Technische Information / Technical Information

IGBT-Module
IGBT-Modules

DD 400 S 33 K2

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Höchstzulässige Werte / Maximum rated values

Elektrische Eigenschaften / Electrical properties

Periodische Spitzensperrspannung repetitive peak reverse voltage	T_j = 25°C T_j = -25°C	V_R	3300 3300	V
Dauergleichstrom DC forward current		I_F	400	A
Periodischer Spitzenstrom repetitive peak forw. current	t_P = 1 ms	I_{FRM}	800	A
Grenzlastintegral der Diode I^2t - value, Diode	V_R = 0V, t_p = 10ms, T_{Vj} = 125°C	I^2t	55.600	A^2s
Spitzenverlustleistung der Diode maximum power dissipation diode	T_j = 125°C	P_{RQM}	400	kW
Isolations-Prüfspannung insulation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}	6.000	V
Teilentladungs-Aussetzspannung partial discharge extinction voltage	RMS, f = 50 Hz, $Q_{PD} \leq$ 10 pC (acc. to IEC 1287)	V_{ISOL}	2.600	V

Charakteristische Werte / Characteristic values

Diode / Diode			**min.**	**typ.**	**max.**	
Durchlaßspannung forward voltage	I_F = 400 A, V_{GE} = 0V, T_{vj} = 25°C	V_F	-	2,80	3,50	V
	I_F = 400 A, V_{GE} = 0V, T_{vj} = 125°C		-	2,80	3,50	V
Sperrstrom reverse current	V_{CE} = 3300V, T_{vj} = 25°C	I_R	-	0,005	0,8	mA
	V_{CE} = 3300V, T_{vj} = 125°C		-	2	10	mA
Rückstromspitze peak reverse recovery current	I_F = 400 A, - di_F/dt = 1200 A/µsec V_R = 1800V, VGE = -10V, T_{vj} = 25°C	I_{RM}	-	330	-	A
	V_R = 1800V, VGE = -10V, T_{vj} = 125°C		-	350	-	A
Sperrverzögerungsladung recovered charge	I_F = 400 A, - di_F/dt = 1200 A/µsec V_R = 1800V, VGE = -10V, T_{vj} = 25°C	Q_r	-	235	-	µAs
	V_R = 1800V, VGE = -10V, T_{vj} = 125°C		-	440	-	µAs
Abschaltenergie pro Puls reverse recovery energy	I_F = 400 A, - di_F/dt = 1200 A/µsec V_R = 1800V, VGE = -10V, T_{vj} = 25°C	E_{rec}	-	245	-	mWs
	V_R = 1800V, VGE = -10V, T_{vj} = 125°C		-	500	-	mWs
Modulinduktivität stray inductance module	pro Diode / per diode	L_{sCE}	-	25	-	nH
Modul-Leitungswiderstand, Anschlüsse - Chip lead resistance, terminals - chip	T = 25°C, pro Diode / per diode	$R_{CC'+EE'}$	-	0,39	-	mΩ

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Thermische Eigenschaften / Thermal properties

			min.	typ.	max.	
Innerer Wärmewiderstand thermal resistance, junction to case	pro Diode / per diode pro Modul / per module	R_{thJC}	- -	- -	0,0510 0,0255	K/W K/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Modul / per module λ_{Paste} = 1 W/m*K / λ_{grease} = 1 W/m*K	R_{thCK}	-	0,006	-	K/W
Höchstzulässige Sperrschichttemperatur maximum junction temperature		T_{vj}	-	-	150	°C
Betriebstemperatur operation temperature		T_{op}	-40	-	125	°C
Lagertemperatur storage temperature		T_{stg}	-40	-	125	°C

