FF800R17KE3

Vorläufige Daten
Preliminary Data

IGBT,Wechselrichter / IGBT,Inverter

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1700	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	800 1150	A A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 ms	I_{CRM}	1600	A
Gesamt-Verlustleistung Total power dissipation	T_C = 25°C, $T_{vj\,max}$ = 150	P_{tot}	4,45	kW
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 = 800 A, V_{GE} = 15 V I_C = 800 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C	$V_{CE\,sat}$		2,00 2,40	2,45	V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 32,0 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,2	5,8	6,4	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V		Q_G		9,00		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C		R_{Gint}		1,9		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		72,0		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		2,30		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 1700 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 = 800 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 1,8 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,on}$		0,65 0,70		µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 800 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Gon} = 1,8 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_r		0,16 0,20		µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 800 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 2,2 Ω	T_{vj} = 25°C T_{vj} = 125°C	$t_{d\,off}$		1,30 1,60		µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 800 A, V_{CE} = 900 V V_{GE} = ±15 V R_{Goff} = 2,2 Ω	T_{vj} = 25°C T_{vj} = 125°C	t_f		0,18 0,30		µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 800 A, V_{CE} = 900 V, L_S = 50 nH V_{GE} = ±15 V R_{Gon} = 1,8 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{on}		165 240		mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 800 A, V_{CE} = 900 V, L_S = 50 nH V_{GE} = ±15 V R_{Goff} = 2,2 Ω	T_{vj} = 25°C T_{vj} = 125°C	E_{off}		200 295		mJ mJ
Kurzschlußverhalten SC data	$V_{GE} \leq$ 15 V, V_{CC} = 1000 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	$t_P \leq$ 10 µs, T_{vj} = 125°C	I_{SC}		3200		A
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro IGBT / per IGBT		R_{thJC}			28,0	K/kW
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro IGBT / per IGBT λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)		R_{thCH}		17,0		K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\,op}$	-40		125	°C

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Vorläufige Daten
Preliminary Data

Diode, Wechselrichter / Diode, Inverter

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1700	V
Dauergleichstrom Continuous DC forward current		I_F	800	A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	1600	A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C	I^2t	125	kA²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 800 A, V_{GE} = 0 V I_F = 800 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C	V_F		1,80 1,90	2,20	V V
Rückstromspitze Peak reverse recovery current	I_F = 800 A, - di_F/dt = 4900 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	I_{RM}		780 850		A A
Sperrverzögerungsladung Recovered charge	I_F = 800 A, - di_F/dt = 4900 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	Q_r		205 345		µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 800 A, - di_F/dt = 4900 A/µs (T_{vj}=125°C) V_R = 900 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C	E_{rec}		130 225		mJ mJ
Wärmewiderstand, Chip bis Gehäuse Thermal resistance, junction to case	pro Diode / per diode		R_{thJC}			64,0	K/kW
Wärmewiderstand, Gehäuse bis Kühlkörper Thermal resistance, case to heatsink	pro Diode / per diode λ_{Paste} = 1 W/(m·K) / λ_{grease} = 1 W/(m·K)		R_{thCH}		39,0		K/kW
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\ op}$	-40		125	°C

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Vorläufige Daten
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Modul / Module

Isolations-Prüfspannung Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}		3,4		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			15,0 15,0		mm
Luftstrecke Clearance	Kontakt - Kühlkörper / terminal to heatsink Kontakt - Kontakt / terminal to terminal			10,0 10,0		mm
Vergleichszahl der Kriechwegbildung Comperative tracking index		CTI		> 250		
			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}		6,00		K/kW
Modulstreuinduktivität Stray inductance module		L_{sCE}		20		nH
Modulleitungswiderstand, Anschlüsse - Chip Module lead resistance, terminals - chip	T_C = 25°C, pro Schalter / per switch	$R_{CC'+EE'}$		0,37		mΩ
Lagertemperatur Storage temperature		T_{stg}	-40		125	°C
Anzugsdrehmoment f. Modulmontage Mounting torque for modul mounting	Schraube M6 - Montage gem. gültiger Applikationsschrift Screw M6 - Mounting according to valid application note	M	4,25	-	5,75	Nm
Anzugsdrehmoment f. elektr. Anschlüsse Terminal connection torque	Schraube M4 - Montage gem. gültiger Applikationsschrift Screw M4 - Mounting according to valid application note Schraube M8 - Montage gem. gültiger Applikationsschrift Screw M8 - Mounting according to valid application note	M	1,8 8,0	- -	2,1 10	Nm Nm
Gewicht Weight		G		1500		g

