IGBT,Wechselrichter / IGBT,Inverter

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1200	V
Kollektor-Dauergleichstrom Continuous DC collector current	T_C = 80°C, $T_{vj\,max}$ = 150°C T_C = 25°C, $T_{vj\,max}$ = 150°C	$I_{C\,nom}$ I_C	75 105	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	150	A
Gesamt-Verlustleistung Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 150	P_{tot}	355	W
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 75 A, V_{GE} = 15 V I_C = 75 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C	$V_{CE\,sat}$		1,70 2,00	2,20	V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 3,00 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,0	5,8	6,5	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V		Q_G		0,70		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		10		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		5,30		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,20		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1200 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			5,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			400	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 75 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Gon} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,on}$		0,26 0,29		µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 75 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Gon} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_r		0,03 0,05		µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 75 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Goff} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,off}$		0,42 0,52		µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 75 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Goff} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_f		0,07 0,09		µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 75 A, V_{CE} = 600 V, L_S = 45 nH V_{GE} = ±15 V R_{Gon} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{on}		6,55 9,40		mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 75 A, V_{CE} = 600 V, L_S = 45 nH V_{GE} = ±15 V R_{Goff} = 4,7 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{off}		6,80 9,40		mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 900 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 10 µs, T_{vj} = 125°C	I_{SC}		300		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			0,35	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		125	°C

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Diode, Wechselrichter / Diode, Inverter

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1200	V
Dauergleichstrom Continuous DC forward current		I_F	75	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	150	A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C	I²t	1200	A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 75 A, V_{GE} = 0 V I_F = 75 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C	V_F		1,65 1,65	2,20	V V
Rückstromspitze Peak reverse recovery current	I_F = 75 A, - di_F/dt = 2000 A/µs (T_{vj}=125°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	I_{RM}		80,0 86,0		A A
Sperrverzögerungsladung Recovered charge	I_F = 75 A, - di_F/dt = 2000 A/µs (T_{vj}=125°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	Q_r		9,30 16,5		µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 75 A, - di_F/dt = 2000 A/µs (T_{vj}=125°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	E_{rec}		3,20 6,50		mJ mJ
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode		R_{thJC}			0,58	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\ op}$	-40		125	°C

Diode, Gleichrichter / Diode, Rectifier

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1600	V
Durchlassstrom Grenzeffektivwert pro Chip Maximum RMS forward current per chip	T_C = 80°C	I_{FRMSM}	115	A
Gleichrichter Ausgang Grenzeffektivstrom Maximum RMS current at rectifier output	T_C = 80°C	I_{RMSM}	80	A
Stoßstrom Grenzwert Surge forward current	t_p = 10 ms, T_{vj} = 25°C t_p = 10 ms, T_{vj} = 150°C	I_{FSM}	500 400	A A
Grenzlastintegral I²t - value	t_p = 10 ms, T_{vj} = 25°C t_p = 10 ms, T_{vj} = 150°C	I²t	1250 800	A²s A²s

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Durchlassspannung Forward voltage	T_{vj} = 150°C, I_F = 75 A	V_F		1,15		V
Schleusenspannung Threshold voltage	T_{vj} = 150°C	V_{TO}		0,80		V
Ersatzwiderstand Slope resistance	T_{vj} = 150°C	r_T		6,00		mΩ
Sperrstrom Reverse current	T_{vj} = 150°C, V_R = 1600 V	I_R		3,00		mA
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode	R_{thJC}			0,65	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\ op}$				°C

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IGBT, Brems-Chopper / IGBT, Brake-Chopper

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1200	V
Kollektor-Dauergleichstrom Continuous DC collector current	T_C = 80°C, $T_{vj\,max}$ = 150°C T_C = 25°C, $T_{vj\,max}$ = 150°C	$I_{C\,nom}$ I_C	40 55	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	80	A
Gesamt-Verlustleistung Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 150	P_{tot}	210	W
Gate-Emitter-Spitzenspannung Gate-emitter peak voltage		V_{GES}	+/-20	V

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage	I_C = 40 A, V_{GE} = 15 V I_C = 40 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C	$V_{CE\,sat}$		1,80 2,15	2,30	V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 1,50 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,0	5,8	6,5	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V		Q_G		0,33		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		6,0		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		2,50		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,09		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1200 V, V_{GE} = 0 V, T_{vj} = 25°C		I_{CES}			5,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			400	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 40 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Gon} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,on}$		0,09 0,09		µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 40 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Gon} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_r		0,03 0,05		µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 40 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Goff} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,off}$		0,42 0,52		µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 40 A, V_{CE} = 600 V V_{GE} = ±15 V R_{Goff} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_f		0,07 0,09		µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 40 A, V_{CE} = 600 V, L_S = t.b.d. nH V_{GE} = ±15 V R_{Gon} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{on}		6,00		mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 40 A, V_{CE} = 600 V, L_S = t.b.d. nH V_{GE} = ±15 V R_{Goff} = 27 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{off}		4,20		mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 900 V V_{CEmax} = V_{CES} - L_{sCE} ·di/dt	t_P ≤ 10 µs, T_{vj} = 125°C	I_{SC}		160		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			0,60	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		125	°C

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Diode, Brems-Chopper / Diode, Brake-Chopper

