

## Capacitor Selection Guide

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Our vision is to be the preferred supplier of electronic component solutions for customers demanding the highest standards of quality, delivery and service.

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# TABLE OF CONTENTS

## Aluminum Capacitors

---

Axial Leads .....	9
Radial Crown .....	13
Screw Terminal .....	15
Snap-In .....	27
Solder Pin/Tag .....	39
Single-Ended .....	42
Surface Mount .....	52
Motor Start .....	55

## Ceramic Capacitors

---

Surface Mount .....	57
Commercial Grade .....	57
Flex Mitigation .....	61
Automotive Grade .....	68
High Reliability Commercial Off-The-Shelf (COTS) .....	78
SnPb End Metallization .....	80
Bulk Capacitance .....	87
High Temperature .....	90
High Voltage .....	94
Aerospace & Defense .....	100
RF & Microwave .....	105
Leaded .....	106
Commercial Grade .....	106
High Temperature .....	111
High Voltage .....	118
Aerospace & Defense .....	122
Disc .....	131
Safety .....	131
Commercial Grade .....	139

## Film Capacitors

---

Through-Hole .....	143
General Purpose .....	143
Metallized Polyester .....	143
Metallized Paper & Polyphenylene Sulfide .....	153
Pulse & AC .....	156
Single Metallized Polypropylene .....	156
Double Metallized Polypropylene .....	168
Film/Foil Polypropylene .....	174
Safety/EMI .....	177
X1 Class .....	177
X2 Class .....	186
Y1 Class .....	196
Y2 Class .....	198
Multiple X & Y .....	202

## Film Capacitors (cont.)

---

Surface Mount .....	205
Polyester (PET) .....	205
Polyethylene Naphthalate (PEN) .....	208
Metallized Polyphenylene Sulfide (PPS).....	211
Y2 Class .....	213
Power & Application Optimized .....	214
Power Film.....	214
Axial.....	214
Radial.....	218
Screw/Faston Terminal .....	222
Motor Run Applications .....	229
Screw/Faston Terminal .....	229
High Voltage Transient Suppression.....	232
Radial.....	232
Low Voltage Transient Suppression .....	236
Radial.....	236
Capacitive AC Power Supply .....	238
Radial.....	238

## Supercapacitors

---

Small Cell.....	245
Radial .....	245
Surface Mount.....	249
Large Cell .....	250
Snap-In.....	250
Screw Terminal.....	250
Bank Module .....	251

## Tantalum Capacitors

---

Surface Mount .....	253
Standard Tantalum .....	253
Polymer Tantalum KEMET Organic Capacitor (KO-CAP).....	258
Polymer Aluminum Organic Capacitor (AO-CAP).....	263
High Temperature.....	264
High Reliability Commercial Off-The-Shelf (COTS) .....	265
MIL-PRF CWR Style.....	275
Fused .....	279
Automotive Grade.....	279
Space Grade .....	284
Through-Hole.....	287
Hermetically Sealed Axial.....	287
Radial Dipped.....	303
Molded Axial.....	310
Molded Radial .....	311

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# Aluminum Capacitors

ALUMINUM CAPACITORS							
Axial Leads	Radial Crown	Screw Terminal	Snap-In	Solder Pin/Tab	Single-Ended	Surface Mount	Motor Start
PEG124 Very Long Life 105°C & 125°C 10 – 450 VDC	PEH126 High Ripple Current 150°C 25 – 63 VDC	ALS30/31 High CV Value & Long Life 85°C 25 – 500 VDC	ALC10 Long Life 85°C 35 – 550 VDC	ALP/T 20/21 Low ESR 85°C 40 – 450 VDC	ESK General Purpose 85°C 6.3 – 450 VDC	A700 Polymer Aluminum 125°C 2 – 16 VDC	MS/MD 60°C / 70°C 120 – 300 VAC
PEG126 High Ripple Current 150°C 25 – 63 VDC	PEH220 High Ripple Current 150°C 25 – 63 VDC	ALS32/33 High CV Value & Long Life 85°C 350 – 500 VDC	ALC10S Slit Foil Audio 85°C 50 – 100 VDC	ALP/T 22/23 High Ripple 85°C 40 – 450 VDC	ESH High CV 105°C 6.3 – 500 VDC	EDH General Purpose 105°C 6.3 – 100 VDC	
PEG127 High Ripple Current 150°C 25 – 63 VDC	PEH225 High Ripple Current 125°C & 150°C 25 – 63 VDC	ALS36/37 High Ripple Current 85°C 25 – 500 VDC	ALC40 High Ripple Current 105°C 25 – 500 VDC	ALN20S T-Network 85°C 50 & 100 VDC	ESC Low ESR 105°C 6.3 – 100 VDC	EDK General Purpose 85°C 4 – 450 VDC	
PEG130 Very Long Life 105°C 25 – 63 VDC	PEH226 High Ripple Current 150°C 25 – 63 VDC	ALS40/41 High CV Value 105°C 25 – 500 VDC	PEH506 Low ESR & ESL 85°C 35 – 450 VDC		ESG High Ripple Current 105°C 160 – 450 VDC	EEV Ultra-Low Impedance 105°C 6.3 – 50 VDC	
PEG220 Very High Ripple Current 150°C 25 – 63 VDC		ALS42/43 High CV Value 105°C 350 – 450 VDC	PEH526 Automotive 125°C 25 – 80 VDC		ESY Low Impedance 105°C 6.3 – 100 VDC	EXV Ultra-Low Impedance 105°C 6.3 – 50 VDC	
PEG225 Extremely High Ripple Current 125°C & 150°C 25 – 63 VDC		ALS60/61 High CV Value 85°C 550 VDC	PEH532 Low ESR & ESL 105°C 35 – 450 VDC		ESW Low Impedance 105°C 6.3 – 100 VDC		
PEG226 Extremely High Ripple Current 150°C 25 – 63 VDC		PEH169 Low ESR 85°C 10 – 450 VDC	PEH534 Low ESR & ESL 105°C 35 – 450 VDC		EST Long Life 105°C 6.3 – 63 VDC		
		PEH169 Low ESR & ESL 105°C 10 – 350 VDC	PEH536 Low ESR & ESL 105°C 35 – 450 VDC		EAK Long Life 125°C 10 – 63 VDC		
		PEH200 High CV Value 85°C 25 – 500 VDC	ELH Low Impedance 85°C 6.3 – 450 VDC				
		PEH205 High Ripple 125°C 16 – 100 VDC	ELG General Purpose 105°C 6.3 – 450 VDC				

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## Axial Leads

### PEG124 Series Very Long Life 105°C & 125°C, 10 – 450 VDC

Capacitance Range: 1 to 4,700  $\mu\text{F}$  • Temperature Range: -40°C to +105°C and -40°C to +125°C • Lifetime: 27,500 Hours



PEG124	E		F	410	0	Q	T1
Series	Voltage (VDC)		Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Packaging
Axial Aluminum Electrolytic	E = 10 G = 16 H = 25 K = 40 M = 63	P = 100 R = 200 U = 350 V = 400 Y = 450	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard A-Z = High Performance	Q = -10 +30% M = $\pm$ 20% T = -10 +50%	See Ordering Options Table

### 105°C

Case Size	Voltage				
	100	200	350	400	450
10 x 20	4.7 $\mu\text{F}$				1 $\mu\text{F}$
10 x 29	22 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$	2.2 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$
13 x 29	47 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$
13 x 37	47 $\mu\text{F}$			10 $\mu\text{F}$	
16 x 29	100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$		10 $\mu\text{F}$
16 x 37	220 $\mu\text{F}$			22 $\mu\text{F}$	15 $\mu\text{F}$
20 x 29		68 $\mu\text{F}$	33 $\mu\text{F}$		15 $\mu\text{F}$ – 22 $\mu\text{F}$
20 x 37		100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$
20 x 46	470 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	47 $\mu\text{F}$

### 125°C

Case Size	Voltage				
	10	16	25	40	63
10 x 20		68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$
10 x 29		150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$
13 x 20		220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$
13 x 29		330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$ – 150 $\mu\text{F}$
13 x 37		680 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	
16 x 29	1 mF	680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$
16 x 37	1.5 mF	1 mF – 2.2 mF	680 $\mu\text{F}$ – 1.5 mF	330 $\mu\text{F}$ – 1 mF	220 $\mu\text{F}$ – 680 $\mu\text{F}$
20 x 37	2.2 mF	1.5 mF – 4.7 mF	1 mF – 3.3 mF	470 $\mu\text{F}$ – 2.2 mF	330 $\mu\text{F}$ – 1 mF
20 x 46	3.3 mF	2.2 mF	1.5 mF – 4 mF	1 mF	470 $\mu\text{F}$ – 1.5 mF

## Axial Leads (cont.)

### PEG126 Series High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,000  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: D=16 6,300 Hours, D=20 8,400 Hours



PEG126	H	F	368	E	Q	E1
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Packaging
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	E = Standard	Q = -10 +30% M = $\pm 20\%$	E1 = Bulk

Case Size	Voltage		
	25	40	63
16 x 29	680 $\mu\text{F}$	470 $\mu\text{F}$	250 $\mu\text{F}$
16 x 37	1 mF – 1.5 mF	600 $\mu\text{F}$	370 $\mu\text{F}$
20 x 29	2.2 mF	1 mF – 1.5 mF	470 $\mu\text{F}$
20 x 37	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 46	4 mF	2.7 mF	900 $\mu\text{F}$

### PEG127 Series High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 33 to 1,300  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 1,600 Hours



PEG127	H	A	318	0	Q	T1
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Packaging
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30%	See Ordering Options Table

Case Size	Voltage		
	25	40	63
10 x 20	180 $\mu\text{F}$	110 $\mu\text{F}$	33 $\mu\text{F}$
10 x 29	360 $\mu\text{F}$	220 $\mu\text{F}$	68 $\mu\text{F}$
13 x 20	470 $\mu\text{F}$	270 $\mu\text{F}$	80 $\mu\text{F}$
13 x 29	900 $\mu\text{F}$	520 $\mu\text{F}$	160 $\mu\text{F}$
13 x 37	1.3 mF	750 $\mu\text{F}$	230 $\mu\text{F}$

## Axial Leads (cont.)

### PEG130 Series Very Long Life 105°C, 25 – 63 VDC

Capacitance Range: 900 to 6,300  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 160,000 Hours



PEG130	H	H	436	0	Q	L1
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Packaging
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30%	See Ordering Options Table

Case Size	Voltage		
	25	40	63
20 x 29	3.6 mF	2 mF	900 $\mu\text{F}$
20 x 37	4.8 mF	3 mF	1.4 mF
20 x 46	6.3 mF	3.9 mF	1.8 mF

### PEG220 Series Very High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,700  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 2,000 Hours



PEG220	H	F	415	0	Q	E1
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Packaging
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$	E1 = Bulk

Case Size	Voltage		
	25	40	63
16 x 26.5	1.5 mF	800 $\mu\text{F}$	250 $\mu\text{F}$
16 x 34.5	2.2 mF	1.2 mF	370 $\mu\text{F}$
20 x 26.5	2.2 mF	1.5 mF	470 $\mu\text{F}$
20 x 34.5	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 42.5	4.7 mF	2.7 mF	900 $\mu\text{F}$

## Axial Leads (cont.)

### PEG225 Series Extremely High Ripple Current 125°C & 150°C, 25 – 63 VDC

Capacitance Range: 470 to 6,300  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  (at  $U_p$ ) and  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  (at reduced voltage) • Lifetime: 2,000 Hours



PEG225	H	F	422	0	M
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$

Case Size	Voltage		
	25	40	63
16 x 26.5	2.2 mF	1.2 mF	470 $\mu\text{F}$
16 x 34.5	3 mF	1.8 mF	680 $\mu\text{F}$
20 x 26.5	3.6 mF	2 mF	900 $\mu\text{F}$
20 x 34.5	4.8 mF	3 mF	1.4 mF
20 x 42.5	6.3 mF	3.9 mF	1.8 mF

### PEG226 Series Extremely High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,700  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 2,000 Hours



PEG226	H	F	415	0	M
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance
Axial Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$

Case Size	Voltage		
	25	40	63
16 x 26.5	1.5 mF	800 $\mu\text{F}$	250 $\mu\text{F}$
16 x 34.5	2.2 mF	1.2 mF	370 $\mu\text{F}$
20 x 26.5	2.2 mF	1.5 mF	470 $\mu\text{F}$
20 x 34.5	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 42.5	4.7 mF	2.7 mF	900 $\mu\text{F}$

## Radial Crown

### PEH126 High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,000  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 2,000 Hours



PEH126	H	F	368	E	Q
Series	Voltage (VDC)	Size Code	Capacitance Code (pF)	Version	Capacitance Tolerance
Radial Crown Aluminum Electrolytic with Soldering Star Termination	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	E = Standard	Q = -10 +30%

Case Size	Voltage		
	25	40	63
16 x 29		470 $\mu\text{F}$	250 $\mu\text{F}$
16 x 37	1 mF – 1.5 mF	600 $\mu\text{F}$	370 $\mu\text{F}$
20 x 29	2.2 mF	1 mF – 1.5 mF	470 $\mu\text{F}$
20 x 37	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 46	4 mF	2.7 mF	900 $\mu\text{F}$

### PEH220 High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,700  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 2,000 Hours



PEH220	H	F	415	0	M
Series	Voltage (VDC)	Size Code	Capacitance Code (pF)	Version	Capacitance Tolerance
Radial Crown Aluminum Electrolytic with Soldering Star Termination	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$

Case Size	Voltage		
	25	40	63
16 x 27	1.5 mF	800 $\mu\text{F}$	250 $\mu\text{F}$
16 x 35	2.2 mF	1.2 mF	370 $\mu\text{F}$
20 x 27	2.2 mF	1.5 mF	470 $\mu\text{F}$
20 x 35	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 43	4.7 mF	2.7 mF	900 $\mu\text{F}$

## Radial Crown (cont.)

### PEH225 High Ripple Current 125°C & 150°C, 25 – 63 VDC

Capacitance Range: 470 to 6,300  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  (at  $U_R$ ) and  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  (at reduced voltage) • Lifetime: 2,000 Hours



PEH225	H	F	422	0	M
Series	Voltage (VDC)	Size Code	Capacitance Code (pF)	Version	Capacitance Tolerance
Radial Crown Aluminum Electrolytic with Soldering Star Termination	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$

Case Size	Voltage		
	25	40	63
16 x 27	2.2 mF	1.2 mF	470 $\mu\text{F}$
16 x 35	3 mF	1.8 mF	680 $\mu\text{F}$
20 x 27	3.6 mF	2 mF	900 $\mu\text{F}$
20 x 35	4.8 mF	3 mF	1.4 mF
20 x 43	6.3 mF	3.9 mF	1.8 mF

### PEH226 High Ripple Current 150°C, 25 – 63 VDC

Capacitance Range: 250 to 4,700  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  • Lifetime: 2,000 Hours



PEH226	H	F	415	0	M
Series	Voltage (VDC)	Size Code	Capacitance Code (pF)	Version	Capacitance Tolerance
Radial Crown Aluminum Electrolytic with Soldering Star Termination	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = $\pm 20\%$

Case Size	Voltage		
	25	40	63
16 x 27	1.5 mF	800 $\mu\text{F}$	250 $\mu\text{F}$
16 x 35	2.2 mF	1.2 mF	370 $\mu\text{F}$
20 x 27	2.2 mF	1.5 mF	470 $\mu\text{F}$
20 x 35	3.3 mF	2.2 mF	680 $\mu\text{F}$
20 x 43	4.7 mF	2.7 mF	900 $\mu\text{F}$

## Screw Terminal

### ALS30/31 Series High CV Value & Long Life 85°C, 25 – 500 VDC

Capacitance Range: 100 to 680,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 40,000 Hours



ALS3	0	A	153	DA	025	
Series	Stud Option	Termination	Capacitance Code (µF)	Size Code	Voltage (VDC)	
Screw Terminal Aluminum Electrolytic	0 = Plain Can 1 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	025 = 25 040 = 40 063 = 63 100 = 100 200 = 200 250 = 250	350 = 350 400 = 400 415 = 415 450 = 450 500 = 500

Case Size	Voltage						
	25	40	63	100	200	250	350
36 x 52	15 mF	10 mF	4.7 mF	2.2 mF	470 µF	470 µF	330 µF
36 x 62	22 mF	15 mF	6.8 mF	3.3 mF	680 µF	680 µF	
36 x 82	33 mF	22 mF	10 mF	4.7 mF	1 mF	1 mF	470 µF
36 x 105	47 mF		15 mF	6.8 mF	1.5 mF		680 µF
51 x 82	68 mF	33 mF – 0.047 F	15 mF – 0.022 F	10 mF	2.2 mF	1.5 mF – 2.2 mF	1 mF
51 x 105	100 mF	68 mF	33 mF	15 mF	3.3 mF	3.3 mF	1.5 mF – 2.2 mF
63.5 x 105							
66 x 105	150 mF	100 mF	47 mF	22 mF	4.7 mF – 6.8 mF	4.7 mF	2.2 mF – 3.3 mF
77 x 75	150 mF	100 mF	47 mF	22 mF	4.7 mF	3.3 mF	2.2 mF
77 x 105	220 mF	150 mF	68 mF	33 mF	10 mF	6.8 mF	4.7 mF
77 x 115							
77 x 146	330 mF	220 mF	100 mF	47 mF	15 mF	10 mF	6.8 mF
77 x 220	470 mF	330 mF	150 mF	68 mF	22 mF	15 mF – 0.022 F	10 mF
90 x 67	220 mF	100 mF	68 mF	22 mF	6.8 mF	6.8 mF	3.3 mF
90 x 75	220 mF	100 mF	47 mF	22 mF	6.8 mF	4.7 mF	3.3 mF
90 x 98	330 mF	150 mF	68 mF	33 mF	10 mF	10 mF	4.7 mF

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## Screw Terminal (cont.)

### ALS30/31 Series High CV Value & Long Life 85°C, 25 – 500 VDC (cont.)

Capacitance Range: 100 to 680,000  $\mu\text{F}$  • Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  • Lifetime: 40,000 Hours



ALS3	0	A	153	DA	025	
Series	Stud Option	Termination	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)	
Screw Terminal Aluminum Electrolytic	0 = Plain Can 1 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	025 = 25 040 = 40 063 = 63 100 = 100 200 = 200 250 = 250	350 = 350 400 = 400 415 = 415 450 = 450 500 = 500

Case Size	Voltage			
	400	415	450	500
36 x 52	220 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$
36 x 62	330 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$
36 x 82	470 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$
36 x 105	680 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$
51 x 82	1 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$
51 x 105	1.5 mF – 2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$
63.5 x 105	3.3 mF			
66 x 105	2.2 mF	2.2 mF	1.5 mF – 2.2 mF	1 mF
77 x 75	1.5 mF	1.5 mF	1.5 mF	1 mF
77 x 105	3.3 mF – 4.7 mF	3.3 mF	2.2 mF – 3.3 mF	1.5 mF
77 x 115	4.7 mF		4.7 mF	
77 x 146	4.7 mF – 6.8 mF	4.7 mF	3.3 mF – 4.7 mF	2.2 mF – 3.3 mF
77 x 220	6.8 mF – 0.01 F	6.8 mF	6.8 mF	4.7 mF
90 x 67	3.3 mF	2.2 mF	2.2 mF	1.5 mF
90 x 75	2.2 mF	2.2 mF	2.2 mF – 3.3 mF	1.5 mF
90 x 98	3.3 mF – 4.7 mF	3.3 mF	3.3 mF	2.2 mF

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## Screw Terminal (cont.)

### ALS32/33 Series High CV Value & Long Life 85°C, 350 – 500 VDC

Capacitance Range: 220 to 18,000  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  • Lifetime: 40,000 Hours



ALS3	2	A	391	D2C	350
Series	Stud Option	Termination	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)
Screw Terminal Aluminum Electrolytic	2 = Plain Can 3 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	350 = 350 400 = 400 450 = 450 500 = 500

Case Size	Voltage			
	350	400	450	500
34.9 x 54	390 $\mu\text{F}$	330 $\mu\text{F}$	270 $\mu\text{F}$	220 $\mu\text{F}$
34.9 x 79.4	470 $\mu\text{F}$ – 680 $\mu\text{F}$	390 $\mu\text{F}$ – 560 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	270 $\mu\text{F}$ – 390 $\mu\text{F}$
34.9 x 92.1	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	560 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$
50.8 x 66.7	1.2 mF – 1.5 mF	1 mF – 1.2 mF	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$
50.8 x 92.1	1.8 mF – 2.2 mF	1.5 mF – 1.8 mF	1.2 mF	1 mF
50.8 x 114.3			1.5 mF	1.2 mF
50.8 x 130.2	2.7 mF – 3.3 mF	2.2 mF	1.8 mF	1.5 mF
63.5 x 92.1		2.7 mF	2.2 mF	1.8 mF
63.5 x 114.3	3.9 mF	3.3 mF	2.7 mF	2.2 mF
63.5 x 130.2		3.9 mF	3.3 mF	2.7 mF
76.2 x 114.3	5.6 mF	4.7 mF	3.9 mF	3.3 mF
76.2 x 130.2	6.8 mF	5.6 mF	4.7 mF	3.9 mF
76.2 x 149.2	8.2 mF	6.8 mF	5.6 mF	4.7 mF
88.9 x 149.2	10 mF – 0.012 F	8.2 mF – 0.01 F	6.8 mF – 8.2 mF	5.6 mF – 6.8 mF
88.9 x 193.7	15 mF	12 mF	10 mF	8.2 mF
88.9 x 219.1	18 mF	15 mF	12 mF	10 mF

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## Screw Terminal (cont.)

### ALS36/37 Series High Ripple Current 85°C, 25 – 500 VDC

Capacitance Range: 150 to 470,000  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  • Lifetime: 40,000 Hours



ALS3	6	A	153	D2C	025	
Series	Stud Option	Termination	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)	
Screw Terminal Aluminum Electrolytic	6 = Plain Can 7 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	025 = 25 040 = 40 050 = 50 063 = 63 075 = 75 100 = 100 160 = 160	200 = 200 250 = 250 350 = 350 400 = 400 450 = 450 500 = 500

Case Size	Voltage												
	25	40	50	63	75	100	160	200	250	350	400	450	500
1.375 x 2.125	15 mF	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1 mF	680 $\mu\text{F}$	680 $\mu\text{F}$	330 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$
1.375 x 2.625	22 mF			6.8 mF	4.7 mF	3.3 mF	1.5 mF	1 mF		470 $\mu\text{F}$			220 $\mu\text{F}$
1.375 x 3.125	33 mF	15 mF	10 mF		6.8 mF	4.7 mF		1.5 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	
1.375 x 3.625				10 mF			2.2 mF					470 $\mu\text{F}$	330 $\mu\text{F}$
1.375 x 4.125	47 mF	22 mF	15 mF			6.8 mF		1.5 mF	1 mF	680 $\mu\text{F}$			
1.375 x 4.625					10 mF		3.3 mF	2.2 mF					470 $\mu\text{F}$
1.375 x 5.125				15 mF							1 mF	680 $\mu\text{F}$	
1.375 x 5.625	68 mF	33 mF	22 mF			10 mF			2.2 mF	1.5 mF			
2 x 2.125	33 mF	22 mF	15 mF	10 mF	4.7 mF	3.3 mF	1.5 mF	1 mF	1 mF	470 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	330 $\mu\text{F}$
2 x 2.625	47 mF	33 mF	22 mF	15 mF	6.8 mF	6.8 mF	2.2 mF	1.5 mF	1.5 mF	680 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$	470 $\mu\text{F}$
2 x 3.125	68 mF	47 mF	33 mF	22 mF	10 mF	10 mF	3.3 mF	2.2 mF	2.2 mF	1 mF	1 mF	680 $\mu\text{F}$	
2 x 3.625					15 mF		4.7 mF			1.5 mF			
2 x 4.125	100 mF	68 mF	47 mF	33 mF		15 mF		3.3 mF			1.5 mF	1 mF	680 $\mu\text{F}$
2 x 4.625						22 mF	6.8 mF	4.7 mF		2.2 mF			
2 x 5.125			68 mF	47 mF							2.2 mF	1.5 mF	1 mF
2 x 5.625	150 mF	100 mF							4.7 mF				
2.5 x 3.125	100 mF	68 mF	33 mF	22 mF	22 mF	15 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$
2.5 x 3.625	150 mF		47 mF	33 mF					4.7 mF		2.2 mF	1.5 mF	1 mF
2.5 x 4.125		100 mF	68 mF	47 mF	33 mF	22 mF	10 mF	6.8 mF		3.3 mF			1.5 mF
2.5 x 4.625											3.3 mF		
2.5 x 5.625	220 mF								6.8 mF				
3 x 3.625	220 mF	150 mF	68 mF	47 mF	33 mF	22 mF	10 mF	6.8 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF
3 x 4.125				68 mF	47 mF	33 mF	15 mF	10 mF				3.3 mF	
3 x 4.625			100 mF										2.2 mF
3 x 5.125											4.7 mF		
3 x 5.625	330 mF	220 mF					22 mF	15 mF	10 mF	6.8 mF	6.8 mF	4.7 mF	
3 x 6.625			150 mF	100 mF	68 mF	47 mF		22 mF	15 mF	10 mF		6.8 mF	3.3 mF
3 x 8.625	470 mF	330 mF			100 mF	68 mF							4.7 mF

# Aluminum Capacitors

## Screw Terminal (cont.)

### ALS40/41 Series High CV Value 105°C, 25 – 500 VDC

Capacitance Range: 150 to 680,000  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 15,000 Hours



ALS4	0	A	153	DA	025	
Series	Stud Option	Termination	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)	
Screw Terminal Aluminum Electrolytic	0 = Plain Can 1 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	025 = 25 040 = 40 063 = 63 100 = 100 160 = 160 200 = 200	250 = 250 350 = 350 400 = 400 415 = 415 450 = 450 500 = 500

Case Size	Voltage										
	25	40	63	100	200	250	350	400	415	450	500
36 x 52	15 mF	10 mF	3.3 mF	1.5 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	220 $\mu\text{F}$	220 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	220 $\mu\text{F}$
36 x 62	22 mF	10 mF	4.7 mF	2.2 mF	680 $\mu\text{F}$	680 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	220 $\mu\text{F}$
36 x 82	33 mF	15 mF	6.8 mF	3.3 mF	1 mF	1 mF	470 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	330 $\mu\text{F}$
36 x 105	47 mF	22 mF	10 mF	4.7 mF	1.5 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	470 $\mu\text{F}$
51 x 82	68 mF	33 mF	15 mF	6.8 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$	680 $\mu\text{F}$
51 x 105	100 mF	47 mF	22 mF	10 mF	3.3 mF	2.2 mF	1.5 mF	1 mF	1 mF	680 $\mu\text{F}$	1 mF
66 x 105	150 mF	100 mF	33 mF	15 mF	6.8 mF	4.7 mF	2.2 mF	2.2 mF	2.2 mF	1.5 mF	
77 x 75	150 mF	68 mF	22 mF	15 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	1.5 mF	1 mF	1.5 mF
77 x 105	220 mF	100 mF	47 mF	22 mF	6.8 mF	6.8 mF	3.3 mF	2.2 mF	2.2 mF	1.5 mF	2.2 mF
77 x 146	330 mF	150 mF	68 mF	33 mF	10 mF	10 mF	4.7 mF	4.7 mF	3.3 mF	2.2 mF – 3.3 mF	3.3 mF
77 x 220	470 mF	220 mF	100 mF	47 mF	22 mF	15 mF	6.8 mF	6.8 mF	6.8 mF	4.7 mF	4.7 mF
90 x 67	220 mF	100 mF	33 mF	22 mF	6.8 mF	4.7 mF	2.2 mF	2.2 mF	2.2 mF	1.5 mF	1.5 mF
90 x 75	150 mF	100 mF	33 mF	15 mF	6.8 mF	4.7 mF	2.2 mF	2.2 mF	2.2 mF	1.5 mF	2.2 mF
90 x 98	330 mF	150 mF	47 mF	22 mF	10 mF	6.8 mF	4.7 mF	3.3 mF	3.3 mF	2.2 mF	3.3 mF
90 x 146	470 mF	220 mF	100 mF	47 mF	15 mF	15 mF	6.8 mF	6.8 mF	4.7 mF	3.3 mF	3.3 mF
90 x 220	680 mF	330 mF	150 mF	100 mF	33 mF	22 mF	10 mF	10 mF	10 mF	6.8 mF	6.8 mF

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## Screw Terminal (cont.)

### ALS42/43 Series High CV Value 105°C, 350 – 450 VDC

Capacitance Range: 1,000 to 15,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 15,000 Hours



ALS4	2	A	102	K3C	350
Series	Stud Option	Termination	Capacitance Code (µF)	Size Code	Voltage (VDC)
Screw Terminal Aluminum Electrolytic	2 = Plain Can 3 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	350 = 350 400 = 400 415 = 415 450 = 450

Case Size	Voltage			
	350	400	415	450
50.8 x 79.4	1 mF – 1.2 mF	1 mF	1 mF	
50.8 x 92.1	1.5 mF – 1.8 mF	1.2 mF	1.2 mF	1 mF
50.8 x 114.3		1.5 mF	1.5 mF	1.2 mF
50.8 x 130.2	2.2 mF	1.8 mF	1.8 mF	1.5 mF
63.5 x 92.1	2.7 mF	2.2 mF	2.2 mF	1.8 mF
63.5 x 114.3	3.3 mF	2.7 mF	2.7 mF	2.2 mF
63.5 x 130.2	3.9 mF	3.3 mF		2.7 mF
63.5 x 149.2	4.7 mF	3.9 mF	3.9 mF	3.3 mF
63.5 x 193.7	5.6 mF	4.7 mF – 5.6 mF	4.7 mF – 5.6 mF	3.9 mF
76.2 x 114.3	4.7 mF	3.9 mF	3.9 mF	2.7 mF
76.2 x 130.2	5.6 mF	4.7 mF	4.7 mF	3.3 mF
76.2 x 149.2	6.8 mF	5.6 mF	5.6 mF	4.7 mF
76.2 x 193.7				5.6 mF
88.9 x 149.2	8.2 mF – 0.01 F	6.8 mF – 8.2 mF	6.8 mF – 8.2 mF	5.6 mF
88.9 x 193.7	12 mF	10 mF	10 mF	6.8 mF – 8.2 mF
88.9 x 219.1	15 mF	12 mF	12 mF	10 mF

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## Screw Terminal (cont.)

**ALS60/61 Series High CV Value 85°C, 550 VDC**

Capacitance Range: 560 to 3,300  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  • Lifetime: 20,000 Hours



ALS6	0	A	561	KE	550
Series	Stud Option	Termination	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)
Screw Terminal Aluminum Electrolytic	0 = Plain Can 1 = Threaded mounting stud	See Termination Table	First 2 digits equals first 2 significant figures, 3rd digit is the number of additional zeros.	See Dimension Table	550 = 550

Case Size	Voltage
	550
51 x 82	560 $\mu\text{F}$
51 x 105	680 $\mu\text{F}$ – 820 $\mu\text{F}$
51 x 115	1 mF
51 x 131	1.2 mF
66 x 82	1 mF
66 x 105	1.2 mF
66 x 115	1.5 mF
66 x 131	1.8 mF
66 x 146	2.2 mF
77 x 105	1.8 mF
77 x 115	2.2 mF
77 x 131	2.7 mF
77 x 146	3.3 mF
90 x 98	2.2 mF

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## Screw Terminal (cont.)

PEH169 Series Low ESR 85°C, 10 – 450 VDC

Capacitance Range: 68 to 470,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 78,000 Hours



PEH169	E		A	510	V	M	U2
Series	Rated Voltage (VDC)		Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	E = 10 G = 16 H = 25 K = 40 M = 63 P = 100 Q = 160	R = 200 S = 250 U = 350 V = 400 O = 420 Y = 450	See Dimension Table	The second 2 digits indicate the 2 most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30% M = ±20%	U2 = Plain Can B2 = Threaded mounting stud

Case Size	Voltage					
	10	16	25	40	63	100
36.6 x 51.5	10 mF – 0.015 F	10 mF – 0.015 F	6 mF – 0.01 F	4.7 mF	2.2 mF – 3.3 mF	1 mF – 1.5 mF
36.6 x 59.5	22 mF			6.8 mF		
36.6 x 73.5	33 mF	22 mF	15 mF	10 mF	4.7 mF	2.2 mF
36.6 x 94.5	47 mF	33 mF	22 mF	15 mF	6.8 mF	3.3 mF
51.6 x 74.5	68 mF	47 mF	33 mF	22 mF	10 mF	4.7 mF
51.6 x 95.5	100 mF	68 mF	47 mF	33 mF	15 mF	6.8 mF
51.6 x 103.5	150 mF				22 mF	10 mF
66.6 x 106	220 mF	100 mF	68 mF	47 mF		15 mF
76.6 x 106		150 mF	100 mF	68 mF	33 mF	
76.6 x 118	330 mF	220 mF	150 mF	100 mF	47 mF	22 mF
76.6 x 146	470 mF	330 mF	220 mF	150 mF	68 mF – 0.082 F	33 mF

Case Size	Voltage						
	160	200	250	350	400	420	450
36.6 x 51.5	470 µF – 680 µF	470 µF	220 µF – 330 µF	150 µF – 220 µF	68 µF – 150 µF	68 µF	68 µF
36.6 x 59.5		680 µF	470 µF		150 µF – 220 µF	100 µF	100 µF
36.6 x 73.5	1 mF		680 µF	330 µF	220 µF – 330 µF	150 µF	150 µF
36.6 x 94.5	1.5 mF	1 mF		470 µF		220 µF	220 µF
51.6 x 74.5	2.2 mF	1.5 mF	1 mF – 1.5 mF	680 µF	330 µF – 470 µF	330 µF	330 µF
51.6 x 95.5	3.3 mF	2.2 mF		1 mF		470 µF	470 µF
51.6 x 103.5		3.3 mF	2.2 mF	1.5 mF	680 µF – 1 mF	680 µF	680 µF
66.6 x 106	4.7 mF	4.7 mF	3.3 mF	2.2 mF	1 mF – 1.5 mF	1 mF	1 mF
76.6 x 98					2.2 mF		
76.6 x 106	6.8 mF	6.8 mF	4.7 mF	3.3 mF	1.5 mF – 2.2 mF	1.5 mF	1.5 mF
76.6 x 118	10 mF						
76.6 x 146	15 mF	10 mF	6.8 mF – 8.8 mF	4.7 mF	2.2 mF – 3.3 mF	2.2 mF	2.2 mF
76.6 x 221			10 mF	6.8 mF	4.7 mF	3.3 mF	3.3 mF

## Screw Terminal (cont.)

PEH169 Series Low ESR & ESL 105°C, 10 – 350 VDC

Capacitance Range: 100 to 330,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 25,000 Hours



PEH169	E		A	468	0	Q	U2
Series	Rated Voltage (VDC)		Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	E = 10 G = 16 H = 25 K = 40 M = 63	P = 100 Q = 160 R = 200 S = 250 U = 350	See Dimension Table	The second 2 digits indicate the 2 most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 +30%	U2 = Plain Can B2 = Threaded mounting stud

Case Size	Voltage					
	10	16	25	40	63	100
36.6 x 51.5	6.8 mF – 0.01 F	6.8 mF – 0.01 F	4.7 mF – 6.8 mF	3.3 mF	1.5 mF – 2.2 mF	680 µF – 1 mF
36.6 x 59.5	15 mF			4.7 mF		
36.6 x 73.5	22 mF	15 mF	10 mF	6.8 mF	3.3 mF	1.5 mF
36.6 x 94.5	33 mF	22 mF	15 mF	10 mF	4.7 mF	2.2 mF
51.6 x 74.5	47 mF	33 mF	22 mF	15 mF	6.8 mF	3.3 mF
51.6 x 95.5	68 mF	47 mF	33 mF	22 mF	10 mF	4.7 mF
51.6 x 103.5	100 mF					
66.6 x 106	150 mF	68 mF	47 mF	33 mF	15 mF	6.8 mF – 0.01 F
76.6 x 106	220 mF	100 mF	68 mF	47 mF	22 mF	
76.6 x 118		150 mF	100 mF	68 mF	33 mF	15 mF
76.6 x 146	330 mF	220 mF	150 mF	100 mF	47 mF	22 mF

Case Size	Voltage			
	160	200	250	350
36.6 x 51.5	330 µF – 470 µF	330 µF	150 µF – 220 µF	100 µF – 150 µF
36.6 x 59.5		470 µF	330 µF	
36.6 x 73.5	680 µF		470 µF	220 µF
36.6 x 94.5	1 mF	680 µF		330 µF
51.6 x 74.5	1.5 mF	1 mF	680 µF – 1 mF	470 µF
51.6 x 95.5	2.2 mF	1.5 mF		680 µF
51.6 x 103.5		2.2 mF	1.5 mF	1 mF
66.6 x 106	3.3 mF	3.3 mF	2.2 mF	1.5 mF
76.6 x 106	4.7 mF	4.7 mF	3.3 mF	2.2 mF
76.6 x 118	6.8 mF			
76.6 x 146	10 mF	6.8 mF	4.7 mF	3.3 mF
76.6 x 221			6.8 mF	4.7 mF
91.6 x 145.5			6.8 mF	4.7 mF

## Screw Terminal (cont.)

### PEH200 Series High CV Value 85°C, 25 – 500 VDC

Capacitance Range: 100 to 330,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 60,000 Hours



PEH200	H		A	515	0	M	U2
Series	Voltage (VDC)		Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	H = 25 K = 40 M = 63 P = 100 S = 250 U = 350	X = 385 V = 400 O = 420 Y = 450 Z = 500	See Dimension table	The second 2 digits indicate the 2 most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 + 30% M = ±20%	U2 = Plain Can B2 = Threaded mounting stud

Case Size	Voltage					
	25	40	63	100	250	350
36.6 x 51.5	15 mF	6.8 mF	4.7 mF	1.5 mF	330 µF	220 µF
36.6 x 59.5		10 mF		2.2 mF	470 µF	330 µF
36.6 x 73.5	22 mF	15 mF	6.8 mF	3.3 mF	680 µF	470 µF
36.6 x 94.5	33 mF	22 mF	10 mF	4.7 mF	1 mF	680 µF
51.6 x 48.5					1 mF	680 µF
51.6 x 74.5	47 mF	33 mF	15 mF	6.8 mF	1.5 mF	1 mF
51.6 x 95.5	68 mF	47 mF	22 mF	10 mF	2.2 mF	1.5 mF
51.6 x 103.5	100 mF			15 mF		
66.6 x 106	150 mF	68 mF – 0.1 F	33 mF – 0.047 F	22 mF	3.3 mF – 4.7 mF	2.2 mF – 3.3 mF
76.6 x 77					3.3 mF	2.2 mF
76.6 x 106	220 mF			33 mF	6.8 mF	
76.6 x 118		150 mF	68 mF			4.7 mF
76.6 x 146	330 mF	220 mF	100 mF	47 mF	10 mF – 0.012 F	6.8 mF
76.6 x 221					15 mF	10 mF
91.6 x 76.5					4.7 mF	3.3 mF
91.6 x 97.5					6.8 mF	4.7 mF
91.6 x 145.5					15 mF	10 mF
91.6 x 220						15 mF



## Screw Terminal (cont.)

### PEH200 Series High CV Value 85°C, 25 – 500 VDC (cont.)

Capacitance Range: 100 to 330,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 60,000 Hours



PEH200	H		A	515	0	M	U2
Series	Voltage (VDC)		Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	H = 25 K = 40 M = 63 P = 100 S = 250 U = 350	X = 385 V = 400 O = 420 Y = 450 Z = 500	See Dimension table	The second 2 digits indicate the 2 most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 + 30% M = ±20%	U2 = Plain Can B2 = Threaded mounting stud

Case Size	Voltage				
	385	400	420	450	500
36.6 x 51.5	220 µF	220 µF	150 µF	150 µF	100 µF
36.6 x 59.5					150 µF
36.6 x 73.5	330 µF	330 µF	220 µF	220 µF	220 µF
36.6 x 94.5	470 µF	470 µF	330 µF	330 µF	330 µF
51.6 x 48.5	470 µF	470 µF	330 µF	330 µF	220 µF
51.6 x 74.5	680 µF	680 µF	470 µF	470 µF	470 µF
51.6 x 95.5	1 mF	1 mF	680 µF	680 µF	680 µF
51.6 x 103.5	1.5 mF		1 mF	1 mF	
66.6 x 106	2.2 mF	1.5 mF – 3.3 mF	1.5 mF – 2.7 mF	1.5 mF – 1.8 mF	1 mF – 1.8 mF
76.6 x 77	2.2 mF	1.5 mF	1.5 mF	1.5 mF	
76.6 x 106	3.3 mF	3.3 mF	2.2 mF	2.2 mF	1.5 mF
76.6 x 118		3.3 mF			
76.6 x 146	4.7 mF	4.7 mF	3.3 mF	3.3 mF	2.2 mF
76.6 x 221	6.8 mF	6.8 mF	4.7 mF	4.7 mF	3.3 mF
91.6 x 76.5	3.3 mF	2.2 mF	2.2 mF	2.2 mF	
91.6 x 97.5	4.7 mF	3.3 mF	3.3 mF	3.3 mF	
91.6 x 145.5	6.8 mF	6.8 mF	4.7 mF	4.7 mF	3.3 mF
91.6 x 220		10 mF	8.2 mF	8.2 mF	5.6 mF

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## Screw Terminal (cont.)

### PEH205 Series High Ripple 125°C, 16 – 100 VDC

Capacitance Range: 1,500 to 390,000 µF • Temperature Range: -40°C to +125°C • Lifetime: 6,000 Hours



PEH205	G	A	518	0	Q	U3
Series	Voltage (VDC)	Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Stud Option
Screw Terminal Aluminum Electrolytic	G = 16 H = 25 K = 40 L = 55 M = 63 P = 100	See Dimension Table	The second 2 digits indicate the 2 most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	Q = -10 + 30%	U3 = Plain Can B3 = Threaded mounting stud

Case Size	Voltage					
	16	25	40	55	63	100
35.3 x 51.5	18 mF	10 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF
35.3 x 73.5	33 mF	18 mF	10 mF	5.6 mF	4.7 mF	2.2 mF
35.3 x 94.5	39 mF	22 mF	15 mF	8.2 mF	6.8 mF	3.3 mF
50.3 x 74.5	68 mF	39 mF	22 mF	12 mF	10 mF	4.7 mF
65.3 x 106	180 mF	120 mF	47 mF	33 mF	22 mF	15 mF
75.3 x 106	270 mF	180 mF	68 mF	47 mF	33 mF	22 mF
75.3 x 146	390 mF	270 mF	100 mF	68 mF	47 mF	33 mF

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# Aluminum Capacitors

## Snap-In

### ALC10 Series Long Life 85°C, 35 – 550 VDC

Capacitance Range: 56 to 82,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 29,000 Hours



ALC10	A	392	BB	040	
Series	Termination	Capacitance Code (µF)	Size Code	Rated Voltage (VDC)	
Snap-In type Aluminum Electrolytic	See Termination Table	First two digits represent significant figures. Third digit specifies number of zeros.	See Dimension Table	035 = 35 040 = 40 063 = 63 100 = 100 200 = 200 250 = 250	350 = 350 400 = 400 450 = 450 500 = 500 550 = 550

Case Size	Voltage										
	35	40	63	100	200	250	350	400	450	500	550
25 x 30		3.9 mF	2.2 mF	1 mF	330 µF	220 µF	120 µF	100 µF	68 µF	56 µF	56 µF
25 x 35		4.7 mF	2.7 mF	1.2 mF	390 µF	270 µF – 330 µF	150 µF	120 µF	100 µF	68 µF	68 µF
25 x 40		5.6 mF	3.3 mF	1.5 mF	470 µF	330 µF	180 µF	150 µF	120 µF – 150 µF	82 µF	82 µF
30 x 30		5.6 mF	3.3 mF	1.5 mF	470 µF	330 µF	180 µF	150 µF	120 µF – 150 µF	82 µF – 100 µF	82 µF
30 x 35		6.8 mF	4.7 mF	1.8 mF	560 µF	470 µF	270 µF	180 µF – 220 µF	150 µF	100 µF – 120 µF	120 µF
30 x 40		8.2 mF	5.6 mF	2.2 mF	680 µF	560 µF	330 µF	220 µF	180 µF	150 µF	150 µF
30 x 50		12 mF	6.8 mF	3.3 mF	1 mF	680 µF	390 µF	330 µF	220 µF – 330 µF	180 µF	180 µF
35 x 35		10 mF	6.8 mF	2.7 mF	820 µF	680 µF	390 µF	270 µF – 330 µF	220 µF – 270 µF	180 µF	180 µF
35 x 40		12 mF	8.2 mF	3.3 mF	1 mF	820 µF	470 µF	330 µF	270 µF	220 µF	220 µF
35 x 50		18 mF	10 mF	4.7 mF	1.2 mF – 1.5 mF	1 mF	560 µF	390 µF – 560 µF	330 µF – 470 µF	270 µF	270 µF
35 x 60						1.2 mF	820 µF	560 µF – 680 µF	470 µF	390 µF	330 µF
35 x 80						1.8 mF	1 mF	820 µF – 1 mF	680 µF	560 µF	470 µF
40 x 30		15 mF	8.2 mF	2.7 mF	820 µF	680 µF	330 µF	270 µF	220 µF	180 µF	180 µF
40 x 35		18 mF	10 mF	3.3 mF	1 mF		390 µF	330 µF	270 µF	220 µF	220 µF
40 x 40		22 mF	12 mF	3.9 mF	1.2 mF	820 µF	470 µF	390 µF – 470 µF	330 µF	270 µF	270 µF
40 x 45				4.7 mF	1.5 mF	1 mF	560 µF	470 µF	390 µF	330 µF	330 µF
40 x 50	33 mF	27 mF	15 mF	5.6 mF	1.8 mF	1.2 mF	680 µF	560 µF	470 µF	390 µF	390 µF
40 x 55				6.8 mF		1.5 mF	820 µF				
40 x 60		33 mF	18 mF	8.2 mF	2.2 mF	1.8 mF	820 µF	680 µF	560 µF	470 µF	470 µF
40 x 80		47 mF	27 mF	12 mF	3.3 mF	2.2 mF	1.2 mF	1 mF	820 µF – 1 mF	680 µF	680 µF
40 x 105		82 mF	39 mF	18 mF	4.7 mF	3.9 mF	1.8 mF	1.5 mF	1.2 mF	1 mF	1 mF
45 x 105					5.6 mF	4.7 mF	2.7 mF	2.2 mF	1.8 mF	1.5 mF	1.2 mF
50 x 105					8.2 mF	5.6 mF	3.3 mF	2.7 mF	2.2 mF	1.8 mF	1.5 mF

## Snap-In (cont.)

### ALC10S Series Slit Foil Audio 85°C, 50 – 100 VDC

Capacitance Range: 10,000  $\mu$ F • Temperature Range: -40°C to +85°C • Lifetime: 29,000 Hours



ALC10	S	110 2	DF
Series	Construction	Unique Sequential Number	Size Code
Snap-In type Aluminum Electrolytic	S = Slit foil		See Dimension Table

Case Size	Voltage			
	50	63	80	100
35 x 50			10 mF	
35 x 60		10 mF		
35 x 80	10 mF			
40 x 90				10 mF

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# Aluminum Capacitors

## Snap-In (cont.)

### ALC40 Series High Ripple Current 105°C, 25 – 500 VDC

Capacitance Range: 47 to 120,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 14,000 Hours



ALC40	A	822	BB	025	
Series	Termination	Capacitance Code (µF)	Size Code	Voltage (VDC)	
Snap-In type Aluminum Electrolytic	See Termination Table	First two digits equals first two significant figures, third digit is the number of additional zeros.	See Dimension Table	025 = 25 040 = 40 063 = 63 100 = 100 200 = 200	250 = 250 350 = 350 400 = 400 450 = 450 500 = 500

Case Size	Voltage									
	25	40	63	100	200	250	350	400	450	500
25 x 30	8.2 mF	3.9 mF	2.2 mF	820 µF	270 µF	220 µF	120 µF	100 µF	47 µF	56 µF
25 x 35	10 mF	5.6 mF	3.3 mF	1 mF	390 µF	270 µF	150 µF	120 µF	56 µF	68 µF
25 x 40	12 mF	6.8 mF	3.9 mF	1.2 mF	470 µF	330 µF	180 µF	150 µF	68 µF	82 µF
30 x 30	12 mF	5.6 mF	3.9 mF	1.2 mF	470 µF	330 µF	180 µF	150 µF	68 µF	82 µF
30 x 35	15 mF	6.8 mF – 8.2 mF	4.7 mF	1.5 mF	560 µF	390 µF	220 µF	180 µF	82 µF	120 µF
30 x 40	18 mF	10 mF	5.6 mF	1.8 mF	680 µF	470 µF	270 µF	220 µF	100 µF	
30 x 50	27 mF	12 mF	6.8 mF – 8.2 mF	2.2 mF	820 µF	560 µF	390 µF	330 µF	150 µF	180 µF
35 x 35	22 mF	12 mF	6.8 mF	2.2 mF	820 µF	560 µF	330 µF	270 µF	120 µF	150 µF
35 x 40	27 mF	15 mF	8.2 mF	2.7 mF	1 mF	680 µF	390 µF	330 µF	150 µF	180 µF
35 x 45								470 µF		
35 x 50	33 mF – 0.039 F	18 mF	10 mF	3.3 mF	1.2 mF	820 µF	470 µF – 560 µF	390 µF – 470 µF	180 µF – 330 µF	270 µF
35 x 60						1 mF	560 µF	470 µF	330 µF – 470 µF	330 µF
35 x 80						1.5 mF	820 µF	680 µF	470 µF	470 µF
40 x 30	27 mF	12 mF	5.6 mF	2.2 mF	680 µF	470 µF	270 µF	220 µF	150 µF	180 µF
40 x 35	33 mF		6.8 mF		820 µF	560 µF		270 µF	180 µF	220 µF
40 x 40	39 mF	15 mF	8.2 mF	2.7 mF	1 mF	680 µF	390 µF	330 µF	220 µF	270 µF
40 x 45		18 mF	10 mF	3.3 mF	1.2 mF	820 µF	470 µF	390 µF		
40 x 50	47 mF	22 mF	12 mF	3.9 mF	1.5 mF	1 mF	560 µF	470 µF	270 µF	390 µF
40 x 55	56 mF	27 mF		4.7 mF		1.2 mF		560 µF	330 µF	470 µF
40 x 60			15 mF	5.6 mF	1.8 mF		680 µF	680 µF	390 µF	
40 x 80	82 mF	47 mF	22 mF	8.2 mF	2.7 mF	1.8 mF	1 mF	1 mF	560 µF – 820 µF	680 µF
40 x 105	120 mF	68 mF	33 mF	10 mF	3.9 mF	2.7 mF	1.5 mF	1.2 mF	820 µF	820 µF
45 x 105					5.6 mF	3.9 mF	2.2 mF	1.8 mF	1.2 mF	1 mF
50 x 105					6.8 mF	4.7 mF	2.7 mF	2.2 mF	1.5 mF	1.2 mF

## Snap-In (cont.)

### PEH506 Series Low ESR & ESL 85°C, 35 – 450 VDC

Capacitance Range: 68 to 27,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 6,000 Hours



PEH506	J	AC	433	0	M	2
Series	Voltage (VDC)	Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Termination
Snap-In type Aluminum Electrolytic	J = 35 M = 63 P = 100 R = 200 S = 250 U = 350 V = 400 Y = 450	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	M = ±20%	See Termination Table

Case Size	Voltage							
	35	63	100	200	250	350	400	450
22 x 25		1.2 mF	560 µF			82 µF		
22 x 30	3.3 mF – 3.9 mF	1.5 mF – 1.8 mF	680 µF	270 µF	220 µF	100 µF	82 µF – 100 µF	68 µF – 82 µF
22 x 35	4.7 mF	2.2 mF	820 µF	330 µF – 390 µF	270 µF	150 µF	120 µF	100 µF
22 x 40	5.6 mF	2.7 mF	1 mF – 1.2 mF	470 µF	330 µF	180 µF	150 µF	120 µF
22 x 45			1.5 mF	560 µF	390 µF	220 µF	180 µF	150 µF
22 x 50	8.2 mF	3.3 mF		680 µF	470 µF – 560 µF	270 µF	220 µF	180 µF
25 x 25			680 µF	270 µF	220 µF		100 µF	68 µF – 82 µF
25 x 30	4.7 mF – 5.6 mF	2.2 mF	820 µF – 1 mF	330 µF – 390 µF	270 µF – 330 µF	150 µF	120 µF	100 µF – 120 µF
25 x 35	6.8 mF	2.7 mF	1.2 mF	470 µF	390 µF	220 µF	150 µF	150 µF
25 x 40	8.2 mF	3.3 mF	1.5 mF	560 µF	470 µF	270 µF	220 µF	180 µF
25 x 45	10 mF	3.9 mF	1.8 mF	680 µF	560 µF		270 µF	220 µF
25 x 50	12 mF	4.7 mF	2.2 mF	820 µF	680 µF	330 µF – 390 µF		
30 x 25					330 µF		120 µF – 150 µF	120 µF
30 x 30	6.8 mF	3.3 mF		470 µF	470 µF	220 µF	180 µF	150 µF – 180 µF
30 x 35	10 mF	3.9 mF	1.8 mF	680 µF – 820 µF			220 µF – 270 µF	220 µF
30 x 40	12 mF	4.7 mF – 5.6 mF	2.2 mF	1 mF	680 µF	330 µF – 390 µF	330 µF	270 µF
30 x 45	15 mF	6.8 mF	2.7 mF	1.2 mF	820 µF	470 µF		
30 x 50			3.3 mF		1 mF	560 µF	390 µF	330 µF
35 x 25							220 µF	
35 x 30	10 mF – 0.012 F	4.7 mF	2.2 mF		680 µF	330 µF		220 µF
35 x 35	15 mF	5.6 mF	2.7 mF	1 mF	820 µF	470 µF	330 µF	270 µF
35 x 40	18 mF	6.8 mF	3.3 mF	1.2 mF	1 mF	560 µF	390 µF	330 µF – 390 µF
35 x 45	22 mF	8.2 mF	3.9 mF	1.5 mF	1.2 mF	680 µF	470 µF	
35 x 50	27 mF	10 mF	4.7 mF	1.8 mF	1.5 mF		560 µF	470 µF
35 x 55				2.2 mF				

## Snap-In (cont.)

### PEH526 Series Automotive 125°C, 25 – 63 VDC

Capacitance Range: 820 to 6,800  $\mu\text{F}$  • Temperature Range: -40°C to +125°C • Lifetime: 20,000 Hours



PEH526	H	AB	427	0	M	3
Series	Voltage (VDC)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Version	Capacitance Tolerance	Termination
Snap-In type Aluminum Electrolytic	H = 25 K = 40 M = 63	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	M = $\pm 20\%$	3 = 3 Pin

Case Size	Voltage		
	25	40	63
22 x 25	2.7 mF	1.2 mF – 1.8 mF	820 $\mu\text{F}$
22 x 30	3.9 mF	1.5 mF – 2.2 mF	1.2 mF
25 x 25	3.9 mF	1.5 mF – 2.2 mF	1.2 mF
25 x 35	6.8 mF	1.8 mF – 3.9 mF	2.2 mF
30 x 25	5.6 mF	2.2 mF – 3.3 mF	1.8 mF

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## Snap-In (cont.)

### PEH532 Series Low ESR & ESL 105°C, 35 – 450 VDC

Capacitance Range: 68 to 27,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 2,000 Hours



PEH532	J	AC	433	0	M	2
Series	Voltage (VDC)	Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Termination
Snap-In type Aluminum Electrolytic	J = 35 M = 63 P = 100 R = 200 S = 250 U = 350 V = 400 Y = 450	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	M = ±20%	See Termination Table

Case Size	Voltage							
	35	63	100	200	250	350	400	450
22 x 25		1.2 mF	560 µF			82 µF		
22 x 30	3.3 mF – 3.9 mF	1.5 mF – 1.8 mF	680 µF	270 µF	220 µF	100 µF	82 µF – 100 µF	68 µF – 82 µF
22 x 35	4.7 mF	2.2 mF	820 µF	330 µF – 390 µF	270 µF	150 µF	120 µF	100 µF
22 x 40	5.6 mF – 6.8 mF	2.7 mF	1 mF – 1.2 mF	470 µF	330 µF	180 µF	150 µF	120 µF
22 x 45			1.5 mF	560 µF	390 µF	220 µF	180 µF	150 µF
22 x 50	8.2 mF	3.3 mF		680 µF	470 µF – 560 µF	270 µF	220 µF	180 µF
25 x 25			680 µF	270 µF	220 µF		100 µF	68 µF – 82 µF
25 x 30	4.7 mF – 5.6 mF	2.2 mF	820 µF – 1 mF	330 µF – 390 µF	270 µF – 330 µF	150 µF	120 µF	100 µF – 120 µF
25 x 35	6.8 mF	2.7 mF	1.2 mF	470 µF	390 µF	220 µF	150 µF	150 µF
25 x 40	8.2 mF	3.3 mF	1.5 mF	560 µF	470 µF	270 µF	220 µF	180 µF
25 x 45	10 mF	3.9 mF	1.8 mF	680 µF	560 µF		270 µF	220 µF
25 x 50	12 mF	4.7 mF	2.2 mF	820 µF	680 µF	330 µF – 390 µF		
30 x 25					330 µF		120 µF – 150 µF	120 µF
30 x 30	6.8 mF – 8.2 mF	3.3 mF		470 µF	470 µF	220 µF	180 µF	150 µF – 180 µF
30 x 35	10 mF	3.9 mF	1.8 mF	680 µF – 820 µF			220 µF – 270 µF	220 µF
30 x 40	12 mF	4.7 mF – 5.6 mF	2.2 mF	1 mF	680 µF	330 µF – 390 µF	330 µF	270 µF
30 x 45	15 mF	6.8 mF	2.7 mF	1.2 mF	820 µF	470 µF		
30 x 50			3.3 mF		1 mF	560 µF	390 µF	330 µF
35 x 25							220 µF	
35 x 30	10 mF – 0.012 F	4.7 mF	2.2 mF		680 µF	330 µF		220 µF
35 x 35	15 mF	5.6 mF	2.7 mF	1 mF	820 µF	470 µF	330 µF	270 µF
35 x 40	18 mF	6.8 mF	3.3 mF	1.2 mF	1 mF	560 µF	390 µF	330 µF – 390 µF
35 x 45	22 mF	8.2 mF	3.9 mF	1.5 mF	1.2 mF	680 µF	470 µF	
35 x 50	27 mF	10 mF	4.7 mF	1.8 mF	1.5 mF		560 µF	470 µF
35 x 55				2.2 mF				



## Snap-In (cont.)

### PEH534 Series Low ESR & ESL 105°C, 35 – 450 VDC

Capacitance Range: 150 to 22,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 4,000 Hours



PEH534	J	BC	456	0	M	2
Series	Voltage (VDC)	Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Termination
Snap-In type Aluminum Electrolytic	J = 35 M = 63 P = 100 R = 200 S = 250 U = 350 V = 400 Y = 450	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	M = ±20%	See Termination Table

Case Size	Voltage							
	35	63	100	200	250	350	400	450
25 x 30	5.6 mF	2.2 mF						
25 x 35	6.8 mF			470 µF			150 µF	
25 x 40	8.2 mF	3.3 mF	1.5 mF	560 µF	390 µF	220 µF		150 µF
25 x 45	10 mF			680 µF	470 µF		220 µF	
25 x 50					560 µF			
30 x 25	6.8 mF						150 µF	
30 x 30	8.2 mF	3.3 mF	1.5 mF	560 µF	390 µF	220 µF		150 µF
30 x 35	10 mF			680 µF	470 µF		220 µF	
30 x 40		4.7 mF	2.2 mF	820 µF	560 µF	330 µF		220 µF
30 x 45	15 mF	5.6 mF			680 µF	390 µF	330 µF	
30 x 50		6.8 mF	3.3 mF	1 mF	820 µF		390 µF	330 µF
35 x 25	8.2 mF					220 µF		150 µF
35 x 30		4.7 mF	2.2 mF	680 µF – 820 µF	470 µF	330 µF	220 µF	220 µF
35 x 35	15 mF	5.6 mF		1 mF	680 µF	390 µF	330 µF	
35 x 40		6.8 mF	3.3 mF		820 µF	470 µF	390 µF	330 µF
35 x 45		8.2 mF	3.9 mF	1.5 mF	1 mF	560 µF	470 µF	390 µF
35 x 50	22 mF	10 mF	4.7 mF				560 µF	470 µF

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## Snap-In (cont.)

### PEH536 Series Low ESR & ESL 105°C, 35 – 450 VDC

Capacitance Range: 47 to 18,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 6,000 Hours



PEH536	J	AD	439	0	M	2
Series	Voltage (VDC)	Size Code	Capacitance Code (µF)	Version	Capacitance Tolerance	Termination
Snap-In type Aluminum Electrolytic	J = 35 M = 63 P = 100 R = 200 S = 250 U = 350 V = 400 Y = 450	See Dimension Table	The second two digits indicate the two most significant digits of the capacitance value. The first digit indicates the total number digits.	0 = Standard	M = ±20%	See Termination Table

Case Size	Voltage							
	35	63	100	200	250	350	400	450
22 x 30			560 µF	220 µF	150 µF	100 µF	68 µF	47 µF
22 x 35	3.9 mF	1.8 mF	680 µF			120 µF	82 µF – 100 µF	
22 x 40	4.7 mF		820 µF	330 µF	220 µF	150 µF	120 µF	68 µF
22 x 45						180 µF		100 µF
22 x 50		2.7 mF		470 µF		220 µF	150 µF	120 µF
25 x 25			560 µF			100 µF	68 µF	
25 x 30	3.9 mF	1.8 mF	680 µF – 820 µF	270 µF	220 µF	150 µF	100 µF	68 µF
25 x 35	5.6 mF	2.2 mF	1 mF	330 µF	270 µF			100 µF
25 x 40	6.8 mF	2.7 mF	1.2 mF	470 µF	330 µF	220 µF	150 µF	
25 x 45	8.2 mF			560 µF	390 µF			150 µF
25 x 50	10 mF	3.3 mF	1.5 mF	680 µF	470 µF	270 µF	220 µF	
30 x 25		1.8 mF	820 µF					
30 x 30	5.6 mF	2.2 mF	1 mF		330 µF		150 µF	
30 x 35	6.8 mF – 8.2 mF	2.7 mF – 3.3 mF	1.2 mF	560 µF			180 µF	150 µF
30 x 40	10 mF	3.9 mF	1.5 mF	680 µF	470 µF	270 µF	220 µF	180 µF
30 x 45	12 mF	4.7 mF		820 µF	560 µF	330 µF	270 µF	220 µF
30 x 50			2.2 mF	1 mF	680 µF		330 µF	270 µF
35 x 25	5.6 mF	2.2 mF						
35 x 30	8.2 mF	3.9 mF					180 µF	
35 x 35	12 mF	4.7 mF		680 µF – 820 µF		330 µF		
35 x 40	15 mF		2.2 mF	1 mF	680 µF	470 µF	330 µF	220 µF
35 x 45		6.8 mF	2.7 mF		820 µF	560 µF	390 µF	270 µF
35 x 50	18 mF	8.2 mF	3.3 mF	1.2 mF	1 mF	560 µF	470 µF	330 µF
35 x 55			4.7 mF				560 µF	390 µF
35 x 60						680 µF		470 µF
40 x 60							680 µF	560 µF
40 x 70								680 µF
40 x 80						1 mF	1 mF	
40 x 100							1.5 mF	1 mF

## Snap-In (cont.)

### ELH Series Low Impedance 85°C, 6.3 – 450 VDC

Capacitance Range: 47 to 120,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 2,000 Hours



ELH	159	M	6R3		A	Q1	AA
Series	Capacitance Code (µF)	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Snap-In Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 080 = 80	100 = 100 160 = 160 180 = 180 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage								
	6.3	10	16	25	35	50	63	80	100
22 x 25	15 mF	12 mF	8.2 mF	5.6 mF	3.9 mF		1.8 mF	1.2 mF	820 µF
22 x 30	18 mF – 0.022 F	15 mF	10 mF – 0.012 F	6.8 mF	4.7 mF	2.7 mF – 3.3 mF	2.2 mF	1.5 mF	1 mF
22 x 35	27 mF	18 mF	15 mF	8.2 mF	5.6 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF
22 x 40	33 mF	22 mF	18 mF	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF
22 x 45	39 mF	27 mF		12 mF	8.2 mF	5.6 mF	3.9 mF	2.7 mF	1.8 mF
22 x 50		33 mF	22 mF	15 mF	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF
25 x 25	18 mF – 0.022 F	15 mF – 0.018 F	10 mF – 0.012 F	6.8 mF – 8.2 mF	4.7 mF – 5.6 mF	2.7 mF – 3.3 mF	2.2 mF	1.5 mF	1 mF
25 x 30	27 mF	22 mF	15 mF	10 mF	6.8 mF	3.9 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF	1.2 mF – 1.5 mF
25 x 35	33 mF	27 mF	18 mF	12 mF	8.2 mF	4.7 mF	3.9 mF	2.7 mF	1.8 mF
25 x 40	39 mF	33 mF	22 mF	15 mF	10 mF	5.6 mF – 6.8 mF	4.7 mF – 5.6 mF	3.3 mF	2.2 mF
25 x 45	47 mF	39 mF	27 mF	18 mF	12 mF		5.6 mF	3.9 mF	2.7 mF
25 x 50	56 mF	47 mF			15 mF	8.2 mF		4.7 mF	3.3 mF
30 x 25	27 mF	22 mF	15 mF	10 mF	6.8 mF	3.9 mF – 4.7 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF	1.5 mF
30 x 30	33 mF – 0.039 F	27 mF – 0.033 F	18 mF – 0.022 F	12 mF	8.2 mF – 0.01 F	5.6 mF – 6.8 mF	3.9 mF – 4.7 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF
30 x 35	47 mF	39 mF	27 mF	15 mF – 0.018 F	12 mF	6.8 mF	5.6 mF	3.9 mF	2.7 mF
30 x 40	56 mF	47 mF	33 mF	22 mF	15 mF	8.2 mF	6.8 mF	4.7 mF	3.3 mF
30 x 45	68 mF	56 mF	39 mF	27 mF	18 mF	10 mF	8.2 mF	5.6 mF	3.9 mF
30 x 50	82 mF	68 mF	47 mF	33 mF	22 mF	12 mF	10 mF	6.8 mF	
35 x 25	33 mF – 0.039 F	33 mF	22 mF	12 mF	10 mF	5.6 mF	4.7 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF
35 x 30	47 mF – 0.056 F	39 mF – 0.047 F	27 mF – 0.033 F	15 mF – 0.018 F	12 mF	6.8 mF – 8.2 mF	5.6 mF – 6.8 mF	3.9 mF	2.7 mF – 3.3 mF
35 x 35	68 mF	56 mF	39 mF	22 mF	15 mF	10 mF	8.2 mF	4.7 mF – 5.6 mF	3.9 mF
35 x 40	82 mF	68 mF	47 mF	27 mF	18 mF	12 mF	10 mF	6.8 mF	4.7 mF
35 x 45	100 mF		56 mF	33 mF	22 mF	15 mF	12 mF	8.2 mF	
35 x 50	120 mF	82 mF	68 mF	39 mF	27 mF	18 mF		10 mF	5.6 mF

## Snap-In (cont.)

### ELH Series Low Impedance 85°C, 6 3 – 450 VDC (cont.)

Capacitance Range: 47 to 120,000  $\mu\text{F}$  • Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  • Lifetime: 2,000 Hours



ELH	159	M	6R3		A	Q1	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Snap-In Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 080 = 80	100 = 100 160 = 160 180 = 180 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage						
	160	180	200	250	350	400	450
22 x 20		180 $\mu\text{F}$		120 $\mu\text{F}$		56 $\mu\text{F}$	
22 x 25	330 $\mu\text{F}$ – 390 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	82 $\mu\text{F}$	68 $\mu\text{F}$ – 82 $\mu\text{F}$	47 $\mu\text{F}$ – 56 $\mu\text{F}$
22 x 30	390 $\mu\text{F}$ – 560 $\mu\text{F}$	330 $\mu\text{F}$ – 390 $\mu\text{F}$	270 $\mu\text{F}$ – 390 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$ – 82 $\mu\text{F}$
22 x 35		470 $\mu\text{F}$ – 560 $\mu\text{F}$	470 $\mu\text{F}$	220 $\mu\text{F}$ – 390 $\mu\text{F}$	150 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$
22 x 40	680 $\mu\text{F}$	560 $\mu\text{F}$	560 $\mu\text{F}$	390 $\mu\text{F}$ – 470 $\mu\text{F}$	180 $\mu\text{F}$	150 $\mu\text{F}$	120 $\mu\text{F}$
22 x 45	820 $\mu\text{F}$	680 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$	220 $\mu\text{F}$	180 $\mu\text{F}$	150 $\mu\text{F}$
22 x 50	1 mF	820 $\mu\text{F}$		560 $\mu\text{F}$		220 $\mu\text{F}$	
25 x 20	330 $\mu\text{F}$	270 $\mu\text{F}$		180 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	68 $\mu\text{F}$ – 82 $\mu\text{F}$	
25 x 25	390 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$ – 390 $\mu\text{F}$	270 $\mu\text{F}$ – 390 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	120 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	68 $\mu\text{F}$ – 82 $\mu\text{F}$
25 x 30	560 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$
25 x 35	820 $\mu\text{F}$	680 $\mu\text{F}$	560 $\mu\text{F}$ – 680 $\mu\text{F}$	390 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$	180 $\mu\text{F}$	150 $\mu\text{F}$
25 x 40	1 mF	820 $\mu\text{F}$	820 $\mu\text{F}$	560 $\mu\text{F}$	270 $\mu\text{F}$	220 $\mu\text{F}$ – 270 $\mu\text{F}$	180 $\mu\text{F}$
25 x 45	1.2 mF	1 mF	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$		270 $\mu\text{F}$	
25 x 50			1 mF – 1.2 mF	680 $\mu\text{F}$	330 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$
30 x 25	390 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$	330 $\mu\text{F}$ – 390 $\mu\text{F}$	150 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$
30 x 30	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	680 $\mu\text{F}$ – 820 $\mu\text{F}$	470 $\mu\text{F}$ – 560 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	150 $\mu\text{F}$
30 x 35	1 mF – 1.2 mF	820 $\mu\text{F}$ – 1 mF	820 $\mu\text{F}$ – 1 mF	560 $\mu\text{F}$ – 820 $\mu\text{F}$	270 $\mu\text{F}$	270 $\mu\text{F}$	180 $\mu\text{F}$
30 x 40	1.5 mF	1.2 mF	1 mF – 1.2 mF	680 $\mu\text{F}$	330 $\mu\text{F}$ – 390 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$
30 x 45	1.5 mF – 1.8 mF	1.5 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$	390 $\mu\text{F}$	270 $\mu\text{F}$
30 x 50	1.8 mF		1.5 mF	1 mF		470 $\mu\text{F}$	330 $\mu\text{F}$
35 x 25	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$ – 680 $\mu\text{F}$	220 $\mu\text{F}$ – 270 $\mu\text{F}$	220 $\mu\text{F}$	180 $\mu\text{F}$
35 x 30	1.2 mF – 1.5 mF	1 mF – 1.2 mF	820 $\mu\text{F}$ – 1.2 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	330 $\mu\text{F}$ – 390 $\mu\text{F}$	270 $\mu\text{F}$ – 330 $\mu\text{F}$	220 $\mu\text{F}$
35 x 35	1.5 mF – 1.8 mF	1.2 mF – 1.5 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$	390 $\mu\text{F}$	270 $\mu\text{F}$
35 x 40	1.8 mF – 2.2 mF	1.5 mF – 1.8 mF	1.5 mF – 1.8 mF	1 mF – 1.2 mF	560 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$
35 x 45	2.2 mF	1.8 mF – 2.2 mF	1.8 mF – 2.2 mF	1.2 mF – 1.5 mF	680 $\mu\text{F}$	560 $\mu\text{F}$	390 $\mu\text{F}$
35 x 50	2.7 mF	2.2 mF	2.2 mF	1.5 mF		680 $\mu\text{F}$	470 $\mu\text{F}$
35 x 60							680 $\mu\text{F}$

## Snap-In (cont.)

### ELG Series General Purpose 105°C, 6.3 – 450 VDC

Capacitance Range: 47 to 82,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 2,000 Hours



ELG	129	M	6R3		A	Q1	AA
Series	Capacitance Code (µF)	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Snap-In Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 080 = 80	100 = 100 160 = 160 180 = 180 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage								
	6.3	10	16	25	35	50	63	80	100
22 x 25	12 mF	10 mF	6.8 mF	4.7 mF	3.3 mF	1.8 mF	1.2 mF	820 µF	560 µF – 680 µF
22 x 30	15 mF – 0.018 F	12 mF – 0.015 F	8.2 mF – 0.01 F	5.6 mF – 6.8 mF	3.9 mF	2.2 mF – 2.7 mF	1.5 mF – 1.8 mF	1 mF – 1.2 mF	820 µF
22 x 35	22 mF	18 mF	12 mF	8.2 mF	4.7 mF – 5.6 mF	3.3 mF	2.2 mF		1 mF
22 x 40	27 mF	22 mF	15 mF	10 mF	6.8 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF
22 x 45	33 mF		18 mF	12 mF		4.7 mF		2.2 mF	1.5 mF
22 x 50		27 mF			8.2 mF	5.6 mF	3.3 mF		
25 x 25	15 mF – 0.018 F	15 mF	8.2 mF – 0.01 F	5.6 mF – 6.8 mF	3.9 mF – 4.7 mF	2.2 mF – 2.7 mF	1.5 mF – 1.8 mF	1 mF – 1.2 mF	820 µF
25 x 30	22 mF	18 mF	12 mF	8.2 mF	5.6 mF	3.3 mF	2.2 mF	1.5 mF	1 mF
25 x 35	27 mF	22 mF	15 mF	10 mF	6.8 mF	3.9 mF	2.7 mF	1.5 mF – 2.2 mF	1.2 mF
25 x 40	33 mF	27 mF	18 mF	12 mF	8.2 mF	4.7 mF – 5.6 mF	3.3 mF		1.5 mF
25 x 45		33 mF	22 mF	15 mF	10 mF		3.9 mF	2.7 mF	1.8 mF
25 x 50	39 mF – 0.047 F	39 mF	27 mF	18 mF	12 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF
30 x 25	22 mF	22 mF	12 mF	8.2 mF	5.6 mF	3.9 mF	2.2 mF – 2.7 mF	1.5 mF – 1.8 mF	1.2 mF
30 x 30	27 mF – 0.033 F	27 mF	15 mF – 0.018 F	10 mF – 0.012 F	6.8 mF – 8.2 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF
30 x 35	39 mF	33 mF	22 mF	15 mF	10 mF	5.6 mF	3.9 mF	2.7 mF	1.8 mF
30 x 40	47 mF	39 mF	27 mF	18 mF	12 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF
30 x 45	56 mF	47 mF	33 mF	22 mF	15 mF	8.2 mF	5.6 mF	3.9 mF	2.7 mF
30 x 50	68 mF	56 mF	39 mF		22 mF	10 mF	6.8 mF	4.7 mF	3.3 mF – 3.9 mF
35 x 25	27 mF – 0.033 F	27 mF	15 mF – 0.018 F	10 mF – 0.012 F	6.8 mF – 8.2 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF
35 x 30	39 mF	33 mF – 0.039 F	22 mF – 0.027 F	15 mF	10 mF – 0.012 F	5.6 mF – 6.8 mF	3.9 mF – 4.7 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF
35 x 35	56 mF	47 mF	33 mF	18 mF – 0.022 F	15 mF	8.2 mF	5.6 mF	3.9 mF	2.7 mF
35 x 40	68 mF	56 mF	39 mF		18 mF	10 mF	6.8 mF	4.7 mF	3.3 mF – 4.7 mF
35 x 45	82 mF		47 mF	27 mF		12 mF	8.2 mF	5.6 mF	3.9 mF
35 x 50		68 mF		33 mF			10 mF	6.8 mF	4.7 mF – 6.8 mF

## Snap-In (cont.)

### ELG Series General Purpose 105°C, 6.3 – 450 VDC (cont.)

Capacitance Range: 47 to 82,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 2,000 Hours



ELG	129	M	6R3		A	Q1	AA
Series	Capacitance Code (µF)	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Snap-In Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 080 = 80	100 = 100 160 = 160 180 = 180 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage						
	160	180	200	250	350	400	450
22 x 20	220 µF	180 µF	150 µF – 180 µF	120 µF	56 µF	47 µF – 56 µF	
22 x 25	270 µF – 330 µF	220 µF – 330 µF	220 µF – 270 µF	150 µF – 220 µF	68 µF – 82 µF	68 µF	56 µF
22 x 30	390 µF – 470 µF	330 µF – 470 µF	330 µF – 390 µF	220 µF – 270 µF	100 µF	82 µF	68 µF
22 x 35	470 µF – 560 µF	470 µF	390 µF – 470 µF	270 µF – 330 µF	120 µF	100 µF – 120 µF	82 µF
22 x 40	560 µF	560 µF	470 µF – 560 µF	330 µF – 390 µF	150 µF	150 µF	100 µF
22 x 45	680 µF	680 µF	560 µF	390 µF – 470 µF	180 µF		120 µF
22 x 50	820 µF	680 µF – 820 µF	680 µF	470 µF	220 µF	180 µF	150 µF
25 x 20	330 µF	270 µF	220 µF	180 µF	82 µF	68 µF	
25 x 25	390 µF – 470 µF	330 µF – 390 µF	270 µF – 390 µF	220 µF – 270 µF	100 µF	82 µF	68 µF
25 x 30	560 µF	470 µF	390 µF – 470 µF	270 µF – 330 µF	120 µF – 180 µF	100 µF – 150 µF	82 µF – 100 µF
25 x 35	680 µF	560 µF	560 µF	390 µF – 470 µF	180 µF	150 µF	120 µF
25 x 40	820 µF	680 µF – 820 µF	680 µF	470 µF	220 µF	180 µF	150 µF
25 x 45	1 mF	820 µF – 1 mF	820 µF	560 µF	270 µF	220 µF	180 µF
25 x 50	1.2 mF	1 mF – 1.2 mF	820 µF	680 µF		270 µF	220 µF
30 x 25	560 µF – 680 µF	470 µF – 560 µF	390 µF – 470 µF	270 µF – 330 µF	120 µF – 150 µF	120 µF	82 µF – 100 µF
30 x 30	820 µF	680 µF – 820 µF	560 µF – 680 µF	390 µF – 560 µF	180 µF – 220 µF	150 µF – 180 µF	120 µF – 150 µF
30 x 35	1 mF	820 µF – 1 mF	820 µF	560 µF – 680 µF	270 µF	220 µF	180 µF
30 x 40	1.2 mF	1 mF – 1.2 mF	1 mF	680 µF – 820 µF	330 µF	270 µF – 390 µF	220 µF
30 x 45	1.5 mF	1.2 mF – 1.5 mF	1 mF – 1.2 mF	820 µF	390 µF	330 µF	270 µF
30 x 50	1.8 mF	1.5 mF	1.2 mF			390 µF – 470 µF	330 µF
35 x 25	820 µF	680 µF – 820 µF	680 µF	470 µF	220 µF	150 µF – 180 µF	120 µF – 150 µF
35 x 30	1 mF – 1.2 mF	1 mF – 1.2 mF	820 µF – 1 mF	560 µF – 820 µF	270 µF	220 µF	180 µF – 220 µF
35 x 35	1.5 mF	1.2 mF – 1.5 mF	1 mF – 1.2 mF	680 µF – 1 mF	330 µF – 390 µF	270 µF – 330 µF	270 µF
35 x 40	1.8 mF	1.5 mF – 1.8 mF	1.2 mF	1 mF – 1.2 mF	470 µF	390 µF	330 µF
35 x 45	1.8 mF – 2.2 mF	2.2 mF	1.5 mF	1.2 mF	560 µF	470 µF	390 µF
35 x 50	2.2 mF	1.8 mF – 2.2 mF	1.8 mF	1.5 mF		560 µF	470 µF
35 x 60						680 µF	680 µF

## Solder Pin/Tag

### ALP20 and ALT20/21 Series Low ESR 85°C, 40 – 450 VDC

Capacitance Range: 22 to 150,000  $\mu\text{F}$  • Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  • Lifetime: 26,000 Hours



ALP	20A	682	AB	010	
Series	Version	Capacitance Code ( $\mu\text{F}$ )	Size Code	Voltage (VDC)	
ALP = Solder pin ALT = Solder tag	20A = Standard 21A = Threaded Mounting Stud (ALT only)	First two digits represent significant figures. Third digit specifies number of zeros.	See Dimension Table	040 = 40 063 = 63 100 = 100 200 = 200	250 = 250 385 = 385 400 = 400 450 = 450

### ALP20

Case Size	Voltage					
	40	63	100	250	400	450
25 x 45	2.2 mF					
30 x 45		2.2 mF			100 $\mu\text{F}$	
35 x 45	4.7 mF	3.3 mF				
35 x 55	6.8 mF	4.7 mF				
40 x 55	10 mF	6.8 mF				
40 x 75		10 mF	4.7 mF	1 mF		
40 x 105		15 mF				470 $\mu\text{F}$

### ALT20/21

Case Size	Voltage					
	40	63	200	250	400	450
25 x 35		1 mF				
30 x 45	3.3 mF				100 $\mu\text{F}$	100 $\mu\text{F}$
35 x 45	4.7 mF					
35 x 55			680 $\mu\text{F}$		220 $\mu\text{F}$	
40 x 55	10 mF			680 $\mu\text{F}$		

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## Solder Pin/Tag (cont.)

### ALP22 and ALT22/23 Series High Ripple 85°C, 40 – 450 VDC

Capacitance Range: 22 to 150,000 µF • Temperature Range: -40°C to +85°C • Lifetime: 26,000 Hours



ALP	22A	682	AB	010	
Series	Version	Capacitance Code (µF)	Size Code	Voltage (VDC)	
ALP = Solder pin ALT = Solder tag	22A = Standard 23A = Threaded Mounting Stud (ALT only)	First two digits represent significant figures. Third digit specifies number of zeros.	See Dimension Table	040 = 40 063 = 63 100 = 100 200 = 200	250 = 250 385 = 385 400 = 400 450 = 450

### ALP22

Case Size	Voltage					
	40	63	100	200	385	450
25 x 45	4.7 mF	2.7 mF	1 mF	220 µF		
30 x 45	6.8 mF	4.7 mF				100 µF
35 x 45	10 mF				220 µF	
35 x 55	15 mF	10 mF		680 µF		220 µF
40 x 45				680 µF		
40 x 55	22 mF	10 mF	4.7 mF	1 mF	470 µF	
40 x 75		15 mF			680 µF	470 µF – 1 mF
40 x 105			10 mF	2.2 mF	1 mF	680 µF – 820 µF

### ALT22/23

Case Size	Voltage				
	40	63	100	200	385
25 x 45	4.7 mF		1 mF	220 µF	100 µF
30 x 45		4.7 mF			150 µF
35 x 45	10 mF				
35 x 55	15 mF	10 mF			
40 x 45				680 µF	
40 x 55	22 mF		4.7 mF	1 mF	470 µF
40 x 75		15 mF			
40 x 105			10 mF	2.2 mF	1 mF



## Solder Pin/Tag (cont.)

**ALN20S Series T-Network 85°C, 50 – 100 VDC**

Capacitance Range: 10,000  $\mu$ F • Temperature Range: -40°C to +85°C • Lifetime: 18,000 Hours



ALN20	S	1053	DD
Series	Construction	Unique Sequential Number	Size Code
Snap-In type Aluminum Electrolytic	S = Slit foil		See Dimension Table

Case Size	Voltage			
	50	63	80	100
40 x 55	10 mF	10 mF		
40 x 75			10 mF	
40 x 105				10 mF

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## Single-Ended

### ESK Series General Purpose 85°C, 6.3 – 450 VDC

Capacitance Range: 0.1 to 22,000  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  • Lifetime: 2,000 Hours



ESK	226	M	6R3		A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	100 = 100 160 = 160 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
5 x 11	22 $\mu\text{F}$ – 220 $\mu\text{F}$	4.7 $\mu\text{F}$ – 220 $\mu\text{F}$	1 $\mu\text{F}$ – 100 $\mu\text{F}$	4.7 $\mu\text{F}$ – 47 $\mu\text{F}$	4.7 $\mu\text{F}$ – 47 $\mu\text{F}$	1 $\mu\text{F}$ – 22 $\mu\text{F}$	1 $\mu\text{F}$ – 10 $\mu\text{F}$	1 $\mu\text{F}$ – 4.7 $\mu\text{F}$
6.3 x 11	220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	10 $\mu\text{F}$
8 x 11	330 $\mu\text{F}$ – 1 mF	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$
8 x 15		680 $\mu\text{F}$		330 $\mu\text{F}$				
10 x 12	1 mF	1 mF	470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$
10 x 15		680 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 1 mF	330 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	220 $\mu\text{F}$	47 $\mu\text{F}$
10 x 20	2.2 mF – 3.3 mF	2.2 mF	1 mF	1 mF	470 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$
13 x 20	2.2 mF – 4.7 mF	2.2 mF – 3.3 mF	2.2 mF	1 mF	470 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$	330 $\mu\text{F}$	
13 x 25		3.3 mF – 4.7 mF	2.2 mF – 3.3 mF	2.2 mF	1 mF	1 mF	470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$
16 x 25	4.7 mF – 0.01 F	4.7 mF – 6.8 mF	3.3 mF – 4.7 mF	2.2 mF – 3.3 mF	2.2 mF	1 mF	1 mF	330 $\mu\text{F}$ – 470 $\mu\text{F}$
16 x 32	10 mF	6.8 mF	4.7 mF	3.3 mF – 4.7 mF	2.2 mF		1 mF	
16 x 36	15 mF	10 mF	6.8 mF		3.3 mF	2.2 mF		
18 x 36	15 mF	10 mF – 0.015 F	6.8 mF – 0.01 F	4.7 mF – 6.8 mF	3.3 mF – 4.7 mF	2.2 mF – 3.3 mF		
18 x 40	22 mF					3.3 mF	2.2 mF	1 mF
22 x 35						4.7 mF		
22 x 40		22 mF	15 mF – 0.022 F	10 mF – 0.015 F	6.8 mF	4.7 mF	3.3 mF	2.2 mF

## Single-Ended (cont.)

### ESK Series General Purpose 85°C, 6.3 – 450 VDC (cont.)

Capacitance Range: 0.1 to 22,000  $\mu\text{F}$  Temperature Range:  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$  • Lifetime: 2,000 Hours



ESK	226	M	6R3		A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	100 = 100 160 = 160 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage					
	160	200	250	350	400	450
5 x 11	1 $\mu\text{F}$	1 $\mu\text{F}$				
6.3 x 11	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$	1 $\mu\text{F}$	
8 x 11	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$
10 x 12	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$
10 x 15	22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
10 x 20	33 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$		10 $\mu\text{F}$	
13 x 20	47 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$	10 $\mu\text{F}$
13 x 25	100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$
16 x 25	100 $\mu\text{F}$	100 $\mu\text{F}$		47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$
16 x 32	220 $\mu\text{F}$		100 $\mu\text{F}$		47 $\mu\text{F}$	33 $\mu\text{F}$
16 x 36	220 $\mu\text{F}$					33 $\mu\text{F}$
18 x 20					33 $\mu\text{F}$	
18 x 32		220 $\mu\text{F}$				
18 x 36	330 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$		100 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$
18 x 40	330 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$			47 $\mu\text{F}$
22 x 40	470 $\mu\text{F}$					100 $\mu\text{F}$

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## Single-Ended (cont.)

### ESH Series High CV 105°C, 6.3 – 450 VDC

Capacitance Range: 0.47 to 15,000  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  • Lifetime: 2,000 Hours



ESH	107	M	6R3		A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	100 = 100 160 = 160 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
5 x 11	100 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	10 $\mu\text{F}$ – 33 $\mu\text{F}$	1 $\mu\text{F}$ – 22 $\mu\text{F}$	1 $\mu\text{F}$ – 15 $\mu\text{F}$	1 $\mu\text{F}$ – 6.8 $\mu\text{F}$
6.3 x 11	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$
8 x 11	330 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$
10 x 12	680 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$
10 x 15	1.5 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	47 $\mu\text{F}$
10 x 20		1.5 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	68 $\mu\text{F}$
13 x 20	2.2 mF – 3.3 mF	2.2 mF	1.5 mF	1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	100 $\mu\text{F}$
13 x 25		3.3 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	150 $\mu\text{F}$
16 x 25	4.7 mF – 6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$
16 x 32	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	1 mF	470 $\mu\text{F}$
16 x 36	15 mF						1.5 mF	680 $\mu\text{F}$
18 x 36		10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF		

## Single-Ended (cont.)

### ESH Series High CV 105°C, 6.3 – 450 VDC (cont.)

Capacitance Range: 0.47 to 15,000  $\mu\text{F}$  • Temperature Range:  $-40^\circ\text{C}$  to  $+105^\circ\text{C}$  • Lifetime: 2,000 Hours



ESH	107	M	6R3		A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	100 = 100 160 = 160 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage					
	160	200	250	350	400	450
5 x 11	1 $\mu\text{F}$					
6.3 x 11	2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$			
8 x 11	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1 $\mu\text{F}$	1 $\mu\text{F}$	1 $\mu\text{F}$
10 x 12	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$
10 x 15	15 $\mu\text{F}$	10 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
10 x 20	22 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	
13 x 20	33 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$
13 x 25	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$		15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$
16 x 25	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	22 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$
16 x 32	150 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$
16 x 36	220 $\mu\text{F}$	150 $\mu\text{F}$		47 $\mu\text{F}$		
18 x 36		220 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$
18 x 40	330 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$		47 $\mu\text{F}$
22 x 40	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$

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## Single-Ended (cont.)

### ESC Series Low ESR 105°C, 6.3 – 100 VDC

Capacitance Range: 4.7 to 15,000  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 3,000 Hours



ESC	157	M	6R3	A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 100 = 100	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
5 x 11	150 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$	4.7 $\mu\text{F}$ – 33 $\mu\text{F}$	1 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$
6.3 x 11	220 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$
8 x 11	330 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	22 $\mu\text{F}$
8 x 15	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$		33 $\mu\text{F}$
8 x 20	820 $\mu\text{F}$ – 1 mF	1 mF		330 $\mu\text{F}$	220 $\mu\text{F}$	120 $\mu\text{F}$	100 $\mu\text{F}$	
10 x 12		470 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$		220 $\mu\text{F}$	150 $\mu\text{F}$		
10 x 15	1.2 mF	820 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$		220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$
10 x 20	1.5 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	68 $\mu\text{F}$
13 x 20	2.2 mF	2.2 mF	1.2 mF – 1.5 mF	1 mF	680 $\mu\text{F}$ – 820 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	100 $\mu\text{F}$
13 x 25	3.3 mF	3.3 mF	2.2 mF	1.2 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$
16 x 25	4.7 mF	4.7 mF	3.3 mF	1.5 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$	220 $\mu\text{F}$
16 x 32	6.8 mF – 8.2 mF			2.2 mF	2.2 mF	1.2 mF	820 $\mu\text{F}$ – 1 mF	330 $\mu\text{F}$
16 x 36	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	1.2 mF	
18 x 36	15 mF	8.2 mF	6.8 mF	4.7 mF	3.3 mF		1.5 mF	470 $\mu\text{F}$
18 x 40						2.2 mF		

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## Single-Ended (cont.)

