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диоды

50A Single-Phase Bridge Rectifier

MB5005 – MB5010

Выпрямительные диоды

Диодно-тиристорные модули

50A Single-Phase Bridge Rectifier

промышленные

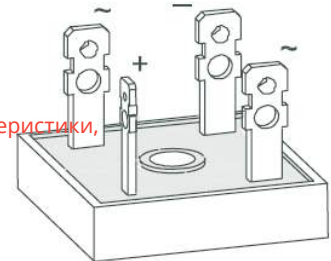
Vishay, Vishay-IR, Выпрямительные диоды,

Диодно-тиристорные модули,

Features

радиодетали, электронные компоненты, каталог, описание, технические, характеристики,

- Low Reverse Leakage Current
- Low Power Loss, High Efficiency
- Electrically Isolated Metal Case for Max. Heat Dissipation
- Case to Terminal Isolation Voltage 2500V
- This series is UL recognized under component index, File number E194718
- RoHS Compliant



MB35L
(Metal Case)



Mechanical Data

Case:	MB35L Metal case with faston lugs
Terminals:	Plated faston lugs
Polarity:	As marked on case
Mounting:	Through hole with #10 screw
Mounting Torque:	23 cm-kg (20 in-lbs) Max.
Weight:	30 grams

Maximum Ratings And Electrical Characteristics (T_{amb}=25°C)

Symbol	Description	MB5005	MB501	MB502	MB504	MB506	MB508	MB5010	Unit	Conditions
V_{RRM}	Maximum Repetitive Peak Reverse Voltage	50	100	200	400	600	800	1000	V	
V_{RMS}	Maximum RMS Voltage	35	70	140	280	420	560	700	V	
V_{DC}	Maximum DC Blocking Voltage	50	100	200	400	600	800	1000	V	
I_{F(AV)}	Maximum Average Forward Output Rectified Current	50							A	TA=60°C
I_{FSM}	Peak Forward Surge Current	400							A	8.3ms single half sine-wave superimposed on rated load (JEDEC Method)

50A Single-Phase Bridge Rectifier

MB5005 – MB5010

Symbol	Description	MB5005	MB501	MB502	MB504	MB506	MB508	MB5010	Unit	Conditions
V_F	Maximum Instantaneous Forward Voltage drop per leg	1.2							V	I _F =25A
I_R	Maximum DC Reverse Current at Rated DC Blocking Voltage per leg	10							μA	T _C =25°C
		1000							μA	T _C =125°C
I²t	Rating for fusing (t<8.3ms)	664							A ² s	
C_J	Typical Junction Capacitance	300							pF	V _R =4V, f=1MHz
R_{thJC}	Typical Thermal Resistance per leg	1.6							°C / W	Note
V_{ISO}	RMS Isolation Voltage from Case to Leads	2500							V	
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-65 to +150							°C	

Note: Thermal resistance junction to case, mounted on heatsink.

Typical Characteristics Curves

Fig.1- Forward Current Derating Curve

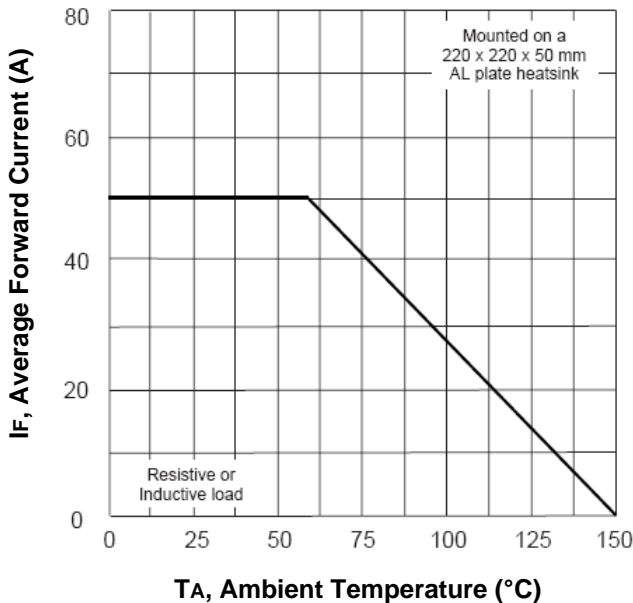
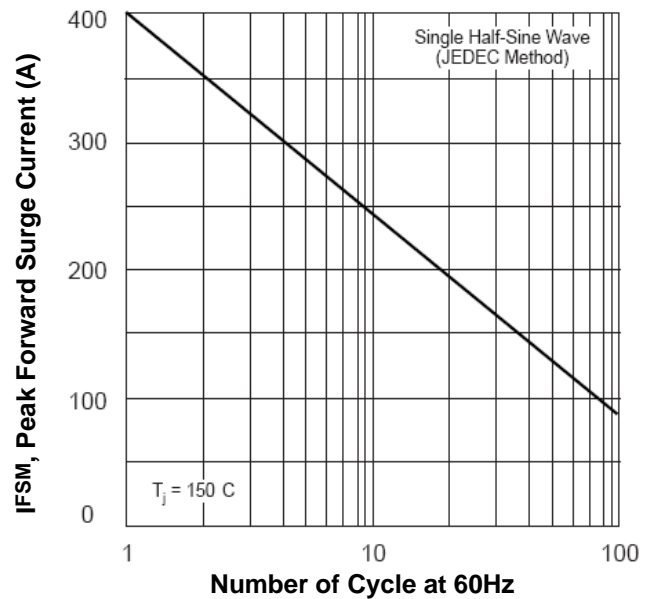


Fig.2-Max. Non-repetitive Peak Forward Surge Current per leg



50A Single-Phase Bridge Rectifier

MB5005 – MB5010

Fig.3-Typical Instantaneous Forward Characteristic per leg

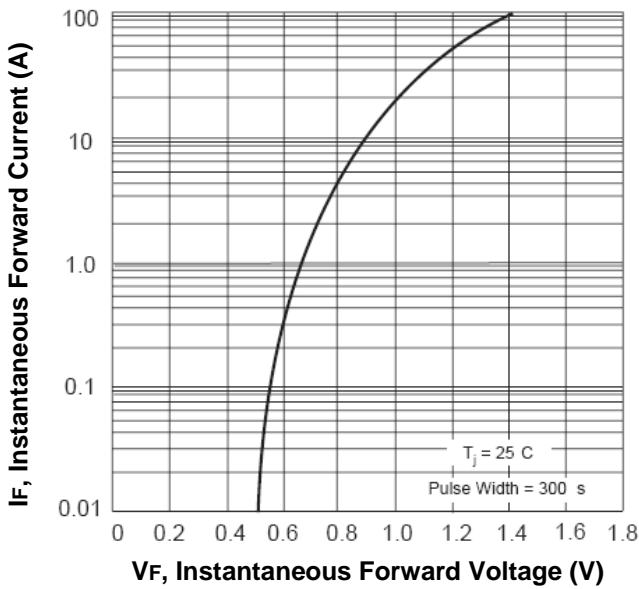


Fig.4-Typical Reverse Characteristics per leg

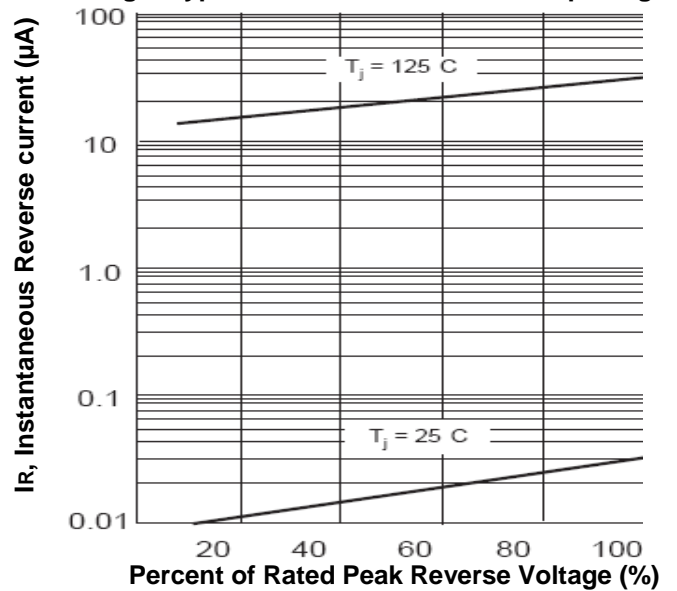
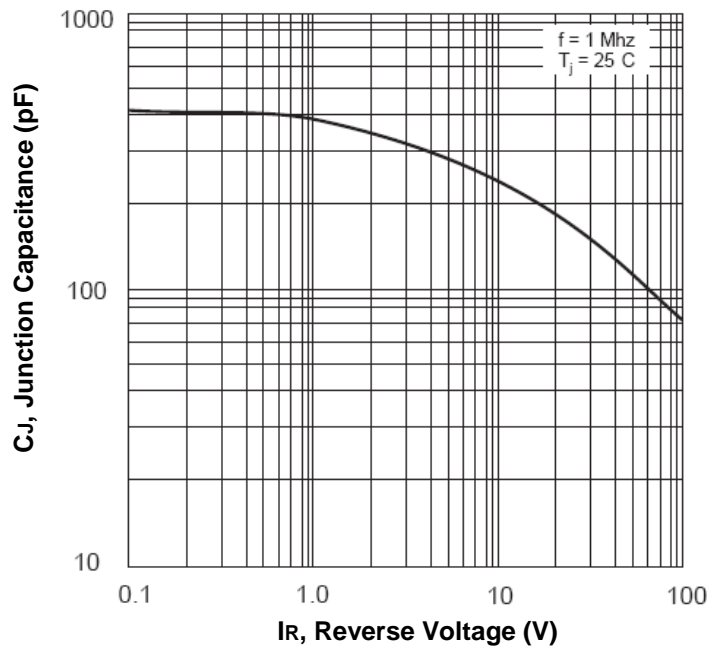


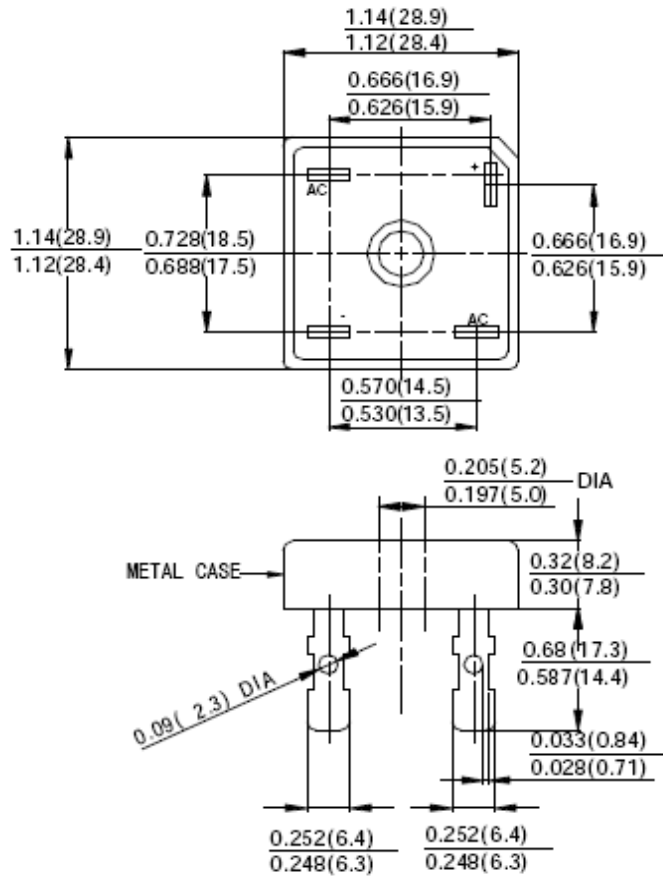
Fig.5-Typical Junction Capacitance per leg



50A Single-Phase Bridge Rectifier

MB5005 – MB5010

Dimensions in inch (mm)