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1200	V
Dauergleichstrom Continuous DC forward current		I_F	25	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	50	A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C	I²t	170	A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 25 A, V_{GE} = 0 V I_F = 25 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C	V_F		1,65 1,65	2,20	V V
Rückstromspitze Peak reverse recovery current	I_F = 25 A, - di_F/dt = 700 A/µs (T_{vj}=125°C) V_R = 600 V	T_{vj} = 25°C T_{vj} = 125°C	I_{RM}		26,0 24,0		A A
Sperrverzögerungsladung Recovered charge	I_F = 25 A, - di_F/dt = 700 A/µs (T_{vj}=125°C) V_R = 600 V	T_{vj} = 25°C T_{vj} = 125°C	Q_r		2,80 5,00		µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 25 A, - di_F/dt = 700 A/µs (T_{vj}=125°C) V_R = 600 V	T_{vj} = 25°C T_{vj} = 125°C	E_{rec}		0,90 1,80		mJ mJ
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode		R_{thJC}			1,20	K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		125	°C

NTC-Widerstand / NTC-Thermistor

Charakteristische Werte / Characteristic Values

			min.	typ.	max.	
Nennwiderstand Rated resistance	T_C = 25°C	R_{25}		5,00		kΩ
Abweichung von R100 Deviation of R100	T_C = 100°C, R_{100} = 493 Ω	ΔR/R	-5		5	%
Verlustleistung Power dissipation	T_C = 25°C	P_{25}			20,0	mW
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298,15\ K))]$	$B_{25/50}$		3375		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298,15\ K))]$	$B_{25/80}$		t.b.d.		K
B-Wert B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298,15\ K))]$	$B_{25/100}$		t.b.d.		K

Angaben gemäß gültiger Application Note.
Specification according to the valid application note.

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Modul / Module

Isolations-Prüfspannung Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}		2,5		kV
Material Modulgrundplatte Material of module baseplate				Cu		
Innere Isolation Internal isolation	Basisisolierung (Schutzklasse 1, EN61140) basic insulation (class 1, IEC 61140)			Al_2O_3		
Kriechstrecke Creepage distance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			10,0		mm
Luftstrecke Clearance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			7,5		mm
Vergleichszahl der Kriechwegbildung Comperative tracking index		CTI		> 225		
			min.	typ.	max.	
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro Modul / per module λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)	R_{thCH}		0,009		K/W
Modulstreuinduktivität Stray inductance module		L_{sCE}		60		nH
Modulleitungswiderstand, Anschlüsse - Chip Module lead resistance, terminals - chip	T_C = 25°C, pro Schalter / per switch	$R_{CC'+EE'}$ $R_{AA'+CC'}$		7,00 4,00		mΩ
Lagertemperatur Storage temperature		T_{stg}	-40		125	°C
Anzugsdrehmoment f. Modulmontage Mounting torque for modul mounting	Schraube M5 - Montage gem. gültiger Applikationsschrift Screw M5 - Mounting according to valid application note	M	3,00	-	6,00	Nm
Gewicht Weight		G		300		g

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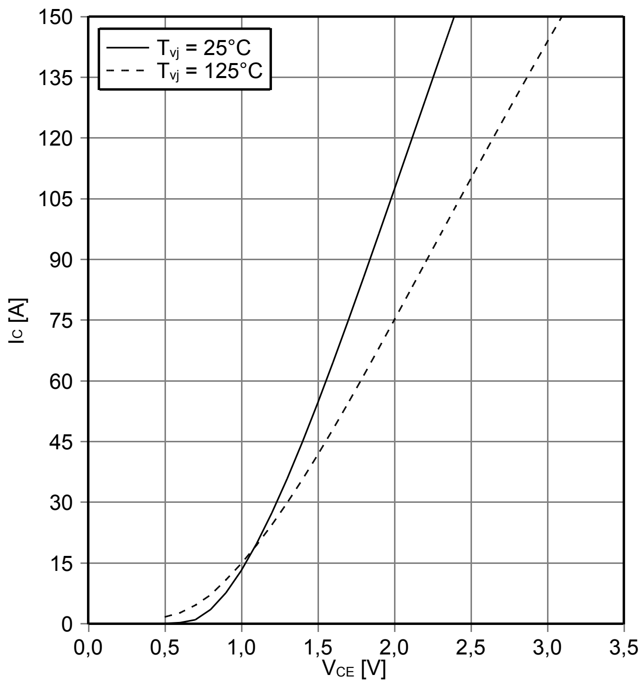
Technische Information / Technical Information