### ESG Series High Ripple Current 105°C, 160 – 450 VDC

Capacitance Range: 4.7 to 330  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 5,000 Hours



ESG	336	M	160	A	H4	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	160 = 160 200 = 200 250 = 250 350 = 350 400 = 400 450 = 450	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage					
	160	200	250	350	400	450
10 x 12		10 $\mu\text{F}$			1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	
10 x 15					4.7 $\mu\text{F}$	
10 x 20	33 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$
13 x 20	47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	22 $\mu\text{F}$		4.7 $\mu\text{F}$ – 10 $\mu\text{F}$
13 x 25	68 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	
16 x 20	68 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	
16 x 25	100 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$
16 x 32	150 $\mu\text{F}$ – 220 $\mu\text{F}$		100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$
18 x 20	100 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$
18 x 25	150 $\mu\text{F}$ – 220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$
18 x 32	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$		47 $\mu\text{F}$
18 x 36					68 $\mu\text{F}$	
18 x 40			220 $\mu\text{F}$		100 $\mu\text{F}$	68 $\mu\text{F}$
22 x 40					150 $\mu\text{F}$	100 $\mu\text{F}$

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## Single-Ended (cont.)

### ESY Series Low Impedance 105°C, 6.3 – 100 VDC

Capacitance Range: 5.6 to 6,800 µF • Temperature Range: -40°C to +105°C • Lifetime: 5,000 Hours



ESY	396	M	6R3	A	B2	AA
Series	Capacitance Code (pF)	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 100 = 100	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
4 x 7	39 µF	27 µF	18 µF	15 µF	10 µF	5.6 µF		
5 x 7	47 µF – 68 µF	33 µF – 56 µF	27 µF – 33 µF	18 µF – 27 µF	15 µF – 18 µF	6.8 µF – 10 µF		
5 x 11	100 µF – 150 µF	68 µF – 100 µF	39 µF – 56 µF	33 µF – 47 µF	27 µF – 33 µF	15 µF – 22 µF	15 µF	6.8 µF
6.3 x 7	100 µF – 150 µF	120 µF	68 µF	56 µF	39 µF	15 µF – 22 µF		
6.3 x 11	270 µF – 330 µF	220 µF	100 µF – 120 µF	68 µF – 100 µF	47 µF – 56 µF	39 µF – 56 µF	22 µF – 33 µF	10 µF – 15 µF
8 x 7	180 µF – 220 µF		100 µF – 120 µF	68 µF – 100 µF	47 µF – 56 µF	27 µF – 33 µF		
8 x 9		150 µF – 180 µF						
8 x 11	470 µF – 560 µF	270 µF – 470 µF	150 µF – 330 µF	120 µF – 220 µF	68 µF – 150 µF	68 µF – 100 µF	39 µF – 56 µF	22 µF – 27 µF
8 x 14	680 µF							33 µF
8 x 16	820 µF	560 µF – 680 µF	470 µF	270 µF – 330 µF	180 µF – 220 µF	120 µF	68 µF – 82 µF	39 µF
8 x 20	1.2 mF	820 µF – 1 mF	560 µF – 680 µF	470 µF	270 µF	180 µF	120 µF	56 µF
10 x 12	1 mF	560 µF – 680 µF	470 µF	270 µF – 330 µF	180 µF – 220 µF	150 µF	68 µF – 82 µF	47 µF
10 x 15	1.2 mF	820 µF – 1 mF	560 µF – 680 µF	470 µF	330 µF	220 µF	100 µF – 120 µF	68 µF
10 x 20	1.5 mF	1.2 mF	820 µF – 1 mF	560 µF – 680 µF	470 µF	270 µF	150 µF – 180 µF	82 µF
10 x 25	1.8 mF – 2.2 mF	1.5 mF	1.2 mF	820 µF	560 µF	330 µF	220 µF	100 µF
13 x 16							150 µF – 180 µF	82 µF
13 x 20	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF	1.5 mF	1 mF	680 µF	390 µF – 470 µF	270 µF	120 µF
13 x 25	3.9 mF	2.7 mF – 3.3 mF	1.8 mF – 2.2 mF	1.2 mF – 1.5 mF	820 µF – 1 mF	560 µF	330 µF	150 µF – 180 µF
13 x 30	4.7 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF	680 µF	390 µF – 470 µF	220 µF
13 x 36	5.6 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	820 µF	560 µF	270 µF
13 x 40							680 µF	330 µF
16 x 20	5.6 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF	820 µF	390 µF – 470 µF	220 µF
16 x 25	6.8 mF	5.6 mF	3.9 mF	2.7 mF	1.8 mF		560 µF	270 µF
16 x 32						1 mF	820 µF	390 µF
16 x 36							1 mF	470 µF
16 x 40							1.2 mF	560 µF
18 x 20							680 µF	270 µF
18 x 25							820 µF	390 µF
18 x 32							1 mF	470 µF
18 x 36							1.2 mF	560 µF
18 x 40							1.5 mF	680 µF



## Single-Ended (cont.)

**ESW Series Low Impedance 105°C, 6.3 – 100 VDC**

Capacitance Range: 6.8 to 15,000  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 5,000 Hours



ESW	226	M	6R3	A	C3	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63 100 = 100	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
5 x 11	22 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 100 $\mu\text{F}$	10 $\mu\text{F}$ – 56 $\mu\text{F}$	4.7 $\mu\text{F}$ – 47 $\mu\text{F}$	4.7 $\mu\text{F}$ – 33 $\mu\text{F}$	4.7 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 12 $\mu\text{F}$	1 $\mu\text{F}$ – 6.8 $\mu\text{F}$
6.3 x 11	150 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 56 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$
6.3 x 15	330 $\mu\text{F}$	220 $\mu\text{F}$	180 $\mu\text{F}$	120 $\mu\text{F}$	82 $\mu\text{F}$	56 $\mu\text{F}$	39 $\mu\text{F}$	18 $\mu\text{F}$
8 x 11	470 $\mu\text{F}$ – 560 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$
8 x 15	820 $\mu\text{F}$	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	120 $\mu\text{F}$	100 $\mu\text{F}$	33 $\mu\text{F}$
8 x 20	1.2 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	180 $\mu\text{F}$		47 $\mu\text{F}$
10 x 12	680 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$	33 $\mu\text{F}$
10 x 15	1.2 mF	1 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$
10 x 20	1.5 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	560 $\mu\text{F}$ – 680 $\mu\text{F}$	390 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	68 $\mu\text{F}$
10 x 25	2.2 mF	1.5 mF	1.2 mF	820 $\mu\text{F}$	560 $\mu\text{F}$	270 $\mu\text{F}$	220 $\mu\text{F}$	82 $\mu\text{F}$
10 x 30	2.7 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$	330 $\mu\text{F}$		
13 x 16							180 $\mu\text{F}$	
13 x 20	2.2 mF – 3.3 mF	2.2 mF	1.5 mF	1 mF	680 $\mu\text{F}$	390 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$	100 $\mu\text{F}$
13 x 25	3.9 mF	2.7 mF – 3.3 mF	2.2 mF	1.5 mF	1 mF	560 $\mu\text{F}$ – 680 $\mu\text{F}$	390 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$
13 x 30	4.7 mF	3.3 mF	2.7 mF	1.8 mF	1.2 mF		470 $\mu\text{F}$	180 $\mu\text{F}$
13 x 36	5.6 mF	3.9 mF	3.3 mF	2.2 mF	1.5 mF	820 $\mu\text{F}$	680 $\mu\text{F}$	
16 x 20	5.6 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF	680 $\mu\text{F}$	470 $\mu\text{F}$	180 $\mu\text{F}$
16 x 25	4.7 mF – 6.8 mF	4.7 mF – 5.6 mF	3.3 mF – 3.9 mF	1.5 mF – 2.7 mF	1.5 mF – 1.8 mF	1 mF	560 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$
16 x 32	8.2 mF – 0.01 F	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.2 mF – 1.5 mF	820 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$
16 x 36		8.2 mF		3.9 mF	2.7 mF	1.5 mF	270 $\mu\text{F}$ – 1 mF	
18 x 16							390 $\mu\text{F}$	
18 x 20	6.8 mF	5.6 mF	3.9 mF	2.2 mF	1.8 mF	820 $\mu\text{F}$	680 $\mu\text{F}$	220 $\mu\text{F}$
18 x 25	10 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.2 mF	820 $\mu\text{F}$	390 $\mu\text{F}$
18 x 32	12 mF	8.2 mF	5.6 mF	3.9 mF	2.7 mF	1.8 mF	1.2 mF	560 $\mu\text{F}$
18 x 36	15 mF	10 mF	5.6 mF – 8.2 mF	4.7 mF	3.3 mF	2.2 mF	1.5 mF	560 $\mu\text{F}$
18 x 40		15 mF	10 mF	6.8 mF	4.7 mF		2.2 mF	820 $\mu\text{F}$

## Single-Ended (cont.)

### EST Series Long Life 105°C, 6.3 – 63 VDC

Capacitance Range: 6.8 to 15,000 µF • Temperature Range: -40°C to +105°C • Lifetime: 10,000 Hours



EST	157	M	6R3	A	C3	AA
Series	Capacitance Code (pF)	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	A = Standard	See Dimension Table	See Ordering Options Table

Case Size	Voltage						
	6.3	10	16	25	35	50	63
5 x 11	150 µF	100 µF	56 µF	47 µF	33 µF	10 µF – 22 µF	10 µF
6.3 x 11	330 µF	220 µF	100 µF	100 µF	47 µF	33 µF – 47 µF	33 µF
8 x 11	680 µF	470 µF	220 µF	150 µF – 220 µF	150 µF	100 µF	56 µF
8 x 15	820 µF	680 µF	330 µF – 470 µF	330 µF	220 µF	120 µF	
8 x 20	1.5 mF					150 µF	
10 x 12	1 mF						
10 x 15	1.5 mF	1 mF	680 µF	470 µF		220 µF	270 µF
10 x 20	2.2 mF	1.5 mF	1 mF	680 µF	330 µF	330 µF	180 µF
10 x 25	2.7 mF	220 µF	4.7 mF	680 µF	470 µF		220 µF
10 x 30					680 µF	470 µF	270 µF
13 x 20	3.3 mF	270 µF		1 mF	680 µF	470 µF	270 µF
13 x 25	3.9 mF	330 µF	2.2 mF	150 µF – 220 µF	820 µF – 1 mF	560 µF	330 µF
13 x 30	4.7 mF	390 µF	2.7 mF		1.2 mF	680 µF	470 µF
13 x 36	5.6 mF	4.7 mF	3.3 mF		1.5 mF	820 µF	560 µF
13 x 40	6.8 mF	4.7 mF	3.9 mF		1.8 mF		680 µF
16 x 25	6.8 mF	5.6 mF		2.7 mF		1 mF	
16 x 32	8.2 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	1.2 mF	820 µF
16 x 36	10 mF	8.2 mF	5.6 mF		2.7 mF	1.5 mF	1 mF
16 x 40							1.2 mF
18 x 32	12 mF		5.6 mF	3.9 mF		1.8 mF	
18 x 36	15 mF	1 mF	6.8 mF	4.7 mF	3.3 mF	2.2 mF	
18 x 40						2.7 mF	

## Single-Ended (cont.)

### EAK Series Long Life 125°C, 10 – 63 VDC

Capacitance Range: 47 to 4,700 µF • Temperature Range: -40°C to +105°C • Lifetime: 5,000 Hours



EAK	227	M	010	A	G3	AA
Series	Capacitance Code (µF)	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Single-Ended Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = ±20%	010 = 10 016 = 16 025 = 25 035 = 35 050 = 50 063 = 63	A = Standard	See Dimension Table	See Ordering Options Table

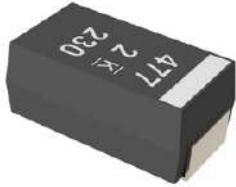
Case Size	Voltage											
	10	16	25	35	50	63	160	200	250	350	400	450
8 x 11	220 µF	220 µF	100 µF		47 µF	47 µF	3.3 µF	3.3 µF	2.2 µF	1 µF		
8 x 16												1 µF
10 x 12	330 µF	330 µF	220 µF	100 µF	100 µF		4.7 µF	4.7 µF	3.3 µF	2.2 µF	1 µF	
10 x 15	470 µF		330 µF	220 µF		100 µF	10 µF		4.7 µF	3.3 µF	2.2 µF – 3.3 µF	2.2 µF
10 x 20	1 mF	470 µF	470 µF	330 µF	220 µF		22 µF	10 µF	10 µF	4.7 µF	4.7 µF	3.3 µF
10 x 25							33 µF	22 µF		10 µF	10 µF	4.7 µF
13 x 20		1 mF		470 µF	330 µF	220 µF	47 µF	33 µF	22 µF			10 µF
13 x 25	2.2 mF		1 mF		470 µF	330 µF	68 µF	47 µF	33 µF	22 µF		
13 x 30											22 µF	
16 x 20								68 µF				
16 x 25	3.3 mF	2.2 mF		1 mF		470 µF	100 µF	100 µF	47 µF	33 µF	33 µF	22 µF
16 x 32	4.7 mF	3.3 mF	2.2 mF		1 mF		150 µF		68 µF	47 µF	47 µF	33 µF
18 x 32		4.7 mF										

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## Surface Mount

### A700 Series Polymer Aluminum 125°C, 2 – 16 VDC

Capacitance Range: 6.8 to 560  $\mu\text{F}$  Temperature Range: -55°C to +125°C • Lifetime: 2,000 Hours



A	700	V	476	M	006	A	T	E018	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code	Packaging (C-Spec)
A = Aluminum	700 = Aluminum Polymer	D, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	002 = 2 2R5 = 2.5 004 = 4 006 = 6.3 008 = 8 010 = 10 12R = 12.5 016 = 16	A = N/A	T = 100% Matte Tin (Sn) plated	E = ESR Last three digits specify ESR in m $\Omega$ (018 = 18 m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	2	2.5	4	6.3	8	10	12.5	16
7343	100 $\mu\text{F}$ – 560 $\mu\text{F}$	68 $\mu\text{F}$ – 330 $\mu\text{F}$	68 $\mu\text{F}$ – 330 $\mu\text{F}$	10 $\mu\text{F}$ – 220 $\mu\text{F}$	10 $\mu\text{F}$ – 100 $\mu\text{F}$	10 $\mu\text{F}$ – 150 $\mu\text{F}$	10 $\mu\text{F}$ – 100 $\mu\text{F}$	6.8 $\mu\text{F}$ – 22 $\mu\text{F}$

### EDH Series General Purpose 105°C, 6.3 – 100 VDC

Capacitance Range: 1.0 to 1,500  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 2,000 Hours



EDH	226	M	6R3		A	9B	AA
Series	Capacitance Code (pF)	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Surface Mount Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35	050 = 50 063 = 63 100 = 100	A = Standard	See Dimension Table	AA = T&R

Case Size	Voltage							
	6.3	10	16	25	35	50	63	100
4 x 5.4	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1 $\mu\text{F}$ – 3.3 $\mu\text{F}$		
5 x 5.4	47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$		
6.3 x 5.4	100 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$		
6.3 x 7.7	220 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$		
8 x 10.2	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$
10 x 10.2	470 $\mu\text{F}$ – 1.5 mF	470 $\mu\text{F}$ – 1 mF	220 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	100 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$

## Surface Mount (cont.)

### EDK Series General Purpose 85°C, 4 – 100 VDC

Capacitance Range: 0.1 to 1,000  $\mu\text{F}$  • Temperature Range: -40°C to +85°C • Lifetime: 2,000 Hours



EDK	226	M	004		A	9B	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)		Electrical Parameters	Size Code	Packaging
Surface Mount Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	004 = 4 6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35	050 = 50 063 = 63 100 = 100	A = Standard	See Dimension Table	AA = Tape & Reel

Case Size	Voltage								
	4	6.3	10	16	25	35	50	63	100
4 x 5.4	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	4.7 $\mu\text{F}$ – 22 $\mu\text{F}$	1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1 $\mu\text{F}$ – 4.7 $\mu\text{F}$		
5 x 5.4	100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$		
6.3 x 5.4	220 $\mu\text{F}$	100 $\mu\text{F}$	100 $\mu\text{F}$	33 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	
6.3 x 7.7			220 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$		10 $\mu\text{F}$
8 x 6.2		220 $\mu\text{F}$ – 330 $\mu\text{F}$	220 $\mu\text{F}$		47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$		
8 x 10.2		470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$		33 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$
10 x 10.2		680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	100 $\mu\text{F}$ – 330 $\mu\text{F}$	47 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$

### EEV Series Ultra-Low Impedance 105°C, 6.3 – 35 VDC

Capacitance Range: 4.7 to 1,500  $\mu\text{F}$  • Temperature Range: -40°C to +105°C • Lifetime: 2,000 Hours



EEV	226	M	6R3	A	9B	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Surface Mount Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35	A = Standard	See Dimension Table	AA = Tape & Reel

Case Size	Voltage				
	6.3	10	16	25	35
4 x 5.4	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$
5 x 5.4	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$
6.3 x 5.4	100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$
6.3 x 7.7	150 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$
8 x 6.2	330 $\mu\text{F}$	220 $\mu\text{F}$	220 $\mu\text{F}$		
8 x 10.2	470 $\mu\text{F}$ – 1 mF	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$
10 x 10.2	1.5 mF	470 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$

## Surface Mount (cont.)

### EXV Series Ultra-Low Impedance 105°C, 6.3 – 50 VDC

Capacitance Range: 1 to 1,000  $\mu\text{F}$  • Temperature Range:  $-40^\circ\text{C}$  to  $+105^\circ\text{C}$  • Lifetime: 5,000 Hours



EXV	226	M	6R3	A	9B	AA
Series	Capacitance Code ( $\mu\text{F}$ )	Tolerance	Rated Voltage (VDC)	Electrical Parameters	Size Code	Packaging
Surface Mount Aluminum Electrolytic	Digits 4 – 5 represent the first two digits of the capacitance value. The final digit indicates the number of zeros to be added.	M = $\pm 20\%$	6R3 = 6.3 010 = 10 016 = 16 025 = 25 035 = 35 050 = 50	A = Standard	See Dimension Table	AA = Tape & Reel

Case Size	Voltage					
	6.3	10	16	25	35	50
4 x 5.4	22 $\mu\text{F}$ – 33 $\mu\text{F}$	22 $\mu\text{F}$		10 $\mu\text{F}$	4.7 $\mu\text{F}$	1 $\mu\text{F}$ – 3.3 $\mu\text{F}$
5 x 5.4	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$
6.3 x 5.4	100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$	10 $\mu\text{F}$
6.3 x 7.7	150 $\mu\text{F}$ – 220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	22 $\mu\text{F}$
8 x 10.2	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	33 $\mu\text{F}$
10 x 10.2	680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$

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## Motor Start

### MS/MD Series 60°C/70°C, 120 – 260 VAC

Capacitance Range: 25 to 750  $\mu\text{F}$  • Temperature Range: MS:  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ , MD:  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  • Lifetime: 500 Hours



080	MS	12	AA	M	A	1	STD
Capacitance Code ( $\mu\text{F}$ )	Rating	Voltage (VAC)	Size Code	Manufacturing Style	Capacitance Tolerance	Terminal Code	Version
Example: 080 = 80 $\mu\text{F}$ 120 = 120 $\mu\text{F}$	MS = Motor start single rating MD = Motor start dual rating	12 = 120 22 = 220 26 = 260	See Dimension Table	M = Molded case	A = -0% +25% K = $\pm 10\%$	1 = Double amp tag	STD = Standard

### MS

Case Size	Voltage		
	120 VAC	220 VAC	260 VAC
38 x 75	25 $\mu\text{F}$ – 360 $\mu\text{F}$	20 $\mu\text{F}$ – 70 $\mu\text{F}$	16 $\mu\text{F}$ – 80 $\mu\text{F}$
38 x 90	85 $\mu\text{F}$ – 510 $\mu\text{F}$	40 $\mu\text{F}$ – 150 $\mu\text{F}$	35 $\mu\text{F}$ – 100 $\mu\text{F}$
38 x 116	120 $\mu\text{F}$ – 750 $\mu\text{F}$	55 $\mu\text{F}$ – 200 $\mu\text{F}$	50 $\mu\text{F}$ – 200 $\mu\text{F}$

### MD

Case Size	Voltage		
	120 VAC	220 VAC	260 VAC
38 x 75	25 $\mu\text{F}$ – 360 $\mu\text{F}$	30 $\mu\text{F}$ – 70 $\mu\text{F}$	25 $\mu\text{F}$ – 55 $\mu\text{F}$
38 x 90	85 $\mu\text{F}$ – 510 $\mu\text{F}$	40 $\mu\text{F}$ – 100 $\mu\text{F}$	30 $\mu\text{F}$ – 80 $\mu\text{F}$
38 x 116	120 $\mu\text{F}$ – 750 $\mu\text{F}$	55 $\mu\text{F}$ – 150 $\mu\text{F}$	45 $\mu\text{F}$ – 115 $\mu\text{F}$

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# Ceramic Capacitors

CERAMIC SURFACE MOUNT CAPACITORS									
Commercial Grade	Flex Mitigation	Automotive Grade	High Reliability Commercial Off-the-Shelf (COTS)	SnPb End Metallization	Bulk Capacitance	High Temperature (> 125°C)	High Voltage (> 500 V)	Aerospace & Defense	RF & Microwave
C0G 10 – 250 VDC	Open Mode Design X7R 16 – 200 VDC	C0G 10 – 250 VDC	C0G 10 – 250 VDC	C0G 10 – 250 VDC	KPS X7R 10 – 250 VDC	150 C X8R 25 – 100 VDC	ArcShield™ Technology X7R 500 – 1,000 VDC	MIL-PRF-123 BP & BX 6.3 – 200 VDC	CBR Series Ultra High Q C0G 6.3 – 500 VDC
X7R 6.3 – 250 VDC	Floating Electrode X7R 6.3 – 250 VDC	X7R 6.3 – 250 VDC	X7R 6.3 – 250 VDC	X7R 6.3 – 250 VDC	KPS High Voltage X7R 500 – 630 VDC	150 C X8L 10 – 50 VDC	C0G 500 – 3,000 VDC	GR900 BP & BX 16 – 200 VDC	
X5R 4 – 50 VDC	Flexible Termination C0G 10 – 250 VDC	Capacitor Array C0G 10 – 200 VDC		X5R 4 – 50 VDC	KPS High Temperature 150 C X8L 10 – 50 VDC	200 C C0G 10 – 200 VDC	X7R 500 – 3,000 VDC	MIL-PRF-55681 BP & BX 50 – 100 VDC	
Z5U 50 VDC & 100 VDC	Flexible Termination X7R 6.3 – 250 VDC	Capacitor Array X7R 10 – 200 VDC		COTS C0G 10 – 200 VDC	KPS MIL Series 50 – 1,000 VDC	HV-HT Series 200 C C0G 500 – 2,000 VDC	Flexible Termination C0G 500 – 3,000 VDC	DLA 03028 BR & BX 6.3 – 200 VDC	
Y5V 6.3 – 50 VDC	High Voltage Flexible Termination C0G 500 – 3,000 VDC	Open Mode Design X7R 16 – 200 VDC		COTS X7R 6.3 – 250 VDC		Flexible Termination 150 C X8R 25 – 100 VDC	Flexible Termination X7R 500 – 3,000 VDC	DLA 03029 BR & BX 6.3 – 100 VDC	
Telecom "Tip & Ring" X7R 250 VDC	High Voltage Flexible Termination X7R 500 – 3,000 VDC	Floating Electrode X7R 6.3 – 250 VDC		High Temperature X8R 25 – 100 VDC		175 C X7R 16 – 200 VDC	KPS X7R 500 – 630 VDC	DLA 05006 BP, BR & BX 10 – 200 VDC	
Capacitor Array C0G 10 – 200 VDC	Flexible Termination X8R 25 – 100 VDC	Flexible Termination X7R 6.3 – 250 VDC		High Temperature X8L 10 – 50 VDC		KPS 150 C X8L 10 VDC – 50 VDC	HV-HT Series 200 C C0G 500 – 2,000 VDC	DLA 05007 BP, BR & BX 10 – 200 VDC	
Capacitor Array X7R 10 – 200 VDC	Floating Electrode w/ Flexible Termination X7R 6.3 – 250 VDC	KPS X7R 10 – 250 VDC		Telecom "Tip & Ring" X7R 250 VDC		200 C High Voltage Pulse Discharge C0G 500 – 2,000 VDC	200 C High Voltage Pulse Discharge C0G 500 – 2,000 VDC	DLA 91019 BR 25 – 50 VDC	
	KPS X7R 10 – 250 VDC	High Voltage Flexible Termination X7R 500 – 3,000 VDC		Open Mode Design X7R 16 – 200 VDC			KPS HV Large Case C0G 500 – 10K VDC		
	KPS High Voltage X7R 500 – 630 VDC	KPS High Voltage X7R 500 – 630 VDC		Floating Electrode X7R 6.3 – 250 VDC			KPS HV Large Case X7R 500 – 10K VDC		
	KPS High Temperature 150 C X8L 10 – 50 VDC	KPS High Temperature 150 C X8L 10 – 50 VDC		Flexible Termination X7R 6.3 – 250 VDC					
		Flexible Termination C0G 10 – 250 VDC		Floating Electrode w/ Flexible Termination X7R 6.3 – 250 VDC					
		Flexible Termination X8R 25 – 100 VDC							
		Floating Electrode w/ Flexible Termination X7R 6.3 – 250 VDC							
		High Temperature X8R 25 – 100 VDC							
		High Temperature 150 C X8L 10 – 50 VDC							
		High Voltage X7R 500 – 3,000 VDC							
		High Voltage C0G 500 – 3,000 VDC							
		High Voltage Flexible Termination C0G 500 – 3,000 VDC							

## CERAMIC DISC CAPACITORS

Safety	Commercial Grade
900 Radial Encapsulated AC Type X1 400 VAC/Y2 250 VAC	KHA X7R 1,000 – 2,000 VDC
900 Radial Encapsulated AC Type X1 440 VAC/Y2 300 VAC	KHB Y5P 1,000 – 2,000 VDC
900 Radial Encapsulated AS Type X1 760 VAC/Y1 500 VAC	KHC SL 1,000 – 2,000 VDC
900 Radial Encapsulated AH Type X1 400 VAC/Y1 250 VAC	
900 Radial Encapsulated AH Type X1 400 VAC/Y1 400 VAC	
ERO610 Radial AC Type X1 440 VAC/Y2 250 VAC	
ERK610 Radial AC Type X1 440 VAC/Y2 300 VAC	
ERP610 Radial AC Type X1 760 VAC/Y2 500 VAC	
KJN Y5P, Y5U & Y5V Y1 250/400 VAC/ X1 440 VAC	
KJY Y5P, Y5U & Y5V Y2 250 VAC/ X1 400 VAC	

## CERAMIC LEADED CAPACITORS

Commercial Grade	High Temperature (> 125°C)	High Voltage (> 500 V)	Aerospace & Defense
Aximax C0G, X7R & Z5U Axial Conformally Coated 25 – 250 VDC	HT 200 C C0G & X7R Radial Molded 50 – 200 VDC	HV 300 Series Goldmax C0G & X7R Radial Conformally Coated 500 – 3,000 VDC	MIL-PRF-123 BP & BX Molded Radial 50 – 100 VDC
300 Series Goldmax C0G, X7R & Z5U Radial Conformally Coated 25 – 250 VDC	HTHP 200 C C0G & X7R Axial & Radial 25 – 200 VDC	HV 600 Series Goldmax C0G & X7R Radial Conformally Coated 500 – 3,000 VDC	GR900 High Reliability BP & BX Molded Radial 50 – 200 VDC
Molded Axial & Radial C0G & X7R 50 – 200 VDC	HV 200 C C0G & X7R Radial Conformally Coated 500 – 4,000 VDC	HV C0G & X7R Radial Conformally Coated 500 – 10,000 VDC	MIL-PRF-20 CG Molded Axial & Radial 50 – 200 VDC
	ACR/ACA 200 C Axial & Radial C0G 50 – 100 VDC		MIL-C-11015/ MIL-PRF-39014 BX & BR Molded Axial 50 – 100 VDC
	ARR/ARA 200 C Axial & Radial X7R 50 – 100 VDC		MIL-C-11015/ MIL-PRF-39014 BX (X7R) Molded Radial 50 – 200 VDC
	TCR/TCA 260 C Axial & Radial C0G 50 – 100 VDC		HV MIL-PRF-46467 Equivalent BP, BR & BZ 500 – 5,000 VDC
	TRR/TRA 260 C Axial & Radial X7R 50 – 100 VDC		HS High Voltage Space Quality C0G & X7R Radial Conformally Coated 500 – 10,000 VDC
	VCR 200 C Axial & Radial C0G 500 – 5,000 VDC		SCR/SRA Standard Axial & Radial C0G 50 – 200 VDC
	VRR 200 C Axial & Radial X7R 500 – 5,000 VDC		SRR/SRA Standard Axial & Radial X7R 50 – 200 VDC
	Aximax 150 C X8L & X8R Molded Axial 25 – 200 VDC		



### Commercial Grade

COG Dielectric, 10 – 250 VDC

Capacitance Range: 0.50 pF to 0.47  $\mu$ F Temperature Range: -55°C to +125°C



C	1206	C	104	J	3	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance <sup>2</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>3</sup>	Packaging/Grade (C-Spec)
	0201 0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	2 significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 99 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0201	10 pF – 100 pF	10 pF – 100 pF	10 pF – 100 pF				
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1808				330 pF – 4.7 nF	330 pF – 4.7 nF	330 pF – 2.7 nF	330 pF – 2.7 nF
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
1825				3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.012 $\mu$ F	3.9 nF – 0.012 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.22 $\mu$ F	
2225				4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.027 $\mu$ F	4.7 nF – 0.015 $\mu$ F	4.7 nF – 0.015 $\mu$ F

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### Commercial Grade (cont)

#### X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 10 pF to 47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	C	106	M	4	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series'	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/ Grade (C-Spec)
	0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage								
	6.3	10	16	25	35	50	100	200	250
0402	10 pF – 0.1 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.047 $\mu$ F		10 pF – 0.022 $\mu$ F			
0603	10 pF – 2.2 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 1 $\mu$ F		10 pF – 0.15 $\mu$ F	10 pF – 0.047 $\mu$ F	10 pF – 0.01 $\mu$ F	
0805	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.22 $\mu$ F	10 pF – 0.056 $\mu$ F	180 pF – 0.022 $\mu$ F
1206	10 pF – 22 $\mu$ F	10 pF – 22 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.15 $\mu$ F	1 nF – 0.1 $\mu$ F
1210	10 pF – 47 $\mu$ F	10 pF – 47 $\mu$ F	10 pF – 22 $\mu$ F	10 pF – 22 $\mu$ F		10 pF – 10 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F
1808						330 pF – 0.18 $\mu$ F	330 pF – 0.056 $\mu$ F	330 pF – 0.018 $\mu$ F	
1812				470 pF – 10 $\mu$ F		470 pF – 4.7 $\mu$ F	470 pF – 2.2 $\mu$ F	470 pF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F
1825						3.9 nF – 2.2 $\mu$ F	3.9 nF – 1 $\mu$ F	3.9 nF – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
2220				6.8 nF – 22 $\mu$ F		6.8 nF – 15 $\mu$ F	6.8 nF – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F
2225						4.7 nF – 2.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	0.1 $\mu$ F – 1.2 $\mu$ F

#### X5R Dielectric, 4 – 50 VDC

Capacitance Range: 0.01  $\mu$ F to 100  $\mu$ F • Temperature Range: -55°C to +85°C



C	1206	C	107	M	9	P	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series'	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec)
	0201 0402 0603 0805 1206 1210	C = Standard	Two significant digits + number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	7 = 4 9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50	P = X5R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	4	6.3	10	16	25	35	50
0201	0.01 $\mu$ F – 0.1 $\mu$ F	0.01 $\mu$ F – 0.1 $\mu$ F		0.01 $\mu$ F			
0402	0.01 $\mu$ F – 10 $\mu$ F	0.01 $\mu$ F – 10 $\mu$ F	0.01 $\mu$ F – 2.2 $\mu$ F	0.01 $\mu$ F – 1 $\mu$ F			
0603	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 4.7 $\mu$ F	0.1 $\mu$ F – 2.2 $\mu$ F	0.1 $\mu$ F – 1 $\mu$ F		
0805	0.47 $\mu$ F – 47 $\mu$ F	0.47 $\mu$ F – 47 $\mu$ F	0.47 $\mu$ F – 22 $\mu$ F	0.47 $\mu$ F – 10 $\mu$ F	0.47 $\mu$ F – 10 $\mu$ F		1 $\mu$ F
1206		0.27 $\mu$ F – 100 $\mu$ F	0.27 $\mu$ F – 47 $\mu$ F	0.27 $\mu$ F – 22 $\mu$ F	0.27 $\mu$ F – 10 $\mu$ F		4.7 $\mu$ F
1210		0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 100 $\mu$ F	0.39 $\mu$ F – 22 $\mu$ F	0.39 $\mu$ F – 10 $\mu$ F	0.39 $\mu$ F – 10 $\mu$ F

### Commercial Grade (cont.)

#### Z5U Dielectric, 50 & 100 VDC

Capacitance Range: 6,800 pF to 2.2  $\mu$ F • Temperature Range: -10°C to +85°C



C	1825	C	225	M	5	U	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rate Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812 1825 2225	C Standard	2 significant digits + number of zeros	M = $\pm$ 20% Z = +80%/-20	5 = 50 1 = 100	U = Z5U	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	50	100
0805	6.8 nF – 0.1 $\mu$ F	6.8 nF – 0.01 $\mu$ F
1206	0.01 $\mu$ F – 0.22 $\mu$ F	0.01 $\mu$ F – 0.1 $\mu$ F
1210	0.047 $\mu$ F – 1 $\mu$ F	0.047 $\mu$ F – 0.15 $\mu$ F
1812	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 0.15 $\mu$ F
1825	0.18 $\mu$ F – 2.2 $\mu$ F	0.18 $\mu$ F – 0.39 $\mu$ F
2225	0.33 $\mu$ F – 2.2 $\mu$ F	0.33 $\mu$ F – 0.47 $\mu$ F

#### Y5V Dielectric, 6.3 – 50 VDC

Capacitance Range: 0.022  $\mu$ F to 22  $\mu$ F • Temperature Range: -30°C to +85°C



C	1210	C	226	Z	4	V	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard	2 significant digits + number of zeros	Z = +80%/-20% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50	V = Y5V	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	6.3	10	16	25	50
0402	0.022 $\mu$ F – 2.2 $\mu$ F	0.022 $\mu$ F – 2.2 $\mu$ F	0.022 $\mu$ F – 0.1 $\mu$ F		
0603	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	
0805	0.022 $\mu$ F – 10 $\mu$ F	0.022 $\mu$ F – 10 $\mu$ F	0.022 $\mu$ F – 4.7 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
1206	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 10 $\mu$ F	0.22 $\mu$ F – 10 $\mu$ F	
1210	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 22 $\mu$ F	0.22 $\mu$ F – 1 $\mu$ F

### Commercial Grade (cont.)

#### Telecom "Tip and Ring" X7R Dielectric, 250 VDC

Capacitance Range: 180 pF to 1.2  $\mu$ F • Temperature Range: -55°C to +125°C



C	1825	C	105	K	A	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C Spec)
	0805 1206 1210 1812 1825 2220 2225	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage
	250
0805	180 pF – 0.022 $\mu$ F
1206	1 nF – 0.1 $\mu$ F
1210	2.2 nF – 0.22 $\mu$ F
1812	6.8 nF – 0.47 $\mu$ F
1825	0.022 $\mu$ F – 1 $\mu$ F
2220	0.082 $\mu$ F – 1 $\mu$ F
2225	0.1 $\mu$ F – 1.2 $\mu$ F

#### Capacitor Array, C0G Dielectric, 10 – 200 VDC

Capacitance Range: 10 pF to 2,200 pF Temperature Range: -55°C to +125°C



CA	06	4	X	104	K	4	G	A	C	TU
Ceramic Array	Case Size (L" x W") <sup>1</sup>	Number of Capacitors	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	05 = 0508 06 = 0612	2 = 2 4 = 4	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	G = C0G	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum Pb content)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0508	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF
0612	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 180 pF

# Ceramic Capacitors

## Surface Mount

### Commercial Grade (cont.)

#### Capacitor Array, X7R Dielectric, 10 – 200 VDC

Capacitance Range: 330 pF to 0.22  $\mu$ F • Temperature Range: -55°C to +125°C



CA	06	4	X	104	K	4	R	A	C	TU
Ceramic Array	Case Size (L" x W") <sup>1</sup>	Number of Capacitors	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	05 = 0508 06 = 0612	2 = 2 4 = 4	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum Pb content)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0508	330 pF – 0.22 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 4.7 nF	
0612	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.056 $\mu$ F	330 pF – 0.047 $\mu$ F	330 pF – 5.6 nF	330 pF – 560 pF

### Flex Mitigation

#### Open Mode Design (FO-CAP), X7R Dielectric, 16 – 200 VDC (Commercial & Automotive Grade)

Capacitance Range: 1,000 pF to 6.8  $\mu$ F • Temperature Range: -55°C to +125°C



C	1210	J	685	K	3	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812	F = Open Mode J = Open Mode with Flexible Termination	Two significant digits + number of zeros	K = $\pm$ 10% M = $\pm$ 20%	4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	16	25	50	100	200
0805	1 nF – 0.68 $\mu$ F	1 nF – 0.47 $\mu$ F	1 nF – 0.22 $\mu$ F	1 nF – 0.068 $\mu$ F	1 nF – 0.015 $\mu$ F
1206	0.018 $\mu$ F – 4.7 $\mu$ F	0.018 $\mu$ F – 2.2 $\mu$ F	0.018 $\mu$ F – 1 $\mu$ F	0.018 $\mu$ F – 0.33 $\mu$ F	0.018 $\mu$ F – 0.1 $\mu$ F
1210	0.068 $\mu$ F – 6.8 $\mu$ F	0.068 $\mu$ F – 6.8 $\mu$ F	0.068 $\mu$ F – 2.2 $\mu$ F	0.068 $\mu$ F – 1 $\mu$ F	0.068 $\mu$ F – 0.22 $\mu$ F
1812		0.047 $\mu$ F – 4.7 $\mu$ F	0.047 $\mu$ F – 4.7 $\mu$ F	0.047 $\mu$ F – 1 $\mu$ F	0.047 $\mu$ F – 0.39 $\mu$ F

### Flex Mitigation (cont.)

#### Floating Electrode Design (FE-CAP), X7R Dielectric 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 150 pF to 0.22  $\mu$ F Temperature Range: -55°C to +125°C



C	0805	S	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	S = Floating Electrode	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF			
0603	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.012 $\mu$ F	180 pF – 0.012 $\mu$ F
1206	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.056 $\mu$ F	1 nF – 0.027 $\mu$ F	1 nF – 0.027 $\mu$ F
1210	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.1 $\mu$ F	2.2 nF – 0.056 $\mu$ F	2.2 nF – 0.056 $\mu$ F
1812				6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.15 $\mu$ F	6.8 nF – 0.082 $\mu$ F	6.8 nF – 0.082 $\mu$ F

#### Flexible Termination System (FT-CAP), C0G Dielectric, 10 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.5 pF to 0.47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	X	563	J	3	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812 1825 2220 2225	X = Flexible Termination	2 significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 99 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = C0G	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
1825				3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.012 $\mu$ F	3.9 nF – 0.012 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.18 $\mu$ F	
2225				4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.027 $\mu$ F	4.7 nF – 0.015 $\mu$ F	4.7 nF – 0.015 $\mu$ F

### Flex Mitigation (cont.)

#### Flexible Termination System (FT-CAP) X7R Dielectric, 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 180 pF to 22  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	X	106	K	4	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec) <sup>2</sup>
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.47 $\mu$ F	180 pF – 0.47 $\mu$ F	180 pF – 0.47 $\mu$ F	180 pF – 0.22 $\mu$ F	180 pF – 0.15 $\mu$ F	180 pF – 0.047 $\mu$ F	180 pF – 0.01 $\mu$ F	
0805	180 pF – 2.2 $\mu$ F	180 pF – 2.2 $\mu$ F	180 pF – 2.2 $\mu$ F	180 pF – 1 $\mu$ F	180 pF – 0.68 $\mu$ F	180 pF – 0.22 $\mu$ F	180 pF – 0.056 $\mu$ F	180 pF – 0.022 $\mu$ F
1206	470 pF – 10 $\mu$ F	470 pF – 10 $\mu$ F	470 pF – 10 $\mu$ F	470 pF – 4.7 $\mu$ F	470 pF – 2.2 $\mu$ F	1 nF – 0.47 $\mu$ F	1 nF – 0.15 $\mu$ F	1 nF – 0.1 $\mu$ F
1210	2.2 nF – 22 $\mu$ F	2.2 nF – 22 $\mu$ F	2.2 nF – 10 $\mu$ F	2.2 nF – 10 $\mu$ F	2.2 nF – 4.7 $\mu$ F	2.2 nF – 1 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F
1808					4.7 nF – 0.18 $\mu$ F	4.7 nF – 0.056 $\mu$ F	4.7 nF – 0.018 $\mu$ F	
1812				6.8 nF – 10 $\mu$ F	6.8 nF – 4.7 $\mu$ F	6.8 nF – 1 $\mu$ F	6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F
1825					0.022 $\mu$ F – 2.2 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
2220				0.082 $\mu$ F – 22 $\mu$ F	0.082 $\mu$ F – 15 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F
2225					0.047 $\mu$ F – 2.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F

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### Flex Mitigation (cont.)

High Voltage with Flexible Termination System (HV FT-CAP), COG Dielectric,  
 500 – 3,000 VDC (Commercial & Automotive Grade)

Capacitance Range: 1 pF to 0.039  $\mu$ F • Temperature Range: -55°C to +125°C



C	2225	X	393	J	C	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	X= Flexible Termination	Two significant digits + number of zeros.	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF				
1206	10 pF – 4.7 nF	10 pF – 4.7 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF		
1210	10 pF – 8.2 nF	10 pF – 6.8 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF		
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF	1 pF – 390 pF	1 pF – 180 pF
1812	10 pF – 0.015 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF	10 pF – 680 pF	10 pF – 390 pF
1825	9.1 nF – 0.033 $\mu$ F	5.1 nF – 0.018 $\mu$ F	5.1 nF – 0.01 $\mu$ F	2 nF – 5.6 nF	1.3 nF – 3 nF	1.1 nF – 1.6 nF	430 pF – 680 pF
2220	10 pF – 0.033 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 1.8 nF	10 pF – 1 nF
2225	10 pF – 0.039 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF

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### Flex Mitigation (cont.)

High Voltage with Flexible Termination System (HV FT-CAP) X7R Dielectric,  
 500 – 3,000 VDC (Commercial & Automotive Grade)  
 Capacitance Range: 10 pF to 0.33  $\mu$ F • Temperature Range: –55°C to +125°C



C	1210	X	154	K	C	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	Two significant digits + number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

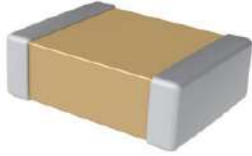
Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF				
0805	10 pF – 0.022 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 5.6 nF				
1206	10 pF – 0.068 $\mu$ F	10 pF – 0.033 $\mu$ F	10 pF – 0.022 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 2.2 nF		
1210	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.039 $\mu$ F	10 pF – 6.8 nF		
1808	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 4.7 nF	10 pF – 2.2 nF	10 pF – 1 nF
1812	51 pF – 0.33 $\mu$ F	51 pF – 0.15 $\mu$ F	51 pF – 0.1 $\mu$ F	51 pF – 0.033 $\mu$ F	51 pF – 0.01 $\mu$ F	51 pF – 4.7 nF	51 pF – 1.2 nF
1825	470 pF – 0.39 $\mu$ F	470 pF – 0.27 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.068 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.01 $\mu$ F	470 pF – 3.3 nF
2220	470 pF – 0.47 $\mu$ F	470 pF – 0.33 $\mu$ F	470 pF – 0.12 $\mu$ F	470 pF – 0.082 $\mu$ F	470 pF – 0.022 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.015 $\mu$ F

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### Flex Mitigation (cont.)

#### Flexible Termination System (FT-CAP), Ultra-Stable X8R Dielectric, 25 – 100 VDC (Commercial & Automotive Grade)

Capacitance Range: 430 pF to 0.22  $\mu$ F • Temperature Range: -55°C to +150°C



C	1206	X	104	J	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812	X = Flexible Termination	2 significant digits + number of zeros	F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	3 = 25 5 = 50 1 = 100	H = Ultra-Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0603	430 pF – 0.01 $\mu$ F	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.033 $\mu$ F	2 nF – 0.022 $\mu$ F	2 nF – 0.015 $\mu$ F
1206	6.8 nF – 0.1 $\mu$ F	6.8 nF – 0.082 $\mu$ F	6.8 nF – 0.056 $\mu$ F
1210	0.012 $\mu$ F – 0.18 $\mu$ F	0.012 $\mu$ F – 0.15 $\mu$ F	0.012 $\mu$ F – 0.1 $\mu$ F
1812		0.015 $\mu$ F – 0.22 $\mu$ F	0.015 $\mu$ F – 0.15 $\mu$ F

#### Floating Electrode Design with Flexible Termination System (FF-CAP), X7R Dielectric, 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 180 pF to 0.22  $\mu$ F • Temperature Range: -55°C to +125°C



C	0805	Y	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812	Y = Floating Electrode with Flexible Termination	2 significant digits + number of zeros	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.012 $\mu$ F	180 pF – 0.012 $\mu$ F
1206	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.056 $\mu$ F	1 nF – 0.027 $\mu$ F	1 nF – 0.027 $\mu$ F
1210	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.1 $\mu$ F	2.2 nF – 0.056 $\mu$ F	2.2 nF – 0.056 $\mu$ F
1812				6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.15 $\mu$ F	6.8 nF – 0.082 $\mu$ F	6.8 nF – 0.082 $\mu$ F

### Flex Mitigation (cont.)

#### KPS Series, X7R Dielectric, 10 – 250 VDC (Commercial Grade)

Capacitance Range: 0.1 µF to 47 µF • Temperature Range: -55°C to +125°C



C	2220	C	106	M	5	R	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	1210 1812 2220	C = Standard	Two significant digits + number of zeros	K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 A = 250	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	250
1210-1	0.1 µF – 22 µF	0.1 µF – 10 µF	0.1 µF – 10 µF	0.1 µF – 4.7 µF	0.1 µF – 2.2 µF	0.1 µF
1210-2	0.1 µF – 47 µF	0.1 µF – 22 µF	0.1 µF – 22 µF	0.1 µF – 10 µF	0.1 µF – 4.7 µF	0.1 µF – 0.22 µF
1812-1		0.1 µF – 10 µF	0.1 µF – 10 µF	0.1 µF – 4.7 µF	0.1 µF – 1 µF	0.1 µF – 0.47 µF
1812-2		0.1 µF – 22 µF	0.1 µF – 22 µF	0.1 µF – 10 µF	0.1 µF – 3.3 µF	0.1 µF – 1 µF
2220-1		0.1 µF – 22 µF	0.1 µF – 22 µF	0.1 µF – 10 µF	0.1 µF – 3.3 µF	0.1 µF – 1 µF
2220-2		0.1 µF – 47 µF	0.1 µF – 47 µF	0.1 µF – 22 µF	0.1 µF – 4.7 µF	0.1 µF – 2.2 µF

#### KPS Series, High Voltage, X7R Dielectric, 500 – 630 VDC (Commercial Grade)

Capacitance Range: 0.047 µF to 1.0 µF • Temperature Range: -55°C to +125°C



C	2220	C	105	M	C	R	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	2220	C = Standard	2 significant digits + number of zeros.	K = ±10% M = ±20%	C = 500 B = 630	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	500	630
2220-1	0.047 µF – 0.47 µF	0.047 µF – 0.22 µF
2220-2	0.1 µF – 1 µF	0.1 µF – 0.47 µF

### Flex Mitigation (cont.)

#### KPS HT Series, High Temperature 150°C, X8L Dielectric, 10 – 50 VDC (Commercial Grade)

Capacitance Range: 0.47  $\mu$ F to 47  $\mu$ F • Temperature Range: -55°C to +150°C



C	2220	C	476	M	8	N	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish	Packaging/Grade (C-Spec)
	1210 2220	C = Standard	2 significant digits + number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50	N = X8L	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
1210-1	0.47 $\mu$ F – 4.7 $\mu$ F	0.47 $\mu$ F – 4.7 $\mu$ F	0.47 $\mu$ F – 4.7 $\mu$ F	0.47 $\mu$ F – 1 $\mu$ F
1210-2	1 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 2.2 $\mu$ F
2220-1	2.2 $\mu$ F – 22 $\mu$ F	2.2 $\mu$ F – 10 $\mu$ F	2.2 $\mu$ F – 10 $\mu$ F	
2220-2	4.7 $\mu$ F – 47 $\mu$ F	4.7 $\mu$ F – 22 $\mu$ F	4.7 $\mu$ F – 22 $\mu$ F	

### Automotive Grade

#### COG Dielectric, 10 – 250 VDC

Capacitance Range: 0.5 pF to 0.47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	C	104	J	3	G	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812 2220	C = Standard	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.22 $\mu$ F	

# Ceramic Capacitors

## Surface Mount

### Automotive Grade (cont.)

X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 10 pF to 22  $\mu$ F Temperature Range: -55°C to +125°C

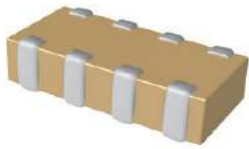


C	0805	C	225	M	4	R	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	04 2 0603 0805 1206 1210 1812 2220	C = Standard	Two significant digits + number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402		10 pF – 0.1 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.047 $\mu$ F	10 pF – 0.022 $\mu$ F			
0603	10 pF – 0.47 $\mu$ F	10 pF – 0.47 $\mu$ F	10 pF – 0.47 $\mu$ F	10 pF – 0.22 $\mu$ F	10 pF – 0.15 $\mu$ F	10 pF – 0.047 $\mu$ F	10 pF – 0.01 $\mu$ F	
0805	10 pF – 2.2 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.68 $\mu$ F	10 pF – 0.22 $\mu$ F	10 pF – 0.056 $\mu$ F	180 pF – 0.022 $\mu$ F
1206	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 2.2 $\mu$ F	10 pF – 0.47 $\mu$ F	10 pF – 0.15 $\mu$ F	1 nF – 0.1 $\mu$ F
1210	10 pF – 22 $\mu$ F	10 pF – 22 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 10 $\mu$ F	10 pF – 4.7 $\mu$ F	10 pF – 1 $\mu$ F	10 pF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F
1808					330 pF – 0.18 $\mu$ F	330 pF – 0.056 $\mu$ F	330 pF – 2.7 nF	
1812				470 pF – 10 $\mu$ F	470 pF – 4.7 $\mu$ F	470 pF – 1 $\mu$ F	470 pF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F
1825					0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
2220				6.8 nF – 22 $\mu$ F	6.8 nF – 10 $\mu$ F	6.8 nF – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F

Capacitor Array, COG Dielectric, 10 – 200 VDC

Capacitance Range: 10 pF to 2,200 pF Temperature Range: -55°C to +125°C



CA	06	4	X	104	K	4	G	A	C	TU
Ceramic Array	Case Size (L" x W")	Number of Capacitors	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	05 = 0508 06 = 0612	2 = 2 4 = 4	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum Pb content)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0508	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	100 pF – 2.2 nF	
0612	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 470 pF	10 pF – 180 pF	10 pF – 82 pF

### Automotive Grade (cont.)

#### Capacitor Array, X7R Dielectric, 10 – 200 VDC

Capacitance Range: 330 pF to 0.22  $\mu$ F • Temperature Range: -55°C to +125°C



CA	06	4	X	104	K	4	R	A	C	TU
Ceramic Array	Case Size (L" x W") <sup>1</sup>	Number of Capacitors	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	05 = 0508 06 = 0612	2 = 2 4 = 4	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% minimum Pb content)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0508	330 pF – 0.22 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 4.7 nF	
0612	330 pF – 0.1 $\mu$ F	330 pF – 0.1 $\mu$ F	330 pF – 0.056 $\mu$ F	330 pF – 0.047 $\mu$ F	330 pF – 5.6 nF	330 pF – 560 pF

#### Open Mode Design (FO-CAP), X7R Dielectric, 16 – 200 VDC

Capacitance Range: 1,000 pF to 6.8  $\mu$ F • Temperature Range: -55°C to +125°C



C	1210	J	685	K	3	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812	F = Open Mode J = Open Mode with Flexible Termination	Two significant digits + number of zeros	K = $\pm$ 10% M = $\pm$ 20%	4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	16	25	50	100	200
0805	1 nF – 0.68 $\mu$ F	1 nF – 0.47 $\mu$ F	1 nF – 0.22 $\mu$ F	1 nF – 0.068 $\mu$ F	1 nF – 0.015 $\mu$ F
1206	0.018 $\mu$ F – 4.7 $\mu$ F	0.018 $\mu$ F – 2.2 $\mu$ F	0.018 $\mu$ F – 1 $\mu$ F	0.018 $\mu$ F – 0.33 $\mu$ F	0.018 $\mu$ F – 0.1 $\mu$ F
1210	0.068 $\mu$ F – 6.8 $\mu$ F	0.068 $\mu$ F – 6.8 $\mu$ F	0.068 $\mu$ F – 2.2 $\mu$ F	0.068 $\mu$ F – 1 $\mu$ F	0.068 $\mu$ F – 0.22 $\mu$ F
1812		0.047 $\mu$ F – 4.7 $\mu$ F	0.047 $\mu$ F – 4.7 $\mu$ F	0.047 $\mu$ F – 1 $\mu$ F	0.047 $\mu$ F – 0.39 $\mu$ F

# Ceramic Capacitors

## Surface Mount

### Automotive Grade (cont.)

#### Floating Electrode Design (FE-CAP), X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 150 pF to 0.22  $\mu$ F Temperature Range: -55°C to +125°C



C	0805	S	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	S = Floating Electrode	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF			
0603	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.1 $\mu$ F	180 pF – 0.022 $\mu$ F	180 pF – 0.012 $\mu$ F	180 pF – 0.012 $\mu$ F
1206	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.12 $\mu$ F	1 nF – 0.056 $\mu$ F	1 nF – 0.027 $\mu$ F	1 nF – 0.027 $\mu$ F
1210	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.1 $\mu$ F	2.2 nF – 0.056 $\mu$ F	2.2 nF – 0.056 $\mu$ F
1812				6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.22 $\mu$ F	6.8 nF – 0.15 $\mu$ F	6.8 nF – 0.082 $\mu$ F	6.8 nF – 0.082 $\mu$ F

#### Flexible Termination System (FT-CAP) X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 180 pF to 22  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	X	106	K	4	R	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec) <sup>2</sup>
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.47 $\mu$ F	180 pF – 0.47 $\mu$ F	180 pF – 0.47 $\mu$ F	180 pF – 0.22 $\mu$ F	180 pF – 0.15 $\mu$ F	180 pF – 0.047 $\mu$ F	180 pF – 0.01 $\mu$ F	
0805	180 pF – 2.2 $\mu$ F	180 pF – 2.2 $\mu$ F	180 pF – 2.2 $\mu$ F	180 pF – 1 $\mu$ F	180 pF – 0.68 $\mu$ F	180 pF – 0.22 $\mu$ F	180 pF – 0.056 $\mu$ F	180 pF – 0.022 $\mu$ F
1206	1 nF – 10 $\mu$ F	1 nF – 10 $\mu$ F	1 nF – 10 $\mu$ F	1 nF – 4.7 $\mu$ F	1 nF – 2.2 $\mu$ F	1 nF – 0.47 $\mu$ F	1 nF – 0.15 $\mu$ F	1 nF – 0.1 $\mu$ F
1210	2.2 nF – 22 $\mu$ F	2.2 nF – 22 $\mu$ F	2.2 nF – 10 $\mu$ F	2.2 nF – 10 $\mu$ F	2.2 nF – 4.7 $\mu$ F	2.2 nF – 1 $\mu$ F	2.2 nF – 0.22 $\mu$ F	2.2 nF – 0.22 $\mu$ F
1808					4.7 nF – 0.18 $\mu$ F	4.7 nF – 0.056 $\mu$ F	4.7 nF – 0.018 $\mu$ F	
1812				6.8 nF – 10 $\mu$ F	6.8 nF – 4.7 $\mu$ F	6.8 nF – 1 $\mu$ F	6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F
1825					0.022 $\mu$ F – 2.2 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F	0.022 $\mu$ F – 1 $\mu$ F
2220				0.082 $\mu$ F – 22 $\mu$ F	0.082 $\mu$ F – 10 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 1 $\mu$ F
2225					0.047 $\mu$ F – 2.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F	0.047 $\mu$ F – 1.2 $\mu$ F

### Automotive Grade (cont.)

#### KPS Series, X7R Dielectric, 10 – 250 VDC

Capacitance Range: 0.1  $\mu$ F to 47  $\mu$ F • Temperature Range: -55°C to +125°C



C	2220	C	106	M	5	R	2	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	1210 1812 2220	C = Standard	Two significant digits + number of zeros	K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 A = 250	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	250
1210-1	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 4.7 $\mu$ F	0.1 $\mu$ F – 1 $\mu$ F	0.1 $\mu$ F
1210-2	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 2.2 $\mu$ F	0.1 $\mu$ F – 0.22 $\mu$ F
1812-1		0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 4.7 $\mu$ F		
1812-2		0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F		
2220 1		0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 10 $\mu$ F	0.1 $\mu$ F – 0.22 $\mu$ F	0.1 $\mu$ F – 0.22 $\mu$ F
2220-2		0.1 $\mu$ F – 47 $\mu$ F	0.1 $\mu$ F – 47 $\mu$ F	0.1 $\mu$ F – 22 $\mu$ F	0.1 $\mu$ F – 0.47 $\mu$ F	0.1 $\mu$ F – 0.47 $\mu$ F

#### High Voltage with Flexible Termination System (HV FT-CAP) X7R Dielectric, 500 – 3,000 VDC

Capacitance Range: 10 pF to 0.33  $\mu$ F • Temperature Range: -55°C to +125°C



C	1210	X	154	K	C	R	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	Two significant digits + number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF				
0805	10 pF – 0.022 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 4.7 nF				
1206	10 pF – 0.068 $\mu$ F	10 pF – 0.033 $\mu$ F	10 pF – 0.022 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 2.2 nF		
1210	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.039 $\mu$ F	10 pF – 6.8 nF		
1808	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 4.7 nF	10 pF – 2.2 nF	10 pF – 1 nF
1812	51 pF – 0.33 $\mu$ F	51 pF – 0.15 $\mu$ F	51 pF – 0.1 $\mu$ F	51 pF – 0.033 $\mu$ F	51 pF – 0.01 $\mu$ F	51 pF – 4.7 nF	51 pF – 1.2 nF
1825	470 pF – 0.39 $\mu$ F	470 pF – 0.27 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.068 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.01 $\mu$ F	470 pF – 3.3 nF
2220	470 pF – 0.47 $\mu$ F	470 pF – 0.33 $\mu$ F	470 pF – 0.12 $\mu$ F	470 pF – 0.082 $\mu$ F	470 pF – 0.022 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.015 $\mu$ F
2225	680 pF – 0.56 $\mu$ F	680 pF – 0.47 $\mu$ F	680 pF – 0.15 $\mu$ F	680 pF – 0.1 $\mu$ F	680 pF – 0.027 $\mu$ F	680 pF – 0.015 $\mu$ F	680 pF – 0.015 $\mu$ F



### Automotive Grade (cont.)

#### KPS Series, High Voltage, X7R Dielectric, 500 – 630 VDC

Capacitance Range: 0.047  $\mu\text{F}$  to 1  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



C	2220	C	105	M	C	R	2	C	7186
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	2220	C = Standard	2 significant digits + number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	C = 500 B = 630	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	500	630
2220-1	0.047 $\mu\text{F}$ – 0.47 $\mu\text{F}$	0.047 $\mu\text{F}$ – 0.22 $\mu\text{F}$
2220-2	0.1 $\mu\text{F}$ – 1 $\mu\text{F}$	0.1 $\mu\text{F}$ – 0.47 $\mu\text{F}$

#### KPS HT Series, High Temperature $150^{\circ}\text{C}$ , X8L Dielectric, 10 – 50 VDC

Capacitance Range: 0.47  $\mu\text{F}$  to 47  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$



C	2220	C	476	M	8	N	2	C	7186
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish	Packaging/Grade (C-Spec)
	1210 2220	C = Standard	2 significant digits + number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	8 = 10 4 = 16 3 = 25 5 = 50	N = X8L	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
1210-1	0.47 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.47 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.47 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.47 $\mu\text{F}$ – 1 $\mu\text{F}$
1210-2	1 $\mu\text{F}$ – 10 $\mu\text{F}$	1 $\mu\text{F}$ – 10 $\mu\text{F}$	1 $\mu\text{F}$ – 10 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$
2220-1	2.2 $\mu\text{F}$ – 22 $\mu\text{F}$	2.2 $\mu\text{F}$ – 10 $\mu\text{F}$	2.2 $\mu\text{F}$ – 10 $\mu\text{F}$	
2220-2	4.7 $\mu\text{F}$ – 47 $\mu\text{F}$	4.7 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 22 $\mu\text{F}$	

### Automotive Grade (cont.)

#### Flexible Termination System (FT-CAP), COG Dielectric, 10 – 250 VDC

Capacitance Range: 0.5 pF to 0.47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	X	563	J	3	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812 1825 2220 2225	X = Flexible Termination	2 significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 9.9 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
1825				3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.012 $\mu$ F	3.9 nF – 0.012 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.18 $\mu$ F	
2225				4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.027 $\mu$ F	4.7 nF – 0.015 $\mu$ F	4.7 nF – 0.015 $\mu$ F

#### Flexible Termination System (FT-CAP), Ultra-Stable X8R Dielectric, 25 – 100 VDC

Capacitance Range: 430 pF to 0.22  $\mu$ F • Temperature Range: -55°C to +150°C



C	1206	X	104	J	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812	X = Flexible Termination	2 significant digits + number of zeros.	F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	3 = 25 5 = 50 1 = 100	H = Ultra-Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0603	430 pF – 0.01 $\mu$ F	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.033 $\mu$ F	2 nF – 0.022 $\mu$ F	2 nF – 0.015 $\mu$ F
1206	6.8 nF – 0.1 $\mu$ F	6.8 nF – 0.082 $\mu$ F	6.8 nF – 0.056 $\mu$ F
1210	0.012 $\mu$ F – 0.18 $\mu$ F	0.012 $\mu$ F – 0.15 $\mu$ F	0.012 $\mu$ F – 0.1 $\mu$ F
1812		0.015 $\mu$ F – 0.22 $\mu$ F	0.015 $\mu$ F – 0.15 $\mu$ F

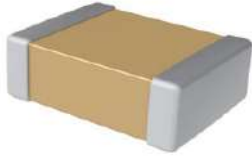
# Ceramic Capacitors

## Surface Mount

### Automotive Grade (cont.)

#### Floating Electrode Design with Flexible Termination System (FF-CAP), X7R Dielectric, 6.3 – 250 VDC

Capacitance Range: 180 pF to 0.22 μF Temperature Range: -55°C to +125°C



C	0805	Y	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec)
	0603 0805 1206 1210 1812	Y = Floating Electrode with Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.022 μF	180 pF – 0.012 μF	180 pF – 0.012 μF
1206	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.056 μF	1 nF – 0.027 μF	1 nF – 0.027 μF
1210	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.1 μF	2.2 nF – 0.056 μF	2.2 nF – 0.056 μF
1812				6.8 nF – 0.22 μF	6.8 nF – 0.22 μF	6.8 nF – 0.15 μF	6.8 nF – 0.082 μF	6.8 nF – 0.082 μF

#### High Temperature 150°C, Ultra-Stable X8R Dielectric, 25 – 100 VDC

Capacitance Range: 100 pF to 0.22 μF Temperature Range: -55°C to +150°C



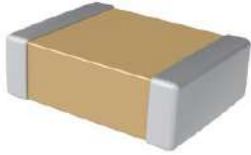
C	1210	C	184	K	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/ Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	C = Standard	2 significant digits + number of zeros	F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	3 = 25 5 = 50 1 = 100	H = Ultra Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0402	100 pF – 1.5 nF	100 pF – 1.5 nF	100 pF – 1 nF
0603	430 pF – 0.01 μF	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.033 μF	2 nF – 0.022 μF	2 nF – 0.015 μF
1206	6.8 nF – 0.1 μF	6.8 nF – 0.082 μF	6.8 nF – 0.056 μF
1210	0.012 μF – 0.18 μF	0.012 μF – 0.15 μF	0.012 μF – 0.1 μF
1812		0.015 μF – 0.22 μF	0.015 μF – 0.15 μF

### Automotive Grade (cont.)

#### High Temperature 150°C, X8L Dielectric, 10 – 50 VDC

Capacitance Range: 0.012 µF to 10 µF Temperature Range: -55°C to +150°C



C	1210	X	106	K	8	N	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	8 = 10 3 = 25 5 = 50	N = X8L	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
0402	0.012 µF – 0.047 µF		0.012 µF – 0.022 µF	
0603	0.047 µF – 0.22 µF		0.047 µF – 0.15 µF	0.047 µF
0805	0.15 µF – 1 µF	0.82 µF – 1 µF	0.15 µF – 0.68 µF	0.15 µF – 0.22 µF
1206	0.47 µF – 4.7 µF	2.7 µF – 4.7 µF	0.47 µF – 2.2 µF	0.47 µF
1210	0.39 µF – 10 µF	5.6 µF – 10 µF	0.39 µF – 4.7 µF	0.39 µF – 1 µF

#### High Voltage X7R Dielectric, 500 – 3,000 VDC

Capacitance Range: 10 pF to 0.56 µF • Temperature Range: -55°C to +125°C



C	1210	C	154	K	C	R	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros.	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF				
0805	10 pF – 0.022 µF	10 pF – 0.012 µF	10 pF – 4.7 nF				
1206	10 pF – 0.068 µF	10 pF – 0.033 µF	10 pF – 0.022 µF	10 pF – 0.01 µF	10 pF – 2.2 nF		
1210	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.068 µF	10 pF – 0.039 µF	10 pF – 6.8 nF		
1808	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.068 µF	10 pF – 0.015 µF	10 pF – 4.7 nF	10 pF – 2.2 nF	10 pF – 1 nF
1812	10 pF – 0.33 µF	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.033 µF	10 pF – 0.01 µF	10 pF – 4.7 nF	10 pF – 1.2 nF
1825	100 pF – 0.39 µF	100 pF – 0.27 µF	100 pF – 0.1 µF	100 pF – 0.068 µF	100 pF – 0.015 µF	100 pF – 0.01 µF	100 pF – 2.2 nF
2220	100 pF – 0.47 µF	100 pF – 0.33 µF	100 pF – 0.12 µF	100 pF – 0.082 µF	100 pF – 0.022 µF	100 pF – 0.015 µF	100 pF – 0.015 µF
2225	100 pF – 0.56 µF	100 pF – 0.47 µF	100 pF – 0.15 µF	100 pF – 0.1 µF	100 pF – 0.027 µF	100 pF – 0.015 µF	100 pF – 0.015 µF

# Ceramic Capacitors

## Surface Mount

### Automotive Grade (cont.)

#### High Voltage C0G Dielectric, 500 – 3,000 VDC

Capacitance Range: 1 pF to 0.039  $\mu$ F • Temperature Range: -55°C to +125°C



C	1210	C	332	J	C	G	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = C0G	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF				
1206	10 pF – 4.7 nF	10 pF – 4.7 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF		
1210	10 pF – 8.2 nF	10 pF – 8 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF		
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF	1 pF – 390 pF	1 pF – 180 pF
1812	10 pF – 0.015 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF	10 pF – 680 pF	10 pF – 390 pF
1825	10 pF – 0.033 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 3 nF	10 pF – 1.6 nF	10 pF – 680 pF
2220	10 pF – 0.033 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 1.8 nF	10 pF – 1 nF
2225	10 pF – 0.039 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF

#### High Voltage with Flexible Termination System (HV FT-CAP), C0G Dielectric, 500 – 3,000 VDC

Capacitance Range: 1 pF to 0.039  $\mu$ F • Temperature Range: -55°C to +125°C



C	2225	X	393	J	C	G	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	Two significant digits + number of zeros.	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = C0G	A = N/A	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF				
1206	10 pF – 4.7 nF	10 pF – 4.7 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF		
1210	10 pF – 8.2 nF	10 pF – 6.8 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF		
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF	1 pF – 390 pF	1 pF – 180 pF
1812	10 pF – 0.015 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF	10 pF – 680 pF	10 pF – 390 pF
1825	9.1 nF – 0.033 $\mu$ F	5.1 nF – 0.018 $\mu$ F	5.1 nF – 0.01 $\mu$ F	2 nF – 5.6 nF	1.3 nF – 3 nF	1.1 nF – 1.6 nF	430 pF – 680 pF
2220	10 pF – 0.033 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 1.8 nF	10 pF – 1 nF
2225	10 pF – 0.039 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF

### High Reliability Commercial Off-The-Shelf (COTS)

**COG Dielectric, 10 – 250 VDC for Higher Reliability Applications**

Capacitance Range: 0.5 pF to 0.47 μF • Temperature Range: -55°C to +125°C



C	1206	T	104	K	5	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812 2220	T = COTS	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ± 1% G = ±2% J = ±5% K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = Testing per MIL-PRF-55681 PDA 8% B = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469 C = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469, Humidity per MIL-STD-202, Method 103, Condition A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 μF	0.5 pF – 0.015 μF	0.5 pF – 0.015 μF	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.022 μF	0.5 pF – 0.015 μF	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.082 μF	1 pF – 0.047 μF	1 pF – 0.022 μF	1 pF – 0.022 μF
1210	1 pF – 0.22 μF	1 pF – 0.22 μF	1 pF – 0.22 μF	1 pF – 0.15 μF	1 pF – 0.1 μF	1 pF – 0.047 μF	1 pF – 0.047 μF
1812				470 pF – 0.22 μF	470 pF – 0.15 μF	470 pF – 0.1 μF	470 pF – 0.1 μF
2220				6.8 nF – 0.47 μF	6.8 nF – 0.33 μF	6.8 nF – 0.22 μF	

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### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

X7R Dielectric, 6.3 – 250 VDC for Higher Reliability Applications

Capacitance Range: 10 pF to 22 µF Temperature Range: -55°C to +125°C



C	1210	T	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812 2220	T = COTS	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = Testing per MIL-PRF-55681 PDA 8% B = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469 C = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469, Humidity per MIL-STD-202, Method 103, Condition A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402		10 pF – 0.1 µF	10 pF – 0.1 µF	10 pF – 0.047 µF	10 pF – 0.022 µF			
0603	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.22 µF	10 pF – 0.15 µF	10 pF – 0.047 µF	10 pF – 0.01 µF	
0805	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 1 µF	10 pF – 0.68 µF	10 pF – 0.22 µF	10 pF – 0.056 µF	180 pF – 0.022 µF
1206	10 pF – 10 µF	10 pF – 10 µF	10 pF – 10 µF	10 pF – 4.7 µF	10 pF – 2.2 µF	10 pF – 0.47 µF	10 pF – 0.15 µF	1 nF – 0.1 µF
1210	10 pF – 22 µF	10 pF – 22 µF	10 pF – 10 µF	10 pF – 10 µF	10 pF – 4.7 µF	10 pF – 1 µF	10 pF – 0.22 µF	2.2 nF – 0.22 µF
1808					330 pF – 0.18 µF	330 pF – 0.056 µF	330 pF – 2.7 nF	
1812				470 pF – 10 µF	470 pF – 4.7 µF	470 pF – 1 µF	470 pF – 0.47 µF	6.8 nF – 0.47 µF
1825					0.022 µF – 1 µF	0.022 µF – 1 µF	0.022 µF – 1 µF	0.022 µF – 1 µF
2220				6.8 nF – 22 µF	6.8 nF – 10 µF	6.8 nF – 1 µF	0.082 µF – 1 µF	0.082 µF – 1 µF

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### SnPb End Metallization

#### COG Dielectric, 10 – 250 VDC (Commercial Grade)

Capacitance Range: 0.5 pF to 0.47  $\mu$ F • Temperature Range: -55°C to +125°C



C	1206	C	104	J	3	G	A	L	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	B = $\pm$ 0.10 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = N/A	L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.047 $\mu$ F	0.5 pF – 0.022 $\mu$ F	0.5 pF – 0.015 $\mu$ F	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.082 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.022 $\mu$ F	1 pF – 0.022 $\mu$ F
1210	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.22 $\mu$ F	1 pF – 0.15 $\mu$ F	1 pF – 0.1 $\mu$ F	1 pF – 0.047 $\mu$ F	1 pF – 0.047 $\mu$ F
1808				330 pF – 4.7 nF	330 pF – 4.7 nF	330 pF – 2.7 nF	330 pF – 2.7 nF
1812				470 pF – 0.22 $\mu$ F	470 pF – 0.15 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.1 $\mu$ F
1825				3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.027 $\mu$ F	3.9 nF – 0.012 $\mu$ F	3.9 nF – 0.012 $\mu$ F
2220				6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.33 $\mu$ F	6.8 nF – 0.22 $\mu$ F	
2225				4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.027 $\mu$ F	4.7 nF – 0.015 $\mu$ F	4.7 nF – 0.015 $\mu$ F

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### SnPb End Metallization (cont.)

#### X7R Dielectric, 6.3 – 250 VDC (Commercial Grade)

Capacitance Range: 10 pF to 22 µF • Temperature Range: -55°C to +125°C



C	1210	C	226	K	8	R	A	L	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	2 Significant Digits + Number of Zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage								
	6.3	10	16	25	35	50	100	200	250
0402	10 pF – 0.1 µF	10 pF – 0.1 µF	10 pF – 0.1 µF	10 pF – 0.047 µF		10 pF – 0.022 µF			
0603	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.22 µF		10 pF – 0.15 µF	10 pF – 0.047 µF	10 pF – 0.01 µF	
0805	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 1 µF	10 pF – 0.68 µF	10 pF – 0.68 µF	10 pF – 0.22 µF	10 pF – 0.056 µF	180 pF – 0.022 µF
1206	10 pF – 10 µF	10 pF – 10 µF	10 pF – 10 µF	10 pF – 4.7 µF	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 0.47 µF	10 pF – 0.15 µF	1 nF – 0.1 µF
1210	10 pF – 22 µF	10 pF – 22 µF	10 pF – 10 µF	10 pF – 10 µF		10 pF – 4.7 µF	10 pF – 1 µF	10 pF – 0.22 µF	2.2 nF – 0.22 µF
1808						330 pF – 0.18 µF	330 pF – 0.056 µF	330 pF – 0.018 µF	
1812				470 pF – 10 µF		470 pF – 4.7 µF	470 pF – 1 µF	470 pF – 0.47 µF	6.8 nF – 0.47 µF
1825						3.9 nF – 2.2 µF	3.9 nF – 1 µF	3.9 nF – 1 µF	0.022 µF – 1 µF
2220				6.8 nF – 22 µF		6.8 nF – 15 µF	6.8 nF – 1 µF	0.082 µF – 1 µF	0.082 µF – 1 µF
2225						4.7 nF – 2.2 µF	4.7 nF – 1.2 µF	4.7 nF – 1.2 µF	0.1 µF – 1.2 µF

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### SnPb End Metallization (cont.)

#### Commercial "L" Series, SnPb Termination, X5R Dielectric 4 – 50 VDC (Commercial Grade)

Capacitance Range: 0.5 pF to 0.47 μF • Temperature Range: -55°C to +125°C



C	1210	C	106	K	4	P	A	L	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard	Two significant digits + number of zeros.	K = ±10% M = ±20%	7 = 4 9 = 6.3 8 = 10 4 = 16 3 = 25 6 = 35 5 = 50	P = X5R	A = N/A	L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	4	6.3	10	16	25	35	50
0402	0.012 μF – 0.1 μF	0.012 μF – 0.1 μF	0.012 μF – 0.1 μF	0.012 μF – 0.1 μF			
0603	0.27 μF – 1 μF	0.27 μF – 1 μF	0.27 μF – 1 μF	0.27 μF – 1 μF			
0805	0.47 μF – 6.8 μF	0.47 μF – 6.8 μF	0.47 μF – 6.8 μF	0.47 μF – 4.7 μF	0.47 μF – 1 μF		
1206		0.27 μF – 10 μF	0.27 μF – 10 μF	0.27 μF – 10 μF	0.27 μF – 4.7 μF		
1210		0.39 μF – 22 μF	0.39 μF – 22 μF	0.39 μF – 22 μF	0.39 μF – 10 μF	0.39 μF – 4.7 μF	0.39 μF – 4.7 μF

#### COG Dielectric, 10 – 250 VDC, Commercial Off-The-Shelf (COTS) for Higher Reliability Applications

Capacitance Range: 0.5 pF to 0.47 μF • Temperature Range: -55°C to +125°C



C	1206	T	104	K	5	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812 2220	T = COTS	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 6 = 35 5 = 50 1 = 100 2 = 200 A = 250	G = COG	A = Testing per MIL-PRF-55681 PDA 8% B = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469 C = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469, Humidity per MIL-STD-202, Method 103, Condition A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	10	16	25	50	100	200	250
0402	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 2.2 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	100 pF – 330 pF	100 pF – 330 pF
0603	0.5 pF – 0.015 μF	0.5 pF – 0.015 μF	0.5 pF – 0.015 μF	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 2.2 nF	0.75 pF – 2.2 nF
0805	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.022 μF	0.5 pF – 0.015 μF	0.5 pF – 8.2 nF	0.75 pF – 8.2 nF
1206	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.082 μF	1 pF – 0.047 μF	1 pF – 0.022 μF	1 pF – 0.022 μF
1210	1 pF – 0.22 μF	1 pF – 0.22 μF	1 pF – 0.22 μF	1 pF – 0.15 μF	1 pF – 0.1 μF	1 pF – 0.047 μF	1 pF – 0.047 μF
1812				470 pF – 0.22 μF	470 pF – 0.15 μF	470 pF – 0.1 μF	470 pF – 0.1 μF
2220				6.8 nF – 0.47 μF	6.8 nF – 0.33 μF	6.8 nF – 0.22 μF	

### SnPb End Metallization (cont.)

#### X7R Dielectric, 6.3 – 250 VDC, Commercial Off-The-Shelf (COTS) for Higher Reliability Applications

Capacitance Range: 10 pF to 22 µF Temperature Range: -55°C to +125°C



C	1210	T	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1 12 2220	T = COTS	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = Testing per M L-PRF-55681 PDA 8% B = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469 C = Testing per MIL-PRF-55681 PDA 8%, DPA per EIA-469, Humidity per M L-STD-202, Method 103, Condition A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402		10 pF – 0.1 µF	10 pF – .1 µF	10 pF – 0.047 µF	10 pF – 0.022 µF			
0603	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.47 µF	10 pF – 0.22 µF	10 pF – 0.15 µF	10 pF – 0.047 µF	10 pF – 0.01 µF	
0805	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 2.2 µF	10 pF – 1 µF	10 pF – 0.68 µF	10 pF – 0.22 µF	10 pF – 0.056 µF	180 pF – 0.022 µF
1206	10 pF – 10 µF	10 pF – 10 µF	10 pF – 10 µF	10 pF – 4.7 µF	10 pF – 2.2 µF	10 pF – 0.47 µF	10 pF – 0.15 µF	1 nF – 0.1 µF
1210	10 pF – 22 µF	10 pF – 22 µF	10 pF – 10 µF	10 pF – 10 µF	10 pF – 4.7 µF	10 pF – 1 µF	10 pF – 0.22 µF	2.2 nF – 0.22 µF
1808					330 pF – 0.18 µF	330 pF – 0.056 µF	330 pF – 2.7 nF	
1812				470 pF – 10 µF	470 pF – 4.7 µF	470 pF – 1 µF	470 pF – 0.47 µF	6.8 nF – 0.47 µF
1825					0.022 µF – 1 µF	0.022 µF – 1 µF	0.022 µF – 1 µF	0.022 µF – 1 µF

#### High Temperature 150°C, Ultra-Stable X8R Dielectric, 25 – 100 VDC (Commercial & Automotive Grade)

Capacitance Range: 100 pF to 0.22 µF Temperature Range: -55°C to +150°C



C	1210	C	184	K	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	C = Standard	2 significant digits + number of zeros	F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	3 = 25 5 = 50 1 = 100	H = Ultra Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0402	100 pF – 1.5 nF	100 pF – 1.5 nF	100 pF – 1 nF
0603	430 pF – 0.01 µF	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.033 µF	2 nF – 0.022 µF	2 nF – 0.015 µF
1206	6.8 nF – 0.1 µF	6.8 nF – 0.082 µF	6.8 nF – 0.056 µF
1210	0.012 µF – 0.18 µF	0.012 µF – 0.15 µF	0.012 µF – 0.1 µF
1812		0.015 µF – 0.22 µF	0.015 µF – 0.15 µF

### SnPb End Metallization (cont.)

High Temperature 150°C, X8L Dielectric, 10 – 50 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.012  $\mu\text{F}$  to 10  $\mu\text{F}$  Temperature Range: -55°C to +150°C



C	1210	X	106	K	8	N	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	8 = 10 3 = 25 5 = 50	N = X8L	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
0402	0.012 $\mu\text{F}$ – 0.047 $\mu\text{F}$		0.012 $\mu\text{F}$ – 0.022 $\mu\text{F}$	
0603	0.047 $\mu\text{F}$ – 0.22 $\mu\text{F}$		0.047 $\mu\text{F}$ – 0.15 $\mu\text{F}$	0.047 $\mu\text{F}$
0805	0.15 $\mu\text{F}$ – 1 $\mu\text{F}$	0.82 $\mu\text{F}$ – 1 $\mu\text{F}$	0.15 $\mu\text{F}$ – 0.68 $\mu\text{F}$	0.15 $\mu\text{F}$ – 0.22 $\mu\text{F}$
1206	0.47 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.47 $\mu\text{F}$ – 2.2 $\mu\text{F}$	0.47 $\mu\text{F}$
1210	0.39 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	0.39 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.39 $\mu\text{F}$ – 1 $\mu\text{F}$

Telecom "Tip and Ring" X7R Dielectric, 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 180 pF to 1.2  $\mu\text{F}$  • Temperature Range: -55°C to +125°C



C	1825	C	105	K	A	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812 1825 2220 2225	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage
	250
0805	180 pF – 0.022 $\mu\text{F}$
1206	1 nF – 0.1 $\mu\text{F}$
1210	2.2 nF – 0.22 $\mu\text{F}$
1812	6.8 nF – 0.47 $\mu\text{F}$
1825	0.022 $\mu\text{F}$ – 1 $\mu\text{F}$
2220	0.082 $\mu\text{F}$ – 1 $\mu\text{F}$
2225	0.1 $\mu\text{F}$ – 1.2 $\mu\text{F}$

# Ceramic Capacitors

## Surface Mount

### SnPb End Metallization (cont.)

#### Open Mode Design (FO-CAP), X7R Dielectric, 16 – 200 VDC (Commercial & Automotive Grade)

Capacitance Range: 1,000 pF to 6 μF • Temperature Range: -55°C to +125°C



C	1210	J	685	K	3	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1812	F = Open Mode J = Open Mode with Flexible Termination	Two significant digits + number of zeros	K = ±10% M = ±20%	4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	16	25	50	100	200
0805	1 nF – 0.68 μF	1 nF – 0.47 μF	1 nF – 0.22 μF	1 nF – 0.068 μF	1 nF – 0.015 μF
1206	0.018 μF – 4.7 μF	0.018 μF – 2.2 μF	0.018 μF – 1 μF	0.018 μF – 0.33 μF	0.018 μF – 0.1 μF
1210	0.068 μF – 6.8 μF	0.068 μF – 6.8 μF	0.068 μF – 2.2 μF	0.068 μF – 1 μF	0.068 μF – 0.22 μF
1812		0.047 μF – 4.7 μF	0.047 μF – 4.7 μF	0.047 μF – 1 μF	0.047 μF – 0.39 μF

#### Floating Electrode Design (FE-CAP), X7R Dielectric, 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 150 pF to 0.22 μF • Temperature Range: -55°C to +125°C



C	0805	S	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	S = Floating Electrode	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0402	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF	150 pF – 1 nF			
0603	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.022 μF	180 pF – 0.012 μF	180 pF – 0.012 μF
1206	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.056 μF	1 nF – 0.027 μF	1 nF – 0.027 μF
1210	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.1 μF	2.2 nF – 0.056 μF	2.2 nF – 0.056 μF
1812				6.8 nF – 0.22 μF	6.8 nF – 0.22 μF	6.8 nF – 0.15 μF	6.8 nF – 0.082 μF	6.8 nF – 0.082 μF

### SnPb End Metallization (cont.)

#### Flexible Termination System (FT-CAP) X7R Dielectric, 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 180 pF to 22 μF • Temperature Range: -55°C to +125°C



C	1206	X	106	K	4	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec) <sup>2</sup>
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.47 μF	180 pF – 0.47 μF	180 pF – 0.47 μF	180 pF – 0.22 μF	180 pF – 0.15 μF	180 pF – 0.047 μF	180 pF – 0.01 μF	
0805	180 pF – 2.2 μF	180 pF – 2.2 μF	180 pF – 2.2 μF	180 pF – 1 μF	180 pF – 0.68 μF	180 pF – 0.22 μF	180 pF – 0.056 μF	180 pF – 0.022 μF
1206	470 pF – 10 μF	470 pF – 10 μF	470 pF – 10 μF	470 pF – 4.7 μF	470 pF – 2.2 μF	1 nF – 0.47 μF	1 nF – 0.15 μF	1 nF – 0.1 μF
1210	2.2 nF – 22 μF	2.2 nF – 22 μF	2.2 nF – 10 μF	2.2 nF – 10 μF	2.2 nF – 4.7 μF	2.2 nF – 1 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF
1808					4.7 nF – 0.18 μF	4.7 nF – 0.056 μF	4.7 nF – 0.018 μF	
1812				6.8 nF – 10 μF	6.8 nF – 4.7 μF	6.8 nF – 1 μF	6.8 nF – 0.47 μF	6.8 nF – 0.47 μF
1825					0.022 μF – 2.2 μF	0.022 μF – 1 μF	0.022 μF – 1 μF	0.022 μF – 1 μF
2220				0.082 μF – 22 μF	0.082 μF – 15 μF	0.082 μF – 1 μF	0.082 μF – 1 μF	0.082 μF – 1 μF
2225					0.047 μF – 2.2 μF	0.047 μF – 1.2 μF	0.047 μF – 1.2 μF	0.047 μF – 1.2 μF

#### Floating Electrode Design with Flexible Termination System (FF-CAP), X7R Dielectric, 6.3 – 250 VDC (Commercial & Automotive Grade)

Capacitance Range: 180 pF to 0.22 μF Temperature Range: -55°C to +125°C



C	0805	Y	104	K	5	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812	Y = Floating Electrode with Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	9 = 6.3 8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	6.3	10	16	25	50	100	200	250
0603	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 0.022 μF	180 pF – 8.2 nF	180 pF – 4.7 nF	
0805	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.1 μF	180 pF – 0.022 μF	180 pF – 0.012 μF	180 pF – 0.012 μF
1206	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.12 μF	1 nF – 0.056 μF	1 nF – 0.027 μF	1 nF – 0.027 μF
1210	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.22 μF	2.2 nF – 0.1 μF	2.2 nF – 0.056 μF	2.2 nF – 0.056 μF
1812				6.8 nF – 0.22 μF	6.8 nF – 0.22 μF	6.8 nF – 0.15 μF	6.8 nF – 0.082 μF	6.8 nF – 0.082 μF

### Bulk Capacitance

#### KPS Series, X7R Dielectric, 10 – 250 VDC (Commercial Grade)

Capacitance Range: 0.1  $\mu\text{F}$  to 47  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



C	2220	C	106	M	5	R	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	1210 1812 2220	C = Standard	Two significant digits + number of zeros	K = $\pm 10\%$ M = $\pm 20\%$	8 = 10 4 = 16 3 = 25 5 = 50 1 = 100 A = 250	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	250
1210-1	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	0.1 $\mu\text{F}$
1210-2	0.1 $\mu\text{F}$ – 47 $\mu\text{F}$	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.1 $\mu\text{F}$ – 0.22 $\mu\text{F}$
1812-1		0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.1 $\mu\text{F}$ – 1 $\mu\text{F}$	0.1 $\mu\text{F}$ – 0.47 $\mu\text{F}$
1812-2		0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 3.3 $\mu\text{F}$	0.1 $\mu\text{F}$ – 1 $\mu\text{F}$
2220-1		0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 10 $\mu\text{F}$	0.1 $\mu\text{F}$ – 3.3 $\mu\text{F}$	0.1 $\mu\text{F}$ – 1 $\mu\text{F}$
2220-2		0.1 $\mu\text{F}$ – 47 $\mu\text{F}$	0.1 $\mu\text{F}$ – 47 $\mu\text{F}$	0.1 $\mu\text{F}$ – 22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	0.1 $\mu\text{F}$ – 2.2 $\mu\text{F}$

#### KPS Series, High Voltage, X7R Dielectric, 500 – 630 VDC (Commercial Grade)

Capacitance Range: 0.047  $\mu\text{F}$  to 1.0  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



C	2220	C	105	M	C	R	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	2220	C = Standard	2 significant digits + number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	C = 500 B = 630	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	500	630
2220-1	0.1 $\mu\text{F}$ – 0.22 $\mu\text{F}$	0.1 $\mu\text{F}$ – 0.22 $\mu\text{F}$
2220-2	0.1 $\mu\text{F}$ – 0.47 $\mu\text{F}$	0.1 $\mu\text{F}$ – 0.47 $\mu\text{F}$

### Bulk Capacitance (cont.)

#### KPS HT Series, High Temperature 150°C, X8L Dielectric, 10 – 50 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.47  $\mu$ F to 47  $\mu$ F • Temperature Range: -55°C to +150°C



C	2220	C	476	M	8	N	2	C	7186
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code ( $\mu$ F)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish	Packaging/Grade (C-Spec)
	1210 2220	C = Standard	2 significant digits + number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	8 = 10 4 = 16 3 = 25 5 = 50	N = X8L	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	500	630
2220-1	0.1 $\mu$ F – 0.22 $\mu$ F	0.1 $\mu$ F – 0.22 $\mu$ F
2220-2	0.1 $\mu$ F – 0.47 $\mu$ F	0.1 $\mu$ F – 0.47 $\mu$ F

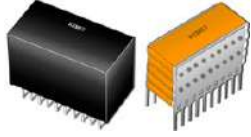
Заказ Минск тел. +375 29 7584780 мтс email m.insk.17@tut.by www.fotorele.net



### Bulk Capacitance (cont.)

#### KPS MIL Series, SMPS Stacked Capacitors, 25 – 1,000 VDC (Commercial, Military, & Space Grades)

Capacitance Range: 0.047  $\mu$ F to 75  $\mu$ F • Temperature Rang : -55°C to +125°C



L1	R	N	30	C	106	K	S	12	
Product Family <sup>1</sup>	Dielectric Classification/Characteristic <sup>2</sup>	Lead Configuration <sup>3</sup>	Case Size/Case Code (CC)	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Testing Option <sup>4</sup>	Maximum Height Dimension (in.) <sup>5</sup>	
L1 = Unencapsulated L2 = Encapsulated	Q = BQ R = BR X = BX W = X7R	N = Straight L = Formed "L" M = Formed "L" J = Formed "J" K = Formed "J"	30 = CC 3 40 = CC 4 50 = CC 5	3 = 25 5 = 50 1 = 100 2 = 200 C = 500 B = 630 D = 1,000	Two significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	B = M49470 "B" Level T = M49470 "T" Level C = DSCC87106 X = Non-Standard (Customer Specific Requirements)	Unencapsulated 12 = 0.12" 24 = 0.24" 36 = 0.36" 48 = 0.48" 65 = 0.65"	Encapsulated 27 = 0.27" 39 = 0.39" 53 = 0.53" 66 = 0.66" 80 = 0.80"