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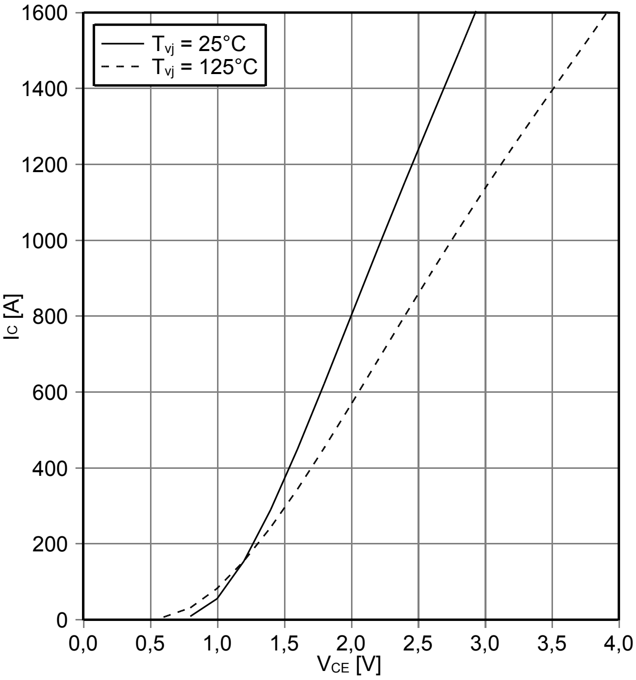
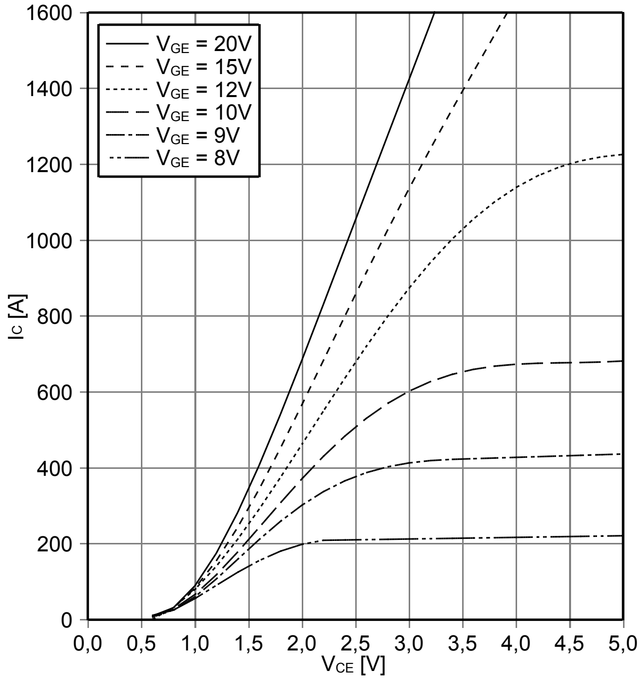
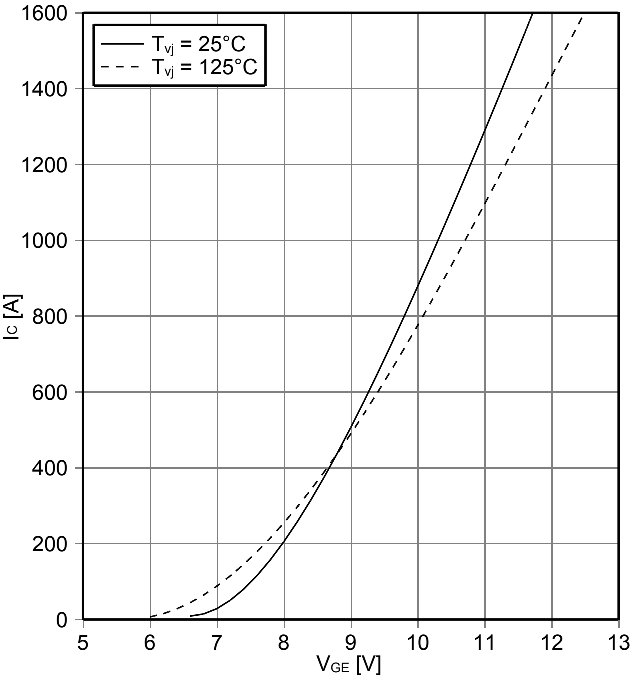
Ausgangskennlinie IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



