

Diode, Wechselrichter / Diode, Inverter

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{RRM}	650	V
Dauergleichstrom Continuous DC forward current		I_F	30	A
Periodischer Spitzenstrom Repetitive peak forward current	$t_P = 1\text{ ms}$	I_{FRM}	60	A
Grenzlastintegral I^2t - value	$V_R = 0\text{ V}, t_P = 10\text{ ms}, T_{vj} = 125^{\circ}\text{C}$ $V_R = 0\text{ V}, t_P = 10\text{ ms}, T_{vj} = 150^{\circ}\text{C}$	I^2t	90,0 82,0	A^2s A^2s

Charakteristische Werte / Characteristic Values

		min.	typ.	max.	
Durchlassspannung Forward voltage	$I_F = 30\text{ A}, V_{GE} = 0\text{ V}$		1,60	2,00	V
	$I_F = 30\text{ A}, V_{GE} = 0\text{ V}$		1,55		V
	$I_F = 30\text{ A}, V_{GE} = 0\text{ V}$		1,50		V
Rückstromspitze Peak reverse recovery current	$I_F = 30\text{ A}, -di_F/dt = 800\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$		15,5		A
	$V_R = 300\text{ V}$		20,5		A
	$V_{GE} = -15\text{ V}$		22,0		A
Sperrverzögerungsladung Recovered charge	$I_F = 30\text{ A}, -di_F/dt = 800\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$		1,10		μC
	$V_R = 300\text{ V}$		1,90		μC
	$V_{GE} = -15\text{ V}$		2,20		μC
Abschaltenergie pro Puls Reverse recovery energy	$I_F = 30\text{ A}, -di_F/dt = 800\text{ A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$		0,18		mJ
	$V_R = 300\text{ V}$		0,34		mJ
	$V_{GE} = -15\text{ V}$		0,41		mJ
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro Diode / per diode	R_{thJH}	2,60		K/W
Temperatur im Schaltbetrieb Temperature under switching conditions		$T_{vj\text{ op}}$	-40	150	$^{\circ}\text{C}$

IGBT,3-Level / IGBT,3-Level

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	$T_{vj} = 25^{\circ}\text{C}$	V_{CES}	650	V
Kollektor-Dauergleichstrom Continuous DC collector current	$T_H = 25^{\circ}\text{C}, T_{vj\ max} = 175^{\circ}\text{C}$	$I_{C\ nom}$	30	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	$t_P = 1\ \text{ms}$	I_{CRM}	60	A
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	$I_C = 30\ \text{A}, V_{GE} = 15\ \text{V}$ $I_C = 30\ \text{A}, V_{GE} = 15\ \text{V}$ $I_C = 30\ \text{A}, V_{GE} = 15\ \text{V}$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$V_{CE\ sat}$	1,55 1,80 1,85	1,95	V V V	
Gate-Schwellenspannung Gate threshold voltage	$I_C = 0,80\ \text{mA}, V_{CE} = V_{GE}, T_{vj} = 25^{\circ}\text{C}$		V_{GEth}	5,00	5,80	6,50	V
Gateladung Gate charge	$V_{GE} = -15\ \text{V} \dots +15\ \text{V}$		Q_G	0,30			μC
Interner Gatewiderstand Internal gate resistor	$T_{vj} = 25^{\circ}\text{C}$		R_{Gint}	0,0			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}	1,65			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}	0,051			nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	$V_{CE} = 650\ \text{V}, V_{GE} = 0\ \text{V}, T_{vj} = 25^{\circ}\text{C}$		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}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}$ $V_{GE} = \pm 15\ \text{V}$ $R_{Gon} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$t_{d\ on}$	0,03 0,03 0,031			μs μs μs
Anstiegszeit, induktive Last Rise time, inductive load	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}$ $V_{GE} = \pm 15\ \text{V}$ $R_{Gon} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_r	0,035 0,036 0,05			μs μs μs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}$ $V_{GE} = \pm 15\ \text{V}$ $R_{Goff} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	$t_{d\ off}$	0,175 0,19 0,20			μs μs μs
Fallzeit, induktive Last Fall time, inductive load	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}$ $V_{GE} = \pm 15\ \text{V}$ $R_{Goff} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	t_f	0,019 0,038 0,043			μs μs μs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}, L_S = 35\ \text{nH}$ $V_{GE} = \pm 15\ \text{V}, di/dt = 830\ \text{A}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Gon} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{on}	0,38 0,40 0,41			mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	$I_C = 30\ \text{A}, V_{CE} = 300\ \text{V}, L_S = 35\ \text{nH}$ $V_{GE} = \pm 15\ \text{V}, du/dt = 5400\ \text{V}/\mu\text{s} (T_{vj} = 150^{\circ}\text{C})$ $R_{Goff} = 20\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$ $T_{vj} = 150^{\circ}\text{C}$	E_{off}	0,42 0,64 0,71			mJ mJ mJ
Kurzschlußverhalten SC data	$V_{GE} \leq 15\ \text{V}, V_{CC} = 360\ \text{V}$ $V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$	$t_P \leq 5\ \mu\text{s}, T_{vj} = 150^{\circ}\text{C}$	I_{SC}	160			A
Wärmewiderstand, Chip bis Kühlkörper Thermal resistance, junction to heatsink	pro IGBT / per IGBT		R_{thJH}	2,15			K/W
Temperatur im Schaltbetrieb Temperature under switching conditions			$T_{vj\ op}$	-40	150		$^{\circ}\text{C}$