#### MIL-PRF 49470, DSCC 87106

M49470	R	01	474	K	C	N	
Performance Specification Indicating MIL-PRF-49470 <sup>1</sup>	Dielectric Classification/Characteristic <sup>2</sup>	Performance Specification Sheet Number (Indicating MIL-PRF-49470/1) <sup>3</sup>		Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Lead Configuration <sup>4</sup>
M49470 = B level T49470 = T level A "T" prefix is used in place of the "M" for T level product.	Q = BQ R = BR X = BX	01 = Unencapsulated 02 = Encapsulated		Two significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	A = 50 B = 100 C = 200 E = 500	N = Straight Pin L = Formed "L" M = Formed "L" J = Formed "J" K = Formed "J"

#### BQ

Case Size	Voltage	
	200	500
3	2.4 $\mu$ F – 27 $\mu$ F	2.2 $\mu$ F – 5.6 $\mu$ F
4	0.82 $\mu$ F – 10 $\mu$ F	0.82 $\mu$ F – 1.8 $\mu$ F
5	0.33 $\mu$ F – 3.3 $\mu$ F	0.15 $\mu$ F – 0.68 $\mu$ F

#### BX

Case Size	Voltage		
	25	50	100
3	6.8 $\mu$ F – 75 $\mu$ F	6.8 $\mu$ F – 75 $\mu$ F	10 $\mu$ F – 27 $\mu$ F
4	2.2 $\mu$ F – 24 $\mu$ F	2.2 $\mu$ F – 24 $\mu$ F	3.9 $\mu$ F – 8.2 $\mu$ F
5	0.82 $\mu$ F – 7.5 $\mu$ F	0.82 $\mu$ F – 7.5 $\mu$ F	0.68 $\mu$ F – 3.3 $\mu$ F

#### BR

Case Size	Voltage	
	100	200
3	5.6 $\mu$ F – 50 $\mu$ F	4.7 $\mu$ F – 12 $\mu$ F
4	1.5 $\mu$ F – 18 $\mu$ F	1.8 $\mu$ F – 3.9 $\mu$ F
5	0.56 $\mu$ F – 6 $\mu$ F	0.47 $\mu$ F – 1.5 $\mu$ F

#### X7R

Case Size	Voltage		
	500	630	1,000
3	1 $\mu$ F – 12 $\mu$ F	0.22 $\mu$ F – 6.8 $\mu$ F	0.1 $\mu$ F – 3.3 $\mu$ F
4	0.39 $\mu$ F – 3.9 $\mu$ F	0.1 $\mu$ F – 2.2 $\mu$ F	0.1 $\mu$ F – 1 $\mu$ F
5	0.12 $\mu$ F – 1.5 $\mu$ F	6.8 nF – 0.75 $\mu$ F	4.7 nF – 0.39 $\mu$ F

### High Temperature (> 125°C)

#### High Temperature 150°C, Ultra-Stable X8R Dielectric, 25 – 100 VDC (Commercial & Automotive Grade)

Capacitance Range: 100 pF to 0.22 µF Temperature Range: -55°C to +150°C



C	1210	C	184	K	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812	C = Standard	2 significant digits + number of zeros	F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	3 = 25 5 = 50 1 = 100	H = Ultra Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0402	100 pF – 1.5 nF	100 pF – 1.5 nF	100 pF – 1 nF
0603	430 pF – 0.01 µF	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.03 µF	2 nF – 0.022 µF	2 nF – 0.015 µF
1206	6.8 nF – 0.1 µF	6.8 nF – 0.082 µF	6.8 nF – 0.056 µF
1210	0.012 µF – 0.18 µF	0.012 µF – 0.15 µF	0.012 µF – 0.1 µF
1812		0.015 µF – 0.22 µF	0.015 µF – 0.15 µF

#### High Temperature 150°C, X8L Dielectric, 10 – 50 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.012 µF to 10 µF Temperature Range: -55°C to +150°C



C	1210	X	106	K	8	N	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210	C = Standard X = Flexible Termination	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	8 = 10 3 = 25 5 = 50	N = X8L	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
0402	0.012 µF – 0.047 µF		0.012 µF – 0.022 µF	
0603	0.047 µF – 0.22 µF		0.047 µF – 0.15 µF	0.047 µF
0805	0.15 µF – 1 µF	0.82 µF – 1 µF	0.15 µF – 0.68 µF	0.15 µF – 0.22 µF
1206	0.47 µF – 4.7 µF	2.7 µF – 4.7 µF	0.47 µF – 2.2 µF	0.47 µF
1210	0.39 µF – 10 µF	5.6 µF – 10 µF	0.39 µF – 4.7 µF	0.39 µF – 1 µF

# Ceramic Capacitors

## Surface Mount

### High Temperature (> 125°C) (cont.)

#### High Temperature 200°C, COG Dielectric, 10 – 200 VDC (Industrial Grade)

Capacitance Range: 0.5 pF to 0.47 μF • Temperature Range: -55°C to +200°C



C	1210	H	124	J	5	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Voltage	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0402 0603 0805 1206 1210 1812 2220	H = High Temperature (200 C)	2 significant digits + number of zeros. Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	8 = 0 V 4 = 16 V 3 = 25 V 5 = 50 V 1 = 100 V 2 = 200 V	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum) E = Gold (Au) 1.97 – 11.8 μin F = Gold (Au) 30 – 50 μin G = Gold (Au) 100 μin minimum	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage					
	10	16	25	50	100	200
0402	0.5 pF – 1.5 nF	0.5 pF – 1.5 nF	0.5 pF – 1.5 nF	0.5 pF – 1.5 nF	100 pF – 1 nF	
0603	0.5 pF – 0.01 μF	0.5 pF – 0.01 μF	0.5 pF – 0.01 μF	0.5 pF – 6.8 nF	0.5 pF – 4.7 nF	0.5 pF – 180 pF
0805	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.047 μF	0.5 pF – 0.022 μF	0.5 pF – 0.015 μF	0.5 pF – 1 nF
1206	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.1 μF	1 pF – 0.082 μF	1 pF – 0.047 μF	1 pF – 2.7 nF
1210	1 pF – 0.15 μF	1 pF – 0.15 μF	1 pF – 0.15 μF	1 pF – 0.15 μF	1 pF – 0.1 μF	1 pF – 5.6 nF
1812	0.015 μF – 0.22 μF	0.015 μF – 0.22 μF	0.015 μF – 0.22 μF	0.015 μF – 0.22 μF	0.015 μF – 0.15 μF	
2220	0.47 μF	0.47 μF	0.47 μF	0.47 μF		

#### HV-HT Series, High Voltage, High Temperature 200°C, COG Dielectric, 500 – 2,000 VDC (Industrial Grade)

Capacitance Range: 1 pF to 0.039 μF • Temperature Range: -55°C to +200°C



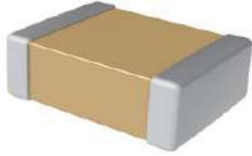
C	2225	H	393	J	C	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	H = High Temperature (200 C)	2 significant digits + number of zeros.	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum) E = Gold (Au) 1.97 – 11.8 μin F = Gold (Au) 30 – 50 μin G = Gold (Au) 100 μin minimum	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	500	630	1,000	1,500	2,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF		
1206	10 pF – 2.7 nF	10 pF – 1.8 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF
1210	10 pF – 8.2 nF	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF
1812	10 pF – 0.015 μF	10 pF – 0.01 μF	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF
1825	10 pF – 0.033 μF	10 pF – 0.018 μF	10 pF – 0.01 μF	10 pF – 5.6 nF	10 pF – 3 nF
2220	10 pF – 0.033 μF	10 pF – 0.027 μF	10 pF – 0.012 μF	10 pF – 6.8 nF	10 pF – 3.9 nF
2225	10 pF – 0.039 μF	10 pF – 0.027 μF	10 pF – 0.015 μF	10 pF – 6.8 nF	10 pF – 3.9 nF

### High Temperature (> 125°C) (cont.)

#### Flexible Termination System (FT-CAP), Ultra-Stable X8R Dielectric, 25 – 100 VDC (Commercial & Automotive Grade)

Capacitance Range: 430 pF to 0.22 μF Temperature Range: -55°C to +150°C



C	1206	X	104	J	3	H	A	C	AUTO
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1812	X = Flexible Termination	2 significant digits + number of zeros.	F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	3 = 25 5 = 50 1 = 100	H = Ultra-Stable X8R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	25	50	100
0603	430 pF – 0.01 μF	430 pF – 6.8 nF	430 pF – 4.7 nF
0805	2 nF – 0.033 μF	2 nF – 0.022 μF	2 nF – 0.015 μF
1206	6.8 nF – 0.1 μF	6.8 nF – 0.082 μF	6.8 nF – 0.056 μF
1210	0.012 μF – 0.18 μF	0.012 μF – 0.15 μF	0.012 μF – 0.1 μF
1812		0.015 μF – 0.22 μF	0.015 μF – 0.15 μF

#### High Temperature 175°C, X7R Dielectric, 16 – 200 VDC (Industrial Grade)

Capacitance Range: 2.7 nF to 3.3 μF • Temperature Range: -55°C to +175°C



C	1210	R	225	K	3	R	A	C	T050
Ceramic	Case Size <sup>1</sup> (L" x W")	Specification/ Series <sup>1</sup>	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Packaging/Grade (C-Spec) <sup>2</sup>
	0402 0603 0805 1206 1210 1812	G = 175 C with standard termination R = 175 C w/ Flexible Termination	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	4 = 16 3 = 25 5 = 50 1 = 100 2 = 200	R = X7R	A = N/A	C = 100% Matte Sn	Blank = Bulk 7292 = Waffle Pack/Tray TU = 7" Reel - Unmarked (full reel quantity) T050 = 50 pieces/7" Reel - Unmarked T100 = 100 pieces/7" Reel - Unmarked T250 = 250 pieces/7" Reel - Unmarked T500 = 500 pieces/7" Reel - Unmarked T1K0 = 1,000 pieces/Reel - Unmarked

Case Size	Voltage			
	16	25	50	200
0402	2.7 nF – 0.047 μF	2.7 nF – 0.022 μF	2.7 nF – 0.01 μF	
0603		0.018 μF – 0.15 μF	0.018 μF – 0.1 μF	
0805		0.047 μF – 0.68 μF	0.047 μF – 0.27 μF	
1206		0.1 μF – 1 μF	0.1 μF – 0.47 μF	
1210		0.18 μF – 2.2 μF	0.18 μF – 1 μF	
1812		0.22 μF – 3.3 μF	0.22 μF – 1.5 μF	0.056 μF – 0.1 μF

### High Temperature (> 125°C) (cont.)

#### KPS HT Series, High Temperature 150°C, X8L Dielectric, 10 – 50 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.47 µF to 47 µF • Temperature Range: -55°C to +150°C



C	2220	C	476	M	8	N	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish	Packaging/Grade (C-Spec)
	1210 2220	C = Standard	2 significant digits + number of zeros.	K = ±10% M = ±20%	8 = 10 4 = 16 3 = 25 5 = 50	N = X8L	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	10	16	25	50
1210-1	0.47 µF – 4.7 µF	0.47 µF – 4.7 µF	0.47 µF – 4.7 µF	0.47 µF – 1 µF
1210-2	1 µF – 10 µF	1 µF – 10 µF	1 µF – 10 µF	1 µF – 2.2 µF
2220-1	2.2 µF – 22 µF	2.2 µF – 10 µF	2.2 µF – 10 µF	
2220-2	4.7 µF – 47 µF	4.7 µF – 22 µF	4.7 µF – 22 µF	

#### Pulse Discharge, High Voltage, High Temperature 200°C, C0G Dielectric, 500 – 2,000 VDC (Industrial Grade)

Capacitance Range: 0.5 pF to 0.15 µF • Temperature Range: -55°C to +200°C



Contact KEMET for ordering information									
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC) <sup>1</sup>	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec) <sup>3</sup>
	2824 3040 3640 4540	H= High Temp (200 C)	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000	G = C0G	W = Pulse Discharge	C = 100% Matte Sn	Contact KEMET for packaging availability and details

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### High Voltage (> 500 V)

#### ArcShield™ Technology, High Voltage, X7R Dielectric, 500 – 1,000 VDC (Commercial & Automotive Grade)

Capacitance Range: 2,200 pF to 0.33 μF • Temperature Range: -55°C to +125°C



C	0603	W	392	K	C	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>1</sup>	Packaging/ Grade (C-Spec) <sup>2</sup>
	0603 0805 1206 1210 1808 1812 1825 2220 2225	V = ArcShield W = ArcShield with Flexible Termination	Two significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% PB minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage		
	500	630	1,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF
0805	2.2 nF – 0.022 μF	2.2 nF – 0.012 μF	2.2 nF – 4.7 nF
1206	0.012 μF – 0.068 μF	0.012 μF – 0.033 μF	0.012 μF – 0.022 μF
1210	0.022 μF – 0.15 μF	0.022 μF – 0.1 μF	0.022 μF – 0.068 μF
1808	0.018 μF – 0.15 μF	0.018 μF – 0.1 μF	0.018 μF – 0.068 μF
1812	0.027 μF – 0.33 μF	0.027 μF – 0.15 μF	0.027 μF – 0.1 μF
1825	0.12 μF – 0.39 μF	0.12 μF – 0.27 μF	
2220	0.15 μF – 0.47 μF	0.15 μF – 0.33 μF	
2225	0.18 μF – 0.56 μF	0.18 μF – 0.47 μF	

#### High Voltage COG Dielectric, 500 – 3,000 VDC (Commercial Grade)

Capacitance Range: 1 pF to 0.039 μF • Temperature Range: -55°C to +125°C



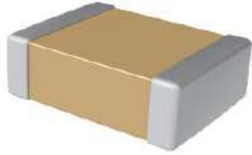
C	1210	G	332	J	C	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/ Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros.	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage							
	500	630	1,000	1,500	2,000	2,500	3,000	
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF					
1206	10 pF – 4.7 nF	10 pF – 4.7 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF			
1210	10 pF – 8.2 nF	10 pF – 6.8 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF			
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF	1 pF – 390 pF	1 pF – 180 pF	
1812	10 pF – 0.015 μF	10 pF – 0.01 μF	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF	10 pF – 680 pF	10 pF – 390 pF	
1825	10 pF – 0.033 μF	10 pF – 0.018 μF	10 pF – 0.01 μF	10 pF – 5.6 nF	10 pF – 3 nF	10 pF – 1.6 nF	10 pF – 680 pF	
2220	10 pF – 0.033 μF	10 pF – 0.027 μF	10 pF – 0.012 μF	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 1.8 nF	10 pF – 1 nF	
2225	10 pF – 0.039 μF	10 pF – 0.027 μF	10 pF – 0.015 μF	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF	

### High Voltage (> 500 V) (cont.)

#### High Voltage X7R Dielectric, 500 – 3,000 VDC (Commercial Grade)

Capacitance Range: 10 pF to 0.56 µF • Temperature Range: -55°C to +125°C



C	1210	C	154	K	C	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate Design	Termination Finish <sup>1</sup>	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	C = Standard	Two significant digits + number of zeros.	J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF				
0805	10 pF – 0.022 µF	10 pF – 0.012 µF	10 pF – 4.7 nF				
1206	10 pF – 0.068 µF	10 pF – 0.033 µF	10 pF – 0.022 µF	10 pF – 0.01 µF	10 pF – 2.2 nF		
1210	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.068 µF	10 pF – 0.039 µF	10 pF – 6.8 nF		
1808	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.068 µF	10 pF – 0.015 µF	10 pF – 4.7 nF	10 pF – 2.2 nF	10 pF – 1 nF
1812	10 pF – 0.33 µF	10 pF – 0.15 µF	10 pF – 0.1 µF	10 pF – 0.033 µF	10 pF – 0.01 µF	10 pF – 4.7 nF	10 pF – 1.2 nF
1825	100 pF – 0.39 µF	100 pF – 0.27 µF	100 pF – 0.1 µF	100 pF – 0.068 µF	100 pF – 0.015 µF	100 pF – 0.01 µF	100 pF – 2.2 nF
2220	100 pF – 0.47 µF	100 pF – 0.33 µF	100 pF – 0.12 µF	100 pF – 0.082 µF	100 pF – 0.022 µF	100 pF – 0.015 µF	100 pF – 0.015 µF
2225	100 pF – 0.56 µF	100 pF – 0.47 µF	100 pF – 0.15 µF	100 pF – 0.1 µF	100 pF – 0.027 µF	100 pF – 0.015 µF	100 pF – 0.015 µF

#### High Voltage with Flexible Termination System (HV FT-CAP), C0G Dielectric, 500 – 3,000 VDC (Commercial Grade)

Capacitance Range: 1 pF to 0.039 µF • Temperature Range: -55°C to +125°C



C	2225	X	393	J	C	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	Two significant digits + number of zeros.	B = ±0.10 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = C0G	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF				
1206	10 pF – 4.7 nF	10 pF – 4.7 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF		
1210	10 pF – 8.2 nF	10 pF – 6.8 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF		
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF	1 pF – 390 pF	1 pF – 180 pF
1812	10 pF – 0.015 µF	10 pF – 0.01 µF	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF	10 pF – 680 pF	10 pF – 390 pF
1825	9.1 nF – 0.033 µF	5.1 nF – 0.018 µF	5.1 nF – 0.01 µF	2 nF – 5.6 nF	1.3 nF – 3 nF	1.1 nF – 1.6 nF	430 pF – 680 pF
2220	10 pF – 0.033 µF	10 pF – 0.027 µF	10 pF – 0.012 µF	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 1.8 nF	10 pF – 1 nF
2225	10 pF – 0.039 µF	10 pF – 0.027 µF	10 pF – 0.015 µF	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF

### High Voltage (> 500 V) (cont.)

#### High Voltage with Flexible Termination System (HV FT-CAP) X7R Dielectric, 500 – 3,000 VDC (Commercial Grade)

Capacitance Range: 10 pF to 0.56  $\mu$ F • Temperature Range: -55°C to +125°C



C	1210	X	154	K	C	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Packaging/Grade (C-Spec)
	0603 0805 1206 1210 1808 1812 1825 2220 2225	X = Flexible Termination	Two significant digits + number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum)	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage						
	500	630	1,000	1,500	2,000	2,500	3,000
0603	1 nF – 3.9 nF	1 nF – 1.5 nF	1 nF				
0805	10 pF – 0.022 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 5.6 nF				
1206	10 pF – 0.068 $\mu$ F	10 pF – 0.033 $\mu$ F	10 pF – 0.022 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 2.2 nF		
1210	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.039 $\mu$ F	10 pF – 6.8 nF		
1808	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 4.7 nF	10 pF – 2.2 nF	10 pF – 1 nF
1812	51 pF – 0.33 $\mu$ F	51 pF – 0.15 $\mu$ F	51 pF – 0.1 $\mu$ F	51 pF – 0.033 $\mu$ F	51 pF – 0.01 $\mu$ F	51 pF – 4.7 nF	51 pF – 1.2 nF
1825	470 pF – 0.39 $\mu$ F	470 pF – 0.27 $\mu$ F	470 pF – 0.1 $\mu$ F	470 pF – 0.068 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.01 $\mu$ F	470 pF – 3.3 nF
2220	470 pF – 0.47 $\mu$ F	470 pF – 0.33 $\mu$ F	470 pF – 0.12 $\mu$ F	470 pF – 0.082 $\mu$ F	470 pF – 0.022 $\mu$ F	470 pF – 0.015 $\mu$ F	470 pF – 0.015 $\mu$ F
2225	680 pF – 0.56 $\mu$ F	680 pF – 0.47 $\mu$ F	680 pF – 0.15 $\mu$ F	680 pF – 0.1 $\mu$ F	680 pF – 0.027 $\mu$ F	680 pF – 0.015 $\mu$ F	680 pF – 0.015 $\mu$ F

#### KPS Series, High Voltage, X7R Dielectric, 500 – 630 VDC (Commercial Grade)

Capacitance Range: 0.047  $\mu$ F to 1.0  $\mu$ F • Temperature Range: -55°C to +125°C



C	2220	C	105	M	C	R	2	C	7186
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Leadframe Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	2220	C = Standard	2 significant digits + number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630	R = X7R	1 = KPS Single Chip Stack 2 = KPS Double Chip Stack	C = 100% Matte Sn	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage	
	500	630
2220-1	0.047 $\mu$ F – 0.47 $\mu$ F	0.047 $\mu$ F – 0.22 $\mu$ F
2220-2	0.1 $\mu$ F – 1 $\mu$ F	0.1 $\mu$ F – 0.47 $\mu$ F



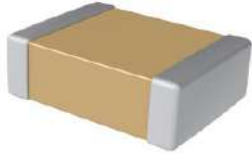
# Ceramic Capacitors

## Surface Mount

### High Voltage (> 500 V) (cont.)

#### HV-HT Series, High Voltage, High Temperature 200°C, COG Dielectric, 500 – 2,000 VDC (Industrial Grade)

Capacitance Range: 1 pF to 0.039  $\mu$ F Temperature Range: -55°C to +200°C

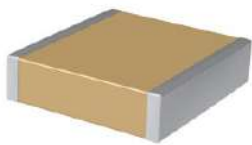


C	2225	H	393	J	C	G	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Failure Rate/ Desig	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
	0805 1206 1210 1808 181 1825 2220 2225	H= High Temperature (200 C)	2 significant digits + number of zeros	B = $\pm$ 0.1 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000	G = COG	A = N/A	C = 100% Matte Sn L = SnPb (5% Pb minimum) E = Gold (Au) 1.97 – 11.8 $\mu$ in F = Gold (Au) 30 – 50 $\mu$ in G = Gold (Au) 100 $\mu$ in minimum	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage				
	500	630	1,000	1,500	2,000
0805	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF		
1206	10 pF – 2.7 nF	10 pF – 1.8 nF	10 pF – 1 nF	10 pF – 560 pF	10 pF – 270 pF
1210	10 pF – 8.2 nF	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF
1808	1 pF – 6.8 nF	1 pF – 4.7 nF	1 pF – 2.7 nF	1 pF – 1.5 nF	1 pF – 680 pF
1812	10 pF – 0.015 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 2.7 nF	10 pF – 1.5 nF
1825	10 pF – 0.033 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.01 $\mu$ F	10 pF – 5.6 nF	10 pF – 3 nF
2220	10 pF – 0.033 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF
2225	10 pF – 0.039 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF

#### Pulse Discharge, High Voltage, High Temperature 200°C, COG Dielectric, 500 – 2,000 VDC (Industrial Grade)

Capacitance Range: 0.5 pF to 0.15  $\mu$ F Temperature Range: -55°C to +200°C



Contact KEMET for ordering information									
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC) <sup>1</sup>	Dielectric	Failure Rate/ Design	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec) <sup>3</sup>
	2824 3040 3640 4540	H= High Temp (200 C)	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000	G = COG	W = Pulse Discharge	C = 100% Matte Sn	Contact KEMET for packaging availability and details

### High Voltage (> 500 V) (cont.)

KPS HV, Large Case, SM Series, C0G Dielectric, 500 – 10,000 VDC (Industrial Grade)

Capacitance Range: 10 pF to 0.39 µF • Temperature Range: -55°C to +125°C



SM20		N	472	J	501	B	M
Style/Size		Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Lead Configuration <sup>1</sup>	Testing/ Inspection Option <sup>2</sup>
SM20	SM30	N = C0G	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	501 = 500	A = Formed "L" B = Formed "J"	Blank = None M = Group A per MIL-PRF-49467
SM21	SM31				102 = 1,000		
SM22	SM33				202 = 2,000		
SM23	SM34				302 = 3,000		
SM24	SM35				402 = 4,000		
SM25	SM36				502 = 5,000		
SM26					752 = 7,500		
			103 = 10,000				

Case Size	Voltage							
	500	1,000	2,000	3,000	4,000	5,000	7,500	10,000
SM20	39 pF – 2.7 nF	39 pF – 2.7 nF	39 pF – 820 pF	39 pF – 270 pF				
SM21	39 pF – 4.7 nF	39 pF – 4.7 nF	22 pF – 1.8 nF	22 pF – 560 pF				
SM22	33 pF – 0.018 µF	33 pF – 6.8 nF	33 pF – 3.3 nF	33 pF – 1.2 nF				
SM23	82 pF – 0.033 µF	82 pF – 0.015 µF	82 pF – 5.6 nF	82 pF – 2.2 nF	82 pF – 680 pF			
SM24	56 pF – 0.068 µF	56 pF – 0.047 µF	56 pF – 0.01 µF	56 pF – 4.7 nF	27 pF – 1.5 nF	27 pF – 1.5 nF		
SM25	270 pF – 0.047 µF	270 pF – 0.047 µF	180 pF – 0.012 µF	180 pF – 5.6 nF	180 pF – 1.8 nF	180 pF – 1.8 nF		
SM26	180 pF – 0.068 µF	180 pF – 0.068 µF	180 pF – 0.022 µF	180 pF – 8.2 nF	100 pF – 3.9 nF	100 pF – 3.9 nF		
SM30	15 pF – 5.6 nF	15 pF – 5.6 nF	15 pF – 1.8 nF	15 pF – 680 pF	10 pF – 120 pF			
SM31	27 pF – 0.033 µF	27 pF – 0.012 µF	27 pF – 5.6 nF	27 pF – 1.5 nF	22 pF – 180 pF	22 pF – 180 pF		
SM33	82 pF – 0.1 µF	82 pF – 0.047 µF	82 pF – 0.018 µF	82 pF – 6.8 nF	82 pF – 2.7 nF	27 pF – 2.7 nF	27 pF – 1 nF	
SM34	68 pF – 0.15 µF	68 pF – 0.056 µF	56 pF – 0.022 µF	56 pF – 0.015 µF	47 pF – 2.7 nF	47 pF – 2.7 nF	39 pF – 1 nF	39 pF – 560 pF
SM35	150 pF – 0.27 µF	150 pF – 0.15 µF	150 pF – 0.047 µF	150 pF – 0.022 µF	150 pF – 3.9 nF	150 pF – 3.9 nF	150 pF – 1.8 nF	47 pF – 1 nF
SM36	150 pF – 0.39 µF	150 pF – 0.15 µF	150 pF – 0.056 µF	150 pF – 0.033 µF	120 pF – 0.01 µF	120 pF – 6.8 nF	120 pF – 3.3 nF	1 nF – 1.5 nF

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### High Voltage (> 500 V) (cont.)

#### KPS HV, Large Case, SM Series, X7R Dielectric, 500 – 10,000 VDC (Industrial Grade)

Capacitance Range: 150 pF to 5.6  $\mu$ F • Temperature Range: -55°C to +125°C



SM20		B	153	K	501	B	M
Style/Size		Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Lead Configuration <sup>1</sup>	Testing/ Inspection Option <sup>2</sup>
SM20	SM30	B = X7R	2 significant digits + number of zeros	K = $\pm$ 10% M = $\pm$ 20%	501 = 500	A = Formed "L" B = Formed "J"	Blank = None M = Group A per M L-PRF-49467
SM21	SM31				102 = 1,000		
SM22	SM33				202 = 2,000		
SM23	SM34				302 = 3,000		
SM24	SM35				402 = 4,000		
SM25	SM36				502 = 5,000		
SM26					752 = 7,500 103 = 10,000		

Case Size	Voltage							
	500	1,000	2,000	3,000	4,000	5,000	7,500	10,000
SM20	330 pF – 0.1 $\mu$ F	330 pF – 0.022 $\mu$ F	330 pF – 3.9 nF					
SM21	820 pF – 0.18 $\mu$ F	820 pF – 0.068 $\mu$ F	820 pF – 0.012 $\mu$ F	820 pF – 4.7 nF				
SM22	680 pF – 0.27 $\mu$ F	680 pF – 0.1 $\mu$ F	680 pF – 0.015 $\mu$ F	680 pF – 5.6 nF				
SM23	1 nF – 0.56 $\mu$ F	1 nF – 0.27 $\mu$ F	1 nF – 0.033 $\mu$ F	1 nF – 0.015 $\mu$ F	1 nF – 6.8 nF			
SM24	1 nF – 1.2 $\mu$ F	1 nF – 0.47 $\mu$ F	1 nF – 0.1 $\mu$ F	1 nF – 0.033 $\mu$ F	1 nF – 0.012 $\mu$ F	1 nF – 6.8 nF		
SM25	2.2 nF – 1.8 $\mu$ F	2.2 nF – 0.47 $\mu$ F	2.2 nF – 0.12 $\mu$ F	2.2 nF – 0.047 $\mu$ F	2.2 nF – 0.015 $\mu$ F	2.2 nF – 0.01 $\mu$ F		
SM26	2.2 nF – 2.9 $\mu$ F	2.2 nF – 1 $\mu$ F	2.2 nF – 0.18 $\mu$ F	2.2 nF – 0.1 $\mu$ F	3.9 nF – 0.033 $\mu$ F	3.9 nF – 0.015 $\mu$ F		
SM30	150 pF – 0.18 $\mu$ F	150 pF – 0.056 $\mu$ F	150 pF – 0.01 $\mu$ F	150 pF – 3.3 nF	150 pF – 1.5 nF			
SM31	680 pF – 0.39 $\mu$ F	680 pF – 0.1 $\mu$ F	680 pF – 0.022 $\mu$ F	680 pF – 8.2 nF	680 pF – 3.9 nF	680 pF – 1.5 nF		
SM33	820 pF – 1.5 $\mu$ F	820 pF – 0.68 $\mu$ F	820 pF – 0.082 $\mu$ F	820 pF – 0.039 $\mu$ F	820 pF – 0.012 $\mu$ F	820 pF – 6.8 nF	820 pF – 4.7 nF	
SM34	1 nF – 2.2 $\mu$ F	1 nF – 1 $\mu$ F	1 nF – 0.27 $\mu$ F	1 nF – 0.082 $\mu$ F	1 nF – 0.033 $\mu$ F	1 nF – 0.022 $\mu$ F	1 nF – 6.8 nF	1 nF – 5.6 nF
SM35	3.3 nF – 3.9 $\mu$ F	3.3 nF – 1.2 $\mu$ F	3.3 nF – 0.27 $\mu$ F	3.3 nF – 0.1 $\mu$ F	3.3 nF – 0.047 $\mu$ F	3.3 nF – 0.027 $\mu$ F	3.3 nF – 0.01 $\mu$ F	1 nF – 6.8 nF
SM36	4.7 nF – 5.6 $\mu$ F	4.7 nF – 2.2 $\mu$ F	4.7 nF – 0.33 $\mu$ F	4.7 nF – 0.15 $\mu$ F	4.7 nF – 0.068 $\mu$ F	4.7 nF – 0.033 $\mu$ F	4.7 nF – 0.022 $\mu$ F	1.5 nF – 0.01 $\mu$ F

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### Aerospace & Defense

#### MIL-PRF-123, BP & BX Dielectric, 50 – 100 VDC

Capacitance Range: 1 pF to 1  $\mu$ F • Temperature Range: -55°C to +125°C



C	0805	Z	101	K	5	G	A	L	A
Ceramic	Style/Size	Specification/Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/Design	Termination Finish	Failure Rate
	0805 1206 1210 1808 1812 1825 2225	Z = MIL-PRF-123	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = $\pm 0.25$ pF D = $\pm 0.5$ pF F = $\pm 1\%$ J = $\pm 5\%$ K = $\pm 10\%$	5 = 50 1 = 100	G = BP (Ultra-stable) X = BX (Stable)	A = N/A	H = Nickel guarded, (solder coated) L = 70/30 SnPb plated	A = N/A

#### MIL PRF-123

M123	A	10	BX	B	472	K	Z
Series	Specification/Series	Style/Size	Dielectric	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Termination Finish
M123 = MIL-PRF	A = Indicates the latest characteristics of the part in the specification sheet.	10 = 0805 11 = 1210 12 = 1808 13 = 2225 21 = 1206 22 = 1812 23 = 1825	BP = G (Ultra-stable) BX = X (Stable)	B = 50 C = 100	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = $\pm 0.25$ pF D = $\pm 0.5$ pF F = $\pm 1\%$ J = $\pm 5\%$ K = $\pm 10\%$	Z = 70/30 SnPb plated S = Nickel guarded, (solder coated)

#### BP

Case Size	Voltage	
	50	100
805	1 pF – 680 pF	1 pF – 470 pF
1206	1.1 nF – 2.7 nF	1 pF – 1 nF
1210	300 pF – 3.3 nF	300 pF – 2.2 nF
1808	300 pF – 1 nF	300 pF – 1 nF
1812	5.1 nF – 0.01 $\mu$ F	1.2 nF – 4.7 nF
1825	0.011 $\mu$ F – 0.022 $\mu$ F	3.9 nF – 0.01 $\mu$ F
2225	1.1 nF – 0.01 $\mu$ F	

#### BX

Case Size	Voltage	
	50	100
805	330 pF – 0.018 $\mu$ F	330 pF – 4.7 nF
1206	0.018 $\mu$ F – 0.039 $\mu$ F	4.7 nF – 0.015 $\mu$ F
1210	5.6 nF – 0.1 $\mu$ F	5.6 nF – 0.027 $\mu$ F
1808	5.6 nF – 0.1 $\mu$ F	5.6 nF – 0.033 $\mu$ F
1812	0.1 $\mu$ F – 0.18 $\mu$ F	0.027 $\mu$ F – 0.056 $\mu$ F
1825	0.18 $\mu$ F – 0.47 $\mu$ F	0.056 $\mu$ F – 0.15 $\mu$ F
2225	0.12 $\mu$ F – 1 $\mu$ F	

### Aerospace & Defense (cont.)

#### GR900 High Reliability Series, BP & BX Dielectric, 16 – 200 VDC

Capacitance Range: 1 pF to 1  $\mu$ F Temperature Range: -55°C to +125°C



C	0805	A	103	K	5	X	A	C	A
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Failure Rate
	0504 0805 1005 1206 1210 1805 1808 1812 1825 2225	A = GR900 Q = Q-Spec	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = $\pm 0.25$ pF D = $\pm 0.5$ pF F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	1 = 100 2 = 200 3 = 25 4 = 16 5 = 50	G = BP (Ultra-stable) X = BX (Stable)	A = N/A	C = 100% Tin plated H = 60/40 SnPb coated L = 70/30 SnPb plated G = Gold plated	A = N/A

#### BP

Case Size	Voltage			
	16	50	100	200
0504		150 pF – 180 pF	91 pF – 130 pF	1 pF – 82 pF
0805		510 pF – 560 pF	240 pF – 470 pF	1 pF – 220 pF
1005		910 pF – 1.2 nF	510 pF – 820 pF	1 pF – 470 pF
1206	4.7 nF – 5.6 nF	1.8 nF – 2 nF	510 pF – 1.6 nF	10 pF – 470 pF
1210	0.01 $\mu$ F	3.6 nF	1.1 nF – 3.3 nF	10 pF – 1 nF
1805		1.6 nF – 2.2 nF	510 pF – 1.5 nF	220 pF – 470 pF
1808		5.1 nF – 5.6 nF	1.6 nF – 4.7 nF	330 pF – 1.5 nF
1812		7.5 nF – 0.01 $\mu$ F	3 nF – 6.8 nF	330 pF – 2.7 nF
1825		0.02 $\mu$ F – 0.022 $\mu$ F	6.2 nF – 0.018 $\mu$ F	2.7 nF – 5.6 nF
2225		0.024 $\mu$ F – 0.033 $\mu$ F	9.1 nF – 0.022 $\mu$ F	2.7 nF – 8.2 nF

#### BX

Case Size	Voltage				
	16	25	50	100	200
0504			1.5 nF – 6.8 nF	360 pF – 1.2 nF	220 pF – 330 pF
0805		0.1 $\mu$ F	5.6 nF – 0.047 $\mu$ F	1 nF – 4.7 nF	180 pF – 820 pF
1005			0.012 $\mu$ F – 0.022 $\mu$ F	2.2 nF – 0.01 $\mu$ F	330 pF – 1.8 nF
1206			0.018 $\mu$ F – 0.15 $\mu$ F	5.6 nF – 0.015 $\mu$ F	470 pF – 4.7 nF
1210	0.47 $\mu$ F	0.33 $\mu$ F	0.039 $\mu$ F – 0.1 $\mu$ F	0.012 $\mu$ F – 0.1 $\mu$ F	470 pF – 0.01 $\mu$ F
1805			0.018 $\mu$ F – 0.047 $\mu$ F	4.7 nF – 0.018 $\mu$ F	1.2 nF – 3.9 nF
1808			0.039 $\mu$ F – 0.1 $\mu$ F	0.012 $\mu$ F – 0.047 $\mu$ F	2.2 nF – 0.01 $\mu$ F
1812			0.082 $\mu$ F – 0.18 $\mu$ F	0.022 $\mu$ F – 0.082 $\mu$ F	6.8 nF – 0.018 $\mu$ F
1825			0.18 $\mu$ F – 0.47 $\mu$ F	0.056 $\mu$ F – 0.18 $\mu$ F	0.01 $\mu$ F – 0.047 $\mu$ F
2225			0.22 $\mu$ F – 1 $\mu$ F	0.056 $\mu$ F – 0.18 $\mu$ F	0.018 $\mu$ F – 0.047 $\mu$ F

### Aerospace & Defense (cont.)

#### MIL-PRF-55681, BP & BX Dielectric, 50 – 100 VDC

Capacitance Range: 1 pF to 0.47 μF Temperature Range: -55°C to +125°C



C	0805	P	101	K	1	G	M	L	A
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Failure Rate/ Design	Termination Finish	Failure Rate
	0805 1206 121 1805 1808 1 12 1825 2225	P = MI - PRF-55681 (CDR01 - CDR06) N = MI - PRF-55681 (CDR31 - CDR35)	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% J = ±5% K = ±1 % M = ±20%	5 = 50 1 = 100	G = BP (COG, NP0) X = BX (X7R)	M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	C = 1 0% Tin plated H = 60/4 L = 70/30 SnPb plated	A = N/A

#### MIL-PRF-55681

CDR	01	B	P	101	B	K	Z	M	A
Series	Style/Size	Temperature ( C )	Dielectric	Capacitance Code (pF)	Rated Voltage (VDC)	Capacitance Tolerance	Termination Finish	Failure Rate/ Design	Failure Rate
C = Ceramic D = Dielectric, Fixed Chip R = Established Reliability	01 = 0805 02 = 1805 03 = 1808 04 = 1812 05 = 1825 06 = 2225 31 = 0805 32 = 1206 33 = 1210 34 = 1812 35 = 1825	B = -55 to +125	P = G (BP, COG) X = BX (X7R)	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	A = 50 B = 100	B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% J = ±5% K = ±10% M = ±20%	S = Solder coated U = Base metallization, (solder coated) W = Base metallization, (Tin/Lead alloy) Y = Base metallization, (100% Tin) Z = Base metallization, metal-tinned (Tin/Lead alloy)	M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	A = N/A

#### BP

Case Size	Voltage	
	50	100
0805	510 pF – 680 pF	1 pF – 470 pF
1206	1.1 nF – 2.2 nF	1 pF – 1 nF
1210	2.4 nF – 3.3 nF	1 nF – 2.2 nF
1805		220 pF – 270 pF
1808		330 pF – 1 nF
1812	5.1 nF – 0.01 μF	1.2 nF – 4.7 nF
1825	0.011 μF – 0.022 μF	3.9 nF – 0.01 μF
2225		6.8 nF – 0.01 μF

#### BX

Case Size	Voltage	
	50	100
0805	3.9 nF – 0.018 μF	120 pF – 4.7 nF
1206	0.018 μF – 0.039 μF	4.7 nF – 0.015 μF
1210	0.039 μF – 0.1 μF	0.015 μF – 0.027 μF
1805	0.012 μF – 0.022 μF	3.9 nF – 0.01 μF
1808	0.039 μF – 0.068 μF	0.012 μF – 0.033 μF
1812	0.082 μF – 0.18 μF	0.027 μF – 0.056 μF
1825	0.18 μF – 0.47 μF	0.056 μF – 0.15 μF
2225	0.39 μF – 0.47 μF	

### Aerospace & Defense (cont.)

#### DLA Drawing 03028 BR & BX Dielectric, 6.3 – 200 VDC, 0603 Case Size (1608 Metric)

Capacitance Range: 100 pF to 0.1  $\mu$ F • Temperature Range: -55°C to +125°C



03028	BX	104	Y	J	Z	C	7189
Series	Dielectric	Capacitance Code (pF)	Rated Voltage (VDC)	Capacitance Tolerance	Termination Finish <sup>1</sup>	Screening Option	Packaging/Grade (C-Spec) <sup>2</sup>
03028 = DSCC Drawing Number (0603 case size)	BR BX	2 significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	W = 6.3 X = 10 Y = 16 Z = 25 A = 50 B = 100 C = 200	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	U = SnPb (4% Pb minimum) Z = SnPb (4% Pb minimum)	Blank = No group C testing C = Full Group C L = 2,000 hour life test only M = 1,000 hour life test only H = Low voltage humidity only	Blank = Bulk bag 7246 = Anti-static bulk bag 7292 = Waffle pack 7189 = 7" Reel marked

#### BR

Case Size	Voltage						
	6.3	10	16	25	50	100	200
0603	100 pF - 0.1 $\mu$ F	100 pF - 0.1 $\mu$ F	100 pF - 0.1 $\mu$ F	100 pF - 0.047 $\mu$ F	100 pF - 0.022 $\mu$ F	100 pF - 4.7 nF	100 pF - 1 nF

#### BX

Case Size	Voltage					
	6.3	10	16	25	50	100
0603	100 pF - 0.1 $\mu$ F	100 pF - 0.1 $\mu$ F	100 pF - 0.1 $\mu$ F	100 pF - 0.022 $\mu$ F	100 pF - 4.7 nF	100 pF - 1 nF

#### DLA Drawing 03029 BR & BX Dielectric, 6.3 – 100 VDC, 0402 Case Size (1005 Metric)

Capacitance Range: 100 pF to 2,200 pF • Temperature Range: -55°C to +125°C



03029	BX	222	Z	J	Z	C	7189
Series	Dielectric	Capacitance Code (pF)	Rated Voltage (VDC)	Capacitance Tolerance	Termination Finish <sup>1</sup>	Screening Option	Packaging/Grade (C-Spec) <sup>2</sup>
03029 = DSCC Drawing Number (0402 case size)	BR BX	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	W = 6.3 X = 10 Y = 16 Z = 25 A = 50 B = 100	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	U = SnPb (4% Pb minimum) Z = SnPb (4% Pb minimum)	Blank = No group C testing C = Full Group C L = 2,000 hour life test only M = 1,000 hour life test only H = Low voltage humidity only	Blank = Bulk bag 7246 = Anti-static bulk bag 7292 = Waffle pack 7189 = 7" Reel marked

#### BR

Case Size	Voltage					
	6.3	10	16	25	50	100
0402	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 1 nF

#### BX

Case Size	Voltage				
	6.3	10	16	25	50
0402	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF	100 pF - 2.2 nF

### Aerospace & Defense (cont.)

#### DLA Drawing 05006 BP, BR & BX Dielectric, 10 – 200 VDC, 0805 Case Size (2012 Metric)

Capacitance Range: 0.5 pF to 1,800 pF • Temperature Range: -55°C to +125°C



05006	BP	681	Z	F	Z	C	7189
Series	Dielectric	Capacitance Code (pF)	Rated Voltage (VDC)	Capacitance Tolerance	Termination Finish <sup>1</sup>	Screening Option	Packaging/Grade (C-Spec) <sup>2</sup>
05006 = DSCC Drawing Number (0805 case size)	BR BX BP	2 significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	X = 10 Y = 16 Z = 25 A = 50 B = 100 C = 200	C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5%	U = SnPb (4% Pb minimum) Z = SnPb (4% Pb minimum)	Blank = No group C testing C = Full group C L = 2,000 hour life test only M = 1,000 hour life test only H = Low voltage humidity only	Blank = Bulk bag 7246 = Anti-static bulk bag 7292 = Waffle pack 7189 = 7" Reel marked

#### DLA Drawing 05007 BP, BR & BX Dielectric, 10 – 200 VDC, 1206 Case Size (3216 Metric)

Capacitance Range: 1 pF to 4,700 pF • Temperature Range: -55°C to +125°C



05007	BP	222	Z	F	Z	C	7189
Series	Dielectric	Capacitance Code (pF)	Rated Voltage (VDC)	Capacitance Tolerance	Termination Finish <sup>1</sup>	Screening Option	Packaging/Grade (C-Spec) <sup>2</sup>
05007 = DSCC Drawing Number (1206 case size)	BR BX BP	2 significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	X = 10 Y = 16 Z = 25 A = 50 B = 100 C = 200	C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5%	U = SnPb (4% Pb minimum) Z = SnPb (4% Pb minimum)	Blank = No group C testing C = Full group C L = 2,000 hour life test only M = 1,000 hour life test only H = Low voltage humidity only	Blank = Bulk bag 7246 = Anti-static bulk bag 7292 = Waffle pack 7189 = 7" Reel marked

#### DLA Drawing 91019, BR Dielectric, 25 – 50 VDC, 2220 Case Size (5650 Metric)

Capacitance Range: 0.56 µF to 1 µF • Temperature Range: -55°C to +125°C



91019	01	-	7189
Series	Dash Number <sup>1</sup>	Termination Finish <sup>2</sup>	Packaging/Grade (C-Spec)
91019 = DSCC Drawing Number (2220 case size)	01 02 03 04 05	Blank = "U" termination finish / SnPb (4% Pb minimum) Y = 100% Sn Z = SnPb (4% Pb minimum)	Blank = Bulk bag 7246 = Anti-static bulk bag 7292 = Waffle pack 7189 = 7" Reel marked



# Ceramic Capacitors

## Surface Mount

### RF & Microwave

#### CBR Series, C0G Dielectric, Ultra High Q, Low ESR, 6.3 – 500 VDC

Capacitance Range: 0.1 pF to 100 pF • Temperature Range: -55°C to +125°C



CBR	02	C	330	F	9	G	A	C	
Series	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Termination Style	Termination Finish	Packaging/Grade (C-Spec) <sup>1</sup>
CBR	02 = 0201 04 = 0402 06 = 0603 08 = 0805	C = Standard	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.1 – .99 pF e.g., 2.2 pF = 229 e.g., 0.5 pF = 508	A = ±0.05 pF B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5%	9 = 6.3 8 = 10 3 = 25 5 = 50 1 = 100 2 = 200 A = 250 C = 500	G = C0G	A = N/A	C = 100% Matte Sn	Blank = 7" Reel Unmarked

Case Size	Voltage						
	6.3	10	25	50	100	250	500
0201	0.1 pF – 33 pF	0.1 pF – 33 pF	0.1 pF – 33 pF	0.1 pF – 20 pF			
0402			0.1 pF – 100 pF	0.1 pF – 56 pF	0.1 pF – 56 pF		
0603				0.3 pF – 47 pF	0.3 pF – 47 pF	0.3 pF – 47 pF	
0805				0.3 pF – 100 pF	0.3 pF – 100 pF	0.3 pF – 100 pF	0.3 pF – 68 pF

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### Commercial Grade

#### Aximax, 400 Series, Axial, Conformally Coated, C0G Dielectric, 50 – 200 VDC

Capacitance Range: 1 pF to 0.015 μF • Temperature Range: 55°C to +125°C



C	410	C	472	J	5	G	5	T	A	7200
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec)
	410 412 420 430 440	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10%	5 = 50 1 = 100 2 = 200	G = C0G	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage		
	50	100	200
C410 (2.413 x 4.318)	1 pF – 4.7 nF	1 pF – 1.8 nF	1 pF – 510 pF
C412 (3.048 x 4.318)	1.1 nF – 2.7 nF	1.1 nF – 2.7 nF	
C420 (2.54 x 5.08)	330 pF – 5.6 nF	330 pF – 5.6 nF	
C430 (3.81 x 6.096)	1.8 nF – 0.01 μF	1.8 nF – 0.01 μF	
C440 (3.81 x 6.604)	5.6 nF – 0.015 μF	5.6 nF – 0.015 μF	

#### Aximax, 400 Series, Axial, Conformally Coated, X7R Dielectric, 25 – 250 VDC

Capacitance Range: 10 pF to 4.7 μF • Temperature Range: -55°C to +125°C



C	410	C	105	K	3	R	5	T	A	7200
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec)
	410 412 420 430 440	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage				
	25	50	100	200	250
C410 (2.413 x 4.318)	10 pF – 1 μF	10 pF – 0.68 μF	10 pF – 0.22 μF	10 pF – 0.056 μF	10 pF – 0.022 μF
C412 (3.048 x 4.318)	470 pF – 1 μF	470 pF – 0.68 μF	470 pF – 0.22 μF	470 pF – 0.022 μF	470 pF – 0.022 μF
C420 (2.54 x 5.08)	470 pF – 1 μF	470 pF – 1 μF	470 pF – 0.47 μF	470 pF – 0.022 μF	470 pF – 0.022 μF
C430 (3.81 x 6.096)	0.022 μF – 4.7 μF	0.022 μF – 2.2 μF	0.022 μF – 0.47 μF	0.022 μF – 0.12 μF	0.022 μF – 0.12 μF
C440 (3.81 x 6.604)	0.033 μF – 4.7 μF	0.033 μF – 2.2 μF	0.033 μF – 0.47 μF	0.033 μF – 0.12 μF	0.033 μF – 0.12 μF

### Commercial Grade (cont.)

#### Aximax, 400 Series, Axial, Conformally Coated, Z5U Dielectric, 50 – 100 VDC

Capacitance Range: 1,000 pF to 2.2  $\mu$ F • Temperature Range: +10°C to +85°C



C	410	C	105	M	3	U	5	T	A	7200
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C Spec)
	410 412 420 430 440	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20% Z = +80%, -20%	3 = 25 5 = 50 1 = 100 2 = 200 A = 250	U Z5U	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage				
	25	50	100	200	250
C410 (2.413 x 4.318)	220 pF – 1 $\mu$ F	220 pF – 0.68 $\mu$ F	220 pF – 0.22 $\mu$ F	220 pF – 0.056 $\mu$ F	220 pF – 0.022 $\mu$ F
C412 (3.048 x 4.318)	470 pF – 1 $\mu$ F	470 pF – 0.68 $\mu$ F	470 pF – 0.22 $\mu$ F	470 pF – 0.022 $\mu$ F	470 pF – 0.022 $\mu$ F
C420 (2.54 x 5.08)	470 pF – 1 $\mu$ F	470 pF – 1 $\mu$ F	470 pF – 0.47 $\mu$ F	470 pF – 0.022 $\mu$ F	470 pF – 0.022 $\mu$ F
C430 (3.81 x 6.096)	0.022 $\mu$ F – 4.7 $\mu$ F	0.022 $\mu$ F – 2.2 $\mu$ F	0.022 $\mu$ F – 0.47 $\mu$ F	0.022 $\mu$ F – 0.12 $\mu$ F	0.022 $\mu$ F – 0.12 $\mu$ F
C440 (3.81 x 6.604)	0.033 $\mu$ F – 4.7 $\mu$ F	0.033 $\mu$ F – 2.2 $\mu$ F	0.033 $\mu$ F – 0.47 $\mu$ F	0.033 $\mu$ F – 0.12 $\mu$ F	0.033 $\mu$ F – 0.12 $\mu$ F

#### Goldmax, 300 Series, Radial, Conformally Coated, C0G Dielectric, 50 – 200 VDC

Capacitance Range: 1 pF to 0.15  $\mu$ F • Temperature Range: –55°C to +125°C



C	320	C	153	J	5	G	5	T	A	7301
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec) <sup>3</sup>
	315 324 335 316 325 336 317 326 340 318 327 346 320 328 350 321 330 356 322 331 323 333	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	B = $\pm$ 0.1 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10%	5 = 50 1 = 100 2 = 200	G = C0G	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage		
	50	100	200
C31x	1 pF – 2.7 nF	1 pF – 1.8 nF	1 pF – 1 nF
C32x	1 pF – 0.015 $\mu$ F	1 pF – 0.01 $\mu$ F	1 pF – 3.9 nF
C33x	470 pF – 0.027 $\mu$ F	470 pF – 0.027 $\mu$ F	470 pF – 0.018 $\mu$ F
C34x	0.01 $\mu$ F – 0.068 $\mu$ F	0.01 $\mu$ F – 0.068 $\mu$ F	0.01 $\mu$ F – 0.047 $\mu$ F
C35x	4.7 nF – 0.15 $\mu$ F	4.7 nF – 0.15 $\mu$ F	4.7 nF – 0.068 $\mu$ F

### Commercial Grade (cont.)

#### Goldmax, 300 Series, Radial, Conformally Coated, X7R Dielectric, 25 – 250 VDC

Capacitance Range: 100 pF to 10  $\mu$ F • Temperature Range: -55°C to +125°C



C	320			C	106	K	3	R	5	T	A	7301
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec) <sup>3</sup>
	315	324	335	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	3 = 25 5 = 50 1 = 100 2 = 200 A = 250	R = X7R	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack
	316	325	336									
	317	326	340									
	318	327	346									
	320	328	350									
	321	330	356									
	322	331										
	323	333										

Case Size	Voltage				
	25	50	100	200	250
C31x	100 pF – 1 $\mu$ F	100 pF – 0.68 $\mu$ F	100 pF – 0.22 $\mu$ F	100 pF – 0.056 $\mu$ F	100 pF – 0.056 $\mu$ F
C32x	100 pF – 10 $\mu$ F	100 pF – 4.7 $\mu$ F	100 pF – 0.47 $\mu$ F	100 pF – 0.15 $\mu$ F	180 pF – 0.15 $\mu$ F
C33x	4.7 nF – 2.2 $\mu$ F	4.7 nF – 2.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F
C34x	0.068 $\mu$ F – 10 $\mu$ F	0.068 $\mu$ F – 10 $\mu$ F	0.068 $\mu$ F – 2.2 $\mu$ F	0.068 $\mu$ F – 1.2 $\mu$ F	0.068 $\mu$ F – 1.2 $\mu$ F
C35x	0.18 $\mu$ F – 10 $\mu$ F	0.18 $\mu$ F – 10 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F

#### Goldmax, 300 Series, Radial, Conformally Coated, Z5U Dielectric, 50 – 250 VDC

Capacitance Range: 100 pF to 10  $\mu$ F • Temperature Range: +10°C to +85°C



C	335			C	225	M	5	U	5	T	A	7303
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec) <sup>3</sup>
	315	324	335	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20% Z = +80%, -20%	3 = 25 5 = 50 1 = 100 2 = 200 A = 250	U = Z5U	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack
	316	325	336									
	317	326	340									
	318	327	346									
	320	328	350									
	321	330	356									
	322	331										
	323	333										

Case Size	Voltage				
	25	50	100	200	250
C31x	100 pF – 1 $\mu$ F	100 pF – 0.68 $\mu$ F	100 pF – 0.22 $\mu$ F	100 pF – 0.056 $\mu$ F	100 pF – 0.056 $\mu$ F
C32x	100 pF – 10 $\mu$ F	100 pF – 4.7 $\mu$ F	100 pF – 0.47 $\mu$ F	100 pF – 0.15 $\mu$ F	100 pF – 0.15 $\mu$ F
C33x	4.7 nF – 2.2 $\mu$ F	4.7 nF – 2.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F	4.7 nF – 1.2 $\mu$ F
C34x	0.068 $\mu$ F – 10 $\mu$ F	0.068 $\mu$ F – 10 $\mu$ F	0.068 $\mu$ F – 2.2 $\mu$ F	0.068 $\mu$ F – 1.2 $\mu$ F	0.068 $\mu$ F – 1.2 $\mu$ F
C35x	0.18 $\mu$ F – 10 $\mu$ F	0.18 $\mu$ F – 10 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F	0.18 $\mu$ F – 1.2 $\mu$ F

### Commercial Grade (cont.)

#### Radial, Molded, C0G Dielectric, 100 – 200 VDC

Capacitance Range: 1 pF to 0.18  $\mu$ F • Temperature Range: -55°C to +125°C



C	052	C	272	F	2	G	5	T	A	7303
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec) <sup>3</sup>
	052 062 512 522	C = Standard	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	D = $\pm 0.5$ pF F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$	1 = 100 2 = 200	G = C0G	5 = Multilayer	T = 100% Matte Sn C = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage	
	100	200
C052 (4.826 x 5.969 x 2.286)	390 pF – 4.7 nF	1 pF – 2.7 nF
C062 (7.366 x 7.366 x 2.286)	5.6 nF – 0.022 $\mu$ F	3.3 nF – 0.01 $\mu$ F
C512 (12.192 x 12.192 x 3.556)	0.027 $\mu$ F – 0.1 $\mu$ F	0.012 $\mu$ F – 0.068 $\mu$ F
C522 (12.192 x 12.192 x 6.096)	0.12 $\mu$ F – 0.18 $\mu$ F	0.082 $\mu$ F – 0.1 $\mu$ F

#### Radial, Molded, X7R Dielectric, 50 – 200 VDC

Capacitance Range: 10 pF to 3.3  $\mu$ F • Temperature Range: -55°C to +125°C



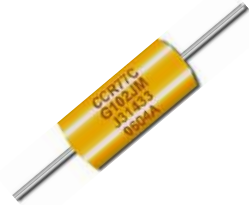
C	062	C	105	K	1	R	5	T	A	7301
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec) <sup>3</sup>
	052 062 512 522	C = Standard	2 significant digits + number of zeros	K = $\pm 10\%$ M = $\pm 20\%$	5 = 50 1 = 100 2 = 200	R = X7R	5 = Multilayer	T = 100% Matte Sn C = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage		
	50	100	200
C052 (4.826 x 5.969 x 2.286)	0.012 $\mu$ F – 0.1 $\mu$ F	1.2 nF – 0.01 $\mu$ F	10 pF – 1 nF
C062 (7.366 x 7.366 x 2.286)	0.12 $\mu$ F – 1 $\mu$ F	0.012 $\mu$ F – 1 $\mu$ F	1.2 nF – 0.01 $\mu$ F
C512 (12.192 x 12.192 x 3.556)	1 $\mu$ F – 2.2 $\mu$ F		
C522 (12.192 x 12.192 x 6.096)	2.7 $\mu$ F – 3.3 $\mu$ F	1 $\mu$ F	

### Commercial Grade (cont.)

#### Axial, Molded, COG Dielectric, 100 – 200 VDC

Capacitance Range: 1 pF to 0.1 μF • Temperature Range: -55°C to +125°C



C	114	C	681	F	1	G	5	C	A	7200
Ceramic	Style/Size	Specification/Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec)
	114 124 192 202 222	C = Standard	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – 99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10%	1 = 100 2 = 200	G = COG	5 = Multilayer	C = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage		
	50	100	200
C114 (2.29 x 4.06)	270 pF – 680 pF	82 pF – 680 pF	1 pF – 330 pF
C124 (2.29 x 6.35)		820 pF – 1 nF	390 pF – 560 pF
C192 (3.56 x 9.91)		1.2 nF – 8.2 nF	680 pF – 4.7 nF
C202 (6.35 x 12.7)		0.01 μF – 0.033 μF	5.6 nF – 0.022 μF
C222 (8.89 x 17.53)		0.039 μF – 0.1 μF	0.027 μF – 0.047 μF

#### Axial, Molded, X7R Dielectric, 50 – 100 VDC

Capacitance Range: 10 pF to 3.3 μF • Temperature Range: -55°C to +125°C



C	114	C	472	M	1	R	5	C	A	7200
Ceramic	Style/Size	Specification/Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec)
	114 124 192 202 222	C = Standard	2 significant digits + number of zeros	K = ±10% M = ±20%	5 = 50 1 = 100	R = X7R	5 = Multilayer	C = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo Pack

Case Size	Voltage	
	50	100
C114 (2.29 x 4.06)	5.6 nF – 0.01 μF	10 pF – 4.7 nF
C124 (2.29 x 6.35)	0.012 μF – 0.047 μF	5.6 nF – 0.01 μF
C192 (3.56 x 9.91)	0.056 μF – 0.27 μF	0.012 μF – 0.1 μF
C202 (6.35 x 12.7)	0.47 μF – 1 μF	0.056 μF – 0.33 μF
C222 (8.89 x 17.53)	2.2 μF – 3.3 μF	0.47 μF – 1 μF

# Ceramic Capacitors

## Leaded

### High Temperature (> 125°C)

#### High Temperature 200°C, Radial, Molded, C0G Dielectric, 50 – 200 VDC (Industrial Grade)

Capacitance Range: 1 pF up to 0.22 μF • Temperature Range: -55°C to +200°C



C	052	H	272	F	2	G	5	G	A	7301
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging C-Spec <sup>3</sup>
	052 062	H = High Temp 200°C	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF ex. 2.2 pF = 229	B = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10%	5 = 50 1 = 100 2 = 200	G = C0G	5 = Multilayer	G = Gold (Au)	A = N/A	Blank = Bulk Bag T250 = 250 pcs / 12" Reel T500 = 500 pcs / 12" Reel T1K0 = 1,000 pcs / 12" Reel 7301 = Full Reel Qty / 12" Reel 7303 = Full Reel Qty / 12" Reel 7061 = Bulk Tray

Case Size	Voltage		
	50	100	200
C052 (4.83 x 5.97 x 2.29)	1 pF – 0.1 μF	1 pF – 0.047 μF	1 pF – 3.3 nF
C062 (7.37 x 7.37 x 2.29)	0.12 μF – 0.22 μF	0.056 μF – 0.12 μF	4.7 nF – 6.8 nF

#### High Temperature 200°C, Radial, Molded, X7R Dielectric, 50 – 200 VDC (Industrial Grade)

Capacitance Range: 1,000 pF up to 1 μF • Temperature Range: -55°C to +200°C



C	062	H	105	K	5	R	5	G	A	7303
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging C-Spec <sup>3</sup>
	052 062	H = High Temp 200°C	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF ex. 2.2 pF = 229	J = ±5% K = ±10% M = ±20%	5 = 50 1 = 100 2 = 200	R = X7R	5 = Multilayer	G = Gold (Au)	A = N/A	Blank = Bulk Bag T250 = 250 pcs / 12" Reel T500 = 500 pcs / 12" Reel T1K0 = 1,000 pcs / 12" Reel 7301 = Full Reel Qty / 12" Reel 7303 = Full Reel Qty / 12" Reel 7061 = Bulk Tray

Case Size	Voltage		
	50	100	200
C052 (4.83 x 5.97 x 2.29)	1 nF – 0.1 μF	1 nF – 0.047 μF	1 nF – 3.3 nF
C062 (7.37 x 7.37 x 2.29)	0.12 μF – 1 μF	0.056 μF – 0.12 μF	4.7 nF – 6.8 nF

### High Temperature (> 125°C) (cont.)

HT/HP Series, 200°C, C0G & X7R Dielectric, Axial & Radial, 25 – 200 VDC

Capacitance Range: 5.6 pF to 2.7 μF • Temperature Range: -55°C to +200°C



HT06	A	W	472	K	N
Style/Size	Rated Voltage (VDC)	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish
HT05 – HT16 HP05 – HP16	A = 25 B = 50 C = 100 D = 200	N = C0G (NP0) W = X7R	Two significant digits plus number of zeros	J = ±5% K = ±10% M = ±20%	N = Nickel (Standard) C = Solder Coated Clad Steel

#### HT-C0G Axial

Case Size	Voltage		
	50	100	200
HT11 (2.54 x 4.32)	1 pF – 1 nF	1 pF – 1 nF	1 pF – 820 pF
HT13 (3.43 x 6.6)	15 pF – 5.6 nF	15 pF – 5.6 nF	15 pF – 3.9 nF
HT14 (3.94 x 10.16)	150 pF – 0.018 μF	150 pF – 0.018 μF	150 pF – 0.012 μF
HT16 (9.52 x 19.05)	820 pF – 0.1 μF	820 pF – 0.1 μF	820 pF – 0.082 μF

#### HP-C0G Axial

Case Size	Voltage		
	50	100	200
HP11 (2.54 x 4.32)	1 pF – 1 nF	1 pF – 1 nF	1 pF – 820 pF
HP13 (3.43 x 6.6)	15 pF – 5.6 nF	15 pF – 5.6 nF	15 pF – 3.9 nF
HP14 (3.94 x 10.16)	150 pF – 0.018 μF	150 pF – 0.018 μF	150 pF – 0.012 μF
HP15 (5.08 x 12.7)	390 pF – 0.047 μF	390 pF – 0.047 μF	390 pF – 0.039 μF
HP16 (9.52 x 19.05)	820 pF – 0.1 μF	820 pF – 0.1 μF	820 pF – 0.082 μF

#### HT-C0G Radial

Case Size	Voltage		
	50	100	200
HT05 (5.08 x 5.08 x 2.54)	22 pF – 2.7 nF	22 pF – 2.7 nF	22 pF – 1.5 nF
HT06 (7.62 x 7.62 x 3.81)	270 pF – 0.039 μF	270 pF – 0.039 μF	270 pF – 0.015 μF
HT08 (12.7 x 12.7 x 6.35)	680 pF – 0.12 μF	680 pF – 0.12 μF	680 pF – 0.12 μF
HT09 (17.78 x 10.16 x 5.08)	0.01 μF – 0.1 μF	0.01 μF – 0.1 μF	0.01 μF – 0.068 μF
HT55 (5.08 x 5.08 x 2.54)	10 pF – 2.7 nF	10 pF – 2.7 nF	10 pF – 1.5 nF

#### HP-C0G Radial

Case Size	Voltage		
	50	100	200
HP05 (5.08 x 5.08 x 2.54)	22 pF – 2.7 nF	22 pF – 2.7 nF	22 pF – 1.5 nF
HP06 (7.62 x 7.62 x 3.81)	270 pF – 0.039 μF	270 pF – 0.039 μF	270 pF – 0.015 μF
HP08 (12.7 x 12.7 x 6.35)	680 pF – 0.12 μF	680 pF – 0.12 μF	680 pF – 0.12 μF
HP09 (17.78 x 10.16 x 5.08)	0.01 μF – 0.1 μF	0.01 μF – 0.1 μF	0.01 μF – 0.068 μF
HP55 (5.08 x 5.08 x 2.54)	10 pF – 2.7 nF	10 pF – 2.7 nF	10 pF – 1.5 nF

#### HT-X7R Axial

Case Size	Voltage		
	50	100	200
HT11 (2.54 x 4.32)	100 pF – 0.056 μF	100 pF – 0.056 μF	100 pF – 0.018 μF
HT13 (3.43 x 6.6)	100 pF – 0.22 μF	100 pF – 0.22 μF	100 pF – 0.027 μF
HT14 (3.94 x 10.16)	330 pF – 0.47 μF	330 pF – 0.47 μF	330 pF – 0.18 μF
HT16 (9.52 x 19.05)	820 pF – 4.7 μF	820 pF – 4.7 μF	820 pF – 1.5 μF

#### HP-X7R Axial

Case Size	Voltage		
	50	100	200
HP11 (2.54 x 4.32)	100 pF – 0.056 μF	100 pF – 0.056 μF	100 pF – 0.018 μF
HP13 (3.43 x 6.6)	100 pF – 0.22 μF	100 pF – 0.22 μF	100 pF – 0.027 μF
HP14 (3.94 x 10.16)	330 pF – 0.47 μF	330 pF – 0.47 μF	330 pF – 0.18 μF
HP15 (5.08 x 12.7)	390 pF – 2.2 μF	390 pF – 2.2 μF	390 pF – 0.47 μF
HP16 (9.52 x 19.05)	820 pF – 4.7 μF	820 pF – 4.7 μF	820 pF – 1.5 μF

#### HT-X7R Radial

Case Size	Voltage		
	50	100	200
HT05 (5.08 x 5.08 x 2.54)	1 nF – 0.082 μF	1 nF – 0.082 μF	1 nF – 0.027 μF
HT06 (7.62 x 7.62 x 3.81)	1.8 nF – 1 μF	1.8 nF – 1 μF	1.8 nF – 0.47 μF
HT08 (12.7 x 12.7 x 6.35)	1.2 nF – 5.6 μF	1.2 nF – 5.6 μF	1.2 nF – 2.7 μF
HT09 (17.78 x 10.16 x 5.08)	0.1 μF – 3.9 μF	0.1 μF – 3.9 μF	0.1 μF – 1 μF
HT55 (5.08 x 5.08 x 2.54)	1 nF – 0.082 μF	1 nF – 0.082 μF	1 nF – 0.027 μF

#### HP-X7R Radial

Case Size	Voltage		
	50	100	200
HP05 (5.08 x 5.08 x 2.54)	1 nF – 0.082 μF	1 nF – 0.082 μF	1 nF – 0.027 μF
HP06 (7.62 x 7.62 x 3.81)	1.8 nF – 1 μF	1.8 nF – 1 μF	1.8 nF – 0.47 μF
HP08 (12.7 x 12.7 x 6.35)	1.2 nF – 5.6 μF	1.2 nF – 5.6 μF	1.2 nF – 2.7 μF
HP09 (17.78 x 10.16 x 5.08)	0.1 μF – 3.9 μF	0.1 μF – 3.9 μF	0.1 μF – 1 μF
HP55 (5.08 x 5.08 x 2.54)	1 nF – 0.082 μF	1 nF – 0.082 μF	1 nF – 0.027 μF



### High Temperature (> 125°C) (cont.)

HV Series, 200°C, C0G & X7R Dielectric, Radial Conformally Coated, 500 – 4,000 VDC

Capacitance Range: 10 pF to 1.0 μF Temperature Range: -55°C to +200°C



10	HV12	W	472	K	N	M
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Group A Screening
05 = 500 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000	HV10 – HV16	N = C0G (NP0) W = X7R	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	N = Nickel (Standard) C = Solder Coated Clad Steel	MIL-PRF-49467 (Subgroup 1) except Corona

### C0G

Case Size	Voltage				
	500	1,000	2,000	3,000	4,000
HV10 (6.35 x 5.59 x 3.81)	27 pF – 1.5 nF	27 pF – 1.5 nF	10 pF – 390 pF		
HV11 (8.13 x 7.62 x 6.35)	39 pF – 2.2 nF	39 pF – 1.8 nF	22 pF – 1 nF	22 pF – 470 pF	
HV12 (10.67 x 10.16 x 6.35)	47 pF – 3.3 nF	47 pF – 2.7 nF	27 pF – 1.5 nF	27 pF – 1 nF	
HV13 (13.21 x 12.7 x 7.62)	120 pF – 5.6 nF	120 pF – 4.7 nF	120 pF – 3.3 nF	120 pF – 2.7 nF	
HV14 (15.75 x 12.7 x 7.62)	180 pF – 8.2 nF	180 pF – 6.8 nF	100 pF – 3.9 nF	100 pF – 3.3 nF	18 pF – 2.7 nF
HV15 (18.29 x 17.78 x 7.62)	390 pF – 0.01 μF	390 pF – 0.01 μF	150 pF – 4.7 nF	150 pF – 3.9 nF	27 pF – 3.3 nF
HV16 (20.83 x 17.78 x 8.89)	470 pF – 0.015 μF	470 pF – 0.015 μF	270 pF – 0.012 μF	270 pF – 8.2 nF	47 pF – 5.6 nF

### X7R

Case Size	Voltage				
	500	1,000	2,000	3,000	4,000
HV10 (6.35 x 5.59 x 3.81)	680 pF – 0.047 μF	680 pF – 0.012 μF	270 pF – 4.7 nF		
HV11 (8.13 x 7.62 x 6.35)	1.2 nF – 0.15 μF	1.2 nF – 0.047 μF	560 pF – 2.7 nF		
HV12 (10.67 x 10.16 x 6.35)	1.2 nF – 0.22 μF	1.2 nF – 0.018 μF	680 pF – 0.01 μF		
HV13 (13.21 x 12.7 x 7.62)	3.3 nF – 0.082 μF	3.3 nF – 0.047 μF	1.2 nF – 0.018 μF	1.2 nF – 0.01 μF	
HV14 (15.75 x 12.7 x 7.62)	6.8 nF – 0.12 μF	6.8 nF – 0.056 μF	2.7 nF – 0.027 μF	2.7 nF – 0.012 μF	470 pF – 0.012 μF
HV15 (18.29 x 17.78 x 7.62)	0.01 μF – 0.22 μF	0.01 μF – 0.056 μF	3.9 nF – 0.027 μF	3.9 nF – 0.015 μF	680 pF – 0.01 μF
HV16 (20.83 x 17.78 x 8.89)	0.015 μF – 0.47 μF	0.015 μF – 0.47 μF	6.8 nF – 0.047 μF	6.8 nF – 0.022 μF	1.2 nF – 0.012 μF

### High Temperature (> 125°C) (cont.)

ACR/ACA/ARR/ARA Series, 200°C, C0G & X7R Dielectric, Axial & Radial, 50 – 100 VDC

Capacitance Range: 10 pF to 5.6 μF Temperature Range: -55°C to +200°C



A	C	R	06	B	103	K	G	S
Series	Dielectric	Lead Configuration	Case Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Grade/ Test Level
A = High Temperature Axial and Radial Capacitors	C = C0G (NP0)/BP R = X7R (BX)	A = Axial R = Radial	05 – 09 = Radial 16 – 69 = Axial	B = 50 D = 100 S = Special	Two significant digits plus the number of zeros	J = ±5% K = ±10% M = ±20%	W = Solder Coated Copper Clad Steel G = Gold Plated Copper Clad Steel	S = Standard A = M L-PRF-39014, Group A Test A = M L-PRF-20 (C0G) X = Special

#### ACR

Case Size	Voltage	
	50	100
05 (5.08 x 5.08 x 2.54)	10 pF – 0.01 μF	10 pF – 0.01 μF
06 (7.62 x 7.62 x 2.54)	270 pF – 0.027 μF	270 pF – 0.027 μF
07 (7.62 x 7.62 x 3.81)	270 pF – 0.033 μF	270 pF – 0.033 μF
08 (12.7 x 12.7 x 2.54)	270 pF – 0.082 μF	270 pF – 0.068 μF
09 (12.7 x 12.7 x 3.81)	270 pF – 0.12 μF	270 pF – 0.1 μF

#### ARR

Case Size	Voltage	
	50	100
05 (5.08 x 5.08 x 2.54)	100 pF – 0.33 μF	100 pF – 0.33 μF
06 (7.62 x 7.62 x 2.54)	330 pF – 1 μF	330 pF – 1 μF
07 (7.62 x 7.62 x 3.81)	330 pF – 1 μF	330 pF – 1 μF
08 (12.7 x 12.7 x 2.54)	680 pF – 1.8 μF	680 pF – 1.8 μF
09 (12.7 x 12.7 x 3.81)	680 pF – 3.3 μF	680 pF – 3.3 μF

#### ACA

Case Size	Voltage	
	50	100
16 (4.32 x 2.03 x 2.03)	1 pF – 680 pF	1 pF – 560 pF
25 (6.86 x 2.54 x 2.54)	56 pF – 4.7 nF	56 pF – 4.7 nF
39 (10.16 x 3.81 x 3.81)	150 pF – 0.015 μF	150 pF – 0.015 μF
50 (13.21 x 6.73 x 4.06)	390 pF – 0.039 μF	390 pF – 0.022 μF
69 (18.29 x 9.4 x 4.06)	820 pF – 0.1 μF	820 pF – 0.1 μF

#### ARA

Case Size	Voltage	
	50	100
16 (4.32 x 2.03 x 2.03)	100 pF – 0.015 μF	100 pF – 4.7 nF
25 (6.86 x 2.54 x 2.54)	100 pF – 0.12 μF	100 pF – 0.047 μF
39 (10.16 x 3.81 x 3.81)	180 pF – 0.33 μF	180 pF – 0.12 μF
50 (13.21 x 6.73 x 4.06)	390 pF – 1 μF	390 pF – 1 μF
69 (18.29 x 9.4 x 4.06)	820 pF – 1.8 μF	820 pF – 1.8 μF

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### High Temperature (> 125°C) (cont.)

TCR/TRR/TCA/TRR Series, 260°C, C0G & X7R Dielectric, Axial & Radial, 50 – 100 VDC

Capacitance Range: 10 pF to 5.6 µF • Temperature Range: -55°C to +200°C



T	C	R	06	B	103	K	G	S
Series	Dielectric	Lead Configuration	Case Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Grade/ Test Level
T = High Temperature Axial and Radial Capacitors	C = C0G (NP0)/BP R = X7R (BX)	A = Axial R = Radial	05 – 09 = Radial 16 – 69 = Axial	B = 50 D = 100	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	W = Solder Coated Copper Clad Steel G = Gold Plated Copper Clad Steel	S = Standard A = M L-PRF-20, Group A Test (C0G) A = M L-PRF-39014 (X7R) X = Special

#### TCR

Case Size	Voltage	
	50	100
05 (5.08 x 5.08 x 2.54)	10 pF – 0.01 µF	10 pF – 0.01 µF
06 (7.62 x 7.62 x 2.54)	330 pF – 0.027 µF	330 pF – 0.022 µF
07 (7.62 x 7.62 x 3.81)	270 pF – 0.033 µF	270 pF – 0.033 µF
08 (12.7 x 12.7 x 2.54)	270 pF – 0.082 µF	270 pF – 0.068 µF
09 (12.7 x 12.7 x 3.81)	270 pF – 0.12 µF	270 pF – 0.1 µF

#### TCA

Case Size	Voltage	
	50	100
16 (4.32 x 2.03 x 2.03)	1 pF – 680 pF	1 pF – 560 pF
25 (6.86 x 2.54 x 2.54)	56 pF – 4.7 nF	56 pF – 4.7 nF
39 (10.16 x 3.81 x 3.81)	150 pF – 0.015 µF	150 pF – 0.015 µF
50 (13.21 x 6.73 x 4.06)	390 pF – 0.039 µF	390 pF – 0.022 µF
69 (18.29 x 9.4 x 4.06)	820 pF – 0.1 µF	820 pF – 0.1 µF

#### TRR

Case Size	Voltage	
	50	100
05 (5.08 x 5.08 x 2.54)	100 pF – 0.33 µF	100 pF – 0.33 µF
06 (7.62 x 7.62 x 2.54)	330 pF – 1 µF	330 pF – 1 µF
07 (7.62 x 7.62 x 3.81)	330 pF – 0.82 µF	330 pF – 0.56 µF
08 (12.7 x 12.7 x 2.54)	680 pF – 2.2 µF	680 pF – 2 µF
09 (12.7 x 12.7 x 3.81)	680 pF – 3.3 µF	680 pF – 3.3 µF

#### TRA

Case Size	Voltage	
	50	100
16 (4.32 x 2.03 x 2.03)	100 pF – 0.015 µF	100 pF – 4.7 nF
25 (6.86 x 2.54 x 2.54)	100 pF – 0.12 µF	100 pF – 0.047 µF
39 (10.16 x 3.81 x 3.81)	180 pF – 0.33 µF	180 pF – 0.12 µF
50 (13.21 x 6.73 x 4.06)	390 pF – 1 µF	390 pF – 1 µF
69 (18.29 x 9.4 x 4.06)	820 pF – 2 µF	820 pF – 2 µF

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### High Temperature (> 125°C) (cont.)

VCR/VRR Series, 200°C, C0G & X7R Dielectric, Radial, 500 – 5,000 VDC

Capacitance Range: 10 pF to 1.5 µF • Temperature Range: -55°C to +200°C



V	C	R	40	M	102	K	W	A
Series	Dielectric	Lead Configuration	Case Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Grade/ Test Level
V = High Voltage Radial Capacitors	C = C0G (NP0)/BP R = X7R (BX)	R = Radial	07 40 50 60 70 80	L = 500 M = 1,000 T = 2,000 V = 3,000 W = 4,000 X = 5,000	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	W = Solder Coated Copper Clad Steel G = Gold Plated Copper Clad Steel	S = Standard A = MIL-PRF-20, Group A Test X = Special

### VCR

Case Size	Voltage					
	500	1,000	2,000	3,000	4,000	5,000
07 (7.62 x 7.62 x 3.81)	10 pF – 3.3 nF	10 pF – 6.8 nF	10 pF – 470 pF			
40 (8.89 x 10.16 x 6.98)	10 pF – 8.2 nF	10 pF – 3.3 nF	10 pF – 330 pF	10 pF – 270 pF	10 pF – 270 pF	
50 (13.2 x 12.7 x 7.62)	18 pF – 0.018 µF	18 pF – 6.8 nF	18 pF – 1.5 nF	18 pF – 1 nF	18 pF – 1 nF	18 pF – 680 pF
60 (13.97 x 15.24 x 9.52)	22 pF – 0.027 µF	22 pF – 0.015 µF	22 pF – 3.3 nF	22 pF – 2.2 nF	22 pF – 2.2 nF	22 pF – 1.2 nF
70 (16.51 x 17.78 x 9.52)	27 pF – 0.033 µF	27 pF – 0.027 µF	27 pF – 4.7 nF	27 pF – 2.7 nF	27 pF – 2.7 nF	27 pF – 2.2 nF
80 (19.05 x 20.32 x 9.52)	33 pF – 0.056 µF	33 pF – 0.033 µF	33 pF – 6.8 nF	33 pF – 3.9 nF	33 pF – 3.9 nF	33 pF – 2.7 nF

### VRR

Case Size	Voltage					
	500	1,000	2,000	3,000	4,000	5,000
07 (7.62 x 7.62 x 3.81)	390 pF – 0.056 µF	390 pF – 0.015 µF	390 pF – 3.9 nF			
40 (8.89 x 10.16 x 6.98)	330 pF – 0.33 µF	330 pF – 0.1 µF	330 pF – 0.027 µF	330 pF – 0.015 µF	330 pF – 6.8 nF	
50 (13.2 x 12.7 x 7.62)	470 pF – 0.33 µF	470 pF – 0.1 µF	470 pF – 0.027 µF	470 pF – 0.015 µF	470 pF – 8.2 nF	470 pF – 2.7 nF
60 (13.97 x 15.24 x 9.52)	560 pF – 0.68 µF	560 pF – 0.18 µF	560 pF – 0.056 µF	560 pF – 0.033 µF	560 pF – 0.018 µF	560 pF – 6.8 nF
70 (16.51 x 17.78 x 9.52)	820 pF – 1 µF	820 pF – 0.27 µF	820 pF – 0.082 µF	820 pF – 0.047 µF	820 pF – 0.027 µF	820 pF – 0.01 µF
80 (19.05 x 20.32 x 9.52)	1 nF – 1.2 µF	1 nF – 0.39 µF	1 nF – 0.12 µF	1 nF – 0.056 µF	1 nF – 0.033 µF	1 nF – 0.015 µF

### High Temperature (> 125°C) (cont.)

#### Aximax, 400 Series, Axial, Conformally Coated, X8L Dielectric, 25 – 50 VDC (Commercial & Automotive Grade)

Capacitance Range: 0.1  $\mu$ F to 2.2  $\mu$ F • Temperature Range: -55°C to +150°C



C	410	C	105	K	3	N	5	T	A	7200
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec)
	410 430	C = Standard	2 significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	3 = 25 V 5 = 50 V	N = X8L	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo pack AUTO = Automotive grade

Case Size	Voltage	
	25	50
C410 (2.413 x 4.318)	0.1 $\mu$ F – 0.68 $\mu$ F	0.1 $\mu$ F – 0.22 $\mu$ F
C430 (3.81 x 6.096)	0.82 $\mu$ F – 2.2 $\mu$ F	0.33 $\mu$ F – 0.47 $\mu$ F

#### Aximax, 400 Series, Axial, Conformally Coated, X8R Dielectric, 50 – 200 VDC (Commercial & Automotive Grade)

Capacitance Range: 100 pF to 0.082  $\mu$ F • Temperature Range: -55°C to +150°C



C	410	C	472	J	5	H	5	T	A	7200
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging/Grade (C-Spec)
	410 430	C = Standard	2 significant digits + number of zeros	F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10%	5 = 50 1 = 100 2 = 200	H = Ultra-Stable X8R	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7200 = 12" Reel 7293 = Ammo pack AUTO = Automotive grade

Case Size	Voltage		
	50	100	200
C410 (2.413 x 4.318)	100 pF – 0.022 $\mu$ F	100 pF – 0.015 $\mu$ F	100 pF – 1 nF
C430 (3.81 x 6.096)	0.027 $\mu$ F – 0.082 $\mu$ F	0.018 $\mu$ F – 0.047 $\mu$ F	1.1 nF – 2.7 nF

### High Voltage (> 500 V)

High Voltage Goldmax, 300 Series, Radial, Conformally Coated, COG Dielectric, 500 – 3,000 VDC (Commercial Grade)  
Capacitance Range: 1 pF to 0.039  $\mu$ F • Temperature Range: -55°C to +125°C



C	320			C	332	J	C	G	5	T	A	7301
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec) <sup>3</sup>
	315	324	335	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros	B = $\pm$ 0 pF C = $\pm$ 0.25 pF D = $\pm$ 0.5 pF F = $\pm$ 1% G = $\pm$ 2% J = $\pm$ 5% K = $\pm$ 10%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = COG	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel
	316	325	336									
	317	326	340									
	318	327	346									
	320	328	350									
	321	330	356									
	322	331										
	323	333										

Case Size	Voltage							
	500	630	1,000	1,500	2,000	2,500	3,000	
C31x	1 pF – 820 pF	1 pF – 560 pF	1 pF – 270 pF					
C32x	1 pF – 8.2 nF	1 pF – 6.8 nF	1 pF – 2.7 nF	10 pF – 1.2 nF	10 pF – 680 pF			
C33x	10 pF – 0.033 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 5.6 nF	10 pF – 3 nF	10 pF – 1.8 nF	10 pF – 680 pF	
C34x	10 pF – 0.033 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 5.6 nF	10 pF – 3 nF	10 pF – 1.8 nF	10 pF – 680 pF	
C35x	10 pF – 0.039 $\mu$ F	10 pF – 0.027 $\mu$ F	10 pF – 0.015 $\mu$ F	10 pF – 6.8 nF	10 pF – 3.9 nF	10 pF – 2.2 nF	10 pF – 1 nF	

High Voltage Goldmax, 300 Series, Radial, Conformally Coated, X7R Dielectric, 500 – 3,000 VDC (Commercial Grade)  
Capacitance Range: 10 pF to 0.56  $\mu$ F • Temperature Range: -55°C to +125°C



C	320			C	473	K	C	R	5	T	A	7301
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec) <sup>3</sup>
	315	324	335	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = 500 B = 630 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	Blank = Bulk 7301 = 12" Reel 7303 = 12" Reel 7293 = Ammo Pack
	316	325	336									
	317	326	340									
	318	327	346									
	320	328	350									
	321	330	356									
	322	331										
	323	333										

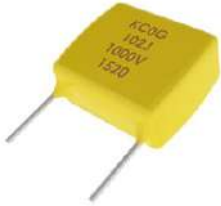
Case Size	Voltage							
	500	630	1,000	1,500	2,000	2,500	3,000	
C31x	10 pF – 0.012 $\mu$ F	10 pF – 8.2 nF	10 pF – 4.7 nF					
C32x	10 pF – 0.15 $\mu$ F	10 pF – 0.1 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.039 $\mu$ F	10 pF – 6.8 nF			
C33x	10 pF – 0.47 $\mu$ F	10 pF – 0.33 $\mu$ F	10 pF – 0.12 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 0.012 $\mu$ F	
C34x	10 pF – 0.47 $\mu$ F	10 pF – 0.33 $\mu$ F	10 pF – 0.12 $\mu$ F	10 pF – 0.068 $\mu$ F	10 pF – 0.018 $\mu$ F	10 pF – 0.012 $\mu$ F	10 pF – 0.012 $\mu$ F	
C35x	100 pF – 0.56 $\mu$ F	100 pF – 0.47 $\mu$ F	100 pF – 0.15 $\mu$ F	100 pF – 0.1 $\mu$ F	100 pF – 0.027 $\mu$ F	100 pF – 0.015 $\mu$ F	100 pF – 0.015 $\mu$ F	

# Ceramic Capacitors

## Leaded

### High Voltage (> 500 V) (cont.)

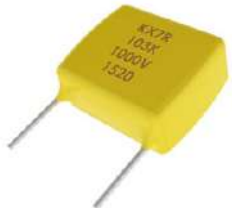
High Voltage Goldmax, 600 Series, Radial, Conformally Coated, C0G Dielectric, 500 – 3,000 VDC (Commercial Grade)  
 Capacitance Range: 12 pF to 0.1 μF • Temperature Range: -55°C to +125°C



C	627			C	224	K	C	G	5	T	A	7301
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec)
	617	637	648	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20% Z = +80%, -20%	C = 500 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	G = C0G	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	See "Packaging C-Spec Ordering Options Table" below
	622	638	657									
	623	640	658									
	627	641	667									
	628	642	668									
	630	643										
	631	647										

Case Size	Voltage					
	500	1,000	1,500	2,000	2,500	3,000
C61x	12 pF – 4.7 nF	12 pF – 2.2 nF	15 pF – 680 pF	15 pF – 680 pF		15 pF – 330 pF
C62x	22 pF – 0.018 μF	22 pF – 6.8 nF	22 pF – 3.3 nF	22 pF – 3.3 nF		22 pF – 1.2 nF
C63x	15 pF – 0.033 μF	15 pF – 0.015 μF	82 pF – 5.6 nF	15 pF – 5.6 nF	15 pF – 2.2 nF	15 pF – 2.2 nF
C64x	56 pF – 0.047 μF	56 pF – 0.047 μF		56 pF – 0.01 μF		56 pF – 4.7 nF
C65x	180 pF – 0.047 μF	180 pF – 0.047 μF		180 pF – 0.012 μF		180 pF – 5.6 nF
C66x	180 pF – 0.1 μF	180 pF – 0.068 μF		180 pF – 0.022 μF		180 pF – 8.2 nF

High Voltage Goldmax, 600 Series, Radial, Conformally Coated, X7R Dielectric, 500 – 3,000 VDC (Commercial Grade)  
 Capacitance Range: 150 pF to 2.9 μF • Temperature Range: -55°C to +125°C



C	627			C	224	K	C	R	5	T	A	7301
Ceramic	Style/Size			Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Rated Voltage (VDC)	Dielectric	Design	Lead Finish <sup>2</sup>	Failure Rate	Packaging (C-Spec)
	617	637	648	C = Standard	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20% Z = +80%, -20%	C = 500 D = 1,000 F = 1,500 G = 2,000 Z = 2,500 H = 3,000	R = X7R	5 = Multilayer	T = 100% Matte Sn H = SnPb (60/40)	A = N/A	See "Packaging C-Spec Ordering Options Table" below
	622	638	657									
	623	640	658									
	627	641	667									
	628	642	668									
	630	643										
	631	647										

Case Size	Voltage					
	500	1,000	1,500	2,000	2,500	3,000
C61x	820 pF – 0.082 μF	820 pF – 0.022 μF	820 pF – 4.7 nF	820 pF – 4.7 nF		
C62x	680 pF – 0.27 μF	680 pF – 0.1 μF	680 pF – 0.015 μF	680 pF – 0.015 μF		680 pF – 5.6 nF
C63x	150 pF – 0.56 μF	150 pF – 0.27 μF	150 pF – 0.033 μF	150 pF – 0.033 μF	150 pF – 0.015 μF	150 pF – 0.015 μF
C64x	680 pF – 1.2 μF	680 pF – 0.47 μF		680 pF – 0.1 μF		680 pF – 0.033 μF
C65x	2.2 nF – 1.8 μF	2.2 nF – 0.82 μF		2.2 nF – 0.12 μF		2.2 nF – 0.047 μF
C66x	2.2 nF – 2.7 μF	2.2 nF – 1 μF		2.2 nF – 0.18 μF		2.2 nF – 0.1 μF

### High Voltage (> 500 V) (cont.)

HV Series, C0G and X7R, Radial Conformally Coated, 500 – 10,000 VDC

Capacitance Range: 12 pF to 56 μF • Temperature Range: -55°C to +125°C



10	HV23	N	102	K	N	M
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Group A Screening
05 = 500 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000 50 = 5,000 75 = 7,500 100 = 10,000	HV20 – HV36	N = C0G (NP0) B = X7R	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	N = Nickel C = Solder Coated Clad Steel (Standard)	MIL-PRF-49467 (Subgroup 1) except Corona

### C0G

Case Size	Voltage			
	500	1,000	2,000	3,000
HV20 (6.35 x 5.59 x 5.08)	27 pF – 4.7 nF	27 pF – 1.5 nF	12 pF – 680 pF	12 pF – 470 pF
HV21 (8.13 x 7.11 x 6.35)	39 pF – 0.01 μF	39 pF – 0.01 μF	22 pF – 1 nF	22 pF – 560 pF
HV22 (9.4 x 7.62 x 6.35)	47 pF – 0.01 μF	47 pF – 3.9 nF	27 pF – 680 pF	27 pF – 680 pF
HV23 (11.94 x 10.16 x 6.86)	120 pF – 0.022 μF	120 pF – 0.018 μF	47 pF – 3.3 nF	47 pF – 1 nF
HV24 (14.48 x 12.7 x 6.86)	220 pF – 0.056 μF	220 pF – 0.033 μF	100 pF – 6.8 nF	100 pF – 3.9 nF
HV25 (17.02 x 15.24 x 6.86)	330 pF – 0.082 μF	220 pF – 0.047 μF	150 pF – 0.01 μF	150 pF – 6.8 nF
HV26 (19.56 x 18.29 x 6.86)	470 pF – 0.1 μF	220 pF – 0.068 μF	220 pF – 0.022 μF	220 pF – 8.2 nF
HV30 (11.43 x 5.59 x 5.08)	68 pF – 0.015 μF	68 pF – 4.7 nF	15 pF – 1 nF	15 pF – 390 pF
HV31 (13.97 x 7.11 x 6.35)	82 pF – 0.027 μF	82 pF – 0.012 μF	27 pF – 2.2 nF	27 pF – 1.2 nF
HV33 (21.59 x 10.16 x 6.86)	330 pF – 0.12 μF	220 pF – 0.068 μF	68 pF – 0.015 μF	68 pF – 4.7 nF
HV34 (26.67 x 12.7 x 6.86)	470 pF – 0.15 μF	220 pF – 0.056 μF	120 pF – 0.015 μF	120 pF – 5.6 nF
HV35 (31.75 x 15.24 x 6.86)	680 pF – 0.22 μF	220 pF – 0.1 μF	220 pF – 0.022 μF	220 pF – 0.015 μF
HV36 (36.83 x 18.29 x 6.86)	1 nF – 0.33 μF	1 nF – 0.15 μF	270 pF – 0.039 μF	270 pF – 0.018 μF

### C0G (cont.)

Case Size	Voltage			
	4,000	5,000	7,000	10,000
HV23 (11.94 x 10.16 x 6.86)	27 pF – 680 pF			
HV24 (14.48 x 12.7 x 6.86)	18 pF – 1.5 nF	18 pF – 1 nF		
HV25 (17.02 x 15.24 x 6.86)	27 pF – 2.7 nF	27 pF – 2.7 nF		
HV26 (19.56 x 18.29 x 6.86)	47 pF – 3.9 nF	47 pF – 2.7 nF		
HV30 (11.43 x 5.59 x 5.08)	10 pF – 220 pF			
HV31 (13.97 x 7.11 x 6.35)	10 pF – 560 pF	10 pF – 390 pF		
HV33 (21.59 x 10.16 x 6.86)	27 pF – 1.5 nF	27 pF – 1.2 nF	12 pF – 470 pF	
HV34 (26.67 x 12.7 x 6.86)	47 pF – 3.3 nF	47 pF – 2.2 nF	18 pF – 1 nF	18 pF – 820 pF
HV35 (31.75 x 15.24 x 6.86)	82 pF – 5.6 nF	82 pF – 3.9 nF	33 pF – 1.8 nF	33 pF – 1.2 nF
HV36 (36.83 x 18.29 x 6.86)	120 pF – 8.2 nF	120 pF – 5.6 nF	56 pF – 2.7 nF	56 pF – 2.2 nF



### High Voltage (> 500 V) (cont.)

#### HV Series, C0G and X7R, Radial Conformally Coated, 500 – 10,000 VDC (cont.)

Capacitance Range: 12 pF to 5.6 µF • Temperature Range: -55°C to +125°C



10	HV23	N	102	K	N	M
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish	Group A Screening
05 = 500 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000 50 = 5,000 75 = 7,500 100 = 10,000	HV20 – HV36	N = C0G (NP0) B = X7R	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	N = Nickel C = Solder Coated Clad Steel (Standard)	MIL-PRF-49467 (Subgroup 1) except Corona

#### X7R

Case Size	Voltage			
	500	1,000	2,000	3,000
HV20 (6.35 x 5.59 x 5.08)	680 pF – 0.082 µF	680 pF – 0.022 µF	270 pF – 4.7 nF	
HV21 (8.13 x 7.11 x 6.35)	1.2 nF – 0.18 µF	1.2 nF – 0.068 µF	560 pF – 0.012 µF	560 pF – 3.9 nF
HV22 (9.4 x 7.62 x 6.35)	1.2 nF – 0.22 µF	1.2 nF – 0.1 µF	680 pF – 0.018 µF	680 pF – 5.6 nF
HV23 (11.94 x 10.16 x 6.86)	3.3 nF – 0.56 µF	3.3 nF – 0.27 µF	1.2 nF – 0.033 µF	1.2 nF – 0.015 µF
HV24 (14.48 x 12.7 x 6.86)	6.8 nF – 1.2 µF	6.8 nF – 0.47 µF	2.7 nF – 0.1 µF	2.7 nF – 0.033 µF
HV25 (17.02 x 15.24 x 6.86)	0.01 µF – 1.8 µF	0.01 µF – 0.68 µF	3.9 nF – 0.1 µF	3.9 nF – 0.039 µF
HV26 (19.56 x 18.29 x 6.86)	0.015 µF – 2.2 µF	0.015 µF – 0.82 µF	6.8 nF – 0.18 µF	6.8 nF – 0.082 µF
HV30 (11.43 x 5.59 x 5.08)	1.8 nF – 0.22 µF	1.8 nF – 0.056 µF	390 pF – 8.2 nF	390 pF – 2.2 nF
HV31 (13.97 x 7.11 x 6.35)	2.7 nF – 0.39 µF	2.7 nF – 0.15 µF	680 pF – 0.022 µF	680 pF – 8.2 nF
HV33 (21.59 x 10.16 x 6.86)	0.01 µF – 1.5 µF	0.01 µF – 0.68 µF	1.8 nF – 0.082 µF	1.8 nF – 0.027 µF
HV34 (26.67 x 12.7 x 6.86)	0.012 µF – 2.2 µF	0.012 µF – 1 µF	3.3 nF – 1 µF	3.3 nF – 0.056 µF
HV35 (31.75 x 15.24 x 6.86)	0.018 µF – 3.9 µF	0.018 µF – 1.5 µF	5.6 nF – 0.27 µF	5.6 nF – 0.082 µF
HV36 (36.83 x 18.29 x 6.86)	0.027 µF – 5.6 µF	0.027 µF – 2.2 µF	8.2 nF – 0.39 µF	8.2 nF – 0.15 µF

#### X7R (cont.)

Case Size	Voltage			
	4,000	5,000	7,000	10,000
HV23 (11.94 x 10.16 x 6.86)	270 pF – 6.8 nF			
HV24 (14.48 x 12.7 x 6.86)	470 pF – 0.01 µF	470 pF – 6.8 nF		
HV25 (17.02 x 15.24 x 6.86)	680 pF – 0.015 µF	680 pF – 0.01 µF		
HV26 (19.56 x 18.29 x 6.86)	1.2 nF – 0.027 µF	1.2 nF – 0.015 µF		
HV30 (11.43 x 5.59 x 5.08)	150 pF – 1.2 nF			
HV31 (13.97 x 7.11 x 6.35)	270 pF – 4.7 nF	270 pF – 2.7 nF		
HV33 (21.59 x 10.16 x 6.86)	680 pF – 0.012 µF	680 pF – 8.2 nF	220 pF – 3.3 nF	
HV34 (26.67 x 12.7 x 6.86)	1.2 nF – 0.027 µF	1.2 nF – 0.022 µF	470 pF – 6.8 nF	470 pF – 3.9 nF
HV35 (31.75 x 15.24 x 6.86)	2.2 nF – 0.047 µF	2.2 nF – 0.027 µF	820 pF – 0.01 µF	820 pF – 5.6 nF
HV36 (36.83 x 18.29 x 6.86)	3.3 nF – 0.068 µF	3.3 nF – 0.039 µF	1.2 nF – 0.033 µF	1.2 nF – 0.033 µF

### Aerospace & Defense

#### MIL-PRF-123, BP & BX Dielectric, Molded Radial, 50 – 100 VDC

Capacitance Range: 4.7 pF to 1 μF • Temperature Range: -55°C to +125°C



C	052	Z	102	K	5	G	5	C	A
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish	Failure Rate
	052 062 512	Z = MIL-PRF-123	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = ±0.25 pF D = ±0.5 pF F = ±1% J = ±5% K = ±10%	5 = 50 1 = 100	G = BP (Ultra-stable) X = BX (Stable)	5 = Standard	C = Solder coated copper (standard)	A = N/A

#### MIL-PRF-123

M123	A	01	BX	B	103	K	C
Series	Specification/ Series	Style/Size	Dielectric	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance	Lead Finish
M123 = MIL-PRF	A = Indicates the latest characteristics of the part in the specification sheet.	01 = 052 02 = 062 03 = 512	BP = G (Ultra-stable) BX = X (Stable)	B = 50 C = 100	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = ±0.25 pF D = ±0.5 pF F = ±1% J = ±5% K = ±10%	C = Solder coated copper

#### BP

Case Size	Voltage	
	50	100
C052 (4.826 x 5.969 x 2.286)	270 pF – 2.7 nF	4.7 pF – 240 pF
C062 (7.366 x 7.366 x 2.286)	2.7 nF – 4.7 nF	270 pF – 2.4 nF
C512 (12.192 x 12.192 x 3.556)	0.011 μF – 0.1 μF	2.7 nF – 0.01 μF

#### BX

Case Size	Voltage	
	50	100
C052 (4.826 x 5.969 x 2.286)	5.6 nF – 0.01 μF	270 pF – 4.7 nF
C062 (7.366 x 7.366 x 2.286)	0.056 μF – 1 μF	5.6 nF – 0.1 μF
C512 (12.192 x 12.192 x 3.556)	0.56 μF – 1 μF	0.056 μF – 0.47 μF

# Ceramic Capacitors

## Leaded

### Aerospace & Defense (cont.)

#### GR900 High Reliability, BP and BX Dielectric, Molded Radial, 50 – 200 VDC

Capacitance Range: 1 pF to 3.3  $\mu$ F Temperature Range: -55°C to +125°C



C	052	B	223	K	1	X	5	C	A
Ceramic	Style/Size	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish	Failure Rate
	052 062 512	B = Leaded devices	Two significant digits + number of zeros Use 9 for 1.0 - 9.9 pF ex. 0.5 pF = 508 ex. 2.2 pF = 229 Use 8 for 0.5 - 0.99 pF	C = $\pm 0.25$ pF D = $\pm 0.5$ pF F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	1 = 100 2 = 200 5 = 50	G = C0G (CG, BP) X = X7R (BX)	5 = Standard	C = Solder coated copper (standard)	A = N/A

#### BP

Case Size	Voltage		
	50	100	200
C052 (4.83 x 4.83 x 2.29)	6.2 nF – 6.8 nF	1.6 nF – 5.6 nF	1 pF – 1.5 nF
C062 (7.37 x 7.37 x 2.29)		7.5 nF – 0.024 $\mu$ F	270 pF – 6.8 nF
C512 (12.19 x 12.19 x 3.56)	0.12 $\mu$ F – 0.15 $\mu$ F	0.039 $\mu$ F – 0.1 $\mu$ F	2 nF – 0.033 $\mu$ F

#### BX

Case Size	Voltage		
	50	100	200
C052 (4.83 x 4.83 x 2.29)	0.056 $\mu$ F – 0.12 $\mu$ F	0.018 $\mu$ F – 0.047 $\mu$ F	470 pF – 0.015 $\mu$ F
C062 (7.37 x 7.37 x 2.29)	0.27 $\mu$ F – 1 $\mu$ F	0.082 $\mu$ F – 0.22 $\mu$ F	3.3 nF – 0.068 $\mu$ F
C512 (12.19 x 12.19 x 3.56)	1.2 $\mu$ F – 3.3 $\mu$ F	0.47 $\mu$ F – 1 $\mu$ F	0.039 $\mu$ F – 0.39 $\mu$ F

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### Aerospace & Defense (cont.)