MB35L

50A Single-Phase Bridge Rectifier

MB5005 – MB5010

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Bridge Rectifiers

Bridge

Part No.	Cross-Reference	Max. Average Rectified Current	Peak Repetitive Reverse Voltage	Peak Forward Surge Current	Max. Forward Voltage @ Rated Io	Max. Reverse Current @ V _{RRM}	Package	Outline (Typ. in Inches)																																			
		I _o (AV)	V _{RRM} (V)	I _{FSM} (A)	V _F (V)	I _R (μA)	Bulk																																				
RB151 RB152 RB153 RB154 RB155 RB156 RB157	- - - - - - -	1.5 A	50 100 200 400 600 800 1000	50	1.0 @ 1 A	5.0	250(bag) 1000(box)	<p>RB</p>																																			
W005M W01M W02M W04M W06M W08M W10M	- - - - - - -		50 100 200 400 600 800 1000						50	1.0 @ 1 A	5.0	250(bag) 1000(box)	<p>WOM</p>																														
2W005M 2W01M 2W02M 2W04M 2W06M 2W08M 2W10M	2W005 2W01 2W02 2W04 2W06 2W08 2W10		50 100 200 400 600 800 1000											50	1.1	5.0	250(bag) 1000(box)	<p>2WOM</p>																									
BR805DTP200 BR81DTP201 BR82DTP202 BR84DTP204 BR86DTP206 BR88DTP208 BR810DTP210	KBP005M KBP01M KBP02M KBP04M KBP06M KBP08M KBP10M		50 100 200 400 600 800 1000																50	1.0 @ 1 A 1.3 @ 1.57 A	5.0	250(bag) 1000(box)	<p>TP</p>																				
TB305 TB31 TB32 TB34 TB36 TB38 TB310	KBPC1005 KBPC101 KBPC102 KBPC104 KBPC106 KBPC108 KBPC110		50 100 200 400 600 800 1000																					50	1.1 @ 1.5 A	5.0	200	<p>TB3</p>															
TL400 TL401 TL402 TL404 TL406 TL408 TL410	KBL005 KBL01 KBL02 KBL04 KBL06 KBL08 KBL10		50 100 200 400 600 800 1000																										200	1.1	5.0	400	<p>TL</p>										
TU400 TU401 TU402 TU404 TU406 TU408 TU410	KBU4A KBU4B KBU4D KBU4G KBU4J KBU4K KBU4M		50 100 200 400 600 800 1000																															200	1.0	5.0	400	<p>TU</p>					
TU600 TU601 TU602 TU604 TU606 TU608 TU610	KBU6A KBU6B KBU6D KBU6G KBU6J KBU6K KBU6M		50 100 200 400 600 800 1000																																				250	1.0	5.0	400	<p>TU</p>

Bridge Rectifiers

Bridge

Part No.	Cross-Reference	Max. Average Rectified Current	Peak Repetitive Reverse Voltage	Peak Forward Surge Current	Max. Forward Voltage @ Rated Io	Max. Reverse Current @ V _{RRM}	Package	Outline (Typ. in Inches)																									
		I _o (AV)	V _{RRM} (V)	I _{FSM} (A)	V _F (V)	I _R (μA)	Bulk																										
TB605 TB61 TB62 TB64 TB66 TB68 TB610	KBPC6005 KBPC601 KBPC602 KBPC604 KBPC606 KBPC608 KBPC610	6.0 A	50 100 200 400 600 800 1000	125	1.0 @ 3 A	5.0	200	TB6 																									
TB805 TB81 TB82 TB84 TB86 TB88 TB810	KBPC8005 KBPC801 KBPC802 KBPC804 KBPC806 KBPC808 KBPC810		8.0 A					50 100 200 400 600 800 1000	125	1.1 @ 4 A	5.0	200	TB10 																				
TU800 TU801 TU802 TU804 TU806 TU808 TU810	KBU8A KBU8B KBU8D KBU8G KBU8J KBU8K KBU8M							10.0 A					50 100 200 400 600 800 1000	300	1.0	5.0	400	TU 															
MP1005M MP101M MP102M MP104M MP106M MP108M MP1010M	MB1005 MB101 MB102 MB104 MB106 MB108 MB1010												10.0 A					50 100 200 400 600 800 1000	150	1.1 @ 5 A	5.0	100(bag) 400(box)	MP6 										
TB1005 TB101 TB102 TB104 TB106 TB108 TB1010	BR1005 BR101 BR102 BR104 BR106 BR108 BR1010																	10.0 A					50 100 200 400 600 800 1000	150	1.1 @ 5 A	5.0	200	TB10 					
MP1005 MP101 MP102 MP104 MP106 MP108 MP1010	BRS1005 BRS101 BRS102 BRS104 BRS106 BRS108 BRS1010																						10.0 A					50 100 200 400 600 800 1000	150	1.1 @ 5 A	5.0	200	MP10
TU1000 TU1001 TU1002 TU1004 TU1006 TU1008 TU1010	KBU1001 KBU1002 KBU1003 KBU1004 KBU1005 KBU1006 KBU1007																											15.0 A					50 100 200 400 600 800 1000
MP1505M MP151M MP152M MP154M MP156M MP158M MP1510M	- - - - - - -	15.0 A		50 100 200 400 600 800 1000	300	1.1 @ 7.5 A	10.0																										200

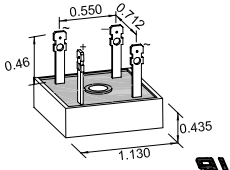
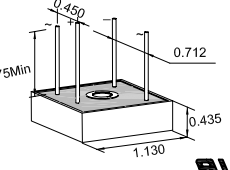
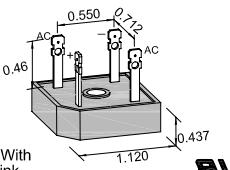
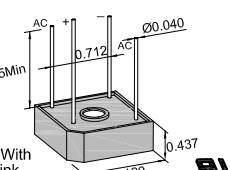
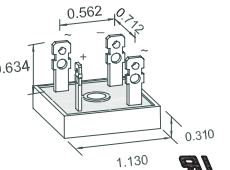
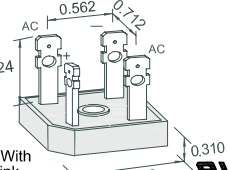
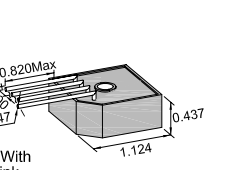
Bridge Rectifiers

Bridge

Part No.	Cross-Reference	Max. Average Rectified Current	Peak Repetitive Reverse Voltage	Peak Forward Surge Current	Max. Forward Voltage @ Rated Io	Max. Reverse Current @ V _{RRM}	Package	Outline (Typ. in Inches)																																				
		I _o (AV)	V _{RRM} (V)	I _{FSM} (A)	V _F (V)	I _R (μA)	Bulk																																					
MB1505 MB151 MB152 MB154 MB156 MB158 MB1510	SB1505 SB151 SB152 SB154 SB156 SB158 SB1510	15.0 A	50 100 200 400 600 800 1000	300	1.1 @ 7.5 A	10.0	50																																					
MB1505W MB151W MB152W MB154W MB156W MB158W MB1510W	SB1505W SB151W SB152W SB154W SB156W SB158W SB1510W		50 100 200 400 600 800 1000						300	1.1 @ 7.5 A	10.0	50																																
TB1505 TB151 TB152 TB154 TB156 TB158 TB1510	KBPC15-005 KBPC15-01 KBPC15-02 KBPC15-04 KBPC15-06 KBPC15-08 KBPC15-10		50 100 200 400 600 800 1000											300	1.1 @ 7.5 A	10.0	50																											
TB1505W TB151W TB152W TB154W TB156W TB158W TB1510W	KBPC15-005W KBPC15-01W KBPC15-02W KBPC15-04W KBPC15-06W KBPC15-08W KBPC15-10W		50 100 200 400 600 800 1000																300	1.1 @ 7.5 A	10.0	50																						
MB2505 MB251 MB252 MB254 MB256 MB258 MB2510	SB2505 SB251 SB252 SB254 SB256 SB258 SB2510		25.0 A																					50 100 200 400 600 800 1000	300	1.1 @ 12.5 A	10.0	50																
MB2505W MB251W MB252W MB254W MB256W MB258W MB2510W	SB2505W SB251W SB252W SB254W SB256W SB258W SB2510W																							50 100 200 400 600 800 1000						300	1.1 @ 12.5 A	10.0	50											
TB2505 TB251 TB252 TB254 TB256 TB258 TB2510	KBPC25-005 KBPC25-01 KBPC25-02 KBPC25-04 KBPC25-06 KBPC25-08 KBPC25-10																							50 100 200 400 600 800 1000											300	1.1 @ 12.5 A	10.0	50						
TB2505W TB251W TB252W TB254W TB256W TB258W TB2510W	KBPC25-005W KBPC25-01W KBPC25-02W KBPC25-04W KBPC25-06W KBPC25-08W KBPC25-10W																							50 100 200 400 600 800 1000																300	1.1 @ 12.5 A	10.0	50	

Bridge Rectifiers

Bridge

Part No.	Cross-Reference	Max. Average Rectified Current	Peak Repetitive Reverse Voltage	Peak Forward Surge Current	Max. Forward Voltage @ Rated I _o	Max. Reverse Current @ V _{RRM}	Package	Outline (Typ. in Inches)					
		I _o (AV)	V _{RRM} (V)	I _{FSM} (A)	V _F (V)	I _R (μA)	Bulk						
MB3505 MB351 MB352 MB354 MB356 MB358 MB3510	SB3505 SB351 SB352 SB354 SB356 SB358 SB3510	35.0 A	50 100 200 400 600 800 1000	400	1.1 @ 17.5 A	10.0	50	MB35 (Metal Case) 					
MB3505W MB351W MB352W MB354W MB356W MB358W MB3510W	SB3505W SB351W SB352W SB354W SB356W SB358W SB3510W		50 100 200 400 600 800 1000					MB35W (Metal Case) 					
TB3505 TB351 TB352 TB354 TB356 TB358 TB3510	KBPC35-005 KBPC35-01 KBPC35-02 KBPC35-04 KBPC35-06 KBPC35-08 KBPC35-10		50 100 200 400 600 800 1000					TB35 Plastic Case With Metal Heat Sink 					
TB3505W TB351W TB352W TB354W TB356W TB358W TB3510W	KBPC35-005W KBPC35-01W KBPC35-02W KBPC35-04W KBPC35-06W KBPC35-08W KBPC35-10W		50 100 200 400 600 800 1000					TB35W Plastic Case With Metal Heat Sink 					
MB4005 MB401 MB402 MB404 MB406 MB408 MB4010	- - - - - - -		40.0 A					50 100 200 400 600 800 1000	400	1.2 @ 20 A	10.0	50	MB35L (Metal Case) 
TB4005 TB401 TB402 TB404 TB406 TB408 TB4010	- - - - - - -							50 100 200 400 600 800 1000					TB35L Plastic Case With Metal Heat Sink 
KBPC40-005S KBPC40-01S KBPC40-02S KBPC40-04S KBPC40-06S KBPC40-08S KBPC40-10S	- - - - - - -							50 100 200 400 600 800 1000					KBPCS Plastic Case With Metal Heat Sink 

Bridge Rectifiers

Bridge

Part No.	Cross-Reference	Max. Average Rectified Current	Peak Repetitive Reverse Voltage	Peak Forward Surge Current	Max. Forward Voltage @ Rated I _o	Max. Reverse Current @ V _{RRM}	Package	Outline (Typ. in Inches)					
		I _o (AV)	V _{RRM} (V)	I _{FSM} (A)	V _F (V)	I _R (μA)	Bulk						
MB5005	-	50.0 A	50	400	1.2 @ 25 A	10.0	50						
MB501	-		100										
MB502	-		200										
MB504	-		400										
MB506	-		600										
MB508	-		800										
MB5010	-		1000										
TB5005	-		50						450	1.1 @ 25.0 A	5.0	50	
TB501	-		100										
TB502	-		200										
TB504	-	400											
TB506	-	600											
TB508	-	800											
TB5010	-	1000											
KBPC50-005S	-	50.0 A	50	450	1.1 @ 25 A	10.0	80						
KBPC50-01S	-		100										
KBPC50-02S	-		200										
KBPC50-04S	-		400										
KBPC50-06S	-		600										
KBPC50-08S	-		800										
KBPC50-10S	-		1000										

Three Phase Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

PSDM 33/05

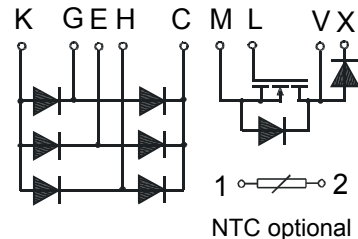
$I_{D25} = 35 \text{ A}$
 $V_{DSS} = 500 \text{ V}$
 $R_{DS(on)} = 0.12 \Omega$

Preliminary Data Sheet

V_{RSM} (V)	V_{RRM} (V)	Type
600	500	PSDM 33/05

MOSFET

Symbol	Test Conditions	Maximum Ratings
V_{DSS}	$T_{VJ} = 25 \text{ °C to } 150 \text{ °C}$	500 V
V_{DGR}	$T_{VJ} = 25 \text{ °C to } 150 \text{ °C}, R_{GS} = 10 \Omega$	500 V
V_{GS}	continuous	± 20 V
I_D	$T_s = 85 \text{ °C}$	24 A
I_D	$T_s = 25 \text{ °C}$	35 A
I_{DM}	$T_s = 25 \text{ °C}, \text{ pulse width limited by } T_{VJ}$	95 A
P_D	$T_s = 85 \text{ °C}$	170 W
I_S	$V_{GS} = 0 \text{ V}, T_s = 25 \text{ °C}$	24 A
I_{SM}	$V_{GS} = 0 \text{ V}, T_s = 25 \text{ °C}, \text{ pulse width limited by } T_{VJ}$	95 A