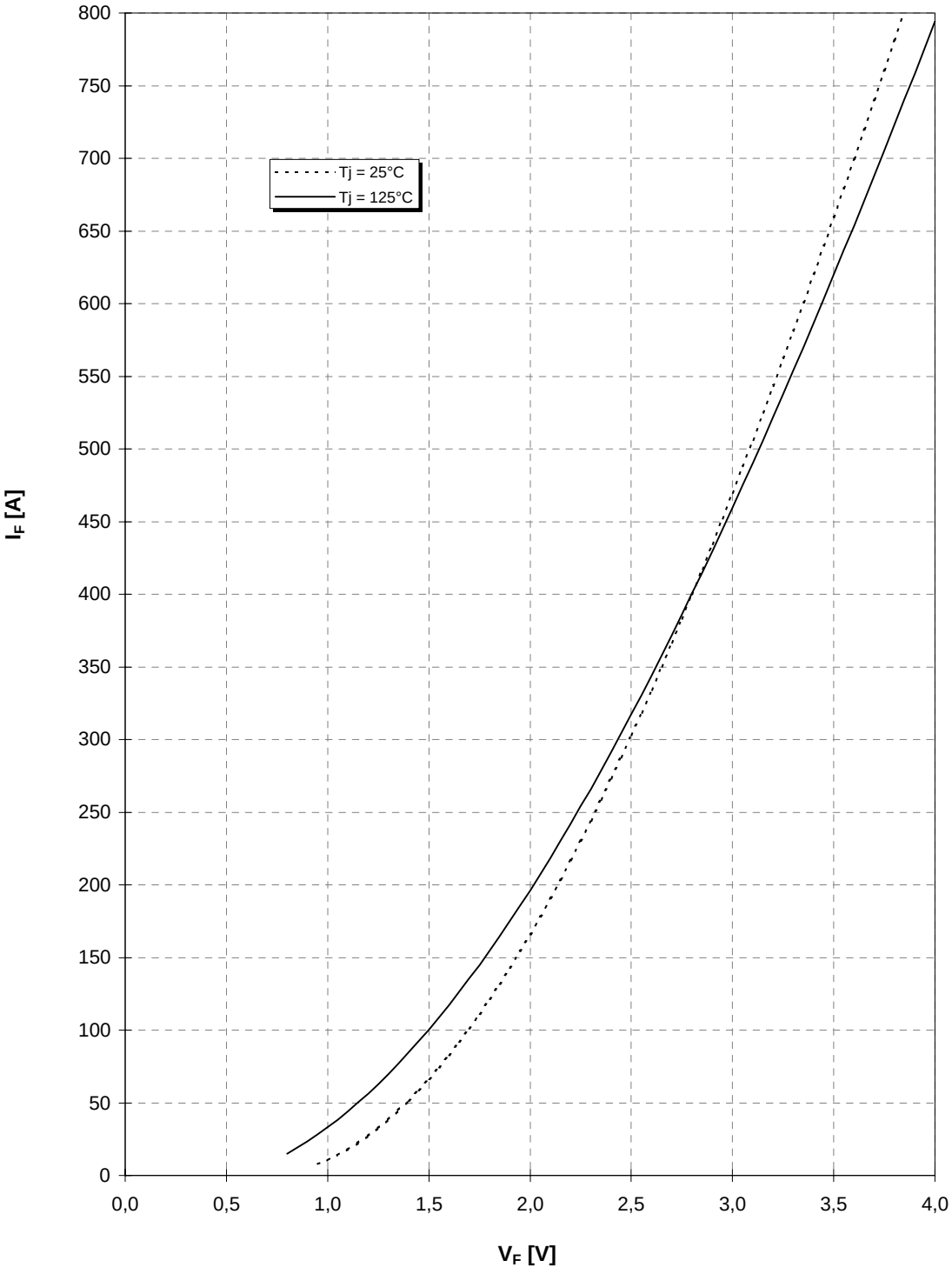
Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see appendix				
Material Modulgrundplatte material of module baseplate			AlSiC	
Innere Isolation internal insulation			AlN	
Kriechstrecke creepage distance			32,2	mm
Luftstrecke clearance			19,1	mm
CTI comperative tracking index			> 400	
Anzugsdrehmoment f. mech. Befestigung mounting torque		M1	5	Nm
Anzugsdrehmoment f. elektr. Anschlüsse terminal connection torque	terminals M4 terminals M8	M2	2 8 .. 10	Nm Nm
Gewicht weight		G	1000	g

Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen.