#### MIL-PRF-20, CG, Molded Axial & Radial, 50 – 200 VDC

Capacitance Range: 1 pF to 0.1 μF • Temperature Range: -55°C to +125°C



C	052	G	102	J	1	G	5	C	A
Ceramic	Style/Size	Specification	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish	Failure Rate
	C052 – C522 (Radial) C114 – C222 (Axial)	G – MIL-PRF-20	2 significant digits + number of zeros	C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10%	1 = 100 2 = 200 5 = 50	G = C0G, CG	5 = Standard	C = 60/40 Tin/Lead (SnPb)	A = N/A M = 1.0% P = 0.1% R = 0.01% S = 0.001%

#### Axial

Case Size	Voltage		
	50	100	200
C124 (2.29 x 6.35)	750 pF – 1 nF	270 pF – 680 pF	82 pF – 130 pF
C192 (3.56 x 9.91)	2.4 nF – 5.6 nF	750 pF – 2.2 nF	150 pF – 680 pF
C202 (6.35 x 12.7)	0.015 μF – 0.027 μF	3.9 nF – 0.012 μF	820 pF – 3.3 nF
C222 (8.89 x 17.53)	0.047 μF – 0.082 μF	0.015 μF – 0.039 μF	3.9 nF – 0.01 μF

#### Radial

Case Size	Voltage		
	50	100	200
C052 (4.826 x 5.969 x 2.286)	2 nF – 3.3 nF	360 pF – 1.8 nF	1 pF – 330 pF
C062 (7.366 x 7.366 x 2.286)	5.1 nF – 0.018 μF	2 nF – 4.7 nF	360 pF – 1.8 nF
C512 (12.192 x 12.192 x 3.556)	0.015 μF – 0.1 μF	5.6 nF – 0.012 μF	2.2 nF – 4.7 nF
C522 (12.192 x 12.192 x 6.096)	0.056 μF – 0.068 μF	0.015 μF – 0.018 μF	3.9 nF – 4.7 nF

### Aerospace & Defense (cont.)

#### MIL-C-11015/MIL-PRF-39014, BX & BR, Molded Axial & Radial, 50 – 200 VDC

Capacitance Range: Axial: 10 pF to 3.3 μF, Radial: 10 pF to 0.1 μF • Temperature Range: -55°C to +125°C



C	052	K	102	K	2	X	5	C	A
Ceramic	Style/Size	Specification	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Dielectric	Design	Lead Finish	Failure Rate
	C052 – C066 (Radial) C114 – C222 (Axial)	Military T – MIL-PRF-39014 K – MIL-C-11015	2 significant digits + number of zeros	K = ±10% M = ±20%	1 = 100 V 2 = 200 V 5 = 50 V	X = BX (X7R) R = BR	5 = Multilayer	C = 60/40 Tin/Lead (SnPb)	A = N/A M = 1.0% P = 0.1% R = 0.01% S = 0.001%

#### BX Axial

Case Size	Voltage	
	50	100
C114 (2.29 x 4.06)	5.6 nF – 0.01 μF	10 pF – 4.7 nF
C124 (2.29 x 6.35)	0.012 μF – 0.047 μF	5.6 nF – 0.01 μF
C192 (3.56 x 9.91)	0.056 μF – 0.1 μF	0.012 μF – 0.047 μF
C202 (6.35 x 12.7)		0.056 μF – 0.1 μF

#### BX Radial

Case Size	Voltage		
	50	100	200
C052 (4.826 x 5.969 x 2.286)	0.012 μF – 0.1 μF	1.2 nF – 0.01 μF	10 pF – 1 nF
C056 (4.826 x 5.486 x 2.286)	0.012 μF – 0.1 μF	1.2 nF – 0.01 μF	10 pF – 1 nF
C062 (7.366 x 7.366 x 2.286)	0.12 μF – 1 μF	0.012 μF – 0.1 μF	1.2 nF – 0.01 μF
C066 (7.366 x 8.026 x 2.286)	0.12 μF – 1 μF	0.012 μF – 0.1 μF	1.2 nF – 0.01 μF

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## Aerospace & Defense (cont.)

### HV Series, MIL-PRF-49467 Equivalent, BP BR & BZ, 500 – 5,000 VDC

Capacitance Range: 15 pF to 1.0  $\mu$ F Temperature Range: -55°C to +125°C



10	HV60	R	102	K	C
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Grade/Test Level
05 = 500 06 = 600 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000 50 = 5,000	HV60 – HV69	P = BP C0G (NP0) R = BR (X7R) Z = BZ (X7R)	Two significant digits + number of zeros	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	C = CSAM

### BP

Case Size	Voltage					
	600	1,000	2,000	3,000	4,000	5,000
HV60 (6.35 x 5.588 x 5.08)	27 pF – 5.6 nF	27 pF – 1.5 nF	12 pF – 390 pF			
HV61 (8.128 x 7.112 x 6.35)	39 pF – 0.012 $\mu$ F	39 pF – 1.8 nF	22 pF – 1 nF	22 pF – 470 pF		
HV62 (9.398 x 7.62 x 6.35)	47 pF – 0.018 $\mu$ F	47 pF – 8.2 nF	27 pF – 1.2 nF	27 pF – 680 pF		
HV63 (11.938 x 10.16 x 6.858)	120 pF – 0.039 $\mu$ F	120 pF – 4.7 nF	47 pF – 2.2 nF	47 pF – 1.5 nF	47 pF – 1 nF	
HV64 (14.478 x 12.7 x 6.858)	220 pF – 0.068 $\mu$ F	220 pF – 0.047 $\mu$ F	100 pF – 4.7 nF	100 pF – 3.3 nF	100 pF – 1.8 nF	100 pF – 1.2 nF
HV65 (17.018 x 15.24 x 6.858)		330 pF – 0.018 $\mu$ F	150 pF – 0.01 $\mu$ F	150 pF – 4.7 nF	150 pF – 3.3 nF	150 pF – 2.2 nF
HV66 (19.558 x 18.288 x 6.858)		470 pF – 0.027 $\mu$ F	470 pF – 0.01 $\mu$ F	270 pF – 8.2 nF	270 pF – 4.7 nF	270 pF – 3.3 nF

### BR & BZ

Case Size	Voltage						
	500	600	1,000	2,000	3,000	4,000	5,000
HV60 (6.35 x 5.588 x 5.08)	680 pF – 0.027 $\mu$ F		680 pF – 0.012 $\mu$ F	270 pF – 4.7 nF			
HV61 (8.128 x 7.112 x 6.35)		1.2 nF – 0.082 $\mu$ F	1.2 nF – 0.047 $\mu$ F	560 pF – 0.01 $\mu$ F	560 pF – 3.3 nF		
HV62 (9.398 x 7.62 x 6.35)		1.2 nF – 0.1 $\mu$ F	1.2 nF – 0.1 $\mu$ F	680 pF – 0.01 $\mu$ F	680 pF – 3.9 nF		
HV63 (11.938 x 10.16 x 6.858)		3.3 nF – 0.33 $\mu$ F	3.3 nF – 0.33 $\mu$ F	1.2 nF – 0.033 $\mu$ F	1.2 nF – 0.015 $\mu$ F	270 pF – 6.8 nF	
HV64 (14.478 x 12.7 x 6.858)		6.8 nF – 0.47 $\mu$ F	6.8 nF – 0.47 $\mu$ F	2.7 nF – 0.1 $\mu$ F	2.7 nF – 0.022 $\mu$ F	470 pF – 0.01 $\mu$ F	470 pF – 6.8 nF
HV65 (17.018 x 15.24 x 6.858)			0.01 $\mu$ F – 0.22 $\mu$ F	3.9 nF – 0.082 $\mu$ F	3.9 nF – 0.033 $\mu$ F	680 pF – 0.015 $\mu$ F	680 pF – 0.01 $\mu$ F
HV66 (19.558 x 18.288 x 6.858)			0.01 $\mu$ F – 0.47 $\mu$ F	6.8 nF – 0.15 $\mu$ F	6.8 nF – 0.056 $\mu$ F	1.2 nF – 0.027 $\mu$ F	1.2 nF – 0.015 $\mu$ F
HV68 (33.02 x 15.24 x 6.858)					5.6 nF – 0.068 $\mu$ F	2.2 nF – 0.039 $\mu$ F	2.2 nF – 0.022 $\mu$ F
HV69 (38.1 x 18.288 x 6.858)					8.2 nF – 0.1 $\mu$ F	3.3 nF – 0.056 $\mu$ F	3.3 nF – 0.056 $\mu$ F

### Aerospace & Defense (cont.)

#### HS Series High Voltage Space Quality, COG & X7R, Radial, 500 – 10,000 VDC

Capacitance Range: 12 pF to 5.6 μF • Temperature Range: -55°C to +125°C



10	HS24	B	103	K	C	F
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Grade/Test Level	Lead Finish
05 = 500 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000 50 = 5,000 75 = 7,500 100 = 10,000	HS20 – HS36	B = X7R N = BP COG (NP0)	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20% P = 0/+100% Z = -20%/+80%	C = CSAM	INERT LIQU D (BURN-IN) Standard for > 2KV; Add "F" if required for 500 V or 1 kV parts

### COG

Case Size	Voltage			
	500	1,000	2,000	3,000
HS20 (6.35 x 5.59 x 5.08)	27 pF – 4.7 nF	27 pF – 2.7 nF	12 pF – 470 pF	
HS21 (8.13 x 7.11 x 6.35)	39 pF – 8.2 nF	39 pF – 5.6 nF	22 pF – 1.2 nF	
HS22 (9.4 x 7.62 x 6.35)	47 pF – 0.012 μF	47 pF – 5.6 nF	27 pF – 1.5 nF	
HS23 (11.94 x 10.16 x 6.89)	120 pF – 0.033 μF	120 pF – 0.022 μF	47 pF – 2.7 nF	47 pF – 1.8 nF
HS24 (14.48 x 12.7 x 6.89)	220 pF – 0.056 μF	220 pF – 0.047 μF	100 pF – 5.6 nF	100 pF – 3.3 nF
HS25 (17.02 x 15.24 x 6.89)	390 pF – 0.1 μF	390 pF – 0.047 μF	150 pF – 0.01 μF	150 pF – 6.8 nF
HS26 (19.56 x 18.29 x 6.89)	470 pF – 0.15 μF	470 pF – 0.068 μF	270 pF – 0.022 μF	270 pF – 0.01 μF
HS30 (11.43 x 5.59 x 5.08)	68 pF – 0.012 μF	68 pF – 5.6 nF	15 pF – 1 nF	15 pF – 390 pF
HS31 (13.97 x 7.11 x 6.35)	82 pF – 0.022 μF	82 pF – 0.012 μF	27 pF – 1.2 nF	27 pF – 1.2 nF
HS33 (21.59 x 10.16 x 6.89)	330 pF – 0.082 μF	330 pF – 0.047 μF	68 pF – 3.9 nF	68 pF – 2.7 nF
HS34 (26.67 x 12.7 x 6.89)	470 pF – 0.15 μF	470 pF – 0.068 μF	120 pF – 8.2 nF	120 pF – 5.6 nF
HS35 (31.75 x 15.24 x 6.89)	680 pF – 0.12 μF	680 pF – 0.1 μF	220 pF – 0.012 μF	220 pF – 8.2 nF
HS36 (36.83 x 18.29 x 6.89)	1 nF – 0.18 μF	1 nF – 0.068 μF	270 pF – 0.018 μF	270 pF – 0.012 μF

### COG (cont.)

Case Size	Voltage			
	4,000	5,000	7,500	10,000
HS24 (14.48 x 12.7 x 6.89)	15 pF – 1 nF	15 pF – 560 pF		
HS25 (17.02 x 15.24 x 6.89)	27 pF – 1.8 nF	27 pF – 1.5 nF		
HS26 (19.56 x 18.29 x 6.89)	47 pF – 2.7 nF	47 pF – 2.2 nF		
HS33 (21.59 x 10.16 x 6.89)	27 pF – 1.5 nF	27 pF – 1.2 nF		
HS34 (26.67 x 12.7 x 6.89)	47 pF – 3.3 nF	47 pF – 2.2 nF	18 pF – 820 pF	
HS35 (31.75 x 15.24 x 6.89)	82 pF – 4.7 nF	82 pF – 3.9 nF	33 pF – 1.2 nF	33 pF – 1 nF
HS36 (36.83 x 18.29 x 6.89)	120 pF – 0.01 μF	120 pF – 6.8 nF	56 pF – 2.7 nF	56 pF – 1.5 nF

### Aerospace & Defense (cont.)

#### HS Series High Voltage Space Quality, COG & X7R, Radial, 500 – 10,000 VDC (cont.)

Capacitance Range: 12 pF to 5.6 µF • Temperature Range: -55°C to +125°C



10	HS24	B	103	K	C	F
Rated Voltage (VDC)	Style/Size	Dielectric	Capacitance Code (pF)	Capacitance Tolerance	Grade/Test Level	Lead Finish
05 = 500 10 = 1,000 20 = 2,000 30 = 3,000 40 = 4,000 50 = 5,000 75 = 7,500 100 = 10,000	HS20 – HS36	B = X7R N = BP COG (NP0)	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20% P = 0/+100% Z = -20%/+80%	C = CSAM	INERT LIQUID (BURN-IN) Standard for > 2kV; Add "F" if required for 500 V or 1 kV parts

#### X7R

Case Size	Voltage			
	500	1,000	2,000	3,000
HS20 (6.35 x 5.59 x 5.08)	680 pF – 0.047 µF	680 pF – 0.012 µF	270 pF – 4.7 nF	
HS21 (8.13 x 7.11 x 6.35)	1.2 nF – 0.15 µF	1.2 nF – 0.047 µF	560 pF – 0.01 µF	
HS22 (9.4 x 7.62 x 6.35)	1.2 nF – 0.22 µF	1.2 nF – 0.1 µF	680 pF – 0.01 µF	
HS23 (11.94 x 10.16 x 6.89)	3.3 nF – 0.56 µF	3.3 nF – 0.27 µF	1.2 nF – 0.033 µF	1.2 nF – 0.015 µF
HS24 (14.48 x 12.7 x 6.89)	6.8 nF – 0.47 µF	6.8 nF – 0.47 µF	2.7 nF – 0.1 µF	2.7 nF – 0.012 µF
HS25 (17.02 x 15.24 x 6.89)	0.01 µF – 1 µF	0.01 µF – 0.47 µF	3.9 nF – 0.068 µF	3.9 nF – 0.022 µF
HS26 (19.56 x 18.29 x 6.89)	0.015 µF – 2.7 µF	0.015 µF – 1 µF	6.8 nF – 0.18 µF	6.8 nF – 0.056 µF
HS30 (11.43 x 5.59 x 5.08)	1.8 nF – 0.082 µF	1.8 nF – 0.018 µF	390 pF – 3.3 nF	390 pF – 1.2 nF
HS31 (13.97 x 7.11 x 6.35)	2.7 nF – 0.33 µF	2.7 nF – 0.1 µF	560 pF – 0.01 µF	560 pF – 8.2 nF
HS33 (21.59 x 10.16 x 6.89)	0.01 µF – 1.5 µF	0.01 µF – 0.22 µF	1.8 nF – 0.033 µF	1.8 nF – 0.015 µF
HS34 (26.67 x 12.7 x 6.89)	0.012 µF – 1.2 µF	0.012 µF – 1.2 µF	3.3 nF – 0.068 µF	3.3 nF – 0.027 µF
HS35 (31.75 x 15.24 x 6.89)	0.018 µF – 2.7 µF	0.018 µF – 0.47 µF	5.6 nF – 0.27 µF	5.6 nF – 0.068 µF
HS36 (36.83 x 18.29 x 6.89)	0.027 µF – 5.6 µF	0.027 µF – 2.2 µF	8.2 nF – 0.15 µF	8.2 nF – 0.15 µF

#### X7R (cont.)

Case Size	Voltage				
	4,000	5,000	7,000	7,500	10,000
HS25 (17.02 x 15.24 x 6.89)	680 pF – 0.01 µF	680 pF – 0.01 µF			
HS26 (19.56 x 18.29 x 6.89)	1.2 nF – 0.015 µF	1.2 nF – 0.015 µF			
HS30 (11.43 x 5.59 x 5.08)					
HS33 (21.59 x 10.16 x 6.89)	680 pF – 6.8 nF	680 pF – 4.7 nF		220 pF – 4.7 nF	
HS34 (26.67 x 12.7 x 6.89)	1.2 nF – 0.015 µF	1.2 nF – 0.015 µF		470 pF – 3.3 nF	
HS35 (31.75 x 15.24 x 6.89)	2.2 nF – 0.022 µF	2.2 nF – 0.012 µF		820 pF – 0.01 µF	820 pF – 3.3 nF
HS36 (36.83 x 18.29 x 6.89)	3.3 nF – 0.068 µF	3.3 nF – 0.039 µF	1.2 nF – 0.033 µF		1.2 nF – 0.033 µF



### Aerospace & Defense (cont.)

#### SCA Series, Axial, C<sup>3</sup> Technology, C0G Dielectric, 50 – 200 VDC (Commercial Grade)

Capacitance Range: 10 pF to 0.1 μF Temperature Range: 55°C to +125°C



S	C	A	69	B	104	J	W	S	
Specification/ Series	Dielectric	Lead Configuration	Style/Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Lead Finish <sup>2</sup>	Screening Option	Packaging/Grade (C-Spec)
S=Standard	C = C0G	A = Axial	16 25 39 50 69	B = 50 D = 100 F = 200	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	J = ±5% K = ±10% M = ±20%	W = SnPb (60/40) G = Au	S = Standard A = Group A (MIL-PRF-20)	Blank = Tray

Case Size	Voltage		
	50	100	200
16 (4.32 x 2.03 x 2.03)	1 pF – 820 pF	1 pF – 560 pF	1 pF – 220 pF
25 (6.86 x 2.54 x 2.54)	56 pF – 4.7 nF	56 pF – 4.7 nF	56 pF – 1.2 nF
39 (10.16 x 3.81 x 3.81)	150 pF – 0.015 μF	150 pF – 0.015 μF	150 pF – 8.2 nF
50 (13.21 x 6.73 x 4.06)	390 pF – 0.039 μF	390 pF – 0.033 μF	390 pF – 0.022 μF
69 (18.29 x 9.4 x 4.06)	820 pF – 0.1 μF	820 pF – 0.1 μF	820 pF – 0.068 μF

#### SCR Series, Radial, C<sup>3</sup> Technology, C0G Dielectric, 50 – 200 VDC (Commercial Grade)

Capacitance Range: 12 pF to 0.15 μF • Temperature Range: -55°C to +125°C



S	C	R	09	D	184	J	W	S	
Specification/ Series	Dielectric	Lead Configuration	Style/Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Lead Finish <sup>2</sup>	Screening Option	Packaging/Grade (C-Spec)
S=Standard	C = C0G	R = Radial	05 06 07 08 09	B = 50 D = 100 F = 200	2 significant digits + number of zeros Use 9 for 1.0 – 9.9 pF Use 8 for 0.5 – .99 pF ex. 2.2 pF = 229 ex. 0.5 pF = 508	J = ±5% K = ±10% M = ±20%	W = SnPb (60/40) G = Au	S = Standard A = Group A (MIL-PRF-20)	Blank = Tray

Case Size	Voltage		
	50	100	200
05 (5.08 x 5.08 x 2.54)	10 pF – 0.015 μF	10 pF – 0.015 μF	10 pF – 5.6 nF
06 (7.62 x 7.62 x 2.54)	270 pF – 0.022 μF	270 pF – 0.022 μF	270 pF – 0.012 μF
07 (7.62 x 7.62 x 3.81)	270 pF – 0.068 μF	270 pF – 0.033 μF	270 pF – 0.018 μF
08 (12.7 x 12.7 x 2.54)	270 pF – 0.1 μF	270 pF – 0.082 μF	270 pF – 0.068 μF
09 (12.7 x 12.7 x 3.81)	270 pF – 0.1 μF	270 pF – 0.1 μF	270 pF – 0.068 μF

### Aerospace & Defense (cont.)

#### SRA Series, Axial, C<sup>3</sup> Technology, X7R Dielectric, 50 – 200 VDC (Commercial Grade)

Capacitance Range: 1,000 pF to 5.6 μF • Temperature Range: -55°C to +125°C



S	R	A	69	B	475	J	W	S	
Specification/ Series	Dielectric	Lead Configuration	Style/Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Lead Finish <sup>2</sup>	Screening Option	Packaging/Grade (C-Spec)
S=Standard	R = X7R	A = Axial	16 25 39 50 69	B = 50 D = 100 F = 200	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	W = SnPb (60/40) G = Au	S = Standard A = Group A (MIL-PRF-39014)	Blank = Tray

Case Size	Voltage		
	50	100	200
16 (4.32 x 2.03 x 2.03)	100 pF – 0.047 μF	100 pF – 0.027 μF	100 pF – 5.6 nF
25 (6.86 x 2.54 x 2.54)	100 pF – 0.27 μF	100 pF – 0.22 μF	100 pF – 0.047 μF
39 (10.16 x 3.81 x 3.81)	180 pF – 1 μF	180 pF – 0.68 μF	180 pF – 0.15 μF
50 (13.21 x 6.73 x 4.06)	390 pF – 2.2 μF	390 pF – 1.5 μF	390 pF – 0.47 μF
69 (18.29 x 9.4 x 4.06)	820 pF – 4.7 μF	820 pF – 2.7 μF	820 pF – 0.68 μF

#### SRR Series, Radial, C<sup>3</sup> Technology, X7R Dielectric, 50 – 200 VDC (Commercial Grade)

Capacitance Range: 680 pF to 4.7 μF • Temperature Range: -55°C to +125°C



S	R	R	09	D	475	J	W	S	
Specification/ Series	Dielectric	Lead Configuration	Style/Size	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance <sup>1</sup>	Lead Finish <sup>2</sup>	Screening Option	Packaging/ Grade (C-Spec)
S=Standard	R = X7R	R=Radial	05 06 07 08 09	B = 50 V D = 100 V F = 200 V	2 significant digits + number of zeros	J = ±5% K = ±10% M = ±20%	W = SnPb (60/40) G = Au	S = Standard A = Group A (MIL-PRF-39014)	Blank = Tray

Case Size	Voltage		
	50	100	200
05 (5.08 x 5.08 x 2.54)	100 pF – 0.68 μF	100 pF – 0.68 μF	100 pF – 0.22 μF
06 (7.62 x 7.62 x 2.54)	330 pF – 0.56 μF	330 pF – 0.56 μF	330 pF – 0.22 μF
07 (7.62 x 7.62 x 3.81)	330 pF – 2.2 μF	330 pF – 1.5 μF	330 pF – 0.82 μF
08 (12.7 x 12.7 x 2.54)	680 pF – 4.7 μF	680 pF – 4.7 μF	680 pF – 1.8 μF
09 (12.7 x 12.7 x 3.81)	680 pF – 6.8 μF	680 pF – 4.7 μF	680 pF – 2.7 μF

# Ceramic Capacitors

## Disc

### Safety

**Safety Standard Recognized, 900 Series, Radial Disc, Encapsulated, AC Type, X1 400 VAC/Y2 250 VAC (Industrial Grade)**  
 Capacitance Range: 2 pF to 10,000 pF Temperature Range: -40°C to +125°C



C9	8	1	U	103	M	Y	V	D	A	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1,2,4</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/Temp. Char.	Design	Lead Config. <sup>1,3,4</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 6 = 13.0 mm 8 = 15.0 mm	5 = 5.0 mm 7 = 7.5 mm 1 = 10.0 mm	U = Safety	2 significant digits + number of zeroes	J = ±5% K = ±10% M = ±20%	Y = X1 400 VAC /Y2 250 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside Kink D = Inside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	Y5V	SL	Y5P	Y5U
7	1 nF – 2.2 nF	10 pF – 51 pF	100 pF – 470 pF	1 nF
8		56 pF – 75 pF	560 pF – 680 pF	
9	3.3 nF	82 pF	820 pF – 1 nF	1.5 nF – 2.2 nF
10		100 pF		
11	3.9 nF – 4.7 nF			3.3 nF
13	6.8 nF			3.9 nF – 4.7 nF
15	0.01 µF			

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### Safety (cont.)

**Safety Standard Recognized, 900 Series, Radial Disc, Encapsulated, AC Type, X1 440 VAC/Y2 300 VAC (Industrial Grade)**  
 Capacitance Range: 2 pF to 10 000 pF • Temperature Range: -40 °C to +125°C



C9	7	1	U	472	M	Z	W	D	A	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1,3</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/Temp. Char.	Design	Lead Config. <sup>2,3</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 6 = 13.0 mm 8 = 15.0 mm	7 = 7.5 mm 1 = 10.0 mm	U = Safety	2 significant digits + number of zeroes	J = ±5% K = ±10% M = ±20%	Z = X1 440 VAC /Y2 300 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside D = Inside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	Y5V	SL	Y5P	Y5U
7	1 nF – 2.2 nF	10 pF – 51 pF	100 pF – 470 pF	1 nF
8		56 pF – 75 pF	560 pF – 680 pF	
9	3.3 nF	82 pF	820 pF – 1 nF	1.5 nF – 2.2 nF
10		100 pF		
11	3.9 nF – 4.7 nF			3.3 nF
13	6.8 nF			3.9 nF – 4.7 nF
15	0.01 µF			

**Safety Standard Recognized, 900 Series, Radial Disc, Encapsulated, AS Type, X1 760 VAC/Y1 500 VAC (Industrial Grade)**  
 Capacitance Range: 2,200 pF • Temperature Range: -25°C to +125°C



C9	6	1	U	222	M	W	W	D	A	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/Temp. Char.	Design	Lead Config. <sup>1</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	6 = 13.0 mm	1 = 10.0 mm	U = Safety	2 significant digits + number of zeroes	M = ±20%	W = X1 760 VAC /Y1 500 VAC	W = Y5U	D = Disc	A = Straight B = Vertical Kink C = Outside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage
	Y5U
13	2.2 nF

# Ceramic Capacitors

## Disc

### Safety (cont.)

**Safety Standard Recognized, 900 Series, Radial Disc, Encapsulated, AH Type, X1 400 VAC/Y1 250 VAC (Industrial Grade)**  
 Capacitance Range: 2.0 pF to 4,700 pF • Temperature Range: -25°C to +125°C



C9	1	1	U	620	J	U	S	D	A	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/Temp. Char.	Design	Lead Config. <sup>2</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 5 = 12.0 mm 7 = 14.0 mm	1 = 10.0 mm	U = Safety	2 significant digits + number of zeroes	J = ±5% K = ±10% M = ±10%	U = X1 400 VAC /Y1 250 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	Y5V	SL	Y5P	Y5U
7	1 nF	15 pF – 39 pF	100 pF – 330 pF	
8	1.5 nF	47 pF – 62 pF	470 pF	1 nF
9	2.2 nF	68 pF – 82 pF	560 pF – 680 pF	1.5 nF
10		100 pF		2.2 nF
11	3.3 nF		1 nF	
12	4.7 nF			3.3 nF
13				3.9 nF
14				4.7 nF

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### Safety (cont.)

**Safety Standard Recognized, 900 Series, Radial Disc, Encapsulated, AH Type, X1 400 VAC/Y1 400 VAC (Industrial Grade)**  
 Capacitance Range: 2.0 pF to 4,700 pF • Temperature Range: -25°C to +125°C



C9	3	1	U	101	J	V	S	D	A	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/Temp. Char.	Design	Lead Config. <sup>2</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 5 = 12.0 mm 6 = 13.0 mm 7 = 14.0 mm	1 = 10.0 mm	U = Safety	2 significant digits + number of zeroes	J = ±5% K = ±10% M = ±20%	V = X1 400 VAC /Y1 400 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

Case Size	Voltage			
	Y5V	SL	Y5P	Y5U
7	1 nF	15 pF – 39 pF	100 pF – 330 pF	
8	1.5 nF	47 pF – 62 pF	470 pF	1 nF
9	2.2 nF	68 pF – 82 pF	560 pF – 680 pF	1.5 nF
10		100 pF		2.2 nF
11	3.3 nF		1 nF	
12	4.7 nF			3.3 nF
13				3.9 nF
14				4.7 nF

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### Safety (cont.)

#### ERO610 Series, Radial AC Type, X1 440 VAC/Y2 250 VAC

Capacitance Range: 1,000 pF to 2,000 pF • Temperature Range: -40°C to +125°C



ERO610	R	J	4250	K	BFO
Series	Safety Class/Sub-Class	Lead Spacing	Capacitance Code (pF)	Capacitance Tolerance	Lead Configuration & Packaging
ERO610	R = X1/Y2	J = 5.0 mm K = 7.5 mm	Digits 2 – 4 indicate the first three significant figures of capacitance in pF. The first digit indicates the total number of significant figures of capacitance. Example: 12,000 pF = 5120 1,800 pF = 4180 150 pF = 3150	K = ±10% M = ±20%	Please refer to datasheet

Case Size	Voltage
	K4000
6.5	1 nF
8	1.5 nF – 1.8 nF
9	2.2 nF – 2.5 nF
10	3.3 nF
12	4.7 nF – 5 nF
17	6.8 nF – 8.2 nF
21	0.01 µF – 0.012 µF

#### ERK610 Series, Radial AC Type, X1 440 VAC/Y2 300 VAC

Capacitance Range: 33 pF to 4,700 pF • Temperature Range: -40°C to +125°C



ERK610	R	K	4470	K	CF0
Series	Safety Class/Sub-Class	Lead Spacing	Capacitance Code (pF)	Capacitance Tolerance	Lead Configuration & Packaging
ERK610	R = X1/Y2	K = 7.5 mm	Digits 2 – 4 indicate the first three significant figures of capacitance in pF. The first digit indicates the total number of significant figures of capacitance. Example: 12,000 pF = 5120 1,800 pF = 4180 150 pF = 3150	K = ±10% M = ±20%	Please refer to datasheet

Case Size	Voltage					
	K1200	K1500	K2000	K4000	K6000	N750
7					1 nF	
8	68 pF	100 pF	150 pF – 330 pF	470 pF	1.5 nF	33 pF – 47 pF
9				680 pF		
10					2.2 nF	
11.5					3.3 nF	
14					3.9 nF – 4.7 nF	

### Safety (cont.)

#### ERP610 Series, Radial AC Type, X1 760 VAC/Y2 500 VAC

Capacitance Range: 33 pF to 4,700 pF • Temperature Range: -40°C to +125°C



ERP610	V	H	4470	K	EF0
Series	Safety Class/Sub-Class	Lead Spacing	Capacitance Code (pF)	Capacitance Tolerance	Lead Configuration & Packaging
ERP610	V = X1 / Y1	H = 12.5 mm	Digits 2 – 4 indicate the first three significant figures of capacitance in pF. The first digit indicates the total number of significant figures of capacitance. Example: 12,000 pF = 5120 1,800 pF = 4180 150 pF = 3150	K = ±10% M = ±20%	Please refer to datasheet

Case Size	Voltage				
	K1200	K1500	K2000	K4000	N750
8	47 pF – 68 pF	100 pF	150 pF – 330 pF	470 pF – 680 pF	33 pF
9				1 nF	
10				1.5 nF	
12				2.2 nF	
13				2.7 nF	
15				3.3 nF – 3.9 nF	
17				4.7 nF	

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### Safety (cont.)

#### KJN Series, Y5P, Y5U and Y5V Dielectric, Y1 250/400 VAC/X1 440 VAC

Capacitance Range: 100 pF to 4,700 pF • Temperature Range: -25°C to +125°C



KJN	331	K	Q	35		F	G
Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Size (mm)		Lead Spacing (mm)	Temperature Code
	2 significant digits + number of zeros	K = ±10% M = ±20%	Q = 440 VDC/X1, 250 VAC/Y1	28 = 7 31 = 8 35 = 9 39 = 10 43 = 11 47 = 12 51 = 13	55 = 14 59 = 15 63 = 16 67 = 17 71 = 18 79 = 20 87 = 22	F = 10 G = 12.5	A = Y5U or better B = Y5V G = Y5P

Case Size	Voltage		
	Y5V	Y5P	Y5U
9	1 nF – 1.5 nF	100 pF – 330 pF	1 nF
10	2.2 nF	470 pF – 560 pF	
11		680 pF	1.5 nF
12	3.3 nF		
13	3.9 nF		2.2 nF
14	4.7 nF		3.3 nF
15			3.9 nF
16			4.7 nF

#### 250 VAC

Case Size	Voltage		
	Y5V	Y5P	Y5U
9	1 nF – 1.5 nF	100 pF – 470 pF	1 nF
10	2.2 nF	560 pF – 680 pF	
11			1.5 nF
12	3.3 nF		2.2 nF
13	3.9 nF – 4.7 nF		
14			3.3 nF
15			3.9 nF – 4.7 nF

### Safety (cont.)

#### KJY Series, Y5P, Y5U & Y5V Dielectric, Y2 250 VAC/X1 400 VAC

Capacitance Range: 100 pF to 10,000 pF • Temperature Range: -25°C to +125°C



KJY	102	M	R	31		F	A
Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Size (mm)		Lead Spacing (mm)	Temperature Code
	2 significant digits + number of zeros	K = ±10% M = ±20%	R = 400 VAC/X1, 250 VAC/Y2	28 = 7 31 = 8 35 = 9 39 = 10 43 = 11 47 = 12 51 = 13	55 = 14 59 = 15 63 = 16 67 = 17 71 = 18 79 = 20 87 = 22	F = 10 G = 12.5	A = Y5U or better B = Y5V G = Y5P

Case Size	Voltage		
	Y5V	Y5P	Y5U
8	1 nF – 1.5 nF	100 pF – 470 pF	1 nF
9	2.2 nF	560 pF – 680 pF	1.5 nF
10	3.3 nF	1 nF	2.2 nF
11	3.9 nF		2.5 nF
12	4.7 nF		3.3 nF
13			3.9 nF
14			4.7 nF
16	0.01 µF		

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# Ceramic Capacitors

## Disc

### Commercial Grade

#### KHA Series, X7R Dielectric, 1,000 – 2,000 VDC

Capacitance Range: 100 pF to 4,700 pF • Temperature Range: -55°C to +125°C



KHA	152	K	N	35		C	H
Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Size (mm)		Lead Spacing (mm)	Temperature Code
	2 significant digits + number of zeros	K = ±10% M = ±20%	N = 1,000 VDC P = 2,000 VDC	28 = 7 31 = 8 35 = 9 39 = 10 43 = 11 47 = 12 51 = 13	55 = 14 59 = 15 63 = 16 67 = 17 71 = 18 79 = 20 87 = 22	C = 5 D = 7.5	H = X7R

#### 1,000 VDC

Case Size	Voltage
	X7R
5.5	100 pF – 470 pF
6.5	560 pF – 820 pF
7.5	1 nF – 1.2 nF
8.5	1.5 nF
9.5	1.8 nF
10.5	2.2 nF
12.5	2.7 nF – 3.3 nF
14.5	3.9 nF – 4.7 nF

#### 2,000 VDC

Case Size	Voltage
	X7R
8.5	100 pF – 270 pF
9.5	330 pF – 560 pF
10.5	680 pF – 1 nF
12.5	1.2 nF – 1.5 nF
14.5	1.8 nF – 2.7 nF
16.5	3.3 nF

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### Commercial Grade (cont.)

#### KHB Series, Y5P Dielectric, 1,000 – 2,000 VDC

Capacitance Range: 100 pF to 10,000 pF • Temperature Range: -25°C to +85°C



KHB	122	K	N	31		D	G
Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Size (mm)		Lead Spacing (mm)	Temperature Code
	2 significant digits + number of zeros	K = ±10% M = ±20%	N = 1,000 VDC P = 2,000 VDC	28 = 7 31 = 8 35 = 9 39 = 10 43 = 11 47 = 12 51 = 13	55 = 14 59 = 15 63 = 16 67 = 17 71 = 18 79 = 20 87 = 22	C = 5 D = 7.5	G = Y5P

#### 1,000 VDC

Case Size	Voltage
	Y5P
5.5	100 pF – 470 pF
6.5	560 pF – 1 nF
7.5	1.2 nF – 1.5 nF
8.5	1.8 nF
9.5	2.2 nF
10.5	2.7 nF
12.5	3.3 nF – 4.7 nF
14.5	5.6 nF – 6.8 nF
16.5	8.2 nF – 0.01 μF

#### 2,000 VDC

Case Size	Voltage
	Y5P
7.5	100 pF – 180 pF
8.5	220 pF – 470 pF
9.5	560 pF – 820 pF
10.5	1 nF
11.5	1.2 nF – 1.5 nF
12.5	1.8 nF – 2.2 nF
14.5	2.7 nF
15.5	3.3 nF
17.5	3.9 nF – 4.7 nF
19.5	5.6 nF – 6.8 nF
21.5	8.2 nF – 0.01 μF

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### Commercial Grade (cont.)

#### KHC Series, SL Dielectric, 1,000 – 2,000 VDC

Capacitance Range: 15 pF to 560 pF • Temperature Range: -55°C to +125°C



KHC	820	K	N	28		D	C
Series	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Size (mm)		Lead Spacing (mm)	Temperature Code
	2 significant digits + number of zeros	K = ±10% M = ±20%	N = 1,000 VDC P = 2,000 VDC	28 = 7 31 = 8 35 = 9 39 = 10 43 = 11 47 = 12 51 = 13	55 = 14 59 = 15 63 = 16 67 = 17 71 = 18 79 = 20 87 = 22	C = 5 D = 7.5	C = SL

#### 1,000 VDC

Case Size	Voltage
	SL
5.5	15 pF – 68 pF
6.5	82 pF – 100 pF
7.5	120 pF – 150 pF
8.5	180 pF – 220 pF
9.5	270 pF
10.5	330 pF – 390 pF
12.5	470 pF
14.5	560 pF

#### 2,000 VDC

Case Size	Voltage
	SL
8.5	22 pF – 56 pF
9.5	68 pF – 100 pF
10.5	120 pF – 150 pF
12.5	180 pF
13.5	220 pF
14.5	270 pF
15.5	330 pF
16.5	390 pF

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# Film Capacitors

THROUGH-HOLE FILM CAPACITORS									
General Purpose		Pulse & AC			Safety/EMI				
Metallized Polyester	Metallized Paper & Polyphenylene Sulfide	Single Metallized Polypropylene	Double Metallized Polypropylene	Film/Foil Polypropylene	X1 Class	X2 Class	Y1 Class	Y2 Class	Multiple X & Y
F611 & F612 5 – 37.5 mm 50 – 1,000 VDC	PME261 (P561) Impregnated Paper 400 – 1,000 VDC	F461 – 464 Halogen Free 160 – 500 VDC	PHE450 (F450) DC Applications 250 – 3,000 VAC	R73 Radial 100 – 2,000 VDC	F871 – F873 Halogen Free Metallized Polypropylene 330/480/760 VAC	F861 Metallized Polypropylene 310 VAC	P295 Metallized Impregnated Paper 500 VA	F881 Halogen Free Metallized Polypropylene 300 VAC	PHZ9004 (9004) Metallized Polypropylene 300 VAC (3x X2)
F622 – 125 C Halogen Free 5 mm (Stacked) 50 – 630 VDC	SMR (F211) Polyphenylene Sulfide 150 C 50 – 400 VDC	R79 5 mm Lead Spacing 160 – 630 VDC	R76 DC & Pulse Applications 250 – 2,000 VDC	PFR (F411) Radial 63 – 1,000 VDC	R49 Metallized Polypropylene 310 VAC/330 VAC	F 62 Metallized Polypropylene 310 VAC	PME295 (P295) Metallized Impregnated Paper 440 VAC/480 VAC	R41 Metallized Polypropylene 300 VAC	PMZ2074 (P 74) Metallized Impregnated Paper 275 VAC (2x X2)
R60 10 – 37.5 mm 50 – 1,000 VDC		R75 160 – 2,000 VDC		A72 Axial 100 – 2,000 VDC	R47 Metallized Polypropylene 440 VAC	R4 Metallized Polypropylene 440 VAC/510 VAC		PME271YA E (P272) Impregnated Paper 300 VAC	PZB300 (P300) Metallized Impregnated Paper 275 VAC (X2 2x Y2)
R66 7.5 mm Lead Spacing 50 – 630 VDC		R74 AC Applications 250 – 900 VDC			P278 Metallized Impregnated Paper 480 VAC	R46 Metallized Polypropylene 310 V C		PME271Y (P271) Impregnated Paper 250 VAC	
R82 5 mm Lead Spacing 50 – 400 VDC		R74 – 125 C AC Applications 500 – 700 VDC			P410 Metallized Impregnated Paper 300 VAC	R46 (Miniature) Metallized Polypropylene 275 VAC			
RSB – 125 C 5 mm (Stacked) 50 – 630 VDC		R71 SMPS PFC Applications 420 – 1,000 VDC			PME271E (P277) Metallized Impregnated Paper 300 VAC	R46 – 125 C Metallized Polypropylene 275 VAC			
A50 Axial 50 – 1,000 VDC		A70 Axial 160 – 630 VDC			PHE844 (F844) Metallized Polypropylene 440/480 VAC	PME264 (P264) Metallized Impregnated Paper 660 VAC			
MDK (F683/4/5/7/8) Dual In-Line High Current 50 – 630 VDC					PHE845 (F845) Metallized Polypropylene 760 VAC	P409 Metallized Impregnated Paper 275 VAC			
						PME271M (P276) Metallized Impregnated Paper 275 VAC			

POWER & APPLICATION OPTIMIZED FILM CAPACITORS						
Power Film			Motor Run Applications	High Voltage Transient Suppression	Low Voltage Transient Suppression	Capacitive AC Power Supply
Axial	Radial	Screw/Faston Terminal	Screw/Faston Terminal	Radial	Radial	Radial
C4C Axial Round 850 – 3,000 VDC/ 450 – 750 VAC	C4AE 2 or 4 Leads DC Link 450 – 1,100 VDC	C4DE Low Inductance DC Link 400 – 1,000 VDC	C27 Plastic Case 425 – 450 VAC	F43 Integrated Resistor Metallized Polypropylene 250 – 630 VDC	F5A Integrated Varistor 18 – 63 VDC	F862 Metallized Polypropylene 310 VAC
C4DC GTO Snubbing 850 – 1,400 VDC/ 500 – 700 VAC	C4AS 2 or 4 Leads 850 – 3,000 VDC/ 500 – 750 VAC	C44A General Purpose & Snubbing 400 – 1,500 VDC/ 250 – 630 VAC	C87 Aluminum Case 470 VAC	PMR205 (P405) Integrated Resistor Metallized Impregnated Paper 125 VAC/250 VDC	F5B Integrated Suppression Diode 18 – 63 VDC	R47 X1 – X2 Metallized Polypropylene 440 VAC
C4DR GTO Clamping 400 – 3,000 VDC/ 160 – 1,500 VAC	C4AT 2 or 4 Leads 250 – 850 VDC/ 160 – 450 VAC	C44B General Purpose & Snubbing 1,200 – 2,400 VDC/ 500 – 1,000 VAC		P409 Integrated Resistor Metallized Impregnated Paper 275 VAC	F5D Integrated Ceramic Capacitor 63 – 100 VDC	R75 2L Metallized Polypropylene 230 VAC / 250 VAC
C4G Axial Round 250 – 850 VDC/ 160 – 450 VAC	C4BS IGBT Direct Mount 850 – 3,000 VDC/ 550 – 750 VAC	C44H PFC & AC Filter 330 – 440 VAC/ 700 – 1,000 VDC		P410 Integrated 100 Ω Resistor Metallized Impregnated Paper 300 VAC		PME271E (P277) Metallized Impregnated Paper 300 VAC
	C4BT IGBT Direct Mount 400 – 850 VDC/ 250 – 450 VAC	C44P/C20A PFC & AC Filter 330 – 1,000 VAC/ 700 – 2,300 VDC		PMZ2035 (P435) Integrated 100 Ω Resistor Metallized Impregnated Paper 300 VDC		PME271M X2 (P276) Metallized Impregnated Paper 275 VAC
		C44U DC Link 700 – 1,300 VDC				
		C93 Filter Applications 400 – 600 VDC				
		C9T PFC & AC Filter 415 – 690 VAC				

SURFACE MOUNT FILM CAPACITORS			
Polyester (PET)	Polyethylene Naphthalate (PEN)	Metallized Polyphenylene Sulfide (PPS)	Y2 Class
F161 Encapsulated Stacked 50 – 400 VDC	LDE Unencapsulated Stacked 50 – 1,000 VDC	LDB Unencapsulated Stacked 16 VDC & 50 VDC	SMP253 (P101) Metallized Impregnated Paper 250 VAC
MDC (F153/4/5/7/8) Dual In-Line High Current 50 – 630 VDC	GMC (F115) Encapsulated Stacked Size 2220 – 6560 50 – 630 VDC	SMC (F125) Encapsulated Stacked 50 – 400 VDC	
MDS (F173/4/5) Dual In-Line High Current 50 – 630 VDC	GPC (F117) Encapsulated Double Metallized 63 – 1,000 VDC	SPC (F127) Encapsulated Double Metallized 100 – 630 VDC	

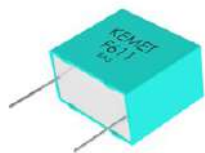
# Film Capacitors

## Through-Hole – General Purpose

### Metallized Polyester

#### F611 & F612 Series Metallized Polyester Film, 5 – 37.5 mm Lead Spacing, 50 – 1,000 VDC

Capacitance Range: 0.001 to 180  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	611	J	F	104	M	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polyester 611 = Wound 612 = Stacked	J = 5 K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	050 = 50 063 = 63 100 = 100 160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1,000	See Ordering Options Table

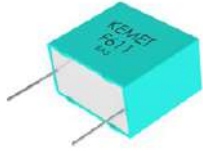
### F611

Case Size	Voltage							
	50/30	63/40	100/63	160/90	250/160	400/200	630/220	1,000/250
5 – 7.2 x 10 x 5	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$						22 nF	6.8 nF
5 – 7.2 x 11 x 6	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$						27 nF – 33 nF	8.2 nF – 12 nF
5 – 7.2 x 13 x 7.2	3.9 $\mu\text{F}$ – 6 $\mu\text{F}$						39 nF – 47 nF	15 nF
5 – 7.2 x 6.5 x 2.5	270 nF – 470 nF		1 nF		6.8 nF	1 nF	1.2 nF – 3.9 nF	1 nF
5 – 7.2 x 7.5 x 3.5	560 nF – 1 $\mu\text{F}$						4.7 nF – 10 nF	1.2 nF – 3.3 nF
5 – 7.2 x 9.5 x 4.5	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$						12 nF – 18 nF	3.9 nF – 5.6 nF
7.5 – 10 x 10.5 x 5							22 nF – 39 nF	8.2 nF – 12 nF
7.5 – 10 x 6 x 2.5							1.8 nF – 4.7 nF	1 nF – 1.5 nF
7.5 – 10 x 8 x 3							5.6 nF – 10 nF	1.8 nF – 3.3 nF
7.5 – 10 x 8 x 4							12 nF – 18 nF	3.9 nF – 6.8 nF
7.5 – 10.5 x 12 x 6							47 nF – 56 nF	15 nF – 22 nF
10 – 13 x 11 x 5					180 nF – 270 nF	100 nF – 150 nF	33 nF – 47 nF	15 nF – 18 nF
10 – 13 x 12 x 6				820 nF	330 nF – 470 nF	180 nF – 220 nF	56 nF – 82 nF	22 nF – 33 nF
10 – 13 x 9 x 4					100 nF – 150 nF	33 nF – 82 nF	12 nF – 27 nF	1 nF – 12 nF
15 – 18 x 10 x 4	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	330 nF – 390 nF	180 nF – 270 nF	56 nF – 150 nF	22 nF – 47 nF	8.2 nF – 18 nF
15 – 18 x 11 x 5	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	470 nF – 680 nF	330 nF – 390 nF	180 nF – 220 nF	56 nF – 82 nF	22 nF – 33 nF
15 – 18 x 12 x 6		3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1 $\mu\text{F}$	560 nF	330 nF	120 nF	47 nF
15 – 18 x 12.5 x 5.5	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.8 $\mu\text{F}$	820 nF	470 nF	270 nF	100 nF	39 nF
15 – 18 x 13.5 x 7.5	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	680 nF – 1 $\mu\text{F}$	390 nF – 560 nF	150 nF – 180 nF	56 nF – 68 nF
15 – 18 x 14.5 x 8.5	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$	680 nF	220 nF	82 nF – 100 nF
15 – 18 x 16 x 10	10 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	820 nF	270 nF – 330 nF	120 nF
15 – 18 x 19 x 11	12 $\mu\text{F}$ – 15 $\mu\text{F}$	12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 470 nF	150 nF – 180 nF
22.5 – 26 x 14.5 x 6		4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.8 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	270 nF – 680 nF	120 nF – 220 nF	33 nF – 100 nF
22.5 – 26 x 16 x 7		6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	270 nF – 330 nF	120 nF – 150 nF
22.5 – 26 x 16 x 8			6.8 $\mu\text{F}$		1.8 $\mu\text{F}$		390 nF	180 nF
22.5 – 26 x 18.5 x 10		15 $\mu\text{F}$	12 $\mu\text{F}$	4.7 $\mu\text{F}$	2.7 $\mu\text{F}$	1.8 $\mu\text{F}$	680 nF	270 nF
22.5 – 26 x 18.5 x 9		12 $\mu\text{F}$	10 $\mu\text{F}$	3.9 $\mu\text{F}$		1.5 $\mu\text{F}$	560 nF	220 nF
22.5 – 26 x 20 x 11		18 $\mu\text{F}$	15 $\mu\text{F}$	5.6 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	820 nF	330 nF
22.5 – 26 x 22 x 13		22 $\mu\text{F}$	18 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$	390 nF – 470 nF
22.5 – 26 x 24.5 x 15.5		27 $\mu\text{F}$ – 33 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 680 nF
22.5 – 26 x 17 x 8.5		10 $\mu\text{F}$	8.2 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.2 $\mu\text{F}$	470 nF	

### Metallized Polyester (cont.)

#### F611 & F612 Series Metallized Polyester Film, 5 – 37.5 mm Lead Spacing, 50 – 1,000 VDC (cont.)

Capacitance Range: 0.001 to 180  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	611	J	F	104	M	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polyester 611 = Wound 612 = Stacked	J = 5 K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	050 = 50 063 = 63 100 = 100 160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1,000	See Ordering Options Table

#### F611 (cont.)

Case Size	Voltage						
	63/40	100/63	160/90	250/160	400/200	630/220	1,000/250
27.5 – 31.5 x 17 x 9	15 $\mu\text{F}$	10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 8.2 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 1.8 $\mu\text{F}$	330 nF – 680 nF	150 nF – 330 nF
27.5 – 31.5 x 20 x 11	18 $\mu\text{F}$ – 22 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	390 nF – 470 nF
27.5 – 31.5 x 25 x 13	27 $\mu\text{F}$ – 33 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$	8.2 $\mu\text{F}$ – 12 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.8 $\mu\text{F}$	560 nF – 680 nF
27.5 – 31.5 x 28 x 14	39 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$	5.6 $\mu\text{F}$	2.2 $\mu\text{F}$	820 nF
27.5 – 31.5 x 28 x 17.5	47 $\mu\text{F}$	39 $\mu\text{F}$	27 $\mu\text{F}$	18 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 31.5 x 29 x 19	56 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$			1.5 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	68 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 82 $\mu\text{F}$	39 $\mu\text{F}$ – 56 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$
37.5 – 41 x 22 x 11	22 $\mu\text{F}$ – 27 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$	5.6 $\mu\text{F}$ – 12 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 1.8 $\mu\text{F}$	470 nF – 680 nF
37.5 – 41 x 24 x 13	33 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$
37.5 – 41 x 26 x 15	39 $\mu\text{F}$ – 47 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$	2.7 $\mu\text{F}$	1.2 $\mu\text{F}$
37.5 – 41 x 28.5 x 16	56 $\mu\text{F}$	56 $\mu\text{F}$	39 $\mu\text{F}$	27 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$
37.5 – 41 x 32 x 19	68 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	12 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$
37.5 – 41 x 38 x 21	82 $\mu\text{F}$ – 100 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$
37.5 – 41 x 44 x 24	120 $\mu\text{F}$ – 150 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$
37.5 – 41 x 45 x 30	180 $\mu\text{F}$	180 $\mu\text{F}$	120 $\mu\text{F}$	82 $\mu\text{F}$	33 $\mu\text{F}$	12 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$



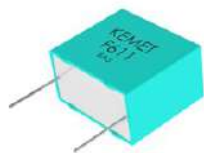
# Film Capacitors

## Through-Hole – General Purpose

### Metallized Polyester (cont.)

#### F611 & F612 Series Metallized Polyester Film, 5 – 37.5 mm Lead Spacing, 50 – 1,000 VDC (cont.)

Capacitance Range: 0.001 to 180  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	611	J	F	104	M	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polyester 611 = Wound 612 = Stacked	J = 5 K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	050 = 50 063 = 63 100 = 100 160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1,000	See Ordering Options Table

### F612

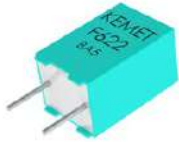
Case Size	Voltage							
	50/30	63/40	100/63	160/90	250/140	250/160	400/160	400/200
5 – 7.2 x 10 x 5		1 $\mu\text{F}$	560 nF – 680 nF		150 nF	82 nF – 100 nF	47 nF	27 nF – 33 nF
5 – 7.2 x 11 x 6		1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$		180 nF – 220 nF	120 nF – 150 nF	68 nF	39 nF – 56 nF
5 – 7.2 x 6.5 x 2.5		100 nF – 220 nF	1.2 nF – 120 nF		22 nF – 27 nF	8.2 nF – 18 nF	6.8 nF – 8.2 nF	1.2 nF – 4.7 nF
5 – 7.2 x 7.5 x 3.5		270 nF – 470 nF	150 nF – 270 nF		47 nF – 68 nF	22 nF – 39 nF	15 nF – 18 nF	5.6 nF – 82 nF
5 – 7.2 x 9.5 x 4.5		560 nF – 820 nF	330 nF – 470 nF		82 nF – 120 nF	47 nF – 68 nF	33 nF – 39 nF	15 nF – 22 nF
7.5 – 10 x 10.5 x 5	1.8 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$			180 nF – 220 nF		68 nF – 82 nF
7.5 – 10 x 8 x 3	680 nF – 1 $\mu\text{F}$	330 nF – 470 nF	68 nF – 220 nF			22 nF – 68 nF		6.8 nF – 27 nF
7.5 – 10 x 9 x 4	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	270 nF – 680 nF			82 nF – 150 nF		33 nF – 56 nF
7.5 – 10.5 x 12 x 6	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$			270 nF – 390 nF		100 nF – 150 nF
10 – 13 x 11 x 5	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 560 nF				
10 – 13 x 12 x 6	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	680 nF				
10 – 13 x 9 x 4	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	330 nF – 820 nF	180 nF – 330 nF				

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### Metallized Polyester (cont.)

F622 Series, 125°C, Halogen Free, 5 mm (Stacked), 50 – 630 VDC

Capacitance Range: 0.001 to 2.2  $\mu$ F • Temperature Range: -55°C to +125°C



F	622	J	F	104	M	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polyester	J = 5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	050 = 50 063 = 63 100 = 100 250 = 250 400 = 400 500 = 500 630 = 630	See Ordering Options Table

Case Size	Voltage						
	50/30	63/40	100/63	250/160	400/200	500/220	630/220
5 – 7.2 x 10 x 5		1 $\mu$ F	220 nF	100 nF	33 nF – 39 nF	10 nF	6.8 nF
5 – 7.2 x 11 x 6	2.2 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F	270 nF – 470 nF	120 nF – 150 nF	47 nF – 56 nF	12 nF – 15 nF	8.2 nF – 10 nF
5 – 7.2 x 6.5 x 2.5		100 nF – 220 nF	4.7 nF – 68 nF	1 nF – 82 nF	1 nF – 4.7 nF	1 nF – 1.8 nF	1 nF – 1.2 nF
5 – 7.2 x 7.5 x 3.5		270 nF – 470 nF	82 nF – 100 nF	22 nF – 39 nF	5.6 nF – 15 nF	2.2 nF – 4.7 nF	1.5 nF – 2.7 nF
5 – 7.2 x 9.5 x 4.5		560 nF – 820 nF	120 nF – 180 nF	47 nF – 82 nF	18 nF – 27 nF	5.6 nF – 8.2 nF	3.3 nF – 5.6 nF

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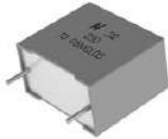
# Film Capacitors

## Through-Hole – General Purpose

### Metallized Polyester (cont.)

R60 Series, Radial, 10 – 37.5 mm Lead Spacing, 50 – 1,000 VDC (Automotive Grade)

Capacitance Range: 0.001 to 220  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



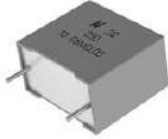
R60	M	F	2470	AA	60	K
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code ( $\mu\text{F}$ )	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 G = 160 I = 250 M = 400 P = 630 Q = 1000	F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	00 01 30 40 50 6A L0 L1	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage						
	63/40	100/63	160/90	250/160	400/200	630/220	1,000/250
10 – 13 x 11 x 5					68 nF – 100 nF	22 nF – 33 nF	4.7 nF
10 – 13 x 12 x 6					100 nF – 150 nF	33 nF – 47 nF	6.8 nF
10 – 13 x 9 x 4					15 nF – 68 nF	4.7 nF – 22 nF	1 nF – 3.3 nF
15 – 18 x 11 x 5	680 nF – 1.5 $\mu\text{F}$	330 nF – 1 $\mu\text{F}$	330 nF – 680 nF	100 nF – 330 nF	22 nF – 220 nF	33 nF – 68 nF	10 nF – 15 nF
15 – 18 x 12 x 13	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1 $\mu\text{F}$	470 nF – 680 nF		47 nF
15 – 18 x 12 x 6	2.2 $\mu\text{F}$			470 nF	220 nF	68 nF – 100 nF	22 nF
15 – 18 x 12.5 x 9	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	680 nF	330 nF – 470 nF	100 nF	33 nF
15 – 18 x 13.5 x 7.5	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$	680 nF	330 nF – 470 nF	100 nF – 150 nF	33 nF
15 – 18 x 16 x 10	6.8 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	680 nF	220 nF – 330 nF	47 nF
15 – 18 x 19 x 11		4.7 $\mu\text{F}$	3.3 $\mu\text{F}$		680 nF – 1 $\mu\text{F}$		68 nF
15 – 18 x 14.5 x 8.5	4.7 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$	470 nF	150 nF – 220 nF	
22.5 – 26.5 x 15 x 6	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$	220 nF – 680 nF	100 nF – 220 nF	33 nF – 47 nF
22.5 – 26.5 x 16 x 7	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	680 nF	220 nF – 330 nF	68 nF
22.5 – 26.5 x 17 x 8.5	10 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$		1 $\mu\text{F}$	330 nF	100 nF
22.5 – 26.5 x 22 x 13		10 $\mu\text{F}$	6.8 $\mu\text{F}$		2.2 $\mu\text{F}$	680 nF	150 nF
22.5 – 26.5 x 18.5 x 10		6.8 $\mu\text{F}$		2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	330 nF – 470 nF	
22.5 – 26.5 x 20 x 11	15 $\mu\text{F}$		4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	470 nF – 680 nF	
27.5 – 32 x 17 x 9	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$	1.5 $\mu\text{F}$ – 4.7 $\mu\text{F}$	680 nF – 1.5 $\mu\text{F}$	330 nF – 470 nF	150 nF – 220 nF
27.5 – 32 x 20 x 11	15 $\mu\text{F}$	15 $\mu\text{F}$	15 $\mu\text{F}$	6.8 $\mu\text{F}$		680 nF – 1 $\mu\text{F}$	330 nF
27.5 – 32 x 22 x 13	22 $\mu\text{F}$	22 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$		470 nF
27.5 – 32 x 28 x 14		33 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$	4.7 $\mu\text{F}$		680 nF
27.5 – 32 x 33 x 18	33 $\mu\text{F}$	47 $\mu\text{F}$	47 $\mu\text{F}$	22 $\mu\text{F}$	6.8 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$
27.5 – 32 x 37 x 22	47 $\mu\text{F}$ – 68 $\mu\text{F}$	68 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	22 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	470 nF – 680 nF
37.5 – 41.5 x 24 x 13	33 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$	6.8 $\mu\text{F}$	2.2 $\mu\text{F}$	1 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	47 $\mu\text{F}$	47 $\mu\text{F}$	47 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	68 $\mu\text{F}$	68 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$		4.7 $\mu\text{F}$	2.2 $\mu\text{F}$
37.5 – 41.5 x 44 x 24		150 $\mu\text{F}$		68 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$	3.3 $\mu\text{F}$
37.5 – 41.5 x 45 x 30			150 $\mu\text{F}$		33 $\mu\text{F}$		4.7 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	100 $\mu\text{F}$	100 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$		6.8 $\mu\text{F}$	

### Metallized Polyester (cont.)

#### R60 Series, Radial, 10 – 37.5 mm Lead Spacing, 63 – 1,000 VDC (Automotive Grade) (cont.)

Capacitance Range: 0.001 to 220  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



R60	M	F	2470	AA	60	K
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 G = 160 I = 250 M = 400 P = 630 Q = 1000	F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	00 01 30 40 50 6A L0 L1	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

### Stacked

Case Size	Voltage						
	50/30	63/40	100/63	160/90	250/160	400/200	630/220
10 – 13 x 11 x 5	3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	470 nF	220 nF – 330 nF	100 nF	33 nF – 47 nF
10 – 13 x 9 x 4	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$	330 nF – 680 nF	220 nF – 330 nF	100 nF – 150 nF	33 nF – 68 nF	10 nF – 22 nF
10 – 13 x 12 x 6	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	3.3 $\mu\text{F}$		680 nF	470 nF	150 nF	

#### R66 Series, Radial, 7.5 mm Lead Spacing, 50 – 630 VDC (Automotive Grade)

Capacitance Range: 0.001 to 4.7  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



R66	E	D	3100	AA	7A	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400 P = 630	D = 7.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	10 6A 7A	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	630/220
7.5 – 10 x 8 x 3	1 nF – 4.7 nF
7.5 – 10 x 9 x 4	6.8 nF

### Stacked

Case Size	Voltage					
	50/30	63/40	100/63	250/160	400/200	630/220
7.5 – 10 x 10.5 x 5	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$	220 nF	68 nF	22 nF
7.5 – 10 x 8 x 3	680 nF – 1 $\mu\text{F}$	330 nF – 470 nF	68 nF – 220 nF	22 nF – 68 nF	6.8 nF – 22 nF	
7.5 – 10 x 9 x 4	1.5 $\mu\text{F}$	680 nF – 1 $\mu\text{F}$	330 nF – 680 nF	100 nF – 150 nF	33 nF – 47 nF	10 nF – 15 nF
7.5 – 10.5 x 12 x 6	4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	330 nF	100 nF – 150 nF	33 nF – 47 nF

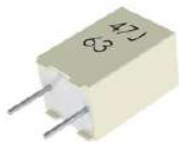
# Film Capacitors

## Through-Hole – General Purpose

### Metallized Polyester (cont.)

#### R82 Series, 5 mm Lead Spacing, 50 – 400 VDC (Automotive Grade)

Capacitance Range: 0.001 to 4.7  $\mu$ F • Temperature Range: -55°C to +105°C



R82	D	C	3470	AA	60	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400	C = 5.0	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	30 50 60 70	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage
	50/30
5 – 7.2 x 13 x 7.2	3.3 $\mu$ F – 4.7 $\mu$ F

### Stacked

Case Size	Voltage						
	50/30	63/40	100/63	250/140	250/160	400/160	400/200
5 – 7.2 x 10 x 5		1 $\mu$ F	680 nF	150 nF	100 nF	47 nF	33 nF
5 – 7.2 x 11 x 6	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F	220 nF	150 nF	68 nF	47 nF
5 – 7.2 x 6.5 x 2.5		100 nF – 220 nF	1 nF – 100 nF	22 nF	6.8 nF – 15 nF	6.8 nF	1 nF – 4.7 nF
5 – 7.2 x 7.5 x 3.5		330 nF – 470 nF	150 nF – 220 nF	47 nF – 68 nF	22 nF – 33 nF	15 nF	6.8 nF – 10 nF
5 – 7.2 x 9.5 x 4.5		680 nF	330 nF – 470 nF	100 nF	47 nF – 68 nF	33 nF	15 nF – 22 nF

#### RSB Series, 125°C, 5 mm (Stacked), 50 – 630 VDC (Automotive Grade)

Capacitance Range: 0.001 to 2.2  $\mu$ F • Temperature Range: -55°C to +125°C



RSB	D	C	3100	AA	00	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400 W = 500 P = 630	C = 5.0	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	30 50 60 70	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage						
	50/30	63/40	100/63	250/160	400/200	500/220	630/220
5 – 7.2 x 10 x 5		1 $\mu$ F	220 nF	100 nF	33 nF	10 nF	6.8 nF
5 – 7.2 x 11 x 6	2.2 $\mu$ F	1.5 $\mu$ F	330 nF – 470 nF	150 nF	47 nF	15 nF	10 nF
5 – 7.2 x 6.5 x 2.5		100 nF – 220 nF	4.7 nF – 68 nF	1 nF – 15 nF	1 nF – 4.7 nF	1 nF – 1.5 nF	1 nF
5 – 7.2 x 7.5 x 3.5		330 nF – 470 nF	100 nF	22 nF – 33 nF	6.8 nF – 15 nF	2.2 nF – 4.7 nF	1.5 nF – 2.2 nF
5 – 7.2 x 9.5 x 4.5		680 nF	150 nF	47 nF – 68 nF	22 nF	6.8 nF	3.3 nF – 4.7 nF

### Metallized Polyester (cont.)

#### A50 Series Axial Pulse DC Transient, 50 – 1,000 VDC (Automotive Grade)

Capacitance Range: 0.001 to 10  $\mu$ F • Temperature Range: -55°C to +105°C



A50	C	F	3470	AA	00	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code ( $\mu$ F)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400 P = 630 Q = 1000	F = 11 H = 14 K = 20.5 Q = 28 T = 33	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	00, 60 (Standard)	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage						
	50/30	63/40	100/63	250/160	400/200	630/220	1,000/250
5 x 11	470 nF – 680 nF	330 nF	100 nF – 220 nF	47 nF – 68 nF	10 nF – 33 nF	1 nF – 6.8 nF	
5 x 14						10 nF – 15 nF	
5.5 x 14				100 nF – 150 nF			
6 x 14		470 nF – 680 nF	330 nF – 470 nF		47 nF – 68 nF	22 nF	
6 x 20.5				330 nF	150 nF	33 nF – 47 nF	
6.5 x 11	1 $\mu$ F						
6.5 x 14				220 nF	100 nF		1 nF – 3.3 nF
6.5 x 20.5		1.5 $\mu$ F					
7 x 14	1.5 $\mu$ F	1 $\mu$ F	680 nF				
7 x 20.5			1 $\mu$ F	470 nF		68 nF	10 nF
7 x 28						100 nF	
7.5 x 14							4.7 nF
7.5 x 20.5	3.3 $\mu$ F				220 nF		15 nF
8 x 14	2.2 $\mu$ F						6.8 nF
8 x 20.5		2.2 $\mu$ F	1.5 $\mu$ F				
8 x 28							33 nF
8.5 x 20.5	4.7 $\mu$ F			680 nF	330 nF		
8.5 x 28				1 $\mu$ F – 1.5 $\mu$ F	470 nF	150 nF	
9 x 20.5							22 nF
9 x 28							47 nF
9.5 x 20.5		3.3 $\mu$ F	2.2 $\mu$ F				
9.5 x 28		4.7 $\mu$ F	3.3 $\mu$ F				
10 x 20.5	6.8 $\mu$ F						
10 x 28					680 nF	220 nF	
10 x 33			4.7 $\mu$ F				
10.5 x 28							68 nF
10.5 x 33					1 $\mu$ F	330 nF	
11 x 28		6.8 $\mu$ F					
11 x 33				2.2 $\mu$ F			
11.5 x 33		10 $\mu$ F					

# Film Capacitors

## Through-Hole – General Purpose

### Metallized Polyester (cont.)

#### A50 Series Axial Pulse DC Transient, 50 – 1,000 VDC (Automotive Grade) (cont.)

Capacitance Range: 0.001 to 10  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



A50	C	F	3470	AA	00	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code ( $\mu\text{F}$ )	Packaging	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400 P = 630 Q = 1000	F = 11 H = 14 K = 20.5 Q = 28 T = 33	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	See Ordering Options Table	00, 60 (Standard)	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

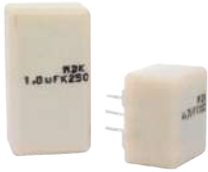
Case Size	Voltage				
	50/30	63/40	100/63	250/160	400/200
12 x 20.5	10 $\mu\text{F}$				
12 x 33			6.8 $\mu\text{F}$		
12.5 x 28					
12.5 x 33					1.5 $\mu\text{F}$
13 x 33				3.3 $\mu\text{F}$	
13.5 x 33					
14.5 x 33			10 $\mu\text{F}$		
15 x 33					2.2 $\mu\text{F}$
15.5 x 33				4.7 $\mu\text{F}$	
16 x 33					
17.5 x 33					
18.5 x 33				6.8 $\mu\text{F}$	3.3 $\mu\text{F}$
19 x 33					

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### Metallized Polyester (cont.)

MDK Series, Dual In-Line, High Current, 50 – 630 VDC

Capacitance Range: 0.033 to 15  $\mu$ F • Temperature Range: -55°C to +125°C



#### Legacy Part Number System

MDK	10	333	K	50	A52	P3	TUBE
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Number of Leads per Side	Packaging
Dual In-Line, Metallized Polyester	10 15	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm$ 5% K = $\pm$ 10% Other tolerances on request	50 100 250 400 630	See Dimension Table	P3 = 3 leads P4 = 4 leads P5 = 5 leads P7 = 7 leads P8 = 8 leads	See Ordering Options Table

#### New KEMET Part Number System

F	68	3	A	A	333	K	050	T
Capacitor Class	Series	Number of Leads per Side	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Dual In-Line, Metallized Polyester	3 = 3 leads 4 = 4 leads 5 = 5 leads 7 = 7 leads 8 = 8 leads	A = 10 B = 15	A = Standard box size	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm$ 5% K = $\pm$ 10% Other tolerances on request	050 = 50 100 = 100 250 = 250 400 = 400 630 = 630	See Ordering Options Table

Case Size	Voltage					
	50/30	100/35	100/63	250/160	400/200	630/220
A52	33 nF – 4.7 $\mu$ F	2.7 $\mu$ F – 3.9 $\mu$ F	33 nF – 4.7 $\mu$ F	33 nF – 470 nF	33 nF – 180 nF	33 nF – 56 nF
A53		4.7 $\mu$ F				
A54	5.6 $\mu$ F	4.7 $\mu$ F		560 nF		68 nF
A55	6.8 $\mu$ F	5.6 $\mu$ F		680 nF		
A57	8.2 $\mu$ F – 10 $\mu$ F		6.8 $\mu$ F	820 nF – 1 $\mu$ F	220 nF – 330 nF	
A58	12 $\mu$ F – 15 $\mu$ F		8.2 $\mu$ F – 10 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F	390 nF – 470 nF	82 nF – 180 nF
B53	33 nF – 6.8 $\mu$ F	4.7 $\mu$ F	33 nF – 3.9 $\mu$ F	33 nF – 680 nF	33 nF – 270 nF	33 nF – 100 nF
B55					330 nF	



# Film Capacitors

## Through-Hole – General Purpose

### Metallized Paper & Polyphenylene Sulfide

#### PME261 Series Impregnated Paper, 10.2 – 25.4 mm Lead Spacing, 400 – 1,000 VDC

Capacitance Range: 0.001 to 1  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  AC app &  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  DC app

#### Legacy Part Number System



PME261	K	A	5100	K	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Metallized Paper	K = 220 E = 300 J = 500	A = 10.2 B = 15.2 C = 20.3 E = 25.4	The last three digits represent significant figures. First digit specifies the total number of digits in the capacitance value.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	See Ordering Options Table

#### New KEMET Part Number System

P	561	H	E	103	K	220	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Metallized Paper General Purpose	H = 10.2 Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeroes.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	220 = 220 300 = 300 500 = 500	See Ordering Options Table

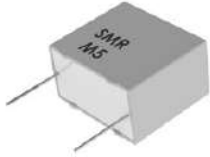
Case Size	Voltage		
	400/220	630/300	1,000/500
10.2 – 13.5 x 10.5 x 5.1	15 nF – 22 nF	10 nF – 15 nF	4.7 nF – 6.8 nF
10.2 – 13.5 x 7.5 x 3.9	8.2 nF – 10 nF	1 nF – 6.8 nF	1 nF – 3.3 nF
15.2 – 18.5 x 10.5 x 5.2	33 nF – 47 nF	22 nF – 33 nF	10 nF – 15 nF
15.2 – 18.5 x 13 x 7.3	68 nF – 100 nF	47 nF – 68 nF	22 nF
15.2 – 18.5 x 13.5 x 7.8			33 nF
20.3 – 24 x 14 x 7.6	150 nF	100 nF	47 nF
20.3 – 24 x 15 x 9		150 nF	68 nF
20.3 – 24 x 16.5 x 11.3	330 nF		100 nF
20.3 – 24 x 14 x 8.4	220 nF		
25.4 – 30.5 x 17.3 x 10.6	470 nF		
25.4 – 30.5 x 22 x 15.3	680 nF – 1 $\mu\text{F}$		

### Metallized Paper & Polyphenylene Sulfide (cont.)

SMR Series Polyphenylene Sulfide Film, +150°C, 5.0 – 27.5 mm Lead Spacing, 50 – 400 VDC

Capacitance Range: 0.001 to 22 µF • Temperature Range: -55°C to +150°C

#### Legacy Part Number System



SMR	5	104	K	50	J01	L4	BULK
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Lead Length	Packaging
Metallized PPS	5 = 5.0 7.5 = 7.5 10 = 10.0 15 = 15.0 22.5 = 22.5 27.5 = 27.5	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	H = ±2.5% J = ±5% K = ±10% M = ±20%	50 = 50 63 = 63 100 = 100 250 = 250 400 = 400	See Dimension Table	Letter "L" followed by lead length in mm	See Ordering Options Table

#### New KEMET Part Number System

F	211	J	F	104	K	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized PPS	J = 5.0 K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	R = ±2.5% J = ±5% K = ±10% M = ±20%	050 = 50 063 = 63 100 = 100 250 = 250 400 = 400	See Ordering Options Table

Case Size	Voltage				
	50/30	63/40	100/63	250/160	400/200
5 – 7.2 x 10 x 5	470 nF – 560 nF	270 nF – 330 nF	120 nF	56 nF	22 nF – 27 nF
5 – 7.2 x 11 x 6	680 nF – 820 nF	390 nF – 470 nF	150 nF – 180 nF	68 nF – 82 nF	33 nF – 39 nF
5 – 7.2 x 13 x 7.2	1 µF – 1.2 µF	560 nF – 680 nF	220 nF – 330 nF	100 nF – 120 nF	47 nF – 56 nF
5 – 7.2 x 6.5 x 2.5	1 nF – 120 nF	1 nF – 68 nF	1 nF – 39 nF	1 nF – 12 nF	1 nF – 3.9 nF
5 – 7.2 x 8 x 3.5	150 nF – 270 nF	82 nF – 150 nF	47 nF	15 nF – 27 nF	4.7 nF – 12 nF
5 – 7.2 x 9 x 4.5	330 nF – 390 nF	180 nF – 220 nF	56 nF – 100 nF	33 nF – 47 nF	15 nF – 18 nF
7.5 – 10 x 11 x 5	470 nF – 820 nF	330 nF – 560 nF	150 nF – 270 nF	56 nF – 100 nF	27 nF – 47 nF
7.5 – 10 x 8 x 4	1 nF – 390 nF	1 nF – 270 nF	1 nF – 120 nF	1 nF – 47 nF	1 nF – 22 nF
7.5 – 10.5 x 12 x 6	1 µF – 1.2 µF	680 nF – 820 nF	330 nF – 470 nF	120 nF – 150 nF	56 nF – 68 nF
10 – 13 x 10.5 x 4.5	820 nF – 1 µF	470 nF – 560 nF	270 nF	82 nF – 100 nF	39 nF
10 – 13 x 11 x 5	1.2 µF	680 nF	330 nF – 390 nF	120 nF	47 nF – 56 nF
10 – 13 x 12 x 6	1.5 µF – 1.8 µF	820 nF – 1 µF	470 nF – 560 nF	150 nF – 180 nF	68 nF – 82 nF
10 – 13 x 9 x 4	2.7 nF – 680 nF	2.7 nF – 390 nF	2.7 nF – 220 nF	2.7 nF – 68 nF	2.7 nF – 33 nF
15 – 18 x 10.5 x 5.5		680 nF – 820 nF	270 nF – 470 nF	100 nF – 150 nF	47 nF – 68 nF
15 – 18 x 12.5 x 5.5		1 µF	560 nF	180 nF	82 nF

# Film Capacitors

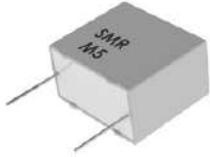
## Through-Hole – General Purpose

### Metallized Paper & Polyphenylene Sulfide (cont.)

SMR Series Polyphenylene Sulfide Film, +150°C, 5.0 – 27.5 mm Lead Spacing, 50 – 400 VDC (cont.)