Symbol	Test Conditions	Characteristic Values
$T_{VJ} = 25 \text{ °C}, \text{ unless otherwise specified}$		
V_{DSS}	$V_{GS} = 0 \text{ V}, I_D = 2 \text{ mA}$	min. 500 V
$V_{GS(th)}$	$V_{DS} = 20 \text{ V}, I_D = 20 \text{ mA}$	min. 2 V
$V_{GS(th)}$	$V_{DS} = 20 \text{ V}, I_D = 20 \text{ mA}$	max. 5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$	max. ± 500 nA
I_{DSS}	$V_{DS} = 500 \text{ V}, V_{GS} = 0 \text{ V}$	max. 2 mA
$R_{DS(on)}$	$T_{VJ} = 25 \text{ °C}$	max. 0.12 Ω
R_{Gint}	$T_{VJ} = 25 \text{ °C}$	max. 1.5 Ω
g_{fs}	$V_{DS} = 15 \text{ V}, I_{DS} = 12 \text{ A}$	typ. 30 S
V_{DS}	$I_{DS} = 24 \text{ A}, V_{GS} = 0 \text{ V}$	max. 1.5 V
$t_{d(on)}$	$V_{DS} = 250 \text{ V}, I_{DS} = 12 \text{ A}, V_{GS} = 10 \text{ V}$ $Z_{gen} = 1 \Omega, \text{ L-load}$	max. 100 ns
$t_{d(off)}$		max. 220 ns
C_{iss}	$V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}, V_{GS} = 0 \text{ V}$	typ. 8.5 nF
C_{oss}		typ. 0.9 nF
C_{rss}		typ. 0.3 nF
Q_g	$V_{DS} = 250 \text{ V}, I_D = 12 \text{ A}, V_{GS} = 10 \text{ V}$	typ. 350 nC
R_{thJH}		max. 0.38 K/W

Module

Symbol	Test Conditions	Maximum Ratings
T_{VJ}		-40...+150 °C
T_{JM}		150 °C
T_{stg}		-40...+150 °C
V_{isol}	50/60 Hz $t = 1 \text{ min}$	3000 V~
	$I_{isol} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3600 V~
M_d	Mounting torque (M 4)	1.5-2.0 Nm
Weight	typ.	24 g

Features

- High level of integration - only one power semiconductor module required
- Isolation voltage 3000 V~
- Planar glass passivated chips
- Ultrafast boost diode
- Leads suitable for PC board soldering
- Thermistor (optional)
- UL registered, E 148688

Applications

- Drive Inverters with brake system

Advantages

- Easy to mount with two screws
- Space and weight savings
- high temperature and power cycling capability
- Small and light weight
- 2 functions in one package

Caution: These Devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

Data according to IEC 60747 refer to a single diode unless otherwise stated

Boost Diode

Symbol	Test Conditions	Maximum Ratings	
V_{RRM}		600	V
I_{FAV}	$T_S = 85\text{ °C}$, rectangular $\delta = 0.5$	33	A
I_{FSM}	$T_{VJ} = 45\text{ °C}$, $T = 10\text{ ms}$ (50Hz)	300	A
		$T = 8.3\text{ ms}$ (60Hz)	320
	$T_{VJ} = 150\text{ °C}$, $T = 10\text{ ms}$ (50Hz)	260	A
		$T = 8.3\text{ ms}$ (60Hz)	280
P	$T_S = 85\text{ °C}$	36	W

Symbol	Test Conditions	Characteristic Values		
$T_{VJ} = 25\text{ °C}$, unless otherwise specified				

V_F	$I_F = 22\text{ A}$, $T_{VJ} = 25\text{ °C}$	max.	1.65	V
		$T_{VJ} = 150\text{ °C}$	max.	1.4
I_R	$V_R = 600\text{ V}$, $T_{VJ} = 25\text{ °C}$	max.	1.5	mA
	$V_R = 480\text{ V}$, $T_{VJ} = 25\text{ °C}$	max.	0.25	mA
	$T_{VJ} = 125\text{ °C}$	max.	7	mA
V_{T0}	} for power-loss calculations only $T_{VJ} = 125\text{ °C}$	max.	1.14	V
r_T		max.	10	m Ω
I_{RM}	$I_F = 30\text{ A}$, $-di_F/dt = 240\text{ A}/\mu\text{s}$	max.	11	A
	$V_R = 350\text{ V}$, $T_{VJ} = 100\text{ °C}$	typ.	10	A
R_{thJH}		max.	1.8	K/W

Rectifier Diodes

Symbol	Test Conditions	Maximum Ratings	
V_{RRM}		800	V
I_{dAV}	$T_S = 85\text{ °C}$, sinus 180 °	54	A
I_{FSM}	$T_{VJ} = 45\text{ °C}$, $T = 10\text{ ms}$ (50Hz)	300	A
		$T = 8.3\text{ ms}$ (60Hz)	320
	$T_{VJ} = 150\text{ °C}$, $T = 10\text{ ms}$ (50Hz)	260	A
		$T = 8.3\text{ ms}$ (60Hz)	280

Symbol	Test Conditions	Characteristic Values		
$T_{VJ} = 25\text{ °C}$, unless otherwise specified				

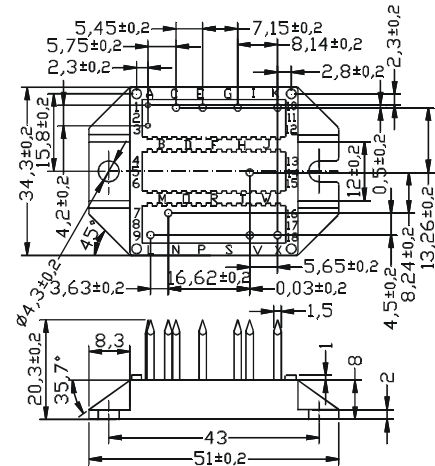
V_F	$I_F = 20\text{ A}$, $T_{VJ} = 25\text{ °C}$	max.	1.4	V
		$T_{VJ} = 125\text{ °C}$	max.	1.4
I_R	$V_R = 800\text{ V}$, $T_{VJ} = 25\text{ °C}$	max.	0.25	mA
	$V_R = 640\text{ V}$, $T_{VJ} = 125\text{ °C}$	max.	2	mA
V_{T0}	for power-loss calculations only	max.	1.05	V
r_T	$T_{VJ} = 125\text{ °C}$	max.	16	m Ω
R_{thJH}		max.	2.0	K/W

Module

Symbol	Test Conditions	Characteristic Values	
d_s	Creeping distance on surface	11.2	mm
d_A	Creeping distance in air	5.6	mm
a	Max. allowable acceleration	50	m/s ²
R_{25}^*	NTC @ 25 °C	470.000	Ω


Package style and outline

Dimensions in mm (1mm = 0.0394")



*NTC will be changed in future to 5.000 Ω .

Features

- Package fully compatible with the industry standard INT-A-pak power modules series
- High thermal conductivity package, electrically insulated case
- Excellent power volume ratio
- 4000 V_{RMS} isolating voltage
- UL E78996 approved 
- TOTALLY LEAD-FREE

130 A
160 A

Description

A range of extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and heavy duty applications.

Major Ratings and Characteristics

Parameters	130MT.K	160MT.K	Units
I_o	130(160)	160(200)	A
@ T_c	85(62)	85(60)	°C
I_{FSM}	1130	1430	A
@50Hz	1180	1500	A
@60Hz	6400	10200	A ² s
I^2t	5800	9300	A ² s
@50Hz	64000	102000	A ² /s
@60Hz			
$I^2\sqrt{t}$			
V_{RRM} range	800 to 1600		V
T_{STG} range	-40 to 150		°C
T_J range	-40 to 150		°C

130-160MT..KPbF Series

Bulletin I27216 03/06

International
 Rectifier

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ T_J max. mA
130-160MT..K	80	800	900	10
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

Forward Conduction

Parameter	130MT.K	160MT.K	Units	Conditions
I_O Maximum DC output current @ Case temperature	130 (160)	160 (200)	A	120° Rect conduction angle
	85 (62)	85 (60)	°C	
I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current	1130	1430	A	t = 10ms No voltage
	1180	1500		t = 8.3ms reapplied
	950	1200		t = 10ms 100% V_{RRM}
	1000	1260		t = 8.3ms reapplied
I^2t Maximum I^2t for fusing	64000	10200	A ² s	t = 10ms No voltage
	5800	9300		t = 8.3ms reapplied
	4500	7200		t = 10ms 100% V_{RRM}
	4100	6600		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	64000	102000	A ² √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.78	0.81	V	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), @ T_J max.
$V_{F(TO)2}$ High level value of threshold voltage	0.99	1.04	V	($I > \pi \times I_{F(AV)}$), @ T_J max.
r_{f1} Low level value of forward slope resistance	4.59	3.52	mΩ	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), @ T_J max.
r_{f2} High level value of forward slope resistance	4.17	3.13	mΩ	($I > \pi \times I_{F(AV)}$), @ T_J max.
V_{FM} Maximum forward voltage drop	1.63	1.49	V	$I_{pk} = 200A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ single junction
V_{INS} RMS isolation voltage	4000	4000	V	$T_J = 25^\circ C$, all terminal shorted f = 50Hz, t = 1s

Thermal and Mechanical Specifications

Parameter	130MT.K	160MT.K	Units	Conditions
T_J Max. junction operating temperature range	-40 to 150		°C	
T_{stg} Max. storage temperature range	-40 to 150		°C	
R_{thJC} Max. thermal resistance, junction to case	0.16	0.12	K/W	DC operation per module
	0.93	0.73		DC operation per junction
	0.18	0.15		120° Rect conduction angle per module
	1.08	0.88		120° Rect conduction angle per junction
R_{thCS} Max. thermal resistance, case to heatsink	0.03		K/W	Per module Mounting surface smooth, flat and greased
T Mounting torque $\pm 10\%$	to heatsink	4 to 6	Nm	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound. Lubricated threads.
	to terminal	3 to 4		
wt Approximate weight	176		g	

Ordering Information Table

Device Code					
16	0	MT	160	K	PbF
(1)	(2)	(3)	(4)		
<p>1 - Current rating code: 13 = 130 A (Avg) 16 = 160 A (Avg)</p> <p>2 - Three phase diodes bridge</p> <p>3 - Essential part number</p> <p>4 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings Table)</p> <p>5 - PbF = Lead-Free</p>					

Outline Table (without optional barriers)

Screws M5 x 0.8 Length 10

Top View Dimensions:

- Height: 25.5 ± 0.5 mm (1.004 ± 0.02 inches)

Side View Dimensions:

- Height: 30 ± 0.5 mm (1.17 ± 0.02 inches)
- Terminal Height: 8.5 ± 0.5 mm (0.34 ± 0.02 inches)
- Width: 35 ± 0.3 mm (1.38 ± 0.01 inches)

Front View Dimensions:

- Terminal Spacing: 14 ± 0.3 mm (0.55 ± 0.01 inches)
- Terminal Height: 18 ± 0.3 mm (0.71 ± 0.01 inches)
- Distance from Left Edge to Terminal 1: 46 ± 0.3 mm (1.81 ± 0.01 inches)
- Distance from Left Edge to Terminal 2: 80 ± 0.3 mm (3.15 ± 0.01 inches)
- Distance from Left Edge to Terminal 3: 94 ± 0.3 mm (3.7 ± 0.01 inches)
- Terminal Diameter: $\varnothing 6.5 \pm 0.2$ mm (0.26 ± 0.01 inches)

Terminal Labels: A, B, C, D, E, F

All dimensions in millimeters (inches)

NOTE: To order the Optional Hardware see Bulletin I27900

130-160MT..KPbF Series

Bulletin I27216 03/06



Outline Table (with optional barriers)

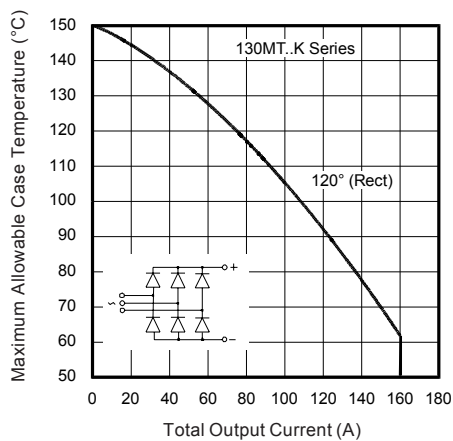
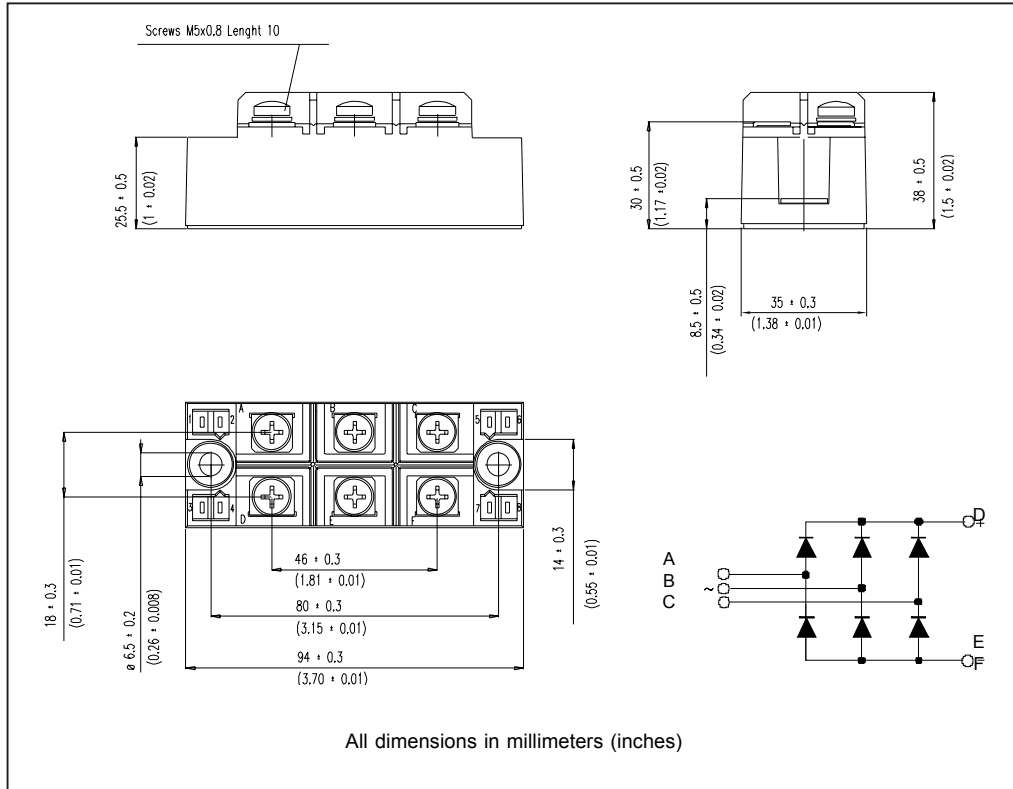


