

### Elektrische Eigenschaften / Electrical properties

### Vorläufige Daten Preliminary data

#### Höchstzulässige Werte / Maximum rated values

<b>Netz-Diode / Rectifier diode</b>				
Periodische Spitzenspernung 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	$T_C = 100^{\circ}\text{C}$ $T_C = 97^{\circ}\text{C}$	$I_d$	100 104	A A
Stoßstrom-Grenzwert surge forward current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$	$I_{FSM}$	650 550	A A
Grenzlantintegral $I^2t$ -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$	$I^2t$	2100 1500	A <sup>2</sup> s A <sup>2</sup> s
<b>IGBT</b>				
Kollektor-Emitter-Spernung 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		$V_{GE}$	$\pm 20$	V
<b>Schnelle Diode / Fast diode</b>				
Dauergleichstrom DC forward current		$I_F$	25	A
Periodischer Spitzenstrom repetitive peak forward current	$t_p = 1\text{ms}$	$I_{FRM}$	50	A
<b>Modul</b>				
Isolations-Prüfspernung insulation test voltage	RMS, $f = 50\text{Hz}, t = 1\text{min}$	$V_{ISOL}$	2,5	kV

#### Charakteristische Werte / Characteristic values

<b>Netz-Diode / Rectifier diode</b>			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	m $\Omega$
Spernstrom reverse current	$T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$	$i_R$			5	mA
<b>IGBT</b>						
Kollektor-Emitter Sättigungsspernung collector-emitter saturation voltage	$T_{vj} = 25^{\circ}\text{C}, I_C = 50\text{A}, V_{GE} = 20\text{V}$ $T_{vj} = 125^{\circ}\text{C}, I_C = 50\text{A}, V_{GE} = 20\text{V}$	$V_{CE\text{sat}}$		2,5 3,1	3,2	V
Gate-Emitter-Schwellspernung 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

### Vorläufige Daten Preliminary data

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
<b>Schnelle Diode / Fast diode</b>						
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		$\mu\text{As}$ $\mu\text{As}$

### 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. 1,15 max. 0,38 max. 1,00	$^{\circ}\text{C}/\text{W}$ $^{\circ}\text{C}/\text{W}$ $^{\circ}\text{C}/\text{W}$
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	$^{\circ}\text{C}/\text{W}$ $^{\circ}\text{C}/\text{W}$ $^{\circ}\text{C}/\text{W}$
Höchstzulässige Sperrschichttemperatur max. junction temperature		$T_{vj\ max}$	150	$^{\circ}\text{C}$
Betriebstemperatur operating temperature		$T_{c\ op}$	- 40...+150	$^{\circ}\text{C}$
Lagertemperatur storage temperature		$T_{stq}$	- 40...+150	$^{\circ}\text{C}$

### Mechanische Eigenschaften / Mechanical properties

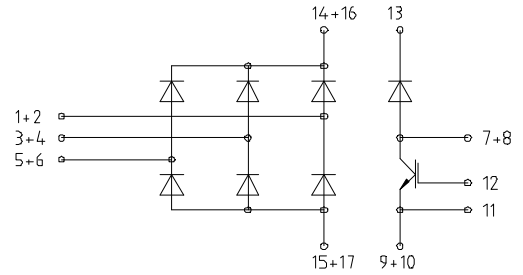
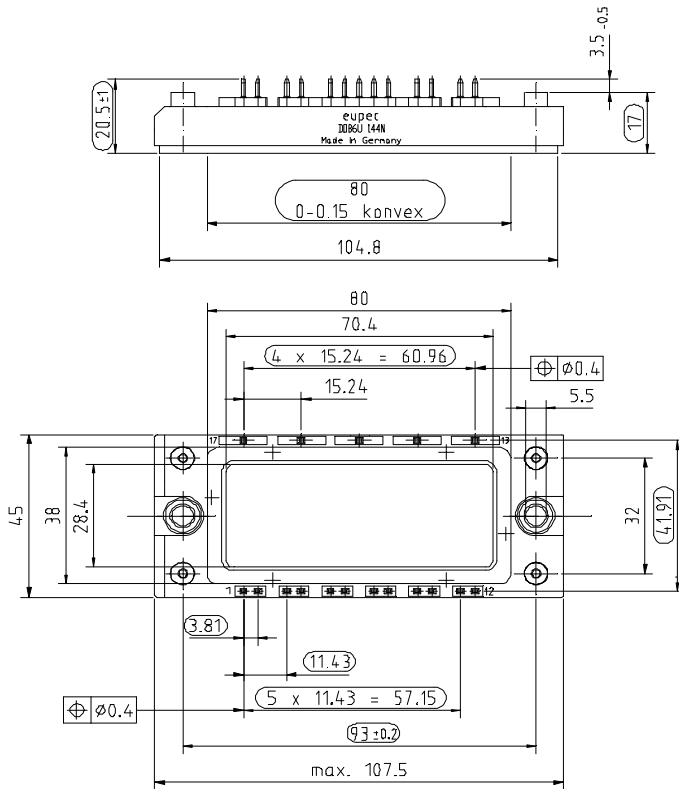
Gehäuse, siehe Anlage case, see appendix			Seite 3 page 3	
Innere Isolation internal insulation			$\text{Al}_2\text{O}_3$	
Anzugsdrehmoment für mechanische Befestigung mounting torque	Toleranz / tolerance $\pm 15\%$	M1	4	Nm
Gewicht weight		G	typ. 185	g
Kriechstrecke creepage distance			12,5	mm

### Kühlkörper / heatsinks :

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Dioden-Modul mit Chopper-IGBT  
Diode Module with Chopper-IGBT

**DD B6U 100 N 12...16 RR**



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