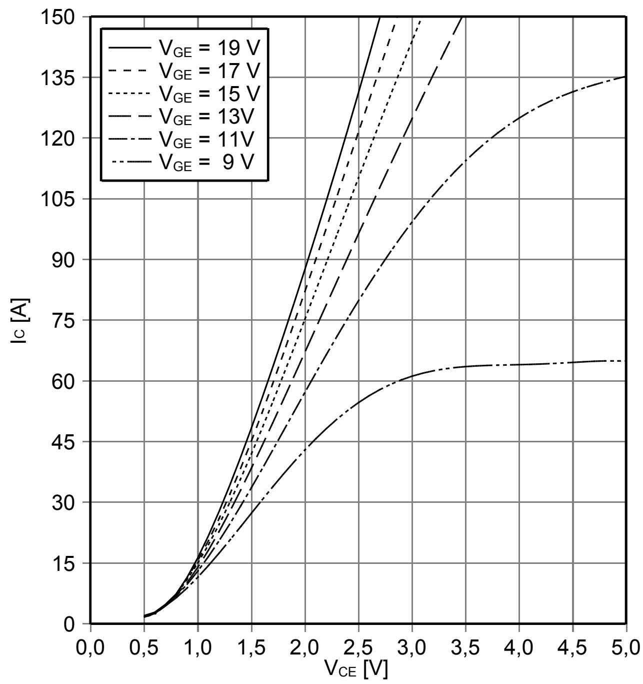
IGBT-Module
IGBT-modules

FP75R12KE3

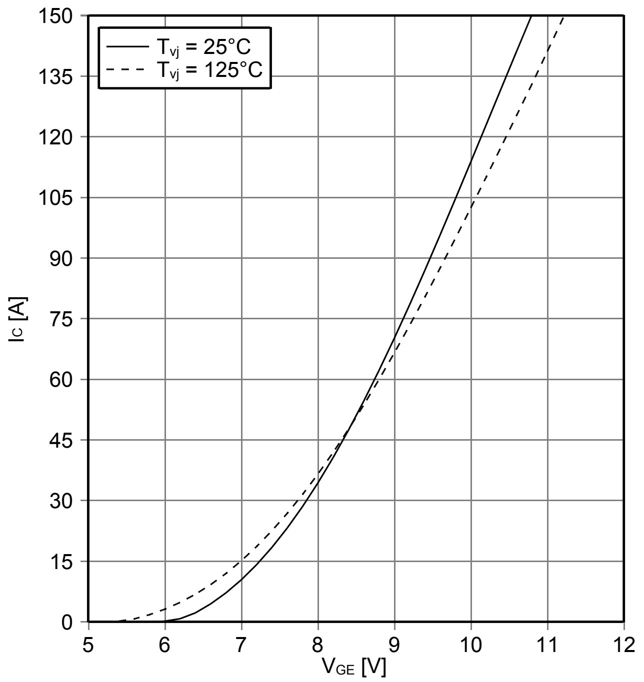
Ausgangskennlinie IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



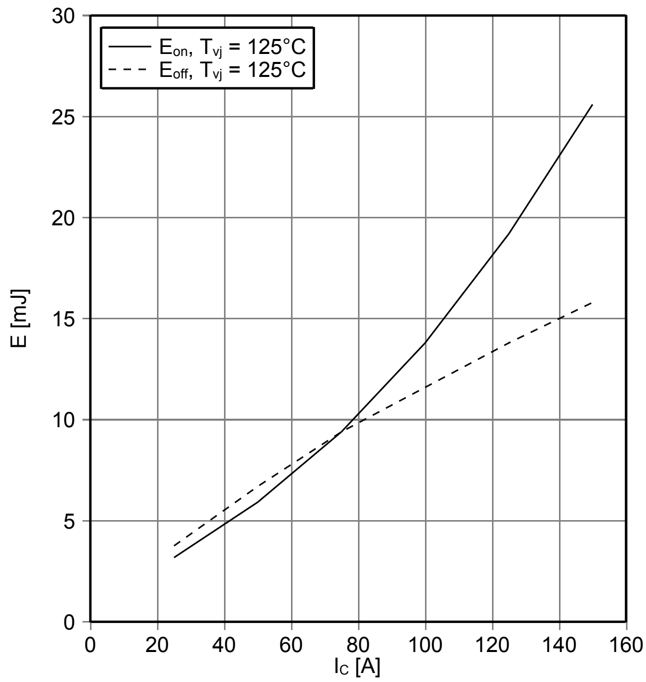
Ausgangskennlinienfeld IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
$T_{vj} = 125°C$



Übertragungscharakteristik IGBT,Wechselrichter (typisch)
transfer characteristic IGBT,Inverter(typical)
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



SchaltverlusteIGBT,Wechselrichter (typisch)
switching losses IGBT,Inverter (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
$V_{GE} = \pm 15$ V, $R_{Gon} = 4.7\ \Omega$, $R_{Goff} = 4.7\ \Omega$, $V_{CE} = 600$ V