Fig. 1 - Current Ratings Characteristics

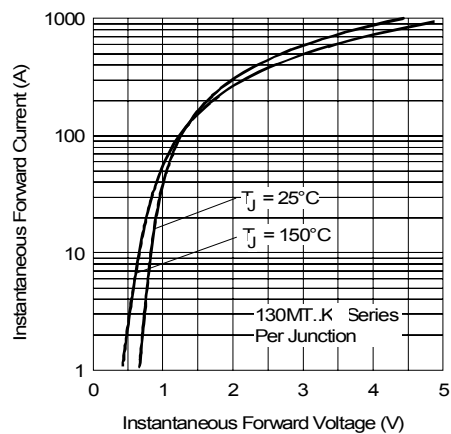


Fig. 2 - Forward Voltage Drop Characteristics

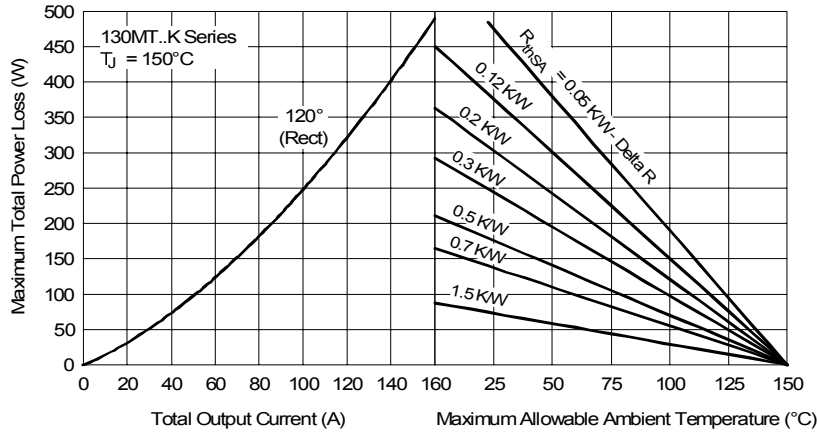


Fig. 3 - Total Power Loss Characteristics

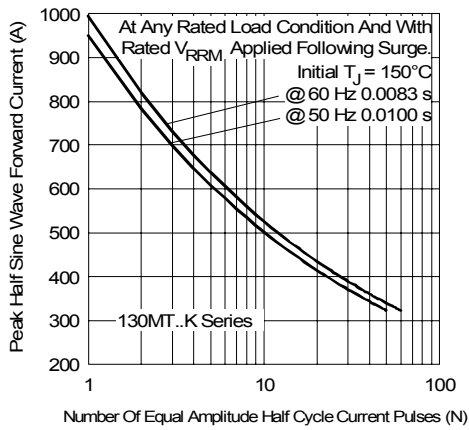


Fig. 4 - Maximum Non-Repetitive Surge Current

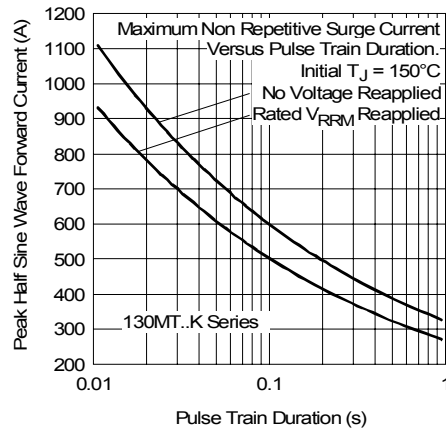


Fig. 5 - Maximum Non-Repetitive Surge Current

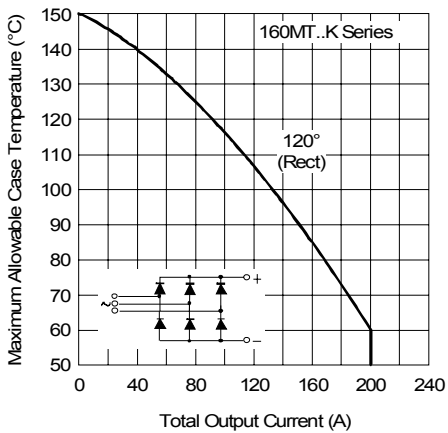


Fig. 6 - Current Ratings Characteristics

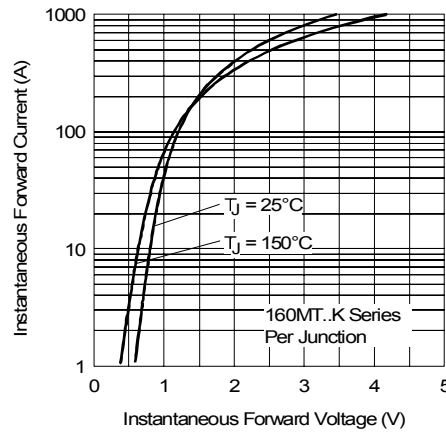


Fig. 7 - Forward Voltage Drop Characteristics

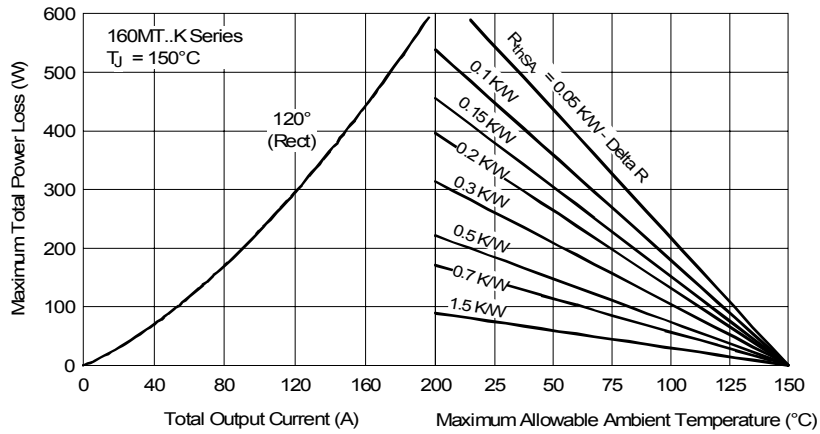


Fig. 8 - Total Power Loss Characteristics

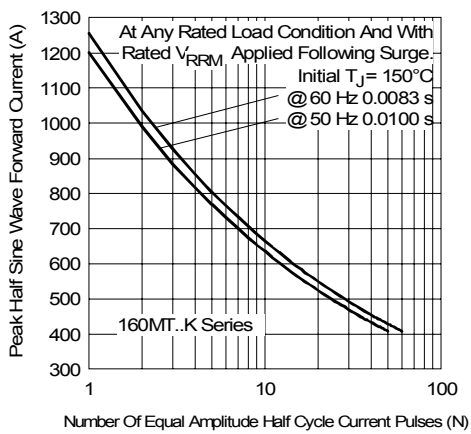


Fig. 9 - Maximum Non-Repetitive Surge Current

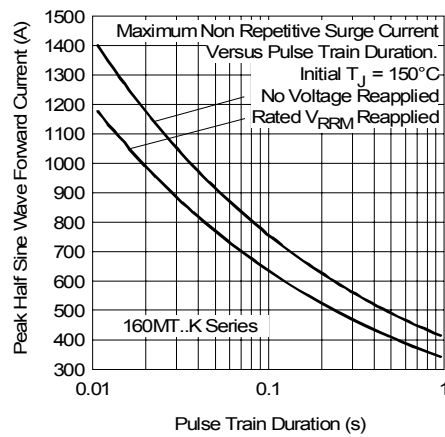


Fig. 10 - Maximum Non-Repetitive Surge Current

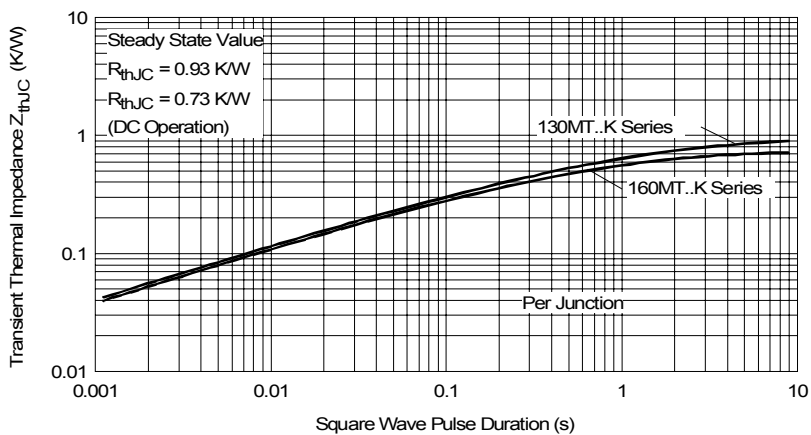


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
03 /06



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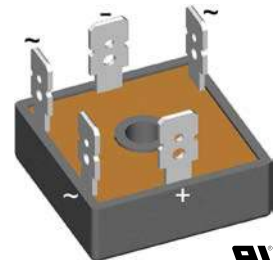
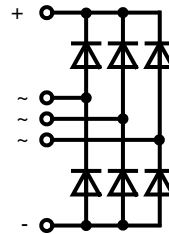
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Three Phase Rectifier Bridge

$$I_{dAV} = 35 \text{ A}$$

$$V_{RRM} = 800/1600 \text{ V}$$

V_{RSM} V	V_{RRM} V	Type
900	800	IX36MT080
1700	1600	IX36MT160



Symbol	Conditions	Maximum Ratings	
I_{dAV}	$T_C = 85^\circ\text{C}$, module	27	A
I_{dAVM}	$T_C = 62^\circ\text{C}$, module	35	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz)	550	A
	$V_R = 0$; $t = 8.3 \text{ ms}$ (60 Hz)	600	A
	$T_{VJ} = T_{VJM}$; $t = 10 \text{ ms}$ (50 Hz)	500	A
	$V_R = 0$; $t = 8.3 \text{ ms}$ (60 Hz)	550	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz)	1520	A ² s
	$V_R = 0$; $t = 8.3 \text{ ms}$ (60 Hz)	1520	A ² s
	$T_{VJ} = T_{VJM}$; $t = 10 \text{ ms}$ (50 Hz)	1250	A ² s
	$V_R = 0$; $t = 8.3 \text{ ms}$ (60 Hz)	1250	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
V_{ISOL}	50/60 Hz, RMS $t = 1 \text{ min}$	2500	V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000	V~
M_d	Mounting torque (M5) (10-32 UNF)	2 ±10%	Nm
		18 ±10%	lb.in.
Weight	Typ.	22	g

Features

- Package with ¼" fast-on terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop

Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

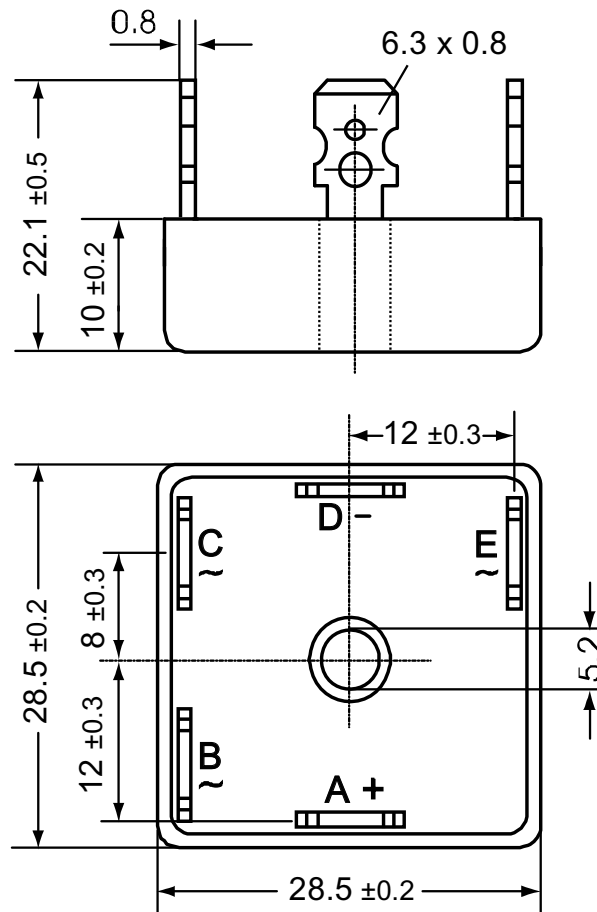
Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature & power cycling

Symbol	Conditions	Characteristic Values	
I_R	$V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$	0.3	mA
		2.0	mA
V_F	$I_F = 150 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$	1.7	V
V_{T0}	For power-loss calculations only	0.8	V
r_t		7.4	mΩ
R_{thJC}	per diode; 120° el.	7.50	K/W
	per module	1.25	K/W
R_{thJH}	per diode; 120° el.	8.40	K/W
	per module	1.40	K/W
d_S	Creeping distance on surface	12.7	mm
d_A	Creepage distance in air	9.4	mm
a	Max. allowable acceleration	50	m/s ²

Data according to IEC 60747 and refer to a single diode unless otherwise stated.

