

Technische Information / Technical Information

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Dioden-Modul mit Chopper-IGBT
Diode Module with Chopper-IGBT **DD B6U 84 N 12...16 RR**



Elektrische Eigenschaften / Electrical properties

Vorläufige Daten Preliminary data

Höchstzulässige Werte / Maximum rated values

Netz-Diode / Rectifier diode				
Periodische Spitzensperrspannung repetitive peak reverse voltage	$T_{vj} = -40^{\circ}\text{C} \dots T_{vj\text{ max}}$	V_{RRM}	1200, 1400 1600	V
Durchlaßstrom-Grenzeffektivwert (pro Element) RMS forward current (per chip)		I_{FRMSM}	60	A
Ausgangsstrom output current	$T_C = 100^{\circ}\text{C}$	I_d	85	A
	$T_C = 84^{\circ}\text{C}$		104	A
Stoßstrom-Grenzwert surge forward current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$	I_{FSM}	650	A
	$T_{vj} = T_{vj\text{ max}}, t_p = 10\text{ms}$		550	A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$	I^2t	2100	A^2s
	$T_{vj} = T_{vj\text{ max}}, t_p = 10\text{ms}$		1500	A^2s
IGBT				
Kollektor-Emitter-Sperrspannung collector-emitter voltage		V_{CES}	1200	V
Kollektor-Dauergleichstrom DC-collector current		I_C	50	A
Periodischer Kollektor-Spitzenstrom repetitive peak collector current	$t_p = 1\text{ms}$	I_{CRM}	100	A
Gesamt-Verlustleistung total power dissipation	$T_C = 25^{\circ}\text{C}$	P_{tot}	350	W
Gate-Emitter Spitzenspannung gate-emitter peak voltage		V_{GE}	± 20	V
Schnelle Diode / Fast diode				
Dauergleichstrom DC forward current		I_F	25	A
Periodischer Spitzenstrom repetitive peak forward current	$t_p = 1\text{ms}$	I_{FRM}	50	A
Modul				
Isolations-Prüfspannung insulation test voltage	RMS, $f = 50\text{Hz}$, $t = 1\text{min}$	V_{ISOL}	2,5	kV

Charakteristische Werte / Characteristic values

Netz-Diode / Rectifier diode			min.	typ.	max.	
Durchlaßspannung forward voltage	$T_{vj} = T_{vj\text{ max}}, I_F = 100\text{A}$	V_F			1,55	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			5,5	$\text{m}\Omega$
Sperrstrom reverse current	$T_{vj} = T_{vj\text{ max}}, V_R = V_{RRM}$	i_R			5	mA
IGBT						
Kollektor-Emitter Sättigungsspannung collector-emitter saturation voltage	$T_{vj} = 25^{\circ}\text{C}, I_C = 50\text{A}, V_{GE} = 20\text{V}$	$V_{CE\text{ sat}}$		2,5	3,2	V
	$T_{vj} = 125^{\circ}\text{C}, I_C = 50\text{A}, V_{GE} = 20\text{V}$			3,1		
Gate-Emitter-Schwellspannung gate-emitter threshold voltage	$T_{vj} = 25^{\circ}\text{C}, I_C = 2\text{mA}, V_{GE} = V_{CE}$	$V_{GE(TO)}$	4,5	5,5	6,5	V