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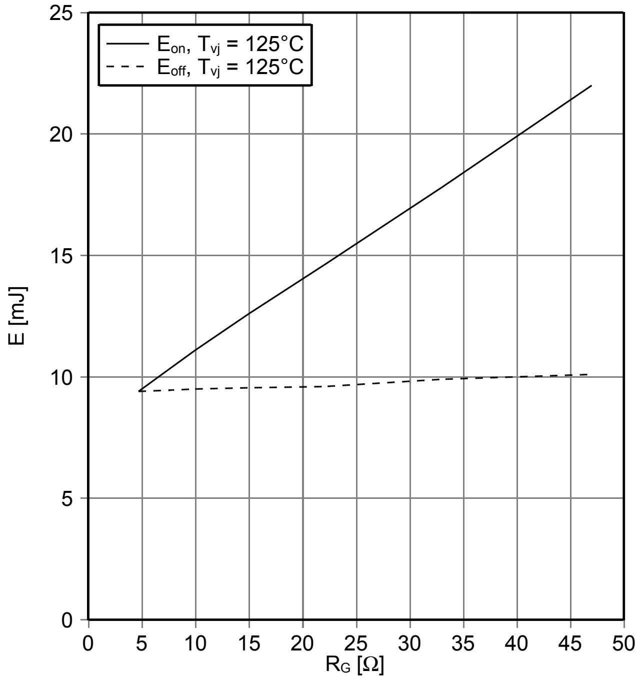
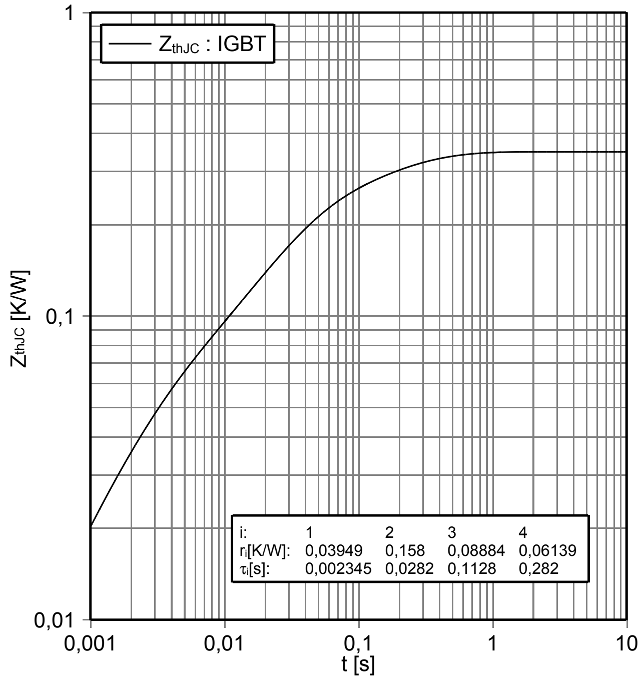
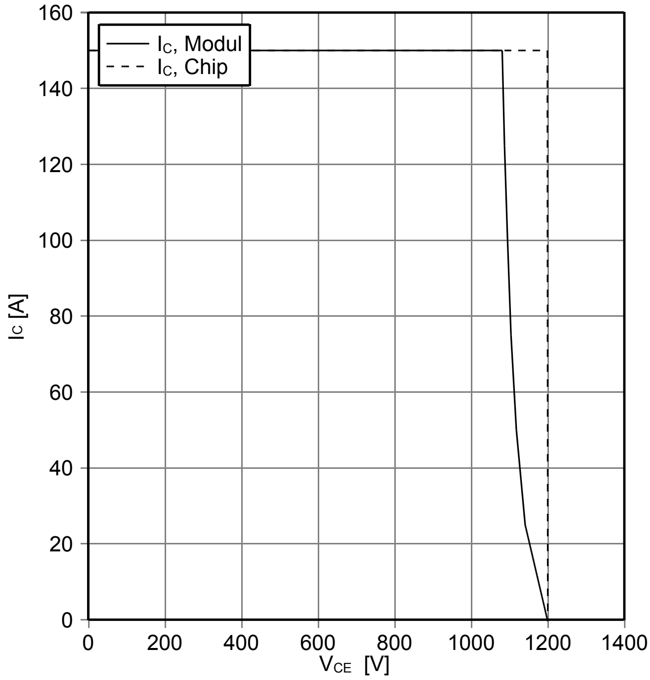
SchaltverlustelGBT,Wechselrichter (typisch)
switching losses IGBT,Inverter (typical)
$E_{on} = f\ (R_G)$, $E_{off} = f\ (R_G)$
$V_{GE} = \pm15$ V, $I_C = 75$ A, $V_{CE} = 600$ V



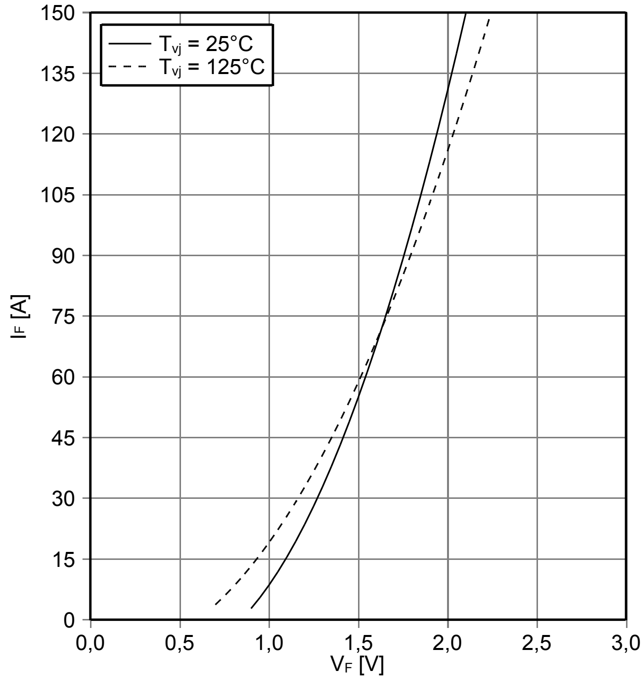
Transienter Wärmewiderstand IGBT,Wechselrichter
transient thermal impedance IGBT,Inverter
$Z_{thJC} = f\ (t)$