Dimensions in mm (1 mm = 0.0394")



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	IX36MT080	IX36MT080	Box	50	514573
Standard	IX36MT160	IX36MT160	Box	50	510543

Минск

Беларусь

Заказ Минск viber и тел.+375 44 7584780 email minsk17@tut.by www.fotorele.net

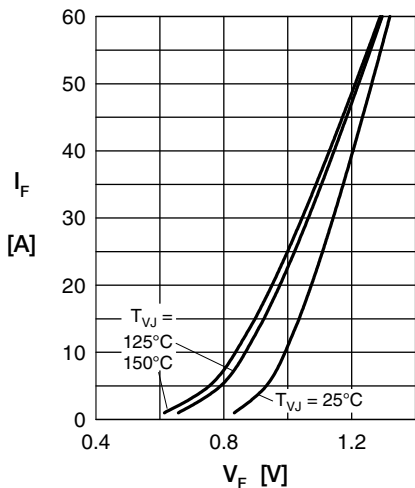


Fig. 1 Forward current vs. voltage drop per diode

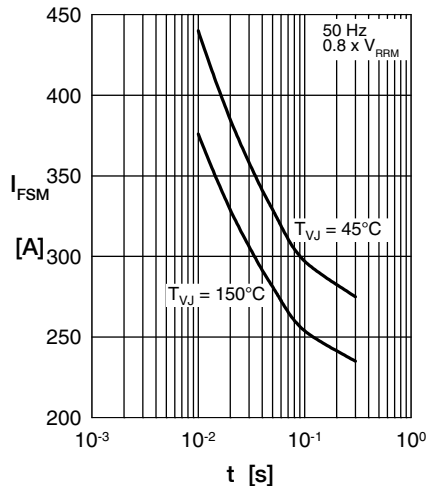


Fig. 2 Surge overload current vs. time per diode

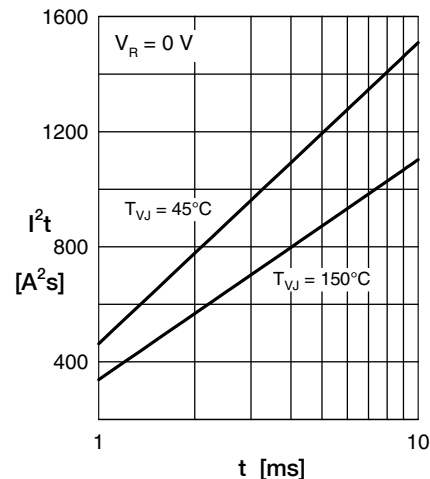


Fig. 3 I^2t vs. time per diode

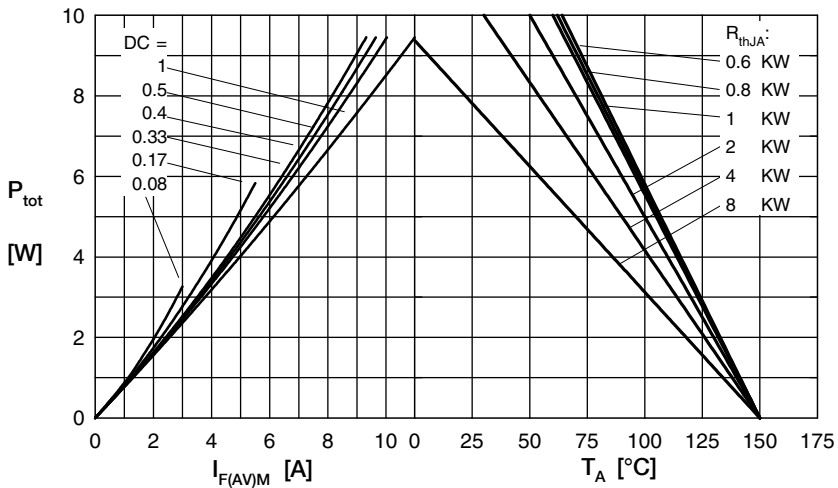


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

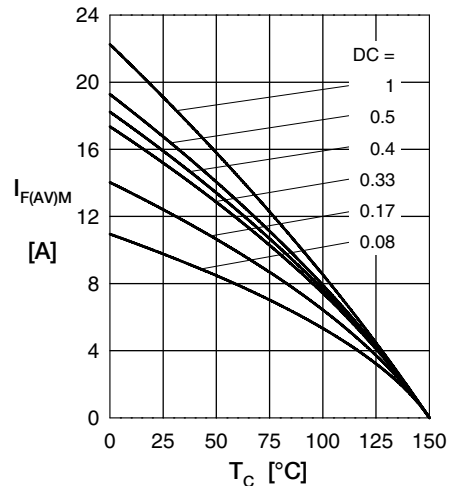
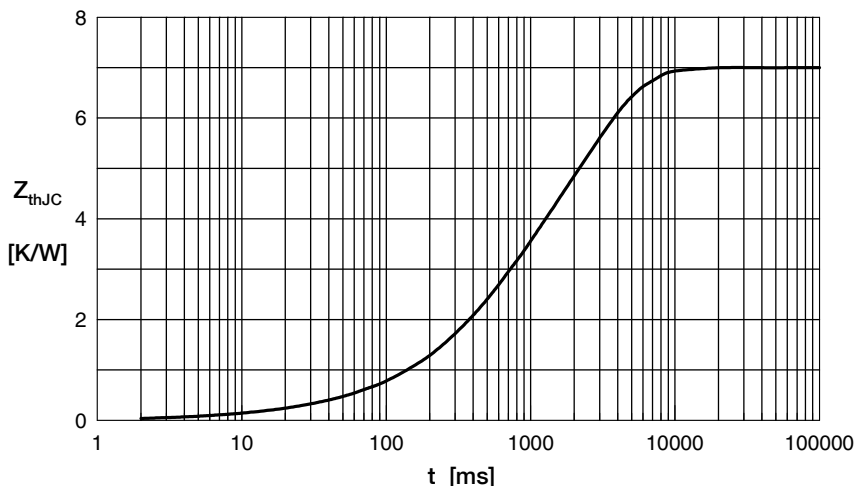


Fig. 5 Max. forward current vs. case temperature per diode



Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.040	0.005
2	0.150	0.030
3	1.710	0.400
4	5.100	2.300




Three Phase Bridge Rectifier, 25 A, 35 A



D-63

FEATURES

- Universal, 3 way terminals: push-on, wrap around or solder
- High thermal conductivity package, electrically insulated case
- Center hole fixing
- Excellent power/volume ratio
- UL E300359 approved 
- Nickel plated terminals solderable using lead (Pb)-free solder; solder alloy Sn/Ag/Cu (SAC305); solder temperature 260 °C to 275 °C
- Designed and qualified for industrial and consumer level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT

PRIMARY CHARACTERISTICS	
I_o	25 A, 35 A
V_{RRM}	50 V to 1600 V
Package	D-63
Circuit configuration	Three phase bridge

DESCRIPTION

A range of extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and instrumentation applications.

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	VALUES 26MT..	VALUES 36MT..	UNITS
I_o		25	35	A
	T_C	70	60	°C
I_{FSM}	50 Hz	360	475	A
	60 Hz	375	500	
i^2t	50 Hz	635	1130	A ² s
	60 Hz	580	1030	
V_{RRM}		50 to 1600		V
T_J		-55 to +150		°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J MAXIMUM mA
VS-26MT.. VS-36MT..	05	50	75	2
	10	100	150	
	20	200	275	
	40	400	500	
	60	600	725	
	80	800	900	
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES 26MT..	VALUES 36MT..	UNITS
Maximum DC output current at T_C	I_O	120° rect. conduction angle		25	35	A
				70	60	°C
Maximum peak, one-cycle non-repetitive forward current	I_{FSM}	t = 10 ms	No voltage reapplied	360	475	A
		t = 8.3 ms		375	500	
		t = 10 ms	100 % V_{RRM} reapplied	300	400	
		t = 8.3 ms		314	420	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied	635	1130	A ² s
		t = 8.3 ms		580	1030	
		t = 10 ms	100 % V_{RRM} reapplied	450	800	
		t = 8.3 ms		410	730	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	I^2t for time $t_x = I^2\sqrt{t} \times \sqrt{t_x}$; $0.1 \leq t_x \leq 10$ ms, $V_{RRM} = 0$ V		6360	11 300	A ² √s
Low level of threshold voltage	$V_{F(TO)1}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, T_J maximum		0.88	0.86	V
High level of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$, T_J maximum		1.13	1.03	
Low level forward slope resistance	r_{t1}	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, T_J maximum		7.9	6.3	mΩ
High level forward slope resistance	r_{t2}	$(I > \pi \times I_{F(AV)})$, T_J maximum		5.2	5.0	
Maximum forward voltage drop	V_{FM}	$T_J = 25$ °C, $I_{FM} = 40$ A _{pk} - per single junction		1.26	1.19	V
Maximum DC reverse current	I_{RRM}	$T_J = 25$ °C, per junction at rated V_{RRM}		100		μA
RMS isolation voltage	V_{INS}	$T_J = 25$ °C, all terminal shorted; f = 50 Hz, t = 1 s		2700		V

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES 26MT	VALUES 36MT	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-55 to +150		°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation per bridge (based on total power loss of bridge)	1.42	1.35	K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.2	0.2	
Approximate weight			20		g
Mounting torque ± 10 %		Bridge to heatsink with screw M4	2.0		Nm

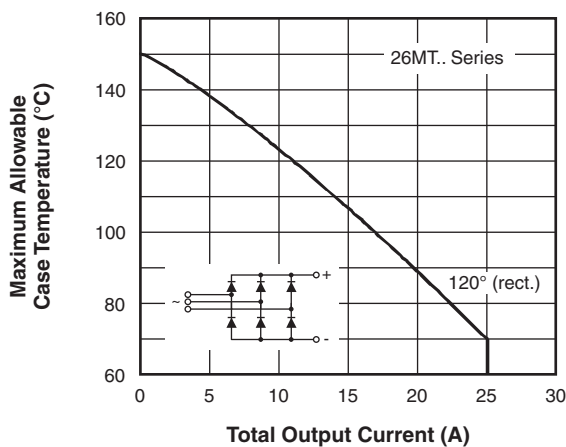


Fig. 1 - Current Ratings Characteristics

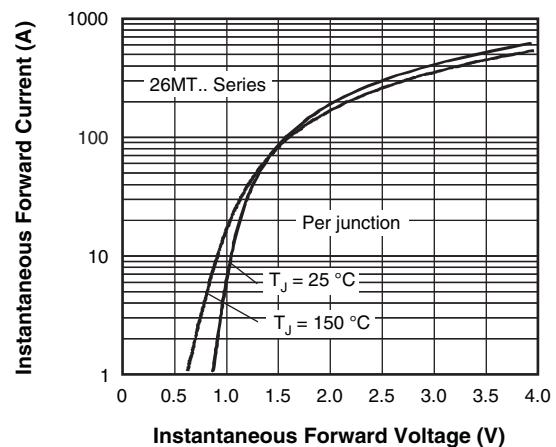


Fig. 2 - Forward Voltage Drop Characteristics

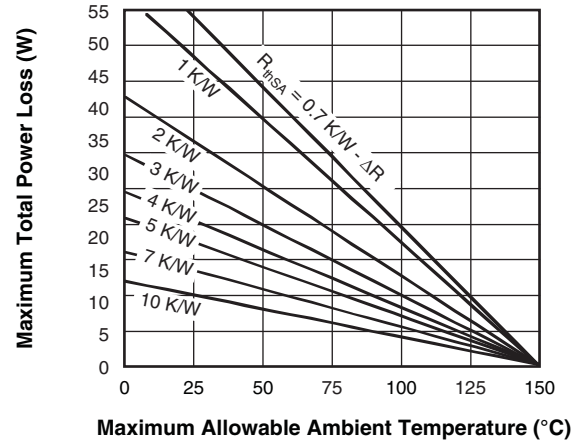
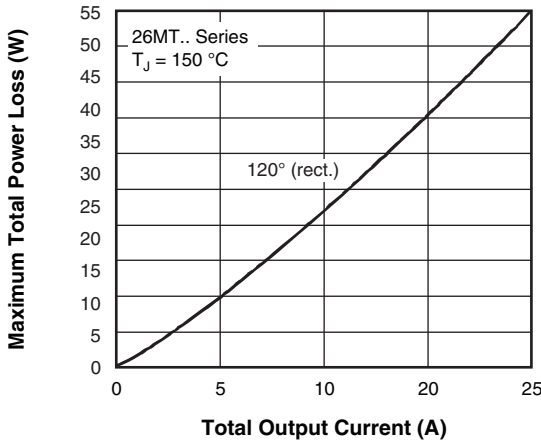


