Diode, Wechselrichter / Diode, Inverter

Höchstzulässige Werte / Maximum Rated Values

Periodische Spitzensperrspannung Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	650		V
Dauergleichstrom Continuous DC forward current		I_F	30		A
Periodischer Spitzenstrom Repetitive peak forward current	t_P = 1 ms	I_{FRM}	60		A
Grenzlastintegral I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 150°C	I²t	90,0 82,0		A²s A²s

Charakteristische Werte / Characteristic Values

				min.	typ.	max.	
Durchlassspannung Forward voltage	I_F = 30 A, V_{GE} = 0 V I_F = 30 A, V_{GE} = 0 V I_F = 30 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	V_F		1,60 1,55 1,50	2,00	V V V
Rückstromspitze Peak reverse recovery current	I_F = 30 A, - di_F/dt = 1100 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	I_{RM}		20,0 26,0 28,0		A A A
Sperrverzögerungsladung Recovered charge	I_F = 30 A, - di_F/dt = 1100 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	Q_r		1,20 2,10 2,50		µC µC µC
Abschaltenergie pro Puls Reverse recovery energy	I_F = 30 A, - di_F/dt = 1100 A/µs (T_{vj}=150°C) V_R = 300 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 150°C	E_{rec}		0,22 0,45 0,53		mJ mJ 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			$T_{vj\,op}$	-40		150	°C

IGBT,3-Level / IGBT,3-Level

Höchstzulässige Werte / Maximum Rated Values

Kollektor-Emitter-Sperrspannung Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	650	V
Kollektor-Dauergleichstrom Continuous DC collector current	T_H = 25°C, $T_{vj\,max}$ = 175°C	$I_{C\,nom}$	30	A
Periodischer Kollektor-Spitzenstrom Repetitive peak collector current	t_P = 1 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 A, V_{GE} = 15 V, T_{vj} = 25°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 125°C I_C = 30 A, V_{GE} = 15 V, T_{vj} = 150°C	$V_{CE\,sat}$		1,55 1,80 1,85	1,95	V V V
Gate-Schwellenspannung Gate threshold voltage	I_C = 0,80 mA, V_{CE} = V_{GE}, T_{vj} = 25°C	V_{GEth}	5,00	5,80	6,50	V
Gateladung Gate charge	V_{GE} = -15 V ... +15 V	Q_G		0,30		µC
Interner Gatewiderstand Internal gate resistor	T_{vj} = 25°C	R_{Gint}		0,0		Ω
Eingangskapazität Input capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{ies}		1,65		nF
Rückwirkungskapazität Reverse transfer capacitance	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V	C_{res}		0,051		nF
Kollektor-Emitter-Reststrom Collector-emitter cut-off current	V_{CE} = 650 V, V_{GE} = 0 V, T_{vj} = 25°C	I_{CES}			1,0	mA
Gate-Emitter-Reststrom Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C	I_{GES}			100	nA
Einschaltverzögerungszeit, induktive Last Turn-on delay time, inductive load	I_C = 30 A, V_{CE} = 300 V, T_{vj} = 25°C V_{GE} = ±15 V, T_{vj} = 125°C R_{Gon} = 20 Ω, T_{vj} = 150°C	$t_{d\,on}$		0,03 0,03 0,031		µs µs µs
Anstiegszeit, induktive Last Rise time, inductive load	I_C = 30 A, V_{CE} = 300 V, T_{vj} = 25°C V_{GE} = ±15 V, T_{vj} = 125°C R_{Gon} = 20 Ω, T_{vj} = 150°C	t_r		0,035 0,036 0,05		µs µs µs
Abschaltverzögerungszeit, induktive Last Turn-off delay time, inductive load	I_C = 30 A, V_{CE} = 300 V, T_{vj} = 25°C V_{GE} = ±15 V, T_{vj} = 125°C R_{Goff} = 20 Ω, T_{vj} = 150°C	$t_{d\,off}$		0,175 0,19 0,20		µs µs µs
Fallzeit, induktive Last Fall time, inductive load	I_C = 30 A, V_{CE} = 300 V, T_{vj} = 25°C V_{GE} = ±15 V, T_{vj} = 125°C R_{Goff} = 20 Ω, T_{vj} = 150°C	t_f		0,019 0,038 0,043		µs µs µs
Einschaltverlustenergie pro Puls Turn-on energy loss per pulse	I_C = 30 A, V_{CE} = 300 V, L_S = 35 nH, T_{vj} = 25°C V_{GE} = ±15 V, di/dt = 830 A/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Gon} = 20 Ω, T_{vj} = 150°C	E_{on}		0,38 0,42 0,42		mJ mJ mJ
Abschaltverlustenergie pro Puls Turn-off energy loss per pulse	I_C = 30 A, V_{CE} = 300 V, L_S = 35 nH, T_{vj} = 25°C V_{GE} = ±15 V, du/dt = 5400 V/µs (T_{vj} = 150°C), T_{vj} = 125°C R_{Goff} = 20 Ω, T_{vj} = 150°C	E_{off}		0,42 0,64 0,71		mJ mJ mJ
Kurzschlußverhalten SC data	V_{GE} ≤ 15 V, V_{CC} = 360 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt, t_P ≤ 5 µs, T_{vj} = 150°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	°C