Sicherer Rückwärts-Arbeitsbereich IGBT,Wechselrichter (RBSOA)
reverse bias safe operating area IGBT,Inverter (RBSOA)
$I_C = f\ (V_{CE})$
$V_{GE} = \pm15$ V, $R_{Goff} = 4.7\ \Omega$, $T_{vj} = 125°C$



Durchlasskennlinie der Diode, Wechselrichter (typisch)
forward characteristic of Diode, Inverter (typical)
$I_F = f\ (V_F)$



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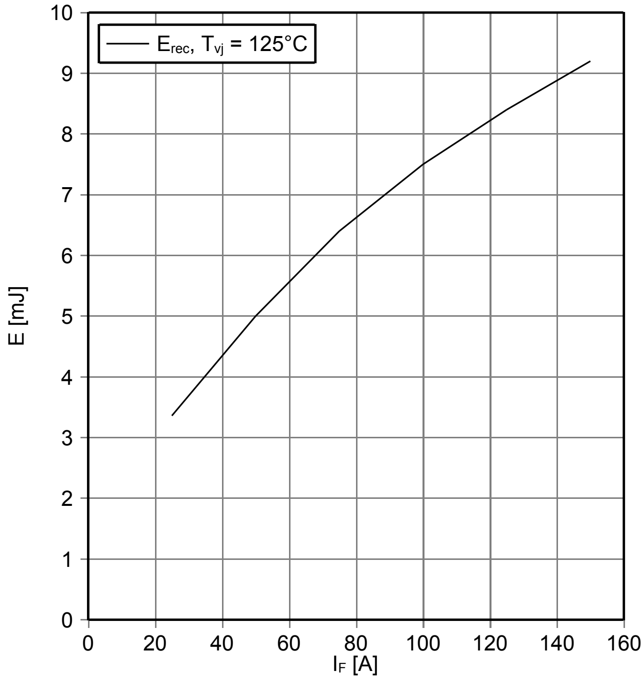
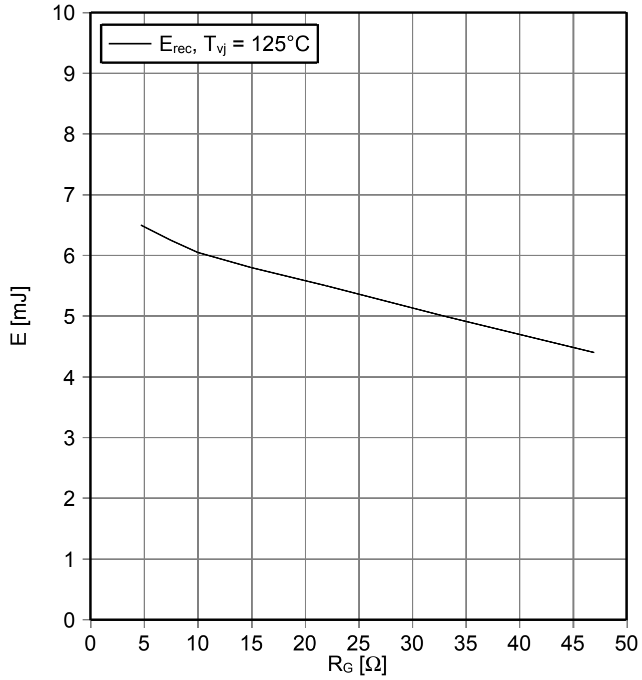
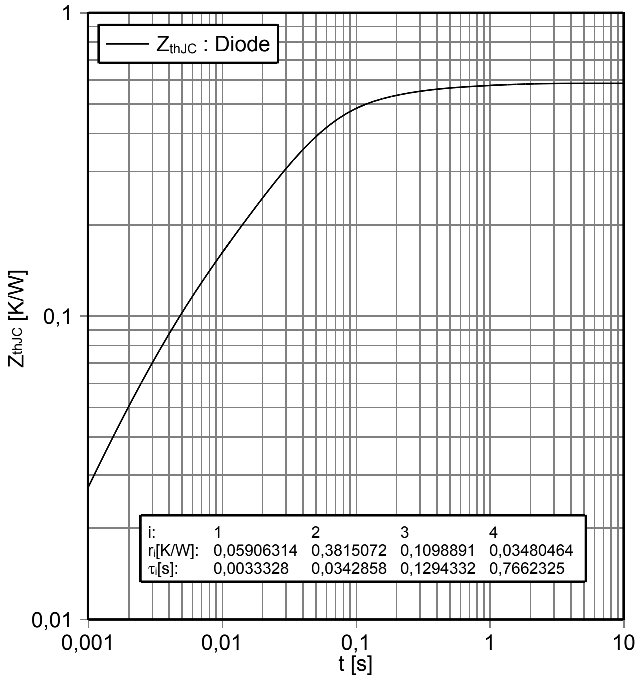
Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 4.7\ \Omega$, $V_{CE} = 600$ V



Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(R_G)$
$I_F = 75$ A, $V_{CE} = 600$ V

