

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RRM}	1200, 1400 1600, 1800	V V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	$T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RSM}	1300, 1500 1700, 1900	V V
Durchlaßstrom-Grenzeffektivwert (pro Element) RMS forward current (per chip)		I_{FRMSM}	120	A
Ausgangsstrom output current	$T_C = 100^{\circ}\text{C}$ $T_C = 99^{\circ}\text{C}$ $T_A = 45^{\circ}\text{C}, \text{KM } 11$ $T_A = 45^{\circ}\text{C}, \text{KM } 33$ $T_A = 35^{\circ}\text{C}, \text{KM } 14 (V_L = 45\text{I/s})$ $T_A = 35^{\circ}\text{C}, \text{KM } 33 (V_L = 90\text{I/s})$	I_d	205 208 80 113 190 208	A A A A A A
Stoßstrom-Grenzwert surge forward current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$	I_{FSM}	1600 1375	A A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$	I^2t	12800 9450	A ² s A ² s

Charakteristische Werte / Characteristic values

Durchlaßspannung forward voltage	$T_{vj} = T_{vj\text{max}}, i_F = 200\text{A}$	V_F	max. 1,47	V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj\text{max}}$	$V_{(TO)}$	0,75	V
Ersatzwiderstand forward slope resistance	$T_{vj} = T_{vj\text{max}}$	r_T	2,2	m Ω
Sperrstrom reverse current	$T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$	i_R	max. 10	mA
Isolations-Prüfspannung insulation test voltage	RMS, $f = 50\text{Hz}, t = 1\text{min}$ RMS, $f = 50\text{Hz}, t = 1\text{sec}$	V_{ISOL}	3,0 3,6	kV kV

Thermische Eigenschaften / Thermal properties

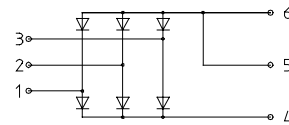
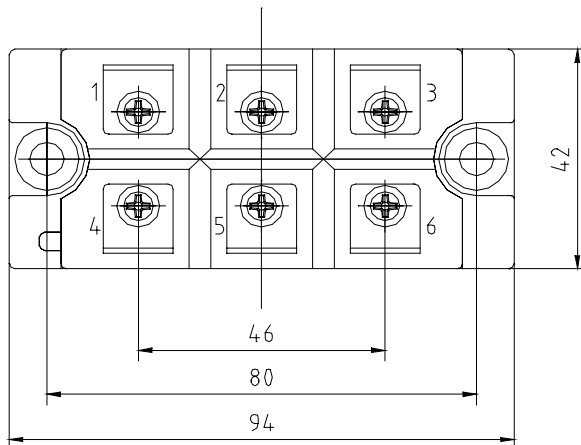
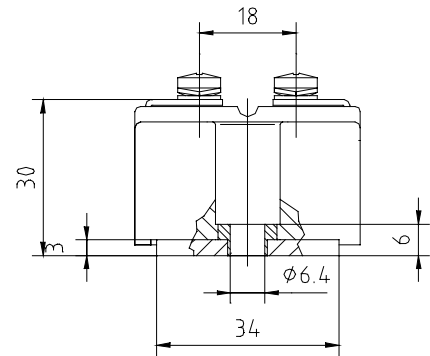
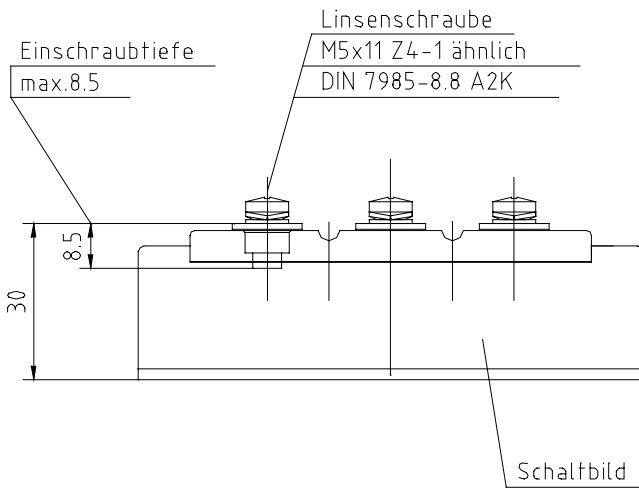
Innerer Wärmewiderstand thermal resistance, junction to case	pro Modul / per module, $\theta = 120^{\circ}\text{rect}$ pro Element / per chip, $\theta = 120^{\circ}\text{rect}$ pro Modul / per module, DC pro Element / per chip, DC	R_{thJC}	max. 0,098 max. 0,590 max. 0,078 max. 0,470	$^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Modul / per module pro Element / per chip	R_{thCK}	max. 0,033 max. 0,200	$^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$
Höchstzulässige Sperrschichttemperatur max. junction temperature		$T_{vj\text{max}}$	150	$^{\circ}\text{C}$
Betriebstemperatur operating temperature		$T_{c\text{op}}$	-40...+150	$^{\circ}\text{C}$
Lagertemperatur storage temperature		T_{stg}	-40...+150	$^{\circ}\text{C}$