Fig. 3 - Total Power Loss Characteristics

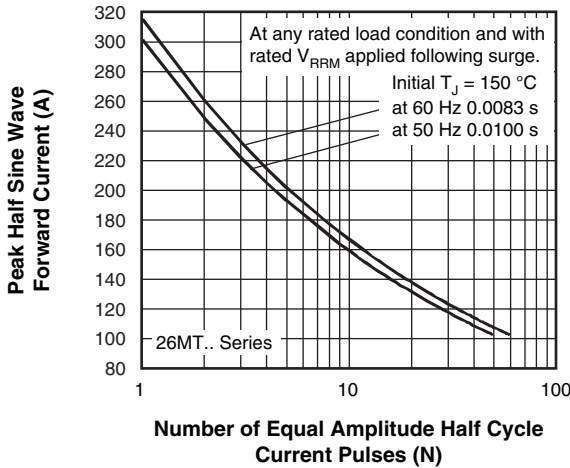


Fig. 4 - Maximum Non-Repetitive Surge Current

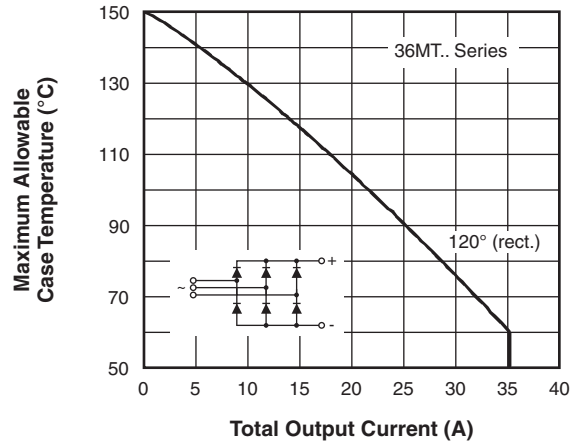


Fig. 6 - Current Ratings Characteristics

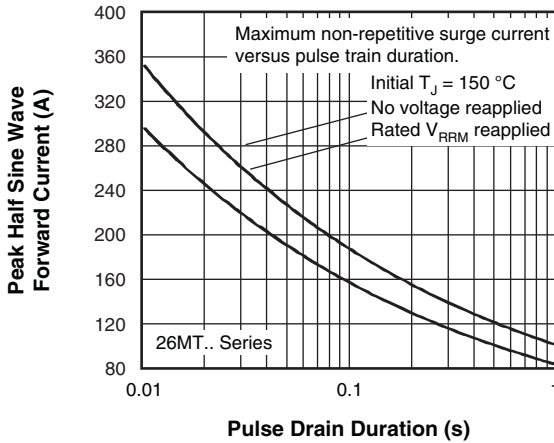


Fig. 5 - Maximum Non-Repetitive Surge Current

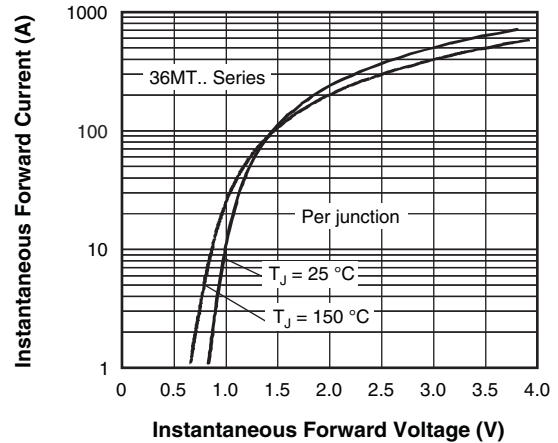


Fig. 7 - Forward Voltage Drop Characteristics

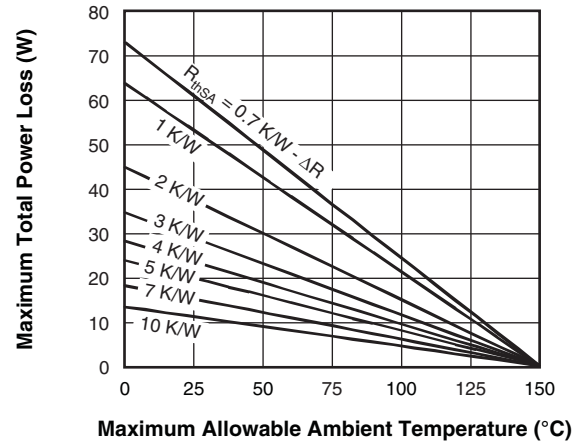
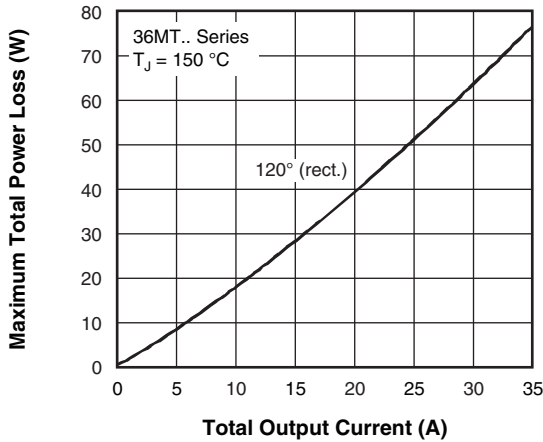


Fig. 8 - Total Power Loss Characteristics

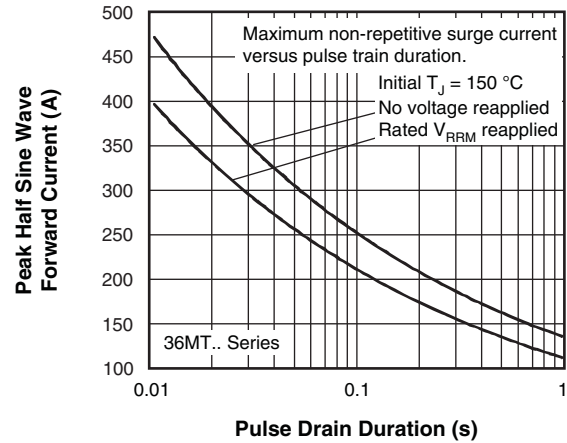
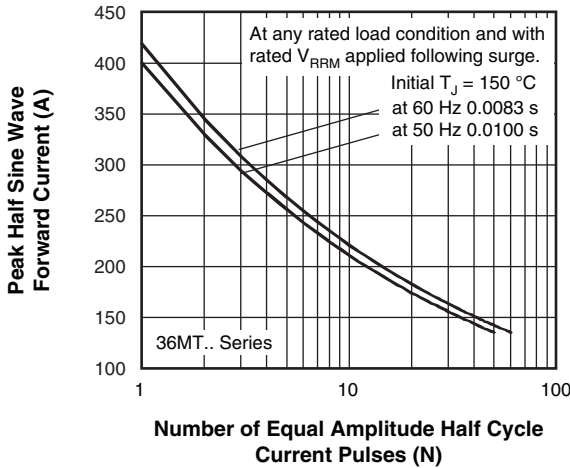


Fig. 9 - Maximum Non-Repetitive Surge Current

Fig. 10 - Maximum Non-Repetitive Surge Current

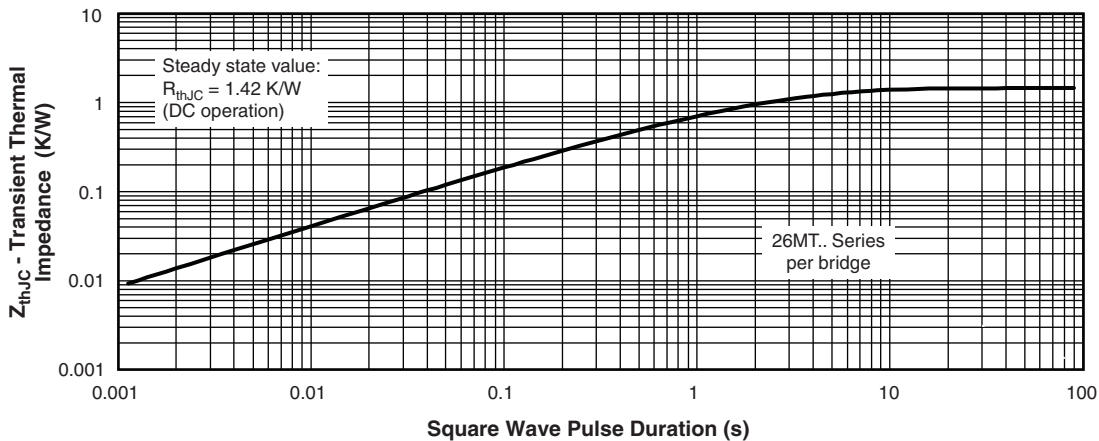


Fig. 11 - Thermal Impedance Z_{thJC} Characteristics

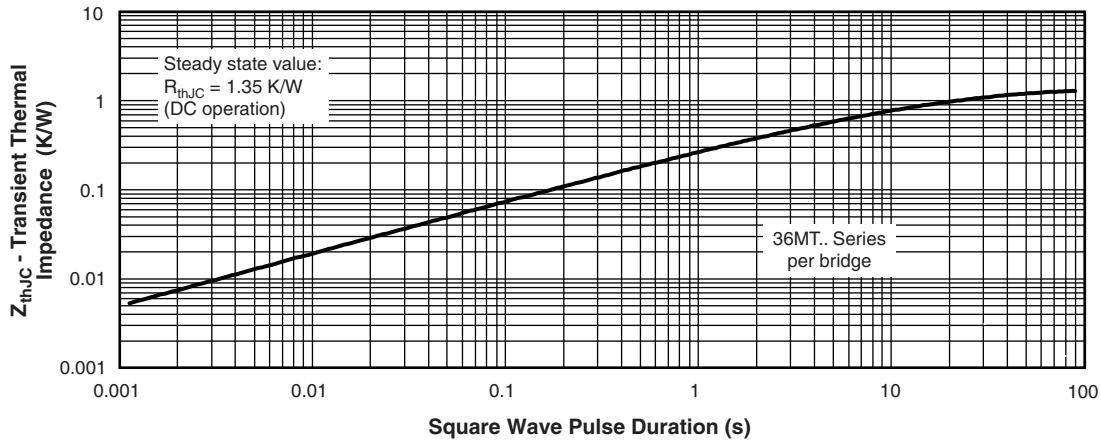
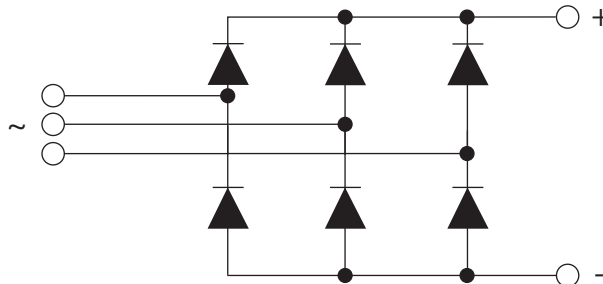


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	36	MT	160
	①	②	③	④
	1	- Vishay Semiconductors product		
	2	- Current rating code	26 = 25 A (average) 36 = 35 A (average)	
	3	- Basic part number		
	4	- Voltage code x 10 = V_{RRM}		