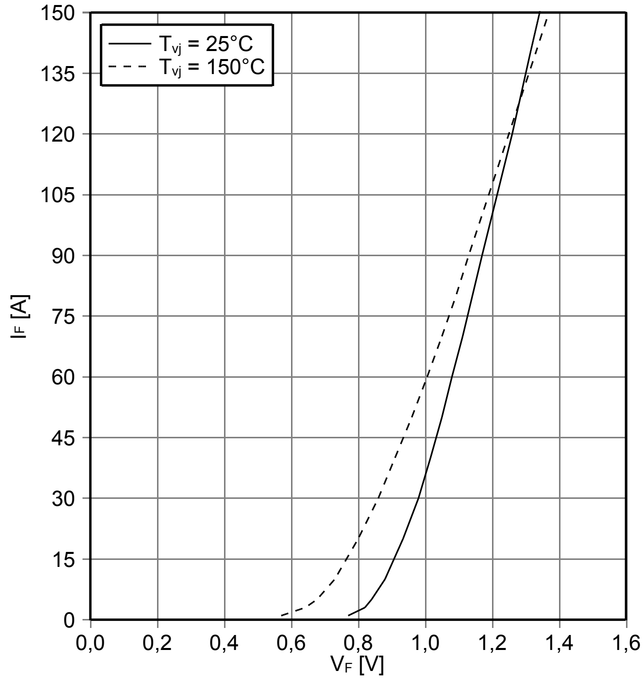


Transienter Wärmewiderstand Diode, Wechselrichter
transient thermal impedance Diode, Inverter
$Z_{thJC} = f(t)$



i:	1	2	3	4
r_i[K/W]:	0,05906314	0,3815072	0,1098891	0,03480464
τ_i[s]:	0,0033328	0,0342858	0,1294332	0,7662325

Durchlasskennlinie der Diode, Gleichrichter (typisch)
forward characteristic of Diode, Rectifier (typical)
$I_F = f(V_F)$



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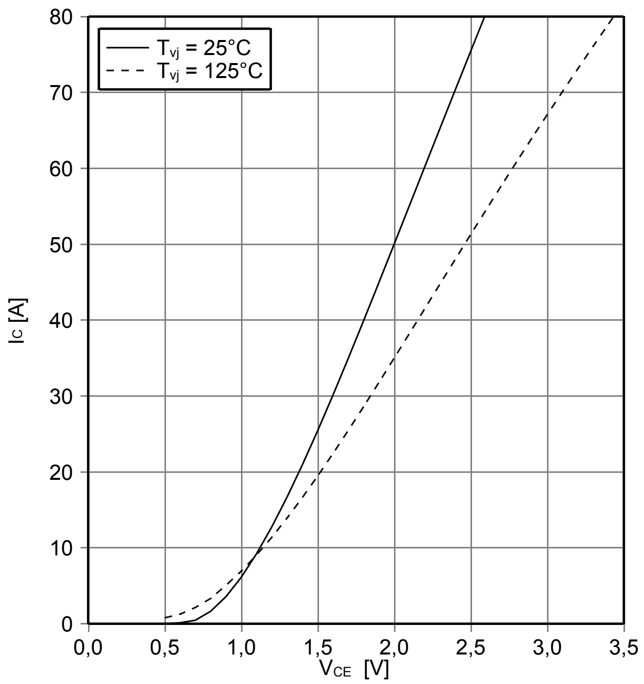
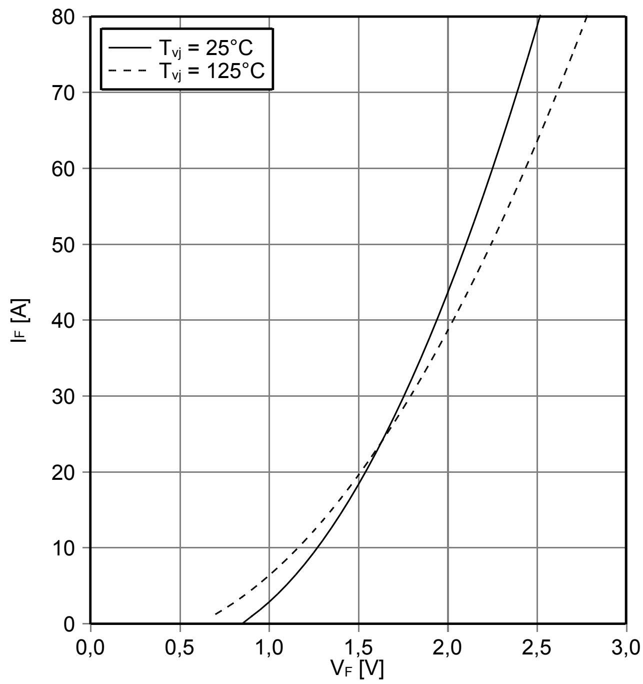
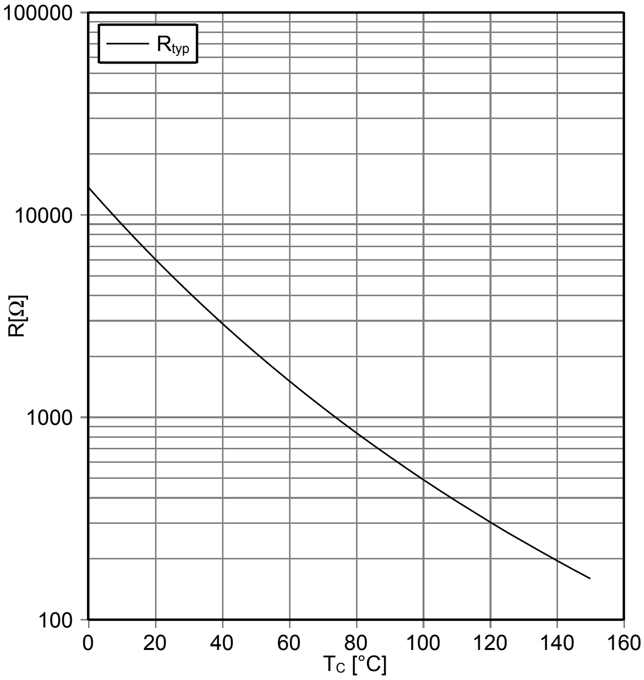
Ausgangskennlinie IGBT, Brems-Chopper (typisch)
output characteristic IGBT, Brake-Chopper (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