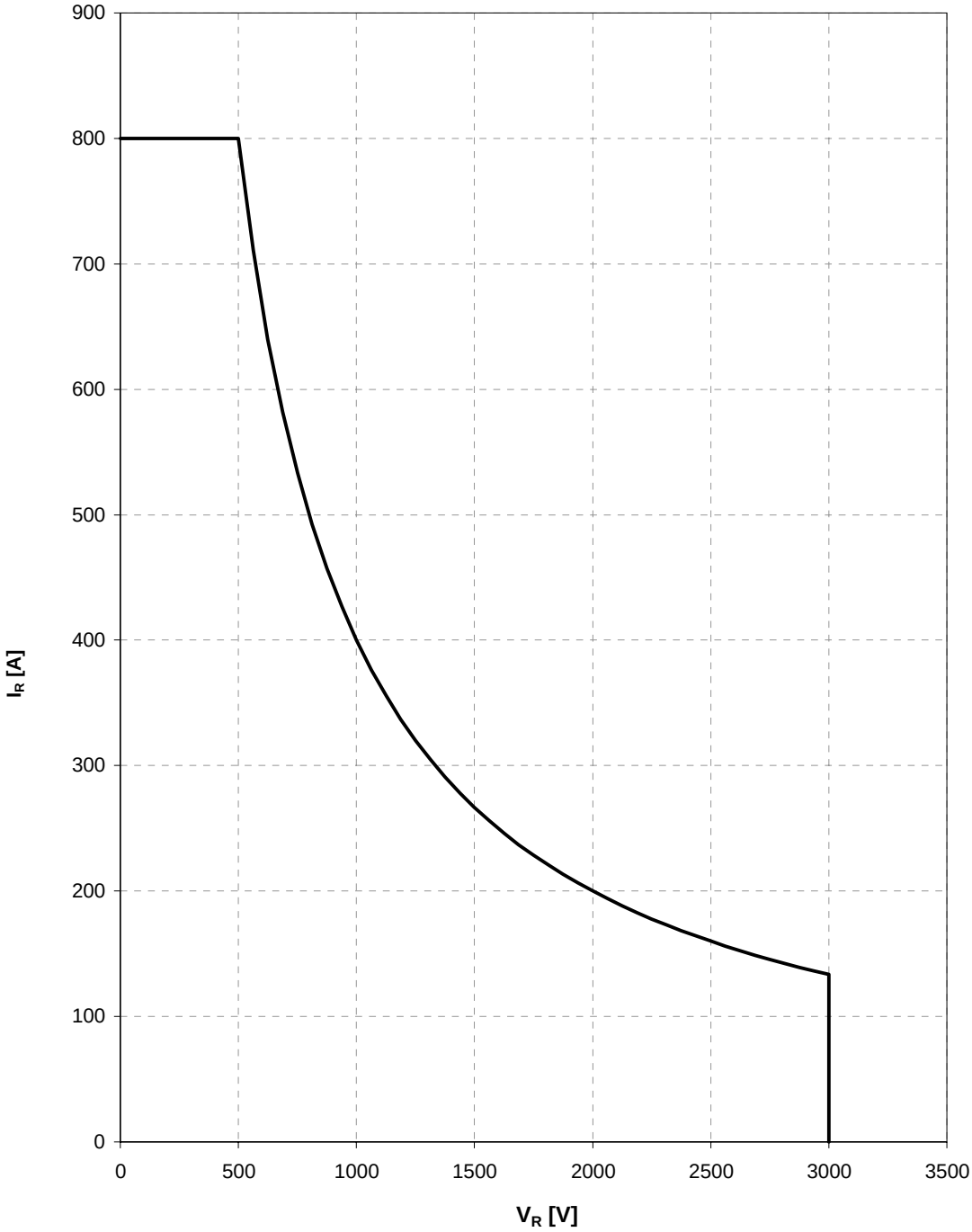
This technical information specifies semiconductor devices but promises no characteristics. It is valid in combination with the belonging technical notes.