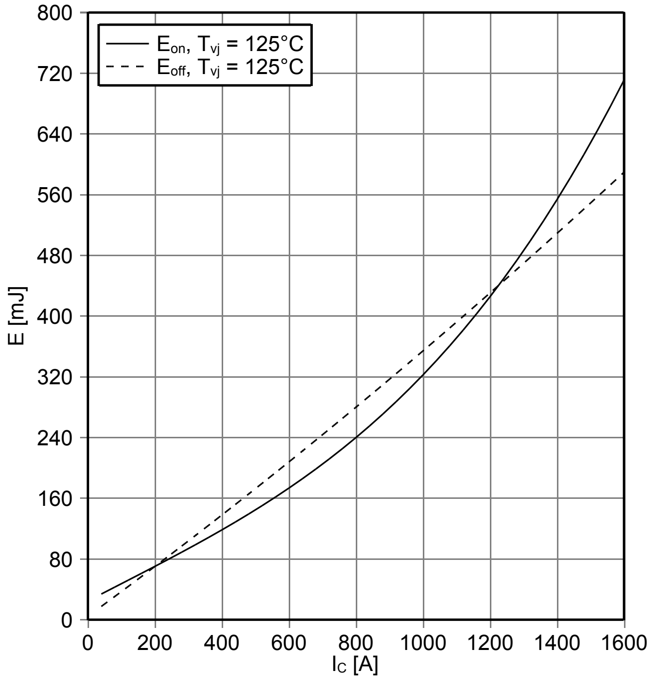
Ausgangskennlinienfeld IGBT,Wechselrichter (typisch)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
$T_{vj} = 125°C$



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, $R_{Gon} = 1.8\ \Omega$, $R_{Goff} = 2.2\ \Omega$, $V_{CE} = 900$ V



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Vorläufige Daten
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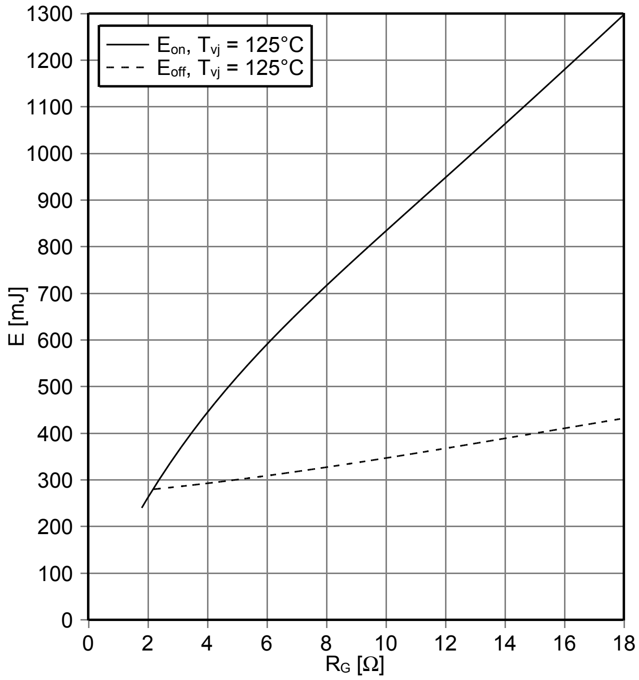
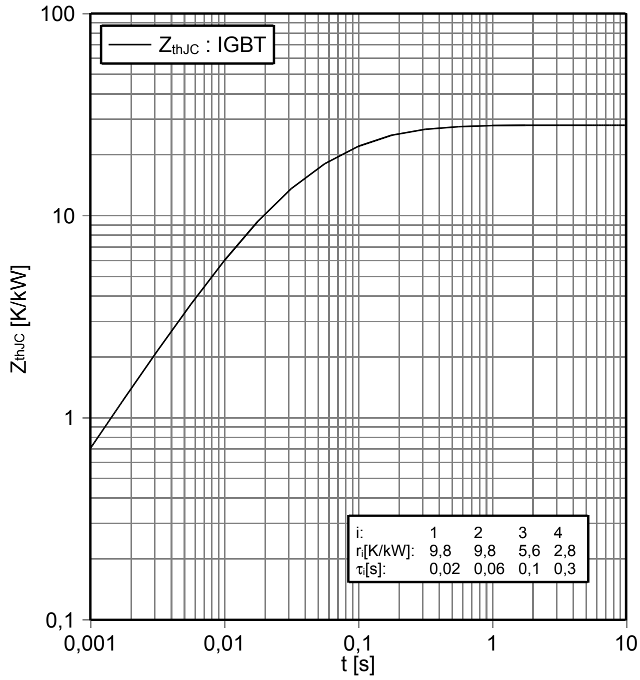
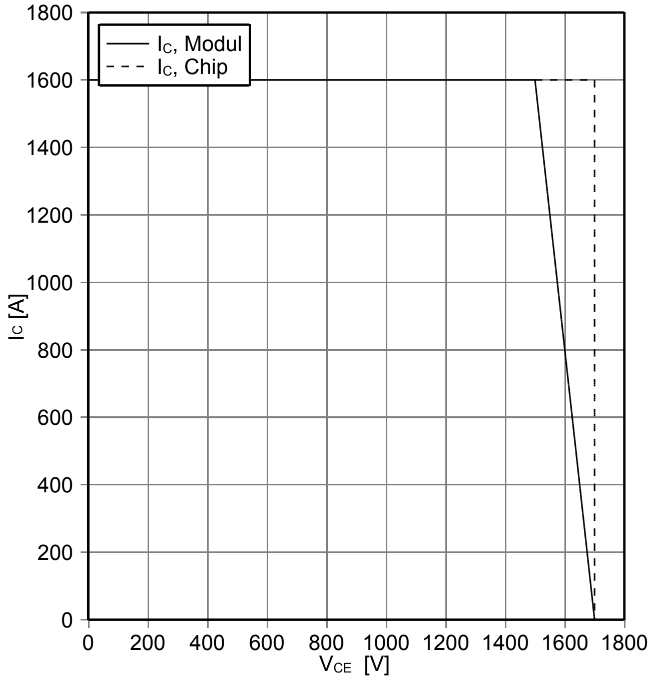
SchaltverlusteIGBT,Wechselrichter (typisch)
switching losses IGBT,Inverter (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
$V_{GE} = \pm 15$ V, $I_C = 800$ A, $V_{CE} = 900$ V