Capacitance Range: 0.001 to 22 µF • Temperature Range: -55°C to +150°C

#### Legacy Part Number System



SMR	5	104	K	50	J01	L4	BULK
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Lead Length	Packaging
Metallized PPS	5 = 5.0 7.5 = 7.5 10 = 10.0 15 = 15.0 22.5 = 22.5 27.5 = 27.5	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	H = ±2.5% J = ±5% K = ±10% M = ±20%	50 = 50 63 = 63 100 = 100 250 = 250 400 = 400	See Dimension Table	Letter "L" followed by lead length in mm	See Ordering Options Table

#### New KEMET Part Number System

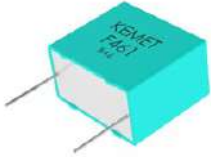
F	211	J	F	104	K	050	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized PPS	J = 5.0 K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	R = ±2.5% J = ±5% K = ±10% M = ±20%	050 = 50 063 = 63 100 = 100 250 = 250 400 = 400	See Ordering Options Table

Case Size	Voltage				
	50/30	63/40	100/63	250/160	400/200
15 – 18 x 12.5 x 6.5	2.2 µF	1.2 µF – 1.5 µF	680 nF	220 nF	100 nF
15 – 18 x 14.5 x 7.5	2.7 µF – 3.3 µF	1.8 µF	820 nF – 1 µF	270 nF – 330 nF	120 nF – 150 nF
15 – 18 x 15 x 8	3.9 µF	2.2 µF	1.2 µF	390 nF	180 nF
15 – 18 x 16 x 8.5	4.7 µF	2.7 µF	1.5 µF	470 nF	220 nF
15 – 18 x 17.5 x 9.5	5.6 µF	3.3 µF	1.8 µF	560 nF	270 nF
22.5 – 26 x 14.5 x 6.5		2.7 µF	1.5 µF	470 nF	150 nF – 220 nF
22.5 – 26 x 16 x 8		3.9 µF	2.2 µF		330 nF
22.5 – 26 x 16.5 x 7		3.3 µF	1.8 µF	560 nF – 680 nF	270 nF
22.5 – 26 x 18.5 x 9	6.8 µF – 8.2 µF	4.7 µF – 5.6 µF	2.7 µF	820 nF – 1 µF	390 nF – 470 nF
22.5 – 26 x 19 x 10.5	10 µF	6.8 µF	3.3 µF – 3.9 µF	1.2 µF	560 nF
22.5 – 26 x 21.5 x 11	12 µF	8.2 µF	4.7 µF	1.5 µF	680 nF
27.5 – 31.5 x 22.5 x 11.5	18 µF	10 µF	5.6 µF	2.2 µF	820 nF – 1 µF
27.5 – 31.5 x 24.5 x 14.5	22 µF	12 µF – 15 µF	6.8 µF – 8.2 µF	2.7 µF	1.2 µF
27.5 – 31.5 x 28 x 17.5		18 µF – 22 µF	10 µF – 12 µF	3.3 µF – 3.9 µF	1.5 µF – 1.8 µF
27.5 – 31.5 x 20.5 x 10.5	15 µF			1.5 µF – 1.8 µF	470 nF – 680 nF

### Single Metallized Polypropylene

#### F461 – 464 Series Halogen Free, 160 – 2,500 VDC

Capacitance Range: 0.001 to 56  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	46x	K	E	223	J	160	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene x = sections in construction	J = 5 K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ On Request: F = $\pm 1\%$ G = $\pm 2\%$ M = $\pm 20\%$	160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1000 1L2 = 1250 1K6 = 1600 2K0 = 2000 2K5 = 2500	See Ordering Options Table

#### F461

Case Size	Voltage			
	160/90	250/160	400/220	630/250
5 – 7.2 x 11 x 6	100 nF – 120 nF	68 nF – 82 nF	33 nF – 39 nF	15 nF – 22 nF
5 – 7.2 x 13 x 7.2	150 nF – 220 nF	100 nF – 150 nF	47 nF – 56 nF	27 nF – 33 nF
5 – 7.2 x 6.5 x 2.5	10 nF – 18 nF	10 nF – 15 nF	3.3 nF – 5.6 nF	1.5 nF – 3.3 nF
5 – 7.2 x 7.5 x 3.5	22 nF – 39 nF	22 nF – 27 nF	6.8 nF – 12 nF	3.9 nF – 5.6 nF
5 – 7.2 x 9.5 x 4.5	47 nF – 82 nF	33 nF – 39 nF	15 nF – 22 nF	6.8 nF – 10 nF
5 – 7.2 x 10 x 5		47 nF – 56 nF	27 nF	12 nF
7.5 – 10 x 10.5 x 5	100 nF – 180 nF	68 nF – 100 nF	27 nF – 47 nF	12 nF – 22 nF
7.5 – 10 x 6 x 2.5	15 nF – 22 nF	10 nF – 12 nF	3.3 nF – 4.7 nF	1.5 nF – 2.2 nF
7.5 – 10 x 8 x 3	27 nF – 56 nF	15 nF – 33 nF	5.6 nF – 12 nF	2.7 nF – 6.8 nF
7.5 – 10 x 8 x 4	68 nF – 82 nF	39 nF – 56 nF	15 nF – 22 nF	8.2 nF – 10 nF
7.5 – 10.5 x 12 x 6	220 nF – 270 nF	120 nF – 150 nF	56 nF – 68 nF	27 nF – 39 nF
10 – 13 x 11 x 5	180 nF – 270 nF	120 nF – 220 nF	47 nF – 100 nF	27 nF – 39 nF
10 – 13 x 12 x 6	330 nF – 470 nF	270 nF	120 nF	47 nF – 68 nF
10 – 13 x 9 x 4	100 nF – 150 nF	68 nF – 100 nF	22 nF – 39 nF	10 nF – 22 nF
15 – 18 x 10 x 4	150 nF – 270 nF	100 nF – 180 nF	47 nF – 68 nF	22 nF – 39 nF
15 – 18 x 11 x 5	330 nF – 390 nF	220 nF – 270 nF	82 nF – 100 nF	47 nF – 63 nF
15 – 18 x 12.5 x 5.5	470 nF – 560 nF		120 nF – 150 nF	68 nF – 82 nF
15 – 18 x 13.5 x 7.5	680 nF – 1 $\mu\text{F}$	390 nF – 560 nF	180 nF – 270 nF	100 nF – 150 nF
15 – 18 x 14.5 x 8.5	1.2 $\mu\text{F}$	680 nF – 820 nF		180 nF
15 – 18 x 16 x 10	1.5 $\mu\text{F}$	1 $\mu\text{F}$	390 nF – 470 nF	220 nF
15 – 18 x 19 x 11	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.8 $\mu\text{F}$	560 nF – 820 nF	270 nF – 390 nF
15 – 18 x 12 x 6		330 nF		
15 – 18 x 17.5 x 6			330 nF	
22.5 – 26 x 14.5 x 6	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	470 nF – 680 nF	220 nF – 330 nF	100 nF – 150 nF
22.5 – 26 x 16 x 7	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	390 nF – 470 nF	180 nF – 220 nF
22.5 – 26 x 17 x 8.5	2.2 $\mu\text{F}$			330 nF
22.5 – 26 x 18.5 x 9	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$	680 nF – 820 nF	390 nF – 470 nF
22.5 – 26 x 20 x 11	3.9 $\mu\text{F}$		1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	560 nF
22.5 – 26 x 22 x 13	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	680 nF – 820 nF
22.5 – 26 x 24.5 x 15.5	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ – 5.6 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$

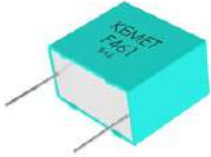
# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### F461 – 464 Series Halogen Free, 160 – 2,500 VDC (cont.)

Capacitance Range: 0.001 to 56  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	46x	K	E	223	J	160	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene x = sections in construction	J = 5 K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ On Request: F = $\pm 1\%$ G = $\pm 2\%$ M = $\pm 20\%$	160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1000 1L2 = 1250 1K6 = 1600 2K0 = 2000 2K5 = 2500	See Ordering Options Table

#### F461 (cont.)

Case Size	Voltage			
	160/90	250/160	400/220	630/250
22.5 – 26 x 16 x 8		1.2 $\mu\text{F}$	560 nF	270 nF
22.5 – 26 x 18.5 x 10		2.2 $\mu\text{F}$		
27.5 – 31.5 x 17 x 9	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$	560 nF – 820 nF	330 nF – 470 nF
27.5 – 31.5 x 20 x 11	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 820 nF
27.5 – 31.5 x 25 x 13	5.6 $\mu\text{F}$ – 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 31.5 x 28 x 17.5	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$	3.3 $\mu\text{F}$	1.8 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$
27.5 – 31.5 x 28 x 14		5.6 $\mu\text{F}$	2.7 $\mu\text{F}$	1.5 $\mu\text{F}$
27.5 – 31.5 x 29 x 19		8.2 $\mu\text{F}$	3.9 $\mu\text{F}$	2.2 $\mu\text{F}$
37.5 – 41 x 22 x 11	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	680 nF – 1.2 $\mu\text{F}$
37.5 – 41 x 24 x 13	10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$
37.5 – 41 x 26 x 15	12 $\mu\text{F}$	8.2 $\mu\text{F}$	3.9 $\mu\text{F}$	2.2 $\mu\text{F}$
37.5 – 41 x 28.5 x 16	15 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$	2.7 $\mu\text{F}$
37.5 – 41 x 32 x 19	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$
37.5 – 41 x 38 x 21	27 $\mu\text{F}$	18 $\mu\text{F}$	8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
37.5 – 41 x 44 x 24	33 $\mu\text{F}$ – 39 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$
37.5 – 41 x 45 x 30	47 $\mu\text{F}$ – 56 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$	8.2 $\mu\text{F}$

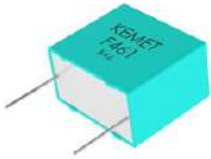
#### F462

Case Size	Voltage		
	1,000/300	1,250/400	1,600/500
10 – 13 x 11 x 5	8.2 nF – 18 nF	6.8 nF – 12 nF	2.7 nF – 4.7 nF
10 – 13 x 12 x 6	22 nF	15 nF	5.6 nF – 6.8 nF
10 – 13 x 9 x 4	4.7 nF – 6.8 nF	3.3 nF – 5.6 nF	1 nF – 2.2 nF
15 – 18 x 10 x 4	10 nF – 15 nF	6.8 nF – 10 nF	3.3 nF – 5.6 nF
15 – 18 x 11 x 5	18 nF – 22 nF	12 nF – 15 nF	6.8 nF – 8.2 nF
15 – 18 x 12.5 x 5.5	27 nF – 33 nF	18 nF – 22 nF	10 nF
15 – 18 x 13.5 x 7.5	39 nF – 56 nF	27 nF – 47 nF	15 nF – 22 nF
15 – 18 x 14.5 x 8.5	68 nF	56 nF	27 nF

### Single Metallized Polypropylene (cont.)

#### F461 – 464 Series Halogen Free, 160 – 2,500 VDC (cont.)

Capacitance Range: 0.001 to 56  $\mu$ F • Temperature Range: -55°C to +105°C



F	46x	K	E	223	J	160	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene x = sections in construction	J = 5 K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% On Request: F = $\pm$ 1% G = $\pm$ 2% M = $\pm$ 20%	160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1000 1L2 = 1250 1K6 = 1600 2K0 = 2000 2K5 = 2500	See Ordering Options Table

#### F462 (cont.)

Case Size	Voltage		
	1,000/300	1,250/400	1,600/500
15 – 18 x 16 x 10	82 nF – 100 nF	68 nF	33 nF
15 – 18 x 19 x 11	120 nF – 150 nF	82 nF – 120 nF	39 nF – 56 nF
15 – 18 x 12 x 6			12 nF
22.5 – 26 x 14.5 x 6	47 nF – 68 nF	33 nF – 56 nF	15 nF – 27 nF
22.5 – 26 x 16 x 7	82 nF – 100 nF	68 nF – 82 nF	33 nF – 39 nF
22.5 – 26 x 16 x 8	120 nF		47 nF
22.5 – 26 x 18.5 x 10	180 nF – 220 nF		68 nF
22.5 – 26 x 18.5 x 9	150 nF	120 nF – 150 nF	56 nF
22.5 – 26 x 22 x 13	270 nF – 330 nF	220 nF	120 nF
22.5 – 26 x 24.5 x 15.5	390 nF – 560 nF	270 nF – 390 nF	150 nF – 220 nF
22.5 – 26 x 17 x 8.5		100 nF	
22.5 – 26 x 20 x 11		180 nF	82 nF – 100 nF
27.5 – 31.5 x 17 x 9	150 nF – 220 nF	100 nF – 150 nF	47 nF – 82 nF
27.5 – 31.5 x 20 x 11	270 nF – 330 nF	180 nF – 220 nF	100 nF – 120 nF
27.5 – 31.5 x 25 x 13	390 nF – 470 nF	270 nF – 390 nF	150 nF – 180 nF
27.5 – 31.5 x 28 x 14	560 nF – 680 nF	470 nF	220 nF
27.5 – 31.5 x 28 x 17.5	820 nF	560 nF	270 nF – 330 nF
27.5 – 31.5 x 37 x 22	1 $\mu$ F – 1.5 $\mu$ F	820 nF – 1.2 $\mu$ F	470 nF – 680 nF
27.5 – 31.5 x 29 x 19		680 nF	390 nF
37.5 – 41 x 22 x 11	330 nF – 560 nF	220 nF – 390 nF	150 nF – 220 nF
37.5 – 41 x 24 x 13	680 nF	470 nF – 560 nF	270 nF
37.5 – 41 x 26 x 15	820 nF	680 nF	330 nF
37.5 – 41 x 28.5 x 16	1 $\mu$ F	820 nF	390 nF – 470 nF
37.5 – 41 x 32 x 19	1.2 $\mu$ F – 1.5 $\mu$ F	1 $\mu$ F	560 nF
37.5 – 41 x 38 x 21	1.8 $\mu$ F – 2.2 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F	680 nF – 820 nF
37.5 – 41 x 44 x 24	2.7 $\mu$ F	1.8 $\mu$ F	1 $\mu$ F – 1.2 $\mu$ F
37.5 – 41 x 45 x 30	3.3 $\mu$ F – 3.9 $\mu$ F	2.2 $\mu$ F – 2.7 $\mu$ F	1.5 $\mu$ F

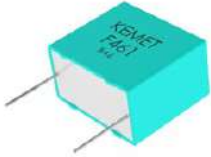
# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### F461 – 464 Series Halogen Free, 160 – 2,500 VDC (cont.)

Capacitance Range: 0.001 to 56  $\mu$ F • Temperature Range: -55°C to +105°C



F	46x	K	E	223	J	160	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene x = sections in construction	J = 5 K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% On Request: F = $\pm$ 1% G = $\pm$ 2% M = $\pm$ 20%	160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1000 1L2 = 1250 1K6 = 1600 2K0 = 2000 2K5 = 2500	See Ordering Options Table

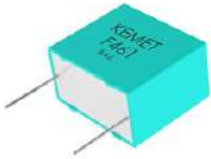
#### F463

Case Size	Voltage		
	1,250/500	1,600/650	2,000/700
10 – 13 x 11 x 5			2.7 nF – 4.7 nF
10 – 13 x 12 x 6			5.6 nF
10 – 13 x 9 x 4			1 nF – 2.2 nF
15 – 18 x 10 x 4	4.7 nF – 6.8 nF	3.3 nF – 4.7 nF	1 nF – 2.2 nF
15 – 18 x 11 x 5	8.2 nF – 10 nF	5.6 nF – 6.8 nF	2.7 nF – 3.9 nF
15 – 18 x 12 x 6	15 nF	10 nF	
15 – 18 x 12.5 x 5.5	12 nF	8.2 nF	4.7 nF – 5.6 nF
15 – 18 x 13.5 x 7.5	18 nF – 27 nF	12 nF – 15 nF	6.8 nF – 10 nF
15 – 18 x 14.5 x 8.5	33 nF	18 nF – 22 nF	12 nF
15 – 18 x 16 x 10	39 nF – 47 nF	27 nF	15 nF
15 – 18 x 19 x 11	56 nF – 68 nF	33 nF – 47 nF	18 nF – 27 nF
22.5 – 26 x 14.5 x 6	22 nF – 39 nF	15 nF – 27 nF	10 nF – 12 nF
22.5 – 26 x 16 x 7	47 nF – 56 nF	33 nF – 39 nF	15 nF – 18 nF
22.5 – 26 x 17 x 8.5	68 nF	47 nF	27 nF
22.5 – 26 x 18.5 x 10	100 nF	68 nF	33 nF – 39 nF
22.5 – 26 x 18.5 x 9	82 nF	56 nF	
22.5 – 26 x 20 x 11	120 nF	82 nF	47 nF
22.5 – 26 x 22 x 13	150 nF – 180 nF	100 nF – 120 nF	56 nF – 68 nF
22.5 – 26 x 24.5 x 15.5	220 nF – 270 nF	150 nF – 180 nF	82 nF – 100 nF
22.5 – 26 x 16 x 8			22 nF
27.5 – 31.5 x 17 x 9	68 nF – 120 nF	47 nF – 82 nF	22 nF – 39 nF
27.5 – 31.5 x 20 x 11	150 nF – 180 nF	100 nF – 120 nF	47 nF – 68 nF
27.5 – 31.5 x 25 x 13	220 nF – 270 nF	150 nF – 180 nF	82 nF – 100 nF
27.5 – 31.5 x 28 x 14	330 nF	220 nF	120 nF
27.5 – 31.5 x 28 x 17.5	390 nF – 470 nF	270 nF	150 nF
27.5 – 31.5 x 37 x 22	560 nF – 820 nF	390 nF – 560 nF	220 nF – 330 nF
27.5 – 31.5 x 29 x 19		330 nF	180 nF
37.5 – 41 x 22 x 11	220 nF – 330 nF	150 nF – 220 nF	68 nF – 120 nF
37.5 – 41 x 24 x 13	390 nF	270 nF	150 nF

### Single Metallized Polypropylene (cont.)

#### F461 – 464 Series Halogen Free, 160 – 2,500 VDC (cont.)

Capacitance Range: 0.001 to 56  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



F	46x	K	E	223	J	160	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene x = sections in construction	J = 5 K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ On Request: F = $\pm 1\%$ G = $\pm 2\%$ M = $\pm 20\%$	160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1000 1L2 = 1250 1K6 = 1600 2K0 = 2000 2K5 = 2500	See Ordering Options Table

#### F463 (cont.)

Case Size	Voltage		
	1,250/500	1,600/650	2,000/700
37.5 – 41 x 26 x 15	470 nF	330 nF	180 nF
37.5 – 41 x 28.5 x 16	560 nF – 680 nF	390 nF	220 nF
37.5 – 41 x 32 x 19	820 nF	470 nF – 560 nF	270 nF – 330 nF
37.5 – 41 x 38 x 21	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	680 nF – 820 nF	390 nF – 470 nF
37.5 – 41 x 44 x 24	1.5 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	560 nF
37.5 – 41 x 45 x 30	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	680 nF – 820 nF

#### F464

Case Size	Voltage
	2,500/900
15 – 18 x 10 x 4	1 nF – 2.2 nF
15 – 18 x 11 x 5	2.7 nF – 3.3 nF
15 – 18 x 12.5 x 5.5	3.9 nF – 4.7 nF
15 – 18 x 13.5 x 7.5	5.6 nF – 8.2 nF
15 – 18 x 14.5 x 8.5	10 nF
15 – 18 x 16 x 10	12 nF – 15 nF
15 – 18 x 19 x 11	18 nF – 22 nF
22.5 – 26 x 14.5 x 6	4.7 nF – 8.2 nF
22.5 – 26 x 16 x 7	10 nF – 12 nF
22.5 – 26 x 17 x 8.5	15 nF
22.5 – 26 x 18.5 x 9	18 nF – 22 nF
22.5 – 26 x 20 x 11	27 nF
22.5 – 26 x 22 x 13	33 nF
22.5 – 26 x 24.5 x 15.5	39 nF – 56 nF
27.5 – 31.5 x 17 x 9	15 nF – 27 nF

Case Size	Voltage
	2,500/900
27.5 – 31.5 x 20 x 11	33 nF – 39 nF
27.5 – 31.5 x 25 x 13	47 nF – 68 nF
27.5 – 31.5 x 28 x 14	82 nF
27.5 – 31.5 x 28 x 17.5	100 nF
27.5 – 31.5 x 29 x 19	120 nF
27.5 – 31.5 x 37 x 22	150 nF – 180 nF
37.5 – 41 x 22 x 11	47 nF – 68 nF
37.5 – 41 x 24 x 13	82 nF – 100 nF
37.5 – 41 x 26 x 15	120 nF
37.5 – 41 x 28.5 x 16	150 nF
37.5 – 41 x 32 x 19	180 nF – 220 nF
37.5 – 41 x 38 x 21	270 nF
37.5 – 41 x 44 x 24	330 nF – 390 nF
37.5 – 41 x 45 x 30	470 nF – 560 nF



# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### R79 Series Radial, 5 mm Lead Spacing, 160 – 630 VDC

Capacitance Range: 0.001 to 0.22  $\mu$ F Temperature Range: -55°C to +105°C

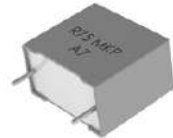


R79	G	C	2390	AA	40	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630	C = 5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	40 45	H = 2.5% J = $\pm$ 5% K = $\pm$ 10%

Case Size	Voltage			
	160/70	250/160	400/200	630/220
5 – 7.2 x 10 x 5	82 nF – 100 nF	68 nF	18 nF – 22 nF	6.8 nF – 8.2 nF
5 – 7.2 x 11 x 6	120 nF – 150 nF	82 nF – 100 nF	27 nF – 33 nF	10 nF – 12 nF
5 – 7.2 x 13 x 7.2	180 nF – 220 nF	120 nF – 150 nF	39 nF – 47 nF	15 nF – 18 nF
5 – 7.2 x 7.5 x 3.5	39 nF	12 nF – 33 nF	3.9 nF – 10 nF	1 nF – 3.3 nF
5 – 7.2 x 9.5 x 4.5	47 nF – 68 nF	39 nF – 56 nF	12 nF – 15 nF	3.9 nF – 5.6 nF

#### R75 Series Radial, DC & Pulse Applications 160 – 2,000 VDC (Automotive Grade)

Capacitance Range: 220 pF to 33  $\mu$ F • Temperature Range: -55°C to +105°C



R75	P	N	2820	AA	30	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630 Q = 1,000 R = 1,250 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 30 40 50 60 70 80	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage						
	160/70	160/90	250/140	250/160	400/200	400/220	630/220
7.5 – 10 x 10.5 x 5	120 nF – 150 nF	100 nF – 120 nF	100 nF – 120 nF	68 nF – 82 nF	33 nF – 47 nF	27 nF – 33 nF	15 nF – 18 nF
7.5 – 10 x 9 x 4	100 nF	68 nF – 82 nF	68 nF – 82 nF	27 nF – 56 nF	27 nF	10 nF – 22 nF	10 nF – 12 nF
7.5 – 10.5 x 12 x 6	180 nF – 220 nF	150 nF – 180 nF	150 nF – 180 nF	100 nF – 120 nF	56 nF – 68 nF	39 nF – 47 nF	22 nF – 27 nF
10 – 13 x 11 x 5	180 nF – 220 nF	120 nF – 150 nF	120 nF – 150 nF	82 nF – 100 nF		33 nF – 39 nF	
10 – 13 x 12 x 6	270 nF – 330 nF	180 nF – 220 nF	180 nF – 220 nF	120 nF – 150 nF			
10 – 13 x 9 x 4	120 nF – 150 nF	82 nF – 100 nF	82 nF – 100 nF	33 nF – 68 nF		15 nF – 27 nF	
15 – 18 x 11 x 5		180 nF – 220 nF		120 nF – 220 nF		68 nF – 100 nF	
15 – 18 x 12 x 13		680 nF		680 nF – 820 nF		330 nF	
15 – 18 x 12 x 6		270 nF – 330 nF		270 nF – 330 nF		120 nF – 150 nF	
15 – 18 x 12.5 x 9		470 nF – 560 nF		390 nF – 560 nF		220 nF – 270 nF	
15 – 18 x 13.5 x 7.5		390 nF – 470 nF		390 nF – 560 nF		180 nF – 220 nF	

### Single Metallized Polypropylene (cont.)

#### R75 Series Radial, DC & Pulse Applications 160 – 2,000 VDC (Automotive Grade) (cont.)

Capacitance Range: 220 pF to 33  $\mu$ F • Temperature Range: -55°C to +105°C



R75	P	N	2820	AA	30	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630 Q = 1,000 R = 1,250 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 30 40 50 60 70 80	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage		
	160/90	250/160	400/220
15 – 18 x 14.5 x 8.5	560 nF – 680 nF	680 nF	270 nF
15 – 18 x 16 x 10	820 nF – 1 $\mu$ F	820 nF – 1 $\mu$ F	330 nF – 470 nF
15 – 18 x 19 x 11		1.2 $\mu$ F	560 nF
22.5 – 26.5 x 15 x 6		390 nF – 680 nF	180 nF – 330 nF
22.5 – 26.5 x 16 x 7	820 nF – 1 $\mu$ F	820 nF – 1 $\mu$ F	390 nF – 470 nF
22.5 – 26.5 x 17 x 8.5	1.2 $\mu$ F	1.2 $\mu$ F	560 nF
22.5 – 26.5 x 18.5 x 10	1.5 $\mu$ F – 1.8 $\mu$ F	1.5 $\mu$ F – 1.8 $\mu$ F	680 nF – 820 nF
22.5 – 26.5 x 20 x 11		2.2 $\mu$ F	1 $\mu$ F
22.5 – 26.5 x 22 x 13		2.7 $\mu$ F – 3.3 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F
27.5 – 32 x 17 x 9	1.5 $\mu$ F – 1.8 $\mu$ F	1 $\mu$ F – 1.8 $\mu$ F	560 nF – 820 nF
27.5 – 32 x 20 x 11	2.2 $\mu$ F – 2.7 $\mu$ F	2.2 $\mu$ F – 2.7 $\mu$ F	1 $\mu$ F – 1.2 $\mu$ F
27.5 – 32 x 22 x 13	3.3 $\mu$ F – 3.9 $\mu$ F	3.3 $\mu$ F – 3.9 $\mu$ F	1.5 $\mu$ F – 1.8 $\mu$ F
27.5 – 32 x 25 x 13	4.7 $\mu$ F	4.7 $\mu$ F	2.2 $\mu$ F
27.5 – 32 x 28 x 14	5.6 $\mu$ F	5.6 $\mu$ F	2.7 $\mu$ F
27.5 – 32 x 33 x 18	6.8 $\mu$ F – 8.2 $\mu$ F	6.8 $\mu$ F – 8.2 $\mu$ F	3.3 $\mu$ F – 3.9 $\mu$ F
27.5 – 32 x 37 x 22	10 $\mu$ F – 12 $\mu$ F	10 $\mu$ F – 12 $\mu$ F	4.7 $\mu$ F – 5.6 $\mu$ F
37.5 – 41.5 x 22 x 11	3.3 $\mu$ F – 4.7 $\mu$ F	3.3 $\mu$ F – 4.7 $\mu$ F	1.2 $\mu$ F – 2.2 $\mu$ F
37.5 – 41.5 x 24 x 13	5.6 $\mu$ F	5.6 $\mu$ F	2.7 $\mu$ F
37.5 – 41.5 x 28.5 x 16	6.8 $\mu$ F – 8.2 $\mu$ F	6.8 $\mu$ F – 8.2 $\mu$ F	3.3 $\mu$ F – 3.9 $\mu$ F
37.5 – 41.5 x 32 x 19	10 $\mu$ F – 12 $\mu$ F	10 $\mu$ F – 12 $\mu$ F	4.7 $\mu$ F – 6.8 $\mu$ F
37.5 – 41.5 x 40 x 20	15 $\mu$ F – 18 $\mu$ F	15 $\mu$ F – 18 $\mu$ F	8.2 $\mu$ F – 10 $\mu$ F
37.5 – 41.5 x 44 x 24	22 $\mu$ F	22 $\mu$ F – 27 $\mu$ F	12 $\mu$ F
37.5 – 41.5 x 45 x 30	27 $\mu$ F – 33 $\mu$ F	33 $\mu$ F	15 $\mu$ F

Case Size	Voltage	
	630/250	1,000/400
7.5 – 10 x 10.5 x 5	10 nF – 12 nF	3.9 nF – 5.6 nF
7.5 – 10 x 8 x 3		0.22 nF – 1 nF
7.5 – 10 x 9 x 4	3.3 nF – 8.2 nF	1.2 nF – 3.3 nF
7.5 – 10.5 x 12 x 6	15 nF – 18 nF	6.8 nF – 8.2 nF

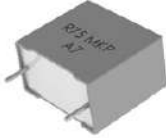
# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### R75 Series Radial, DC & Pulse Applications 160 – 2,000 VDC (Automotive Grade) (cont.)

Capacitance Range: 220 pF to 33 µF • Temperature Range: -55°C to +105°C



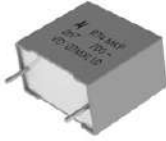
R75	P	N	2820	AA	30	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630 Q = 1,000 R = 1,250 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 30 40 50 60 70 80	J = ±5% K = ±10% M = ±20%

Case Size	Voltage				
	630/250	1,000/250	1,250/600	1,600/650	2,000/700
10 – 13 x 11 x 5	15 nF – 18 nF				
10 – 13 x 12 x 6	22 nF				
10 – 13 x 9 x 4	1 nF – 12 nF				
15 – 18 x 11 x 5	27 nF – 56 nF	12 nF – 22 nF	8.2 nF – 10 nF	5.6 nF – 6.8 nF	3.9 nF – 4.7 nF
15 – 18 x 12 x 13	150 nF – 180 nF	68 nF	27 nF – 33 nF	22 nF	15 nF – 18 nF
15 – 18 x 12 x 6	68 nF – 82 nF	27 nF – 33 nF	12 nF – 15 nF	8.2 nF – 10 nF	5.6 nF – 6.8 nF
15 – 18 x 12.5 x 9	100 nF – 120 nF	47 nF – 56 nF	22 nF	18 nF	12 nF
15 – 18 x 13.5 x 7.5	100 nF – 120 nF	39 nF – 47 nF	18 nF – 22 nF	12 nF – 15 nF	8.2 nF – 10 nF
15 – 18 x 14.5 x 8.5	150 nF	56 nF – 68 nF	27 nF	18 nF	12 nF – 15 nF
15 – 18 x 16 x 10	180 nF – 220 nF	82 nF	33 nF – 39 nF	22 nF – 27 nF	18 nF
15 – 18 x 19 x 11	270 nF – 330 nF	100 nF	47 nF – 56 nF	33 nF	22 nF – 27 nF
15 – 18 x 10 x 4				3.9 nF – 4.7 nF	1 nF – 3.3 nF
22.5 – 26.5 x 15 x 6	82 nF – 150 nF	47 nF – 68 nF	33 nF – 39 nF	27 nF	4.7 nF – 22 nF
22.5 – 26.5 x 16 x 7	180 nF – 220 nF	82 nF – 100 nF	47 nF – 56 nF	33 nF – 39 nF	27 nF
22.5 – 26.5 x 17 x 8.5	270 nF	120 nF	68 nF	47 nF	33 nF
22.5 – 26.5 x 18.5 x 10	330 nF – 390 nF	150 nF – 180 nF	82 nF – 100 nF	56 nF – 68 nF	39 nF – 47 nF
22.5 – 26.5 x 20 x 11	470 nF – 560 nF	220 nF	120 nF	82 nF	56 nF
22.5 – 26.5 x 22 x 13	680 nF		150 nF	100 nF – 120 nF	68 nF
27.5 – 32 x 17 x 9	390 nF – 470 nF	150 nF – 180 nF	100 nF – 120 nF	68 nF – 82 nF	47 nF – 68 nF
27.5 – 32 x 20 x 11	560 nF – 680 nF	220 nF – 270 nF	150 nF – 180 nF	100 nF – 120 nF	82 nF – 100 nF
27.5 – 32 x 22 x 13	820 nF – 1 µF	330 nF – 390 nF	220 nF	150 nF – 180 nF	120 nF
27.5 – 32 x 25 x 13		470 nF	270 nF – 330 nF	220 nF	150 nF
27.5 – 32 x 28 x 14	1.2 µF – 1.5 µF	560 nF			180 nF – 220 nF
27.5 – 32 x 33 x 18	1.8 µF – 2.2 µF	680 nF – 1 µF	390 nF – 560 nF	270 nF – 390 nF	270 nF – 330 nF
27.5 – 32 x 37 x 22	2.7 µF – 3.3 µF	1.2 µF – 1.5 µF	680 nF – 820 nF	470 nF – 560 nF	390 nF – 470 nF
37.5 – 41.5 x 22 x 11	680 nF – 1 µF	270 nF – 470 nF	270 nF – 330 nF	180 nF – 220 nF	150 nF
37.5 – 41.5 x 24 x 13	1.2 µF – 1.5 µF	560 nF – 680 nF	390 nF	270 nF	180 nF – 220 nF
37.5 – 41.5 x 28.5 x 16	1.8 µF – 2.2 µF	820 nF – 1 µF	470 nF – 680 nF	330 nF – 470 nF	270 nF – 330 nF
37.5 – 41.5 x 32 x 19	2.7 µF – 3.9 µF	1.2 µF – 1.5 µF	820 nF	560 nF – 680 nF	390 nF – 470 nF
37.5 – 41.5 x 40 x 20	4.7 µF – 5.6 µF	1.8 µF – 2.2 µF	1 µF – 1.2 µF	820 nF	560 nF – 680 nF
37.5 – 41.5 x 44 x 24	6.8 µF	2.7 µF	1.5 µF – 1.8 µF	1 µF – 1.2 µF	820 nF – 1 µF
37.5 – 41.5 x 45 x 30	8.2 µF	3.3 µF – 3.9 µF	2.2 µF	1.5 µF	

### Single Metallized Polypropylene (cont.)

#### R74 Series Radial, AC Applications 250 – 900 VAC (Automotive Grade)

Capacitance Range: 470 pF to 3.3  $\mu$ F Temperature Range: -55°C to +105°C



R74	5	N	2180	AA	00	J
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	L = 250 N = 400 5 = 500 6 = 600 7 = 700 9 = 900	F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 30 60	J = $\pm$ 5% K = $\pm$ 10%

Case Size	Voltage					
	630/250	1,300/400	1,600/500	2,000/600	2,000/700	2,200/900
10 – 13 x 11 x 5	15 nF – 18 nF	3.9 nF – 5.6 nF	2.2 nF – 2.7 nF	2.2 nF – 2.7 nF	2.2 nF – 2.7 nF	
10 – 13 x 12 x 6	22 nF – 27 nF	6.8 nF – 8.2 nF	3.3 nF – 8.2 nF	3.3 nF – 8.2 nF	3.3 nF – 5.6 nF	
10 – 13 x 9 x 4	10 nF – 12 nF	2.2 nF – 3.3 nF	1 nF – 1.8 nF	0.47 nF – 1.8 nF	0.47 nF – 1.8 nF	
15 – 18 x 11 x 5	15 nF – 33 nF	6.8 nF – 10 nF	1.5 nF – 5.6 nF	3.9 nF – 4.7 nF	1 nF – 3.3 nF	
15 – 18 x 12 x 13	82 nF – 100 nF	27 nF – 39 nF	15 nF – 22 nF		10 nF – 12 nF	
15 – 18 x 12 x 6	39 nF – 47 nF	12 nF – 15 nF	6.8 nF – 10 nF	6.8 nF	3.9 nF – 5.6 nF	
15 – 18 x 12.5 x 9	68 nF	22 nF			8.2 nF	
15 – 18 x 13.5 x 7.5	56 nF – 68 nF	18 nF – 22 nF	12 nF – 15 nF		6.8 nF – 8.2 nF	
15 – 18 x 14.5 x 8.5	82 nF – 100 nF	27 nF – 33 nF	18 nF	12 nF – 15 nF	10 nF	
15 – 18 x 16 x 10	120 nF	39 nF – 47 nF	22 nF – 27 nF	18 nF	12 nF – 15 nF	
15 – 18 x 19 x 11	150 nF	56 nF	33 nF		18 nF	
15 – 18 x 10 x 4			1.5 nF – 4.7 nF	2.3 nF – 2.7 nF	0.47 nF – 2.2 nF	
22.5 – 26.5 x 15 x 6		39 nF	18 nF – 22 nF		8.2 nF – 15 nF	1 nF – 6.8 nF
22.5 – 26.5 x 16 x 7		47 nF – 56 nF	27 nF – 33 nF		18 nF	8.2 nF – 10 nF
22.5 – 26.5 x 17 x 8.5		68 nF	39 nF		22 nF – 27 nF	12 nF
22.5 – 26.5 x 18.5 x 10		82 nF – 100 nF	47 nF – 56 nF		33 nF – 39 nF	15 nF – 18 nF
22.5 – 26.5 x 20 x 11		120 nF	68 nF		47 nF	22 nF
22.5 – 26.5 x 22 x 13		150 nF	82 nF – 100 nF		56 nF – 68 nF	27 nF – 33 nF
27.5 – 32 x 17 x 9		150 nF – 180 nF	100 nF – 150 nF		39 nF – 56 nF	22 nF – 27 nF
27.5 – 32 x 20 x 11		220 nF – 270 nF	180 nF – 220 nF		68 nF – 82 nF	33 nF – 39 nF
27.5 – 32 x 22 x 13		330 nF – 390 nF	270 nF		100 nF – 120 nF	47 nF – 56 nF
27.5 – 32 x 28 x 14		470 nF – 680 nF	330 nF – 470 nF		150 nF – 180 nF	68 nF – 82 nF
27.5 – 32 x 33 x 18		820 nF – 1 $\mu$ F	560 nF – 680 nF		220 nF – 270 nF	100 nF – 150 nF
27.5 – 32 x 37 x 22			820 nF – 1 $\mu$ F		330 nF	
37.5 – 41.5 x 22 x 11		470 nF – 560 nF	330 nF – 390 nF		150 nF	68 nF – 82 nF
37.5 – 41.5 x 24 x 13		680 nF	470 nF – 560 nF		180 nF – 220 nF	100 nF – 120 nF
37.5 – 41.5 x 28.5 x 16		820 nF – 1 $\mu$ F	680 nF – 820 nF		270 nF – 330 nF	150 nF – 180 nF
37.5 – 41.5 x 32 x 19		1.2 $\mu$ F – 1.5 $\mu$ F	1 $\mu$ F – 1.2 $\mu$ F		390 nF – 470 nF	220 nF
37.5 – 41.5 x 40 x 20		1.8 $\mu$ F	1.5 $\mu$ F		560 nF	270 nF – 330 nF
37.5 – 41.5 x 44 x 24		2.2 $\mu$ F – 2.7 $\mu$ F	1.8 $\mu$ F – 2.2 $\mu$ F		680 nF – 820 nF	390 nF – 470 nF
37.5 – 41.5 x 45 x 30		3.3 $\mu$ F			1 $\mu$ F	

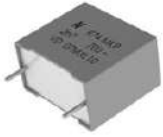
# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### R74 Series 125°C Radial, AC Applications 500 and 700 VAC (Automotive Grade)

Capacitance Range: 470 pF to 0.018  $\mu$ F • Temperature Range: -55°C to +125°C



R74	5	F	1100	AA	H0	J
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	5 = 500 7 = 700	F = 10 I = 15 N = 22.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	H0 H1 H3 (Hx = 125 C)	J = $\pm$ 5% K = $\pm$ 10%

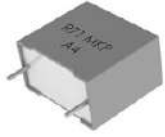
Case Size	Voltage	
	1,600/500	2,000/700
10 – 13 x 11 x 5	1.8 nF – 2.7 nF	
10 – 13 x 12 x 6	3.3 nF – 3.9 nF	
10 – 13 x 9 x 4	1 nF – 1.5 nF	
15 – 18 x 10 x 4	2.7 nF – 3.9 nF	0.68 nF – 2.5 nF
15 – 18 x 11 x 5	4.7 nF – 5.6 nF	2.7 nF – 3.3 nF
15 – 18 x 12 x 13	15 nF – 22 nF	10 nF – 12 nF
15 – 18 x 12 x 6	6.8 nF – 10 nF	3.6 nF – 5.6 nF
15 – 18 x 13.5 x 7.5	12 nF – 15 nF	6.2 nF – 8.2 nF
15 – 18 x 14.5 x 8.5	18 nF	10 nF
15 – 18 x 16 x 10	22 nF – 27 nF	12 nF – 15 nF
15 – 18 x 19 x 11	33 nF	18 nF
15 – 18 x 12.5 x 9		8.2 nF
22.5 – 26.5 x 15 x 6	18 nF – 22 nF	6.2 nF – 15 nF
22.5 – 26.5 x 16 x 7	27 nF – 33 nF	18 nF
22.5 – 26.5 x 17 x 8.5	39 nF	22 nF – 27 nF
22.5 – 26.5 x 18.5 x 10	47 nF – 56 nF	33 nF – 39 nF
22.5 – 26.5 x 20 x 11	68 nF	47 nF
22.5 – 26.5 x 22 x 13	82 nF – 100 nF	56 nF – 68 nF

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### Single Metallized Polypropylene (cont.)

R71 Series Radial, SMPS PFC Applications 420 – 1,000 VDC

Capacitance Range: 0.01 to 22  $\mu$ F • Temperature Range: -55°C to +105°C



R71	M	F	2100	AA	00	J
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Metallized Polypropylene	M = 420 V = 520 P = 630 Q = 1,000	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00, 10, 20, 30, 40 (Standard)	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage			
	420/220	520/250	630/275	1,000/275
10 – 13 x 11 x 5	150 nF	100 nF	33 nF – 47 nF	
10 – 13 x 12 x 6	220 nF	150 nF	68 nF – 100 nF	
10 – 13 x 9 x 4	15 nF – 100 nF	10 nF – 68 nF	10 nF – 22 nF	
15 – 18 x 11 x 5	100 nF – 220 nF	100 nF – 150 nF	10 nF – 100 nF	
15 – 18 x 12 x 13	680 nF	470 nF	330 nF	
15 – 18 x 12 x 6	330 nF	220 nF	150 nF	
15 – 18 x 12.5 x 9	470 nF	330 nF	220 nF – 330 nF	
15 – 18 x 13.5 x 7.5	470 nF	330 nF	220 nF	
15 – 18 x 14.5 x 8.5	680 nF	470 nF	330 nF	
15 – 18 x 16 x 10	1 $\mu$ F	680 nF	470 nF	
15 – 18 x 17.5 x 6	470 nF – 680 nF	220 nF – 330 nF	150 nF – 220 nF	
15 – 18 x 18.5 x 7.5	1 $\mu$ F	470 nF	330 nF – 470 nF	
15 – 18 x 19 x 11	1.5 $\mu$ F	1 $\mu$ F	680 nF	
22.5 – 26.5 x 15 x 6	220 nF – 680 nF	220 nF – 470 nF	150 nF – 330 nF	
22.5 – 26.5 x 16 x 7	1 $\mu$ F	680 nF	470 nF	
22.5 – 26.5 x 17 x 8.5	1.5 $\mu$ F			
22.5 – 26.5 x 18.5 x 10	1.5 $\mu$ F – 2.2 $\mu$ F	1 $\mu$ F	680 nF – 1 $\mu$ F	
22.5 – 26.5 x 20 x 11	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F	
22.5 – 26.5 x 22 x 13	3.3 $\mu$ F	2.2 $\mu$ F		
27.5 – 32 x 17 x 9	680 nF – 1 $\mu$ F	680 nF – 1 $\mu$ F	680 nF	220 nF – 560 nF
27.5 – 32 x 20 x 11	1.5 $\mu$ F	1 $\mu$ F – 1.5 $\mu$ F	1 $\mu$ F	330 nF – 820 nF
27.5 – 32 x 22 x 13	2.2 $\mu$ F		1.5 $\mu$ F	470 nF – 1 $\mu$ F
27.5 – 32 x 25 x 13		2.2 $\mu$ F		1.2 $\mu$ F
27.5 – 32 x 28 x 14	3.3 $\mu$ F	2.2 $\mu$ F – 3.3 $\mu$ F	2.2 $\mu$ F	680 nF – 1.8 $\mu$ F
27.5 – 32 x 33 x 18	4.7 $\mu$ F	3.3 $\mu$ F – 4.7 $\mu$ F	3.3 $\mu$ F	1 $\mu$ F – 2.7 $\mu$ F
27.5 – 32 x 37 x 22	6.8 $\mu$ F	4.7 $\mu$ F – 6.8 $\mu$ F	4.7 $\mu$ F	1.8 $\mu$ F – 3.9 $\mu$ F
37.5 – 41.5 x 22 x 11	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F	680 nF – 1.5 $\mu$ F
37.5 – 41.5 x 24 x 13		3.3 $\mu$ F	2.2 $\mu$ F	820 nF – 1.8 $\mu$ F
37.5 – 41.5 x 28.5 x 16	4.7 $\mu$ F	3.3 $\mu$ F – 4.7 $\mu$ F	3.3 $\mu$ F	1.2 $\mu$ F – 2.7 $\mu$ F
37.5 – 41.5 x 32 x 19	6.8 $\mu$ F	6.8 $\mu$ F	4.7 $\mu$ F	1.8 $\mu$ F – 3.9 $\mu$ F
37.5 – 41.5 x 40 x 20	10 $\mu$ F	6.8 $\mu$ F – 10 $\mu$ F	6.8 $\mu$ F	2.7 $\mu$ F – 5.6 $\mu$ F
37.5 – 41.5 x 44 x 24	15 $\mu$ F	10 $\mu$ F – 15 $\mu$ F	10 $\mu$ F	3.3 $\mu$ F – 8.2 $\mu$ F
37.5 – 41.5 x 45 x 30	22 $\mu$ F	15 $\mu$ F – 22 $\mu$ F	15 $\mu$ F	5.6 $\mu$ F – 10 $\mu$ F

# Film Capacitors

## Through-Hole – Pulse & AC

### Single Metallized Polypropylene (cont.)

#### A70 Series Axial 160 – 630 VDC

Capacitance Range: 0.001 to 4.7  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



A70	G	F	2220	AA	00	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Lead and Packaging Code	Internal Use	Capacitance Tolerance
Metallized Polypropylene	G = 160 I = 250 M = 400 P = 630	F = 11 H = 14 K = 20.5 Q = 28 T = 33	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 (Standard)	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

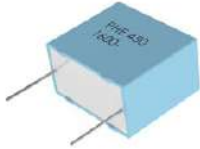
Case Size	Voltage			
	160/90	250/200	400/220	630/250
5 x 11	22 nF – 47 nF	10 nF – 15 nF	6.8 nF	1 nF – 4.7 nF
5.5 x 14	68 nF – 100 nF	22 nF – 33 nF	10 nF	6.8 nF
6 x 14		47 nF	15 nF – 22 nF	10 nF
6.5 x 14	150 nF		33 nF	
7 x 14		68 nF		15 nF
7 x 20.5	330 nF		68 nF	
7.5 x 14	220 nF			
7.5 x 20.5		150 nF		33 nF
8 x 14			47 nF	
8 x 20.5	470 nF		100 nF	
8 x 28	680 nF		150 nF	
8.5 x 14		100 nF		22 nF
8.5 x 20.5		330 nF		47 nF
8.5 x 28				68 nF
9 x 20.5		220 nF		
9.5 x 28	1 $\mu\text{F}$		220 nF	
10 x 28		470 nF		100 nF
11 x 28	1.5 $\mu\text{F}$		330 nF	
11.5 x 28		680 nF		150 nF
12 x 33	2.2 $\mu\text{F}$			
12.5 x 33		1 $\mu\text{F}$		220 nF – 680 nF
13 x 28			470 nF	
13.5 x 33			680 nF	
14.5 x 33	3.3 $\mu\text{F}$			
15 x 33		1.5 $\mu\text{F}$		
16.5 x 33			1 $\mu\text{F}$	
17 x 33	4.7 $\mu\text{F}$			
18 x 33		2.2 $\mu\text{F}$		
20 x 33			1.5 $\mu\text{F}$	
21.5 x 33		3.3 $\mu\text{F}$		

### Double Metallized Polypropylene

**PHE450 Series Radial, 250 – 3,000 VDC**

Capacitance Range: 0.00033 to 10  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$

#### Legacy Part Number System



PHE450	P	B	5180	J	B04	R06
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Optional Box Code	Packaging
Metallized Polypropylene	H = 250 K = 400 M = 630 P = 1000 R = 1600 S = 2000 T = 2500 X = 3000	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	J = $\pm 5\%$ On request: F = $\pm 1\%$ G = $\pm 2\%$ H = $\pm 2.5\%$ K = $\pm 10\%$ M = $\pm 20\%$	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	450	B	D	183	J	1K0	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ On request: F = $\pm 1\%$ G = $\pm 2\%$ H = $\pm 2.5\%$ K = $\pm 10\%$ M = $\pm 20\%$	250 = 250 400 = 400 630 = 630 1K0 = 1000 1K6 = 1600 2K0 = 2000 2K5 = 2500 3K0 = 3000	See Ordering Options Table

Case Size	Voltage					
	250/180	400/250	630/300	630/400	1,000/375	1,000/600
7.5 – 10 x 8 x 4	0.33 nF – 22 nF	0.33 nF – 12 nF	0.39 nF – 8.2 nF		0.33 nF – 2.2 nF	2.7 nF – 3.9 nF
7.5 – 10 x 11 x 5	27 nF – 56 nF	15 nF – 33 nF	10 nF – 18 nF			4.7 nF – 8.2 nF
7.5 – 10.5 x 12 x 6	68 nF	39 nF – 47 nF	22 nF			10 nF – 12 nF
10 – 13 x 10.5 x 4.5	56 nF – 68 nF	33 nF	18 nF – 22 nF			8.2 nF – 10 nF
10 – 13 x 11 x 5	82 nF	39 nF	27 nF			12 nF
10 – 13 x 12 x 6	100 nF – 120 nF	47 nF – 56 nF	33 nF – 39 nF			15 nF – 18 nF
10 – 13 x 9 x 4	1 nF – 47 nF	1 nF – 27 nF	1 nF – 15 nF			1 nF – 6.8 nF
15 – 18 x 10.5 x 5.5	47 nF – 120 nF	33 nF – 68 nF		10 nF – 33 nF		3.9 nF – 22 nF
15 – 18 x 12.5 x 5.5	150 nF	82 nF		39 nF		27 nF
15 – 18 x 12.5 x 6.5	180 nF	100 nF		47 nF – 56 nF		33 nF
15 – 18 x 14.5 x 7.5	220 nF – 270 nF	120 nF – 150 nF		68 nF		39 nF – 47 nF
15 – 18 x 15 x 8	330 nF	180 nF		82 nF		56 nF
15 – 18 x 16 x 8.5	390 nF			100 nF		68 nF
15 – 18 x 17.5 x 9.5	470 nF	220 nF – 270 nF		120 nF – 150 nF		82 nF
15 – 18 x 19 x 11						100 nF – 120 nF
22.5 – 26 x 14.5 x 6.5	180 nF – 330 nF	120 nF – 180 nF		33 nF – 100 nF		22 nF – 82 nF
22.5 – 26 x 16 x 8						120 nF
22.5 – 26 x 16.5 x 7	390 nF – 470 nF	220 nF – 270 nF		120 nF – 150 nF		100 nF
22.5 – 26 x 18.5 x 9	560 nF – 680 nF	330 nF – 390 nF		180 nF – 220 nF		150 nF
22.5 – 26 x 19 x 10.5	820 nF	470 nF				180 nF
22.5 – 26 x 21.5 x 11	1 $\mu\text{F}$	560 nF		270 nF – 330 nF		220 nF
22.5 – 26 x 23 x 13.5	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	680 nF – 820 nF		390 nF – 470 nF		270 nF – 330 nF
22.5 – 26 x 24.5 x 15.5	1.8 $\mu\text{F}$	1 $\mu\text{F}$		560 nF		390 nF



# Film Capacitors

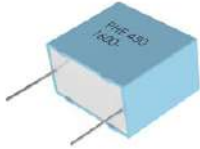
## Through-Hole – Pulse & AC

### Double Metallized Polypropylene (cont.)

#### PHE450 Series Radial, 250 – 3,000 VDC (cont.)

Capacitance Range: 0.00033 to 10  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$

#### Legacy Part Number System



PHE450	P	B	5180	J	B04	R06
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Optional Box Code	Packaging
Metallized Polypropylene	H = 250 K = 400 M = 630 P = 1000 R = 1600 S = 2000 T = 2500 X = 3000	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	J = $\pm 5\%$ On request: F = $\pm 1\%$ G = $\pm 2\%$ H = $\pm 2.5\%$ K = $\pm 10\%$ M = $\pm 20\%$	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	450	B	D	183	J	1K0	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ On request: F = $\pm 1\%$ G = $\pm 2\%$ H = $\pm 2.5\%$ K = $\pm 10\%$ M = $\pm 20\%$	250 = 250 400 = 400 630 = 630 1K0 = 1000 1K6 = 1600 2K0 = 2000 2K5 = 2500 3K0 = 3000	See Ordering Options Table

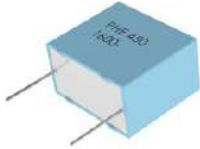
Case Size	Voltage			
	250/180	400/250	630/400	1,000/600
27.5 – 31.5 x 12.5 x 21	1.2 $\mu\text{F}$	680 nF	390 nF	220 nF
27.5 – 31.5 x 16 x 27.5	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	820 nF	470 nF
27.5 – 31.5 x 19 x 31	3.9 $\mu\text{F}$	2.2 $\mu\text{F}$	1.2 $\mu\text{F}$	680 nF
27.5 – 31.5 x 20.5 x 10.5	820 nF – 1.2 $\mu\text{F}$	470 nF – 680 nF	220 nF – 390 nF	150 nF – 270 nF
27.5 – 31.5 x 22.5 x 11.5	1.5 $\mu\text{F}$	820 nF	470 nF	330 nF
27.5 – 31.5 x 23 x 13.5	1.8 $\mu\text{F}$	1 $\mu\text{F}$	560 nF	390 nF
27.5 – 31.5 x 24.5 x 14.5	2.2 $\mu\text{F}$	1.2 $\mu\text{F}$	680 nF	470 nF
27.5 – 31.5 x 28 x 17.5	2.7 $\mu\text{F}$	1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	560 nF – 680 nF
27.5 – 31.5 x 29 x 19	3.3 $\mu\text{F}$	1.8 $\mu\text{F}$		820 nF
27.5 – 31.5 x 30 x 21	3.9 $\mu\text{F}$	2.2 $\mu\text{F}$	1.2 $\mu\text{F}$	1 $\mu\text{F}$
37.5 – 41 x 24 x 13	1.8 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 820 nF	330 nF – 560 nF
37.5 – 41 x 26 x 15	3.3 $\mu\text{F}$	1.8 $\mu\text{F}$	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$	680 nF
37.5 – 41 x 32 x 16.5	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$
37.5 – 41 x 36 x 19	5.6 $\mu\text{F}$	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
37.5 – 41 x 38 x 21	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	2.7 $\mu\text{F}$	1.8 $\mu\text{F}$
37.5 – 41 x 43 x 28	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$

### Double Metallized Polypropylene (cont.)

#### PHE450 Series Radial, 250 – 3,000 VDC (cont.)

Capacitance Range: 0.00033 to 10  $\mu$ F • Temperature Range: -55°C to +105°C

#### Legacy Part Number System



PHE450	P	B	5180	J	B04	R06
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Optional Box Code	Packaging
Metallized Polypropylene	H = 250 K = 400 M = 630 P = 1000 R = 1600 S = 2000 T = 2500 X = 3000	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	J = $\pm$ 5% On request: F = $\pm$ 1% G = $\pm$ 2% H = $\pm$ 2.5% K = $\pm$ 10% M = $\pm$ 20%	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	450	B	D	183	J	1K0	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% On request: F = $\pm$ 1% G = $\pm$ 2% H = $\pm$ 2.5% K = $\pm$ 10% M = $\pm$ 20%	250 = 250 400 = 400 630 = 630 1K0 = 1000 1K6 = 1600 2K0 = 2000 2K5 = 2500 3K0 = 3000	See Ordering Options Table

Case Size	Voltage			
	1,600/650	2,000/700	2,500/900	3,000/1,000
15 – 18 x 10.5 x 5.5	2.7 nF – 12 nF	1 nF – 6.8 nF	1 nF – 1.8 nF	1 nF – 1.2 nF
15 – 18 x 12.5 x 5.5	15 nF	8.2 nF	2.2 nF	1.5 nF – 1.8 nF
15 – 18 x 12.5 x 6.5	18 nF – 22 nF	10 nF	2.7 nF	2.2 nF
15 – 18 x 14.5 x 7.5	27 nF	12 nF – 15 nF	3.3 nF – 3.9 nF	2.7 nF
15 – 18 x 15 x 8	33 nF	18 nF	4.7 nF	3.3 nF
15 – 18 x 16 x 8.5	39 nF	22 nF	5.6 nF	3.9 nF
15 – 18 x 17.5 x 9.5	47 nF – 56 nF	27 nF	6.8 nF – 8.2 nF	4.7 nF – 5.6 nF
15 – 18 x 19 x 11			10 nF	6.8 nF
22.5 – 26 x 14.5 x 6.5	10 nF – 39 nF	3.3 nF – 22 nF	4.7 nF – 8.2 nF	4.7 nF – 5.6 nF
22.5 – 26 x 16 x 8		39 nF	12 nF	8.2 nF
22.5 – 26 x 16.5 x 7	47 nF – 56 nF	27 nF – 33 nF	10 nF	6.8 nF
22.5 – 26 x 18.5 x 9	68 nF – 82 nF	47 nF	15 nF – 18 nF	10 nF
22.5 – 26 x 19 x 10.5	100 nF	56 nF	22 nF	12 nF
22.5 – 26 x 21.5 x 11	120 nF	68 nF – 82 nF	27 nF	15 nF – 18 nF
22.5 – 26 x 23 x 13.5	150 nF – 180 nF	100 nF	33 nF – 39 nF	22 nF
22.5 – 26 x 24.5 x 15.5	220 nF	120 nF	47 nF	27 nF – 33 nF

# Film Capacitors

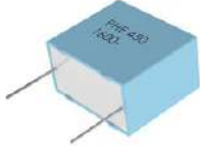
## Through-Hole – Pulse & AC

### Double Metallized Polypropylene (cont.)

#### PHE450 Series Radial, 250 – 3,000 VDC (cont.)

Capacitance Range: 0.00033 to 10  $\mu$ F • Temperature Range: -55°C to +105°C

#### Legacy Part Number System



PHE450	P	B	5180	J	B04	R06
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Optional Box Code	Packaging
Metallized Polypropylene	H = 250 K = 400 M = 630 P = 1000 R = 1600 S = 2000 T = 2500 X = 3000	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. First digit specifies the number of zeros to be added.	J = $\pm$ 5% On request: F = $\pm$ 1% G = $\pm$ 2% H = $\pm$ 2.5% K = $\pm$ 10% M = $\pm$ 20%	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	450	B	D	183	J	1K0	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized Polypropylene	K = 7.5 A = 10.0 B = 15.0 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% On request: F = $\pm$ 1% G = $\pm$ 2% H = $\pm$ 2.5% K = $\pm$ 10% M = $\pm$ 20%	250 = 250 400 = 400 630 = 630 1K0 = 1000 1K6 = 1600 2K0 = 2000 2K5 = 2500 3K0 = 3000	See Ordering Options Table

Case Size	Voltage		
	1,600/650	2,000/700	2,500/900
27.5 – 31.5 x 12.5 x 21	100 nF	56 nF	
27.5 – 31.5 x 16 x 27.5	220 nF	120 nF	
27.5 – 31.5 x 19 x 31	330 nF	180 nF	
27.5 – 31.5 x 20.5 x 10.5	82 nF – 120 nF	47 nF – 82 nF	27 nF – 33 nF
27.5 – 31.5 x 22.5 x 11.5	150 nF	100 nF	39 nF
27.5 – 31.5 x 23 x 13.5	180 nF	120 nF	47 nF – 56 nF
27.5 – 31.5 x 24.5 x 14.5	220 nF	150 nF	68 nF
27.5 – 31.5 x 28 x 17.5	270 nF	180 nF	27 nF
27.5 – 31.5 x 29 x 19	330 nF	220 nF	100 nF
27.5 – 31.5 x 30 x 21	390 nF	270 nF	120 nF
37.5 – 41 x 24 x 13	180 nF – 270 nF	100 nF – 180 nF	68 nF – 82 nF
37.5 – 41 x 26 x 15	330 nF	220 nF	100 nF – 120 nF
37.5 – 41 x 32 x 16.5	390 nF – 560 nF	270 nF – 330 nF	150 nF
37.5 – 41 x 36 x 19	680 nF	390 nF – 470 nF	180 nF – 220 nF
37.5 – 41 x 38 x 21	820 nF	560 nF	220 nF – 270 nF
37.5 – 41 x 43 x 28	1 $\mu$ F	680 nF	330 nF

### Double Metallized Polypropylene (cont.)

#### R76 Series Radial, DC & Pulse Applications 250 – 2,000 VDC (Automotive Grade)

Capacitance Range: 100 pF to 15  $\mu$ F • Temperature Range: -55°C to +105°C



R76	I	D	1680	SE	30	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Double Metallized Polypropylene	I = 250 M = 400 P = 630 Q = 1,000 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 30 40 50 60 70 80	H = 2.5% J = $\pm$ 5% K = $\pm$ 10%

Case Size	Voltage							
	250/160	400/250	630/250	630/400	1,000/400	1,000/600	1,600/650	2,000/700
7.5 – 10 x 10.5 x 5	27 nF – 33 nF	15 nF – 18 nF	6.8 nF – 8.2 nF		1.5 nF – 2.2 nF			
7.5 – 10 x 8 x 3	6.8 nF – 10 nF	2.7 nF – 5.6 nF	0.68 nF – 2.2 nF		0.22 nF – 0.56 nF			
7.5 – 10 x 9 x 4	12 nF – 22 nF	6.8 nF – 12 nF	2.7 nF – 5.6 nF		0.68 nF – 1.2 nF			
7.5 – 10.5 x 12 x 6	39 nF – 47 nF	22 nF – 27 nF	10 nF – 12 nF		2.7 nF – 3.3 nF			
10 – 13 x 11 x 5	47 nF – 56 nF	27 nF – 33 nF		10 nF – 12 nF		3.9 nF – 4.7 nF		
10 – 13 x 12 x 6	68 nF – 82 nF	39 nF – 47 nF		15 nF – 18 nF		5.6 nF – 6.8 nF		
10 – 13 x 9 x 4	27 nF – 39 nF	10 nF – 22 nF		3.9 nF – 8.2 nF		0.47 nF – 3.3 nF		
15 – 18 x 10 x 4						8.2 nF – 10 nF	3.3 nF – 5.6 nF	0.1 nF – 2.7 nF
15 – 18 x 11 x 5	68 nF – 100 nF	33 nF – 56 nF		12 nF – 27 nF		8.2 nF – 18 nF	3.3 nF – 10 nF	0.22 nF – 4.7 nF
15 – 18 x 12 x 13	330 nF	150 nF – 180 nF		82 nF		33 nF	22 nF	10 nF
15 – 18 x 12 x 6	120 nF – 150 nF	68 nF – 82 nF		33 nF – 39 nF		22 nF	12 nF – 15 nF	5.6 nF – 8.2 nF
15 – 18 x 12.5 x 9	180 nF – 270 nF	100 nF – 120 nF		47 nF – 68 nF		22 nF – 27 nF	18 nF	
15 – 18 x 13.5 x 7.5	180 nF – 220 nF	100 nF – 120 nF		47 nF – 56 nF		27 nF – 33 nF	18 nF – 22 nF	10 nF
15 – 18 x 14.5 x 8.5	270 nF	150 nF		68 nF – 82 nF		39 nF – 47 nF	27 nF – 33 nF	12 nF – 15 nF
15 – 18 x 16 x 10	330 nF – 390 nF	180 nF – 220 nF		100 nF				
15 – 18 x 19 x 11	470 nF	270 nF		120 nF				
22.5 – 26.5 x 15 x 6	220 nF – 330 nF	120 nF – 180 nF		47 nF – 100 nF		27 nF – 39 nF	15 nF – 33 nF	1 nF – 18 nF
22.5 – 26.5 x 16 x 7	390 nF – 470 nF	220 nF		120 nF		47 nF – 56 nF	39 nF – 47 nF	22 nF – 27 nF
22.5 – 26.5 x 17 x 8.5	560 nF	270 nF – 330 nF		150 nF – 180 nF		68 nF	56 nF	33 nF
22.5 – 26.5 x 18.5 x 10	680 nF – 820 nF	390 nF – 470 nF		220 nF		82 nF – 100 nF	68 nF – 82 nF	39 nF – 47 nF
22.5 – 26.5 x 20 x 11	1 $\mu$ F	560 nF		270 nF – 330 nF		120 nF	100 nF	56 nF
22.5 – 26.5 x 22 x 13	1.2 $\mu$ F	680 nF		390 nF		150 nF		

# Film Capacitors

## Through-Hole – Pulse & AC

### Double Metallized Polypropylene (cont.)

#### R76 Series Radial, DC & Pulse Applications 250 – 2,000 VDC (Automotive Grade) (cont.)

Capacitance Range: 100 pF to 15  $\mu$ F • Temperature Range: -55°C to +105°C



R76	I	D	1680	SE	30	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Double Metallized Polypropylene	I = 250 M = 400 P = 630 Q = 1,000 T = 1,600 U = 2,000	D = 7.5 F = 10 I = 15 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00 10 30 40 50 60 70 80	H = 2.5% J = $\pm$ 5% K = $\pm$ 10%

Case Size	Voltage					
	250/160	400/250	630/250	630/400	1,000/400	1,000/600
27.5 – 32 x 17 x 9	820 nF	390 nF – 470 nF		150 nF – 270 nF		100 nF – 120 nF
27.5 – 32 x 20 x 11	1 $\mu$ F – 1.2 $\mu$ F	560 nF – 680 nF		330 nF – 390 nF		150 nF
27.5 – 32 x 22 x 13	1.5 $\mu$ F – 1.8 $\mu$ F	820 nF – 1 $\mu$ F		470 nF – 560 nF		180 nF – 220 nF
27.5 – 32 x 25 x 13				680 nF		270 nF
27.5 – 32 x 28 x 14	2.2 $\mu$ F	1.2 $\mu$ F		820 nF		330 nF
27.5 – 32 x 33 x 18	2.7 $\mu$ F – 3.9 $\mu$ F	1.5 $\mu$ F – 1.8 $\mu$ F		1 $\mu$ F – 1.2 $\mu$ F		390 nF – 470 nF
27.5 – 32 x 37 x 22	4.7 $\mu$ F – 5.6 $\mu$ F	2.2 $\mu$ F – 2.7 $\mu$ F		1.5 $\mu$ F – 1.8 $\mu$ F		560 nF – 680 nF
37.5 – 41.5 x 22 x 11	1.2 $\mu$ F – 1.8 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F		330 nF – 680 nF		180 nF – 220 nF
37.5 – 41.5 x 24 x 13	2.2 $\mu$ F – 2.7 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F		820 nF		270 nF – 330 nF
37.5 – 41.5 x 28.5 x 16	3.3 $\mu$ F – 3.9 $\mu$ F	1.8 $\mu$ F		1 $\mu$ F – 1.5 $\mu$ F		390 nF – 560 nF
37.5 – 41.5 x 32 x 19	4.7 $\mu$ F – 5.6 $\mu$ F	2.2 $\mu$ F – 3.3 $\mu$ F		1.8 $\mu$ F		680 nF
37.5 – 41.5 x 40 x 20	6.8 $\mu$ F – 8.2 $\mu$ F	3.9 $\mu$ F – 4.7 $\mu$ F		2.2 $\mu$ F – 2.7 $\mu$ F		820 nF – 1 $\mu$ F
37.5 – 41.5 x 44 x 24	10 $\mu$ F	5.6 $\mu$ F		3.3 $\mu$ F		1.2 $\mu$ F – 1.5 $\mu$ F
37.5 – 41.5 x 45 x 30	12 $\mu$ F – 15 $\mu$ F	6.8 $\mu$ F – 8.2 $\mu$ F		3.9 $\mu$ F – 5.6 $\mu$ F		1.8 $\mu$ F – 2.2 $\mu$ F

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### Film/Foil Polypropylene

#### R73 Series Radial 100 – 2,000 VDC (Automotive Grade)

Capacitance Range: 100 pF to 2.2 μF Temperature Range: -55°C to +105°C



R73	E	I	2470	AA	00	H
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Polypropylene Film/ Foil	E = 100 G = 160 I = 250 M = 400 P = 630 Q = 1000 R = 1250 T = 1600 U = 2000	I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00, 10, 30, 40 (Standard)	H = ±2.5% (for 2-section construction only) J = ±5% K = ±10%

Case Size	Voltage								
	100/63	160/90	250/125	400/160	630/300	1,000/400	1,250/450	1,600/450	2,000/500
15 – 18 x 11 x 5	47 nF	33 nF	15 nF	10 nF	10 nF – 12 nF	3.3 nF – 8.2 nF	2.2 nF – 2.7 nF	1 nF – 1.8 nF	0.1 nF – 0.68 nF
15 – 18 x 12 x 6	68 nF	47 nF	22 nF	15 nF	15 nF – 18 nF	10 nF – 12 nF	3.3 nF – 3.9 nF	2.2 nF – 2.7 nF	1 nF – 1.2 nF
15 – 18 x 13.5 x 7.5	100 nF	68 nF	33 nF	22 nF	22 nF – 27 nF	15 nF	4.7 nF – 5.6 nF	3.3 nF – 3.9 nF	1.5 nF – 1.8 nF
15 – 18 x 14.5 x 8.5				33 nF	33 nF	18 nF – 22 nF	6.8 nF	4.7 nF	2.2 nF
15 – 18 x 16 x 10	150 nF	100 nF	47 nF	47 nF	39 nF – 47 nF	27 nF	8.2 nF	5.6 nF – 6.8 nF	2.7 nF
22.5 – 26.5 x 15 x 6					39 nF	15 nF – 22 nF	8.2 nF – 12 nF	5.6 nF – 10 nF	2.7 nF – 3.9 nF
22.5 – 26.5 x 16 x 7					47 nF – 56 nF	27 nF – 33 nF	15 nF – 18 nF	12 nF	4.7 nF – 5.6 nF
22.5 – 26.5 x 17 x 8.5					68 nF	39 nF	22 nF	15 nF – 18 nF	6.8 nF – 8.2 nF
22.5 – 26.5 x 18.5 x 10					82 nF – 100 nF	47 nF – 56 nF	27 nF – 33 nF	22 nF	10 nF
22.5 – 26.5 x 20 x 11						68 nF			12 nF
27.5 – 32 x 17 x 9					100 nF – 120 nF	47 nF – 82 nF	39 nF	27 nF	10 nF – 12 nF
27.5 – 32 x 20 x 11					150 nF – 180 nF	82 nF – 120 nF	47 nF – 56 nF	33 nF – 39 nF	15 nF
27.5 – 32 x 22 x 13					180 nF – 220 nF	120 nF – 150 nF	68 nF	47 nF – 56 nF	18 nF – 22 nF
27.5 – 32 x 25 x 13					270 nF	180 nF	82 nF – 100 nF		
27.5 – 32 x 28 x 14					330 nF – 390 nF	220 nF	120 nF	68 nF – 82 nF	27 nF – 33 nF
27.5 – 32 x 33 x 18					390 nF – 560 nF	270 nF – 330 nF	120 nF – 180 nF	100 nF – 120 nF	33 nF – 47 nF
27.5 – 32 x 37 x 22					560 nF – 820 nF	470 nF	220 nF	150 nF – 180 nF	56 nF – 68 nF
37.5 – 41.5 x 22 x 11					220 nF – 330 nF	120 nF – 180 nF	82 nF – 120 nF	33 nF – 82 nF	18 nF – 27 nF
37.5 – 41.5 x 24 x 13					330 nF – 470 nF	220 nF – 270 nF	120 nF – 180 nF	100 nF	33 nF – 39 nF
37.5 – 41.5 x 28.5 x 16					470 nF – 680 nF	270 nF – 390 nF	180 nF – 270 nF	120 nF – 180 nF	47 nF – 68 nF
37.5 – 41.5 x 32 x 19					820 nF	470 nF – 560 nF	330 nF	220 nF	82 nF
37.5 – 41.5 x 40 x 20					1 μF – 1.2 μF	680 nF – 820 nF	390 nF – 560 nF	270 nF – 330 nF	100 nF – 120 nF
37.5 – 41.5 x 44 x 24					1.5 μF	1 μF	680 nF	390 nF – 560 nF	150 nF
37.5 – 41.5 x 45 x 30					1.8 μF – 2.2 μF	1.2 μF – 1.5 μF	820 nF	470 nF – 560 nF	180 nF – 220 nF

# Film Capacitors

## Through-Hole – Pulse & AC

### Film/Foil Polypropylene (cont.)

#### PFR Series Radial 63 – 1,000 VDC

Capacitance Range: 100 pF to 0.022 μF • Temperature Range: –55°C to +100°C

#### Legacy Part Number System



PFR	5	101	J	63	J11	L4	BULK
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Lead Length	Packaging
Polypropylene Film/Foil	5 (Standard)	First two digits represent significant figures. Third digit specifies number of zeros.	F = ±1% G = ±2% H = ±2.5% J = ±5% K = ±10%	63 = 63 100 = 100 250 = 250 400 = 400 630 = 630 1000 = 1000	See Dimension Table	Letter "L" followed by lead length in mm	See Ordering Options Table

#### N KEMET Part Number System

F	411	J	H	101	J	063	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Polypropylene Film/Foil	J = 5.0	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	F = ±1% G = ±2% H = ±2.5% J = ±5% K = ±10%	063 = 63 100 = 100 250 = 250 400 = 400 630 = 630 1K0 = 1000	See Ordering Options Table

Case Size	Voltage					
	63/40	100/63	250/160	400/220	630/250	1,000/250
5 – 7.2 x 6 x 4.5	0.1 nF – 6.8 nF	0.1 nF – 2.2 nF	0.1 nF – 2.2 nF	0.1 nF – 2.2 nF	0.1 nF – 1.5 nF	0.1 nF – 0.22 nF
5 – 7.2 x 7 x 5.5	10 nF	3.3 nF – 4.7 nF	3.3 nF	3.3 nF	2.2 nF	0.33 nF – 0.68 nF
5 – 7.2 x 8 x 6.5	15 nF – 22 nF	6.8 nF – 10 nF	4.7 nF – 6.8 nF	4.7 nF – 6.8 nF	3.3 nF – 4.7 nF	1 nF

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### Film/Foil Polypropylene (cont.)

#### A72 Series Axial 100 – 2,000 VDC

Capacitance Range: 47 pF to 0.33  $\mu$ F Temperature Range: -55°C to +105°C



A72	E	F	1470	AA	00	J
Series	Rated Voltage (VDC)	Length (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Polypropylene Film/ Foil	E = 100 I = 250 M = 400 P = 630 Q = 1000 S = 1500 U = 2000	F = 11 H = 14 K = 20.5 Q = 28 T = 33	The last three digits represent significant figures. The first digit specifies the total number of zeros to be added.	See Ordering Options Table	00, 02 (Standard)	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage						
	100/63	250/125	400/160	630/300	1,000/400	1,500/450	2,000/500
5 x 11	4.7 nF – 10 nF	2.2 nF – 3.3 nF	0.047 nF – 1.5 nF				
5 x 16.5		4.7 nF – 15 nF					
6.5 x 16.5			2.2 nF – 3.3 nF				
7 x 16.5			4.7 nF				
8 x 16.5			6.8 nF				
8 x 20.5				15 nF		2.2 nF	
8 x 28					6.8 nF		
8.5 x 20.5					3.3 nF – 4.7 nF		1 nF – 2.2 nF
8.5 x 28					10 nF	4.7 nF – 6.8 nF	
9 x 16.5			10 nF				
9 x 28				33 nF			3.3 nF
9.5 x 20.5				22 nF		3.3 nF	
9.5 x 28						10 nF	4.7 nF
10 x 28				47 nF	15 nF		
11 x 28					22 nF	15 nF	6.8 nF
11.5 x 28				68 nF			
12.5 x 28						22 nF	
13 x 28					33 nF		10 nF
13.5 x 28				100 nF			
13.5 x 33						33 nF	15 nF
14 x 33				150 nF	47 nF		
16 x 33					68 nF	47 nF	22 nF
16.5 x 33				220 nF			
18 x 33						68 nF	
19 x 33					100 nF		
19.5 x 33				330 nF			
20 x 33							33 nF
22.5 x 33							47 nF



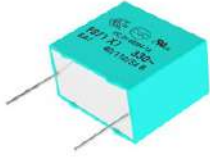
# Film Capacitors

## Through-Hole – Safety/EMI

### X1 Class

#### F871 – F873 Series, Halogen Free, Metallized Polypropylene, 330/480/760 VAC

Capacitance Range: 0.001 to 8.2  $\mu$ F • Temperature Range: -40°C to +110°C



F	871	B	K	104	M	330	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X1, Metallized Polypropylene	A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	330	See Ordering Options Table

#### F871

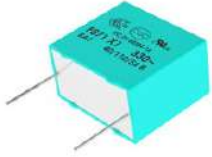
Case Size	Voltage
	330 VAC
10 – 13 x 11 x 5	15 nF – 22 nF
10 – 13 x 12 x 6	22 nF – 33 nF
10 – 13 x 17 x 7	33 nF – 47 nF
10 – 13 x 7.5 x 9.5	1.8 nF – 27 nF
10 – 13 x 8 x 4	1 nF – 10 nF
10 – 13 x 9 x 4	10 nF – 12 nF
15 – 18 x 10 x 4	2.7 nF – 33 nF
15 – 18 x 11 x 5	33 nF – 47 nF
15 – 18 x 12 x 13	82 nF – 180 nF
15 – 18 x 12 x 6	68 nF
15 – 18 x 12.5 x 5.5	47 nF – 68 nF
15 – 18 x 12.5 x 9	82 nF – 120 nF
15 – 18 x 13.5 x 7.5	82 nF – 120 nF
15 – 18 x 14.5 x 8.5	120 nF – 150 nF
15 – 18 x 16 x 10	180 nF
15 – 18 x 17.5 x 6	82 nF – 120 nF
15 – 18 x 18.5 x 7.5	150 nF – 180 nF
15 – 18 x 19 x 11	220 nF – 270 nF
15 – 18 x 20 x 12	250 nF – 270 nF
22.5 – 26 x 14.5 x 6	39 nF – 150 nF
22.5 – 26 x 16 x 7	150 nF – 220 nF
22.5 – 26 x 16 x 8	250 nF – 270 nF
22.5 – 26 x 17 x 8.5	330 nF
22.5 – 26 x 18.5 x 10	390 nF – 470 nF
22.5 – 26 x 18.5 x 9	330 nF – 390 nF
22.5 – 26 x 20 x 11	470 nF – 560 nF
22.5 – 26 x 22 x 13	680 nF – 820 nF
22.5 – 26 x 24.5 x 15.5	820 nF – 1 $\mu$ F
27.5 – 31.5 x 12.5 x 21	250 nF – 680 nF

Case Size	Voltage
	330 VAC
27.5 – 31.5 x 16 x 27.5	1.2 $\mu$ F
27.5 – 31.5 x 17 x 9	220 nF – 390 nF
27.5 – 31.5 x 19 x 31	1.5 $\mu$ F – 1.8 $\mu$ F
27.5 – 31.5 x 20 x 11	150 nF – 680 nF
27.5 – 31.5 x 25 x 13	820 nF – 1 $\mu$ F
27.5 – 31.5 x 28 x 14	1.2 $\mu$ F
27.5 – 31.5 x 28 x 17.5	1.5 $\mu$ F – 1.8 $\mu$ F
27.5 – 31.5 x 29 x 19	1.8 $\mu$ F
27.5 – 31.5 x 37 x 22	2.2 $\mu$ F – 3.3 $\mu$ F
27.5 – 31.5 x 40 x 17	1.8 $\mu$ F – 2.2 $\mu$ F
37.5 – 41 x 15 x 24	560 nF – 1.5 $\mu$ F
37.5 – 41 x 19 x 24	1.8 $\mu$ F – 2.7 $\mu$ F
37.5 – 41 x 22 x 11	330 nF – 1 $\mu$ F
37.5 – 41 x 24 x 13	1.2 $\mu$ F – 1.5 $\mu$ F
37.5 – 41 x 26 x 15	1.5 $\mu$ F – 1.8 $\mu$ F
37.5 – 41 x 28.5 x 16	2.2 $\mu$ F
37.5 – 41 x 32 x 19	2.5 $\mu$ F – 3.3 $\mu$ F
37.5 – 41 x 38 x 21	3.3 $\mu$ F – 4.7 $\mu$ F
37.5 – 41 x 44 x 24	4.7 $\mu$ F – 6.8 $\mu$ F
37.5 – 41 x 45 x 30	6.8 $\mu$ F – 8.2 $\mu$ F

### X1 Class (cont.)

#### F871 – F873 Series, Halogen Free, Metallized Polypropylene, 330/480/760 VAC (cont.)

Capacitance Range: 0.001 to 8.2  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



F	871	B	K	104	M	330	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X1, Metallized Polypropylene	A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	330	See Ordering Options Table

#### F872

Case Size	Voltage
	480 VAC
10 – 13 x 11 x 5	5.6 nF – 8.2 nF
10 – 13 x 12 x 6	10 nF – 12 nF
10 – 13 x 17 x 7	15 nF – 18 nF
10 – 13 x 7.5 x 9.5	1.8 nF – 10 nF
10 – 13 x 8 x 4	1 nF – 3.9 nF
10 – 13 x 9 x 4	3.9 nF – 4.7 nF
15 – 18 x 10 x 4	2.7 nF – 15 nF
15 – 18 x 11 x 5	18 nF – 22 nF
15 – 18 x 12 x 13	39 nF – 82 nF
15 – 18 x 12 x 6	33 nF
15 – 18 x 12.5 x 5.5	25 nF – 33 nF
15 – 18 x 12.5 x 9	15 nF – 47 nF
15 – 18 x 13.5 x 7.5	39 nF – 56 nF
15 – 18 x 14.5 x 8.5	56 nF – 68 nF
15 – 18 x 16 x 10	82 nF – 100 nF
15 – 18 x 17.5 x 6	39 nF – 56 nF
15 – 18 x 18.5 x 7.5	56 nF – 82 nF
15 – 18 x 19 x 11	100 nF – 120 nF
15 – 18 x 20 x 12	120 nF – 150 nF
22.5 – 26 x 14.5 x 6	39 nF – 68 nF
22.5 – 26 x 16 x 7	82 nF – 120 nF
22.5 – 26 x 16 x 8	120 nF
22.5 – 26 x 17 x 8.5	150 nF
22.5 – 26 x 18.5 x 10	180 nF – 220 nF
22.5 – 26 x 18.5 x 9	150 nF – 180 nF
22.5 – 26 x 20 x 11	220 nF
22.5 – 26 x 22 x 13	250 nF – 390 nF
22.5 – 26 x 24.5 x 15.5	390 nF – 470 nF
27.5 – 31.5 x 12.5 x 21	250 nF – 390 nF
27.5 – 31.5 x 16 x 27.5	560 nF – 680 nF

#### F873

Case Size	Voltage
	480 VAC
27.5 – 31.5 x 17 x 9	150 nF – 180 nF
27.5 – 31.5 x 19 x 31	680 nF – 1 $\mu\text{F}$
27.5 – 31.5 x 20 x 11	220 nF – 330 nF
27.5 – 31.5 x 25 x 13	390 nF – 470 nF
27.5 – 31.5 x 28 x 14	560 nF
27.5 – 31.5 x 28 x 17.5	680 nF – 820 nF
27.5 – 31.5 x 29 x 19	820 nF – 1 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$
27.5 – 31.5 x 40 x 17	820 nF – 1.2 $\mu\text{F}$
37.5 – 41 x 15 x 24	560 nF – 680 nF
37.5 – 41 x 19 x 24	820 nF – 1.2 $\mu\text{F}$
37.5 – 41 x 22 x 11	330 nF – 560 nF
37.5 – 41 x 24 x 13	680 nF
37.5 – 41 x 26 x 15	820 nF – 1 $\mu\text{F}$
37.5 – 41 x 28.5 x 16	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$
37.5 – 41 x 32 x 19	1.2 $\mu\text{F}$ – 1.8 $\mu\text{F}$
37.5 – 41 x 38 x 21	1.8 $\mu\text{F}$
37.5 – 41 x 44 x 24	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$
37.5 – 41 x 45 x 30	3.3 $\mu\text{F}$ – 3.5 $\mu\text{F}$

Case Size	Voltage
	760 VAC
22.5 – 26 x 14.5 x 6	10 nF – 25 nF
22.5 – 26 x 16 x 7	25 nF – 39 nF
22.5 – 26 x 16 x 8	47 nF
22.5 – 26 x 17 x 8.5	47 nF – 56 nF
22.5 – 26 x 18.5 x 10	68 nF – 82 nF
22.5 – 26 x 18.5 x 9	56 nF
22.5 – 26 x 20 x 11	82 nF – 100 nF
22.5 – 26 x 22 x 13	100 nF – 120 nF
22.5 – 26 x 24.5 x 15.5	150 nF – 180 nF
27.5 – 31.5 x 12.5 x 21	100 nF – 150 nF
27.5 – 31.5 x 16 x 27.5	220 nF – 250 nF
27.5 – 31.5 x 17 x 9	56 nF – 82 nF
27.5 – 31.5 x 19 x 31	270 nF – 330 nF
27.5 – 31.5 x 20 x 11	82 nF – 120 nF
27.5 – 31.5 x 25 x 13	150 nF – 220 nF
27.5 – 31.5 x 28 x 14	220 nF – 250 nF
27.5 – 31.5 x 28 x 17.5	250 nF – 330 nF
27.5 – 31.5 x 29 x 19	330 nF – 390 nF
27.5 – 31.5 x 37 x 22	390 nF – 560 nF
27.5 – 31.5 x 40 x 17	250 nF – 390 nF
37.5 – 41 x 15 x 24	220 nF – 330 nF
37.5 – 41 x 19 x 24	330 nF – 470 nF
37.5 – 41 x 22 x 11	150 nF – 220 nF
37.5 – 41 x 24 x 13	250 nF – 330 nF
37.5 – 41 x 26 x 15	330 nF
37.5 – 41 x 28.5 x 16	390 nF – 470 nF
37.5 – 41 x 32 x 19	470 nF – 680 nF
37.5 – 41 x 38 x 21	680 nF – 820 nF
37.5 – 41 x 44 x 24	820 nF – 1.2 $\mu\text{F}$
37.5 – 41 x 45 x 30	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$

# Film Capacitors

## Through-Hole – Safety/EMI

### X1 Class (cont.)

#### R49 Series, Metallized Polypropylene, 310 VAC

Capacitance Range: 0.01 to 2.2  $\mu$ F Temperature Range: -40°C to +110°C



R49	A	I	3100	00	01	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X1, Metallized Polypropylene	A = 310	F = 10.0 I = 15.0 N = 22.5 R = 27.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	01 M1	K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage	Case Size	Voltage
	310 VAC		310 VAC
10 – 13 x 11 x 5	10 nF – 15 nF	22.5 – 26.5 x 17 x 8.5	220 nF
10 – 13 x 12 x 6	22 nF – 33 nF	22.5 – 26.5 x 18.5 x 10	330 nF
15 – 18 x 11 x 5	10 nF – 33 nF	22.5 – 26.5 x 20 x 11	470 nF
15 – 18 x 12 x 6	47 nF – 68 nF	27.5 – 32 x 17 x 9	330 nF
15 – 18 x 13.5 x 7.5	68 nF – 100 nF	27.5 – 32 x 20 x 11	470 nF
15 – 18 x 14.5 x 8.5	100 nF	27.5 – 32 x 22 x 13	680 nF
15 – 18 x 16 x 10	150 nF	27.5 – 32 x 28 x 14	1 $\mu$ F
22.5 – 26.5 x 15 x 6	100 nF	27.5 – 32 x 33 x 18	1.5 $\mu$ F
22.5 – 26.5 x 16 x 7	150 nF	27.5 – 32 x 37 x 22	2.2 $\mu$ F

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### X1 Class (cont.)