Durchlaßkennlinie der Inversdiode (typisch) $I_F = f(V_F)$
Forward characteristic of inverse diode (typical)



Sicherer Arbeitsbereich Diode (SOA)
safe operation area Diode (SOA)

T_{vj}= 125°C



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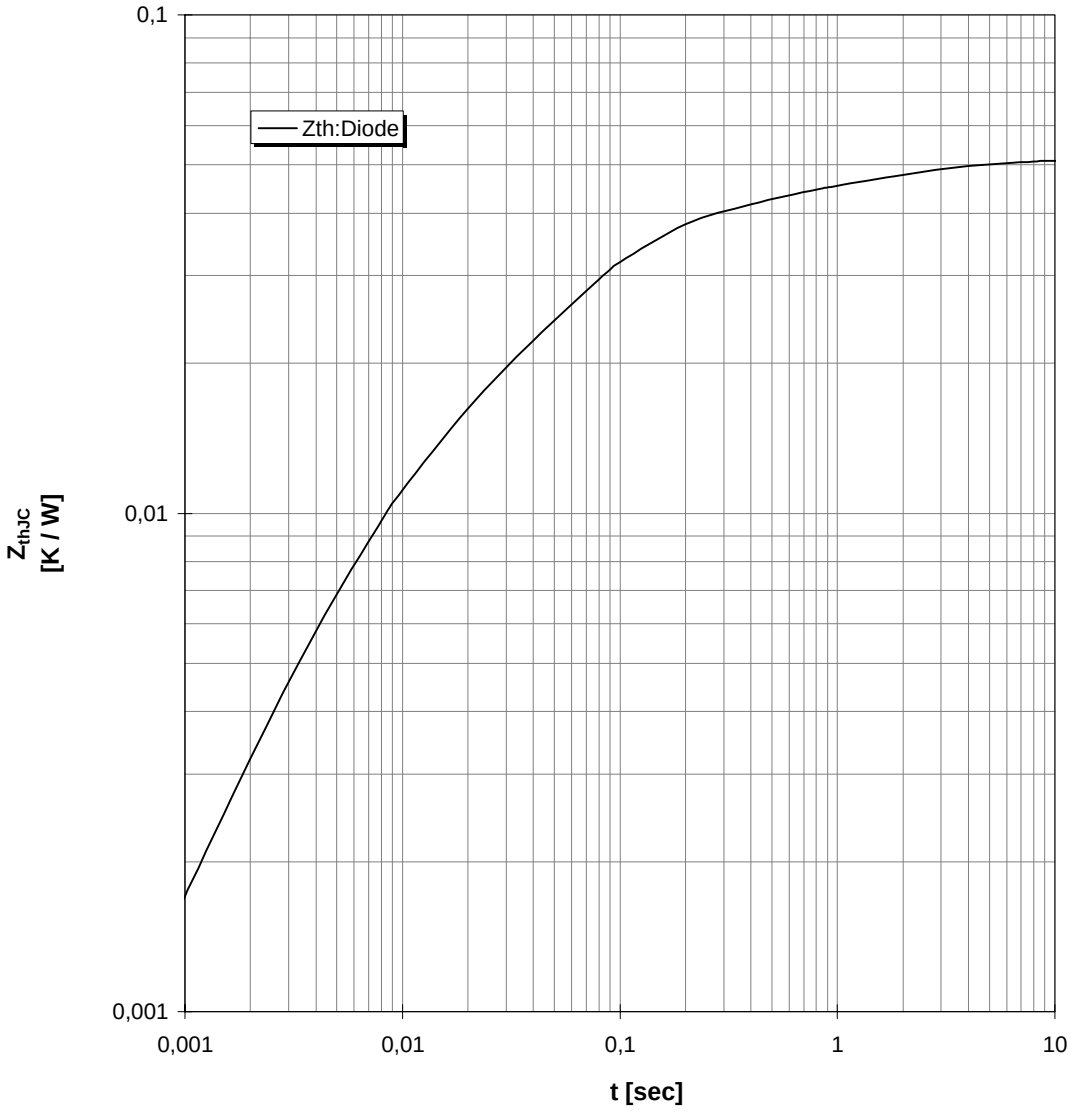
Transienter Wärmewiderstand $Z_{thJC} = f(t)$
Transient thermal impedance



i		1	2	3	4
r_i [K/kW]	: Diode	9,34	25,47	7,57	8,63
τ_i [sec]	: Diode	0,0068	0,0642	0,3209	2,0212