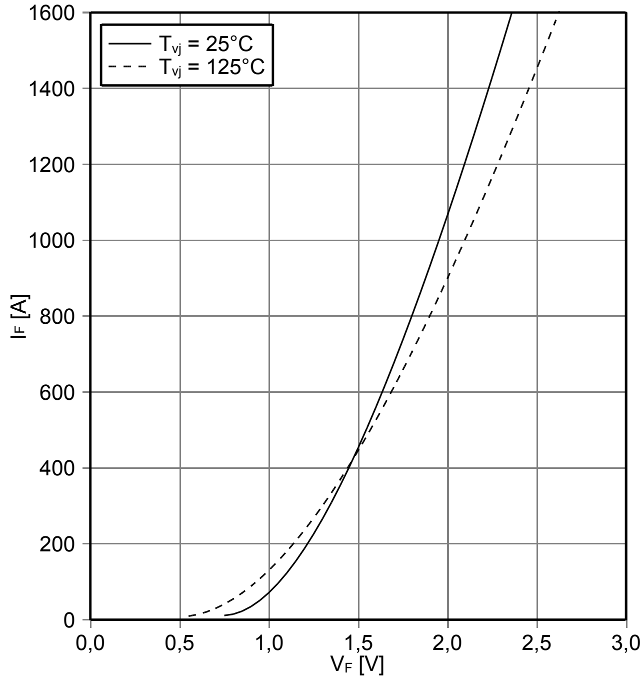
Transienter Wärmewiderstand IGBT,Wechselrichter
transient thermal impedance IGBT,Inverter
$Z_{thJC} = f(t)$



Sicherer Rückwärts-Arbeitsbereich IGBT,Wechselrichter (RBSOA)
reverse bias safe operating area IGBT,Inverter (RBSOA)
$I_C = f(V_{CE})$
$V_{GE} = \pm 15$ V, $R_{Goff} = 2.2\ \Omega$, $T_{vj} = 125$°C