Durchlasskennlinie der Diode, Brems-Chopper (typisch)
forward characteristic of Diode, Brake-Chopper (typical)
$I_F = f(V_F)$



NTC-Widerstand-Temperaturkennlinie (typisch)
NTC-Thermistor-temperature characteristic (typical)
$R = f(T)$



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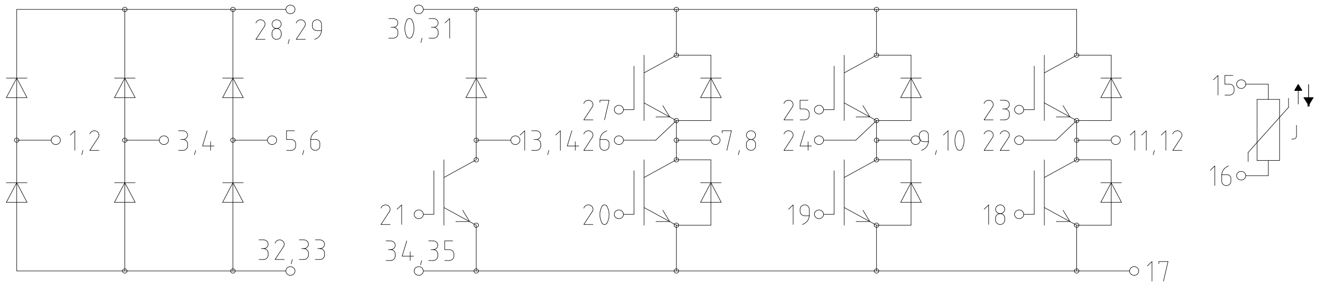
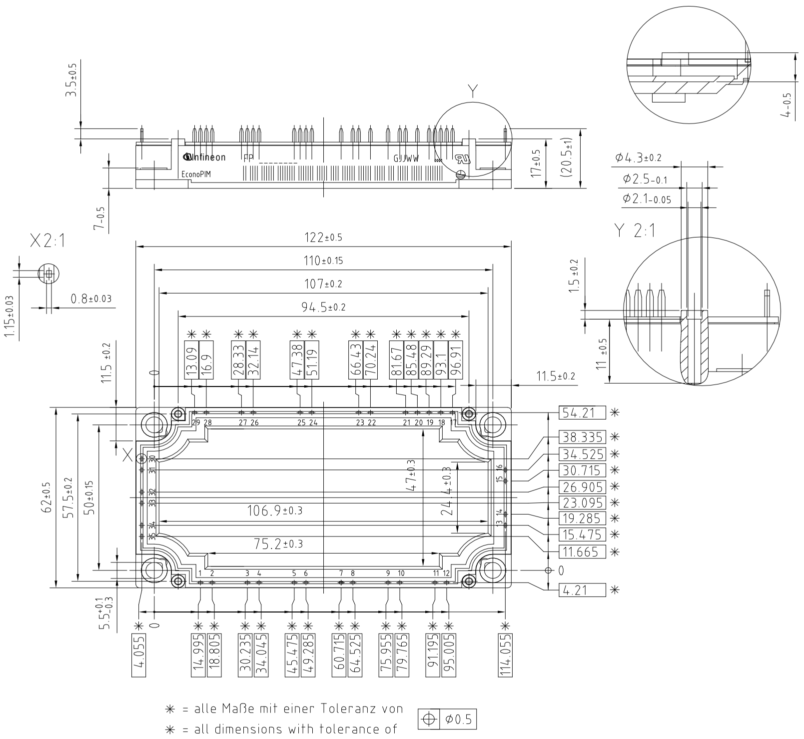
Schaltplan / circuit_diagram_headline



Gehäuseabmessungen / package outlines



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- to perform joint Risk and Quality Assessments;
- the conclusion of Quality Agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery depended on the realization of any such measures.

If and to the extent necessary, please forward equivalent notices to your customers.

Changes of this product data sheet are reserved.

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Orderable Part Number OPN Translation Table

You can find your related information (OPN, pCPN, Sales Type, SP) here.

Orderable Part Number OPN Identifiers

The descriptive identifiers within the OPN tell you more about the product attributes. Please find the related information below.

Example for an OPN (the OPN relevant suffix are the last 5 digits)

1st digit: RoHS, Halogen and Totally Lead Free Status

OPN suffix 1st digit 1	Hal free	RoHS compliant	Totally Lead free
A	Yes	Yes	No
B	No	Yes	No
C	Undefined	Yes	No
D	Yes	No	No
N	No	No	No
E	Undefined	No	No
X	Yes	Yes	Yes
H	No	Yes	Yes
F	Undefined	Yes	Yes

2nd and 3d digit: Packing type, Moisture Protection Packing and Packing Size

The 2nd digit shows the functional packing type in combination with the moisture protection packing.

