

Diode-Gleichrichter / diode-rectifier

Vorläufige Daten / preliminary data

Höchstzulässige Werte / maximum rated values

Periodische Rückw. Spitzensperrspannung repetitive peak reverse voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{RRM}	800	V
Durchlassstrom Grenzeffektivwert pro Dio. forward current RMS maximum per diode	$T_C = 80^{\circ}\text{C}$	I_{FRMSM}	48	A
Gleichrichter Ausgang Grenzeffektivstrom maximum RMS current at Rectifier output	$T_C = 80^{\circ}\text{C}$	I_{RMSM}	50	A
Stoßstrom Grenzwert surge forward current	$t_p = 10\text{ ms}, T_{vj} = 25^{\circ}\text{C}$ $t_p = 10\text{ ms}, T_{vj} = 150^{\circ}\text{C}$	I_{FSM}	480 380	A A
Grenzlastintegral I^2t - value	$t_p = 10\text{ ms}, T_{vj} = 25^{\circ}\text{C}$ $t_p = 10\text{ ms}, T_{vj} = 150^{\circ}\text{C}$	I^2t	1150 720	A^2s A^2s

Charakteristische Werte / characteristic values

			min.	typ.	max.
Durchlassspannung forward voltage	$T_{vj} = 150^{\circ}\text{C}, I_F = 48\text{ A}$	V_F		1,10	V
Schleusenspannung threshold voltage	$T_{vj} = 150^{\circ}\text{C}$	V_{TO}		0,75	V
Ersatzwiderstand slope resistance	$T_{vj} = 150^{\circ}\text{C}$	r_T		6,95	m Ω
Sperrstrom reverse current	$T_{vj} = 150^{\circ}\text{C}, V_R = 800\text{ V}$	I_R		0,10	mA
Innerer Wärmewiderstand thermal resistance, junction to case	pro Diode per diode	R_{thJC}		1,15	1,30 K/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro Diode / per diode $\lambda_{Paste} = 1\text{ W}/(\text{m}\cdot\text{K})$ / $\lambda_{grease} = 1\text{ W}/(\text{m}\cdot\text{K})$	R_{thCH}		0,55	K/W

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IGBT-Brems-Chopper / IGBT-brake-chopper

Höchstzulässige Werte / maximum rated values

Kollektor-Emitter-Sperrspannung collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	600	V
Kollektor-Dauergleichstrom DC-collector current	$T_C = 70^{\circ}\text{C}, T_{vj} = 150^{\circ}\text{C}$ $T_C = 25^{\circ}\text{C}, T_{vj} = 150^{\circ}\text{C}$	I_{Cnom} I_C	20 25	A A
Periodischer Kollektor Spitzenstrom repetitive peak collector current	$t_p = 1 \text{ ms}$	I_{CRM}	40	A
Gesamt-Verlustleistung total power dissipation	$T_C = 25^{\circ}\text{C}, T_{vj} = 150^{\circ}\text{C}$	P_{tot}	83,5	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	$I_C = 20 \text{ A}, V_{GE} = 15 \text{ V}$ $I_C = 20 \text{ A}, V_{GE} = 15 \text{ V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	$V_{CE \text{ sat}}$	1,95 2,20	2,55	V V	
Gate-Schwellenspannung gate threshold voltage	$I_C = 0,50 \text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	4,5	5,5	6,5	V
Gateladung gate charge	$V_{GE} = -15 \text{ V} \dots +15 \text{ V}$		Q_G	0,11			μC
Interner Gatewiderstand internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	0,00			Ω
Eingangskapazität input capacitance	$f = 1 \text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}$		C_{ies}	0,88			nF
Rückwirkungskapazität reverse transfer capacitance	$f = 1 \text{ MHz}, T_{vj} = 25^{\circ}\text{C}, V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}$		C_{res}	0,08			nF
Kollektor-Emitter Reststrom collector-emitter cut-off current	$V_{CE} = 600 \text{ V}, V_{GE} = 0 \text{ V}, T_{vj} = 25^{\circ}\text{C}$		I_{CES}		1,0		mA
Gate-Emitter Reststrom gate-emitter leakage current	$V_{CE} = 0 \text{ V}, V_{GE} = 20 \text{ V}, T_{vj} = 25^{\circ}\text{C}$		I_{GES}		400		nA
Einschaltverzögerungszeit (ind. Last) turn-on delay time (inductive load)	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Gon} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	$t_{d \text{ on}}$	0,018 0,018			μs μs
Anstiegszeit (induktive Last) rise time (inductive load)	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Gon} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_r	0,02 0,02			μs μs
Abschaltverzögerungszeit (ind. Last) turn-off delay time (inductive load)	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Goff} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	$t_{d \text{ off}}$	0,10 0,11			μs μs
Fallzeit (induktive Last) fall time (inductive load)	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Goff} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	t_f	0,025 0,035			μs μs
Einschaltverlustenergie pro Puls turn-on energy loss per pulse	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Gon} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	E_{on}	0,40 0,50			mJ mJ
Abschaltverlustenergie pro Puls turn-off energy loss per pulse	$I_C = 20 \text{ A}, V_{CE} = 300 \text{ V}$ $V_{GE} = \pm 15 \text{ V}$ $R_{Goff} = 27 \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	E_{off}	0,35 0,55			mJ mJ
Kurzschlußverhalten SC data	$t_p \leq 10 \mu\text{s}, V_{GE} \leq 15 \text{ V}$ $T_{vj} = 125^{\circ}\text{C}, V_{CC} = 360 \text{ V}, V_{CEmax} = V_{CES} - L_s \cdot di/dt$		I_{SC}	90			A
Innerer Wärmewiderstand thermal resistance, junction to case	pro IGBT per IGBT		R_{thJC}	1,35	1,50		K/W K/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	pro IGBT / per IGBT $\lambda_{Paste} = 1 \text{ W}/(\text{m}\cdot\text{K}) / \lambda_{grease} = 1 \text{ W}/(\text{m}\cdot\text{K})$		R_{thCH}	0,60			K/W

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