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



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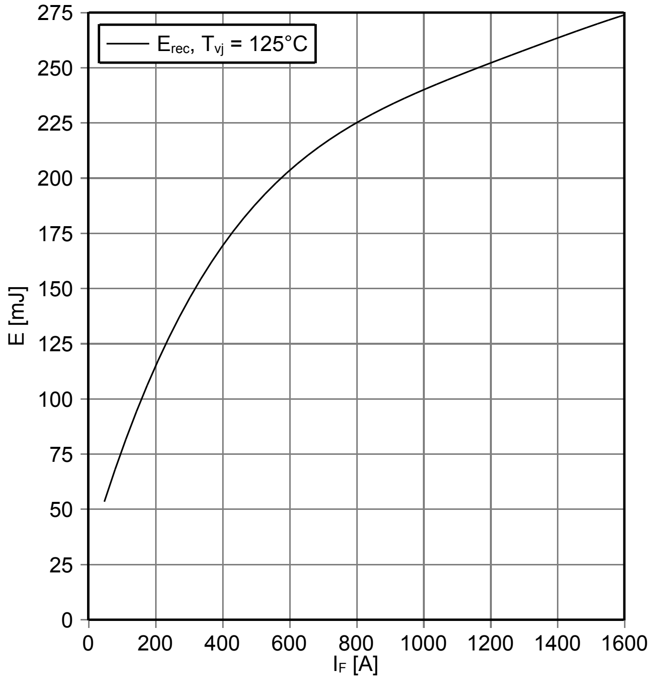
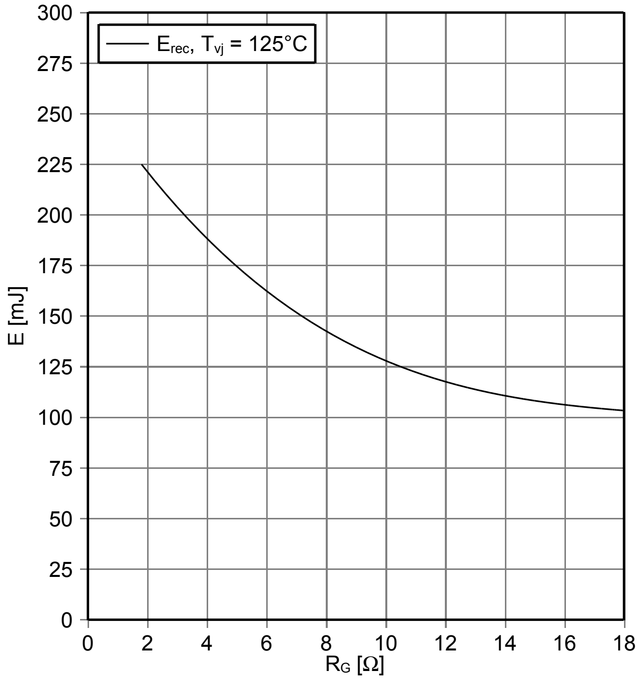
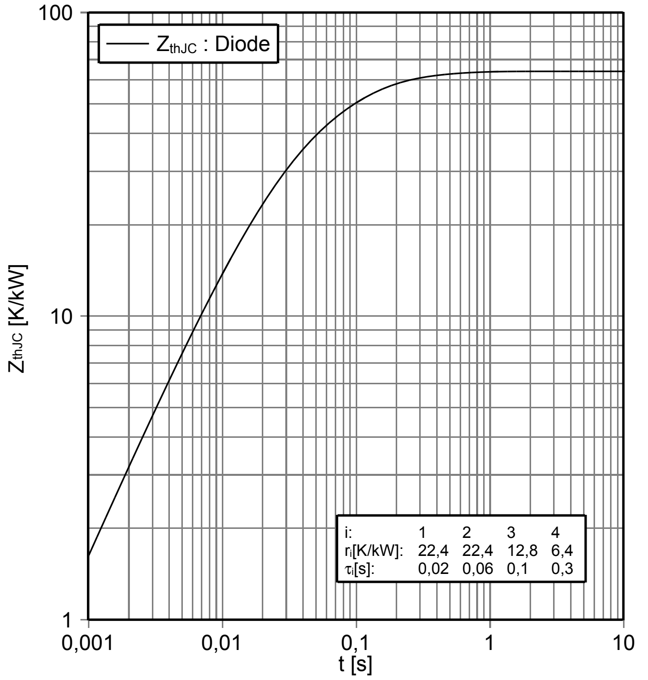
Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 1.8\ \Omega$, $V_{CE} = 900$ V



Schaltverluste Diode, Wechselrichter (typisch)
switching losses Diode, Inverter (typical)
$E_{rec} = f(R_G)$
$I_F = 800$ A, $V_{CE} = 900$ V



