

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Diode Gleichrichter/ Diode Rectifier

Periodische Rückw. Spitzenspernung repetitive peak reverse voltage		V_{RRM}	1600	V
Durchlaßstrom Grenzeffektivwert RMS forward current per chip		I_{FRMSM}	40	A
Dauergleichstrom DC forward current	$T_C = 80^\circ\text{C}$	I_d	25	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}	300 230	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	450 260	A^2s A^2s

Transistor Wechselrichter/ Transistor Inverter

Kollektor-Emitter-Spernung collector-emitter voltage		V_{CES}	1200	V
Kollektor-Dauergleichstrom DC-collector current	$T_C = 80^\circ\text{C}$ $T_C = 25^\circ\text{C}$	$I_{C,nom.}$ I_C	25 45	A A
Periodischer Kollektor Spitzenstrom repetitive peak collector current	$t_p = 1\text{ ms}, T_C = 80^\circ\text{C}$	I_{CRM}	50	A
Gesamt-Verlustleistung total power dissipation	$T_C = 25^\circ\text{C}$	P_{tot}	230	W
Gate-Emitter-Spernung gate-emitter peak voltage		V_{GES}	+/- 20V	V

Diode Wechselrichter/ Diode Inverter

Dauergleichstrom DC forward current	$T_C = 80^\circ\text{C}$	I_F	25	A
Periodischer Spitzenstrom repetitive peak forw. current	$t_p = 1\text{ ms}$	I_{FRM}	50	A
Grenzlastintegral I^2t - value	$V_R = 0\text{V}, t_p = 10\text{ms}, T_{vj} = 125^\circ\text{C}$	I^2t	125	A^2s

Transistor Brems-Chopper/ Transistor Brake-Chopper

Kollektor-Emitter-Spernung collector-emitter voltage		V_{CES}	1200	V
Kollektor-Dauergleichstrom DC-collector current	$T_C = 80^\circ\text{C}$ $T_C = 25^\circ\text{C}$	$I_{C,nom.}$ I_C	12,5 20	A A
Periodischer Kollektor Spitzenstrom repetitive peak collector current	$t_p = 1\text{ ms}, T_C = 80^\circ\text{C}$	I_{CRM}	25	A
Gesamt-Verlustleistung total power dissipation	$T_C = 25^\circ\text{C}$	P_{tot}	100	W
Gate-Emitter-Spernung gate-emitter peak voltage		V_{GES}	+/- 20V	V

Diode Brems-Chopper/ Diode Brake-Chopper

Dauergleichstrom DC forward current	$T_C = 80^\circ\text{C}$	I_F	10	A
Periodischer Spitzenstrom repetitive peak forw. current	$t_p = 1\text{ ms}$	I_{FRM}	20	A

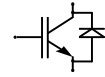
prepared by: Andreas Schulz	date of publication:29.03.2001
approved by: Robert Severin	revision: 5

Technische Information / Technical Information

IGBT-Module
IGBT-Modules

BSM25GP120

eupec



Modul Isolation/ Module Isolation

Isolations-Prüfspannung insulation test voltage	RMS, f = 50 Hz, t = 1 min. NTC connected to Baseplate	V_{ISOL}	2,5	kV
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Elektrische Eigenschaften / Electrical properties

Charakteristische Werte / Characteristic values

Diode Gleichrichter/ Diode Rectifier

			min.	typ.	max.	
Durchlaßspannung forward voltage	$T_{vj} = 150^{\circ}\text{C}$, $I_F = 25\text{ A}$	V_F	-	1,05	1,1	V
Schleusenspannung threshold voltage	$T_{vj} = 150^{\circ}\text{C}$	$V_{(TO)}$	-	-	0,8	V
Ersatzwiderstand slope resistance	$T_{vj} = 150^{\circ}\text{C}$	r_T	-	-	10,5	m Ω
Sperrstrom reverse current	$T_{vj} = 150^{\circ}\text{C}$, $V_R = 1600\text{ V}$	I_R	-	2	-	mA
Modul Leitungswiderstand, Anschlüsse-Chip lead resistance, terminals-chip	$T_C = 25^{\circ}\text{C}$	R_{AA+CC}	-	8	-	m Ω

Transistor Wechselrichter/ Transistor Inverter

			min.	typ.	max.		
Kollektor-Emitter Sättigungsspannung collector-emitter saturation voltage	$V_{GE} = 15\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $I_C = 25\text{ A}$	$V_{CE\text{ sat}}$	-	2,1	2,55	V	
	$V_{GE} = 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $I_C = 25\text{ A}$		-	2,45	-	V	
Gate-Schwellenspannung gate threshold voltage	$V_{CE} = V_{GE}$, $T_{vj} = 25^{\circ}\text{C}$, $I_C = 1\text{ mA}$	$V_{GE(TO)}$	4,5	5,5	6,5	V	
Eingangskapazität input capacitance	f = 1MHz, $T_{vj} = 25^{\circ}\text{C}$ $V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$	C_{ies}	-	1,5	-	nF	
Kollektor-Emitter Reststrom collector-emitter cut-off current	$V_{GE} = 0\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 1200\text{ V}$	I_{CES}	-	1,5	500	μA	
	$V_{GE} = 0\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $V_{CE} = 1200\text{ V}$		-	2,0	-	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}	-	-	300	nA	
Einschaltverzögerungszeit (ind. Last) turn on delay time (inductive load)	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	$t_{d,on}$	-	45	-	ns	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
Anstiegszeit (induktive Last) rise time (inductive load)	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	t_r	-	45	-	ns	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
Abschaltverzögerungszeit (ind. Last) turn off delay time (inductive load)	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	$t_{d,off}$	-	290	-	ns	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
Fallzeit (induktive Last) fall time (inductive load)	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	t_f	-	60	-	ns	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 25^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
Einschaltverlustenergie pro Puls turn-on energy loss per pulse	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	E_{on}	-	3,2	-	mWs	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$L_S = 75\text{ nH}$						
Abschaltverlustenergie pro Puls turn-off energy loss per pulse	$I_C = I_{Nenn}$, $V_{CC} = 600\text{ V}$	E_{off}	-	3,2	-	mWs	
	$V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^{\circ}\text{C}$, $R_G = 27\text{ Ohm}$						
	$L_S = 75\text{ nH}$						
Kurzschlußverhalten SC Data	$t_P \leq 10\mu\text{s}$, $V_{GE} \leq 15\text{V}$, $T_{vj} \leq 125^{\circ}\text{C}$,	$R_G = 27\text{ Ohm}$ $V_{CC} = 720\text{ V}$ $di/dt = 2000\text{ A}/\mu\text{s}$	I_{SC}	-	160	-	A