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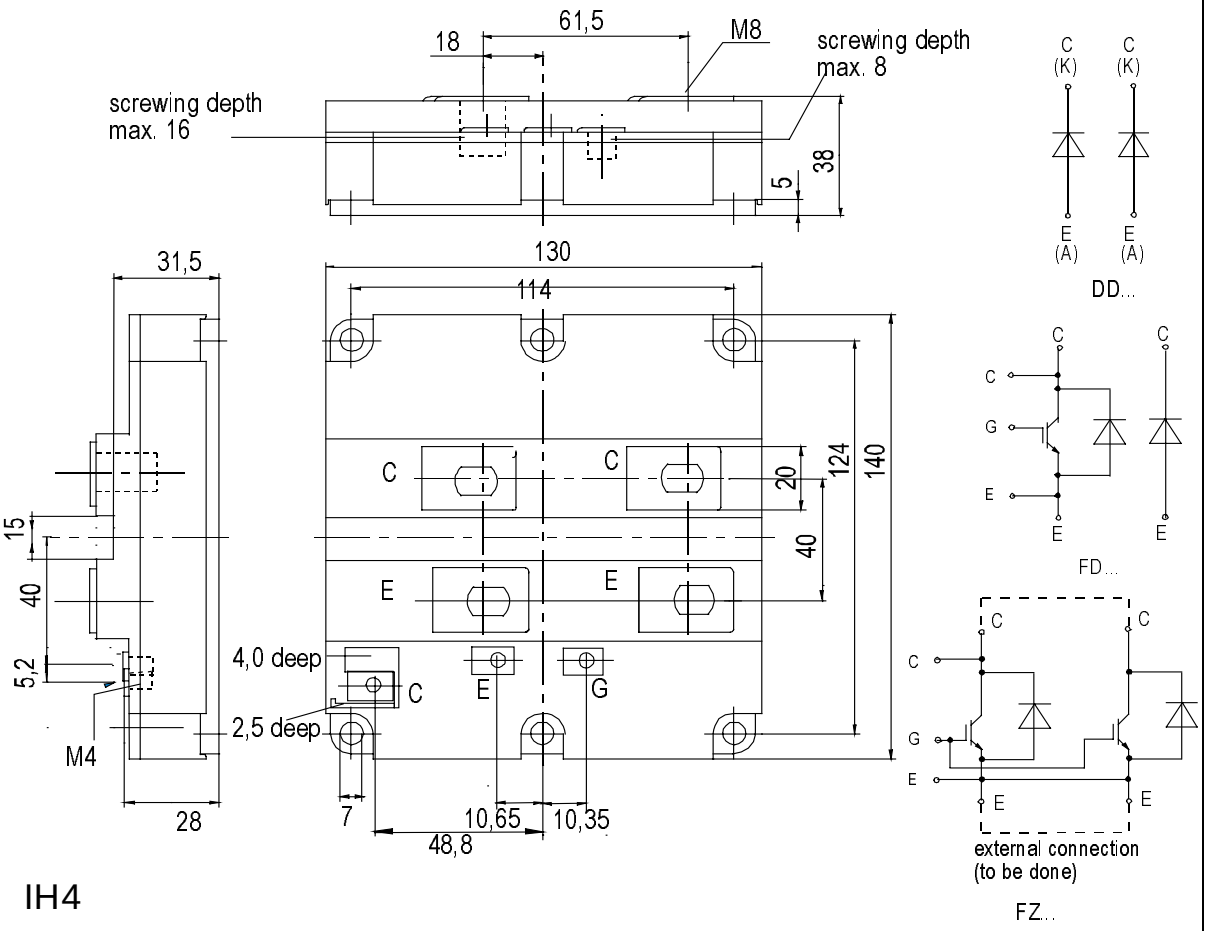
Gehäusemaße / Schaltbild
Package outline / Circuit diagram



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