#### R49 Series, Metallized Polypropylene, 330 VAC

Capacitance Range: 0.047 to 6.8  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



R49	A	N	3150	00	B1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Lead and Packaging Code	Internal Use	Capacitance Tolerance
X1, Metallized Polypropylene	A = 330	I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	A1 A2 A3 B1 B2	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	330 VAC
15 – 18 x 11 x 5	47 nF
15 – 18 x 12 x 6	68 nF
15 – 18 x 14.5 x 8.5	150 nF
15 – 18 x 16 x 10	220 nF
15 – 18 x 17.5 x 6	68 nF – 100 nF
15 – 18 x 19 x 11	220 nF
22.5 – 26.5 x 15 x 6	150 nF
22.5 – 26.5 x 16 x 7	220 nF
22.5 – 26.5 x 17 x 8.5	330 nF
22.5 – 26.5 x 18.5 x 10	470 nF
22.5 – 26.5 x 22 x 13	680 nF
27.5 – 32 x 17 x 9	330 nF

Case Size	Voltage
	330 VAC
27.5 – 32 x 20 x 11	470 nF – 680 nF
27.5 – 32 x 22 x 13	680 nF
27.5 – 32 x 28 x 14	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$
27.5 – 32 x 33 x 18	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
27.5 – 32 x 37 x 22	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$
27.5 – 32 x 25 x 13	1 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	680 nF – 1 $\mu\text{F}$
37.5 – 41.5 x 24 x 13	1.5 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	2.2 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
37.5 – 41.5 x 45 x 30	6.8 $\mu\text{F}$

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# Film Capacitors

## Through-Hole – Safety/EMI

### X1 Class (cont.)

#### R47 Series, Metallized Polypropylene, 440 VAC (Automotive Grade)

Capacitance Range: 0.0047 to 2.2  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



R47	4	I	2100	00	A1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	nental Use	Capacitance Tolerance
X1, Metallized Polypropylene	4 = 440	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	A1 A2 A3	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	440 VAC
10 – 13 x 11 x 5	6.8 nF
10 – 13 x 12 x 6	8.2 nF – 10 nF
10 – 13 x 9 x 4	4.7 nF
15 – 18 x 11 x 5	10 nF – 18 nF
15 – 18 x 12 x 13	68 nF
15 – 18 x 12 x 6	22 nF – 33 nF
15 – 18 x 12.5 x 9	47 nF
15 – 18 x 13.5 x 7.5	39 nF – 47 nF
15 – 18 x 14.5 x 8.5	56 nF
15 – 18 x 16 x 10	68 nF – 82 nF
15 – 18 x 17.5 x 6	47 nF

Case Size	Voltage
	440 VAC
15 – 18 x 18.5 x 7.5	68 nF
15 – 18 x 19 x 11	100 nF
22.5 – 26.5 x 13.5 x 6.5	47 nF
22.5 – 26.5 x 15 x 6	47 nF – 68 nF
22.5 – 26.5 x 16 x 7	100 nF
22.5 – 26.5 x 17 x 8.5	120 nF
22.5 – 26.5 x 18.5 x 10	150 nF – 180 nF
22.5 – 26.5 x 20 x 11	220 nF
22.5 – 26.5 x 22 x 13	270 nF – 330 nF
27.5 – 32 x 17 x 9	150 nF – 270 nF
27.5 – 32 x 20 x 11	30 nF – 390 nF

Case Size	Voltage
	440 VAC
27.5 – 32 x 22 x 13	470 nF – 560 nF
27.5 – 32 x 28 x 14	680 nF
27.5 – 32 x 33 x 18	820 nF – 1.2 $\mu\text{F}$
27.5 – 32 x 37 x 22	1.5 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	470 nF – 560 nF
37.5 – 41.5 x 24 x 13	680 nF
37.5 – 41.5 x 28.5 x 16	820 nF – 1 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$

#### P278 Series, Metallized Impregnated Paper, 480 VAC

Capacitance Range: 0.001 to 0.15  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



P	278	H	E	102	M	480	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X1, Metallized Paper	H = 10.2 Q = 15.2 C = 20.3 S = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	480 = 480	See Ordering Options Table

Case Size	Voltage
	480 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 10 nF
15.2 – 18.5 x 11 x 5.5	15 nF
15.2 – 18.5 x 14.3 x 8.5	22 nF
20.3 – 24 x 14 x 7.6	33 nF

Case Size	Voltage
	480 VAC
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
22.5 – 27 x 17 x 8	33 nF – 47 nF
22.5 – 27 x 19 x 10	68 nF
22.5 – 27 x 22 x 12	100 nF
25.4 – 30.5 x 19 x 12.1	100 nF
25.4 – 30.5 x 22 x 15.3	150 nF

### X1 Class (cont.)

#### P410 Series, Metallized Impregnated Paper 300 VAC

Capacitance Range: 0.022 to 0.1  $\mu$ F • Temperature Range: -40°C to +85°C



P	410	Q	M	223	M	300	A	H101
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance ( $\Omega$ )
P= Metallized Paper	RC Snubber	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	300 = 300	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	1,000/300
15.2 – 18.5 x 13 x 7.3	22 nF
15.2 – 18.5 x 14.3 x 8.5	33 nF
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
25.4 – 30.5 x 16.1 x 10.6	100 nF

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# Film Capacitors

## Through-Hole – Safety/EMI

### X1 Class (cont.)

#### PME271E Series, Metallized Impregnated Paper, 300 VAC

Capacitance Range: 0.01 to 0.22  $\mu$ F • Temperature Range: -40°C to +110°C

#### Legacy Part Number System



PME271	E	(D)	510(0)	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X1, Metallized Paper	E = 300	Blank = Standard D = 22.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$ (for C $\leq$ 0.1 $\mu$ F) K = $\pm 10\%$ (for C > 0.1 $\mu$ F)	See Ordering Options Table

#### New KEMET Part Number System

P	277	Q	E	103	M	300	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X1, Metallized Paper	Q = 15.2 C = 20.3 S = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ (for C $\leq$ 0.1 $\mu$ F) K = $\pm 10\%$ (for C > 0.1 $\mu$ F)	300 = 300	See Ordering Options Table

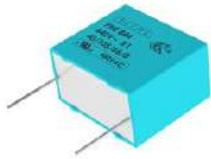
Case Size	Voltage
	300 VAC
15.2 – 18.5 x 10.5 x 5.2	10 nF – 15 nF
15.2 – 18.5 x 14.3 x 8.5	47 nF
15.2 – 19 x 13 x 7.3	22 nF – 33 nF
20.3 – 24 x 14 x 7.6	68 nF
20.3 – 24 x 16.5 x 11.3	100 nF
22.5 – 27 x 17 x 8	68 nF – 100 nF
22.5 – 27 x 19 x 10	150 nF
22.5 – 27 x 22 x 12	220 nF
25.4 – 30.5 x 16.1 x 10.6	150 nF
25.4 – 30.5 x 19 x 12.1	220 nF

### X1 Class (cont.)

#### PHE844 Series, Metallized Polypropylene, 440/480 VAC

Capacitance Range: 0.1 to 2.2  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$

#### Legacy Part Number System



PHE844	R	D	6100	M	R06L2
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X1, Metallized Polypropylene	R = 440	D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	K = $\pm 10\%$ M = $\pm 20\%$	See Ordering Options Table

#### New KEMET Part Number System

F	844	D	H	104	M	440	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
F = Film	X1, Metallized Polypropylene	D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	440 = 440	See Ordering Options Table

Case Size	Voltage
	480 VAC
22.5 – 26 x 16 x 8	100 nF
22.5 – 26 x 18.5 x 9	150 nF
22.5 – 26 x 21.5 x 11	220 nF
22.5 – 26 x 23 x 13.5	330 nF
22.5 – 26 x 24.5 x 15.5	470 nF
27.5 – 31.5 x 20.5 x 10.5	220 nF
27.5 – 31.5 x 23 x 13.5	330 nF
27.5 – 31.5 x 24.5 x 14.5	470 nF
27.5 – 31.5 x 28 x 17.5	680 nF
27.5 – 31.5 x 30 x 21	1 $\mu\text{F}$
37.5 – 41 x 24 x 13	470 nF – 680 nF
37.5 – 41 x 26 x 15	1 $\mu\text{F}$
37.5 – 41 x 36 x 19	1.5 $\mu\text{F}$
37.5 – 41 x 38 x 21	2.2 $\mu\text{F}$

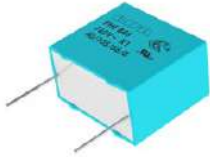


### X1 Class (cont.)

#### PHE845 Series, Metallized Polypropylene, 760 VAC

Capacitance Range: 0.01 to 10  $\mu$ F • Temperature Range: -40°C to +105°C

#### Legacy Part Number System



PHE845	V	D	5100	M	R06L2
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X1, Metallized Polypropylene	V = 760	D = 22.5 F = 27.5 R = 37.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	K = $\pm$ 10% M = $\pm$ 20%	See Ordering Options Table

#### New KEMET Part Number System

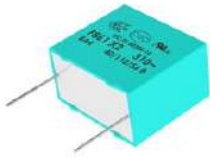
F	845	D	D	103	M	760	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
F = Film	X1, Metallized Polypropylene	D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	760 = 760	See Ordering Options Table

Case Size	Voltage
	760 VAC
22.5 – 26 x 14.5 x 6.5	10 nF – 22 nF
22.5 – 26 x 16.5 x 7	33 nF
22.5 – 26 x 18.5 x 9	47 nF
22.5 – 26 x 19 x 10.5	68 nF
22.5 – 26 x 21.5 x 11	100 nF
22.5 – 26 x 23 x 13.5	150 nF
22.5 – 26 x 24.5 x 15.5	220 nF
27.5 – 31.5 x 20.5 x 10.5	100 nF
27.5 – 31.5 x 22.5 x 11.5	150 nF
27.5 – 31.5 x 23 x 13.5	220 nF
27.5 – 31.5 x 29 x 19	330 nF
27.5 – 31.5 x 30 x 21	470 nF
37.5 – 41 x 26 x 15	470 nF
37.5 – 41 x 32 x 16.5	470 nF
37.5 – 41 x 36 x 19	680 nF
37.5 – 41 x 38 x 21	1 $\mu$ F

### X2 Class

#### F861 Series Metallized Polypropylene Film, 310 VAC

Capacitance Range: 0.01 – 4.7  $\mu$ F • Temperature Range: -40°C to +110°C



F	861	B	C	104	M	310	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X2, Metallized Polypropylene	K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	310	See Ordering Options Table

Case Size	Voltage
	310 VAC
7.5 – 10 x 10.5 x 5	18 nF – 33 nF
7.5 – 10 x 8 x 4	10 nF – 12 nF
7.5 – 10 x 9 x 4	15 nF
7.5 – 10.5 x 12 x 6	33 nF – 47 nF
10 – 13 x 11 x 5	68 nF – 100 nF
10 – 13 x 12 x 6	100 nF – 150 nF
10 – 13 x 17 x 7	150 nF – 270 nF
10 – 13 x 7.5 x 9.5	10 nF – 120 nF
10 – 13 x 8 x 4	10 nF – 47 nF
10 – 13 x 9 x 4	56 nF
15 – 18 x 10 x 4	10 nF – 120 nF
15 – 18 x 11 x 5	120 nF – 180 nF
15 – 18 x 12 x 13	270 nF – 680 nF
15 – 18 x 12 x 6	220 nF – 270 nF
15 – 18 x 12.5 x 5.5	180 nF – 220 nF
15 – 18 x 12.5 x 9	150 nF – 390 nF
15 – 18 x 13.5 x 7.5	270 nF – 390 nF
15 – 18 x 14.5 x 8.5	390 nF – 470 nF
15 – 18 x 16 x 10	560 nF – 680 nF
15 – 18 x 17.5 x 6	270 nF – 390 nF
15 – 18 x 18.5 x 7.5	470 nF – 560 nF
15 – 18 x 19 x 11	820 nF
15 – 18 x 20 x 12	1 $\mu$ F
22.5 – 26 x 14.5 x 6	39 nF – 470 nF
22.5 – 26 x 16 x 7	470 nF – 680 nF
22.5 – 26 x 16 x 8	820 nF
22.5 – 26 x 17 x 8.5	1 $\mu$ F
22.5 – 26 x 18.5 x 10	1.2 $\mu$ F
22.5 – 26 x 18.5 x 9	1.2 $\mu$ F

Case Size	Voltage
	310 VAC
22.5 – 26 x 20 x 11	1.5 $\mu$ F – 1.8 $\mu$ F
22.5 – 26 x 22 x 13	1.8 $\mu$ F – 2.5 $\mu$ F
22.5 – 26 x 24.5 x 15.5	2.5 $\mu$ F – 3.3 $\mu$ F
27.5 – 31.5 x 12.5 x 21	250 nF – 2.2 $\mu$ F
27.5 – 31.5 x 16 x 27.5	2.5 $\mu$ F – 3.9 $\mu$ F
27.5 – 31.5 x 17 x 9	150 nF – 1.2 $\mu$ F
27.5 – 31.5 x 19 x 31	3.9 $\mu$ F – 4.7 $\mu$ F
27.5 – 31.5 x 20 x 11	1.2 $\mu$ F – 1.8 $\mu$ F
27.5 – 31.5 x 25 x 13	2.2 $\mu$ F – 3.3 $\mu$ F
27.5 – 31.5 x 28 x 14	3.3 $\mu$ F
27.5 – 31.5 x 28 x 17.5	3.9 $\mu$ F – 4.7 $\mu$ F
27.5 – 31.5 x 40 x 17	3.3 $\mu$ F – 4.7 $\mu$ F
37.5 – 41 x 15 x 24	4.7 $\mu$ F
37.5 – 41 x 19 x 24	4.7 $\mu$ F
37.5 – 41 x 24 x 13	4.7 $\mu$ F
37.5 – 41 x 26 x 15	4.7 $\mu$ F

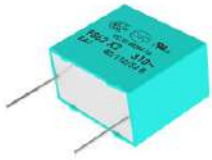
# Film Capacitors

## Through-Hole – Safety/EMI

### X2 Class (cont.)

#### F862 Series, Metallized Polypropylene for Harsh Environmental Conditions, 310 VAC (Automotive Grade)

Capacitance Range: 0.047 to 4.7  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



F	862	B	C	104	M	310	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X2, Metallized Polypropylene	B = 15 D = 22.5 F = 27.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	310	See Ordering Options Table

Case Size	Voltage
	310 VAC
15 – 18 x 13.5 x 7.5	100 nF – 150 nF
15 – 18 x 14.5 x 8.5	180 nF – 220 nF
15 – 18 x 16 x 10	330 nF – 390 nF
15 – 18 x 19 x 11	470 nF
15 – 18 x 20 x 12	560 nF
22.5 – 26 x 18.5 x 10	470 nF – 560 nF
22.5 – 26 x 20 x 11	680 nF – 820 nF
22.5 – 26 x 22 x 13	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 31.5 x 20 x 11	1 $\mu\text{F}$
27.5 – 31.5 x 25 x 13	1.5 $\mu\text{F}$
27.5 – 31.5 x 28 x 14	2.2 $\mu\text{F}$
27.5 – 31.5 x 29 x 19	3.3 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	4.7 $\mu\text{F}$

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### X2 Class (cont.)

#### R47 Series, Metallized Polypropylene, 440 VAC (Automotive Grade)

Capacitance Range: 0.0047 to 2.2  $\mu$ F Temperature Range: -40°C to +110°C



R47	4	F	1470	00	01	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	4 = 440	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	01 02 03	K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage
	440 VAC
10 – 13 x 11 x 5	6.8 nF
10 – 13 x 12 x 6	8.2 nF – 10 nF
10 – 13 x 9 x 4	4.7 nF
15 – 18 x 11 x 5	10 nF – 18 nF
15 – 18 x 12 x 13	68 nF
15 – 18 x 12 x 6	22 nF – 33 nF
15 – 18 x 12.5 x 9	47 nF
15 – 18 x 13.5 x 7.5	39 nF – 47 nF
15 – 18 x 14.5 x 8.5	56 nF
15 – 18 x 16 x 10	68 nF – 82 nF
15 – 18 x 17.5 x 6	47 nF

Case Size	Voltage
	440 VAC
15 – 18 x 18.5 x 7.5	68 nF
15 – 18 x 19 x 11	100 nF
22.5 – 26.5 x 13.5 x 6.5	47 nF
22.5 – 26.5 x 15 x 6	47 nF – 68 nF
22.5 – 26.5 x 16 x 7	100 nF
22.5 – 26.5 x 17 x 8.5	120 nF
22.5 – 26.5 x 18.5 x 10	150 nF – 180 nF
22.5 – 26.5 x 20 x 11	220 nF
22.5 – 26.5 x 22 x 13	270 nF – 330 nF
27.5 – 32 x 17 x 9	150 nF – 270 nF
27.5 – 32 x 20 x 11	330 nF – 390 nF

Case Size	Voltage
	440 VAC
27.5 – 32 x 22 x 13	470 nF – 560 nF
27.5 – 32 x 28 x 14	680 nF
27.5 – 32 x 33 x 18	820 nF – 1.2 $\mu$ F
27.5 – 32 x 37 x 22	1.5 $\mu$ F
37.5 – 41.5 x 22 x 11	470 nF – 560 nF
37.5 – 41.5 x 24 x 13	680 nF
37.5 – 41.5 x 28.5 x 16	820 nF – 1 $\mu$ F
37.5 – 41.5 x 32 x 19	1.2 $\mu$ F – 1.5 $\mu$ F
37.5 – 41.5 x 40 x 20	1.8 $\mu$ F – 2.2 $\mu$ F

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# Film Capacitors

## Through-Hole – Safety/EMI

### X2 Class (cont.)

#### R47 Series, Metallized Polypropylene, 520 VAC, 85°C (Automotive Grade)

Capacitance Range: 0.0047 to 2.2  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



R47	5	I	2100	00	01	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	5 = 520	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	01 02 03	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	520 VAC
10 – 13 x 11 x 5	6.8 nF
10 – 13 x 12 x 6	8.2 nF – 10 nF
10 – 13 x 9 x 4	4.7 nF
15 – 18 x 11 x 5	10 nF – 18 nF
15 – 18 x 12 x 13	68 nF
15 – 18 x 12 x 6	22 nF – 33 nF
15 – 18 x 12.5 x 9	47 nF
15 – 18 x 13.5 x 7.5	39 nF – 47 nF
15 – 18 x 14.5 x 8.5	56 nF
15 – 18 x 16 x 10	68 nF – 82 nF
15 – 18 x 17.5 x 6	47 nF

Case Size	Voltage
	520 VAC
15 – 18 x 18.5 x 7.5	68 nF
15 – 18 x 19 x 11	100 nF
22.5 – 26.5 x 13.5 x 6.5	47 nF
22.5 – 26.5 x 15 x 6	47 nF – 68 nF
22.5 – 26.5 x 16 x 7	100 nF
22.5 – 26.5 x 17 x 8.5	120 nF
22.5 – 26.5 x 18.5 x 10	150 nF – 180 nF
22.5 – 26.5 x 20 x 11	220 nF
22.5 – 26.5 x 22 x 13	270 nF – 330 nF
27.5 – 32 x 17 x 9	150 nF – 270 nF
27.5 – 32 x 20 x 11	330 nF – 390 nF

Case Size	Voltage
	520 VAC
27.5 – 32 x 22 x 13	470 nF – 560 nF
27.5 – 32 x 28 x 14	680 nF
27.5 – 32 x 33 x 18	820 nF – 1.2 $\mu\text{F}$
27.5 – 32 x 37 x 22	1.5 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	470 nF – 560 nF
37.5 – 41.5 x 24 x 13	680 nF
37.5 – 41.5 x 28.5 x 16	820 nF – 1 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$

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### X2 Class (cont.)

#### R46 Series, Metallized Polypropylene, 310 VAC

Capacitance Range: 0.01 to 10  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



R46	3	N	3150	00	01	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code ( $\mu\text{F}$ )	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	3 = 310	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	01 02 L2 M1 M2 NO N1 N2	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	310 VAC
10 – 13 x 11 x 5	33 nF – 47 nF
10 – 13 x 12 x 6	68 nF – 100 nF
10 – 13 x 9 x 4	10 nF – 22 nF
15 – 18 x 11 x 5	10 nF – 100 nF
15 – 18 x 12 x 13	330 nF
15 – 18 x 12 x 6	150 nF
15 – 18 x 12.5 x 9	150 nF – 220 nF
15 – 18 x 13.5 x 7.5	220 nF
15 – 18 x 14.5 x 8.5	330 nF
15 – 18 x 16 x 10	330 nF – 470 nF
15 – 18 x 17.5 x 6	220 nF

Case Size	Voltage
	310 VAC
15 – 18 x 18.5 x 7.5	330 nF
15 – 18 x 19 x 11	470 nF – 600 nF
22.5 – 26.5 x 15 x 6	150 nF – 330 nF
22.5 – 26.5 x 16 x 7	470 nF
22.5 – 26.5 x 18.5 x 10	680 nF – 1 $\mu\text{F}$
22.5 – 26.5 x 20 x 11	1 $\mu\text{F}$
22.5 – 26.5 x 22 x 13	1.5 $\mu\text{F}$
27.5 – 32 x 17 x 9	470 nF – 680 nF
27.5 – 32 x 20 x 11	1 $\mu\text{F}$
27.5 – 32 x 22 x 13	1.5 $\mu\text{F}$
27.5 – 32 x 25 x 13	2.2 $\mu\text{F}$

Case Size	Voltage
	310 VAC
27.5 – 32 x 28 x 14	2.2 $\mu\text{F}$
27.5 – 32 x 33 x 18	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
27.5 – 32 x 37 x 22	4.7 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
37.5 – 41.5 x 24 x 13	2.2 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	4.7 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	6.8 $\mu\text{F}$
37.5 – 41.5 x 44 x 24	6.8 $\mu\text{F}$
37.5 – 41.5 x 45 x 30	10 $\mu\text{F}$

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# Film Capacitors

## Through-Hole – Safety/EMI

### X2 Class (cont.)

#### R46 (Miniature) Series, Metallized Polypropylene, 275 VAC

Capacitance Range: 0.033 to 10  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



R46	K	I	3470	00	P0	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	K = 275	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	P0 P1 P2 P3	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	275 VAC
10 – 13 x 11 x 5	33 nF – 100 nF
10 – 13 x 12 x 6	68 nF – 150 nF
10 – 13 x 9 x 4	10 nF – 47 nF
15 – 18 x 11 x 5	10 nF – 150 nF
15 – 18 x 12 x 13	330 nF
15 – 18 x 12 x 6	150 nF – 220 nF
15 – 18 x 12.5 x 9	150 nF – 470 nF
15 – 18 x 13.5 x 7.5	220 nF – 330 nF
15 – 18 x 14.5 x 8.5	330 nF – 470 nF
15 – 18 x 16 x 10	330 nF – 680 nF
15 – 18 x 17.5 x 6	220 nF – 470 nF

Case Size	Voltage
	275 VAC
15 – 18 x 18.5 x 7.5	330 nF – 470 nF
15 – 18 x 19 x 11	470 nF – 820 nF
22.5 – 26.5 x 15 x 6	150 nF – 560 nF
22.5 – 26.5 x 16 x 7	470 nF – 680 nF
22.5 – 26.5 x 17 x 8.5	1 $\mu\text{F}$
22.5 – 26.5 x 18.5 x 10	680 nF – 1.5 $\mu\text{F}$
22.5 – 26.5 x 20 x 11	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$
22.5 – 26.5 x 22 x 13	2.2 $\mu\text{F}$
27.5 – 32 x 17 x 9	470 nF – 1 $\mu\text{F}$
27.5 – 32 x 20 x 11	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$
27.5 – 32 x 22 x 13	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$

Case Size	Voltage
	275 VAC
27.5 – 32 x 25 x 13	2.2 $\mu\text{F}$
27.5 – 32 x 28 x 14	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$
27.5 – 32 x 33 x 18	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
27.5 – 32 x 37 x 22	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
37.5 – 41.5 x 24 x 13	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$
37.5 – 41.5 x 44 x 24	6.8 $\mu\text{F}$
37.5 – 41.5 x 45 x 30	10 $\mu\text{F}$

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### X2 Class (cont.)

#### R46 Series, Metallized Polypropylene, 275 VAC, 125°C

Capacitance Range: 0.01 to 1  $\mu$ F Temperature Range: -40°C to +125°C



R46	K	N	3220	00	H1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	K = 275	F = 10.0 I = 15.0 N = 22.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	H = High Temperature H1 H2 H3 H4	K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage
	275 VAC
10 – 13 x 11 x 5	10 nF – 33 nF
10 – 13 x 12 x 6	47 nF – 68 nF
15 – 18 x 11 x 5	10 nF – 68 nF
15 – 18 x 12 x 13	330 nF
15 – 18 x 12 x 6	100 nF
15 – 18 x 12.5 x 9	150 nF – 220 nF
15 – 18 x 13.5 x 7.5	150 nF
15 – 18 x 14.5 x 8.5	220 nF
15 – 18 x 16 x 10	330 nF
15 – 18 x 17.5 x 6	150 nF – 220 nF
15 – 18 x 18.5 x 7.5	220 nF – 330 nF
15 – 18 x 19 x 11	470 nF
22.5 – 26.5 x 15 x 6	150 nF – 220 nF
22.5 – 26.5 x 16 x 7	330 nF
22.5 – 26.5 x 18.5 x 10	470 nF
22.5 – 26.5 x 20 x 11	680 nF
22.5 – 26.5 x 22 x 13	1 $\mu$ F

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### X2 Class (cont.)

#### PME264 Series Metallized Impregnated Paper, 660 VAC

Capacitance Range: 0.001 to 0.1  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

#### Legacy Part Number System



PME264	N	B	5100	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X2, Metallized Paper	N = 660	B = 15.2 C = 20.3 E = 25.4	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$	See Ordering Options Table

#### New KEMET Part Number System

P	264	Q	E	103	M	660	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X2, Metallized Paper	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	660 = 660	See Ordering Options Table

Case Size	Voltage
	660 VAC
15.2 – 18.5 x 10.5 x 5.2	1 nF – 4.7 nF
15.2 – 18.5 x 13 x 7.3	6.8 nF – 10 nF
20.3 – 24 x 14 x 7.6	15 nF
20.3 – 24 x 15 x 9	22 nF
20.3 – 24 x 16.5 x 11.3	33 nF
25.4 – 30.5 x 17 x 10.5	47 nF
25.4 – 30.5 x 19 x 12.1	68 nF
25.4 – 30.5 x 22 x 15.3	100 nF

### X2 Class (cont.)

#### P409 Series Metallized Polypropylene, 275 VAC

Capacitance Range: 0.047 to 0.47  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



P	409	Q	M	473	M	275	A	H470
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance ( $\Omega$ )
P= Metallized Paper	RC Snubber	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	275 = 275	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	630/275
15.2 – 18.5 x 13 x 7.3	47 nF
20.3 – 24 x 14 x 7.6	100 nF
20.3 – 24 x 16.5 x 11.3	100 nF – 220 nF
25.4 – 30.5 x 19 x 12.1	220 nF
25.4 – 30.5 x 22 x 15.3	220 nF – 470 nF

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### X2 Class (cont.)

#### PME271M Series Metallized Impregnated Paper, 275 VAC

Capacitance Range: 0.001 to 0.6  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$

#### Legacy Part Number System



PME271	M	(B)	610(0)	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X2, Metallized Paper	M = 275	Blank = Standard A = 10.2 B = 15.2 D = 22.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	See Ordering Options Table

#### New KEMET Part Number System

P	276	Q	E	104	M	275	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X2, Metallized Paper	H = 10.2 Q = 15.2 C = 20.3 S = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	275 = 275	See Ordering Options Table

Case Size	Voltage
	275 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF – 6.8 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 15 nF
15.2 – 18.5 x 12.5 x 6	22 nF – 47 nF
15.2 – 18.5 x 13.5 x 7.8	68 nF
15.2 – 18.5 x 14.3 x 8.5	100 nF
20.3 – 24 x 14 x 7.6	100 nF
20.3 – 24 x 15 x 9	150 nF
20.3 – 24 x 16.5 x 11.3	220 nF
22.5 – 27 x 17 x 8	100 nF – 150 nF
22.5 – 27 x 19 x 10	220 nF
22.5 – 27 x 22 x 12	270 nF – 330 nF
25.4 – 30.5 x 17.3 x 10.5	270 nF
25.4 – 30.5 x 19 x 12.1	330 nF
25.4 – 30.5 x 22 x 15.3	470 nF – 600 nF

### Y1 Class

#### P295 Series Metallized Impregnated Paper, 500 VAC

Capacitance Range: 470 to 4,700 pF • Temperature Range: -40°C to +115°C



P	295	B	E	471	M	500	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Y1, Metallized Paper	B = 15.0	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	500 = 500	See Ordering Options Table

Case Size	Voltage
	500 VAC
15 – 18 x 12.5 x 5.5	0.47 nF – 1 nF
15 – 18 x 12.5 x 6.5	1.2 nF – 2.2 nF
15 – 18 x 14.5 x 7.5	2.5 nF – 3.3 nF
15 – 18 x 16 x 8.5	3.9 nF – 4.7 nF

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# Film Capacitors

## Through-Hole – Safety/EMI

### Y1 Class (cont.)

#### PME295 Series Metallized Impregnated Paper, 440 VAC/480 VAC

Capacitance Range: 470 to 4,700 pF • Temperature Range: -40°C to +115°C

#### Legacy Part Number System



PME295	R	B	3470	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Y1, Metallized Paper	R = 440	B = 15.0	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = ±20%	See Ordering Options Table

#### New KEMET Part Number System

P	295	B	E	471	M	440	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Y1, Metallized Paper	B = 15.0	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	440 = 440	See Ordering Options Table

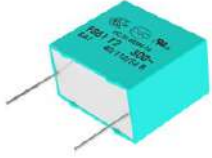
Case Size	Voltage
	480 VAC
15 – 18 x 12.5 x 5.5	0.47 nF – 1 nF
15 – 18 x 12.5 x 6.5	1.2 nF – 2.2 nF
15 – 18 x 14.5 x 7.5	2.5 nF – 3.3 nF
15 – 18 x 16 x 8.5	3.9 nF – 4.7 nF

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### Y2 Class

#### F881 Series, Halogen Free, Metallized Polypropylene, 300 VAC

Capacitance Range: 0.01 to 1 0  $\mu$ F Temperature Range: -40°C to +110°C



F	881	B	C	103	M	300	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	Y2, Metallized Polypropylene	K = 7.5 A = 10 B = 15 D = 22.5 F = 27.5 R = 37.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	300	See Ordering Options Table

Case Size	Voltage
	300 VAC
7.5 – 10 x 10.5 x 5	2.5 nF – 3.9 nF
7.5 – 10 x 8 x 3	1 nF
7.5 – 10 x 8 x 4	1.2 nF – 1.5 nF
7.5 – 10 x 9 x 4	1.8 nF – 2.2 nF
7.5 – 10.5 x 12 x 6	3.9 nF – 5.6 nF
10 – 13 x 11 x 5	3.3 nF – 4.7 nF
10 – 13 x 12 x 6	5.6 nF – 6.8 nF
10 – 13 x 17 x 7	8.2 nF – 10 nF
10 – 13 x 7.5 x 9.5	1.8 nF – 6.8 nF
10 – 13 x 8 x 4	1 nF – 2.2 nF
10 – 13 x 9 x 4	2.5 nF – 2.7 nF
15 – 18 x 10 x 4	2.7 nF – 10 nF
15 – 18 x 11 x 5	10 nF – 15 nF
15 – 18 x 12 x 13	25 nF – 56 nF
15 – 18 x 12 x 6	22 nF
15 – 18 x 12.5 x 5.5	15 nF – 18 nF
15 – 18 x 12.5 x 9	15 nF – 39 nF
15 – 18 x 13.5 x 7.5	25 nF – 27 nF
15 – 18 x 14.5 x 8.5	39 nF – 47 nF
15 – 18 x 16 x 10	47 nF – 56 nF
15 – 18 x 17.5 x 6	25 nF – 39 nF
15 – 18 x 18.5 x 7.5	33 nF – 56 nF
15 – 18 x 19 x 11	68 nF – 82 nF
15 – 18 x 20 x 12	82 nF
22.5 – 26 x 14.5 x 6	39 nF – 56 nF
22.5 – 26 x 16 x 7	56 nF – 82 nF
22.5 – 26 x 16 x 8	82 nF – 100 nF
22.5 – 26 x 17 x 8.5	100 nF – 120 nF
22.5 – 26 x 18.5 x 10	150 nF

Case Size	Voltage
	300 VAC
22.5 – 26 x 18.5 x 9	120 nF
22.5 – 26 x 20 x 11	180 nF – 220 nF
22.5 – 26 x 22 x 13	220 nF – 270 nF
22.5 – 26 x 24.5 x 15.5	330 nF – 390 nF
27.5 – 31.5 x 12.5 x 21	220 nF – 330 nF
27.5 – 31.5 x 16 x 27.5	390 nF – 470 nF
27.5 – 31.5 x 17 x 9	100 nF – 150 nF
27.5 – 31.5 x 19 x 31	560 nF – 820 nF
27.5 – 31.5 x 20 x 11	180 nF – 270 nF
27.5 – 31.5 x 25 x 13	270 nF – 390 nF
27.5 – 31.5 x 28 x 14	560 nF
27.5 – 31.5 x 28 x 17.5	470 nF – 680 nF
27.5 – 31.5 x 37 x 22	820 nF – 1 $\mu$ F
27.5 – 31.5 x 40 x 17	680 nF – 820 nF
37.5 – 41 x 15 x 24	470 nF – 560 nF
37.5 – 41 x 19 x 24	680 nF – 1 $\mu$ F
37.5 – 41 x 22 x 11	330 nF – 390 nF
37.5 – 41 x 24 x 13	470 nF
37.5 – 41 x 26 x 15	560 nF – 820 nF
37.5 – 41 x 32 x 19	1 $\mu$ F

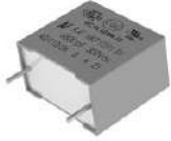
# Film Capacitors

## Through-Hole – Safety/EMI

### Y2 Class (cont.)

#### R41 Series, Metallized Polypropylene, 300 VAC (Automotive Grade)

Capacitance Range: 0.001 to 1  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



R41	3	I	2330	00	M1	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Y2, Metallized Polypropylene	3 = 300	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	00 M1	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage
	300 VAC
10 – 13 x 11 x 5	4.7 nF
10 – 13 x 12 x 6	6.8 nF
10 – 13 x 9 x 4	1 nF – 3.3 nF
15 – 18 x 11 x 5	3.3 nF – 15 nF
15 – 18 x 12 x 6	22 nF
15 – 18 x 14.5 x 8.5	33 nF – 47 nF
15 – 18 x 19 x 11	68 nF
22.5 – 26.5 x 15 x 6	47 nF – 68 nF
22.5 – 26.5 x 16 x 7	68 nF
22.5 – 26.5 x 17 x 8.5	100 nF
22.5 – 26.5 x 18.5 x 10	150 nF
22.5 – 26.5 x 22 x 13	220 nF
27.5 – 32 x 22 x 13	220 nF
27.5 – 32 x 28 x 14	330 nF
27.5 – 32 x 33 x 18	470 nF – 680 nF
37.5 – 41.5 x 24 x 13	470 nF
37.5 – 41.5 x 28.5 x 16	680 nF
37.5 – 41.5 x 40 x 20	1 $\mu\text{F}$

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### Y2 Class (cont.)

**PME271Y A–E Series Metallized Impregnated Paper, 300 VAC**  
 Capacitance Range: 0.001 to 0.15  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+115^{\circ}\text{C}$

#### Legacy Part Number System



PME271	Y	A	4100	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Y2, Metallized Paper	Y = 300	A = 10.2 B = 15.2 C = 20.3 D = 25 E = 25.4	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$ (for C $\leq$ 0.1 $\mu\text{F}$ ) K = $\pm 10\%$ (for C > 0.1 $\mu\text{F}$ )	See Ordering Options Table

#### New KEMET Part Number System

P	272	H	E	102	M	300	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Y2, Metallized Paper	H = 10.2 Q = 15.2 C = 20.3 D = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ (for C $\leq$ 0.1 $\mu\text{F}$ ) K = $\pm 10\%$ (for C > 0.1 $\mu\text{F}$ )	300 = 300	See Ordering Options Table

Case Size	Voltage
	300 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	2.5 nF – 3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 10 nF
15.2 – 18.5 x 11 x 5.5	15 nF
15.2 – 18.5 x 13 x 7.3	22 nF
20.3 – 24 x 14 x 7.6	33 nF
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
22.5 – 27 x 17 x 8	33 nF – 47 nF
22.5 – 27 x 19 x 10	68 nF
22.5 – 27 x 22 x 12	100 nF
25.4 – 30.5 x 19 x 12.1	100 nF
25.4 – 30.5 x 22 x 15.3	150 nF



### Y2 Class (cont.)

#### PME271Y Series Metallized Impregnated Paper, 250 VAC

Capacitance Range: 0.001 to 0.1  $\mu$ F • Temperature Range: -40°C to +100°C

#### Legacy Part Number System



PME271	Y	410	M	R30
Series	Rated Voltage (VAC)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Y2, Metallized Paper	Y = 250	The last two digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm$ 20%	See Ordering Options Table

#### New KEMET Part Number System

P	271	H	E	102	M	250	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Lead and Packaging Code
P = Paper	Y2, Metallized Paper	H = 10.2 Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	250 = 250	See Ordering Options Table

Case Size	Voltage
	250 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 10 nF
15.2 – 18.5 x 11 x 5.5	15 nF
15.2 – 18.5 x 13 x 7.3	22 nF
20.3 – 24 x 14 x 7.6	33 nF
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
25.4 – 30.5 x 19 x 12.1	100 nF

### Multiple X & Y

**PHZ9004 Series Metallized Polypropylene Film, 300 VAC 3x X2 with Separate Terminals for Three-Phase Filtering**  
 Capacitance Range: 3 x 1.0  $\mu$ F • Temperature Range: -55°C to +105°C

#### Legacy Part Number System



PHZ9004	E	F	7100	M	R06L2
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Triple Capacitor X2, Metallized Polypropylene	E = 300	F = 27.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm$ 20%	See Ordering Options Table

#### New KEMET Part Number System

9004	AA	105	M	300	C	DECT	V680
Capacitor Class	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	C-Spec	V-Spec
Triple Capacitor X2, Metallized Polypropylene	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	300 = 300	See Ordering Options Table	Optional additional characters at KEMET's option.	Part Number specific version code

Case Size	Voltage
	300 VAC
27.5 – 64 x 11.5 x 30	1 $\mu$ F

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### Multiple X & Y (cont.)

#### PMZ2074 Series Metallized Impregnated Paper, 275 VAC 2x X2 with One Common Terminal

Capacitance Range: 0.15  $\mu$ F + 0.033  $\mu$ F, 0.15  $\mu$ F + 0.047  $\mu$ F, 0.15  $\mu$ F + 0.068  $\mu$ F, 0.22  $\mu$ F + 0.082  $\mu$ F, 0.22  $\mu$ F + 0.1  $\mu$ F

Temperature Range: -40°C to +110°C



#### Legacy Part Number System

PMZ2074	M	C	615	M	533	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Capacitance Code (pF)	Internal Use	Packaging
Double Capacitor X2, Metallized Paper	M = 275	C = 20.3	The last two digits represent significant figures. The first digit specifies the total number of digits.	K = $\pm$ 10% M = $\pm$ 20%	The last two digits represent significant figures. The first digit specifies the total number of digits.	M (Standard)	See Ordering Options Table

#### New KEMET Part Number System

P	374	C	L	154	M	275	A	C333
Capacitor Class	Series	Lead Spacing (mm)	Size Code	X Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Y Capacitance Code
P = Paper	Double Capacitor X2, Metallized Paper	C = 20.3	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	M = $\pm$ 20%	275 = 275	See Ordering Options Table	C plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	275 VAC
20.3 – 24 x 16 x 12.5	150 nF
20.3 – 24 x 18 x 14	220 nF

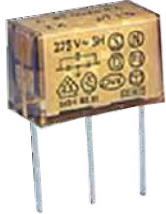
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### Multiple X & Y (cont.)

#### PZB300 Series Metallized Impregnated Paper, 275 VAC Delta Configuration X2 + 2x Y2

Capacitance Range: X Value 0.1  $\mu$ F and 0.15  $\mu$ F Y Value 0.0022  $\mu$ F, 0.0033  $\mu$ F and 0.0047  $\mu$ F • Temperature Range: -40°C to +100°C

#### Legacy Part Number System



PZB300	M	C	11	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code ( $\mu$ F)	Packaging
Delta EMI X2 + 2x Y2, Metallized Paper	M = 275	C = 20.0	The first digit indicates the value of the X capacitor: 1 = 0.10 $\mu$ F 2 = 0.15 $\mu$ F The second digit indicates the value of the Y capacitor: 1 = 0.0022 $\mu$ F 2 = 0.0033 $\mu$ F 3 = 0.0047 $\mu$ F	See Ordering Options Table

#### New KEMET Part Number System

P	300	P	L	104	M	275	A	C222
Capacitor Class	Series	Lead Spacing (mm)	Size Code	X Capacitance Code ( $\mu$ F)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Y Capacitance Code
P = Paper	Delta EMI, X2 + 2x Y2, Metallized Paper	P = 20	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	M = $\pm$ 20%	275 = 275	See Ordering Options Table	C plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	275 VAC
20 – 24 x 16 x 12.5	100 nF – 150 nF

### Polyester (PET)

#### F161 Series Encapsulated Stacked, Size 2220 – 6560, 50 – 400 VDC

Capacitance Range: 0.01 to 12  $\mu\text{F}$  • Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



F	161	P	P	103	K	050	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging Code
F = Film	Metallized Polyester Stacked Technology	P = 2220 S = 2824 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$ Other tolerances on request.	050 = 50 063 = 63 100 = 100 250 = 250 400 = 400 630 = 630	See Ordering Options Table

Case Size	Voltage				
	50/30	63/40	100/63	250/160	400/200
2220	10 nF – 220 nF		10 nF – 100 nF		
2824	10 nF – 1 $\mu\text{F}$	10 nF – 470 nF	10 nF – 220 nF	10 nF – 47 nF	
4036	22 nF – 2.2 $\mu\text{F}$	22 nF – 1.5 $\mu\text{F}$	22 nF – 470 nF	22 nF – 150 nF	22 nF – 68 nF
5045	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 3.3 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	180 nF – 470 nF	82 nF – 150 nF
6560	5.6 $\mu\text{F}$ – 12 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	180 nF – 470 nF

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**Polyester (PET) (cont.)**

**MDC Series Dual In-Line, High Current, 50 – 630 VDC**

Capacitance Range: 0.033 to 15  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

**Legacy Part Number System**



MDC	10	333	K	50	A52	P3	TUBE
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Number of Leads per Side	Packaging
Dual In-Line, Metallized Polyester	10 15	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm 5$ K = $\pm 10\%$ Other tolerances on request.	50 100 250 400 630	See Dimension Table	P3 = 3 leads P4 = 4 leads P5 = 5 leads P7 = 7 leads P8 = 8 leads	See Ordering Options Table

**New KEMET Part Number System**

F	15	3	A	A	333	K	050	T
Capacitor Class	Series	Number of Leads per Side	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Dual In-Line, Metallized Polyester	3 = 3 leads 4 = 4 leads 5 = 5 leads 7 = 7 leads 8 = 8 leads	A = 10 B = 15	A = Standard box size	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm 5$ K = $\pm 10\%$ Other tolerances on request	050 = 50 100 = 100 250 = 250 400 = 400 630 = 630	See Ordering Options Table

Case Size	Voltage				
	50/30	100/63	250/160	400/200	630/220
A52	33 nF – 4.7 $\mu\text{F}$	33 nF – 4 $\mu\text{F}$	33 nF – 470 nF	33 nF – 180 nF	33 nF – 56 nF
A53		4.7 $\mu\text{F}$			
A54	5.6 $\mu\text{F}$	4.7 $\mu\text{F}$	560 nF		68 nF
A55	6.8 $\mu\text{F}$	5.6 $\mu\text{F}$	680 nF		
A57	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	6.8 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	220 nF – 330 nF	
A58	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 470 nF	82 nF – 180 nF
B53	33 nF – 6.8 $\mu\text{F}$	33 nF – 4.7 $\mu\text{F}$	33 nF – 680 nF	33 nF – 270 nF	33 nF – 100 nF
B55		5.6 $\mu\text{F}$		330 nF	

### Polyester (PET) (cont.)

#### MDS Series Dual In-Line Low Profile, High Current, 50 – 630 VDC

Capacitance Range: 0.033 to 6.8  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

#### Legacy Part Number System



MDS	10	333	K	50	A52	P3	TUBE
Series	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Number of Leads per Side	Packaging
Dual In-Line, Metallized Polyester	10 15	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J $\pm 5$ K $\pm 10\%$ Other tolerances on request.	050 = 50 100 = 100 250 = 250 400 = 400 630 = 630	See Dimension Table	P3 = 3 leads P4 = 4 leads P5 = 5 leads	See Ordering Options Table

#### New KEMET Part Number System

F	17	3	A	A	333	K	050	T
Capacitor Class	Series	Number of Leads per Side	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Dual In-Line, Metallized Polyester	3 = 3 leads 4 = 4 leads 5 = 5 leads	A = 10 B = 15	A = Standard box size	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J $\pm 5$ K $\pm 10\%$ Other tolerances on request	050 = 50 100 = 100 250 = 250 400 = 400 630 = 630	See Ordering Options Table

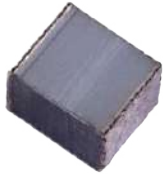
Case Size	Voltage				
	50/30	100/63	250/160	400/200	630/220
A52	33 nF – 4.7 $\mu\text{F}$	33 nF – 3.9 $\mu\text{F}$	33 nF – 470 nF	33 nF – 180 nF	33 nF – 56 nF
A54	5.6 $\mu\text{F}$	4.7 $\mu\text{F}$	560 nF		68 nF
A55	6.8 $\mu\text{F}$	5.6 $\mu\text{F}$	680 nF		
B53	33 nF – 6.8 $\mu\text{F}$	33 nF – 4.7 $\mu\text{F}$	33 nF – 680 nF	33 nF – 270 nF	33 nF – 100 nF
B55		5.6 $\mu\text{F}$		330 nF	

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### Polyethylene Naphthalate (PEN)

#### LDE Series Unencapsulated Stacked Chip, Size 1206 – 6054, 50 – 1,000 VDC (Automotive Grade)

Capacitance Range: 0.001 to 4.7  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



LDE	C	C	2560	M	A	5	N	00
Series	Rated Voltage (VDC)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Dielectric	Version	Packaging	Internal Use
Metallized PEN	C = 50 D = 63 E = 100 I = 250 M = 400 P = 630 Q = 1000	See Dimension Table	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	K = $\pm 10\%$ M = $\pm 20\%$ J = $\pm 5\%$ on request	A = PEN	5 = Standard 0 = Miniature	See Ordering Options Table	00 (Standard)

Case Size	Voltage						
	50/40	63/40	100/63	250/120	400/160	630/200	1,000/250
1206	1 nF – 33 nF	1 nF – 33 nF	1 nF – 15 nF	1 nF – 33 nF			
1210	33 nF – 100 nF	33 nF – 100 nF	18 nF – 47 nF	3.9 nF – 10 nF			
1812	1.5 nF – 220 nF	1.5 nF – 220 nF	1.5 nF – 100 nF	1.5 nF – 33 nF			
2220	270 nF – 1 $\mu\text{F}$	270 nF – 1 $\mu\text{F}$	120 nF – 470 nF	18 nF – 120 nF	15 nF – 47 nF	1 nF – 18 nF	1 nF – 6.8 nF
2824	820 nF – 1.8 $\mu\text{F}$	820 nF – 1.8 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$	82 nF – 220 nF	56 nF – 100 nF	22 nF – 39 nF	8.2 nF – 18 nF
4030	2.2 $\mu\text{F}$ – 3.9 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.9 $\mu\text{F}$	820 nF – 2.2 $\mu\text{F}$	180 nF – 560 nF	120 nF – 180 nF	47 nF – 100 nF	22 nF – 33 nF
5040	1.5 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	390 nF – 820 nF	220 nF – 330 nF	100 nF – 150 nF	39 nF – 68 nF
6054	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	680 nF – 1.5 $\mu\text{F}$	390 nF – 470 nF	180 nF – 270 nF	82 nF – 100 nF

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### Polyethylene Naphthalate (PEN) (cont.)

GMC Series Encapsulated Stacked, Size 2220 – 6560, 50 – 630 VDC

Capacitance Range: 0.001 to 5.6  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

#### Legacy Part Number System



GMC	5.7	102	K	50	J31	TR12
Series	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Packaging
Metallized PEN	5.7 7.3 10.2 12.7 16.5	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm 5\%$ K = $\pm 10\%$ Other tolerances on request.	50 63 100 250 400 630	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	115	P	L	102	K	050	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized PEN	P = 2220 S = 2824 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	J = $\pm 5\%$ K = $\pm 10\%$ Other tolerances on request.	050 = 50 063 = 63 100 = 100 250 = 250 400 = 400 630 = 630	See Ordering Options Table

Case Size	Voltage					
	50/30	63/40	100/63	250/160	400/200	630/300
2220	1 nF – 180 nF		1 nF – 47 nF	1 nF – 22 nF		
2824		1 nF – 390 nF	1 nF – 100 nF	1 nF – 47 nF	1 nF – 15 nF	
4036	22 nF – 1.2 $\mu\text{F}$	22 nF – 820 nF	22 nF – 330 nF	22 nF – 150 nF	22 nF – 47 nF	22 nF – 27 nF
5045	1.5 $\mu\text{F}$ – 3 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 680 nF	180 nF – 330 nF	56 nF – 100 nF	33 nF – 68 nF
6560	3.9 $\mu\text{F}$ – 5.6 $\mu\text{F}$	1.8 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 2.2 $\mu\text{F}$	390 nF – 680 nF	120 nF – 330 nF	82 nF – 150 nF

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**Polyethylene Naphthalate (PEN) (cont.)**

**GPC Series Encapsulated Double Metallized, Size 2824 – 6560, 63 – 1,000 VDC**

Capacitance Range: 470 pF to 1.0  $\mu$ F • Temperature Range: -55°C to +125°C

**Legacy Part Number System**



GPC	7.3	471	K	63	K31	TR12
Series	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Packaging
Double Metallized PEN	7.3 10.2 12.7 16.5	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	K = $\pm$ 10% M = $\pm$ 20% Other tolerances on request.	63 100 160 250 400 630 1,000	See Dimension Table	See Ordering Options Table

**N w KEMET Part Number System**

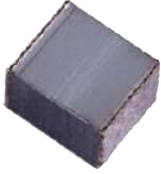
F	117	S	G	471	K	063	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Double Metallized PEN	S = 2824 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits indicate the two most significant digits of the capacitance value in picofarads. The third digit is the number of following zeros.	K = $\pm$ 10% M = $\pm$ 20% Other tolerances on request.	063 = 63 100 = 100 160 = 160 250 = 250 400 = 400 630 = 630 1K0 = 1,000	See Ordering Options Table

Case Size	Voltage						
	63/40	100/63	160/100	250/160	400/200	630/300	1,000/350
2824	0.47 nF – 100 nF	0.47 nF – 47 nF	0.47 nF – 33 nF	0.47 nF – 22 nF	0.47 nF – 10 nF	0.47 nF – 6.8 nF	0.47 nF – 4.7 nF
4036	6.8 nF – 330 nF	6.8 nF – 150 nF	6.8 nF – 100 nF	6.8 nF – 68 nF	6.8 nF – 27 nF	6.8 nF – 22 nF	6.8 nF – 15 nF
5045	470 nF	220 nF – 330 nF	150 nF – 220 nF	100 nF – 150 nF	33 nF – 68 nF	33 nF – 47 nF	22 nF – 33 nF
6560	680 nF – 1 $\mu$ F	470 nF – 1 $\mu$ F	330 nF – 680 nF	220 nF – 470 nF	100 nF – 220 nF	68 nF – 100 nF	47 nF – 68 nF

### Metallized Polyphenylene Sulfide (PPS)

#### LDB Series Unencapsulated Stacked Chip, Size 1206 – 1812, 16 & 50 VDC

Capacitance Range: 0.0033 to 0.1  $\mu$ F • Temperature Range: -55°C to +125°C



LDB	A	A	2120	G	C	5	N	0
Series	Rated Voltage (VDC)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Dielectric	Version	Packaging	Internal Use
Metallized PPS	A = 16 C = 50	See Dimension Table	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	G = $\pm$ 2% J = $\pm$ 5%	C = PPS	5 = Standard	See Ordering Options Table	0 (Standard)

Case Size	Voltage	
	16 VDC	50/40
1206	12 nF – 47 nF	3.3 nF – 12 nF
1210	56 nF – 100 nF	15 nF – 47 nF
1812		56 nF – 100 nF

#### SMC Series Encapsulated Stacked, Size 2220 – 6560, 50 – 400 VDC

Capacitance Range: 0.001 to 3.3  $\mu$ F • Temperature Range: -55°C to +125°C

#### Legacy Part Number System



SMC	57	102	J	50	J31	TR12
Series	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Packaging
Metallized PPS	5.7 7.3 10.2 12.7 16.5	First two digits represent significant figures. The third digit specifies number of zeros.	G = $\pm$ 2% H = $\pm$ 2.5% J = $\pm$ 5%	50 100 250 400	See Dimension Table	See Ordering Options Table

#### New KEMET Part Number System

F	125	P	L	102	J	050	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Metallized PPS	P = 2220 S = 2820 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits represent significant figures. The third digit specifies number of zeros.	G = $\pm$ 2% R = $\pm$ 2.5% J = $\pm$ 5%	050 = 50 100 = 100 250 = 250 400 = 400	See Ordering Options Table

Case Size	Voltage			
	50/30	100/63	250/160	400/200
2220	1 nF – 100 nF	1 nF – 33 nF	1 nF – 10 nF	1 nF – 3.3 nF
2824	1 nF – 220 nF	1 nF – 68 nF	1 nF – 22 nF	1 nF – 10 nF
4036	10 nF – 820 nF	10 nF – 270 nF	10 nF – 100 nF	10 nF – 39 nF
5045	1 $\mu$ F – 1.8 $\mu$ F	330 nF – 560 nF	120 nF – 180 nF	47 nF – 82 nF
6560	2.2 $\mu$ F – 3.3 $\mu$ F	680 nF – 1.5 $\mu$ F	220 nF – 470 nF	100 nF – 220 nF

**Metallized Polyphenylene Sulfide (PPS) (cont.)**

**SPC Series Encapsulated Double Metallized, Size 2824 – 6560, 100 – 630 VDC**

Capacitance Range: 470 pF to 0.68  $\mu$ F • Temperature Range: -55°C to +125°C

**Legacy Part Number System**



SPC	7.3	471	K	100	K31	TR12
Series	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Size Code	Packaging
Double Metallized PPS	7.3 10.2 12.7 16.5	First two digits represent significant figures. The third digit specifies number of zeros.	G = $\pm$ 2% H = $\pm$ 2.5% J = $\pm$ 5% K = $\pm$ 10%	100 250 400 630	See Dimension Table	See Ordering Options Table

**New KEMET Part Number System**

F	127	S	G	471	K	100	V
Capacitor Class	Series	Chip Size	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Packaging
F = Film	Double Metallized PPS	S = 2824 W = 4036 Y = 5045 Z = 6560	See Dimension Table	First two digits represent significant figures. The third digit specifies number of zeros.	G = $\pm$ 2% R = $\pm$ 2.5% J = $\pm$ 5% K = $\pm$ 10%	100 250 400 630	See Ordering Options Table

Case Size	Voltage			
	100/63	250/160	400/250	630/350
2824	0.47 nF – 33 nF	0.47 nF – 15 nF	0.47 nF – 6.8 nF	0.47 nF – 4.7 nF
4036	6.8 nF – 100 nF	6.8 nF – 47 nF	6.8 nF – 22 nF	6.8 nF – 15 nF
5045	150 nF – 220 nF	68 nF – 100 nF	33 nF – 47 nF	22 nF – 33 nF
6560	330 nF – 680 nF	150 nF – 330 nF	68 nF – 150 nF	47 nF – 100 nF

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### Y2 Class

#### SMP253 Series Metallized Impregnated Paper, 250 VAC

Capacitance Range: 1,000 to 4,700 pF • Temperature Range: -40°C to +100°C

#### Legacy Part Number System



SMP253	M	A	4100	M	TR24
Series	Rated Voltage (VAC)	Chip Length (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
Y2, Metallized Paper	M = 250	A = 12.7	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = ±20%	See Ordering Options Table

#### New KEMET Part Number System

P	101	AA	102	M	250	V
Capacitor Class	Series	Chip Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	Y2, Metallized Paper	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = ±20%	250 = 250	See Ordering Options Table

Case Size	Voltage
	250/250
5045	1 nF – 4.7 nF

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### Axial

#### C4C Series, Axial Round, 850 – 3,000 VDC/450 – 750 VAC

Capacitance Range: 0.0068 to 2.5  $\mu$ F Temperature Range: -40°C to +85°C



C4	C	A	M	U	B	3100	AA	0	J
Series	Type	Fire Protection	Rated Voltage (VDC)	Insulation	Lead Diameter (mm)	Capacitance Code (pF)	Lead and Packaging Code	Capacitor Length (mm)	Tolerance
C4 = MKP capacitors	C = Round body, snubber application	A = No fire retardant S = Fire retardant (on request)	M = 850 P = 1,200 W = 2,000 Y = 3,000	U = Polyester tape & resin protection 0 = Uninsulated (on request)	B = 0.8 C = 1.0 D = 1.2	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA (Standard)	0 = 33 1 = 44 3 = 58	J = 5% K = 10%

Case Size	Voltage			
	850/450	1,200/500	2,000/630	3,000/750
10 x 33		47 nF		6.8 nF
10.5 x 33	100 nF		22 nF	
12 x 33		68 nF		10 nF
12.5 x 33	150 nF		33 nF	
14 x 33		100 nF		
14.5 x 33				15 nF
15 x 33			47 nF	
15.5 x 33	220 nF			
17 x 33				22 nF
17.5 x 33		150 nF	68 nF	
18.5 x 33	330 nF			
19 x 44				47 nF
19.5 x 44			150 nF	
20 x 44		330 nF		
20.5 x 33		220 nF	100 nF	33 nF
21 x 44	680 nF			
21.5 x 33	470 nF			
22.5 x 44				68 nF
23 x 44		470 nF		
23.5 x 44			220 nF	
25 x 44	1 $\mu$ F			
27 x 44				100 nF
27.5 x 44		680 nF		
28.5 x 44			330 nF	
28.5 x 58	2 $\mu$ F			
29 x 58		1.2 $\mu$ F	560 nF	
29.5 x 58	2.2 $\mu$ F			
30.5 x 44	1.5 $\mu$ F			
31 x 58				220 nF
31.5 x 58	2.5 $\mu$ F			
32 x 44				150 nF
32 x 58		1.5 $\mu$ F	680 nF	
33 x 44		1 $\mu$ F		
33.5 x 44			470 nF	

# Film Capacitors

## Power & Application Optimized – Power Film

### Axial (cont.)

#### C4DC Series, GTO Snubbing, 850 – 1,400 VDC/500 – 700 VAC

Capacitance Range: 0.5 to 6  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4DC	M	A	Q	4150	AA0	J
Series	Rated Voltage (VDC)	Case	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Internal Code	Tolerance
C4DC = MKP, GTO Application	M = 850 N = 1000 R = 1400	A = Axial plastic case	Q = M8 Threaded Inserts	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA0 = Standard	J = 5% K = 10%

Case Size	Voltage		
	850/500	1,000/600	1,400/700
60 x 51	1.5 $\mu\text{F}$ – 2 $\mu\text{F}$	1 $\mu\text{F}$	500 nF – 1 $\mu\text{F}$
60 x 64			1.5 $\mu\text{F}$
72 x 51	3 $\mu\text{F}$ – 3.5 $\mu\text{F}$	2 $\mu\text{F}$	
72 x 64			2 $\mu\text{F}$ – 2.5 $\mu\text{F}$
80 x 51	4 $\mu\text{F}$ – 5 $\mu\text{F}$	2.5 $\mu\text{F}$ – 3 $\mu\text{F}$	
80 x 64			3 $\mu\text{F}$
90 x 51	6 $\mu\text{F}$	3.5 $\mu\text{F}$ – 4 $\mu\text{F}$	1 $\mu\text{F}$
90 x 64			4 $\mu\text{F}$ – 5 $\mu\text{F}$

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### Axial (cont.)

#### C4DR Series, GTO Clamping, 400 – 3,000 VDC/160 – 1,000 VAC

Capacitance Range: 1 to 220  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4DR	F	A	Q	5250	AA0	J
Series	Rated Voltage (VDC)	Case	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Internal Code	Tolerance
C4DR = MKP, Clamping Application	F = 400 H = 600 J = 700 M = 850 P = 1,200 S = 1,500 Y = 3,000	A = Axial plastic case	Q = M8 threaded inserts	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA0 = Standard	J = 5% K = 10%

Case Size	Voltage						
	400/160	600/220	700/250	850/330	1,200/440	1,500/500	3,000/1,000
60 x 49							250 nF – 470 nF
60 x 51	25 $\mu\text{F}$	12 $\mu\text{F}$	7.5 $\mu\text{F}$	4 $\mu\text{F}$ – 6 $\mu\text{F}$	2.5 $\mu\text{F}$	1 $\mu\text{F}$	
72 x 51	30 $\mu\text{F}$	15 $\mu\text{F}$ – 20 $\mu\text{F}$	10 $\mu\text{F}$	7.5 $\mu\text{F}$ – 8 $\mu\text{F}$	3 $\mu\text{F}$ – 4 $\mu\text{F}$	2 $\mu\text{F}$	
80 x 49							1 $\mu\text{F}$
80 x 51	50 $\mu\text{F}$	25 $\mu\text{F}$	15 $\mu\text{F}$		5 $\mu\text{F}$	3 $\mu\text{F}$	
80 x 61			25 $\mu\text{F}$	10 $\mu\text{F}$ – 20 $\mu\text{F}$	8 $\mu\text{F}$	5 $\mu\text{F}$	
80 x 99					20 $\mu\text{F}$		
90 x 49							1.25 $\mu\text{F}$
90 x 51	75 $\mu\text{F}$	33 $\mu\text{F}$	20 $\mu\text{F}$		6 $\mu\text{F}$	4 $\mu\text{F}$	
90 x 59							2.5 $\mu\text{F}$
90 x 61	100 $\mu\text{F}$ – 110 $\mu\text{F}$	50 $\mu\text{F}$	33 $\mu\text{F}$	25 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$	7.5 $\mu\text{F}$	
90 x 99	220 $\mu\text{F}$	100 $\mu\text{F}$	70 $\mu\text{F}$	60 $\mu\text{F}$	25 $\mu\text{F}$	15 $\mu\text{F}$	4 $\mu\text{F}$ – 5 $\mu\text{F}$

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# Film Capacitors

## Power & Application Optimized – Power Film

### Axial (cont.)

#### C4G Series, Axial Round, 250 – 850 VDC/160 – 450 VAC

Capacitance Range: 0.15 to 40  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4	G	A	D	U	B	4100	AA	4	J
Series	Type	Fire Protection	Rated Voltage (VDC)	Insulation	Lead Diameter (mm)	Capacitance Code (pF)	Lead and Packaging Code	Capacitor Length (mm)	Tolerance
C4 = MKP capacitors	G = Round body, switching application	A = No fire retardant S = Fire retardant (on request)	D = 250 F = 400 H = 600 J = 700 M = 850	U = Polyester tape & resin protection 0 = Uninsulated (on request)	B = 0.8 C = 1.0 D = 1.2	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA (Standard)	4 = 20.5 5 = 28 0 = 33 1 = 44 3 = 58	J = 5% K = 10%

Case Size	Voltage				
	250/160	400/250	600/330	700/400	850/450
9.5 x 28		470 nF			
10 x 33		680 nF			150 nF
11 x 20.5	1 $\mu\text{F}$				
11 x 33			470 nF		
11.5 x 33	2.2 $\mu\text{F}$				
12 x 33	2.5 $\mu\text{F}$	1 $\mu\text{F}$			220 nF
13 x 33			680 nF		
13.5 x 33	3 $\mu\text{F}$				
14 x 33	3.3 $\mu\text{F}$				
14.5 x 33		1.5 $\mu\text{F}$		470 nF	330 nF
15.5 x 33	4 $\mu\text{F}$		1 $\mu\text{F}$		
16.5 x 33		2 $\mu\text{F}$			
17 x 33	5 $\mu\text{F}$			680 nF	470 nF
17.5 x 33		2.2 $\mu\text{F}$			
18 x 44		3.3 $\mu\text{F}$			
18.5 x 33		2.5 $\mu\text{F}$			
18.5 x 44			2 $\mu\text{F}$		
19.5 x 33	6.8 $\mu\text{F}$				
19.5 x 44		4 $\mu\text{F}$	2.2 $\mu\text{F}$		
20 x 33		3 $\mu\text{F}$			
20 x 44	10 $\mu\text{F}$				
20.5 x 33				1 $\mu\text{F}$	680 nF
20.5 x 44				1.5 $\mu\text{F}$	1 $\mu\text{F}$
21 x 44		4.7 $\mu\text{F}$			

Case Size	Voltage				
	250/160	400/250	600/330	700/400	850/450
21.5 x 44		5 $\mu\text{F}$			
22.5 x 44			3 $\mu\text{F}$		
23.5 x 44			3.3 $\mu\text{F}$	2 $\mu\text{F}$	
24.5 x 44	15 $\mu\text{F}$			2.2 $\mu\text{F}$	1.5 $\mu\text{F}$
25 x 44		6.8 $\mu\text{F}$			
25.5 x 44			4 $\mu\text{F}$		
27.5 x 44			4.7 $\mu\text{F}$		
28 x 44	20 $\mu\text{F}$				
28 x 58					3 $\mu\text{F}$
28.5 x 44			5 $\mu\text{F}$	3 $\mu\text{F}$	2 $\mu\text{F}$
28.5 x 58			6.8 $\mu\text{F}$		
29 x 58	30 $\mu\text{F}$				
29.5 x 44					2.2 $\mu\text{F}$
29.5 x 58				4.7 $\mu\text{F}$	3.3 $\mu\text{F}$
30 x 44		10 $\mu\text{F}$		3.3 $\mu\text{F}$	
30.5 x 58				5 $\mu\text{F}$	
31 x 44	25 $\mu\text{F}$				
31.5 x 44					2.5 $\mu\text{F}$
31.5 x 58		15 $\mu\text{F}$			
32.5 x 58					4 $\mu\text{F}$
33 x 44				4 $\mu\text{F}$	
33.5 x 58	40 $\mu\text{F}$				
34.5 x 58			10 $\mu\text{F}$		
35 x 58		20 $\mu\text{F}$		6.8 $\mu\text{F}$	

## Radial

### C4AE Series, Radial, 2 or 4 Leads, 450 – 1,100 VDC, for DC Link

Capacitance Range: 1 to 100  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



C4	A	E	G	B	W	4	4	5	0	A	1	W	J
Series		DC Voltage		Case Code	Terminals Code	Capacitance Code (pF)				Variants	Terminals Diameter (mm)	Case Letter <sup>2</sup>	Tolerance
C4 = MKP Capacitors	A = Box - Wire Terminals	E = DC Link	E = 300 V G = 450 V H = 600 V I = 800 V J = 700 V K = 750 V L = 500 V M = 850 V N = 1000 V O = 900 V Q = 1100 V U = 1300 V	B = Box plastic case	U = Single copper wire W = Double copper wire Z = Special wire	Digits 9, 10, & 11 indicate the first 3 digits of capacitance value. Digit 8 indicates the number of zeroes that must be added to obtain rated capacitance in pF.				A = Standard B = Special H <sup>1</sup> = 100 C	1 = 0.8 2 = 1 3 = 1.2	0, A, B, C, D, E, F, G, H, J, L, M, N, W, X, Y, 1, 2	J = 5% K = 10%

Case Size	Voltage				
	450 VDC	600 VDC	700 VDC	900 VDC	1,100 VDC
27.5 – 31.5 x 20 x 11	4.5 $\mu\text{F}$	3.3 $\mu\text{F}$	2.7 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$
27.5 – 31.5 x 25 x 13	6.8 $\mu\text{F}$	5.6 $\mu\text{F}$	4 $\mu\text{F}$	2.7 $\mu\text{F}$	1.8 $\mu\text{F}$
27.5 – 31.5 x 28 x 14	10 $\mu\text{F}$	7 $\mu\text{F}$	5 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$
27.5 – 31.5 x 29 x 19	12.5 $\mu\text{F}$	10 $\mu\text{F}$	8 $\mu\text{F}$	5 $\mu\text{F}$	3.3 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	20 $\mu\text{F}$	15 $\mu\text{F}$	12.5 $\mu\text{F}$	8 $\mu\text{F}$	5 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	30 $\mu\text{F}$	20 $\mu\text{F}$	15 $\mu\text{F}$	12 $\mu\text{F}$	8 $\mu\text{F}$
37.5 – 41.5 x 44 x 24	40 $\mu\text{F}$		22 $\mu\text{F}$	16 $\mu\text{F}$	
37.5 – 42 x 45 x 30	50 $\mu\text{F}$	40 $\mu\text{F}$	30 $\mu\text{F}$	20 $\mu\text{F}$	12 $\mu\text{F}$
37.5 – 42.5 x 37 x 28	35 $\mu\text{F}$	30 $\mu\text{F}$	20 $\mu\text{F}$	14 $\mu\text{F}$	10 $\mu\text{F}$
52.5 – 57.5 x 45 x 30	75 $\mu\text{F}$	55 $\mu\text{F}$	45 $\mu\text{F}$	30 $\mu\text{F}$	20 $\mu\text{F}$
52.5 – 57.5 x 50 x 35	100 $\mu\text{F}$	75 $\mu\text{F}$	55 $\mu\text{F}$ – 60 $\mu\text{F}$	40 $\mu\text{F}$	25 $\mu\text{F}$ – 27 $\mu\text{F}$

# Film Capacitors

## Power & Application Optimized – Power Film

### Radial (cont.)

#### C4AS Series, 2 or 4 Leads, 850 – 3,000 VDC/500 – 750 VAC

Capacitance Range: 0.022 to 5  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4	AS	M	B	U	3150	A3	A	J
Series	Type	Rated Voltage (VDC)	Case	Number of Leads	Capacitance Code ( $\mu\text{F}$ )	Lead Diameter (mm)	Size Code	Tolerance
C4 = MKP Capacitors	AS = Radial box, snubber application	M = 850 N = 1,000 P = 1,200 W = 2,000 Y = 3,000	B = Plastic box with epoxy resin sealing	U = 2 lead W = 4 lead	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	A1 = 0.8 A3 = 1.2	See Dimension Table	J = 5% K = 10%

Case Size	Voltage				
	850/500	1,000/600	1,200/630	2,000/700	3,000/750
27.5 – 32 x 20 x 10	150 nF	150 nF	100 nF	33 nF – 47 nF	22 nF
27.5 – 32 x 22 x 13	220 nF	220 nF	150 nF	68 nF	33 nF
27.5 – 32 x 28 x 14	330 nF	330 nF	220 nF	100 nF	47 nF – 68 nF
27.5 – 32 x 33 x 18	470 nF	470 nF	330 nF	150 nF – 220 nF	100 nF
27.5 – 32 x 37 x 22	680 nF	680 nF	470 nF		150 nF
37.5 – 41.5 x 40 x 20	1 $\mu\text{F}$	1 $\mu\text{F}$	680 nF – 1 $\mu\text{F}$	330 nF	220 nF
37.5 – 41.5 x 44 x 24	2 $\mu\text{F}$			680 nF	330 nF
37.5 – 42 x 45 x 30		2 $\mu\text{F}$ – 2.2 $\mu\text{F}$			
37.5 – 42.5 x 37 x 28		1.5 $\mu\text{F}$	1.2 $\mu\text{F}$		
52.5 – 57.5 x 45 x 30	3 $\mu\text{F}$ – 4 $\mu\text{F}$	3 $\mu\text{F}$	2 $\mu\text{F}$ – 2.5 $\mu\text{F}$	1 $\mu\text{F}$	470 nF
52.5 – 57.5 x 50 x 35	5 $\mu\text{F}$	4 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3 $\mu\text{F}$ – 3.5 $\mu\text{F}$	1.5 $\mu\text{F}$	820 nF

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## Radial (cont.)

### C4AT Series, 2 or 4 Leads, 250 – 850 VDC/160 – 450 VAC

Capacitance Range: 0.22 to 60  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4	AT	D	B	U	4100	A3	0	J
Series	Type	Rated Voltage (VDC)	Case	Number of Leads	Capacitance Code ( $\mu\text{F}$ )	Lead Diameter (mm)	Size Code	Tolerance
C4 = MKP Capacitors	AT = Radial box, switching application	D = 250 F = 400 G = 450 H = 600 J = 700 M = 850	B = Plastic box with epoxy resin sealing	U = 2 lead W = 4 lead	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	A1 = 0.8 A3 = 1.2	See Dimension Table	J = 5% K = 10%

Case Size	Voltage					
	250/160	400/250	450/275	600/350	700/400	850/450
27.5 – 32 x 20 x 10	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1 $\mu\text{F}$	680 nF	470 nF	220 nF
27.5 – 32 x 22 x 13	3.3 $\mu\text{F}$	2 $\mu\text{F}$		1 $\mu\text{F}$		470 nF
27.5 – 32 x 28 x 14	5 $\mu\text{F}$	3.3 $\mu\text{F}$				
27.5 – 32 x 33 x 18	10 $\mu\text{F}$	4 $\mu\text{F}$ – 5 $\mu\text{F}$	3.3 $\mu\text{F}$	2 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$
27.5 – 32 x 37 x 22		6.8 $\mu\text{F}$	6.8 $\mu\text{F}$	3.3 $\mu\text{F}$	3 $\mu\text{F}$	1.5 $\mu\text{F}$
27.5 – 32 x 24.5 x 15					1 $\mu\text{F}$	
37.5 – 41.5 x 40 x 20		10 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5 $\mu\text{F}$		
37.5 – 42 x 45 x 30		20 $\mu\text{F}$	15 $\mu\text{F}$	9 $\mu\text{F}$ – 10 $\mu\text{F}$		4.7 $\mu\text{F}$
37.5 – 42 x 37 x 28				6.8 $\mu\text{F}$		
37.5 – 42.5 x 37 x 28	20 $\mu\text{F}$	15 $\mu\text{F}$			5 $\mu\text{F}$	3.3 $\mu\text{F}$
37.5 – 42.5 x 45 x 30	30 $\mu\text{F}$					
52.5 – 57.5 x 45 x 30	40 $\mu\text{F}$	25 $\mu\text{F}$ – 30 $\mu\text{F}$	20 $\mu\text{F}$	12 $\mu\text{F}$	9 $\mu\text{F}$ – 10 $\mu\text{F}$	6.8 $\mu\text{F}$
52.5 – 57.5 x 50 x 35	50 $\mu\text{F}$ – 60 $\mu\text{F}$	35 $\mu\text{F}$ – 40 $\mu\text{F}$	33 $\mu\text{F}$	20 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$

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# Film Capacitors

## Power & Application Optimized – Power Film

### Radial (cont.)

#### C4BS Series, IGBT Box, 850 – 3,000 VDC/550 – 750 VAC

Capacitance Range: 0.047 to 5  $\mu$ F • Temperature Range: -40°C to +85°C



C4	BS	M	B	X	3470	Z	E	E	J
Series	Type	Rated Voltage (VDC)	Case	Number of Leads	Capacitance Code (pF)	Internal Code	Termination Style	Size Code	Tolerance
C4 = MKP Capacitors for Power Applications	BS = Radial box with tab terminals, IGBT application	M = 850 N = 1,000 P = 1,200 W = 2,000 Y = 3,000	B = Plastic box with epoxy resin sealing	X = Standard	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	Z = Standard	A = Style A B = Style B E = Style E F = Style F G = Style G	See Dimension Table	J = 5% K = 10%

Case Size	Voltage				
	850/550	1,000/600	1,200/630	2,000/700	3,000/750
32 x 33 x 18	470 nF	470 nF	330 nF	100 nF – 150 nF	47 nF – 68 nF
41.5 x 40 x 20	470 nF – 1 $\mu$ F	470 nF – 1 $\mu$ F	330 nF – 680 nF	100 nF – 470 nF	47 nF – 220 nF
41.5 x 44 x 24				680 nF	
42 x 45 x 30	2 $\mu$ F – 2.2 $\mu$ F	2 $\mu$ F	1.5 $\mu$ F	820 nF	330 nF
42.5 x 37 x 28	1.5 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F – 1.2 $\mu$ F		
57.5 x 45 x 30	2.5 $\mu$ F – 3.3 $\mu$ F	2.2 $\mu$ F – 3.3 $\mu$ F	2 $\mu$ F – 2.5 $\mu$ F	1 $\mu$ F – 1.2 $\mu$ F	470 nF
57.5 x 50 x 35	4 $\mu$ F – 5 $\mu$ F	4 $\mu$ F	3 $\mu$ F – 3.3 $\mu$ F	1.5 $\mu$ F	680 nF – 820 nF

#### C4BT Series, IGBT Box, 400 – 850 VDC/250 – 450 VAC

Capacitance Range: 1 to 60  $\mu$ F • Temperature Range: -40°C to +85°C



C4	BT	F	B	X	4330	Z	E	E	J
Series	Type	Rated Voltage (VDC)	Case	Number of Leads	Capacitance Code (pF)	Internal Code	Termination Style	Size Code	Tolerance
C4 = MKP Capacitors for Power Applications	BT = Radial box with tab terminals, switching application	F = 400 M = 850	B = Plastic box with epoxy resin sealing	X = Standard	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	Z = Standard	A = Style A E = Style E	See Dimension Table	J = 5% K = 10%

Case Size	Voltage	
	400/250	850/450
32 x 33 x 18	3.3 $\mu$ F – 5 $\mu$ F	1 $\mu$ F
41.5 x 40 x 20	4 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 3 $\mu$ F
42 x 44 x 24		4 $\mu$ F
42 x 45 x 30	20 $\mu$ F – 30 $\mu$ F	5 $\mu$ F
42.5 x 37 x 28	12.5 $\mu$ F – 15 $\mu$ F	
57 x 50 x 35		10 $\mu$ F
57.5 x 50 x 35	35 $\mu$ F – 40 $\mu$ F	8 $\mu$ F

## Screw/Faston Terminal

### C4DE Series, Low Inductance DC Link, 400 – 1,000 VDC

Capacitance Range: 47 to 380  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4DE	F	P	Q	6175	A8T	K
Series	Rated Voltage (VDC)	Case & Fixing Bolt Code	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Internal Code	Tolerance
C4DE = MKP, DC Link Application	F = 400 H = 600 I = 800 N = 1,000	P = Cylindrical plastic case with fixing feet	Q = M8 threaded inserts	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	A8T = Standard	K = 10%

Case Size	Voltage			
	400 VDC	600 VDC	800 VDC	1,000 VDC
84 x 40	175 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$
84 x 51	260 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$
84 x 64	380 $\mu\text{F}$	220 $\mu\text{F}$	140 $\mu\text{F}$	100 $\mu\text{F}$

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# Film Capacitors

## Power & Application Optimized – Power Film

### Screw/Faston Terminal (cont.)

#### C44A Series, Aluminum Case, 400 – 1,500 VDC

Capacitance Range: 1 to 330  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C44A	F	F	P	5150	ZA0	J
Series	Rated Voltage (VDC)	Case & Fixing Bolt Code	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Internal Code	Tolerance
C44A = MKP, General Purpose	F = 400 H = 600 J = 700 M = 850 P = 1,200 S = 1,500	F = Cylindrical aluminum case with M8 bolt G = Cylindrical aluminum case with M12 bolt	P = M6 Threaded posts R = M10 Threaded posts Q = M8 Threaded posts (on request) 2 = Simple faston 6.3 x 0.8 mm (on request) 3 = Double faston 6.3 x 0.8 mm (on request)	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	ZA0, ZB0, ZC0, ZD0, ZE0, ZF0, ZG0, ZH0 = Standard	J = 5% K = 10%

Case Size	Voltage					
	400/250	600/330	700/400	850/450	1,200/500	1,500/630
45 x 80	15 $\mu\text{F}$ – 25 $\mu\text{F}$	10 $\mu\text{F}$	5 $\mu\text{F}$ – 7.5 $\mu\text{F}$	3 $\mu\text{F}$ – 6 $\mu\text{F}$	1 $\mu\text{F}$ – 2.5 $\mu\text{F}$	1 $\mu\text{F}$
45 x 101		20 $\mu\text{F}$				
45 x 105		15 $\mu\text{F}$		8 $\mu\text{F}$		
50 x 76					3 $\mu\text{F}$	2 $\mu\text{F}$
50 x 101	30 $\mu\text{F}$ – 50 $\mu\text{F}$	22 $\mu\text{F}$ – 30 $\mu\text{F}$	10 $\mu\text{F}$ – 20 $\mu\text{F}$	10 $\mu\text{F}$	4 $\mu\text{F}$ – 5 $\mu\text{F}$	3 $\mu\text{F}$
50 x 138					5 $\mu\text{F}$ – 7.5 $\mu\text{F}$	
55 x 101		33 $\mu\text{F}$	22 $\mu\text{F}$		6 $\mu\text{F}$	
55 x 138		50 $\mu\text{F}$		22 $\mu\text{F}$ – 25 $\mu\text{F}$	8 $\mu\text{F}$ – 10 $\mu\text{F}$	
60 x 101	60 $\mu\text{F}$ – 75 $\mu\text{F}$	40 $\mu\text{F}$	25 $\mu\text{F}$	15 $\mu\text{F}$	6.8 $\mu\text{F}$	4 $\mu\text{F}$
60 x 138	100 $\mu\text{F}$	60 $\mu\text{F}$	30 $\mu\text{F}$			
65 x 101				20 $\mu\text{F}$		5 $\mu\text{F}$
65 x 135		80 $\mu\text{F}$				
65 x 138	130 $\mu\text{F}$	70 $\mu\text{F}$ – 75 $\mu\text{F}$	40 $\mu\text{F}$ – 50 $\mu\text{F}$	30 $\mu\text{F}$ – 35 $\mu\text{F}$		7.5 $\mu\text{F}$
65 x 158					10 $\mu\text{F}$	
70 x 138	150 $\mu\text{F}$					10 $\mu\text{F}$
76 x 135		100 $\mu\text{F}$				
76 x 138	200 $\mu\text{F}$		60 $\mu\text{F}$ – 70 $\mu\text{F}$	40 $\mu\text{F}$ – 50 $\mu\text{F}$	15 $\mu\text{F}$	
76 x 200					22 $\mu\text{F}$	
85 x 137			75 $\mu\text{F}$	60 $\mu\text{F}$	20 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$
85 x 138		100 $\mu\text{F}$				
85 x 150	250 $\mu\text{F}$					
85 x 185	300 $\mu\text{F}$ – 330 $\mu\text{F}$		100 $\mu\text{F}$			

## Screw/Faston Terminal (cont.)

### C44B Series, Aluminum Case, Snubber Applications, 1,200 – 2,400 VDC

Capacitance Range: 0.047 to 4  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C44B	P	F	001	3100	ZB0	J
Series	Rated Voltage (VDC)	Case & Fixing Bolt Code	Terminal Style	Capacitance Code (pF)	Internal Code	Tolerance
C44B = MKP, Snubber Application	P = 1,200 W = 2,000 X = 2,400	F = Cylindrical aluminum case with M8 bolt G = Cylindrical aluminum case with M12 bolt	P = M6 Threaded posts 1 = Single fasten 2.8 x 0.8 mm	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	ZA0, ZB0, ZC0 = Standard	J = 5% K = 10%

Case Size	Voltage		
	1,200/500	2,000/630	2,400/1,000
25 x 60	100 nF – 470 nF	47 nF – 150 nF	
35 x 60	680 nF – 1 $\mu\text{F}$	220 nF – 330 nF	
40 x 60		470 nF	
45 x 60	1.5 $\mu\text{F}$	680 nF	
45 x 78			100 nF – 220 nF
45 x 105			470 nF
50 x 100			1 $\mu\text{F}$
50 x 135			1.5 $\mu\text{F}$
55 x 78			330 nF
55 x 200			2 $\mu\text{F}$ – 2.5 $\mu\text{F}$
65 x 175			3 $\mu\text{F}$
65 x 200			4 $\mu\text{F}$

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# Film Capacitors

## Power & Application Optimized – Power Film

### Screw/Faston Terminal (cont.)

#### C44H Series, 330 – 440 VAC, 700 – 1,000 VDC, for PFC and AC Filter

Capacitance Range: 100 to 600  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$



C44H	L	G	P	6100	A	A	S	J
Series	Rated Voltage	Case & Fixing Bolt Code	Terminal Style	Capacitance Code (pF)	Internal Code	Internal Code	Internal Code	Tolerance
C44H = MKP Capacitors for AC filtering	L = 330 $V_{\text{rms}}$ K = 440 $V_{\text{rms}}$	G = Cylindrical aluminum case with M12 bolt	P = M6 Threaded Posts R = M10 Threaded Posts	Digits 9-11 indicate the first three digits of the capacitance value. Digit 8 indicates the number of zeros to be added.	A = Standard Z = Special			J = 5% K = 10%

Case Size	Voltage	
	700/330	1,000/440
65 x 98	100 $\mu\text{F}$	
75 x 117	200 $\mu\text{F}$	
75 x 142		100 $\mu\text{F}$
75 x 194	300 $\mu\text{F}$	133 $\mu\text{F}$ – 150 $\mu\text{F}$
75 x 242	400 $\mu\text{F}$ – 500 $\mu\text{F}$	200 $\mu\text{F}$
85 x 142		133 $\mu\text{F}$
85 x 242	600 $\mu\text{F}$	250 $\mu\text{F}$

#### C44P/C20A Series, for PFC & AC Filter, 330 – 1,000 VAC, 700 – 2,300 VDC

Capacitance Range: 10 to 600  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$



C	44	P	L	G	R	6	1	0	0	A	A	S	J
Series	Rated Voltage (VAC)	Application	Rated Voltage (VAC)	Case Type	Terminal Style	Capacitance Code (pF)	Internal Code	Internal Codes	Internal Code	Tolerance			
MKP Capacitors for Power Applications	44 = 330 – 440 VAC 20 = 550 – 1,000 VAC	AC Filter P = C44 A = C20	For C44P: L = 330 K = 440 For C20A: K = 550 L = 640 Q = 780 Z = 1000	G = M12 bolt	R = Male M10	Digits 9 – 11 indicate the first 3 digits of capacitance value. Digit 8 indicates the number of zeros that must be added to obtain rated capacitance in pF.	A = Standard Z = Special			J = 5% K = 10%			

#### C44P

Case Size	Voltage	
	700/330	1,000/440
65 x 115	100 $\mu\text{F}$	
65 x 145	200 $\mu\text{F}$	
65 x 247	300 $\mu\text{F}$ – 400 $\mu\text{F}$	133 $\mu\text{F}$ – 150 $\mu\text{F}$
75 x 147		100 $\mu\text{F}$
75 x 247	500 $\mu\text{F}$	200 $\mu\text{F}$
85 x 247		300 $\mu\text{F}$
85 x 270	600 $\mu\text{F}$	

## Screw/Faston Terminal (cont.)

### C44P/C20A Series, for PFC & AC Filter, 330 – 1,000 VAC, 700 – 2,300 VDC (cont.)

Capacitance Range: 10 to 600  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$



C	44	P	L	G	R	6	1	0	0	A	A	S	J
Series		Application	Rated Voltage (VAC)		Case Type	Terminal Style	Capacitance Code (pF)			Internal Code	Internal Codes		Tolerance
MKP Capacitors for Power Applications	44 = 330 – 440 VAC 20 = 550 – 1,000 VAC	AC Filter P = C44 A = C20	For C44P: L = 330 K = 440	For C20A: K = 550 L = 640 Q = 780 Z = 1000	G = M12 bolt	R = Male M10	Digits 9 – 11 indicate the first 3 digits of capacitance value. Digit 8 indicates the number of zeros that must be added to obtain rated capacitance in pF.			A = Standard Z = Special			J = 5% K = 10%

### C20A

Case Size	Voltage			
	1,280/550	1,400/640	1,700/780	2,300/1,000
65 x 117	22 $\mu\text{F}$	15 $\mu\text{F}$		20 $\mu\text{F}$
65 x 147			10 $\mu\text{F}$	
65 x 247	47 $\mu\text{F}$ – 68 $\mu\text{F}$	47 $\mu\text{F}$		
75 x 117	33 $\mu\text{F}$			
75 x 147		22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$
75 x 247	100 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$
85 x 147			33 $\mu\text{F}$	
85 x 247	120 $\mu\text{F}$		68 $\mu\text{F}$	47 $\mu\text{F}$
95 x 247	150 $\mu\text{F}$	100 $\mu\text{F}$		68 $\mu\text{F}$
95 x 280		120 $\mu\text{F}$	100 $\mu\text{F}$	
116 x 280		150 $\mu\text{F}$		

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# Film Capacitors

## Power & Application Optimized – Power Film

### Screw/Faston Terminal (cont.)

#### C44U Series, for DC Link, 700 – 1,300 VDC

Capacitance Range: 50 to 600  $\mu\text{F}$  Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C4	4	U	Q	G	T	6	5	0	0	F	8	S	K
Series		DC Voltage	Case & Fixing	Terminals Code	Capacitance Code (pF)	Variants		Case Diameter	Film Type	Tolerance			
MKP Capacitors for Power Applications	Cylindrical types	DC-Link	J = 700 V O = 900 V Q = 1100 V U = 1300 V	G = Cylindrical case with threaded bolt M12  E = Cylindrical case without threaded bolt	T = M6 female terminals Q = M8 male terminals Y = M8 female terminals	Digits 9, 10, & 11 indicate the first 3 digits of capacitance value. Digit 8 indicates the number of zeroes that must be added in order to obtain rated capacitance in pF.		A = 85 C Hot Spot temperature series F = 70 C Hot Spot temperature series	7 = 76 mm 8 = 85 mm	T = Standard film S = Segmented film	J = 5% K = 10%		

Case Size	Voltage			
	700 VDC	900 VDC	1,100 VDC	1,300 VDC
76 x 55	120 $\mu\text{F}$	75 $\mu\text{F}$	50 $\mu\text{F}$	
76 x 70	175 $\mu\text{F}$	110 $\mu\text{F}$	75 $\mu\text{F}$	
76 x 95		200 $\mu\text{F}$ – 270 $\mu\text{F}$	130 $\mu\text{F}$ – 175 $\mu\text{F}$	90 $\mu\text{F}$ – 120 $\mu\text{F}$
76 x 120	350 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	
76 x 140	425 $\mu\text{F}$	275 $\mu\text{F}$	190 $\mu\text{F}$ – 280 $\mu\text{F}$	195 $\mu\text{F}$
85 x 55	160 $\mu\text{F}$	100 $\mu\text{F}$	70 $\mu\text{F}$	
85 x 70	225 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	
85 x 95		370 $\mu\text{F}$	240 $\mu\text{F}$	165 $\mu\text{F}$
85 x 120	450 $\mu\text{F}$	300 $\mu\text{F}$ – 510 $\mu\text{F}$	200 $\mu\text{F}$	
85 x 140	550 $\mu\text{F}$	350 $\mu\text{F}$ – 600 $\mu\text{F}$	250 $\mu\text{F}$ – 330 $\mu\text{F}$	250 $\mu\text{F}$
85 x 174			500 $\mu\text{F}$	320 $\mu\text{F}$
85 x 264				550 $\mu\text{F}$

#### C93 Series, Aluminum Case, Filter Applications, 400 – 600 VDC

Capacitance Range: 10 to 100  $\mu\text{F}$  • Temperature Range:  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$



C93	0	Z	G	3	5500	ZA0	X
Series	Rated Voltage (VAC)	Internal Code	Case & Mounting	Terminal Style	Capacitance Code (pF)	Internal Code	Tolerance
C93 = Single Phase Power Factor Correction Capacitors	0 = 320 1 = 415 3 = 460	Z = Standard	G = Cylindrical aluminum case with M12 bolt	3 = Double fasten	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	ZA0, RA0 & RS0 = Standard	X = $-5/+15\%$

Case Size	Voltage		
	400/320	600/415	600/460
40 x 78		10 $\mu\text{F}$	
45 x 78			16.5 $\mu\text{F}$
60 x 98	50 $\mu\text{F}$ – 70 $\mu\text{F}$	16.6 $\mu\text{F}$ – 33.3 $\mu\text{F}$	33.3 $\mu\text{F}$
60 x 133	100 $\mu\text{F}$	49.8 $\mu\text{F}$ – 83 $\mu\text{F}$	66.3 $\mu\text{F}$ – 83 $\mu\text{F}$
75 x 150		100 $\mu\text{F}$	

## Screw/Faston Terminal (cont.)

### C9T Series, Aluminum Case, PFC & AC Filter, 415 – 690 VAC

Capacitance Range: 19.2 to 184.8  $\mu\text{F}$  • Temperature Range:  $-25^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$



C9T	S	5	A	D	5308	AA0	X
Series	Type	Rated Voltage (VAC)	Terminal Style	Internal Connection	Capacitance Code ( $\mu\text{F}$ )	Internal Code	Tolerance
C9T = Cylindrical Three-Phase Capacitors	S = Slim	A = 525 D = 690 5 = 415 6 = 450	A = Single quick connect B = Double quick connect M = Screw Terminal	D = Delta Y = Star	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA0 = Standard	X = -5% / +15%

Case Size	Voltage			
	415 VAC	450 VAC	525 VAC	690 VAC
60 x 220	30.8 $\mu\text{F}$ – 46.2 $\mu\text{F}$	26.2 $\mu\text{F}$ – 39.3 $\mu\text{F}$	19.2 $\mu\text{F}$ – 29 $\mu\text{F}$	
65 x 220	61.6 $\mu\text{F}$	52.4 $\mu\text{F}$	38.5 $\mu\text{F}$	27.9 $\mu\text{F}$
75 x 220	77 $\mu\text{F}$ – 92.4 $\mu\text{F}$	65.5 $\mu\text{F}$ – 78.6 $\mu\text{F}$	48.1 $\mu\text{F}$ – 57.7 $\mu\text{F}$	
75 x 280	108 $\mu\text{F}$ – 123.2 $\mu\text{F}$	91.7 $\mu\text{F}$ – 105 $\mu\text{F}$	67.4 $\mu\text{F}$ – 77 $\mu\text{F}$	33.4 $\mu\text{F}$ – 39 $\mu\text{F}$
85 x 280	154 $\mu\text{F}$	131 $\mu\text{F}$	96.2 $\mu\text{F}$	44.6 $\mu\text{F}$ – 55.7 $\mu\text{F}$
95 x 280	184.8 $\mu\text{F}$	157 $\mu\text{F}$	115 $\mu\text{F}$	66.8 $\mu\text{F}$

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# Film Capacitors

## Power & Application Optimized – Motor Run Applications

### Screw/Faston Terminal

#### C27 Series, Plastic Case, 250 – 500 VAC

Capacitance Range: 1 to 100  $\mu\text{F}$  • Temperature Range:  $-25^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$



C27	4	A	C	2	4100	AA	4	J
Series	Marking	Case & Fixing Bolt Code	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Packaging	Internal Use	Tolerance	
C27 = Motor Run Capacitors	4 = 30,000 hours/420 VAC (Class A) or 10,000 hours/470 VAC (Class B) 6 = 10,000 hours/420 VAC (Class B) or 3,000 hours/470 VAC (Class C) 7 = 10,000 hours/275 VAC (Class C) or 1,000 hours/425 VAC (Class D)	A = C274 C = C276 L = C277	C = Cylindrical plastic case with M8 bolt	2 = Single fasten 6.3 x 0.8 3 = Double fasten 6.3 x 0.8 A = Polar cable (tinned end) B = Polar cable (untinned end) F = Bipolar cable (40 mm unsheathed, 8 mm exposed end)	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA, AF, AL, LG = Standard	0, 1, 2, 5 = Standard	J = 5%

#### C274

Case Size	Voltage	
	470 VAC	500 VAC
25 x 55	1 $\mu\text{F}$ – 3 $\mu\text{F}$	
25 x 56.5	1 $\mu\text{F}$ – 2.5 $\mu\text{F}$	
25 x 58	1.25 $\mu\text{F}$ – 3 $\mu\text{F}$	
25 x 58.5	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	
30 x 55	4 $\mu\text{F}$ – 5 $\mu\text{F}$	
30 x 56.5	2 $\mu\text{F}$ – 5 $\mu\text{F}$	
30 x 57	5 $\mu\text{F}$	
30 x 58.5	4 $\mu\text{F}$	
30 x 69.5	6 $\mu\text{F}$	
35 x 55	6 $\mu\text{F}$	
35 x 56.5	6 $\mu\text{F}$ – 8 $\mu\text{F}$	8 $\mu\text{F}$
35 x 57	8 $\mu\text{F}$	
35 x 71.5	12 $\mu\text{F}$	
35 x 73.5	9 $\mu\text{F}$ – 12.5 $\mu\text{F}$	
40 x 71.5	16 $\mu\text{F}$	
40 x 73.5	14 $\mu\text{F}$ – 16 $\mu\text{F}$	
45 x 74	18 $\mu\text{F}$ – 20 $\mu\text{F}$	
45 x 93	25 $\mu\text{F}$ – 31.5 $\mu\text{F}$	
45 x 95.5	30 $\mu\text{F}$	
50 x 95	35 $\mu\text{F}$	
50 x 120	40 $\mu\text{F}$ – 50 $\mu\text{F}$	
55 x 120	55 $\mu\text{F}$	
55 x 121	60 $\mu\text{F}$	

### Screw/Faston Terminal (cont.)

#### C27 Series, Plastic Case, 250 – 470 VAC (cont.)

Capacitance Range: 1 to 100  $\mu\text{F}$  • Temperature Range:  $-25^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$



C27	4	A	C	2	4100	AA	4	J
Series	Marking	Case & Fixing Bolt Code	Terminal Style	Capacitance Code (pF)	Packaging	Internal Use	Tolerance	
C27 = Motor Run Capacitors	4 = 30,000 hours/420 VAC (Class A) or 10,000 hours/470 VAC (Class B) 6 = 10,000 hours/420 VAC (Class B) or 3,000 hours/470 VAC (Class C) 7 = 10,000 hours/275 VAC (Class C) or 1,000 hours/425 VAC (Class D)	A = C274 C = C276 L = C277	C = Cylindrical plastic case with M8 bolt	2 = Single fasten 6.3 x 0.8 3 = Double fasten 6.3 x 0.8 A = Polar cable (tinned end) B = Polar cable (untinned end) F = Bipolar cable (40 mm unsheathed, 8 mm exposed end)	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA, AF, AL, LG = Standard	0, 1, 2, 5 = Standard J = 5%	

#### C276

Case Size	Voltage	
	450 VAC	470 VAC
25 x 55		3 $\mu\text{F}$ – 4 $\mu\text{F}$
25 x 56.5		1 $\mu\text{F}$ – 4 $\mu\text{F}$
25 x 57		3 $\mu\text{F}$
25 x 58		1.5 $\mu\text{F}$ – 4 $\mu\text{F}$
25 x 58.5		2 $\mu\text{F}$ – 4 $\mu\text{F}$
30 x 55		5 $\mu\text{F}$ – 7 $\mu\text{F}$
30 x 56.5	6 $\mu\text{F}$	5 $\mu\text{F}$ – 7 $\mu\text{F}$
30 x 57		5 $\mu\text{F}$
30 x 58.5		5.5 $\mu\text{F}$ – 6 $\mu\text{F}$
35 x 55		8 $\mu\text{F}$ – 9 $\mu\text{F}$
35 x 56.5	8 $\mu\text{F}$ – 10 $\mu\text{F}$	8 $\mu\text{F}$ – 11 $\mu\text{F}$
35 x 58.5		8 $\mu\text{F}$ – 10 $\mu\text{F}$
35 x 69.5		12 $\mu\text{F}$ – 16 $\mu\text{F}$
35 x 71.5		12 $\mu\text{F}$ – 16 $\mu\text{F}$
35 x 73.5		12 $\mu\text{F}$ – 16 $\mu\text{F}$
35 x 74	12 $\mu\text{F}$	16 $\mu\text{F}$
35 x 94.5	25 $\mu\text{F}$	
35 x 95.5		20 $\mu\text{F}$
40 x 69.5		20 $\mu\text{F}$
40 x 71.5		20 $\mu\text{F}$
40 x 73.5		17.5 $\mu\text{F}$ – 22 $\mu\text{F}$
40 x 74	20 $\mu\text{F}$	
40 x 94		25 $\mu\text{F}$
45 x 71.5		25 $\mu\text{F}$ – 30 $\mu\text{F}$
45 x 74	25 $\mu\text{F}$ – 30 $\mu\text{F}$	30 $\mu\text{F}$
45 x 93		31.5 $\mu\text{F}$ – 40 $\mu\text{F}$
45 x 94	40 $\mu\text{F}$	
45 x 95.5		35 $\mu\text{F}$ – 40 $\mu\text{F}$
45 x 120		60 $\mu\text{F}$
50 x 95		45 $\mu\text{F}$
50 x 120		50 $\mu\text{F}$ – 60 $\mu\text{F}$
55 x 93.5		60 $\mu\text{F}$

#### C277

Case Size	Voltage
	250 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 10 nF
15.2 – 18.5 x 11 x 5.5	15 nF
15.2 – 18.5 x 13 x 7.3	22 nF
20.3 – 24 x 14 x 7.6	33 nF
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
25.4 – 30.5 x 19 x 12.1	100 nF

# Film Capacitors

## Power & Application Optimized – Motor Run Applications

### Screw/Faston Terminal (cont.)

#### C87 Series, Aluminum Case, 470 VAC

Capacitance Range: 1 to 80  $\mu\text{F}$  • Temperature Range:  $-25^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



C87	0	C	F	2	4300	AA	4	J
Series	Marking	Case & Fixing Bolt Code	Terminal Style	Capacitance Code ( $\mu\text{F}$ )	Packaging	Internal Use	Tolerance	
C87 = Motor Run Capacitors	0 = 10,000 hours/420 VAC (Class B) or 3,000 hours/470 VAC (Class C) 8 = 30,000 hours/420 VAC (Class A) or 10,000 hours/470 VAC (Class B) 1 = Legacy (not for new design) 5 = Legacy (not for new design)	A, C, W = Standard	F = Cylindrical aluminum can with M8 bolt G = Cylindrical aluminum can with M12 bolt	2 = Single fasten 6.3 x 0.8 3 = Double fasten 6.3 x 0.8	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	AA = Standard	0, 1, 2, 4, 5 = Standard	J = 5% K = 10%

#### C870

Case Size	Voltage
	470 VAC
30 x 48	3 $\mu\text{F}$ – 4 $\mu\text{F}$
30 x 60	6 $\mu\text{F}$
30 x 78	8 $\mu\text{F}$ – 10 $\mu\text{F}$
35 x 48	5 $\mu\text{F}$
35 x 60	8 $\mu\text{F}$
35 x 78	10 $\mu\text{F}$ – 16 $\mu\text{F}$
35 x 98	20 $\mu\text{F}$
40 x 78	16 $\mu\text{F}$ – 22 $\mu\text{F}$
40 x 98	25 $\mu\text{F}$ – 30 $\mu\text{F}$
45 x 78	25 $\mu\text{F}$
45 x 98	35 $\mu\text{F}$ – 40 $\mu\text{F}$
45 x 133	45 $\mu\text{F}$
50 x 133	50 $\mu\text{F}$ – 80 $\mu\text{F}$
55 x 133	70 $\mu\text{F}$ – 100 $\mu\text{F}$
60 x 98	60 $\mu\text{F}$
60 x 133	75 $\mu\text{F}$ – 110 $\mu\text{F}$

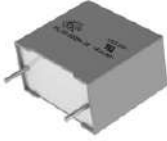
#### C878

Case Size	Voltage
	470 VAC
25 x 48	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$
25 x 60	1.5 $\mu\text{F}$ – 3 $\mu\text{F}$
25 x 78	4 $\mu\text{F}$
30 x 48	1 $\mu\text{F}$ – 3 $\mu\text{F}$
30 x 60	5 $\mu\text{F}$
30 x 78	4 $\mu\text{F}$ – 8 $\mu\text{F}$
35 x 48	3.5 $\mu\text{F}$ – 5 $\mu\text{F}$
35 x 60	4 $\mu\text{F}$ – 7.5 $\mu\text{F}$
35 x 78	6 $\mu\text{F}$ – 12.5 $\mu\text{F}$
35 x 98	16 $\mu\text{F}$
40 x 78	12 $\mu\text{F}$ – 16 $\mu\text{F}$
40 x 98	16 $\mu\text{F}$
45 x 78	18 $\mu\text{F}$ – 22.5 $\mu\text{F}$
45 x 98	25 $\mu\text{F}$ – 31.5 $\mu\text{F}$
45 x 133	30 $\mu\text{F}$ – 40 $\mu\text{F}$
50 x 133	40 $\mu\text{F}$ – 60 $\mu\text{F}$
55 x 133	50 $\mu\text{F}$
60 x 133	60 $\mu\text{F}$ – 80 $\mu\text{F}$

## Radial

### F43 Series, Integrated Resistor Metallized Polypropylene, 250 – 630 VDC

Capacitance Range: 0.01 to 1.0  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$



F	43	K	N	3100	XX	01	M
Capacitor Class	Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
Legacy PN: F New KEMET PN: Omit this character	RC Snubber, Metallized Polypropylene	I = 160 M = 200 P = 220 K = 275 (X2)	I = 15.0 N = 22.5 R = 27.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	Contact KEMET for packaging availability and details	00, 01, 04 (Standard)	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage		
	250/160	400/200	630/220
15 – 18 x 14.5 x 8.5	250 nF		
15 – 18 x 14.5 x 7.5			22 nF
22.5 – 26.5 x 15 x 6	330 nF		
22.5 – 26.5 x 17 x 8.5	470 nF – 500 nF		
22.5 – 26.5 x 18.5 x 10	1 $\mu\text{F}$	500 nF	
22.5 – 26.5 x 16 x 7		250 nF	100 nF
22.5 – 26.5 x 20 x 11			250 nF
27.5 – 32 x 22 x 13		1 $\mu\text{F}$	500 nF

(X2)

Case Size	Voltage
	275 VAC
15 – 18 x 14.5 x 7.5	10 nF – 47 nF
15 – 18 x 16 x 10	68 nF
22.5 – 26.5 x 17 x 8.5	100 nF
22.5 – 26.5 x 20 x 10	150 nF
22.5 – 26.5 x 20 x 11	220 nF
27.5 – 32 x 20 x 11	250 nF – 330 nF
27.5 – 32 x 22 x 13	470 nF – 500 nF
27.5 – 32 x 33 x 18	680 nF – 1 $\mu\text{F}$



# Film Capacitors

## Power & Application Optimized – High Voltage Transient Suppression

### Radial (cont.)

#### PMR205 Series Integrated Resistor Metallized Impregnated Paper, 125 VAC/250 VDC

Capacitance Range: 0.1 to 1.0  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

#### Legacy Part Number System



PMR205	A	B	6100	M	033	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Resistance ( $\Omega$ )	Packaging
RC Snubber, Metallized Paper	A = 125	B = 15.2 C = 20.3 E = 25.4	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$	Resistance Value in $\Omega$	See Ordering Options Table

#### New KEMET Part Number System

P	405	Q	E	104	M	125	A	H330
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance ( $\Omega$ )
P = Metallized Paper	RC Snubber	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	125 = 125	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	250/125
15.2 – 18.5 x 10.5 x 5.2	100 nF – 150 nF
15.2 – 18.5 x 13 x 7.3	220 nF – 250 nF
15.2 – 18.5 x 13.5 x 7.8	330 nF
20.3 – 24 x 14 x 7.6	470 nF
20.3 – 24 x 15 x 9	470 nF
20.3 – 24 x 16.5 x 11.3	470 nF – 1 $\mu\text{F}$
25.4 – 30.5 x 16.1 x 10.6	1 $\mu\text{F}$

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## Radial (cont.)