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see appendix			Seite 3 page 3	
Si-Elemente mit Lötkontakt, glaspassiviert Si-pellets with soldered contact, glass-passivated				
Innere Isolation internal insulation			Al ₂ O ₃	
Anzugsdrehmoment für mechanische Befestigung mounting torque	Toleranz / tolerance ±15%	M1	6	Nm
Anzugsdrehmoment für elektrische Anschlüsse terminal connection torque	Toleranz / tolerance +5% / -10%	M2	4	Nm
Gewicht weight		G	typ. 220	g
Kriechstrecke creepage distance			12,5	mm
Schwingfestigkeit vibration resistance	f = 50Hz		50	m/s ²

Kühlkörper / heatsinks : KM 11; KM 14; KM 17; KM 33

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.

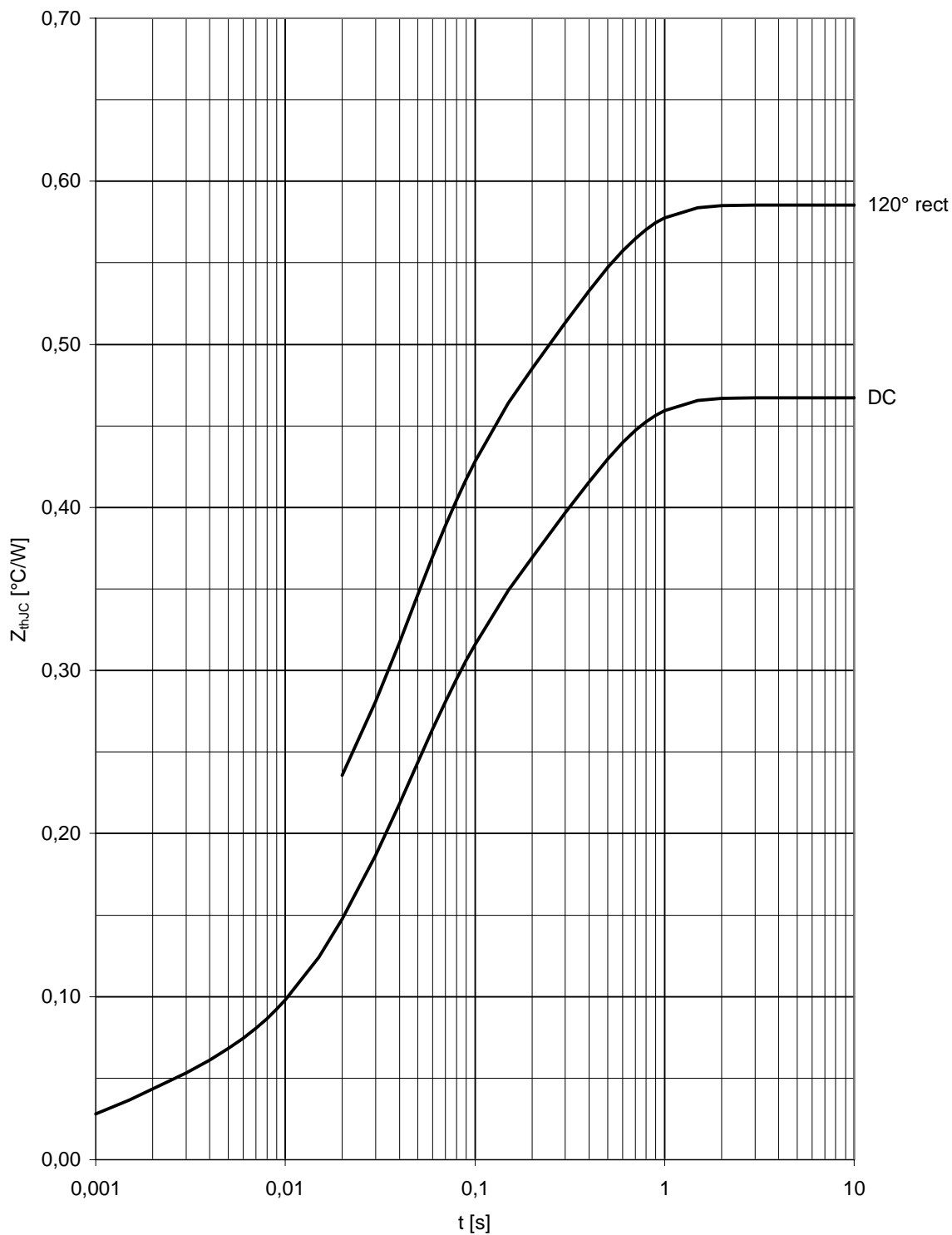


Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC

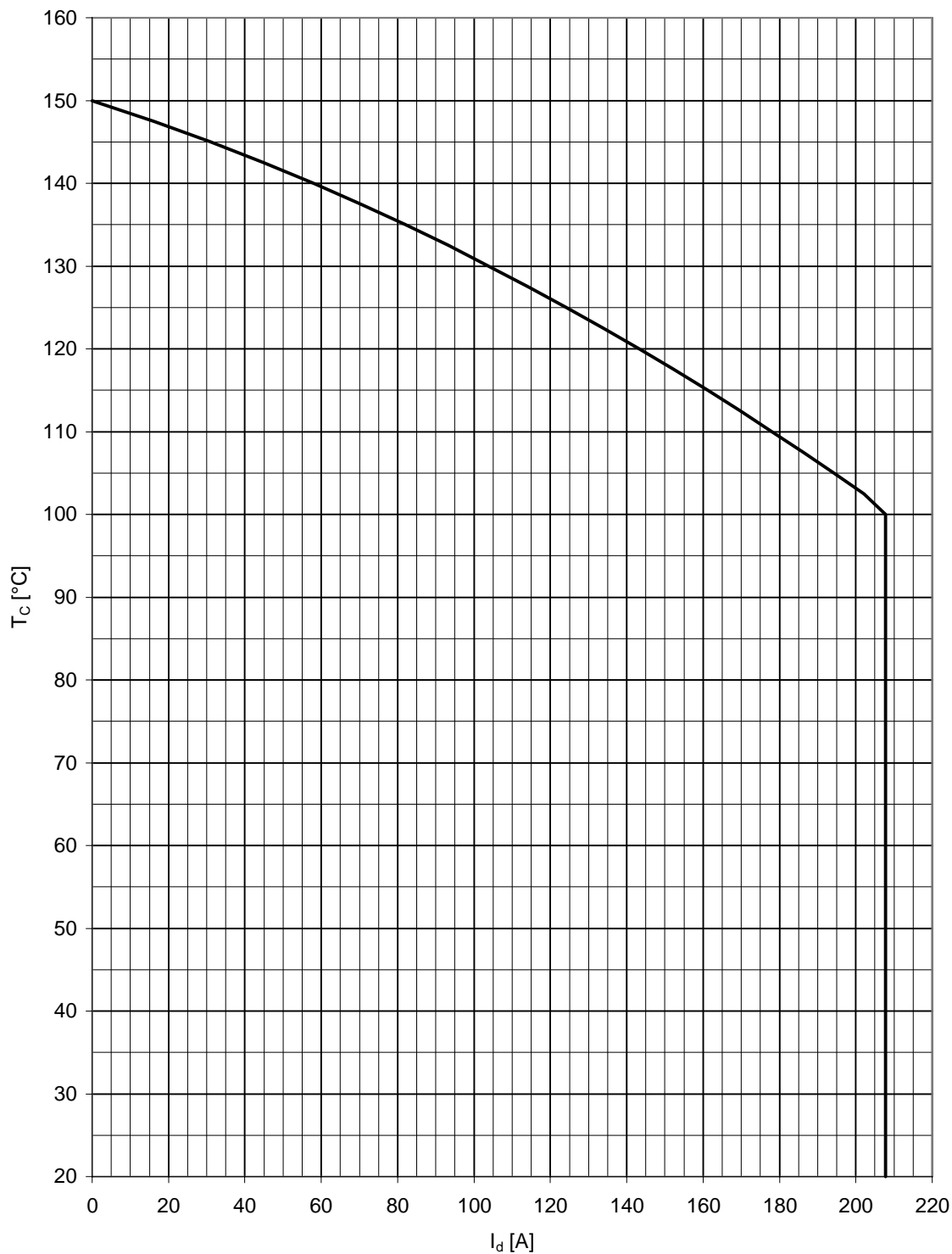
Analytical elements of transient thermal impedance Z_{thJC} for DC

Pos. n	1	2	3	4	5	6	7
$R_{thn} [^{\circ}C / W]$	0,18100	0,25100	0,03520				
$\tau_n [s]$	0,31800	0,03870	0,00109				

Analytische Funktion:
$$Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} \left(1 - e^{-\frac{t}{\tau_n}} \right)$$



Transienter innerer Wärmewiderstand je Zweig / Transient thermal impedance per arm, $Z_{th(jc)} = f(t)$
 Parameter: Stromflußwinkel / Current conduction angle θ



Höchstzulässige Gehäusetemperatur / Maximum allowable case temperature $T_c = f(I_d)$

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