CIRCUIT CONFIGURATION

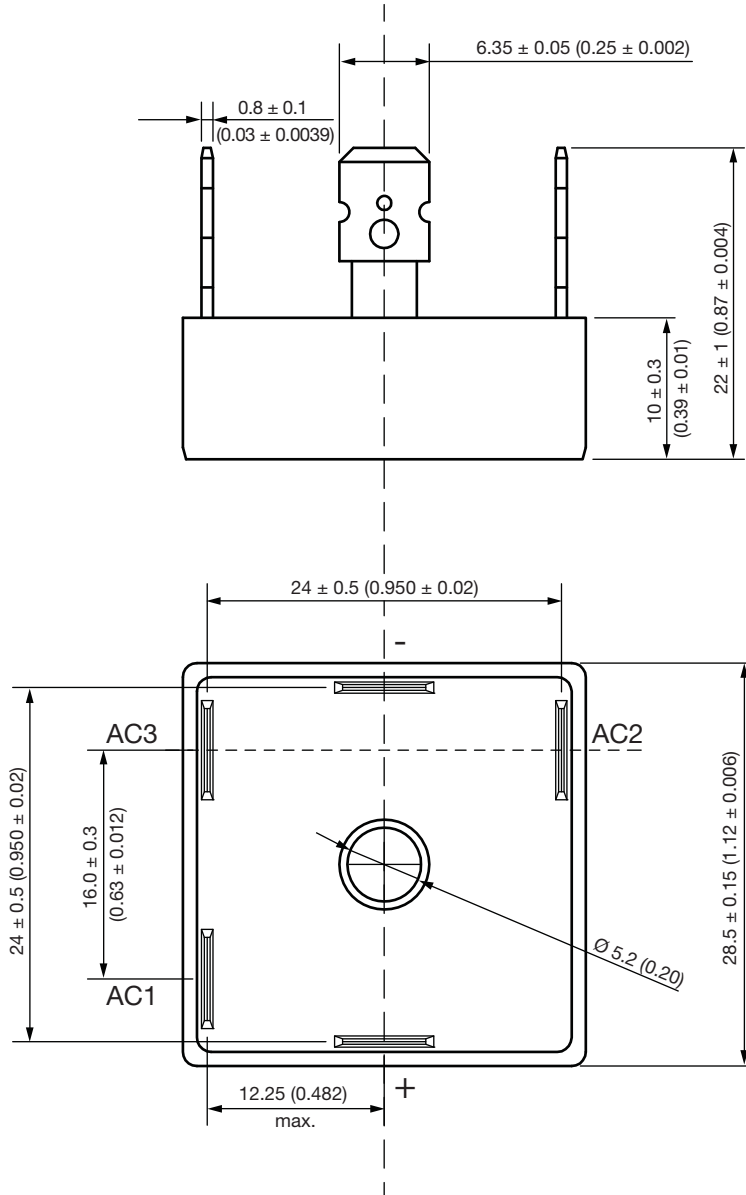


LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95251



D-63

DIMENSIONS in millimeters (inches)



Not to scale



Disclaimer

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THREE PHASE BRIDGE

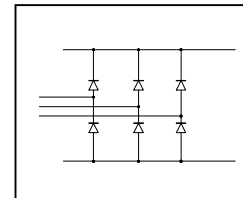
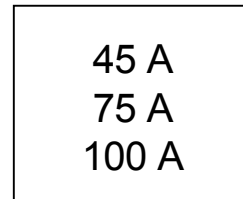
Power Module

Features

- Low V_F
- Low profile package
- Direct Mounting to heatsink
- Flat-Pin/ Round-Pin versions with PCB solderable terminals
- Low junction-to-case Thermal Resistance
- 3500 V_{RMS} insulation voltage
- UL approval pending

Applications: Power conversion machines

- Welding
- UPS
- SMPS
- Motor Drives
- General Purpose & Heavy Duty Applications

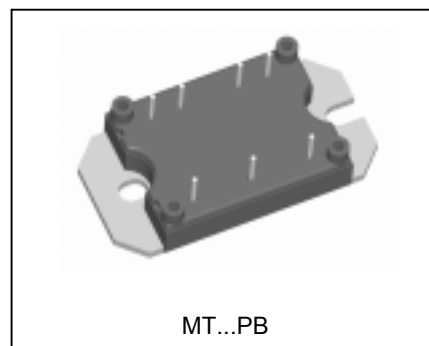
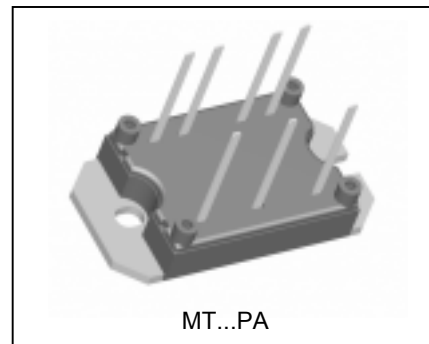


Description

A range of extremely compact three-phase rectifier bridges offering efficient and reliable operation. The low profile package has been specifically conceived to maximize space saving and optimize the electrical layout of the application specific Power Supplies.

Major Ratings and Characteristics

Parameters	40MT	70MT	100MT	Units
I_O	45	75	100	A
@ T_C	100	80	80	°C
I_{FSM}	270	380	450	A
@ 50Hz	280	398	470	
@ 60Hz	365	724	1013	A^2s
I^2t	325	660	920	
@ 50Hz	3650	7240	10130	$A^2\sqrt{s}$
@ 60Hz				
V_{RRM}	1400 & 1600			V
T_{STG} range	-40 to 125			°C
T_J range	-40 to 150			



ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code reverse voltage V	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak V	I_{RRM} max. @ $T_J = 150^\circ\text{C}$ mA
40-70-100MT140P	140	1400	1500	5
40-70-100MT160P	160	1600	1700	

Forward Conduction

Parameter	40MT	70MT	100MT	Units	Conditions
I_O Maximum DC output current @ Case temperature	45	75	100	A	120° Rect conduction angle
	100	80	80	°C	
I_{FSM} Maximum peak, one-cycle forward, non-repetitive on state surge current	270	380	450	A	t = 10ms No voltage reappplied
	280	398	470		t = 8.3ms
	225	320	380		t = 10ms 100% V_{RRM} reappplied
	240	335	400		t = 8.3ms
I^2t Maximum I^2t for fusing	365	724	1013	A ² s	t = 10ms No voltage reappplied
	325	660	920		t = 8.3ms
	253	512	600		t = 10ms 100% V_{RRM} reappplied
	240	467	665		t = 8.3ms
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	3650	7240	10130	A ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)}$ Value of threshold voltage	0.78	0.82	0.75	V	@ T_J max.
r_t Slope resistance	14.8	9.5	8.1	mΩ	
V_{FM} Maximum forward voltage drop	1.45	1.45	1.51	V	$T_J = 25^\circ\text{C}$ $t_p = 400\mu\text{s}$ single junction
	$I_{pk} = 40\text{A}$	$I_{pk} = 70\text{A}$	$I_{pk} = 100\text{A}$		

Insulation Table

Parameter	40MT	70MT	100MT	Units	Conditions
V_{INS} RMS insulation voltage	3500			V	$T_J = 25^\circ\text{C}$ all terminal shorted f = 50Hz, t = 1s

Thermal and Mechanical Specifications

Parameter	40MT	70MT	100MT	Units	Conditions
T _J Maximum junction operating temperature range	- 40 to 150			°C	
T _{stg} Maximum storage temperature range	-40 to 125			°C	
R _{thJC} Maximum thermal resistance, junction to case	0.27	0.23	0.19	K/W	DC operation per module
	1.6	1.38	1.14		DC operation per junction
	0.38	0.29	0.22		120° Rect conduction angle per module
	2.25	1.76	1.29		120° Rect conduction angle per junction
R _{thCS} Maximum thermal resistance, case to heatsink	0.1			K/W	Per module. Mounting surface smooth, flat and greased. Heatsink compound thermal conductivity = 0.42W/mK
T Mounting torque ± 10% to heatsink	4			Nm	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound.
wt Approximate weight	65			g	Lubricated threads.

Clearance and Creepage Distances

Parameter	MT...PA	MT...PB	Units
Clearance (external shortest distance in air between terminals which are not internally short circuited together)	10.9	12.3	mm
Creepage distance (shortest distance along external surface of the insulating material between terminals which are not internally short circuited together)	10.9	12.3	mm

Ordering Information Table

Device Code

10	0	MT	160	P	B
①	②	③	④	⑤	

1 - Current rating code

2 - Circuit configuration code: 0 = 3-Phase Rectifier Bridge

3 - Essential part number

4 - Voltage code: code x 10 = V_{RRM} (See Voltage Ratings table)

5 - Pinout code:

4	= 45A
7	= 75A
10	= 100A

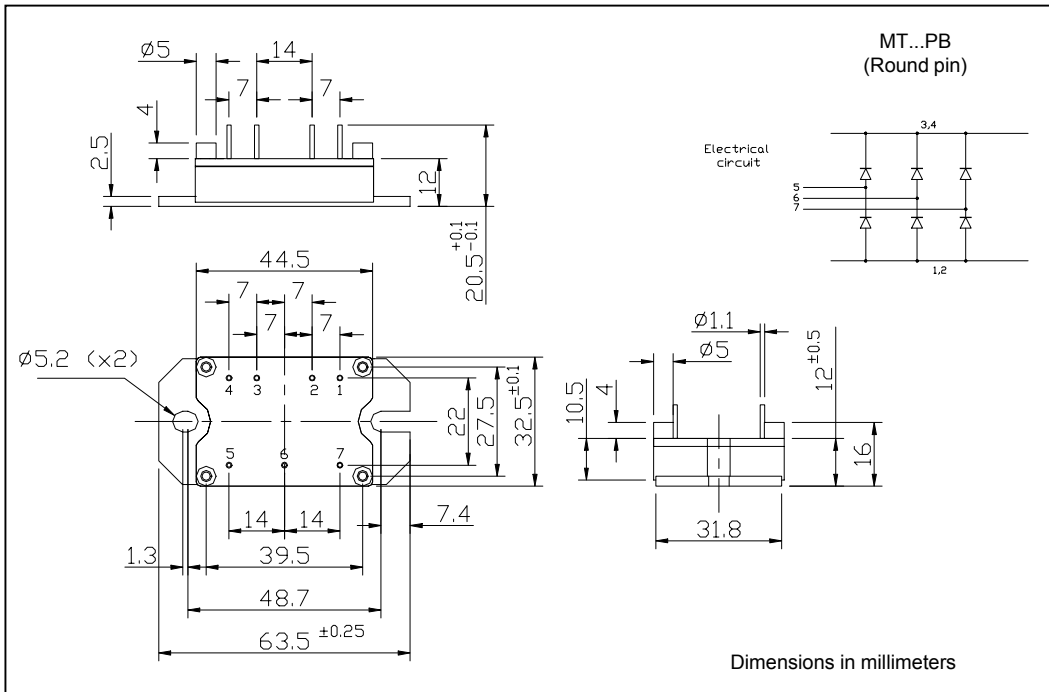
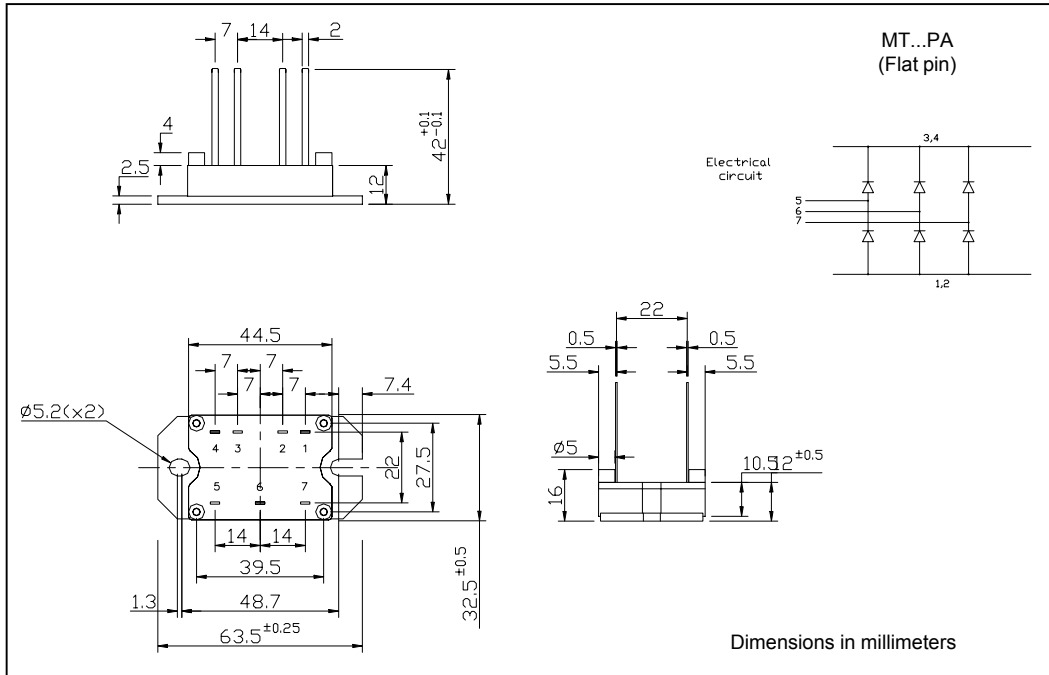
A	= Flat pins
B	= Round pins