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



i:	1	2	3	4
r_i[K/kW]:	22,4	22,4	12,8	6,4
τ_i[s]:	0,02	0,06	0,1	0,3

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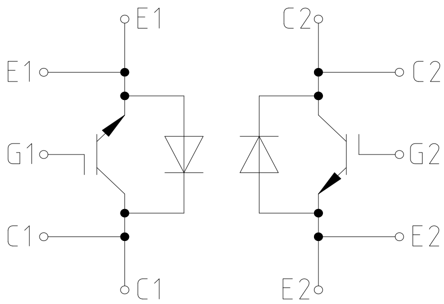
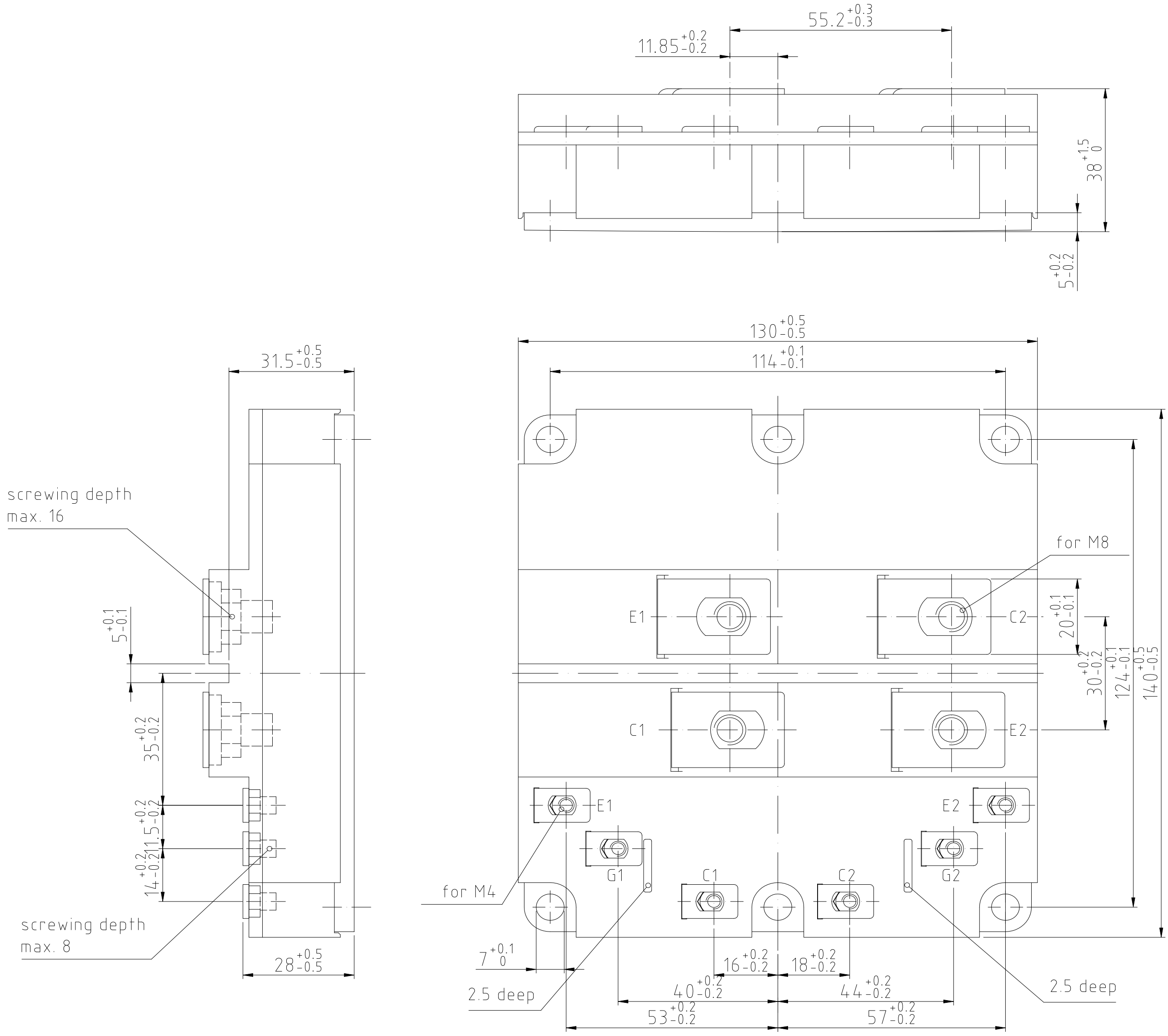
Schaltplan / circuit_diagram_headline



Gehäuseabmessungen / package outlines



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