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IGBT			min.	typ.	max.	
Eingangskapazität input capacitance	$T_{vj} = 25^{\circ}\text{C}$, $f_0 = 1\text{MHz}$, $V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$	C_{ies}		3,3		nF
Kollektor-Emitter Reststrom collector-emitter cut-off current	$T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 1200\text{V}$, $V_{GE} = 0\text{V}$ $T_{vj} = 125^{\circ}\text{C}$, $V_{CE} = 1200\text{V}$, $V_{GE} = 0\text{V}$	i_{CES}		0,8 4,0	1	mA
Gate-Emitter Reststrom gate leakage current	$T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 0\text{V}$, $V_{GE} = 20\text{V}$	i_{GES}			500	nA
Emitter-Gate Reststrom gate-leakage current	$T_{vj} = 25^{\circ}\text{C}$, $V_{CE} = 0\text{V}$, $V_{EG} = 20\text{V}$	i_{EGS}			500	nA
Schnelle Diode / Fast diode						
Durchlaßspannung forward voltage	$T_{vj} = 25^{\circ}\text{C}$, $I_F = 25\text{A}$ $T_{vj} = 125^{\circ}\text{C}$, $I_F = 25\text{A}$	V_F		2,3 1,8	2,9	V
Sperrverzögerungsladung recovered charge	$I_{FM} = 25\text{A}$, $-di/dt = 800\text{A}/\mu\text{s}$, $V_R = 600\text{V}$ $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 125^{\circ}\text{C}$	Q_r		2,3 6,0		μAs μAs

Thermische Eigenschaften / Thermal properties

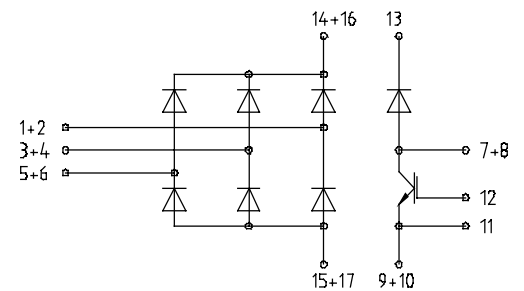
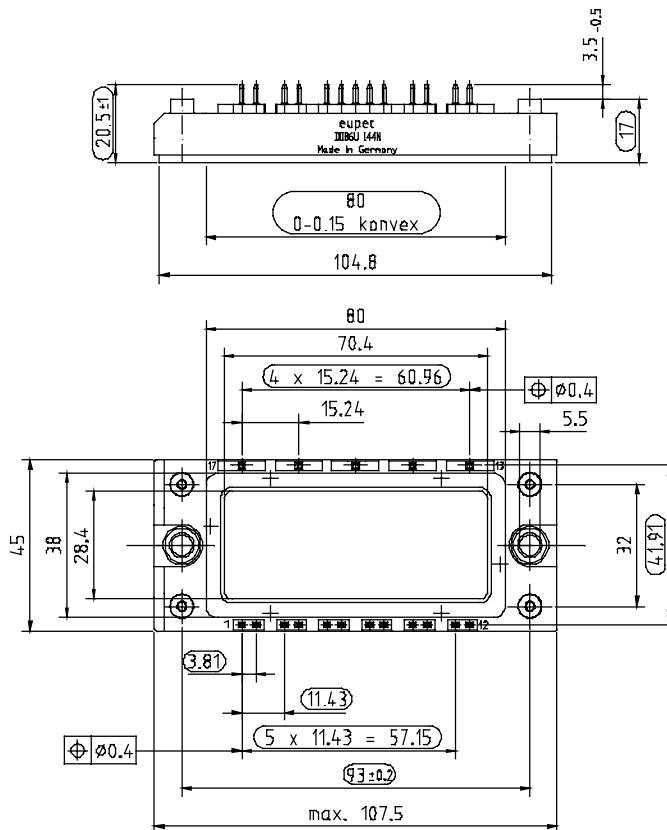
Innerer Wärmewiderstand thermal resistance, junction to case	Netz-Diode / Rectifier diode, $\Theta = 120^{\circ}\text{rect}$ Transistor / Transistor, DC Schnelle Diode / Fast diode, DC	R_{thJC}	max. 1,45 max. 0,38 max. 1,00	$^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	Netz-Diode / Rectifier diode Transistor / Transistor Schnelle Diode / Fast diode	R_{thCK}	max. 0,25 max. 0,24 max. 0,30	$^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$ $^{\circ}\text{C/W}$
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	
Innere Isolation internal insulation			Al_2O_3	
Anzugsdrehmoment für mechanische Befestigung mounting torque	Toleranz / tolerance $\pm 15\%$	M1	4	Nm
Gewicht weight		G	typ. 185	g
Kriechstrecke creepage distance			12,5	mm

Kühlkörper / heatsinks :

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