MTP 3-Phase Rectifier Series

Bulletin I27145 rev. B 06/02

International
IR Rectifier

Outline Table



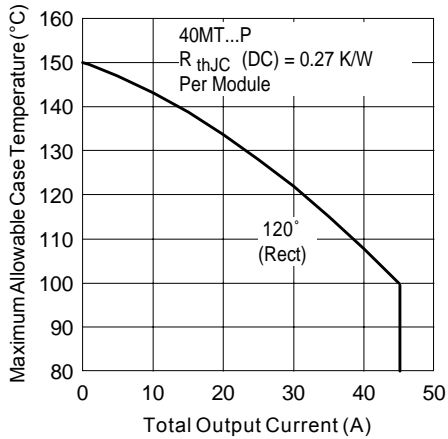


Fig. 1 - Current Rating Characteristics

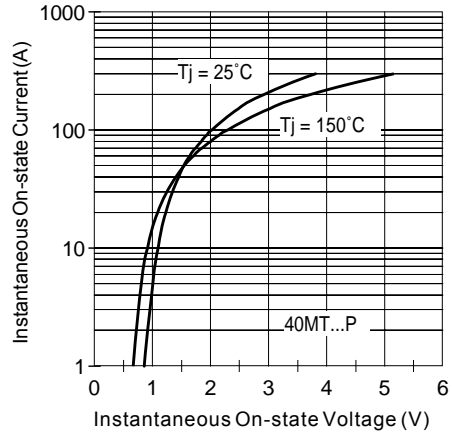


Fig. 2 - On-state Voltage Drop Characteristics

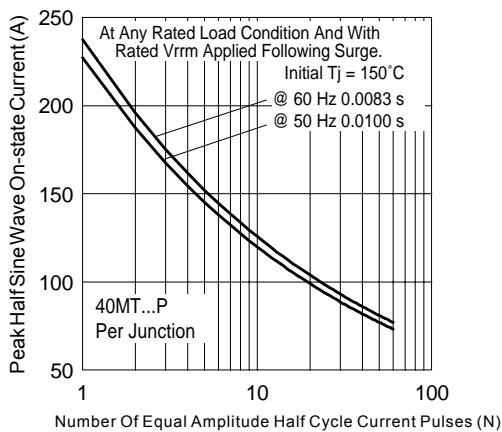


Fig. 3 - Maximum Non-Repetitive Surge Current

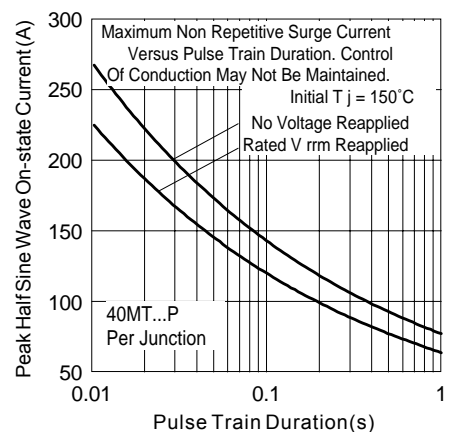


Fig. 4 - Maximum Non-Repetitive Surge Current

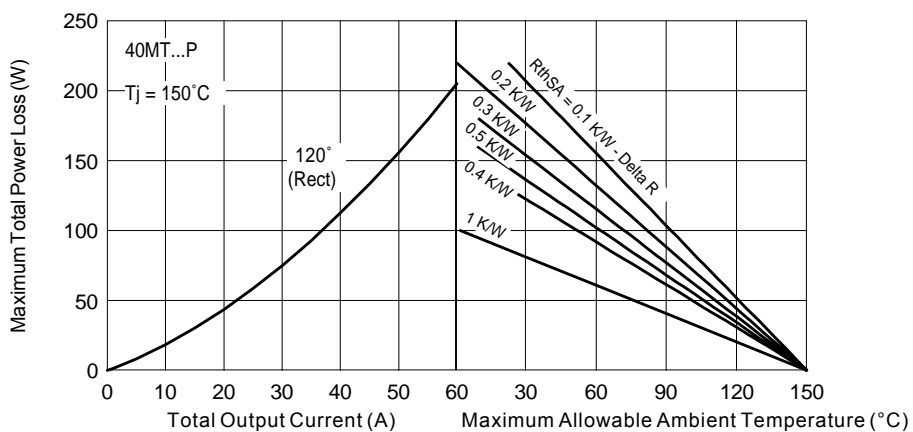


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

MTP 3-Phase Rectifier Series

Bulletin I27145 rev. B 06/02

International
IRF Rectifier

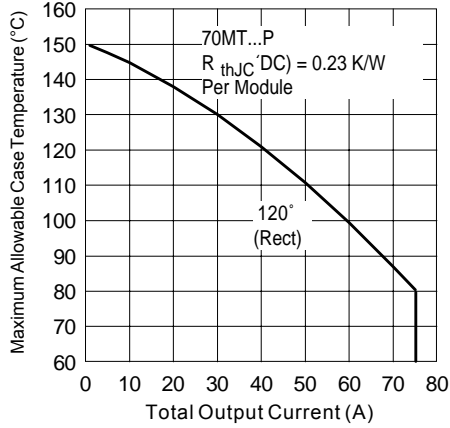


Fig. 6 - Current Rating Characteristics

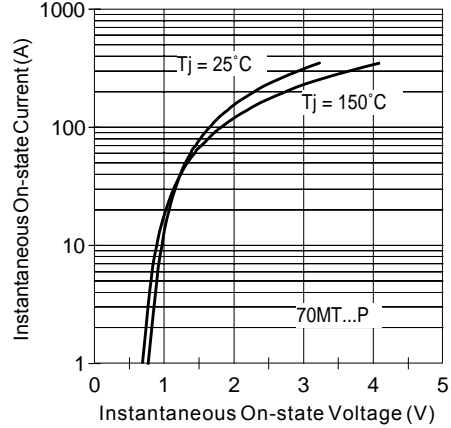


Fig. 7 - On-state Voltage Drop Characteristics

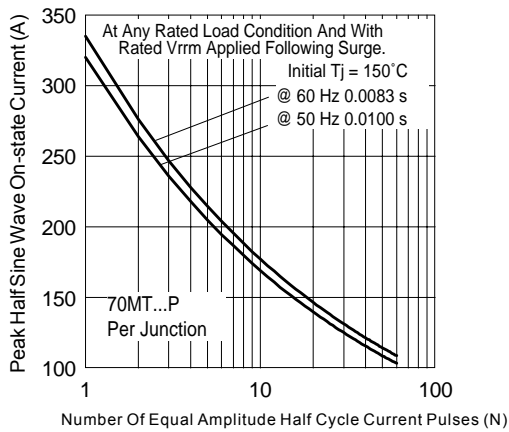


Fig. 8 - Maximum Non-Repetitive Surge Current

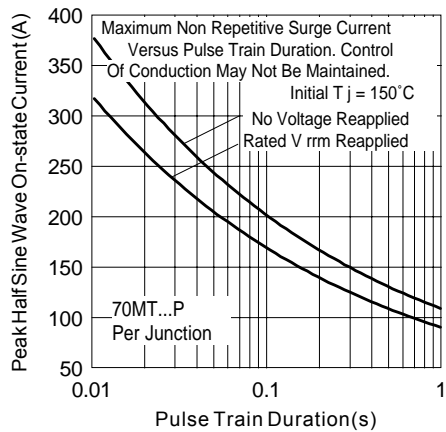


Fig. 9 - Maximum Non-Repetitive Surge Current

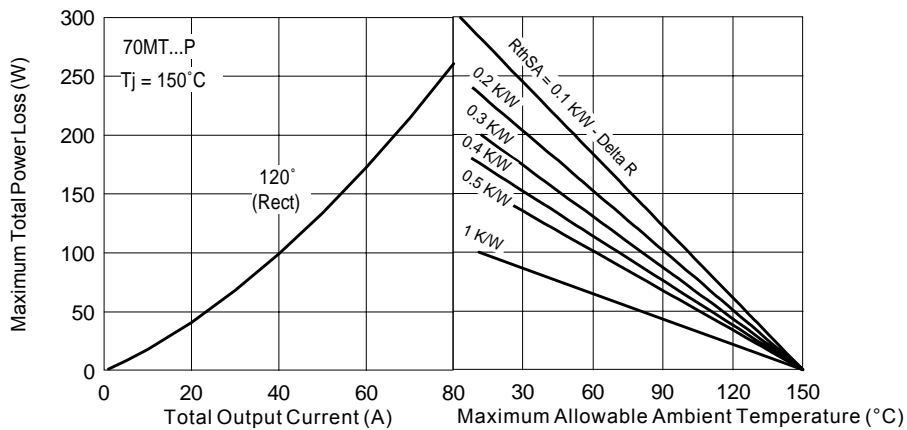


Fig. 10 - Current Rating Nomogram (1 Module Per Heatsink)

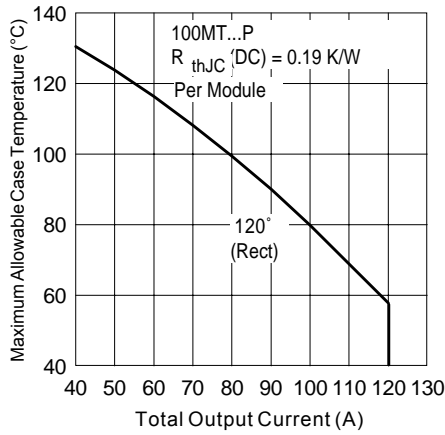


Fig. 11 - Current Rating Characteristics

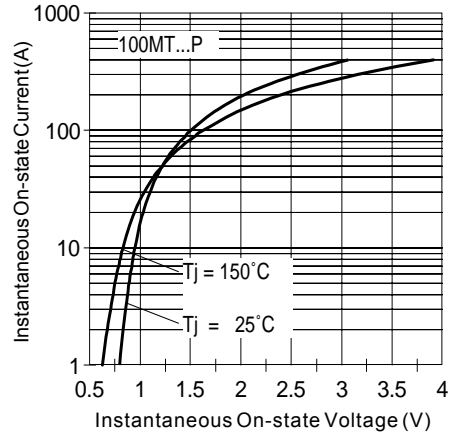


Fig. 12 - On-state Voltage Drop Characteristics

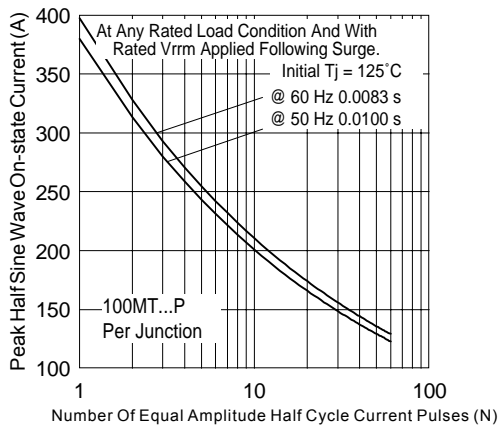


Fig. 13 - Maximum Non-Repetitive Surge Current

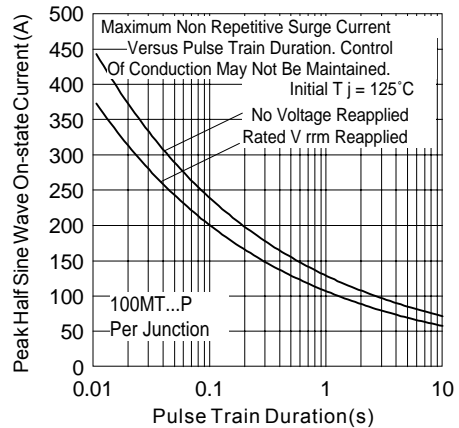


Fig. 14 - Maximum Non-Repetitive Surge Current

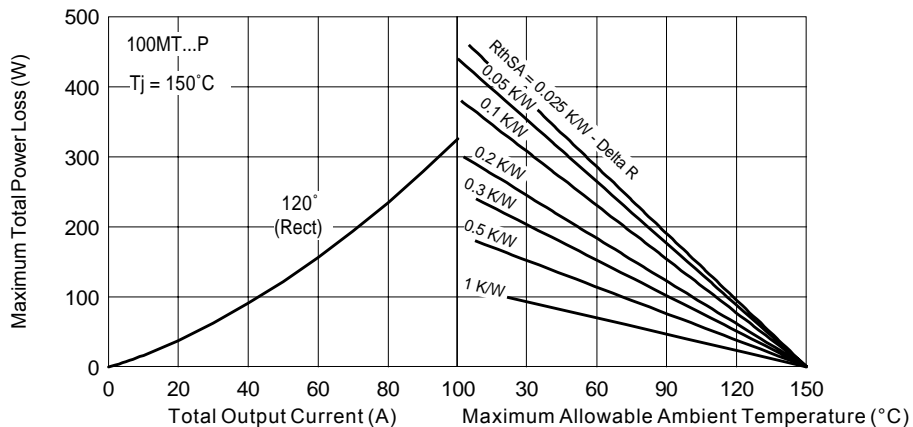


Fig. 15 - Current Rating Nomogram (1 Module Per Heatsink)

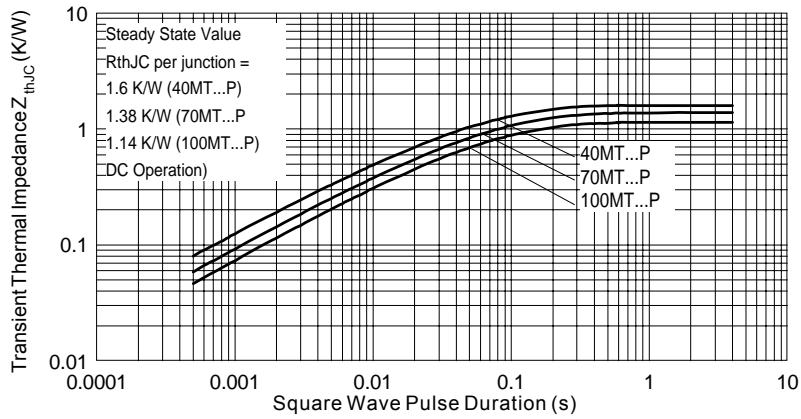


Fig. 16 - Thermal Impedance Z_{thJC} Characteristics

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.