### P409 Series Integrated Resistor Metallized Impregnated Paper, Class X2, 275 VAC

Capacitance Range: 0.047 to 0.47  $\mu$ F Temperature Range: -40°C to +85°C



P	409	Q	M	473	M	275	A	H470
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance ( $\Omega$ )
P= Metallized Paper	RC Snubber	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	275 = 275	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	630/275
15.2 – 18.5 x 13 x 7.3	47 nF
20.3 – 24 x 14 x 7.6	100 nF
20.3 – 24 x 16.5 x 11.3	100 nF – 220 nF
25.4 – 30.5 x 19 x 12.1	220 nF
25.4 – 30.5 x 22 x 15.3	220 nF – 470 nF

### P410 Series, Integrated 100 $\Omega$ Resistor Metallized Impregnated Paper, 300 VAC

Capacitance Range: 0.022 to 0.1  $\mu$ F • Temperature Range: -40°C to +85°C



P	410	Q	M	223	M	300	A	H101
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance ( $\Omega$ )
P= Metallized Paper	RC Snubber	Q = 15.2 C = 20.3 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	300 = 300	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	1,000/300
15.2 – 18.5 x 13 x 7.3	22 nF
15.2 – 18.5 x 14.3 x 8.5	33 nF
20.3 – 24 x 15 x 9	47 nF
20.3 – 24 x 16.5 x 11.3	68 nF
25.4 – 30.5 x 16.1 x 10.6	100 nF

# Film Capacitors

## Power & Application Optimized – High Voltage Transient Suppression

### Radial (cont.)

#### PMZ2035 Series, Integrated 100 Ω Resistor Metallized Impregnated Paper, 440 VAC/1,000 VDC

Capacitance Range: 0.1 μF • Temperature Range: -40°C to +85°C

#### cy Part Number System



PMZ2035	R	E	6100	K	150	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Resistance (Ω)	Packaging
RC Snubber, Metallized Paper	R = 440	E = 25.4	The last three digits represent significant figures. The first digit specifies the total number of digits.	K = ±10% M = ±20%	Resistance Value in Ω	See Ordering Options Table

#### New KEMET Part Number System

P	435	E	J	104	K	440	A	H151
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging	Resistance (Ω)
P = Metallized Paper	RC Snubber	E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	440 = 440	See Ordering Options Table	H plus first two digits represent significant figures. Third digit specifies number of zeros.

Case Size	Voltage
	1,000/440
25.4 – 30.5 x 19 x 12.1	100 nF

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### Radial

#### F5A Series Metallized Polyester Film with Integrated Varistor, 18 – 63 VDC

Capacitance Range: 0.1 to 2.2  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



F5A	H	C	4100	DQ	A	6	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Lead and Packaging Code	Varistor Voltage $V_V$ @ 1 mA	Size Code	Capacitance Tolerance
Film Capacitor/ Ceramic Varistor Unit	B = 18 H = 25 J = 30 N = 45 C = 50 D = 63	C = 5 F = 10	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	See Ordering Options Table	See Varistor Voltage Table	See Dimension Table	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage					
	18 VDC	25 VDC	30 VDC	45 VDC	50 VDC	63 VDC
5 – 7.4 x 9.6 x 4.6	100 nF – 470 nF	100 nF – 470 nF	100 nF – 470 nF	100 nF – 470 nF	100 nF – 470 nF	100 nF – 470 nF
5 – 7.5 x 10.1 x 5.1	560 nF – 1.5 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$
5 – 7.5 x 11.1 x 6.1	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$
10 – 13.35 x 11.1 x 5.2	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$
10 – 13.35 x 12.1 x 6.2	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$

#### F5B Series Metallized Polyester Film with Integrated Suppression Diode, 18 – 63 VDC

Capacitance Range: 0.1 to 2.2  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



F5B	H	C	4100	DQ	A	7	K
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Lead and Packaging Code	Diode Breakdown Voltage $V_{BR}$ @ 1 mA	Size Code	Capacitance Tolerance
Film Capacitor/ Diode Unit	B = 18 H = 25 J = 30 N = 45 C = 50 D = 63	C = 5	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	See Ordering Options Table	See Diode Breakdown Voltage Table	See Dimension Table	K = $\pm 10\%$ M = $\pm 20\%$

Case Size	Voltage					
	18 VDC	25 VDC	30 VDC	45 VDC	50 VDC	63 VDC
5 – 7.5 x 11.1 x 6.1	100 nF – 1.2 $\mu\text{F}$	100 nF – 1.2 $\mu\text{F}$	100 nF – 1.2 $\mu\text{F}$	100 nF – 1.2 $\mu\text{F}$	100 nF – 1.2 $\mu\text{F}$	100 nF – 1.2 $\mu\text{F}$
5 – 7.5 x 13.1 x 7.3	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$

# Film Capacitors

## Power & Application Optimized – Low Voltage Transient Suppression

### Radial (cont.)

#### F5D Series Metallized Polyester Film with Integrated Ceramic Capacitor, 63 – 100 VDC

Capacitance Range: 0.1 to 2.2  $\mu$ F Temperature Range: -55°C to +125°C



F5D	D	C	3100	DQ	W	5	M
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Lead and Packaging Code	Ceramic Capacitor Value	Size Code	Capacitance Tolerance
Film Capacitor/ Ceramic Capacitor Unit	D = 63 E = 100	C = 5 mm F = 10 mm	Digits 2 – 4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	See Ordering Options Table	See Ceramic Capacitor Table	See Dimension Table	K = $\pm$ 10% M = $\pm$ 20%

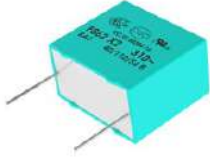
Case Size	Voltage	
	63 VDC	100 VDC
5 – 7.4 x 9.6 x 4.6	100 nF – 470 nF	100 nF – 470 nF
5 – 7.5 x 10.1 x 5.1	560 nF – 1.5 $\mu$ F	560 nF – 1.5 $\mu$ F
5 – 7.5 x 11.1 x 6.1	1.8 $\mu$ F – 2.2 $\mu$ F	1.8 $\mu$ F – 2.2 $\mu$ F
10 – 13.35 x 11.1 x 5.2	100 nF – 1 $\mu$ F	100 nF – 1 $\mu$ F
10 – 13.35 x 12.1 x 6.2	1.2 $\mu$ F – 1.5 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F

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### Radial

#### F862 Series, Metallized Polypropylene, 310 VAC (Automotive Grade)

Capacitance Range: 0.1 to 4.7  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$



F	862	B	C	104	M	310	C
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Voltage (VAC)	Packaging
F = Film	X2, Metallized Polypropylene	B = 15 D = 22.5 F = 27.5	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	310	See Ordering Options Table

Case Size	Voltage
	310 VAC
15 – 18 x 13.5 x 7.5	100 nF – 150 nF
15 – 18 x 14.5 x 8.5	180 nF – 220 nF
15 – 18 x 16 x 10	330 nF – 390 nF
15 – 18 x 19 x 11	470 nF
15 – 18 x 20 x 12	560 nF
22.5 – 26 x 18.5 x 10	470 nF – 560 nF
22.5 – 26 x 20 x 11	680 nF – 820 nF
22.5 – 26 x 22 x 13	1 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 31.5 x 20 x 11	1 $\mu\text{F}$
27.5 – 31.5 x 25 x 13	1.5 $\mu\text{F}$
27.5 – 31.5 x 28 x 14	2.2 $\mu\text{F}$
27.5 – 31.5 x 29 x 19	3.3 $\mu\text{F}$
27.5 – 31.5 x 37 x 22	4.7 $\mu\text{F}$

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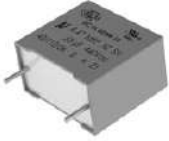
# Film Capacitors

## Power & Application Optimized – Capacitive AC Power Supply

### Radial (cont.)

#### R47 Series, Metallized Polypropylene, 440 VAC (Automotive Grade)

Capacitance Range: 0.0047 to 2.2  $\mu$ F Temperature Range: -40°C to +110°C



R47	4	F	1470	00	01	M
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Packaging	Internal Use	Capacitance Tolerance
X2, Metallized Polypropylene	4 = 440	F = 10.0 I = 15.0 N = 22.5 R = 27.5 W = 37.5	The last three digits represent significant figures. The first digit specifies number of zeros to be added.	See Ordering Options Table	01 02 03	K = $\pm$ 10% M = $\pm$ 20%

Case Size	Voltage
	440 VAC
10 – 13 x 11 x 5	6.8 nF
10 – 13 x 12 x 6	8.2 nF – 10 nF
10 – 13 x 9 x 4	4.7 nF
15 – 18 x 11 x 5	10 nF – 18 nF
15 – 18 x 12 x 13	68 nF
15 – 18 x 12 x 6	22 nF – 33 nF
15 – 18 x 12.5 x 9	47 nF
15 – 18 x 13.5 x 7.5	39 nF – 47 nF
15 – 18 x 14.5 x 8.5	56 nF
15 – 18 x 16 x 10	68 nF – 82 nF
15 – 18 x 17.5 x 6	47 nF

Case Size	Voltage
	440 VAC
15 – 18 x 18.5 x 7.5	68 nF
15 – 18 x 19 x 11	100 nF
22.5 – 26.5 x 13.5 x 6.5	47 nF
22.5 – 26.5 x 15 x 6	47 nF – 68 nF
22.5 – 26.5 x 16 x 7	100 nF
22.5 – 26.5 x 17 x 8.5	120 nF
22.5 – 26.5 x 18.5 x 10	150 nF – 180 nF
22.5 – 26.5 x 20 x 11	220 nF
22.5 – 26.5 x 22 x 13	270 nF – 330 nF
27.5 – 32 x 17 x 9	150 nF – 270 nF
27.5 – 32 x 20 x 11	330 nF – 390 nF

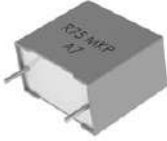
Case Size	Voltage
	440 VAC
27.5 – 32 x 22 x 13	470 nF – 560 nF
27.5 – 32 x 28 x 14	680 nF
27.5 – 32 x 33 x 18	820 nF – 1.2 $\mu$ F
27.5 – 32 x 37 x 22	1.5 $\mu$ F
37.5 – 41.5 x 22 x 11	470 nF – 560 nF
37.5 – 41.5 x 24 x 13	680 nF
37.5 – 41.5 x 28.5 x 16	820 nF – 1 $\mu$ F
37.5 – 41.5 x 32 x 19	1.2 $\mu$ F – 1.5 $\mu$ F
37.5 – 41.5 x 40 x 20	1.8 $\mu$ F – 2.2 $\mu$ F

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### Radial (cont.)

#### R75 2/L Series Metallized Polypropylene, 230 VAC and 250 VAC

Capacitance Range: 0.01 to 10  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



R75	2/L	R	3680	DQ	3	-	K
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code ( $\mu\text{F}$ )	Ordering Code	Electrical Characteristics	Internal use	Capacitance Tolerance
	2 = 230 L = 250	I = 15 N = 22.5 R = 27.5 W = 37.5	Two significant digits + number of zeros	DQ GY CK AA 40 50	Dimensions and electrical characteristics (0-9)		J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$

#### R75 2

Case Size	Voltage
	230 VAC
10 – 13 x 9 x 4	0.033 $\mu\text{F}$
10 – 13 x 12 x 6	0.1 $\mu\text{F}$
15 – 18 x 11 x 5	0.082 $\mu\text{F}$ – 0.1 $\mu\text{F}$
15 – 18 x 12 x 6	0.15 $\mu\text{F}$ – 0.18 $\mu\text{F}$
15 – 18 x 13.5 x 7.5	0.22 $\mu\text{F}$
15 – 18 x 14.5 x 8.5	0.27 $\mu\text{F}$ – 0.33 $\mu\text{F}$
15 – 18 x 16 x 10	0.47 $\mu\text{F}$
22.5 – 26.5 x 15 x 6	0.27 $\mu\text{F}$ – 0.33 $\mu\text{F}$
22.5 – 26.5 x 16 x 7	0.47 $\mu\text{F}$
22.5 – 26.5 x 17 x 8.5	0.56 $\mu\text{F}$
22.5 – 26.5 x 18.5 x 10	0.68 $\mu\text{F}$ – 0.82 $\mu\text{F}$
22.5 – 26.5 x 20 x 11	1.0 $\mu\text{F}$
22.5 – 26.5 x 22 x 13	1.5 $\mu\text{F}$
22.5 – 26.5 x 17 x 8.5	0.0 $\mu\text{F}$
27.5 – 32 x 17 x 9	0.47 $\mu\text{F}$ – 0.82 $\mu\text{F}$
27.5 – 32 x 20 x 11	1.0 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 32 x 20 x 13	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$
27.5 – 32 x 28 x 14	2.2 $\mu\text{F}$
27.5 – 32 x 33 x 18	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$
27.5 – 32 x 37 x 22	4.7 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	1.8 $\mu\text{F}$
37.5 – 41.5 x 24 x 13	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	6.8 $\mu\text{F}$

#### R75 L

Case Size	Voltage
	250 VAC
10 – 13 x 9 x 4	0.01 $\mu\text{F}$ – 0.022 $\mu\text{F}$
10 – 13 x 11 x 5	0.033 $\mu\text{F}$ – 0.047 $\mu\text{F}$
10 – 13 x 12 x 6	0.068 $\mu\text{F}$
15 – 18 x 11 x 5	0.056 $\mu\text{F}$ – 0.082 $\mu\text{F}$
15 – 18 x 12 x 6	0.01 $\mu\text{F}$
15 – 18 x 13.5 x 7.5	0.15 $\mu\text{F}$ – 0.18 $\mu\text{F}$
15 – 18 x 14.5 x 8.5	0.22 $\mu\text{F}$
15 – 18 x 16 x 10	0.27 $\mu\text{F}$ – 0.33 $\mu\text{F}$
22.5 – 26.5 x 15 x 6	0.22 $\mu\text{F}$ – 0.27 $\mu\text{F}$
22.5 – 26.5 x 16 x 7	0.33 $\mu\text{F}$
22.5 – 26.5 x 17 x 8.5	0.47 $\mu\text{F}$
22.5 – 26.5 x 18.5 x 10	0.56 $\mu\text{F}$
22.5 – 26.5 x 20 x 11	0.68 $\mu\text{F}$ – 0.82 $\mu\text{F}$
22.5 – 26.5 x 22 x 13	1.0 $\mu\text{F}$
27.5 – 32 x 17 x 9	0.33 $\mu\text{F}$ – 0.56 $\mu\text{F}$
27.5 – 32 x 20 x 11	0.68 $\mu\text{F}$ – 0.82 $\mu\text{F}$
27.5 – 32 x 22 x 13	1.0 $\mu\text{F}$ – 1.2 $\mu\text{F}$
27.5 – 32 x 25 x 13	1.5 $\mu\text{F}$
27.5 – 32 x 33 x 18	1.8 $\mu\text{F}$ – 2.7 $\mu\text{F}$
27.5 – 32 x 37 x 22	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$
37.5 – 41.5 x 22 x 11	1.2 $\mu\text{F}$
37.5 – 41.5 x 24 x 13	1.5 $\mu\text{F}$ – 1.8 $\mu\text{F}$
37.5 – 41.5 x 28.5 x 16	2.2 $\mu\text{F}$ – 2.7 $\mu\text{F}$
37.5 – 41.5 x 32 x 19	3.3 $\mu\text{F}$ – 3.9 $\mu\text{F}$
37.5 – 41.5 x 40 x 20	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$
37.5 – 41.5 x 44 x 24	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$
37.5 – 41.5 x 45 x 30	10 $\mu\text{F}$



# Film Capacitors

## Power & Application Optimized – Capacitive AC Power Supply

### Radial (cont.)

#### PME271E Series Metallized Impregnated Paper, Class X1, 300 VAC

Capacitance Range: 0.01 to 0.22  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$

#### Legacy Part Number System



PME271	E	(D)	510(0)	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X1, Metallized Paper	E = 300	Blank = Standard D = 22.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	See Ordering Options Table

#### New KEMET Part Number System

P	277	Q	E	103	M	300	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X1, Metallized Paper	Q = 15.2 C = 20.3 S = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	300 = 300	See Ordering Options Table

Case Size	Voltage
	300 VAC
15.2 – 18.5 x 10.5 x 5.2	10 nF – 15 nF
15.2 – 18.5 x 14.3 x 8.5	47 nF
15.2 – 19 x 13 x 7.3	22 nF – 33 nF
20.3 – 24 x 14 x 7.6	68 nF
20.3 – 24 x 16.5 x 11.3	100 nF
22.5 – 27 x 17 x 8	68 nF – 100 nF
22.5 – 27 x 19 x 10	150 nF
22.5 – 27 x 22 x 12	220 nF
25.4 – 30.5 x 16.1 x 10.6	150 nF
25.4 – 30.5 x 19 x 12.1	220 nF

### Radial (cont.)

#### PME271M Series Metallized Impregnated Paper, Class X2, 275 VAC

Capacitance Range: 0.001 to 0.6  $\mu\text{F}$  • Temperature Range:  $-40^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$

#### Legacy Part Number System



PME271	M	(B)	610(0)	M	R30
Series	Rated Voltage (VAC)	Lead Spacing (mm)	Capacitance Code (pF)	Capacitance Tolerance	Packaging
X2, Metallized Paper	M = 275	Blank = Standard A = 10.2 B = 15.2 D = 22.5	The last three digits represent significant figures. The first digit specifies the total number of digits.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	See Ordering Options Table

#### New KEMET Part Number System

P	276	Q	E	104	M	275	A
Capacitor Class	Series	Lead Spacing (mm)	Size Code	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VAC)	Packaging
P = Paper	X2, Metallized Paper	H = 10.2 Q = 15.2 C = 20.3 S = 22.5 E = 25.4	See Dimension Table	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ (for $C \leq 0.1 \mu\text{F}$ ) K = $\pm 10\%$ (for $C > 0.1 \mu\text{F}$ )	275 = 275	See Ordering Options Table

Case Size	Voltage
	275 VAC
10.2 – 13.5 x 10.5 x 5.1	4.7 nF – 6.8 nF
10.2 – 13.5 x 7.5 x 3.9	1 nF – 2.2 nF
10.2 – 13.5 x 8.2 x 4.1	3.3 nF
15.2 – 18.5 x 10.5 x 5.2	6.8 nF – 15 nF
15.2 – 18.5 x 12.5 x 6	22 nF – 47 nF
15.2 – 18.5 x 13.5 x 7.8	68 nF
15.2 – 18.5 x 14.3 x 8.5	100 nF
20.3 – 24 x 14 x 7.6	100 nF
20.3 – 24 x 15 x 9	150 nF
20.3 – 24 x 16.5 x 11.3	220 nF
22.5 – 27 x 17 x 8	100 nF – 150 nF
22.5 – 27 x 19 x 10	220 nF
22.5 – 27 x 22 x 12	270 nF – 330 nF
25.4 – 30.5 x 17.3 x 10.5	270 nF
25.4 – 30.5 x 19 x 12.1	330 nF
25.4 – 30.5 x 22 x 15.3	470 nF – 600 nF

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# Supercapacitors

SUPERCAPACITORS				
Small Cell		Large Cell		
Radial	Surface Mount	Snap-In	Screw Terminal	Bank Module
FA 5.5 V & 11 V 70°C	FC 3.5 V–5.5 V 70°C	S501 2.7 V 65°C	S301 2.7 V 65°C	S02 16 V–48 V 65°C
FE 5.5 V 70°C			S301 Development Balancing Kit	
FG 3.5 V & 5.5 V 70°C & 85°C				
FM 3.5 V, 5.5 V & 6.5 V 70°C & 85°C				
FR 5.5 V 85°C				
FS 5.5 V, 11 V & 12 V 70°C				
FT 5.5 V 85°C				
FY 5.5 V 70°C				
HV 2.5 V & 2.7 V 60°C & 70°C				

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### Radial

#### FA Series, 5.5 V – 11 V, 70°C

Capacitance Range: 0.022 to 1 F • Temperature Range: -25°C to +70°C



FA	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FA	0H = 5.5 VDC 1A = 11.0 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage	
	5.5	11
16 x 15.5	0.047 F	
16 x 25		0.022 F
21.5 x 15.5	0.1 F	
28.5 x 16.5	0.22 F	
28.5 x 25.5		0.1 F
36.5 x 16.5	0.47 F	
36.5 x 27.5		0.22 F
44.5 x 18.5	1 F	
44.5 x 28.5		0.47 F

#### FE Series, 5.5 V, 70°C

Capacitance Range: 0.047 to 1.5 F • Temperature Range: -40°C to +70°C



FE	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FE	0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage
	5.5
14.5 x 14	0.047 F
16.5 x 14	0.1 F
21.5 x 15.5	0.22 F
28.5 x 16.5	0.47 F
36.5 x 18.5	1 F
44.5 x 18.5	1.5 F

### Radial (cont.)

#### FG Series, 3.5 V – 5.5 V, 70°C & 85°C

Capacitance Range: 0.01 to 4.7 F Temperature Range: -25°C to +70°C (FG, FGH) and -40°C to +85°C (FGR)



FG	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FG FGH FGR	0V = 3.5 VDC 0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage	
	3.5	5.5
11 x 5.5		0.01 F – 0.047 F
11 x 6.5		0.1 F
13 x 9		0.22 F
14.5 x 18		0.47 F
16.5 x 14	1.5 F	
16.5 x 19		1 F
21.5 x 19		2.2 F
28.5 x 22		4.7 F

#### FM Series, 3.5 V – 6.5 V, 70°C & 85°C

Capacitance Range: 0.01 to 0.22 F • Temperature Range: -25°C to +70°C (all types except FMR) and -40°C to +85°C (FMR)



FM	0H	223	Z	F	TP	16
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental	Tape Type	Height (excluding lead)
FM FME FML FMR FMC	0V = 3.5 VDC 0H = 5.5 VDC 0J = 6.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free	TP = AMMO -L1 = Transverse mounting Blank = Bulk	16 = 16 mm 18 = 18 mm Blank = Bulk

Case Size	Voltage		
	3.5	5.5	6.5
11.5 x 10.5 x 5	0.047 F – 0.1 F	0.01 F – 0.047 F	
11.5 x 10.5 x 6.5	0.22 F	0.1 F – 0.22 F	0.047 F

### Radial (cont.)

#### FR Series, 5.5 V, 85°C

Capacitance Range: 0.022 to 1 F Temperature Range: -40°C to +85°C



FR	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FR	0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage
	5.5
11.5 x 14	0.022 F
14.5 x 14	0.047 F
14.5 x 15.5	0.1 F
14.5 x 21	0.22 F
16.5 x 21.5	0.47 F
21.5 x 22	1 F

#### FS Series, 5.5 V – 12 V, 70°C

Capacitance Range: 0.022 to 5 F Temperature Range: -25°C to +70°C



FS	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FS	0H = 5.5 VDC 1A = 11.0 VDC 1B = 12.0 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage		
	5.5	11	12
11.5 x 8.5	0.022 F		
13 x 8.5	0.047 F		
16.5 x 8.5	0.1 F		
16.5 x 13	0.22 F		
21.5 x 13	0.47 F		
28.5 x 14	1 F		
28.5 x 25.5		0.47 F	
28.5 x 31.5		1 F	
28.5 x 38			1 F
44.8 x 60			5 F

### Radial (cont.)

#### FT Series, 5.5 V, 85°C

Capacitance Range: 0.1 to 5.6 F • Temperature Range: -40°C to +85°C



FT	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FT FTW	0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

Case Size	Voltage
	5.5
11.5 x 8.5	0.1 F
14.5 x 12	0.22 F
16.5 x 13	0.47 F
21.5 x 13	1 F
28.5 x 14	2.2 F
36.5 x 15	3.3 F
44.5 x 17	5.6 F

#### FY Series, 5.5 V, 70°C

Capacitance Range: 0.01 to 2.2 F • Temperature Range: -25°C to +70°C



FY	0H	104	Z	F
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental
FYD FYH FYL	0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free

#### FYD

Case Size	Voltage
	5.5
11.5 x 8.5	0.022 F – 0.047 F
13 x 8.5	0.1 F
14.5 x 15	0.22 F
16.5 x 15	0.47 F
21.5 x 16	1 F
21.5 x 19	1.4 F
28.5 x 22	2.2 F

#### FYH

Case Size	Voltage
	5.5
11.5 x 7	0.022 F
13 x 7	0.047 F
16.5 x 7.5	0.1 F
16.5 x 9.5	0.22 F
21.5 x 10	0.47 F
28.5 x 11	1 F

#### FYL

Case Size	Voltage
	5.5
11 x 5	0.01 F – 0.022 F
12 x 5	0.047 F



### Radial (cont.)

HV Series, 2.5 V – 2.7 V, 60°C & 70°C

Capacitance Range: 1 to 200 F • Temperature Range: -25°C to +60°C and -25°C to +70°C



HVZ	0E	105	N	F	-LT
Series	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental	Terminal
HVZ	0E = 2.7 VDC (50 F type has 2.5 VDC)	First two digits represent significant figures. Third digit specifies number of zeros.	N = ±30%	F = Lead-free	-LT = Snap-in Blank = Standard

Case Size	Voltage	
	2.5	2.7
8 x 12		1 F
8 x 22		2.7 F
10 x 20		4.7 F
10 x 35		10 F
12.5 x 35		22 F
18 x 40	50 F	
25 x 50		100 F
35 x 50		200 F

### Surface Mount

FC Series, 3.5 V – 5.5 V, 70°C

Capacitance Range: 0.1 to 1 F • Temperature Range: -25°C to +70°C



FC	0H	104	Z	F	TB	R	24	-SS
Series Surface Mount	Maximum Operating Voltage	Capacitance Code (F)	Capacitance Tolerance	Environmental	Tape Type	Orientation	Tape Width	C-Spec
FCS FC	0V = 3.5 VDC 0H = 5.5 VDC	First two digits represent significant figures. Third digit specifies number of zeros.	Z = -20/+80%	F = Lead-free	TB = Embossed	R = Positive electrode forward	24 = 24 mm 32 = 32 mm 44 = 44 mm	-SS = 3 digit serial number marked on top Blank = No serial number marking

#### FC

Case Size	Voltage	
	3.5	5.5
10.5 x 5.5	0.1 F – 0.22 F	0.047 F – 0.1 F
10.5 x 8.5	0.47 F	0.22 F
16 x 9.5		0.47 F
21 x 10.5		1 F

#### FCS

Case Size	Voltage	
	3.5	5.5
10.7 x 5.5	0.1 F – 0.22 F	0.047 F – 0.1 F
10.7 x 8.5	0.47 F	0.22 F

### Snap-In

#### S501 Series, 2.7 V, 65°C

Capacitance Range: 100 to 350 F • Temperature Range: -40°C to +65°C



S501	DC	107	V	2R7	A
Series	Size Code (D x L)	Capacitance Code (μF)	Capacitance Tolerance	Rated Voltage (VDC)	Termination Code
Supercapacitor, Snap-In Termination	DC = 22 x 45 LF = 35 x 60 LJ = 35 x 69 LR = 35 x 89	First two digits represent significant figures. Third digit specifies number of zeros.	V = -5/+10% W = -0/+20%	2R7 = 2.7	A = 2 pin, 10 mm lead spacing, 5.9 mm terminal length U = 4 pin standard snap-in style

Case Size	Voltage
	2.7
22 x 45	100 F
35 x 60	350 F
35 x 62	350 F

### Screw Terminal

#### S301 Series, 2.7 V, 65°C

Capacitance Range: 1,200 to 3,000 F • Temperature Range: -40°C to +65°C



S301	RV	308	T	2R7	W
Series	Size Code (D x L)	Capacitance Code (μF)	Capacitance Tolerance	Rated Voltage (VDC)	Termination Code
Supercapacitor, Screw Termination	RP = 60.5 x 80.5 RS = 60.5 x 108.5 RV = 60.5 x 144	First two digits represent significant figures. Third digit specifies number of zeros.	R = -0%	2R7 = 2.7	2 threaded inserts per end, 20 mm lead spacing, M6

Case Size	Voltage
	2.7
60.7 x 80	1200 F
60.7 x 108.5	2000 F
60.7 x 144	3000 F

#### S301 Development Balancing Kit

Capacitance Range: 1,200 to 3,000 F • Temperature Range: -40°C to +105°C



S0K	MOD	0001
Series	Configuration	Model
Supercapacitor Development Balancing Kit	Module	Additional Hardware Required: Six (6) KEMET S301 Screw Terminal Supercapacitors, 60 mm cell diameter only

# Supercapacitors

## Large Cell

### Bank Module

#### S02 Series, Modules with Cells in Extruded Metal Holder, 16 V – 48 V, 65°C

Capacitance Range: 165 to 500 F • Temperature Range: -40°C to +65°C



S02	A	T	5006	R	016	A	U808
Series	Configuration Code Balancing	Configuration Code Capacitor Type	Capacitance Code (μF)	Capacitance Tolerance	Rated Voltage (VDC)	Termination Code	C-Spec
Supercapacitor, Bank Modules with cells in extruded metal holder	A = Analog with clamping	T = Array, 2 dimensions D = Array, 3 dimensions	First three digits represent significant figures. Fourth digit specifies number of zeros.	R = -0%	016 = 16 V 048 = 48 V	A = The first mechanical configuration of a particular part number B = Refers only to part number S02AT1656R048BU808	Blank = No monitor U808 = Digital Overvoltage and analog over temperature monitor

Case Size	Voltage		
	16	48	48.6
194 x 156 x 418		165 F	
209 x 156 x 136	500 F		
418 x 179 x 194			165 F

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# Tantalum Capacitors

TANTALUM SURFACE MOUNT CAPACITORS								
Standard Tantalum	Polymer Tantalum KEMET Organic Capacitor (KO-CAP)	Polymer Aluminum Organic Capacitor (AO-CAP)	High Temperature	High Reliability Commercial Off-The-Shelf (COTS)	MIL-PRF CWR Series	Fused	Automotive Grade	Space Grade
T489 Low DC Leakage MnO <sub>2</sub>	T520 105°C Rated	A700 125°C Rated	T498 150°C Rated MnO <sub>2</sub>	T428 High Volumetric Efficiency Facedown MnO <sub>2</sub>	T409 (CWR09) MIL-PRF-55365/4	T496 MnO <sub>2</sub>	T489 Low DC Leakage MnO <sub>2</sub>	T493 COTS MnO <sub>2</sub> (CWR11)
T490 High CV MnO <sub>2</sub>	T521 High Voltage		T499 175°C Rated MnO <sub>2</sub>	T493 MnO <sub>2</sub> (CWR11)	T419 (CWR19) MIL-PRF-55365/11		T491 MnO <sub>2</sub>	T496 COTS Fail-Safe Fused MnO <sub>2</sub>
T491 Industrial Grade MnO <sub>2</sub>	T522 Reduced Leakage		T500 200°C Rated MnO <sub>2</sub>	T495 Surge Robust MnO <sub>2</sub> DLA 95158	T429 (CWR29) MIL-PRF-55365/11		T494 Low ESR MnO <sub>2</sub>	T497 COTS MnO <sub>2</sub> (CWR09/19/29)
T494 Industrial Grade Low ESR MnO <sub>2</sub>	T525 125°C Rated			T497 MnO <sub>2</sub> (CWR09/19/29)	T492 (CWR11) MIL-PRF-55365/8		T495 Surge Robust MnO <sub>2</sub>	T510 Multiple Anode MnO <sub>2</sub>
T495 Surge Robust MnO <sub>2</sub>	T527 Facedown Terminal			T496 Fused MnO <sub>2</sub>			T498 150°C Rated MnO <sub>2</sub>	
T510 Multiple Anode MnO <sub>2</sub>	T528 Low ESL/Facedown Terminal			T513 Multiple Anode MnO <sub>2</sub>			T499 175°C Rated MnO <sub>2</sub>	
TSM Tantalum Stack MnO <sub>2</sub>	T529 Small Case Size Substrate Terminal			T540 Single Anode Polymer			T510 Multiple Anode MnO <sub>2</sub>	
	T530 High Capacitance 125°C Rated			T541 Multiple Anode Polymer			T591 High Performance Polymer	
	T545 High Energy			T543 Polymer				
	TSP Tantalum Stack Polymer							

TANTALUM THROUGH-HOLE CAPACITORS				
Hermetically Sealed Axial		Radial Dipped	Molded Axial	Molded Radial
T110 MIL-PRF-39003 Polar & T212 (CSR15)	T225 High Temperature Solder (CSR09)	T35X Polar	T322/T323 (CX01/CX05) MIL-PRF-49137/1 & 5	T330 Precision Molded Polar
T111 MIL-PRF-39003 Non-Polar & T213 (CSR91)	T245 High Temperature Solder (CSR23)	T363 (CX02) & T369 (CX12) MIL-PRF-49137/2		T340 Precision Molded Polar
T140 MIL-PRF-39003 Polar & T242 (CSR23)	T252 MIL-PRF-39003 (CSR33)	T368 High Capacitance		T370 & T378 (CX06) MIL-PRF-49137/6
T210/T240/GR500 High Reliability	T255 High Temperature Solder (CSR33)	T396 & T398 3 Leaded		
T215 High Temperature Solder (CSR13)	T262 MIL-PRF-30093 (CSR21)			
T216 MIL-PRF-39003 (CSS13) & T256 (CSS33)	T550 Polymer 105°C Rated			
T222 MIL-PRF-39003 Polar Miniature (CSR09)	T551 Polymer 125°C Rated			

# Tantalum Capacitors

## Surface Mount

### Standard Tantalum

#### T489 Series Low DC Leakage MnO<sub>2</sub>

Capacitance Range: 0.1 to 470  $\mu$ F • Temperature Range: -55°C to +125°C



T	489	B	156	M	16	A	T	E800
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu$ F)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR
T = Tantalum	Low DC Leakage Series	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) G = Gold Plated	Last three digits specify ESR in m $\Omega$ . (800 = 800 m $\Omega$ )

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6	15 $\mu$ F	2.2 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 2.2 $\mu$ F	1 $\mu$ F – 3.3 $\mu$ F	470 nF – 1 $\mu$ F	100 nF – 1 $\mu$ F	220 nF – 330 nF
3528 – 1.9	10 $\mu$ F – 150 $\mu$ F	6.8 $\mu$ F – 33 $\mu$ F	3.3 $\mu$ F – 22 $\mu$ F	3.3 $\mu$ F – 10 $\mu$ F	2.2 $\mu$ F – 6.8 $\mu$ F	1 $\mu$ F – 3.3 $\mu$ F	680 nF
6032 – 2.5	22 $\mu$ F – 150 $\mu$ F	15 $\mu$ F – 100 $\mu$ F	6.8 $\mu$ F – 47 $\mu$ F	6.8 $\mu$ F – 33 $\mu$ F	6.8 $\mu$ F – 15 $\mu$ F	3.3 $\mu$ F – 10 $\mu$ F	1 $\mu$ F – 2.2 $\mu$ F
7343 2.8	100 $\mu$ F – 220 $\mu$ F	33 $\mu$ F – 220 $\mu$ F	22 $\mu$ F – 150 $\mu$ F	15 $\mu$ F – 68 $\mu$ F	10 $\mu$ F – 47 $\mu$ F	4.7 $\mu$ F – 22 $\mu$ F	2.2 $\mu$ F – 6.8 $\mu$ F
7343 – 4	470 $\mu$ F	330 $\mu$ F		100 $\mu$ F			

#### T490 Series Commercial Grade High CV MnO<sub>2</sub>

Capacitance Range: 47 to 470  $\mu$ F • Temperature Range: -55°C to +40°C



T	490	B	227	M	006	A	T	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu$ F)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Packaging (C-Spec)
T = Tantalum	Industrial	A, B, T	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	004 = 4 006 = 6.3 010 = 10	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B only)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage		
	4	6.3	10
3216 – 1.6	100 $\mu$ F – 150 $\mu$ F	68 $\mu$ F – 100 $\mu$ F	47 $\mu$ F
3528 – 1.2	150 $\mu$ F	47 $\mu$ F – 100 $\mu$ F	47 $\mu$ F
3528 – 1.9	220 $\mu$ F – 470 $\mu$ F	150 $\mu$ F – 330 $\mu$ F	150 $\mu$ F – 220 $\mu$ F

### Standard Tantalum (cont.)

#### T491 Series Industrial Grade MnO<sub>2</sub>

Capacitance Range: 0.1 to 1,000 µF • Temperature Range: -55°C to +125°C



T	491	X	157	K	020	A	T	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Packaging (C-Spec)
T = Tantalum	Industrial	A, B, C, D, E, M, S, T, U, V, W, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only) N = Non-magnetic 100% Tin (Sn) M = Non-magnetic (SnPb)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage									
	2.5	3	4	6.3	10	16	20	25	35	50
3216 – 1.2			6.8 µF – 22 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	2.2 µF	1 µF – 1.5 µF	1 µF		
3216 – 1.6		33 µF	3.3 µF – 100 µF	2.2 µF – 68 µF	1 µF – 33 µF	1 µF – 15 µF	680 nF – 10 µF	330 nF – 4.7 µF	100 nF – 2.2 µF	100 nF – 1 µF
3528 – 1.2	100 µF		15 µF – 100 µF	10 µF – 47 µF	6.8 µF – 33 µF	4.7 µF – 10 µF	3.3 µF			
3528 – 1.9			10 µF – 220 µF	6.8 µF – 150 µF	2.2 µF – 100 µF	3.3 µF – 33 µF	2.2 µF – 33 µF	1 µF – 15 µF	470 nF – 4.7 µF	150 nF – 1 µF
6032 – 1.5			33 µF – 150 µF	22 µF – 150 µF	15 µF – 100 µF	10 µF – 33 µF	6.8 µF – 10 µF			
6032 – 2.5			22 µF – 330 µF	15 µF – 330 µF	10 µF – 220 µF	4.7 µF – 100 µF	4.7 µF – 47 µF	2.2 µF – 33 µF	1.5 µF – 15 µF	470 nF – 3.3 µF
7260 – 3.6			1 mF	330 µF – 680 µF	330 µF – 470 µF	220 µF	100 µF	100 µF	47 µF	
7343 – 1.5			220 µF	150 µF – 220 µF	68 µF – 100 µF	68 µF				
7343 – 2			150 µF – 330 µF	47 µF – 470 µF	33 µF – 330 µF	47 µF – 100 µF	22 µF – 33 µF	15 µF – 22 µF	6.8 µF – 10 µF	1 µF
7343 – 2.8	220 µF		68 µF – 680 µF	47 µF – 470 µF	22 µF – 330 µF	22 µF – 220 µF	15 µF – 100 µF	6.8 µF – 68 µF	4.7 µF – 33 µF	1.5 µF – 10 µF
7343 – 4			330 µF – 1 mF	150 µF – 1 mF	150 µF – 470 µF	100 µF – 220 µF	47 µF – 150 µF	33 µF – 100 µF	15 µF – 47 µF	6.8 µF – 22 µF

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# Tantalum Capacitors

## Surface Mount

### Standard Tantalum (cont.)

#### T494 Series Industrial Grade Low ESR MnO<sub>2</sub>

Capacitance Range: 0.1 to 1,000 µF • Temperature Range: -55°C to +125°C



T	494	T	336	M	004	A	T	
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Packaging (C-Spec)
T = Tantalum	Industrial - Low ESR	A, B, C, D, E, S, T, U, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only) N = Non-magnetic 100% Tin (Sn) M = Non-magnetic (SnPb)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage									
	2.5	3	4	6.3	10	16	20	25	35	50
3216 – 1.2			6.8 µF – 22 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	2.2 µF	1 µF – 1.5 µF			
3216 – 1.6		33 µF	3.3 µF – 100 µF	2.2 µF – 68 µF	1.5 µF – 33 µF	1 µF – 10 µF	680 nF – 10 µF	330 nF – 4.7 µF	100 nF – 2.2 µF	100 nF – 1 µF
3528 – 1.2	100 µF		15 µF – 100 µF	10 µF – 47 µF	6.8 µF – 33 µF	4.7 µF – 10 µF	3.3 µF			
3528 – 1.9			10 µF – 220 µF	6.8 µF – 150 µF	2.2 µF – 68 µF	3.3 µF – 33 µF	2.2 µF – 33 µF	1 µF – 15 µF	470 nF – 4.7 µF	220 nF – 1 µF
6032 – 1.5			33 µF – 100 µF	22 µF – 100 µF	15 µF – 68 µF	10 µF – 33 µF	6.8 µF – 10 µF			
6032 – 2.5			22 µF – 330 µF	15 µF – 220 µF	10 µF – 150 µF	6.8 µF – 68 µF	4.7 µF – 47 µF	2.2 µF – 33 µF	1.5 µF – 10 µF	470 nF – 2.2 µF
7260 – 3.6			1 mF	330 µF – 680 µF	330 µF – 470 µF	220 µF	100 µF		47 µF	
7343 – 2			150 µF – 330 µF	100 µF – 220 µF	33 µF – 150 µF	47 µF – 100 µF	22 µF – 33 µF	22 µF	10 µF	1 µF
7343 – 2.8	220 µF		68 µF – 680 µF	47 µF – 470 µF	33 µF – 330 µF	22 µF – 150 µF	15 µF – 100 µF	10 µF – 68 µF	4.7 µF – 33 µF	1.5 µF – 10 µF
7343 – 4			470 µF – 1 mF	220 µF – 680 µF	150 µF – 470 µF	100 µF – 220 µF	68 µF – 150 µF	33 µF – 100 µF	15 µF – 47 µF	6.8 µF – 22 µF

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### Standard Tantalum (cont.)

#### T495 Series Surge Robust MnO<sub>2</sub>

Capacitance Range: 0.47 to 1,000 µF • Temperature Range: -55°C to +125°C



T	495	X	107	M	010	A	T	E045	
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	Surge Robust Low ESR	A, B, C, D, E, M, T, U, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only)	Last three digits specify ESR in mΩ. (45 = 45 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage								
	2.5	4	6.3	10	16	20	25	35	50
3216 – 1.6		6.8 µF	2.2 µF – 33 µF	2.2 µF – 22 µF	1 µF – 15 µF	1 µF – 4.7 µF	470 nF – 1.5 µF	330 nF – 1 µF	
3528 – 1.2	100 µF	33 µF – 68 µF	10 µF – 33 µF	10 µF – 15 µF	10 µF				
3528 – 1.5			100 µF						
3528 – 1.9		100 µF – 150 µF	10 µF – 100 µF	4.7 µF – 100 µF	3.3 µF – 33 µF	4.7 µF – 10 µF	2.2 µF – 10 µF	470 nF – 4.7 µF	
6032 – 1.5		150 µF	68 µF	47 µF – 100 µF	22 µF – 33 µF				
6032 – 2.5		22 µF – 330 µF	6.8 µF – 330 µF	10 µF – 150 µF	6.8 µF – 100 µF	6.8 µF – 33 µF	2.2 µF – 22 µF	2.2 µF – 15 µF	1 µF
7260 – 3.6		1 mF	330 µF – 1 mF	330 µF – 470 µF	220 µF	100 µF – 150 µF	100 µF	33 µF	
7343 – 1.5			220 µF	100 µF					
7343 – 2		68 µF	47 µF – 470 µF	33 µF – 220 µF	68 µF – 100 µF	22 µF	15 µF	6.8 µF – 10 µF	
7343 – 2.8	220 µF – 470 µF	100 µF – 470 µF	68 µF – 470 µF	47 µF – 330 µF	33 µF – 220 µF	15 µF – 68 µF	10 µF – 68 µF	4.7 µF – 33 µF	2.2 µF – 6.8 µF
7343 – 4	1 mF	470 µF – 1 mF	150 µF – 1 mF	68 µF – 470 µF	68 µF – 220 µF	33 µF – 100 µF	15 µF – 100 µF	6.8 µF – 47 µF	4.7 µF – 15 µF

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# Tantalum Capacitors

## Surface Mount

### Standard Tantalum (cont.)

#### T510 Series Multiple Anode MnO<sub>2</sub>

Capacitance Range: 10 to 1,000 µF Temperature Range: -55°C to +125°C



T	510	X	477	M	006	A	T	E800	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	Multiple Anode Low ESR	E, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A Z = N/A	T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) G = Gold Plated (A, B, C, D, X only)	Last three digits specify ESR in mΩ. (800 = 800 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
7260 – 3.6	1 mF	680 µF				100 µF	47 µF	
7343 – 4	680 µF – 1 mF	470 µF – 680 µF	330 µF	150 µF – 220 µF	68 µF – 100 µF	68 µF	22 µF – 47 µF	10 µF – 22 µF

#### Tantalum Stack MnO<sub>2</sub> (TSM) Series

Capacitance Range: 9.4 to 2,000 µF • Temperature Range: -55°C to +125°C



T	SM	2D	447	K	10	A	H	61	20	D493
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR	C-Spec 2
T = Tantalum	Stacks MnO <sub>2</sub> Cathode	2C, 3C, 4C, 6C, 2D, 3D, 4D, 6D, 2X, 3X, 4X, 6X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	H = Standard Solder Coated (SnPb 5% Pb minimum) C = Hot Solder Dipped B = Gold Plated T = 100% Tin	61 = None 62 = 10 Cycles 25 C After Weibull 63 = 10 cycles, -55 C and 85 C After Weibull 64 = 10 cycles, -55 C and 85 C Before Weibull	10 = ESR-Standard 20 = ESR-Low 30 = ESR-Ultra-low	Designates discrete component series. D493 = T493

Case Size	Voltage							
	6.3	10	16	20	25	35	50	
0650 – 5.3	440 µF – 880 µF	200 µF – 400 µF	94 µF – 190 µF	44 µF – 88 µF	30 µF – 60 µF	20 µF – 40 µF		
0650 – 7.8	660 µF – 1.3 mF	300 µF – 600 µF	140 µF – 280 µF	66 µF – 130 µF	45 µF – 90 µF	30 µF – 60 µF		
0800 – 6.2	660 µF – 1.3 mF	440 µF – 880 µF	300 µF – 600 µF	130 µF – 270 µF	94 µF – 180 µF	44 µF – 88 µF	9.4 µF – 19 µF	
0800 – 8.9		660 µF – 1.3 mF					20 µF – 40 µF	
0800 – 9.2	990 µF – 2 mF	660 µF – 1.3 mF	450 µF – 900 µF	200 µF – 410 µF	140 µF – 280 µF	66 µF – 130 µF	14 µF – 28 µF	
0800 – 13.3		990 µF – 2 mF					30 µF – 60 µF	

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP)

#### T520 Series Polymer Tantalum

Capacitance Range: 10 to 1,500  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



T	520	V	157	M	006	A	T	E045	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code	Packaging (C-Spec)
T = Tantalum	520 = Polymer	A, B, C, D, H, L, M, Q, T, U, V, W, X, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 008 = 8 010 = 10 011 = 11 12R = 12.5 016 = 16 020 = 20 025 = 25	A = N/A	T = 100% Matte Tin (Sn) plated H = Tin/Lead (SnPb) solder coated (5% Pb minimum) P* = Ni-Pd-Au plated N = Non-magnetic 100% Tin (Sn) M = Non-magnetic (SnPb)	E = ESR Last three digits specify ESR in $\text{m}\Omega$ . (045 = 45 $\text{m}\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	2	2.5	3	4	6.3	8	10
3216 – 1.6		47 $\mu\text{F}$ – 68 $\mu\text{F}$		33 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 100 $\mu\text{F}$		10 $\mu\text{F}$ – 22 $\mu\text{F}$
3528 – 1.2		100 $\mu\text{F}$ – 220 $\mu\text{F}$		15 $\mu\text{F}$ – 100 $\mu\text{F}$	15 $\mu\text{F}$ – 150 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	33 $\mu\text{F}$
3528 – 1.5					150 $\mu\text{F}$ – 220 $\mu\text{F}$		
3528 – 1.9		100 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$	33 $\mu\text{F}$ – 220 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$ – 100 $\mu\text{F}$
6032 – 1.5		150 $\mu\text{F}$ – 220 $\mu\text{F}$		68 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 150 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$
6032 – 1.9		330 $\mu\text{F}$		220 $\mu\text{F}$	150 $\mu\text{F}$		100 $\mu\text{F}$
6032 – 2.5		220 $\mu\text{F}$ – 470 $\mu\text{F}$		150 $\mu\text{F}$ – 330 $\mu\text{F}$	33 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$	47 $\mu\text{F}$ – 150 $\mu\text{F}$
7343 – 1.5		220 $\mu\text{F}$ – 330 $\mu\text{F}$		220 $\mu\text{F}$	100 $\mu\text{F}$ – 470 $\mu\text{F}$		68 $\mu\text{F}$ – 100 $\mu\text{F}$
7343 – 2	470 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$
7343 – 2.8		220 $\mu\text{F}$ – 1 mF	680 $\mu\text{F}$	150 $\mu\text{F}$ – 680 $\mu\text{F}$	150 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$
7343 – 4		680 $\mu\text{F}$ – 1 mF	1 mF	680 $\mu\text{F}$	330 $\mu\text{F}$ – 680 $\mu\text{F}$		150 $\mu\text{F}$ – 330 $\mu\text{F}$
7360 – 2					1 mF – 1.5 mF		

Case Size	Voltage				
	11	12.5	16	20	25
3528 – 1.2		10 $\mu\text{F}$ – 15 $\mu\text{F}$			
3528 – 1.9			10 $\mu\text{F}$		
6032 – 2.5			22 $\mu\text{F}$		
7343 – 1.2	47 $\mu\text{F}$				
7343 – 1.5			33 $\mu\text{F}$ – 47 $\mu\text{F}$		
7343 – 2			33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$
7343 – 2.8			47 $\mu\text{F}$ – 68 $\mu\text{F}$		15 $\mu\text{F}$
7343 – 4			150 $\mu\text{F}$		

# Tantalum Capacitors

## Surface Mount

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP) (cont.)

#### T521 Series High Voltage Polymer Tantalum

Capacitance Range: 15 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  and  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$

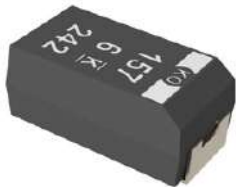


T	521	V	226	M	025	A	T	E060	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/ Design	Termination Finish	ESR Code	Packaging (C-Spec)
T = Tantalum	521 = High Voltage Polymer	B, T, D, Q, V, W, X	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A	T = 100% Matte Tin (Sn) plated H = Tin/Lead (SnPb) solder coated (5% Pb minimum) P = Ni/Pd/Au plated	E = ESR Last three digits specify ESR in $\text{m}\Omega$ . (060 = 60 $\text{m}\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage					
	16	20	25	35	50	63
3528 – 1.2			10 $\mu\text{F}$			
3528 – 1.9	10 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$			
7343 – 1.2	33 $\mu\text{F}$					
7343 – 1.5	47 $\mu\text{F}$	47 $\mu\text{F}$				
7343 – 2	47 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	
7343 – 2.8	47 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	5.6 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$
7343 – 4	150 $\mu\text{F}$ – 330 $\mu\text{F}$		100 $\mu\text{F}$	47 $\mu\text{F}$	18 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$

#### T522 Series Reduced Leakage Polymer Tantalum

Capacitance Range: 150 to 470  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



T	522	V	157	M	006	A	T	E025	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/ Design	Termination Finish	ESR Code	Packaging (C-Spec)
T = Tantalum	522 = Reduced Leakage Polymer	V, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	006 = 6.3	A = N/A	T = 100% Matte Tin (Sn) plated H = Tin/Lead (SnPb) solder coated (5% Pb minimum)	E = ESR Last three digits specify ESR in $\text{m}\Omega$ . (025 = 25 $\text{m}\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage
	6.3
7343 – 1.9	150 $\mu\text{F}$ – 330 $\mu\text{F}$
7343 – 4	470 $\mu\text{F}$

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP) (cont.)

#### T525 Series Polymer Tantalum 125°C

Capacitance Range: 10 to 680  $\mu\text{F}$  Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$

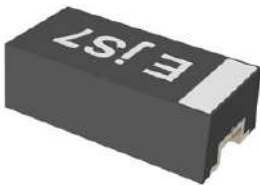


T	525	D	337	M	006	A	T	E025	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	525 = 125 C Rated Polymer	A, B, D, T, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 008 = 8 010 = 10 016 = 16	A = N/A	T = 100% Matte Tin (Sn) Plated H = Tin/Lead (SnPb) Solder Coated (5% Pb minimum)	Last three digits specify ESR in m $\Omega$ . (025 = 25 m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	2.5	3	4	6.3	8	10	16
3216 – 1.6						10 $\mu\text{F}$	
3528 – 1.2	100 $\mu\text{F}$			47 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	
3528 – 1.9		100 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$		22 $\mu\text{F}$ – 33 $\mu\text{F}$	
7343 – 2.8	330 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$ – 680 $\mu\text{F}$	220 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$		100 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$
7343 – 4				470 $\mu\text{F}$		330 $\mu\text{F}$	

#### T527 Series Facedown Terminal Polymer Tantalum

Capacitance Range: 22 to 100  $\mu\text{F}$  • Temperature Range:  $-55^\circ\text{C}$  to  $+105^\circ\text{C}$



T	527	I	476	M	006	A	T	E200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code
T = Tantalum	527 = Facedown Terminal Polymer	I = 3216	First two digits represent significant figures. Third digit specifies number of zeros. ex. 476 = 47 $\mu\text{F}$	M = $\pm 20\%$	004 = 4 006 = 6.3 010 = 10	A = N/A	T = 100% Tin (Sn)	E = ESR Last three digits specify ESR in m $\Omega$ (200 = 200 m $\Omega$ )

Case Size	Voltage		
	4	6.3	10
3216 – 1	100 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$

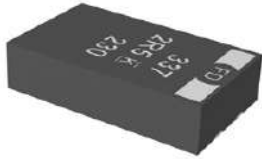
# Tantalum Capacitors

## Surface Mount

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP) (cont.)

#### T528 Series Low ESL Facedown Terminal Polymer Tantalum

Capacitance Range: 33 to 470  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



T	528	Z	337	M	2R5	A	T	E009	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code	Packaging (C-Spec)
T = Tantalum	528 = Low ESL Facedown Terminal Polymer	B = 3528-21 W = 7343-15 Z = 7343-17	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	002 = 2 2R5 = 2.5 004 = 4 006 = 6.3	A = N/A	T = 100% Matte Tin (Sn) plated P = Ni-Pd-Au plated	E = ESR Last three digits specify ESR in $\text{m}\Omega$ (009 = 9 $\text{m}\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage			
	2	2.5	4	6.3
3528 - 2	270 $\mu\text{F}$			
7343 - 1.5		330 $\mu\text{F}$		
7343 - 1.7		220 $\mu\text{F}$ - 470 $\mu\text{F}$	220 $\mu\text{F}$ - 330 $\mu\text{F}$	150 $\mu\text{F}$ - 220 $\mu\text{F}$

#### T529 Series Small Case Size Substrate Terminal Polymer Tantalum

Capacitance Range: 22 to 150  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



T	529	P	476	M	006	A	A	E200
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code
T = Tantalum	529 = Substrate Terminal Polymer	P = 2012-10 I = 3216-10	First two digits represent significant figures. Third digit specifies number of zeros. ex. 476 = 47 $\mu\text{F}$	M = $\pm 20\%$	006 = 6.3 010 = 10	A = N/A	A = Ni - Au	E = ESR Last three digits specify ESR in $\text{m}\Omega$ (200 = 200 $\text{m}\Omega$ )

Case Size	Voltage	
	6.3	10
2012 - 1	22 $\mu\text{F}$ - 47 $\mu\text{F}$	22 $\mu\text{F}$ - 47 $\mu\text{F}$
3216 - 1	150 $\mu\text{F}$	

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP) (cont.)

#### T530 Series High Capacitance Polymer Tantalum 125°C

Capacitance Range: 150 to 1,500  $\mu\text{F}$  • Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



T	530	X	337	M	010	A	T	E005	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code	Packaging (C-Spec)
T = Tantalum	530 = High Capacitance 125 C Rated Polymer	D, X, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16	A = N/A	T = 100% Matte Tin (Sn) plated* H = Standard solder Coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in m $\Omega$ (005 = 5 m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage					
	2.5	3	4	6.3	10	16
7343 – 2.8	470 $\mu\text{F}$ – 680 $\mu\text{F}$	470 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	
7343 – 3.8	680 $\mu\text{F}$ – 1 mF		470 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$	
7343 – 4	680 $\mu\text{F}$ – 1.5 mF	1 mF – 1.5 mF	680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$

#### T545 Series High Energy Polymer Tantalum

Capacitance Range: 33 to 1,500  $\mu\text{F}$  Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



T	545	H	108	M	006	A	T	E055	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	High Energy Polymer Tantalum	H, V, W, X, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$ K = $\pm 10\%$	006 = 6.3 008 = 8 010 = 10 016 = 16 020 = 20	A = N/A	T = 100% Tin (Sn)	ESR in m $\Omega$	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage			
	6.3	10	16	20
7343 – 1.5	470 $\mu\text{F}$		47 $\mu\text{F}$	
7343 – 2	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$
7343 – 4		330 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$	
7360 – 2	1 mF – 1.5 mF		180 $\mu\text{F}$	

# Tantalum Capacitors

## Surface Mount

### Polymer Tantalum KEMET Organic Capacitor (KO-CAP) (cont.)

#### Tantalum Stack Polymer (TSP) Series

Capacitance Range: 66 to 4,080  $\mu$ F Temperature Range: -55°C to +125°C



T	SP	2D	207	M	010	A	H	65	20	D540
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR	C-Spec 2
T = Tantalum	Stacks Polymer Cathode	2B, 3B, 4B, 6B, 2D, 3D, 4D, 6D	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16	A = N/A	H = Standard Solder Coated (SnPb 5% Pb minimum)	65 = No Surge 66 = 10 cycles at 25 C 67 = 10 cycles at -55 C and 85 C	10 = ESR - Standard 20 = ESR - Low	Designates discrete component series. D540 = T540

Case Size	Voltage				
	3	4	6.3	10	16
0410 - 4.3	600 $\mu$ F	200 $\mu$ F - 400 $\mu$ F	130 $\mu$ F - 270 $\mu$ F	66 $\mu$ F - 130 $\mu$ F	
0410 - 6.3	450 $\mu$ F - 900 $\mu$ F	300 $\mu$ F - 600 $\mu$ F	200 $\mu$ F - 400 $\mu$ F	99 $\mu$ F - 200 $\mu$ F	
0800 - 6.2	660 $\mu$ F - 2.7 mF	440 $\mu$ F - 1.9 mF	660 $\mu$ F - 1.3 mF	200 $\mu$ F - 880 $\mu$ F	94 $\mu$ F - 190 $\mu$ F
0800 - 9.2	2 mF - 4.1 mF	1.4 mF - 2.8 mF	990 $\mu$ F - 2 mF	660 $\mu$ F - 1.3 mF	140 $\mu$ F - 280 $\mu$ F

### Polymer Aluminum Organic Capacitor (AO-CAP)

#### A700 Series Polymer Aluminum

Capacitance Range: 6.8 to 560  $\mu$ F • Temperature Range: -55°C to +125°C



A	700	V	476	M	006	A	T	E018	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR Code	Packaging (C-Spec)
A = Aluminum	700 = Aluminum Polymer	D, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	002 = 2 2R5 = 2.5 004 = 4 006 = 6.3 008 = 8 010 = 10 12R = 12.5 016 = 16	A = N/A	T = 100% Matte Tin (Sn) plated	E = ESR Last three digits specify ESR in m $\Omega$ (018 = 18 m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	2	2.5	4	6.3	8	10	12.5	16
7343	100 $\mu$ F - 560 $\mu$ F	68 $\mu$ F - 330 $\mu$ F	68 $\mu$ F - 330 $\mu$ F	10 $\mu$ F - 220 $\mu$ F	10 $\mu$ F - 100 $\mu$ F	10 $\mu$ F - 150 $\mu$ F	10 $\mu$ F - 100 $\mu$ F	6.8 $\mu$ F - 22 $\mu$ F

### High Temperature

#### T498 Series Automotive Grade MnO<sub>2</sub> 150°C

Capacitance Range: 0.1 to 220 µF • Temperature Range: -55°C to +150°C



T	498	X	227	M	010	A	T	E500	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	High Temperature 150°C	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated* G = Gold plated H = Standard solder coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (500 = 500 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3216 – 1.6		2.2 µF – 10 µF	1.5 µF – 6.8 µF	1 µF – 6.8 µF	680 nF – 1.5 µF	470 nF – 1 µF	100 nF – 1 µF	100 nF
3528 – 1.9		6.8 µF – 33 µF	4.7 µF – 22 µF	3.3 µF – 10 µF	2.2 µF – 4.7 µF	1.5 µF – 2.2 µF	470 nF – 1 µF	150 nF – 330 nF
6032 – 2.5		15 µF – 68 µF	10 µF – 47 µF	6.8 µF – 47 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	1.5 µF – 4.7 µF	470 nF – 1 µF
7343 – 2.8	150 µF	47 µF – 150 µF	33 µF – 100 µF	22 µF – 68 µF	15 µF – 33 µF	6.8 µF – 33 µF	4.7 µF – 22 µF	1.5 µF – 10 µF
7343 – 4			150 µF – 220 µF				15 µF – 47 µF	6.8 µF – 10 µF

#### T499 Series Automotive Grade MnO<sub>2</sub> 175°C

Capacitance Range: 0.15 to 220 µF • Temperature Range: -55°C to +175°C



T	499	X	227	M	010	A	T	E500	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	High Temperature 175°C	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated G = Gold plated H = Standard solder coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (500 = 500 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6		1.5 µF – 6.8 µF	1 µF – 6.8 µF	680 nF – 1.5 µF	470 nF – 1.5 µF	150 nF – 1 µF	
3528 – 1.9	10 µF – 33 µF	4.7 µF – 22 µF	3.3 µF – 10 µF	2.2 µF – 4.7 µF	2.2 µF	470 nF – 1 µF	
6032 – 2.5	22 µF – 47 µF	10 µF – 33 µF	6.8 µF – 22 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	1.5 µF – 4.7 µF	
7343 – 2.8	100 µF	33 µF – 100 µF	22 µF – 47 µF	15 µF – 22 µF	6.8 µF – 33 µF	6.8 µF – 10 µF	3.3 µF – 10 µF
7343 – 4		220 µF	100 µF			22 µF – 33 µF	



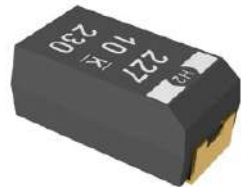
# Tantalum Capacitors

## Surface Mount

### High Temperature (cont.)

#### T500 Series MnO<sub>2</sub> 200°C

Capacitance Range: 10 to 220 µF Temperature Range: -55°C to +200°C



T	500	X	227	M	010	A	G	61	10
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Performance	ESR
T = Tantalum	High Temperature 200 C	X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	010 = 10 016 = 16 035 = 35	A = N/A B = 0.1%/1,000 hours	G = Gold plated	61 = Surge None 62 = Surge at 25 C after Weibull 63 = Surge -55 C and +85 C after Weibull	10 = Standard ESR

Case Size	Voltage		
	10	16	35
7343 - 4	220 µF	100 µF	10 µF - 33 µF

### High Reliability Commercial Off-The-Shelf (COTS)

#### T428 Series High Volumetric Efficiency Facedown COTS MnO<sub>2</sub>

Capacitance Range: 15 to 470 µF • Temperature Range: -55°C to +125°C



T	428	P	227	K	006	A	H	61	10
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR
T = Tantalum	High Volumetric Efficiency Facedown Hi-Rel MnO <sub>2</sub> COTS	P	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A B = 0.1%/1,000 hours	H = Standard solder coated (SnPb 5% Pb) T = 100% tin (Sn)	61 = None 62 = 10 cycles, 25 C 63 = 10 cycles, -55 C and 85 C	10 = Standard 20 = Low 30 = Ultra-low

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
7260fd - 3.5	470 µF	390 µF - 470 µF	330 µF	180 µF - 220 µF	150 µF	68 µF	22 µF	15 µF

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T493 Series COTS MnO<sub>2</sub> (CWR11 Style)

Capacitance Range: 0.1 µF to 470 µF • Temperature Range: -55°C to +125°C



T	493	D	227	K	006	C	H	61	20
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR
T = Tantalum	Military COTS	A, B, C, D, E, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated K = Solder fused T = 100% Tin N = Non-magnetic, 100% Tin (Sn) M = Non-magnetic (SnPb)	61 = None 62 = 10 Cycles after Weibull, 25°C 63 = 10 cycles after Weibull, -55°C and 85°C after Weibull 64 = 10 cycles before Weibull, -55 and +85 C	10 = ESR – Standard 20 = ESR – Low 30 = ESR – Ultra low

#### DLA Drawing 07016

07016-	001	K	B	H	A
Drawing Number	Dash Number	Capacitance Tolerance	Reliability Grade	Termination Finish	Surge
	See Part Number Table	J = ±5% K = ±10% M = ±20%	B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated	A = + 25°C after Weibull B = -55°C and +85°C after Weibull C = -55°C and + 85°C before Weibull Z or no option= No test required

#### F-Tech & Simulated Breakdown Screening (SBDS)

T	493	D	226	K	020	C	H	61	20
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Screening/ESR
T = Tantalum	Military COTS	A, B, C, D, E, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated K = Solder fused T = 100% Tin N = Non-magnetic, 100% Tin (Sn) M = Non-magnetic (SnPb)	61 = None 62 = 10 Cycles after Weibull, 25°C 63 = 10 cycles after Weibull, -55°C and 85°C after Weibull 64 = 10 cycles before Weibull, -55 and +85 C	11 = F-Tech + SBDS * 12 = SBDS 13 = F-Tech * 21 = Low ESR + 11 22 = Low ESR + 12 23 = Low ESR + 13 31 = Ultra Low ESR + 11 32 = Ultra Low ESR + 12 33 = Ultra Low ESR + 13

#### T493

Case Size	Voltage								
	4	6.3	10	16	20	25	35	50	63
3216 – 1.6	2.2 µF – 100 µF	1.5 µF – 22 µF	1 µF – 15 µF	680 nF – 10 µF	470 nF – 3.3 µF	330 nF – 4.7 µF	100 nF – 1.5 µF	100 nF – 680 nF	
3528 – 1.9	6.8 µF – 100 µF	4.7 µF – 100 µF	3.3 µF – 33 µF	3.3 µF – 22 µF	1.5 µF – 10 µF	680 nF – 6.8 µF	470 nF – 3.3 µF	150 nF – 1 µF	
6032 – 2.5	22 µF – 150 µF	15 µF – 220 µF	10 µF – 100 µF	6.8 µF – 47 µF	4.7 µF – 22 µF	2.2 µF – 22 µF	1.5 µF – 10 µF	470 nF – 2.2 µF	
7260 – 3.6							47 µF		
7343 – 2.8	68 µF – 330 µF	47 µF – 330 µF	33 µF – 220 µF	22 µF – 150 µF	15 µF – 68 µF	6.8 µF – 47 µF	4.7 µF – 33 µF	1.5 µF – 6.8 µF	
7343 – 4	330 µF	220 µF – 470 µF	68 µF – 470 µF	100 µF – 220 µF	47 µF – 68 µF	15 µF – 68 µF	10 µF – 47 µF	4.7 µF – 15 µF	6.8 µF – 10 µF

# Tantalum Capacitors

## Surface Mount

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T493 Series COTS MnO<sub>2</sub> (CWR11 Style)

Capacitance Range: 0.1 µF to 470 µF • Temperature Range: -55°C to +125°C



T	493	D	227	K	006	C	H	61	20
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR
T = Tantalum	Military COTS	A, B, C, D, E, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated K = Solder fused T = 100% Tin N = Non-magnetic, 100% Tin (Sn) M = Non-magnetic (SnPb)	61 = None 62 = 10 Cycles after Weibull, 25°C 63 = 10 cycles after Weibull, -55°C and 85°C after Weibull 64 = 10 cycles before Weibull, -55 and +85 C	10 = ESR – Standard 20 = ESR – Low 30 = ESR – Ultra low

#### DLA Drawing 07016

07016-	001	K	B	H	A
Drawing Number	Dash Number	Capacitance Tolerance	Reliability Grade	Termination Finish	Surge
	See Part Number Table	J = ±5% K = ±10% M = ±20%	B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated	A = + 25°C after Weibull B = -55°C and +85°C after Weibull C = -55°C and + 85°C before Weibull Z or no option= No test required

#### F-Tech & Simulated Breakdown Screening (SBDS)

T	493	D	226	K	020	C	H	61	20
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Screening/ESR
T = Tantalum	Military COTS	A, B, C, D, E, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	C = Hot solder dipped H = Standard solder coated (SnPb 5% Pb minimum) B = Gold plated K = Solder fused T = 100% Tin N = Non-magnetic, 100% Tin (Sn) M = Non-magnetic (SnPb)	61 = None 62 = 10 Cycles after Weibull, 25°C 63 = 10 cycles after Weibull, -55°C and 85°C after Weibull 64 = 10 cycles before Weibull, -55 and +85 C	11 = F-Tech + SBDS * 12 = SBDS 13 = F-Tech * 21 = Low ESR + 11 22 = Low ESR + 12 23 = Low ESR + 13 31 = Ultra Low ESR + 11 32 = Ultra Low ESR + 12 33 = Ultra Low ESR + 13

#### DLA Drawing 07016

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3216 – 1.6	33 µF	3.3 µF – 22 µF	4.7 µF – 15 µF	2.2 µF – 3.3 µF	1.5 µF – 4.7 µF	680 nF – 1.5 µF	470 nF – 1 µF	150 nF
3528 – 1.9	100 µF	22 µF – 33 µF	15 µF – 33 µF	6.8 µF – 15 µF	4.7 µF – 10 µF	2.2 µF – 4.7 µF	1.5 µF – 4.7 µF	470 nF
6032 – 2.5		47 µF – 100 µF	22 µF – 68 µF	22 µF – 47 µF	10 µF – 22 µF	6.8 µF – 10 µF	10 µF – 15 µF	1.5 µF
7260 – 3.6				150 µF		68 µF		
7343 – 2.8		220 µF	68 µF – 220 µF	68 µF – 150 µF	33 µF – 68 µF	22 µF – 47 µF	6.8 µF – 33 µF	1.5 µF – 4.7 µF
7343 – 4		330 µF	220 µF – 330 µF		68 µF		33 µF	6.8 µF

### High Reliability Commercial Off-The-Shelf (COTS) (cont)

#### T495 Series Surge Robust COTS MnO<sub>2</sub>

Capacitance Range: 4.7 to 220 μF • Temperature Range: -55°C to +125°C



T	495	X	107	M	010	A	H	4095	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Customer Specification	Packaging (C-Spec)
T = Tantalum	Surge Robust Low ESR	C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated	Tested to meet the Established Reliability	Blank = 7" Reel 7280 = 13" Reel

#### DLA Drawing 95158

95158-	07	M	H
Drawing Number	Dash Number	Capacitance Tolerance	Termination Finish
Capacitor, Fixed, Tantalum Chip, Low ESR	See Part Number List	K = ±10% M = ±20%	H = Solder Plated B = Gold Plated

#### T495

Case Size	Voltage						
	6.3	10	16	20	25	35	50
6032 - 2.5						4.7 μF	
7343 - 2.8	68 μF - 220 μF	47 μF - 150 μF	33 μF - 47 μF	15 μF - 22 μF	15 μF	10 μF	
7343 - 4	150 μF - 220 μF	68 μF - 220 μF	100 μF	47 μF - 68 μF	15 μF - 33 μF	6.8 μF - 22 μF	4.7 μF

#### DLA Drawing 95158

Case Size	Voltage						
	6.3	10	16	20	25	35	50
6032 - 2.5						4.7 μF	
7343 - 2.8	68 μF - 220 μF	47 μF - 150 μF	33 μF - 47 μF	15 μF - 22 μF	15 μF	10 μF	
7343 - 4	150 μF - 220 μF	68 μF - 220 μF	100 μF	47 μF - 68 μF	15 μF - 33 μF	6.8 μF - 22 μF	4.7 μF

# Tantalum Capacitors

## Surface Mount

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T496 Series Fused COTS MnO<sub>2</sub>

Capacitance Range: 0.15 to 470 µF • Temperature Range: -55°C to +125°C



T	496	X	227	M	010	B	T	61	10	
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Performance	ESR	Packaging (C-Spec)
T Tantalum	Fail Safe	B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	B = 0.1%/1,000 hours C = 0.01%/1,000 hours D = 0.001%/1,000 hours A = Non-Weibull Graded	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) C = Hot solder dipped K = Solder Fused	61 = Surge None 62 = Surge at 25 C after Weibull 63 = Surge 55 C and +85 C after Weibull 64 = Surge 55 C and +85 C before Weibull	10 Standard 20 = Low	Blank = 7" Reel 7280 = 13" Reel

#### DLA Drawing 04053

04053-	001	B
Drawing Number	Dash Number	Reliability Grade
	See Part Number List	B = 0.1%/1,000 hours C = 0.01%/1,000 hours D = 0.001%/1,000 hours Z = Non-Weibull Graded

#### T496

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3528 – 1.9		4.7 µF – 22 µF	3.3 µF – 15 µF	2.2 µF – 10 µF	1.5 µF – 3.3 µF	680 nF – 4.7 µF	470 nF – 1 µF	150 nF – 330 nF
6032 – 2.5	68 µF – 150 µF	15 µF – 100 µF	10 µF – 47 µF	6.8 µF – 22 µF	4.7 µF – 15 µF	2.2 µF – 15 µF	1.5 µF – 3.3 µF	470 nF – 1.5 µF
7343 – 2.8	150 µF – 330 µF	47 µF – 220 µF	33 µF – 220 µF	22 µF – 68 µF	15 µF – 47 µF	10 µF – 22 µF	4.7 µF – 15 µF	2.2 µF – 4.7 µF
7343 – 4	330 µF – 470 µF	100 µF – 330 µF	68 µF – 220 µF	47 µF – 100 µF	33 µF – 47 µF	22 µF	10 µF – 22 µF	4.7 µF

#### DLA Drawing 04053

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3528 – 1.9		4.7 µF – 22 µF	3.3 µF – 15 µF	2.2 µF – 10 µF	1.5 µF – 3.3 µF	680 nF – 1.5 µF	470 nF – 1 µF	150 nF – 330 nF
6032 – 2.5	68 µF – 100 µF	15 µF – 68 µF	10 µF – 47 µF	6.8 µF – 22 µF	4.7 µF – 10 µF	2.2 µF – 10 µF	1.5 µF – 3.3 µF	470 nF – 1.5 µF
7343 – 2.8	150 µF – 330 µF	47 µF – 220 µF	33 µF – 150 µF	22 µF – 47 µF	15 µF – 22 µF	10 µF – 22 µF	4.7 µF – 6.8 µF	2.2 µF – 3.3 µF
7343 – 4	330 µF – 470 µF	100 µF – 330 µF	68 µF – 220 µF	47 µF – 100 µF	33 µF – 47 µF	22 µF	10 µF – 22 µF	

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T497 Series COTS MnO<sub>2</sub> (CWR09/19/29 Style)

Capacitance Range: 0.1 to 150 µF • Temperature Range: -55°C to +125°C



T	497	G	226	K	020	A	H	61	10
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	X-ray
T = Tantalum	High Grade COTS	A, B, C, D, E, F, G, H, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated	61 = Standard (in-process) 62 = 10 Cycles After Weibull, 25 C 63 = 10 Cycles After Weibull, -55 and 85 C 64 = 10 Cycles Before Weibull, -55 and 85 C	10 = None 15 = 100%

#### F-Tech & Simulated Breakdown Screening (SBDS)

T	497	H	226	K	020	A	H	61	10
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Design/Screening
T = Tantalum	High Grade COTS	H	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	020 = 20 025 = 25 035 = 35 050 = 50	A = N/A B = 0.1%/1,000 hours C = 0.01%/1,000 hours	T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated	61 = Standard (in-process) 62 = 10 Cycles After Weibull, 25 C 63 = 10 Cycles After Weibull, -55 and 85 C 64 = 10 Cycles Before Weibull, -55 and 85 C	10 = Standard 11 = F-Tech & SBDS * 12 = SBDS 13 = F-Tech * 15 = 100% X-ray 16 = F-Tech & SBDS & 100% X-ray * 17 = SBDS & 100% X-ray 18 = F-Tech & 100% X-ray *

Case Size	Voltage							
	4	6.3	10	15	20	25	35	50
2513 - 1.27	4.7 µF	1.5 µF - 4.7 µF	470 nF - 3.3 µF	100 nF - 2.2 µF	150 nF - 1 µF	330 nF - 470 nF	220 nF - 330 nF	100 nF - 150 nF
3813 - 1.27	4.7 µF - 15 µF	3.3 µF - 15 µF	2.2 µF - 10 µF	1.5 µF - 4.7 µF	680 nF - 2.2 µF	680 nF - 1 µF	470 nF	220 nF - 330 nF
3825 - 1.27	33 µF	4.7 µF - 22 µF	4.7 µF - 22 µF	3.3 µF - 10 µF	2.2 µF - 6.8 µF	1.5 µF - 2.2 µF	1 µF	680 nF
5113 - 1.27						1 µF	680 nF	470 nF
5125 - 1.27	68 µF	10 µF - 33 µF	6.8 µF - 22 µF	4.7 µF - 15 µF	3.3 µF - 6.8 µF	2.2 µF - 3.3 µF	1.5 µF	1 µF
5634 - 1.78	33 µF - 68 µF	22 µF - 68 µF	6.8 µF - 47 µF	10 µF - 33 µF	4.7 µF - 15 µF	4.7 µF - 10 µF	3.3 µF	1.5 µF - 2.2 µF
6728 - 2.79	68 µF	47 µF - 150 µF	22 µF - 100 µF	22 µF - 47 µF	15 µF - 22 µF	6.8 µF - 22 µF	4.7 µF - 6.8 µF	3.3 µF
6954 - 2.74						22 µF - 33 µF	15 µF	
7238 - 2.79	100 µF	68 µF - 150 µF	47 µF - 150 µF	33 µF - 100 µF	22 µF - 47 µF	15 µF - 33 µF	6.8 µF - 10 µF	4.7 µF

# Tantalum Capacitors

## Surface Mount

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T513 Series COTS Multiple Anode MnO<sub>2</sub>

Capacitance Range: 15 to 1,000  $\mu\text{F}$  • Temperature Range: -55°C to +125°C



T	513	X	108	K	004	B	H	61	10
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR
T = Tantalum	Multiple Anode COTS	D, E, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35	A = N/A B = 0.1%/1,000 hours	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused T = 100% Tin	61 = None 62 = 10 cycles, 25 C after Weibull 63 = 10 cycles, -55 C & 85 C after Weibull 64 = 10 cycles, -55 C & 85 C before Weibull	10 = Standard ESR 20 = Low ESR 30 = Ultra Low ESR

Case Size	Voltage						
	4	6.3	10	16	20	25	35
7260 – 3.6	1 mF	680 $\mu\text{F}$				100 $\mu\text{F}$	
7343 – 2.8				100 $\mu\text{F}$			15 $\mu\text{F}$
7343 – 4	680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$

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### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T540 Series COTS Single Anode Polymer Tantalum

Capacitance Range: 4.7 to 680  $\mu\text{F}$  Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



T	540	D	107	M	10	A	H	65	10	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge Option	ESR	Packaging (C-Spec)
T = Tantalum	540 = Polymer COTS	B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B** = 0.1%/1,000 hours C** = 0.01%/1,000 hours D** = 0.001%/1,000 hours	H = Standard Solder Coated (SnPb 5% Pb minimum)	65 = 4 cycles at 25 C * 66 = 10 cycles at 25 C * 67 = 10 cycles at -55 C and 85 C *	10 = ESR - Standard 20 = ESR - Low	Blank = 7" Reel 7280 = 13" Reel

#### DLA Drawing 04051

04051-	001	A
Drawing Number	Dash Number	Surge Current Option
04051	See Part Number List	Blank = 4 cycles +25 C $\pm 5$ C Before Voltage Aging A = 10 cycles +25 C $\pm 5$ C After Voltage Aging B = 10 cycles -55 C $\pm 5$ C, +0 C $\pm 5$ C, and +85 C $\pm 5$ C After Voltage Aging

Case Size	Voltage										
	2.5	3	4	6.3	10	16	20	25	35	50	63
3528 - 1.9		100 $\mu\text{F}$ - 150 $\mu\text{F}$	68 $\mu\text{F}$ - 100 $\mu\text{F}$	33 $\mu\text{F}$ - 68 $\mu\text{F}$	22 $\mu\text{F}$ - 33 $\mu\text{F}$						
6032 - 2.5								6.8 $\mu\text{F}$ - 10 $\mu\text{F}$			
7343 - 2.8	330 $\mu\text{F}$ - 680 $\mu\text{F}$	330 $\mu\text{F}$ - 680 $\mu\text{F}$	220 $\mu\text{F}$ - 470 $\mu\text{F}$	150 $\mu\text{F}$ - 330 $\mu\text{F}$	100 $\mu\text{F}$ - 220 $\mu\text{F}$	47 $\mu\text{F}$ - 100 $\mu\text{F}$	22 $\mu\text{F}$ - 47 $\mu\text{F}$	15 $\mu\text{F}$ - 33 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$



# Tantalum Capacitors

## Surface Mount

### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T541 Series COTS Multiple Anode Polymer Tantalum

Capacitance Range: 10 to 1,500  $\mu\text{F}$  Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



T	541	D	157	M	10	A	H	65	10	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge Option	ESR	Packaging (C-Spec)
T = Tantalum	541 = Polymer COTS Multiple Anode	D, X, Y	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A B** = 0.1%/1,000 hours C** = 0.01%/1,000 hours D** = 0.001%/1,000 hours	H = Standard Solder Coated (SnPb 5% Pb minimum)	65 = 4 cycles at 25 C * 66 = 10 cycles at 25 C * 67 = 10 cycles at -55 C and 85 C	10 = ESR - Standard 20 = ESR - Low 30 = ESR - Ultra Low ESR	Blank = 7" Reel 7280 = 13" Reel

#### DLA Drawing 04052

04052-	001	A
Drawing Number	Dash Number	Surge Current Option
04052	See Part Number List	Blank = 4 cycles +25 C $\pm 5$ C Before Voltage Aging A = 10 cycles +25 C $\pm 5$ C After Voltage Aging B = 10 cycles -55 C $\pm 5$ C, +0 $\pm 5$ C, and +85 C $\pm 5$ C After Voltage Aging

Case Size	Voltage										
	2.5	3	4	6.3	10	16	20	25	35	50	63
7343 - 2.8	470 $\mu\text{F}$ - 680 $\mu\text{F}$	470 $\mu\text{F}$ - 680 $\mu\text{F}$	330 $\mu\text{F}$ - 470 $\mu\text{F}$	220 $\mu\text{F}$ - 330 $\mu\text{F}$	150 $\mu\text{F}$ - 220 $\mu\text{F}$						
7343 - 3.8	680 $\mu\text{F}$		470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$						
7343 - 4	1 mF - 1.5 mF	1 mF - 1.5 mF	680 $\mu\text{F}$ - 1 mF	470 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ - 330 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$ - 100 $\mu\text{F}$	33 $\mu\text{F}$ - 47 $\mu\text{F}$	22 $\mu\text{F}$ - 33 $\mu\text{F}$	10 $\mu\text{F}$ - 15 $\mu\text{F}$

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### High Reliability Commercial Off-The-Shelf (COTS) (cont.)