The 3rd digit shows the number of devices per functional packing or the number of functional packings (denoted with 1)

	Packing type		OPN suffix 2nd digit	OPN suffix 3rd digit Packing Size*			
				S	M	L	X
Bare Die	ADHESIVE-BAKED PUNCHED TAPE		3	<=2000	<=5000	<=10000	>10000
Bare Die	BLISTER TAPE		2	<=2000	<=5000	<=10000	>10000
Bare Die	VACUUM RELEASED TRAY		4	<=10	<=50	<=100	>100
Bare Die	WAFER SAWN		1	1	<=13	<=25	>25
Bare Die	WAFER UNSAWN		6	1	<=13	<=25	>25
Bare Die	WAFFLE PACK		5	<=10	<=50	<=100	>100
Bare Die	HORIZONTAL FRAME SHIPPER		7	1 *2)	<=13 *2)	<=25 *2)	>25 *2)
Component	AMMO-PACK	NON DRY	A	<=1000	<=1500	<=2000	>2000
Component	BLISTER TRAY	NON DRY	W	<3 *1)	<=6 *1)	<=10 *1)	>10 *1)
Component	BULK	NON DRY	B	<=100	<=500	<=1000	>1000
Component	BULK	DRY	I	<=100	<=500	<=1000	>1000
Component	CARD BOARD (PRE PACK)		F	1	>1	>=300	>=1000
Component	CONTAINER	NON DRY	D	<=10	<=20	<=100	>100
Component	CONTAINER	DRY	Y	<=10	<=20	<=100	>100
Component	RADIAL REEL		G	<=1000	<=1500	<=2000	>2000
Component	REEL FOR CHIP CARD		H	1	<=1000	<=10000	>10000
Component	TAPE & REEL	DRY	U	1 *1)(180mm)	1 *1)(330mm)	>1 *1) (180)	>1 *1)(330)
Component	TAPE & REEL	NON DRY	T	1 *1)(180mm)	1 *1)(330mm)	>1 *1)(180)	>1 *1)(330)
Component	TAPE & REEL LEFT	DRY	S	1 *1)(180mm)	1x *1)(330mm)	>1 *1) (180)	>1 *1)(330)
Component	TAPE & REEL LEFT	NON DRY	R	1 *1)(180mm)	1x *1)(330mm)	>1 *1)(180)	>1 *1)(330)
Component	TAPE & REEL RIGHT	DRY	X	1 *1)(180mm)	1x *1)(330mm)	>1 *1) (180)	>1 *1)(330)
Component	TAPE & REEL RIGHT	NON DRY	E	1 *1)(180mm)	1x *1)(330mm)	>1 *1)(180)	>1 *1)(330)
Component	TRAY	DRY	Q	<3 *1)	<=6 *1)	<=10 *1)	>10 *1)
Component	TRAY	NON DRY	P	<3 *1)	<=6 *1)	<=10 *1)	>10 *1)
Component	TUBE	DRY	L	<=10 *1)	<=20 *1)	<=40 *1)	>40 *1)
Component	TUBE	NON DRY	K	<=10 *1)	<=20 *1)	<=40 *1)	>40 *1)

* In devices per functional packing, if denoted with *1) in functional packings per box

*2) Wafer Sawn

	Packing type	OPN suffix 2nd digit	OPN suffix 3rd digit Packing Size*			
			S	M	L	X
Inactive packing types	Chip	C	1			
Inactive packing types	Wafer sawn	J	1	<=13	<=25	>25
Inactive packing types	Single Box	N	1			
Inactive packing types	Tape & Reel Bare Die	M	<=2000	<=5000	<=10000	>10000
Inactive packing types	Trays non-dry	O	<=10	<=50	<=100	>100
Inactive packing types	Wafer	V	1			

* In devices per functional packing

Examples for packing type- and size

1. TLE4250G with OPN TLE4250GNTSA1 and TLE4250GNTMA1
This product comes on two different reel sizes: 180mm and 330mm.
One can see from the second digit that the product comes on tape & reel (T). Now the packing size can be determined by the third identifier. This product comes as “S” and “M”.
“S” means 180mm, “M” means 330mm. Even if this detail was not known, it becomes obvious on first sight that TLE4250GNTSA1 is smaller than TLE4250GNTMA1.

2. SAE800G with OPN SAE800GXLLA1
This product comes in Tubes (indicated by the “L” in the 2nd digit). The third digit of the OPN is also an “L” which indicates that there are between 21 and 40 tubes per box.

3. SIPC03S2N03L with OPN SIPC03S2N03LX3MA1
This product comes on Tape & Reel bare die (3). The third identifiers (M) indicates that there are between 2001 and 5000 bare dies on the reel.

Although none of the packing size indications gives an exact number of products per packing, it allows you to distinguish between two different products: You can immediately see which product

4th and 5th digit: Designator

The designator increments (e.g. from A1 to A2) whenever a new SP number is set up that does not differ from a previous product in either Salesname or the first three OPN suffix identifiers. Product variants such as different temperature ranges or ROM codes can therefore be recognized by the designator.