#### T543 Series COTS Polymer Tantalum

Capacitance Range: 4.7 to 1,500  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$



T	543	D	156	K	035	A	H	E	100	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	ESR	Packaging (C-Spec)
T = Tantalum	Polymer Tantalum COTS	A, B, C, D, H, L, M, T, U, V, W, X, Y	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 12R = 12.5 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50 063 = 63	A = N/A	H = Standard Solder Coated (SnPb 5% Pb minimum) T = 100% Tin (Sn)	E = None S = 10 cycles 25 C W = 10 cycles -55 C and 85 C	ESR in m $\Omega$	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	2.5	3	4	6.3	8	10	12.5	16
3216 – 1.6	47 $\mu\text{F}$ – 68 $\mu\text{F}$		33 $\mu\text{F}$ – 100 $\mu\text{F}$	22 $\mu\text{F}$ – 68 $\mu\text{F}$		10 $\mu\text{F}$ – 22 $\mu\text{F}$		
3528 – 1.2	56 $\mu\text{F}$ – 100 $\mu\text{F}$		15 $\mu\text{F}$ – 100 $\mu\text{F}$	15 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	
3528 – 1.5				150 $\mu\text{F}$				
3528 – 1.9	100 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$	33 $\mu\text{F}$ – 220 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 47 $\mu\text{F}$		10 $\mu\text{F}$
6032 – 1.5	150 $\mu\text{F}$ – 220 $\mu\text{F}$		68 $\mu\text{F}$ – 150 $\mu\text{F}$	68 $\mu\text{F}$ – 150 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$		
6032 – 1.9	330 $\mu\text{F}$		220 $\mu\text{F}$	150 $\mu\text{F}$		100 $\mu\text{F}$		
6032 – 2.5	220 $\mu\text{F}$ – 470 $\mu\text{F}$		150 $\mu\text{F}$ – 330 $\mu\text{F}$	33 $\mu\text{F}$ – 220 $\mu\text{F}$		47 $\mu\text{F}$ – 150 $\mu\text{F}$		22 $\mu\text{F}$
7343 – 1.5	220 $\mu\text{F}$ – 330 $\mu\text{F}$		220 $\mu\text{F}$	100 $\mu\text{F}$ – 470 $\mu\text{F}$		68 $\mu\text{F}$ – 100 $\mu\text{F}$		33 $\mu\text{F}$ – 47 $\mu\text{F}$
7343 – 1.9	220 $\mu\text{F}$ – 470 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$		33 $\mu\text{F}$ – 100 $\mu\text{F}$
7343 – 2.8	220 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$ – 680 $\mu\text{F}$	220 $\mu\text{F}$ – 680 $\mu\text{F}$	150 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$ – 220 $\mu\text{F}$		47 $\mu\text{F}$ – 100 $\mu\text{F}$
7343 – 3.8	680 $\mu\text{F}$ – 1 mF		470 $\mu\text{F}$ – 680 $\mu\text{F}$	330 $\mu\text{F}$ – 470 $\mu\text{F}$		150 $\mu\text{F}$ – 330 $\mu\text{F}$		
7343 – 4	680 $\mu\text{F}$ – 1.5 mF	1 mF – 1.5 mF	680 $\mu\text{F}$ – 1 mF	470 $\mu\text{F}$ – 680 $\mu\text{F}$		330 $\mu\text{F}$	330 $\mu\text{F}$	150 $\mu\text{F}$ – 330 $\mu\text{F}$
7360 – 2				1 mF – 1.5 mF				

Case Size	Voltage				
	20	25	35	50	63
7343 – 1.9	22 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$		
7343 – 2.8	22 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$
7343 – 3.8					

# Tantalum Capacitors

## Surface Mount

### MIL-PRF CWR Style

#### T409 Series MIL-PRF-55365/4 (CWR09 Style)

Capacitance Range: 0.1 to 100  $\mu$ F • Temperature Range: -55°C to +125°C



T	409	A	225	K	004	A	H	4252	7280
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Packaging (C-Spec)
T = Tantalum	CWR 09 Established Reliability	A, B, C, D, E, F, G, H	First two digits represent significant figures Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused	4250= 25°C after Weibull 4251 = -55°C and 85°C after Weibull 4252 = -55°C and 85°C before Weibull TLVL = Weibull Grade Level "T"	Blank = 7" Reel 7280 = 13" Reel 7610 = Bag 7005 = Moisture bags

### MIL-PRF-55365/4

CWR09	J	H	105	K	C	A
Capacitor Style	Rated Voltage (VDC)	Termination Finish	Capacitance Code (pF)	Capacitance Tolerance	Reliability Level	Surge Current Option
Per MIL-PRF-55365/4	C = 4 D = 6 F = 10 H = 15 J = 20 K = 25 M = 35 N = 50	B = Gold Plated C = Hot solder dipped H = Solder Plated K = Solder fused	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = T Level* (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	A = +25 C after Weibull B = -55 C +85 C after Weibull C = -55 C +85 C before Weibull Blank = No Surge

Case Size	Voltage							
	4	6.3	10	15	20	25	35	50
2513 – 1.27	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F	680 nF	470 nF	330 nF	220 nF	100 nF – 150 nF
3813 – 1.27	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F	680 nF – 1 $\mu$ F	680 nF	470 nF	220 nF – 330 nF
3825 – 1.27	10 $\mu$ F	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F	680 nF
5113 – 1.27	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F	680 nF	470 nF
5125 – 1.27	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F	1 $\mu$ F
5634 – 1.78	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	1.5 $\mu$ F – 2.2 $\mu$ F
6728 – 2.79	68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	6.8 $\mu$ F – 10 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F
7238 – 2.79	100 $\mu$ F	68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	6.8 $\mu$ F	4.7 $\mu$ F

### MIL-PRF CWR Style (cont.)

#### T419 Series MIL-PRF-55365/11 (CWR19 Style)

Capacitance Range: 0.33 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	419	A	225	K	004	A	H	4251	7280
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Packaging (C-Spec)
T = Tantalum	CWR19 Established Reliability	A, B, C, D, E, F, G, H, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused	Blank = No Surge 4250 = $25^{\circ}\text{C}$ after Weibull 4251 = $-55^{\circ}\text{C}$ and $85^{\circ}\text{C}$ after Weibull 4252 = $-55^{\circ}\text{C}$ and $85^{\circ}\text{C}$ before Weibull TLVL = Weibull Grade Level "T"	Blank = 7" Reel 7280 = 13" Reel 7610 = Bag 7005 = Moisture bags

#### MIL-PRF-55365/11

CWR19	K	H	225	K	C	D	A
Capacitor Style	Rated Voltage (VDC)	Termination Finish	Capacitance Code (pF)	Capacitance Tolerance	Reliability Level	Case Code	Surge Current Option
Per MIL-PRF-55365/11	C = 4 D = 6 F = 10 H = 15 J = 20 K = 25 M = 35	B = Gold Plated C = Hot solder dipped H = Solder Plated K = Solder fused	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = T Level* (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	A, B, C, D, E, F, G, H, X	A = +25 C after Weibull B = -55 C +85 C after Weibull C = -55 C +85 C before Weibull Z = None

Case Size	Voltage						
	4	6.3	10	15	20	25	35
2513 – 1.27	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	680 nF – 1 $\mu\text{F}$	470 nF	330 nF
3813 – 1.27	10 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$	
3825 – 1.27	22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	
5113 – 1.27			4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$			
5125 – 1.27	33 $\mu\text{F}$ – 68 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$	
5634 – 1.78	100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	15 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	6.8 $\mu\text{F}$	
6728 – 2.79	150 $\mu\text{F}$	68 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 68 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$
6954 – 2.74			150 $\mu\text{F}$		47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$
7238 – 2.79	220 $\mu\text{F}$ – 330 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	100 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$

# Tantalum Capacitors

## Surface Mount

### MIL-PRF CWR Style (cont.)

#### T429 Series MIL-PRF-55365/11 (CWR29 Style)

Capacitance Range: 0.1 to 330  $\mu\text{F}$  • Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$



T	429	A	225	K	004	A	H	4251	7280
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge	Packaging (C-Spec)
T = Tantalum	CWR2 Established Reliability	A, B, C, D, E, F, G, H, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused	Blank No surge 4250= $25^\circ\text{C}$ after Weibull 4251 = $-55^\circ\text{C}$ and $85^\circ\text{C}$ after Weibull 4252 = $-55^\circ\text{C}$ and $85^\circ\text{C}$ before Weibull TLVL= Weibull Grade Level "T"	Blank = 7" Reel 28 13" Reel 7610 = Bag 7005 = Moisture bags

#### MIL-PRF-55365/11

CWR29	K	H	225	K	C	D	A
Capacitor Style	Rated Voltage (VDC)	Termination Finish	Capacitance Code (pF)	Capacitance Tolerance	Reliability Level	Case Code	Surge Current Option
Per MIL-PRF-55365/11	C = 4 D = 6 F = 10 H = 15 J = 20 K = 25 M = 35 N = 50	B = Gold Plated C = Hot solder dipped H = Solder Plated K = Solder fused	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = T Level* (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	A, B, C, D, E, F, G, H, X	A = +25 C after Weibull B = -55 C +85 C after Weibull C = -55 C +85 C before Weibull Z = None

Case Size	Voltage							
	4	6.3	10	15	20	25	35	50
2513 - 1.27	2.2 $\mu\text{F}$ - 6.8 $\mu\text{F}$	1.5 $\mu\text{F}$ - 4.7 $\mu\text{F}$	1 $\mu\text{F}$ - 3.3 $\mu\text{F}$	680 nF - 2.2 $\mu\text{F}$	470 nF - 1 $\mu\text{F}$	330 nF - 470 nF	220 nF - 330 nF	100 nF - 150 nF
3813 - 1.27	4.7 $\mu\text{F}$ - 22 $\mu\text{F}$	3.3 $\mu\text{F}$ - 15 $\mu\text{F}$	2.2 $\mu\text{F}$ - 10 $\mu\text{F}$	1.5 $\mu\text{F}$ - 4.7 $\mu\text{F}$	680 nF - 2.2 $\mu\text{F}$	680 nF - 1 $\mu\text{F}$	470 nF	220 nF - 330 nF
3825 - 1.27	10 $\mu\text{F}$ - 33 $\mu\text{F}$	6.8 $\mu\text{F}$ - 22 $\mu\text{F}$	4.7 $\mu\text{F}$ - 15 $\mu\text{F}$	3.3 $\mu\text{F}$ - 10 $\mu\text{F}$	2.2 $\mu\text{F}$ - 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ - 2.2 $\mu\text{F}$	1 $\mu\text{F}$	680 nF
5113 - 1.27	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$ - 10 $\mu\text{F}$	2.2 $\mu\text{F}$ - 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$	680 nF	470 nF
5125 - 1.27	15 $\mu\text{F}$ - 68 $\mu\text{F}$	10 $\mu\text{F}$ - 33 $\mu\text{F}$	6.8 $\mu\text{F}$ - 22 $\mu\text{F}$	4.7 $\mu\text{F}$ - 15 $\mu\text{F}$	3.3 $\mu\text{F}$ - 10 $\mu\text{F}$	2.2 $\mu\text{F}$ - 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$
5634 - 1.78	33 $\mu\text{F}$ - 100 $\mu\text{F}$	22 $\mu\text{F}$ - 68 $\mu\text{F}$	15 $\mu\text{F}$ - 47 $\mu\text{F}$	10 $\mu\text{F}$ - 33 $\mu\text{F}$	6.8 $\mu\text{F}$ - 15 $\mu\text{F}$	4.7 $\mu\text{F}$ - 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$ - 6.8 $\mu\text{F}$	1.5 $\mu\text{F}$ - 2.2 $\mu\text{F}$
6728 - 2.79	68 $\mu\text{F}$ - 150 $\mu\text{F}$	47 $\mu\text{F}$ - 150 $\mu\text{F}$	33 $\mu\text{F}$ - 100 $\mu\text{F}$	22 $\mu\text{F}$ - 68 $\mu\text{F}$	15 $\mu\text{F}$ - 22 $\mu\text{F}$	6.8 $\mu\text{F}$ - 22 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$
6954 - 2.74			150 $\mu\text{F}$		47 $\mu\text{F}$	22 $\mu\text{F}$ - 33 $\mu\text{F}$	15 $\mu\text{F}$	
7238 - 2.79	100 $\mu\text{F}$ - 330 $\mu\text{F}$	68 $\mu\text{F}$ - 330 $\mu\text{F}$	47 $\mu\text{F}$ - 220 $\mu\text{F}$	33 $\mu\text{F}$ - 100 $\mu\text{F}$	22 $\mu\text{F}$ - 47 $\mu\text{F}$	15 $\mu\text{F}$ - 33 $\mu\text{F}$	6.8 $\mu\text{F}$ - 10 $\mu\text{F}$	4.7 $\mu\text{F}$

### MIL-PRF CWR Style (cont.)

#### T492 Series MIL-PRF-55365/8 (CWR11 Style)

Capacitance Range: 0.1 to 100  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	492	D	156	K	020	A	C	4251
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	Surge (C-Spec)
T = Tantalum	CWR11 Established Reliability	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused	4250 = $25^{\circ}\text{C}$ after Weibull 4251 = $-55^{\circ}\text{C}$ and $85^{\circ}\text{C}$ after Weibull 4252 = $-55^{\circ}\text{C}$ and $85^{\circ}\text{C}$ before Weibull TLVL= Weibull Grade Level "T"

#### MIL-PRF-55365/8

CWR11	M	H	105	K	B	A
Capacitor Style	Rated Voltage (VDC)	Termination Finish	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Reliability Level	Surge Current Option
Per MIL-PRF-55365/8	C = 4 D = 6 F = 10 H = 15 J = 20 K = 25 M = 35 N = 50	B = Gold Plated C = Hot solder dipped H = Solder Plated K = Solder fused	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	Weibull A = non-ER B = (0.1%/1,000 hours) C = (0.01%/1,000 hours) D = (0.001%/1,000 hours) T = T Level* (0.01%/1,000 hours) Exponential M = (1.0%/1,000 hours) P = (0.1%/1,000 hours) R = (0.01%/1,000 hours) S = (0.001%/1,000 hours)	A = +25 C after Weibull B = -55 C +85 C after Weibull C = -55 C +85 C before Weibull Blank = None

Case Size	Voltage							
	4	6.3	10	15	20	25	35	50
3216 – 1.6	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	680 nF – 1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$	330 nF – 470 nF	100 nF – 330 nF	100 nF
3528 – 1.9	6.8 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	680 nF – 1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$	150 nF – 330 nF
6032 – 2.5	33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$
7343 – 2.8	68 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	6.8 $\mu\text{F}$ – 15 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1.5 $\mu\text{F}$ – 4.7 $\mu\text{F}$

# Tantalum Capacitors

## Surface Mount

### Fused

#### T496 Series Fused MnO<sub>2</sub>

Capacitance Range: 0.15 to 477 µF • Temperature Range: -55°C to +125°C



T	496	X	227	M	010	A	T	E500	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	Fail Safe	B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (500 = 500 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3528 – 1.9		4.7 µF – 22 µF	3.3 µF – 15 µF	2.2 µF – 10 µF	1.5 µF – 3.3 µF	680 nF – 4.7 µF	470 nF – 1 µF	150 nF – 330 nF
6032 – 2.5	68 µF – 150 µF	15 µF – 100 µF	10 µF – 47 µF	6.8 µF – 22 µF	4.7 µF – 15 µF	2.2 µF – 15 µF	1.5 µF – 3.3 µF	470 nF – 1.5 µF
7343 – 2.8	150 µF – 330 µF	47 µF – 220 µF	33 µF – 220 µF	22 µF – 68 µF	15 µF – 47 µF	10 µF – 22 µF	4.7 µF – 15 µF	2.2 µF – 4.7 µF
7343 – 4	330 µF – 470 µF	100 µF – 330 µF	68 µF – 220 µF	47 µF – 100 µF	33 µF – 47 µF	22 µF	10 µF – 22 µF	4.7 µF

### Automotive Grade

#### T489 Series Automotive Grade Low DC Leakage MnO<sub>2</sub>

Capacitance Range: 0.10 to 470 µF • Temperature Range: -55°C to +125°C



T	489	B	156	M	16	A	T	A800	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	C-Spec	Packaging (C-Spec)
T = Tantalum	Low DC Leakage Series	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% matte tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated	A = Automotive grade 800 = ESR value (800 = 800 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6	15 µF	2.2 µF – 10 µF	1 µF – 2.2 µF	1 µF – 3.3 µF	470 nF – 1 µF	100 nF – 1 µF	220 nF – 330 nF
3528 – 1.9	10 µF – 47 µF	6.8 µF – 33 µF	3.3 µF – 22 µF	3.3 µF – 10 µF	2.2 µF – 6.8 µF	1 µF – 3.3 µF	680 nF
6032 – 2.5	100 µF	33 µF – 100 µF	10 µF – 47 µF	6.8 µF – 33 µF	6.8 µF – 15 µF	3.3 µF – 10 µF	1 µF – 2.2 µF
7343 – 2.8	150 µF – 220 µF	47 µF – 220 µF	47 µF – 100 µF	22 µF – 68 µF	10 µF – 47 µF	6.8 µF – 22 µF	2.2 µF – 6.8 µF
7343 – 4	470 µF	330 µF	150 µF	100 µF			

### Automotive Grade (cont.)

#### T491 Series Automotive/Industrial Grade MnO<sub>2</sub>

Capacitance Range: 0.1 to 470 μF • Temperature Range: -55°C to +125°C



T	491	X	157	K	020	A	T	AUTO	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/ Design	Termination Finish	C-Spec 1	Packaging (C-Spec)
T = Tantalum	Industrial	A, B, C, D, E, S, T, U, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated* H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only) N = Non-magnetic 100% Tin (Sn) M = Non-magnetic (SnPb)	AUTO = Automotive Grade (AUTO = AEC-Q200 Certification)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3216 – 1.6	4.7 μF – 47 μF	2.2 μF – 68 μF	1 μF – 22 μF	1 μF – 10 μF	680 nF – 6.8 μF	330 nF – 3.3 μF	100 nF – 2.2 μF	100 nF – 220 nF
3528 – 1.9	33 μF	6.8 μF – 100 μF	2.2 μF – 68 μF	3.3 μF – 33 μF	2.2 μF – 10 μF	1 μF – 6.8 μF	470 nF – 4.7 μF	150 nF – 680 nF
6032 – 2.5	47 μF – 68 μF	15 μF – 220 μF	10 μF – 150 μF	4.7 μF – 68 μF	4.7 μF – 47 μF	2.2 μF – 33 μF	1.5 μF – 10 μF	470 nF – 1.5 μF
7260 – 3.6		330 μF – 470 μF	330 μF		100 μF		47 μF	
7343 – 2							6.8 μF – 10 μF	
7343 – 2.8		47 μF – 330 μF	33 μF – 330 μF	22 μF – 100 μF	15 μF – 47 μF	6.8 μF – 47 μF	4.7 μF – 22 μF	1.5 μF – 6.8 μF
7343 – 4		220 μF – 470 μF	150 μF – 470 μF	100 μF – 150 μF	47 μF – 68 μF	33 μF – 68 μF	15 μF – 47 μF	6.8 μF – 10 μF

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# Tantalum Capacitors

## Surface Mount

### Automotive Grade (cont.)

#### T494 Series Automotive/Industrial Grade MnO<sub>2</sub>

Capacitance Range: 0.1 to 1,000 µF • Temperature Range: -55°C to +125°C



T	494	T	336	M	004	A	T	AUTO	
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	C-Spec 1	Packaging (C-Spec)
T = Tantalum	Industrial - Low ESR	A, B, C, D, E, S, T, U, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 003 = 3 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only)	AUTO = Automotive Grade (AUTO = AEC-Q200 Certification)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6	2.2 µF – 68 µF	1.5 µF – 22 µF	1 µF – 10 µF	680 nF – 6.8 µF	330 nF – 3.3 µF	100 nF – 1 µF	100 nF – 220 nF
3528 – 1.9	6.8 µF – 68 µF	2.2 µF – 47 µF	3.3 µF – 22 µF	2.2 µF – 6.8 µF	1 µF – 6.8 µF	470 nF – 1.5 µF	150 nF – 680 nF
6032 – 2.5	15 µF – 150 µF	10 µF – 100 µF	4.7 µF – 47 µF	4.7 µF – 15 µF	2.2 µF – 22 µF	1.5 µF – 4.7 µF	470 nF – 1.5 µF
7260 – 3.6	330 µF – 47 µF	330 µF		100 µF		47 µF	
7343 – 2						10 µF	
7343 – 2.8	47 µF – 330 µF	33 µF – 220 µF	22 µF – 100 µF	15 µF – 47 µF	6.8 µF – 47 µF	4.7 µF – 15 µF	1.5 µF – 6.8 µF
7343 – 4	220 µF – 470 µF	150 µF – 330 µF	100 µF – 150 µF	47 µF – 68 µF	33 µF – 68 µF	15 µF – 33 µF	6.8 µF

#### T495 Series Automotive Grade Surge Robust MnO<sub>2</sub>

Capacitance Range: 0.1 to 1,000 µF • Temperature Range: -55°C to +125°C



T	495	X	107	M	010	A	T	A080	
Capacitor Class	Series	Case Size	Capacitance Code (µF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	Surge Robust Low ESR	A, B, C, D, E, T, V, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	2R5 = 2.5 004 = 4 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated H = Standard solder coated (SnPb 5% Pb minimum) G = Gold plated (A, B, C, D, X only) N = Non-magnetic 100% Tin (Sn) M = Non-magnetic (SnPb)	A = AUTO grade product 080 = Maximum ESR in mΩ at room temperature (80 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6	2.2 µF – 33 µF	1.5 µF – 22 µF	1 µF – 15 µF	1 µF – 4.7 µF	1 µF	330 nF – 1 µF	
3528 – 1.9	10 µF – 100 µF	4.7 µF – 68 µF	3.3 µF – 33 µF	2.2 µF – 10 µF	1.5 µF – 10 µF	470 nF – 4.7 µF	
6032 – 2.5	22 µF – 220 µF	10 µF – 100 µF	10 µF – 68 µF	6.8 µF – 22 µF	2.2 µF – 22 µF	2.2 µF – 6.8 µF	470 nF – 1.5 µF
7343 – 2.8	68 µF – 470 µF	47 µF – 330 µF	22 µF – 150 µF	15 µF – 100 µF	10 µF – 68 µF	4.7 µF – 33 µF	2.2 µF – 6.8 µF
7343 – 4	150 µF – 680 µF	68 µF – 470 µF	68 µF – 220 µF	33 µF – 100 µF	15 µF – 100 µF	6.8 µF – 47 µF	4.7 µF – 15 µF

### Automotive Grade (cont.)

#### T498 Series Automotive Grade MnO<sub>2</sub> 150°C

Capacitance Range: 0.1 to 220 µF • Temperature Range: -55°C to +150°C



T	498	X	227	M	010	A	T	E500	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	High Temperature 150°C	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated* G = Gold plated H = Standard solder coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (500 = 500 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3216 – 1.6		2.2 µF – 10 µF	1.5 µF – 6.8 µF	1 µF – 6.8 µF	680 nF – 1.5 µF	470 nF – 1 µF	100 nF – 1 µF	100 nF
3528 – 1.9		6.8 µF – 33 µF	4.7 µF – 22 µF	3.3 µF – 10 µF	2.2 µF – 4.7 µF	1.5 µF – 2.2 µF	470 nF – 1 µF	150 nF – 330 nF
6032 – 2.5		15 µF – 68 µF	10 µF – 47 µF	6.8 µF – 47 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	1.5 µF – 4.7 µF	470 nF – 1 µF
7343 – 2.8	150 µF	47 µF – 150 µF	33 µF – 100 µF	22 µF – 68 µF	15 µF – 33 µF	6.8 µF – 33 µF	4.7 µF – 22 µF	1.5 µF – 10 µF
7343 – 4			150 µF – 220 µF				15 µF – 47 µF	6.8 µF – 10 µF

#### T499 Series Automotive Grade MnO<sub>2</sub> 175°C

Capacitance Range: 0.15 to 220 µF • Temperature Range: -55°C to +175°C



T	499	X	227	M	010	A	T	E500	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	High Temperature 175°C	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) plated G = Gold plated H = Standard solder coated (SnPb 5% Pb minimum)	E = ESR Last three digits specify ESR in mΩ (500 = 500 mΩ)	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage						
	6.3	10	16	20	25	35	50
3216 – 1.6		1.5 µF – 6.8 µF	1 µF – 6.8 µF	680 nF – 1.5 µF	470 nF – 1.5 µF	150 nF – 1 µF	
3528 – 1.9	10 µF – 33 µF	4.7 µF – 22 µF	3.3 µF – 10 µF	2.2 µF – 4.7 µF	2.2 µF	470 nF – 1 µF	
6032 – 2.5	22 µF – 47 µF	10 µF – 33 µF	6.8 µF – 22 µF	4.7 µF – 15 µF	3.3 µF – 10 µF	1.5 µF – 4.7 µF	
7343 – 2.8	100 µF	33 µF – 100 µF	22 µF – 47 µF	15 µF – 22 µF	6.8 µF – 33 µF	6.8 µF – 10 µF	3.3 µF – 10 µF
7343 – 4		220 µF	100 µF			22 µF – 33 µF	

# Tantalum Capacitors

## Surface Mount

### Automotive Grade (cont.)

#### T510 Series Automotive Grade Multiple Anode MnO<sub>2</sub>

Capacitance Range: 10 to 1,000  $\mu$ F • Temperature Range: -55°C to +125°C



T	510	X	477	M	006	A	T	A030	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR	Packaging (C-Spec)
T = Tantalum	Multiple Anode Low ESR	E, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Matte Tin (Sn) Plated* H = Standard Solder Coated (SnPb 5% Pb minimum) G = Gold Plated (A, B, C, D, X only)	A = AUTO grade product 030 = Maximum ESR in m $\Omega$ at room temperature (30m $\Omega$ )	Blank = 7" Reel 7280 = 13" Reel

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
7260 – 3.6	1 mF	680 $\mu$ F				100 $\mu$ F	47 $\mu$ F	
7343 – 4	680 $\mu$ F – 1 mF	470 $\mu$ F – 680 $\mu$ F	330 $\mu$ F	150 $\mu$ F – 220 $\mu$ F	100 $\mu$ F	68 $\mu$ F	22 $\mu$ F – 47 $\mu$ F	10 $\mu$ F – 22 $\mu$ F

#### T59x High Humidity/High Temperature Automotive Grade Polymer Electrolytic

Capacitance Range: 10 to 330  $\mu$ F • Temperature Range: -55°C to +105°C & -55°C to +125°C



T	598	D	107	M	010	A	T	E025
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Design	Termination Finish	ESR
T = Tantalum	591 = High Performance 598 = High Humidity/High Temperature	B, D, V	First two digits represent significant figures. Third digit specifies number of zeros.	M = $\pm$ 20%	2R5 = 2.5 006 = 6.3 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	A = N/A	T = 100% Tin (Sn)	Maximum ESR in m $\Omega$ , 025 = 25 m $\Omega$

#### T591

Case Size	Voltage							
	2.5	6.3	10	16	20	25	35	50
3528 – 1.9		33 $\mu$ F – 47 $\mu$ F	33 $\mu$ F – 47 $\mu$ F					
7343 – 2	220 $\mu$ F – 330 $\mu$ F	150 $\mu$ F	100 $\mu$ F				10 $\mu$ F	
7343 – 2.8		330 $\mu$ F	100 $\mu$ F – 220 $\mu$ F	47 $\mu$ F – 100 $\mu$ F	47 $\mu$ F	22 $\mu$ F – 33 $\mu$ F	10 $\mu$ F	10 $\mu$ F

#### T598

Case Size	Voltage		
	6.3	10	16
3528 – 1.9		47 $\mu$ F	
7343 – 2.8	330 $\mu$ F	100 $\mu$ F – 220 $\mu$ F	100 $\mu$ F

### Space Grade

#### T493 Series Space Grade (COTS) MnO<sub>2</sub> (CWR11 Style)

Capacitance Range: 0.1 to 330 μF • Temperature Range: -55°C to +125°C



T	493	D	227	K	006	C	H	61	2	A
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/Design	Lead Material	Surge	ESR	Testing
T = Tantalum	CRW11 Style Space Grade	A, B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	004 = 4 V 006 = 6.3 V 010 = 10 V 016 = 16 V 020 = 20 V 025 = 25 V 035 = 35 V 050 = 50 V	C = .01%/1,000 hours	C = Hot Solder Dipped H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated K = Solder Fused T = 100% Tin	61 = None 62 = 10 Cycles after Weibull, 25 C and 85 C 63 = 10 Cycles, after Weibull, -55 C and 85 C 64 = 10 Cycles before Weibull, -55 C and 85 C 65 = 10 Cycles Before and After Weibull, -55 C and 85 C	1 = ESR - Standard 2 = ESR - Low	A = Option A B = Option B C = Option C

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3216 – 1.6	2.2 μF – 22 μF	1.5 μF – 15 μF	1 μF – 10 μF	680 nF – 2.2 μF	470 nF – 1 μF	330 nF – 1.5 μF	100 nF – 680 nF	100 nF – 150 nF
3528 – 1.9	6.8 μF – 68 μF	4.7 μF – 47 μF	3.3 μF – 22 μF	3.3 μF – 6.8 μF	1.5 μF – 3.3 μF	680 nF – 3.3 μF	470 nF – 2.2 μF	150 nF – 470 nF
6032 – 2.5	22 μF – 150 μF	15 μF – 100 μF	10 μF – 68 μF	6.8 μF – 22 μF	4.7 μF – 15 μF	2.2 μF – 15 μF	1.5 μF – 4.7 μF	470 nF – 2.2 μF
7343 – 2.8	68 μF – 330 μF	47 μF – 330 μF	33 μF – 220 μF	22 μF – 68 μF	15 μF – 33 μF	6.8 μF – 22 μF	4.7 μF – 15 μF	1.5 μF – 4.7 μF
7343 – 4	330 μF	220 μF – 330 μF	68 μF – 330 μF	100 μF	47 μF – 68 μF	15 μF – 33 μF	10 μF – 22 μF	4.7 μF – 10 μF

#### T496 Series Space Grade Fail-Safe Fused MnO<sub>2</sub>

Capacitance Range: 0.15 to 470 μF • Temperature Range: -55°C to +125°C



T	496	X	227	M	010	C	T	61	2	A
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/Design	Lead Material	Surge	ESR	Testing
T = Tantalum	Fail-Safe - Space Grade	B, C, D, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 V 006 = 6.3 V 010 = 10 V 016 = 16 V 020 = 20 V 025 = 25 V 035 = 35 V 050 = 50 V	C = 0.01%/1,000 hours	C = Hot Solder Dipped T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum)	61 = None 62 = 10 Cycles after Weibull, 25 C 63 = 10 Cycles, after Weibull, -55 C and 85 C 64 = 10 Cycles before Weibull, -55 C and 85 C 65 = 10 Cycles Before and After Weibull, -55 C and 85 C	1 = ESR - Standard 2 = ESR - Low	A = Option A B = Option B C = Option C

Case Size	Voltage							
	4	6.3	10	16	20	25	35	50
3528 – 1.9		4.7 μF – 22 μF	3.3 μF – 15 μF	2.2 μF – 4.7 μF	1.5 μF – 2.2 μF	680 nF – 4.7 μF	470 nF – 1 μF	150 nF – 330 nF
6032 – 2.5	68 μF – 150 μF	15 μF – 100 μF	10 μF – 47 μF	6.8 μF – 22 μF	4.7 μF – 15 μF	2.2 μF – 15 μF	1.5 μF – 3.3 μF	470 nF – 1.5 μF
7343 – 2.8	150 μF – 330 μF	47 μF – 220 μF	33 μF – 150 μF	22 μF – 68 μF	15 μF – 33 μF	10 μF – 22 μF	4.7 μF – 15 μF	2.2 μF – 4.7 μF
7343 – 4	330 μF – 470 μF	100 μF – 330 μF	68 μF – 220 μF	47 μF	33 μF	22 μF	10 μF – 15 μF	4.7 μF

# Tantalum Capacitors

## Surface Mount

### Space Grade (cont.)

#### T497 Series Space Grade (COTS) MnO<sub>2</sub> (CWR09/19/29 Style)

Capacitance Range: 0.1 to 150 µF Temperature Range: -55°C to +125°C



T	497	G	226	K	020	C	H	61	2	A
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/Design	Lead Material	Surge	ESR	Testing
T = Tantalum	High Grade - Space Grade	A, B, C, D, E, F, G, H, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 V 006 = 6.3 V 010 = 10 V 015 = 15 V 020 = 20 V 025 = 25 V 035 = 35 V 050 = 50 V	C = 0.01%/1,000 hours	C = Hot Solder Dipped T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum) B = Gold Plated	61 = None 62 = 10 Cycles after Weibull, 25 C 63 = 10 Cycles, after Weibull, -55 C and 85 C 64 = 10 Cycles before Weibull, -55 C and 85 C 65 = 10 Cycles Before and After Weibull, -55 C and 85 C	1 = ESR - Standard 2 = ESR - Low	A = Option A B = Option B C = Option C

Case Size	Voltage							
	4	6.3	10	15	20	25	35	50
2513 - 1.27	2.2 µF - 6.8 µF	1.5 µF - 4.7 µF	1 µF - 3.3 µF	680 nF - 2.2 µF	470 nF			100 nF
3813 - 1.27	4.7 µF - 15 µF	3.3 µF - 15 µF	2.2 µF - 6.8 µF	1.5 µF	680 nF - 1 µF	680 nF - 1 µF	470 nF	220 nF - 330 nF
3825 - 1.27	10 µF - 33 µF	6.8 µF - 22 µF	4.7 µF - 15 µF	3.3 µF - 6.8 µF	2.2 µF - 3.3 µF	1.5 µF - 2.2 µF	1 µF	680 nF
5113 - 1.27	6.8 µF	4.7 µF	3.3 µF - 10 µF	2.2 µF	1.5 µF	1 µF	680 nF	470 nF
5125 - 1.27	15 µF - 68 µF	10 µF - 33 µF	6.8 µF - 15 µF	4.7 µF - 6.8 µF	3.3 µF - 6.8 µF	2.2 µF - 3.3 µF	1.5 µF	1 µF
5634 - 1.78	33 µF - 100 µF	22 µF - 68 µF	15 µF - 47 µF	10 µF - 33 µF	6.8 µF - 10 µF	4.7 µF - 6.8 µF	3.3 µF	1.5 µF - 2.2 µF
6728 - 2.79	68 µF - 150 µF	47 µF - 150 µF	33 µF - 100 µF	22 µF - 47 µF	15 µF - 22 µF	6.8 µF - 22 µF	4.7 µF	3.3 µF
6954 - 2.74			150 µF		47 µF	22 µF - 33 µF	15 µF	
7238 - 2.79	100 µF - 330 µF	68 µF - 330 µF	47 µF - 220 µF	33 µF - 68 µF	22 µF - 33 µF	15 µF - 33 µF	6.8 µF - 10 µF	4.7 µF

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### Space Grade (cont.)

#### T510 Series Space Grade Multiple Anode MnO<sub>2</sub>

Capacitance Range: 10 to 1,000 µF • Temperature Range: -55°C to +125°C



T	510	X	477	M	006	C	T	61	1	A
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Failure Rate/Design	Lead Material	Surge	ESR	Testing
T = Tantalum	Ultra Low ESR - Space Grade	E, X	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	004 = 4 V 006 = 6.3 V 010 = 10 V	C = 0.01%/1,000 hours	C = Hot Solder Dipped T = 100% Matte Tin (Sn) Plated H = Standard Solder Coated (SnPb 5% Pb minimum)	61 = None 62 = 10 Cycles after Weibull, 25 C 63 = 10 Cycles, after Weibull, -55 C and 85 C 64 = 10 Cycles before Weibull, -55 C and 85 C 65 = 10 Cycles Before and After Weibull, -55 C and 85 C	1 = ESR - Standard	A = Option A B = Option B C = Option C

Case Size	Voltage		
	4	6.3	10
7260 – 3.6		680 µF	
7343 – 4	1 mF		330 µF

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# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial

### T110 Series MIL-PRF-39003 Polar Type & T212 (CSR13 Style)

Capacitance Range: 0.0047 to 330  $\mu$ F • Temperature Range: -55°C to +125°C



T	110	A	105	K	050	A	T	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	006 = 6 1 1 015 = 15 02 = 20 35 35 050 = 50 060 = 60 075 = 75 100 = 100 125 = 125	A = N/A	T = 100% Tin S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo

### T212 (CSR13 Style)

T	212	A	105	K	050	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Military grade capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = "A" surge current 4251 = "B" surge current 4252 = "C" surge current

### MIL-PRF-39003

M39003	/01	6003	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T110

Case Size	Voltage					
	6	10	15	20	25	35
3.18 x 6.35	2.2 $\mu$ F – 6.8 $\mu$ F	1 $\mu$ F – 4.7 $\mu$ F	330 nF – 3.3 $\mu$ F	47 nF – 2.2 $\mu$ F		4.7 nF – 1 $\mu$ F
3.43 x 7.26	2.2 $\mu$ F – 6.8 $\mu$ F	1 $\mu$ F – 4.7 $\mu$ F	330 nF – 3.3 $\mu$ F	47 nF – 2.2 $\mu$ F		4.7 nF – 1 $\mu$ F
4.45 x 11.13	8.2 $\mu$ F – 56 $\mu$ F	5.6 $\mu$ F – 39 $\mu$ F	3.9 $\mu$ F – 22 $\mu$ F	2.7 $\mu$ F – 15 $\mu$ F	10 $\mu$ F	1.2 $\mu$ F – 6.8 $\mu$ F
4.7 x 12.04	8.2 $\mu$ F – 56 $\mu$ F	5.6 $\mu$ F – 39 $\mu$ F	3.9 $\mu$ F – 22 $\mu$ F	2.7 $\mu$ F – 15 $\mu$ F	10 $\mu$ F	1.2 $\mu$ F – 6.8 $\mu$ F

### T110 (cont.)

Case Size	Voltage				
	50	60	75	100	125
3.18 x 6.35	4.7 nF – 1 $\mu$ F	4.7 nF – 680 nF	4.7 nF – 680 nF	4.7 nF – 560 nF	4.7 nF – 330 nF
3.43 x 7.26	4.7 nF – 1 $\mu$ F	4.7 nF – 680 nF	4.7 nF – 680 nF	4.7 nF – 560 nF	4.7 nF – 330 nF
4.45 x 11.13	1.2 $\mu$ F – 4.7 $\mu$ F	820 nF – 3.9 $\mu$ F	820 nF – 3.9 $\mu$ F	680 nF – 2.7 $\mu$ F	390 nF – 2.2 $\mu$ F
4.7 x 12.04	1.2 $\mu$ F – 4.7 $\mu$ F	820 nF – 3.9 $\mu$ F	820 nF – 3.9 $\mu$ F	680 nF – 2.7 $\mu$ F	390 nF – 2.2 $\mu$ F

## Hermetically Sealed Axial (cont.)

### T110 Series MIL-PRF-39003 Polar Type & T212 (CSR13 Style) (cont.)

Capacitance Range: 0.0047 to 330  $\mu$ F • Temperature Range: -55°C to +125°C



T	110	A	105	K	050	A	T	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	006 = 6 1 = 1 015 = 15 02 = 20 35 = 35 050 = 50 060 = 60 075 = 75 100 = 100 125 = 125	A = N/A	T = 100% Tin S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo

### T212 (CSR13 Style)

T	212	A	105	K	050	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Military grade capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10% M = $\pm$ 20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = "A" surge current 4251 = "B" surge current 4252 = "C" surge current

### MIL-PRF-39003

M39003	/01	6003	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T212 (CSR13 Style)

Case Size	Voltage							
	6	10	15	20	35	50	75	100
3.18 x 6.35	5.6 $\mu$ F - 6.8 $\mu$ F	3.9 $\mu$ F - 4.7 $\mu$ F	2.7 $\mu$ F - 3.3 $\mu$ F	1.2 $\mu$ F - 2.2 $\mu$ F		4.7 nF - 1 $\mu$ F	100 nF - 680 nF	4.7 nF - 560 nF
3.43 x 7.26	5.6 $\mu$ F - 6.8 $\mu$ F	3.9 $\mu$ F - 4.7 $\mu$ F	2.7 $\mu$ F - 3.3 $\mu$ F	1.2 $\mu$ F - 2.2 $\mu$ F		4.7 nF - 1 $\mu$ F	100 nF - 680 nF	4.7 nF - 560 nF
4.45 x 11.13	47 $\mu$ F - 56 $\mu$ F	27 $\mu$ F - 39 $\mu$ F	18 $\mu$ F - 22 $\mu$ F	8.2 $\mu$ F - 15 $\mu$ F	5.6 $\mu$ F - 6.8 $\mu$ F	1.2 $\mu$ F - 4.7 $\mu$ F	820 nF - 3.9 $\mu$ F	680 nF - 2.7 $\mu$ F
4.7 x 12.04	47 $\mu$ F - 56 $\mu$ F	27 $\mu$ F - 39 $\mu$ F	18 $\mu$ F - 22 $\mu$ F	8.2 $\mu$ F - 15 $\mu$ F	5.6 $\mu$ F - 6.8 $\mu$ F	1.2 $\mu$ F - 4.7 $\mu$ F	820 nF - 3.9 $\mu$ F	680 nF - 2.7 $\mu$ F



# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont.)

### T111 Series MIL-PRF-39003 Non-Polar & T213 (CSR91 Style)

Capacitance Range: 0.0023 to 160  $\mu$ F Temperature Range: -55°C to +125°C



T	111	A	105	K	050	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	06 = 6 10 = 10 15 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	A = N/A	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified.

### T213 (CSR91 Style)

T	213	A	115	K	020	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Military grade capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours Exponential: G = 1.0 %/k hours M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = "A" surge current 4251 = "B" surge current 4252 = "C" surge current

### MIL-PRF-39003

M39003	/04	3007	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T111

Case Size	Voltage							
	6	10	15	20	35	50	75	100
4.09 x 14.61	2.8 $\mu$ F - 3.4 $\mu$ F	1.9 $\mu$ F - 2.3 $\mu$ F	1.3 $\mu$ F - 1.6 $\mu$ F	600 nF - 1.1 $\mu$ F		2.3 nF - 500 nF	340 nF	2.3 nF - 280 nF
5.26 x 24.26	23 $\mu$ F - 28 $\mu$ F	13 $\mu$ F - 19 $\mu$ F	9 $\mu$ F - 11 $\mu$ F	4.1 $\mu$ F - 7.5 $\mu$ F	2.8 $\mu$ F - 3.4 $\mu$ F	600 nF - 2.3 $\mu$ F	410 nF - 1.9 $\mu$ F	340 nF - 1.3 $\mu$ F
7.98 x 34.29	75 $\mu$ F - 90 $\mu$ F	41 $\mu$ F - 60 $\mu$ F	28 $\mu$ F - 34 $\mu$ F	13 $\mu$ F - 23 $\mu$ F	11 $\mu$ F	2.8 $\mu$ F - 9 $\mu$ F	2.3 $\mu$ F - 5 $\mu$ F	
9.55 x 39.37	130 $\mu$ F - 160 $\mu$ F	90 $\mu$ F - 110 $\mu$ F	60 $\mu$ F - 75 $\mu$ F	28 $\mu$ F - 50 $\mu$ F	13 $\mu$ F - 23 $\mu$ F	11 $\mu$ F	6 $\mu$ F - 7.5 $\mu$ F	

## Hermetically Sealed Axial (cont.)

### T111 Series MIL-PRF-39003 Non-Polar & T213 (CSR91 Style) (cont.)

Capacitance Range: 0.0023 to 160  $\mu$ F T mperature Range: -55°C to +125°C



T	111	A	105	K	050	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	06 = 6 10 = 10 15 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	A = N/A	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified.

### T213 (CSR91 Style)

T	213	A	115	K	020	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Military grade capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours Exponential: G = 1.0 %/k hours M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = "A" surge current 4251 = "B" surge current 4252 = "C" surge current

### MIL-PRF-39003

M39003	/04	3007	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T213 (CSR91 Style)

Case Size	Voltage							
	6	10	15	20	35	50	75	100
3.73 x 14.35	2.8 $\mu$ F - 3.4 $\mu$ F	1.9 $\mu$ F - 2.3 $\mu$ F	1.3 $\mu$ F - 1.6 $\mu$ F	600 nF - 1.1 $\mu$ F		2.3 nF - 500 nF	340 nF	2.3 nF - 280 nF
4.09 x 14.61	2.8 $\mu$ F - 3.4 $\mu$ F	1.9 $\mu$ F - 2.3 $\mu$ F	1.3 $\mu$ F - 1.6 $\mu$ F	600 nF - 1.1 $\mu$ F		2.3 nF - 500 nF	340 nF	2.3 nF - 280 nF
4.93 x 23.27	23 $\mu$ F - 28 $\mu$ F	13 $\mu$ F - 19 $\mu$ F	9 $\mu$ F - 11 $\mu$ F	4.1 $\mu$ F - 7.5 $\mu$ F	2.8 $\mu$ F - 3.4 $\mu$ F	600 nF - 2.3 $\mu$ F	410 nF - 1.9 $\mu$ F	340 nF - 1.3 $\mu$ F
5.26 x 24.26	23 $\mu$ F - 28 $\mu$ F	13 $\mu$ F - 19 $\mu$ F	9 $\mu$ F - 11 $\mu$ F	4.1 $\mu$ F - 7.5 $\mu$ F	2.8 $\mu$ F - 3.4 $\mu$ F	600 nF - 2.3 $\mu$ F	410 nF - 1.9 $\mu$ F	340 nF - 1.3 $\mu$ F

# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont)

### T140 Series MIL-PRF-39003 Polar Type & T242 (CSR23 Style)

Capacitance Range: 0.82 to 1,200  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	140	A	105	K	050	A	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 030 = 30 035 = 35 060 = 60 050 = 50 060 = 60	A = N/A	S = Standard (Sn/Pb) T = 100% Tin	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### T242 (CSR23 Style)

T	242	A	105	K	050	A	S	C
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	T242 = CSR23	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 030 = 30 035 = 35 060 = 60 5 5 060 = 60	Graded: B = .1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours R = .1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	All capacitors are sleeved unless specified 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### MIL-PRF-39003

M39003	/03	3075	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T140

Case Size	Voltage							
	6	10	15	20	30	35	50	60
3.18 x 6.35	8.2 $\mu\text{F}$ - 12 $\mu\text{F}$	5.6 $\mu\text{F}$ - 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ - 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ - 3.9 $\mu\text{F}$	1.2 $\mu\text{F}$ - 2.7 $\mu\text{F}$	1.2 $\mu\text{F}$ - 1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ - 1.5 $\mu\text{F}$	820 nF - 1 $\mu\text{F}$
3.43 x 7.26	8.2 $\mu\text{F}$ - 12 $\mu\text{F}$	5.6 $\mu\text{F}$ - 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ - 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ - 3.9 $\mu\text{F}$	1.2 $\mu\text{F}$ - 2.7 $\mu\text{F}$	1.2 $\mu\text{F}$ - 1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ - 1.5 $\mu\text{F}$	820 nF - 1 $\mu\text{F}$
4.45 x 11.13	68 $\mu\text{F}$ - 100 $\mu\text{F}$	47 $\mu\text{F}$ - 82 $\mu\text{F}$	27 $\mu\text{F}$ - 39 $\mu\text{F}$	18 $\mu\text{F}$ - 27 $\mu\text{F}$	12 $\mu\text{F}$ - 18 $\mu\text{F}$	8.2 $\mu\text{F}$ - 10 $\mu\text{F}$	5.6 $\mu\text{F}$ - 6.8 $\mu\text{F}$	4.7 $\mu\text{F}$ - 5.6 $\mu\text{F}$
4.7 x 12.04	68 $\mu\text{F}$ - 100 $\mu\text{F}$	47 $\mu\text{F}$ - 82 $\mu\text{F}$	27 $\mu\text{F}$ - 39 $\mu\text{F}$	18 $\mu\text{F}$ - 27 $\mu\text{F}$	12 $\mu\text{F}$ - 18 $\mu\text{F}$	8.2 $\mu\text{F}$ - 10 $\mu\text{F}$	5.6 $\mu\text{F}$ - 6.8 $\mu\text{F}$	4.7 $\mu\text{F}$ - 5.6 $\mu\text{F}$

## Hermetically Sealed Axial (cont.)

### T140 Series MIL-PRF-39003 Polar Type & T242 (CSR23 Style) (cont.)

Capacitance Range: 0.82 to 1,200  $\mu$ F • Temperature Range: -55°C to +125°C



T	140	A	105	K	050	A	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Capacitor	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	006 = 6 010 = 10 015 = 15 020 = 20 030 = 30 035 = 35 060 = 60 050 = 50 060 = 60	A = N/A	S = Standard (Sn/Pb) T = 100% Tin	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### T242 (CSR23 Style)

T	242	A	105	K	050	A	S	C
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	T242 = CSR23	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm$ 10% M = $\pm$ 20%	006 = 6 0 0 015 = 15 020 = 20 0 0 035 = 35 060 = 60 5 5 060 = 60	Graded: B = .1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours .1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	All capacitors are sleeved unless specified 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### MIL-PRF-39003

M39003	/03	3075	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

### T242 (CSR23 Style)

Case Size	Voltage					
	6	10	15	20	35	50
3.18 x 6.35	10 $\mu$ F – 12 $\mu$ F	6.8 $\mu$ F – 8.2 $\mu$ F	4.7 $\mu$ F – 5.6 $\mu$ F	2.7 $\mu$ F – 3.9 $\mu$ F	1.8 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F
3.43 x 7.26	10 $\mu$ F – 12 $\mu$ F	6.8 $\mu$ F – 8.2 $\mu$ F	4.7 $\mu$ F – 5.6 $\mu$ F	2.7 $\mu$ F – 3.9 $\mu$ F	1.8 $\mu$ F	1.2 $\mu$ F – 1.5 $\mu$ F
4.45 x 11.13	100 $\mu$ F	47 $\mu$ F – 82 $\mu$ F	33 $\mu$ F – 39 $\mu$ F	18 $\mu$ F – 27 $\mu$ F	8.2 $\mu$ F – 10 $\mu$ F	5.6 $\mu$ F – 6.8 $\mu$ F
4.7 x 12.04	100 $\mu$ F	47 $\mu$ F – 82 $\mu$ F	33 $\mu$ F – 39 $\mu$ F	18 $\mu$ F – 27 $\mu$ F	8.2 $\mu$ F – 10 $\mu$ F	5.6 $\mu$ F – 6.8 $\mu$ F

# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont.)

### T210/T240/GR500 Series High Reliability

Capacitance Range: 0.0047 to 330  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	210	A	105	K	050	R	S
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish
T = Tantalum	210 = GR500/J (KEMET) High Reliability, Solid Electrolyte, Graded, Hermetic Seal, Axial Lead, Polar	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros to follow.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50 075 = 75 100 = 100	M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Solder-coated nickel)

### T210

Case Size	Voltage							
	6	10	15	20	35	50	75	100
3.43 x 7.26	3.9 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$	4.7 nF – 1 $\mu\text{F}$	4.7 nF – 680 nF	4.7 nF – 560 nF
4.7 x 12.04	27 $\mu\text{F}$ – 56 $\mu\text{F}$	12 $\mu\text{F}$ – 39 $\mu\text{F}$	5.6 $\mu\text{F}$ – 22 $\mu\text{F}$	4.7 $\mu\text{F}$ – 15 $\mu\text{F}$	2.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 3.9 $\mu\text{F}$	680 nF – 2.7 $\mu\text{F}$
7.34 x 17.42	82 $\mu\text{F}$ – 180 $\mu\text{F}$	47 $\mu\text{F}$ – 120 $\mu\text{F}$	27 $\mu\text{F}$ – 68 $\mu\text{F}$	18 $\mu\text{F}$ – 47 $\mu\text{F}$	8.2 $\mu\text{F}$ – 22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 18 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$
8.92 x 19.96	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 100 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$

### T240

Case Size	Voltage							
	6	10	15	20	30	35	50	60
3.43 x 7.26	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	820 nF – 1 $\mu\text{F}$
4.7 x 12.04	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	27 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	12 $\mu\text{F}$ – 18 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$
7.34 x 17.42	220 $\mu\text{F}$ – 470 $\mu\text{F}$	150 $\mu\text{F}$ – 270 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	56 $\mu\text{F}$ – 120 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$
8.92 x 19.96	680 $\mu\text{F}$ – 1 mF	330 $\mu\text{F}$ – 560 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$

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## Hermetically Sealed Axial (cont.)

### T215 Series High Temperature Solder (CSR13 Style)

Capacitance Range: 0.0047 to 330  $\mu\text{F}$  Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	215	A	105	K	050	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial High Temperature Solder	A, B, C, D	First two digits represent significant figures Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 01 = 1 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0 %/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, 55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### CSR13 Style

M39003	/01	6003	E
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	D = C-4250 E = C-4251 F = C-4252 H = No C-Spec

Case Size	Voltage							
	6	10	15	20	35	50	75	100
3.43 x 7.26	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$		4.7 nF – 1 $\mu\text{F}$	100 nF – 680 nF	4.7 nF – 560 nF
4.7 x 12.04	47 $\mu\text{F}$ – 56 $\mu\text{F}$	27 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 3.9 $\mu\text{F}$	680 nF – 2.7 $\mu\text{F}$
7.34 x 17.42	150 $\mu\text{F}$ – 180 $\mu\text{F}$	82 $\mu\text{F}$ – 120 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 18 $\mu\text{F}$	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$
8.92 x 19.96	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 100 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	

# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont.)

### T216 Series MIL-PRF-39003 (CSS13 Style) and T256 (CSS33 Style)

Capacitance Range: CSS13: 0.12 to 330  $\mu\text{F}$ , CSS33: 1.2 to 1,000  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	216	A	106	K	050	C	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	C-Spec
T = Tantalum	216 (MIL-C-39003/10, CSS13)  256 (MIL-C-39003/10, CSS33)	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75	Graded: B = 0.1%/k hours C = 0.01%/k hours	S = Standard (Solder-coated nickel)	Blank = Sleeved 0100 = Unsleeved 7200 = Tape & Reel 7200 = Tape & Reel 7293 & 7443 = Ammo

### CSS13 Style

M39003	/10	2049	S
Capacitor Class	Slash	Dash Number	Sleeve
Military Specification Number	Specification Sheet Number	Failure Rate Level	S = Sleeved U = Unsleeved use C - 0100

### CSS33 Style

M39003	/10	2549	S
Capacitor Class	Slash	Dash Number	Sleeve
Military Specification Number	Specification Sheet Number	Failure Rate Level	S = Sleeved U = Unsleeved use C - 0100

### T216 (CSS13 Style)

Case Size	Voltage						
	6	10	15	20	35	50	75
3.18 x 6.35	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$		120 nF – 820 nF	150 nF – 680 nF
3.43 x 7.26	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$		120 nF – 820 nF	150 nF – 680 nF
4.45 x 11.13	47 $\mu\text{F}$ – 56 $\mu\text{F}$	27 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 3.9 $\mu\text{F}$
4.7 x 12.04	47 $\mu\text{F}$ – 56 $\mu\text{F}$	27 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1 $\mu\text{F}$ – 4.7 $\mu\text{F}$	820 nF – 3.9 $\mu\text{F}$

### T256 (CSS33 Style)

Case Size	Voltage						
	6	10	15	20	35	50	
3.18 x 6.35	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	
3.43 x 7.26	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	
4.45 x 11.13	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	
4.7 x 12.04	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	

## Hermetically Sealed Axial (cont.)

### T222 Series MIL-PRF-39003 Polar Miniature (CSR09 Style)

Capacitance Range: 0.047 to 18  $\mu$ F • Temperature Range: -55°C to +125°C



T	222	A	225	K	010	B	S	C
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu$ F)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	T222 (CSR09)	A, B	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm$ 5% K = $\pm$ 10%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard Positive: Alloy 52 (solder-coated) Negative: Solder-coated nickel	All capacitors are sleeved unless specified. 7200 = Tape & Reel 7293 & 7443 = Ammo

### CSR09 Style

M39003	/02	2061	D
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	D = C-4250 E = C-4251 F = C-4252 H = No C-Spec

Case Size	Voltage						
	6	10	15	20	35	50	75
2.29 x 6.35	2.7 $\mu$ F	1.8 $\mu$ F – 2.2 $\mu$ F	1 $\mu$ F – 1.5 $\mu$ F	560 nF – 1 $\mu$ F	330 nF – 470 nF	220 nF – 270 nF	47 nF – 180 nF
3.51 x 9.91	18 $\mu$ F	10 $\mu$ F – 15 $\mu$ F	8.2 $\mu$ F	3.3 $\mu$ F – 6.8 $\mu$ F	2.2 $\mu$ F – 2.7 $\mu$ F	1.5 $\mu$ F – 1.8 $\mu$ F	220 nF – 1.2 $\mu$ F

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# Tantalum Capacitors

## Through-Hole

### Hermetically Sealed Axial (cont.)

#### T225 Series High Temperature Solder (CSR09 Style)

Capacitance Range: 0.047 to 18  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	225	A	225	K	010	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial High Temperature Solder	A, B	First two digits represent significant figures. Third digit specifies number of zeros to follow.	J = $\pm 5\%$ K = $\pm 10\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001% k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

#### CSR09 Style

M39003	/02	3036	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank - No surge

Case Size	Voltage						
	6	10	15	20	35	50	75
2.16 x 6.22	2.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	330 nF – 470 nF	220 nF – 270 nF	47 nF – 180 nF
2.29 x 6.35	2.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	560 nF – 1 $\mu\text{F}$	330 nF – 470 nF	220 nF – 270 nF	47 nF – 180 nF

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## Hermetically Sealed Axial (cont.)

### T245 Series High Temperature Solder (CSR23 Style)

Capacitance Range: 1.2 to 1,000  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	245	A	105	K	050	A	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial High Temperature Solder	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001% k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### CSR23 Style

M39003	/03	3075	E
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	D = C-4250 E = C-4251 F = C-4252 H = No C-Spec

Case Size	Voltage					
	6	10	15	20	35	50
3.43 x 7.26	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
4.7 x 12.04	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$
7.34 x 17.42	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 270 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	56 $\mu\text{F}$ – 120 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$
8.92 x 19.96	680 $\mu\text{F}$ – 1 mF	390 $\mu\text{F}$ – 560 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$

# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont.)

### T252 Series MIL-PRF-39003 (CSR33 Style)

Capacitance Range: 1.2 to 1,000  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	252	A	125	K	050	M	S	C
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	252 (CSR33)	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	All capacitors are sleeved unless specified 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = 10 cycles, 25 C after Weibull 4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

### CSR33 Style

M39003	/06	4073	B
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	B = C-4251 C = C-4252

Case Size	Voltage					
	6	10	15	20	35	50
3.18 x 6.35	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
3.43 x 7.26	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
4.45 x 11.13	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$
4.7 x 12.04	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$

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## Hermetically Sealed Axial (cont.)

### T255 Series High Temperature Solder (CSR33 Style)

Capacitance Range: 1.2 to 1,000  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	255	A	125	K	050	M	S	C
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial High Temperature Solder	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros to follow.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard	4251 = 10 cycles, -55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull 7200 = Tape & Reel 7293 & 7443 = Ammo

### CSR33 Style

M39003	/06	4073	H
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	E = C-4251 F = C-4252 H = Hi Temp Solder Only

Case Size	Voltage					
	6	10	15	20	35	50
3.43 x 7.26	10 $\mu\text{F}$ – 12 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$	4.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.9 $\mu\text{F}$	1.8 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$
4.7 x 12.04	100 $\mu\text{F}$	47 $\mu\text{F}$ – 82 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$	18 $\mu\text{F}$ – 27 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$
7.34 x 17.42	330 $\mu\text{F}$ – 470 $\mu\text{F}$	220 $\mu\text{F}$ – 270 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	56 $\mu\text{F}$ – 120 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 27 $\mu\text{F}$
8.92 x 19.96	680 $\mu\text{F}$ – 1 mF	390 $\mu\text{F}$ – 560 $\mu\text{F}$	220 $\mu\text{F}$ – 330 $\mu\text{F}$	150 $\mu\text{F}$ – 180 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 39 $\mu\text{F}$

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# Tantalum Capacitors

## Through-Hole

### Hermetically Sealed Axial (cont.)

#### T262 Series MIL-PRF-39003 (CSR21 Style)

Capacitance Range: 5.6 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	262	C	106	K	050	C	C
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish
T = Tantalum	Hermetically Sealed Axial Capacitor	C, D	First two digits represent significant figures. Third digit specifies number of zeros.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4251 = 10 cycles, 55 & 85 C after Weibull 4252 = 10 cycles, -55 & 85 C before Weibull

#### CSR21 Style

M39003	/09	3074	B
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	B = C-4251 C = C-4252

Case Size	Voltage					
	6	10	15	20	35	50
7.09 x 16.51	150 $\mu\text{F}$ – 180 $\mu\text{F}$	82 $\mu\text{F}$ – 120 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 18 $\mu\text{F}$
7.34 x 17.42	150 $\mu\text{F}$ – 180 $\mu\text{F}$	82 $\mu\text{F}$ – 120 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 18 $\mu\text{F}$

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## Hermetically Sealed Axial (cont.)

### T550 Series Polymer Hermetic Seal (PHS) 105°C & DLA Series

Capacitance Range: 20 to 820  $\mu\text{F}$  • Temperature Range:  $-55^\circ\text{C}$  to  $+105^\circ\text{C}$



T	550	B	107	M	025	A	T	4251	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Product Level	Termination Finish	Surge Option	Sleeve Option
T = Tantalum	550 = Polymer Hermetic Seal	B	First two digits represent significant figures. Third digit specifies number of zeros.	K = $\pm 10\%$ M = $\pm 20\%$	006 = 6.3 008 = 8 015 = 15 025 = 25 040 = 40 050 = 50 060 = 60 075 = 75 100 = 100	A = N/A B* = DLA 13030 Standard reliability T* = DLA 13030 High reliability	T = 100% tin (Sn) plated H = Tin/lead (SnPb) solder coated (5% Pb minimum)	Blank = 25 C $\pm 5$ C, 10 cycles, after constant voltage conditioning (KEMET standard) 4251 = 10 cycles, $-55$ C and $+85$ C after voltage aging 4252 = 10 cycles, $-55$ C and $+85$ C before voltage aging	Blank = Sleeved 0100 = Unsleeved 7200 = Tape & Reel 7293 & 7443 = Ammo

### DLA Series

13030	-01	K	A	S	L	B
Drawing Number	Dash Number	Capacitance Tolerance	Surge Current Testing	Insulation	Lead Length	Product Level
	See Part Number Table	K = $\pm 10\%$ M = $\pm 20\%$	A = $+25$ C $\pm 5$ C, 10 cycles, after constant voltage conditioning (KEMET standard) B = $-55$ C $-5$ C, $+0$ C and $+85$ C $\pm 5$ C; after constant voltage conditioning. C = $-55$ C $-5$ C, $+0$ C and $+85$ C $\pm 5$ C; before constant voltage conditioning.	S = Sleeved U = Unsleeved	L = 1.50 inches (standard)	B = Standard reliability T = High reliability

### T550

Case Size	Voltage									
	6	8	10	15	25	30	40	50	60	75
7.92 x 16.28	140 $\mu\text{F}$ – 820 $\mu\text{F}$	220 $\mu\text{F}$ – 680 $\mu\text{F}$	100 $\mu\text{F}$ – 560 $\mu\text{F}$	70 $\mu\text{F}$ – 390 $\mu\text{F}$	50 $\mu\text{F}$ – 100 $\mu\text{F}$	40 $\mu\text{F}$ – 68 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	25 $\mu\text{F}$ – 120 $\mu\text{F}$	20 $\mu\text{F}$ – 100 $\mu\text{F}$	75 $\mu\text{F}$

### DLA

Case Size	Voltage		
	25	40	50
7.92 x 16.28	100 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$	100 $\mu\text{F}$ – 120 $\mu\text{F}$

# Tantalum Capacitors Through-Hole

## Hermetically Sealed Axial (cont.)

### T551 Series Polymer Hermetic Seal (PHS) 125°C

Capacitance Range: 20 to 820 µF • Temperature Range: -55°C to +125°C



T	551	B	107	M	025	A	T	4251	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Product Level	Termination Finish	Surge Option	Sleeve Option
T = Tantalum	551 = Polymer Hermetic Seal	B	First two digits represent significant figures. Third digit specifies number of zeros.	K = ±10% M = ±20%	006 = 6.3 V 008 = 8 V 015 = 15 V 025 = 25 V 040 = 40 V 050 = 50 V 060 = 60 V	A = N/A	T = 100% tin (Sn) plated H = Tin/lead (SnPb) solder coated (5% Pb minimum)	4251 = Surge current, 10 cycles, -55 C and +85 C	Blank = Sleeved 0100 = Unsleeved 7200 = Tape & Reel 7293 & 7443 = Ammo

Case Size	Voltage								
	6	8	10	15	25	30	40	50	60
7.92 x 16.28	140 µF – 820 µF	220 µF – 680 µF	100 µF – 560 µF	70 µF – 390 µF	50 µF – 100 µF	40 µF – 68 µF	100 µF – 120 µF	25 µF – 120 µF	20 µF – 100 µF

## Radial Dipped

### T350, T351, T352, T353, T354, T355 and T356 Series UltraDip II Polar

Capacitance Range: 0.1 to 680 µF • Temperature Range: -55°C to +125°C



T	35X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	350 351 352 353 354 355 356	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = ±20% K = ±10% J = ±5% (Available on special order)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T350

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 7.1	4.7 µF – 10 µF	3.3 µF – 6.8 µF	2.2 µF – 4.7 µF	1.5 µF – 3.3 µF	1 µF – 2.2 µF	1 µF – 1.8 µF	100 nF – 1 µF	100 nF – 330 nF
4.5 x 7.6	12 µF – 15 µF	8.2 µF – 10 µF	5.6 µF – 6.8 µF	3.9 µF – 4.7 µF	2.7 µF – 3.3 µF	2.2 µF – 3.3 µF	1.2 µF – 1.5 µF	390 nF – 1 µF
5 x 8.4	18 µF – 22 µF	12 µF – 15 µF	8.2 µF – 10 µF	5.6 µF – 6.8 µF	3.9 µF – 4.7 µF	3.9 µF – 4.7 µF	1.8 µF – 2.2 µF	
5 x 8.6	27 µF – 33 µF	18 µF – 22 µF			5.6 µF – 6.8 µF		2.7 µF – 3.3 µF	1.2 µF
5.5 x 8.9	39 µF – 47 µF	27 µF – 33 µF	12 µF – 22 µF	8.2 µF – 15 µF	8.2 µF – 10 µF	5.6 µF – 10 µF	3.9 µF – 4.7 µF	1.5 µF – 2.2 µF
6 x 9.9	56 µF – 68 µF	39 µF – 47 µF	27 µF – 33 µF	18 µF – 22 µF	12 µF – 15 µF		5.6 µF – 6.8 µF	2.7 µF – 3.3 µF
6.3 x 10.2	82 µF – 100 µF	56 µF – 68 µF	39 µF		18 µF – 22 µF	12 µF – 15 µF	8.2 µF – 10 µF	3.9 µF – 4.7 µF
7.6 x 10.2	120 µF – 150 µF	82 µF – 100 µF	47 µF – 68 µF	27 µF – 33 µF		18 µF – 22 µF		5.6 µF
8.4 x 12.7	180 µF – 220 µF	120 µF – 150 µF	82 µF – 100 µF	39 µF – 47 µF	27 µF – 33 µF	27 µF – 33 µF	12 µF – 15 µF	6.8 µF – 8.2 µF
8.9 x 13.5	270 µF – 330 µF	180 µF – 220 µF	120 µF – 150 µF	56 µF – 68 µF	39 µF – 47 µF	39 µF – 47 µF	18 µF – 22 µF	10 µF – 12 µF
8.9 x 16	390 µF – 470 µF	270 µF – 330 µF	180 µF – 220 µF	82 µF – 100 µF	56 µF – 68 µF	56 µF – 68 µF	27 µF – 33 µF	15 µF – 18 µF
10.2 x 17	560 µF – 680 µF			120 µF – 150 µF	82 µF – 100 µF		39 µF – 47 µF	22 µF

## Radial Dipped (cont.)

### T350, T351, T352, T353, T354, T355 and T356 Series UltraDip II Polar (cont.)

Capacitance Range: 0.1 to 680  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	35X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	350 351 352 353 354 355 356	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$ J = $\pm 5\%$ (Available on special order)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T351

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 9.6	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 9.9	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 10.7	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 10.9	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 11.2	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 12.2	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 12.4	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 12.7	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$

### T352

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 10.2	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 10.4	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 11.2	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 11.4	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 11.7	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 12.7	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 13	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 13.2	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$



# Tantalum Capacitors Through-Hole

## Radial Dipped (cont.)

### T350, T351, T352, T353, T354, T355 and T356 Series UltraDip II Polar (cont.)

Capacitance Range: 0.1 to 680  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	35X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	350 351 352 353 354 355 356	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$ J = $\pm 5\%$ (Available on special order)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T353

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 10.2	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 10.4	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 11.2	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 11.4	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 11.7	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 12.7	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 13	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 13.2	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$
8.4 x 14.7	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$
8.9 x 16	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$
8.9 x 18.5	390 $\mu\text{F}$ – 470 $\mu\text{F}$	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$
10.2 x 19.9	560 $\mu\text{F}$ – 680 $\mu\text{F}$			120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$		39 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$

### T354

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 8.6	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 8.9	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 9.6	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 9.9	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 10.2	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 11.2	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 11.4	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 11.9	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$
8.4 x 14	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$
8.9 x 15.5	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$
8.9 x 18.1	390 $\mu\text{F}$ – 470 $\mu\text{F}$	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$
10.2 x 18.6	560 $\mu\text{F}$ – 680 $\mu\text{F}$			120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$		39 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$

## Radial Dipped (cont.)

### T350, T351, T352, T353, T354, T355 and T356 Series UltraDip II Polar (cont.)

Capacitance Range: 0.1 to 680  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	35X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	350 351 352 353 354 355 356	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$ J = $\pm 5\%$ (Available on special order)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T355

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 8.6	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 8.9	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 9.6	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 9.9	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 10.2	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 11.2	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 11.4	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 11.9	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$

### T356

Case Size	Voltage							
	3	6.3	10	16	20	25	35	50
4.5 x 8.6	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.8 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
4.5 x 8.9	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$ – 1.5 $\mu\text{F}$	390 nF – 1 $\mu\text{F}$
5 x 9.6	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.8 $\mu\text{F}$ – 2.2 $\mu\text{F}$	
5 x 9.9	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$			5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$		2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.2 $\mu\text{F}$
5.5 x 10.2	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
6 x 11.2	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 3.3 $\mu\text{F}$
6.3 x 11.4	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.6 x 11.9	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$		18 $\mu\text{F}$ – 22 $\mu\text{F}$		5.6 $\mu\text{F}$
8.4 x 14	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	6.8 $\mu\text{F}$ – 8.2 $\mu\text{F}$
8.9 x 15.5	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 12 $\mu\text{F}$
8.9 x 18.1	390 $\mu\text{F}$ – 470 $\mu\text{F}$	270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 18 $\mu\text{F}$
10.2 x 18.6	560 $\mu\text{F}$ – 680 $\mu\text{F}$			120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$		39 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$

# Tantalum Capacitors Through-Hole

## Radial Dipped (cont.)

### T363 and T369 Series MIL-PRF-49137/2 (CX02 and CX12 Style)

Capacitance Range: 0.1 to 330  $\mu$ F Temperature Range: -55°C to +85°C



T	35X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	363 369	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm$ 20% K = $\pm$ 10%	006 = 6 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### MIL-PRF-49137/2 (CX02 & CX12 Style)

CX	02	D	225	K
Capacitor Class	Series	Voltage	Capacitance Code (pF)	Capacitance Tolerance
CX = MIL-PRF	02 = T363 12 = T369	D = 6 V F = 10 V H = 15 V J = 20 V K = 25 V M = 35 V N = 50 V	First two digits represent significant figures. Third digit specifies number of zeros to follow.	K = $\pm$ 10% M = $\pm$ 20%

### T363

Case Size	Voltage						
	6	10	15	20	25	35	50
4.45 x 8.89	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F		100 nF – 1 $\mu$ F
6.35 x 11.43	47 $\mu$ F – 68 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	1.5 $\mu$ F – 4.7 $\mu$ F
8.89 x 15.49	150 $\mu$ F	100 $\mu$ F	68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	6.8 $\mu$ F – 15 $\mu$ F
10.16 x 18.8	330 $\mu$ F	220 $\mu$ F	150 $\mu$ F	100 $\mu$ F	68 $\mu$ F	33 $\mu$ F – 47 $\mu$ F	22 $\mu$ F

### T369

Case Size	Voltage						
	6	10	15	20	25	35	50
4.45 x 8.89	6.8 $\mu$ F	4.7 $\mu$ F	3.3 $\mu$ F	2.2 $\mu$ F	1.5 $\mu$ F		100 nF – 1 $\mu$ F
6.35 x 11.43	47 $\mu$ F – 68 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	1.5 $\mu$ F – 4.7 $\mu$ F

## Radial Dipped (cont.)

### T368 Series UltraDip II

Capacitance Range: 5.6 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



T	368	C	106	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	T368	C, D	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$	006 = 6 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

Case Size	Voltage						
	6	10	15	20	25	35	50
10.67 x 10.16 x 6.35	82 $\mu\text{F}$ – 150 $\mu\text{F}$	47 $\mu\text{F}$ – 100 $\mu\text{F}$	27 $\mu\text{F}$ – 68 $\mu\text{F}$	18 $\mu\text{F}$ – 47 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	8.2 $\mu\text{F}$ – 22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 15 $\mu\text{F}$
13.2 x 11.68 x 6.35	180 $\mu\text{F}$ – 330 $\mu\text{F}$	120 $\mu\text{F}$ – 220 $\mu\text{F}$	82 $\mu\text{F}$ – 150 $\mu\text{F}$	56 $\mu\text{F}$ – 100 $\mu\text{F}$	39 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 22 $\mu\text{F}$

### T396 and T398 Series UltraDip III (3 Leaded)

Capacitance Range: 0.1 to 680  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	39X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	T396 Straight Leads T398 Straight Leads	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$ (Special order only)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T396

Case Size	Voltage							
	3	6	10	16	20	25	35	50
7.9 x 7.1 x 4.8	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
8.1 x 7.1 x 4.8	15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$
9.1 x 7.1 x 5.1	22 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	4.7 $\mu\text{F}$	2.2 $\mu\text{F}$	
9.4 x 7.1 x 5.1	33 $\mu\text{F}$	22 $\mu\text{F}$			6.8 $\mu\text{F}$		3.3 $\mu\text{F}$	
9.7 x 7.1 x 5.8	47 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
10.4 x 7.1 x 6.1	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$		6.8 $\mu\text{F}$	3.3 $\mu\text{F}$
10.7 x 7.1 x 6.3	100 $\mu\text{F}$	68 $\mu\text{F}$			22 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$
10.7 x 7.1 x 6.9	150 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$		22 $\mu\text{F}$		
11.7 x 7.6 x 7.6	220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$	6.8 $\mu\text{F}$
12.7 x 8.6 x 8.6	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	47 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$
14.2 x 8.6 x 8.6	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$
15.7 x 9.1 x 9.1	680 $\mu\text{F}$			150 $\mu\text{F}$	100 $\mu\text{F}$		47 $\mu\text{F}$	22 $\mu\text{F}$

# Tantalum Capacitors Through-Hole

## Radial Dipped (cont.)

### T396 and T398 Series UltraDip III (3 Leaded) (cont.)

Capacitance Range: 0.1 to 680  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	39X	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu\text{F}$ )	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	T396 Straight Leads T398 Straight Leads	A, B, C, D, E, F, G, H, J, K, L, M	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ K = $\pm 10\%$ (Special order only)	003 = 3 006 = 6 010 = 10 016 = 16 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard	7301 & 7303 = Tape & Reel 7305 & 7317 = Ammo

### T398

Case Size	Voltage							
	3	6	10	16	20	25	35	50
9 x 7.1 x 4.8	4.7 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.2 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
9.3 x 7.1 x 4.8	15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$
9.9 x 7.1 x 5.1	22 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	
10.5 x 7.1 x 5.8	47 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
10.9 x 7.1 x 6.1	68 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$		6.8 $\mu\text{F}$	3.3 $\mu\text{F}$
11.2 x 7.1 x 6.3	100 $\mu\text{F}$	68 $\mu\text{F}$			22 $\mu\text{F}$	15 $\mu\text{F}$	10 $\mu\text{F}$	4.7 $\mu\text{F}$
11.2 x 7.1 x 6.9	150 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$		22 $\mu\text{F}$		
12.2 x 7.6 x 7.6	220 $\mu\text{F}$	150 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$	33 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$	6.8 $\mu\text{F}$
12.7 x 8.6 x 8.6	330 $\mu\text{F}$	220 $\mu\text{F}$	150 $\mu\text{F}$	68 $\mu\text{F}$	47 $\mu\text{F}$	47 $\mu\text{F}$	22 $\mu\text{F}$	10 $\mu\text{F}$
14.7 x 8.6 x 8.6	470 $\mu\text{F}$	330 $\mu\text{F}$	220 $\mu\text{F}$	100 $\mu\text{F}$	68 $\mu\text{F}$	68 $\mu\text{F}$	33 $\mu\text{F}$	15 $\mu\text{F}$
15.7 x 9.1 x 9.1	680 $\mu\text{F}$			150 $\mu\text{F}$	100 $\mu\text{F}$		47 $\mu\text{F}$	22 $\mu\text{F}$

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## Molded Axial

### T322 & T323 Series MIL-PRF-49137/1 and 5 (CX01 & CX05 Style)

Capacitance Range: 0.1 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



T	32X	A	474	M	035	A	T	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product	Termination Finish	Packaging
T = Tantalum	Axial Molded Polar Solid Tantalum. Insert appropriate number to replace letter "X" = 322 or 323 (CX01 or CX05).	A, B, C, D, E, F	First two digits represent significant figures. Third digit specifies number of zeros to follow.	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	002 = 2 004 = 4 006 = 6 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	T = 100% tin S = standard (solder-coated nickel)	(When necessary) Reeling per EIA Specification RS-296 Blank = Bulk 7200 = Reel

### MIL PRF 49137/1/5 (CX01 & CX05 Style)

CX	05	D	225	K
Capacitor Class	Series	Rated Voltage (VDC)	Capacitance Code (pF)	Capacitance Tolerance
CX = MIL-PRF	01 = T322 05 = T323	D = 6 F = 10 H = 15 J = 20 K = 25 M = 35 N = 50	First two digits represent significant figures. Third digit specifies number of zeros to follow.	K = $\pm 10\%$ M = $\pm 20\%$

### T322

Case Size	Voltage								
	2	4	6	10	15	20	25	35	50
2.41 x 6.6	6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	4.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	2.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	1 $\mu\text{F}$ – 1.5 $\mu\text{F}$	470 nF – 1 $\mu\text{F}$	100 nF – 470 nF	100 nF – 270 nF
2.79 x 7.37	12 $\mu\text{F}$ – 33 $\mu\text{F}$	8.2 $\mu\text{F}$ – 22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 15 $\mu\text{F}$	3.9 $\mu\text{F}$ – 10 $\mu\text{F}$	2.7 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1.8 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	330 nF – 1 $\mu\text{F}$
4.57 x 8.76	39 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	8.2 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 10 $\mu\text{F}$	1.8 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 2.2 $\mu\text{F}$
4.57 x 10.67		56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 68 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	18 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$
7.11 x 13.46			82 $\mu\text{F}$ – 220 $\mu\text{F}$	56 $\mu\text{F}$ – 150 $\mu\text{F}$	39 $\mu\text{F}$ – 100 $\mu\text{F}$	27 $\mu\text{F}$ – 68 $\mu\text{F}$	18 $\mu\text{F}$ – 47 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	5.6 $\mu\text{F}$ – 10 $\mu\text{F}$
7.62 x 18.03			270 $\mu\text{F}$ – 330 $\mu\text{F}$	180 $\mu\text{F}$ – 220 $\mu\text{F}$	120 $\mu\text{F}$ – 150 $\mu\text{F}$	82 $\mu\text{F}$ – 100 $\mu\text{F}$	56 $\mu\text{F}$ – 68 $\mu\text{F}$	39 $\mu\text{F}$ – 47 $\mu\text{F}$	12 $\mu\text{F}$ – 22 $\mu\text{F}$

### T323

Case Size	Voltage						
	6	10	15	20	25	35	50
2.41 x 6.6	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	1 $\mu\text{F}$	330 nF – 470 nF	100 nF – 220 nF
2.79 x 7.37	5.6 $\mu\text{F}$ – 15 $\mu\text{F}$	10 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 3.3 $\mu\text{F}$	560 nF – 1.5 $\mu\text{F}$	330 nF – 1 $\mu\text{F}$
4.57 x 8.76	33 $\mu\text{F}$	22 $\mu\text{F}$	15 $\mu\text{F}$		6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$
4.57 x 10.67	47 $\mu\text{F}$	27 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 15 $\mu\text{F}$		6.8 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$

# Tantalum Capacitors Through-Hole

## Molded Radial

### T330 Series Precision Molded Polar

Capacitance Range: 0.1 to 220  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	330	B	104	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	Radial Lead Precision Molded Polar Solid Tantalum	A, B, C, D	First two digits represent significant figures. Third digit specifies number of zeros to follow.	K = $\pm 10\%$ M = $\pm 20\%$ J = $\pm 5\%$ (available on request)	006 = 6 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35 050 = 50	Not Applicable	S = Standard (Solder-coated nickel) T = 100% tin (Sn) plated	7301 = Tape & Reel 7305 & 7317 = Ammo

Case Size	Voltage							
	6	10	15	16	20	25	35	50
5.71 x 7.24 x 4.32	10 $\mu\text{F}$ – 22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 22 $\mu\text{F}$	3.9 $\mu\text{F}$ – 8.2 $\mu\text{F}$	3.9 $\mu\text{F}$ – 8.2 $\mu\text{F}$		2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	100 nF – 3.3 $\mu\text{F}$	100 nF – 2.2 $\mu\text{F}$
8.26 x 8.26 x 4.32	27 $\mu\text{F}$ – 68 $\mu\text{F}$	18 $\mu\text{F}$ – 39 $\mu\text{F}$	10 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 33 $\mu\text{F}$		5.6 $\mu\text{F}$ – 15 $\mu\text{F}$	3.9 $\mu\text{F}$ – 10 $\mu\text{F}$	2.7 $\mu\text{F}$ – 5.6 $\mu\text{F}$
8.76 x 5.84 x 2.67	18 $\mu\text{F}$ – 22 $\mu\text{F}$	10 $\mu\text{F}$ – 15 $\mu\text{F}$	8.2 $\mu\text{F}$	8.2 $\mu\text{F}$	5.6 $\mu\text{F}$ – 6.8 $\mu\text{F}$	3.3 $\mu\text{F}$ – 4.7 $\mu\text{F}$	100 nF – 2.7 $\mu\text{F}$	100 nF – 1.5 $\mu\text{F}$
9.53 x 15.24 x 4.95	82 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 150 $\mu\text{F}$	39 $\mu\text{F}$ – 82 $\mu\text{F}$	39 $\mu\text{F}$ – 82 $\mu\text{F}$		18 $\mu\text{F}$ – 47 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	6.8 $\mu\text{F}$ – 18 $\mu\text{F}$

### T340 Series Precision Molded Radial Lead

Capacitance Range: 0.1 to 330  $\mu\text{F}$  • Temperature Range:  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



T	340	A	105	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	Radial Lead Precision Molded Polar Solid Tantalum	A, B, C, D, E, F	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm 20\%$ (standard) K = $\pm 10\%$ J = $\pm 5\%$ (available on request)	003 = 3 006 = 6 010 = 10 015 = 15/16 020 = 20 025 = 25 035 = 35 040 = 40 050 = 50	Not Applicable	S = Standard (Solder-coated copperweld)	7301 = Tape & Reel 7305 & 7317 = Ammo

Case Size	Voltage									
	3	6	10	15	16	20	25	35	40	50
7.3 x 4.7 x 4.2	10 $\mu\text{F}$ – 15 $\mu\text{F}$	6.8 $\mu\text{F}$	4.7 $\mu\text{F}$	3.3 $\mu\text{F}$	3.3 $\mu\text{F}$	2.2 $\mu\text{F}$	1.5 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 1 $\mu\text{F}$	100 nF – 330 nF
8.3 x 7.2 x 4	33 $\mu\text{F}$ – 47 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	5.6 $\mu\text{F}$ – 15 $\mu\text{F}$	3.9 $\mu\text{F}$ – 10 $\mu\text{F}$	3.9 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	2.7 $\mu\text{F}$ – 4.7 $\mu\text{F}$	1.2 $\mu\text{F}$ – 3.3 $\mu\text{F}$	1.5 $\mu\text{F}$ – 2.2 $\mu\text{F}$	390 nF – 2.2 $\mu\text{F}$
10.5 x 7.3 x 4.3	68 $\mu\text{F}$ – 100 $\mu\text{F}$	27 $\mu\text{F}$ – 68 $\mu\text{F}$	18 $\mu\text{F}$ – 39 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	15 $\mu\text{F}$	5.6 $\mu\text{F}$ – 15 $\mu\text{F}$	3.3 $\mu\text{F}$ – 10 $\mu\text{F}$	3.3 $\mu\text{F}$ – 6.8 $\mu\text{F}$	1.5 $\mu\text{F}$ – 5.6 $\mu\text{F}$
10.5 x 12.3 x 12.3		330 $\mu\text{F}$	220 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$ – 150 $\mu\text{F}$	100 $\mu\text{F}$	47 $\mu\text{F}$ – 68 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	33 $\mu\text{F}$ – 47 $\mu\text{F}$	22 $\mu\text{F}$
10.5 x 12.3 x 7.3		82 $\mu\text{F}$ – 220 $\mu\text{F}$	47 $\mu\text{F}$ – 150 $\mu\text{F}$	39 $\mu\text{F}$ – 82 $\mu\text{F}$	39 $\mu\text{F}$ – 82 $\mu\text{F}$	47 $\mu\text{F}$	18 $\mu\text{F}$ – 47 $\mu\text{F}$	12 $\mu\text{F}$ – 33 $\mu\text{F}$	10 $\mu\text{F}$ – 22 $\mu\text{F}$	3.3 $\mu\text{F}$ – 18 $\mu\text{F}$

## Molded Radial (cont.)

### T370 and T378 Series Micron MIL-PRF-4913716 (CX06 Style)

Capacitance Range: T370: 0.68 to 220  $\mu$ F, T378: 2.2 to 220  $\mu$ F • Temperature Range: -55°C to +125°C



T	37X	D	475	M	035	A	S	
Capacitor Class	Series	Case Size	Capacitance Code ( $\mu$ F)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate	Termination Finish	Specification
T = Tantalum	370 378	C, D, E, F	First two digits represent significant figures. Third digit specifies number of zeros to follow.	M = $\pm$ 20% K = $\pm$ 10% J = $\pm$ 5% L = 40%, -20%	003 = 3 004 = 4 006 = 6.3 010 = 10 015 = 15 020 = 20 025 = 25 035 = 35	Not Applicable	S = Standard (Solder coated nickel)	7301 = Tape & Reel 7305 & 7317 = Ammo

### MIL-PRF-49137/6 (CX06 Style)

CX	06	D	225	K
Capacitor Class	Series	Voltage	Capacitance Code ( $\mu$ F)	Capacitance Tolerance
CX = MIL-PRF	06 = T378	A = 2 V B = 3 V C = 4 V D = 6 V F = 10 V H = 15 V J = 20 V K = 25 V M = 35 V	First two digits represent significant figures. Third digit specifies number of zeros to follow.	K = $\pm$ 10% M = $\pm$ 20%

### T370

Case Size	Voltage							
	3	4	6	10	15	20	25	35
4.7 x 5.72 x 1.91		15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F		3.3 $\mu$ F – 4.7 $\mu$ F	2.2 $\mu$ F	680 nF – 1.5 $\mu$ F
5.59 x 7.73 x 2.79		47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	2.2 $\mu$ F – 4.7 $\mu$ F
5.84 x 7.87 x 3.3		68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F
9.53 x 12.07 x 3.81	220 $\mu$ F		150 $\mu$ F	100 $\mu$ F	68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	10 $\mu$ F – 22 $\mu$ F

### T378

Case Size	Voltage							
	3	4	6	10	15	20	25	35
5.59 x 7.73 x 2.79		47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F	2.2 $\mu$ F – 4.7 $\mu$ F
5.84 x 7.87 x 3.3		68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	22 $\mu$ F	15 $\mu$ F	10 $\mu$ F	6.8 $\mu$ F
9.53 x 12.07 x 3.81	220 $\mu$ F		150 $\mu$ F	100 $\mu$ F	68 $\mu$ F	47 $\mu$ F	33 $\mu$ F	10 $\mu$ F – 22 $\mu$ F



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