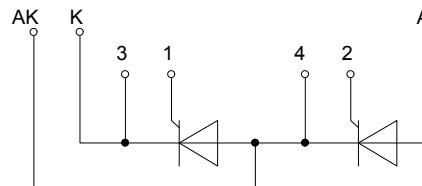
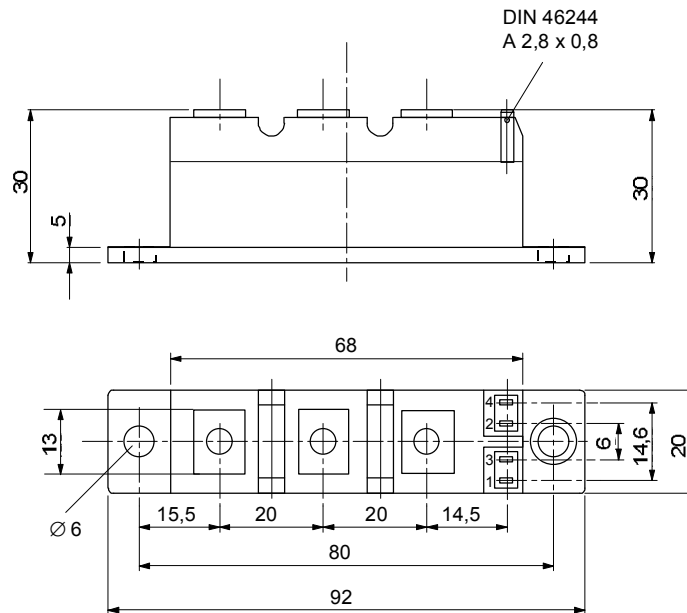




European Power-Semiconductor and Electronics Company

# Marketing Information

## TT 46 F 08...13



MA2-BE, 24. May 1994

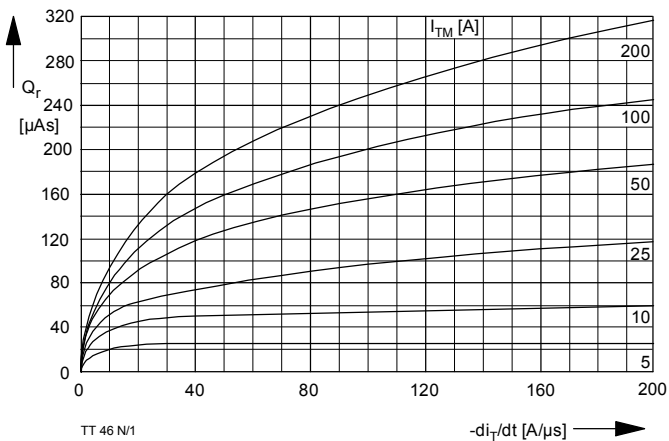
## TT 46 F 08...13

Elektrische Eigenschaften	Electrical properties				
Höchstzulässige Werte	Maximum rated values				
Periodische Vorwärts- und Rückwärts-Spitzensperrspann.	repetitive peak forward off-state and reverse voltages	$t_{vj} = -t_{c\ op} \dots t_{vj\ max}$	$V_{DRM}, V_{RRM}$	800, 1000, 1100 1200, 1300	V <sup>1)</sup>
Vorwärts-Stoßspitzensperrspannung	non-repetitive peak forward off-state voltage	$t_{vj} = -t_{c\ op} \dots t_{vj\ max}$	$V_{DSM}$	800, 1000, 1100 1200, 1300	V
Rückwärts-Stoßspitzensperrspannung	non-repetitive peak reverse voltage	$t_{vj} = +25^{\circ}C \dots t_{vj\ max}$	$V_{RSM}$	900, 1100, 1200 1300, 1400	V
Durchlaßstrom-Grenzeffektivwert	RMS on-state current		$I_{TRMSM}$	120	A
Dauergrenzstrom	average on-state current	$t_c = 85^{\circ}C$ $t_c = 48^{\circ}C$	$I_{TAVM}$	45 76	A
Stoßstrom-Grenzwert	surge current	$t_{vj} = 25^{\circ}C, t_p = 10\ ms$ $t_{vj} = t_{vj\ max}, t_p = 10\ ms$	$I_{TSM}$	1300 1150	A
Grenzlastintegral	I <sup>2</sup> t-value	$t_{vj} = 25^{\circ}C, t_p = 10\ ms$ $t_{vj} = t_{vj\ max}, t_p = 10\ ms$	I <sup>2</sup> t	8450 6600	A <sup>2</sup> s
Kritische Stromsteilheit	critical rate of rise of on-state current	DIN IEC 747-6, f = 50 Hz, $v_L = 10\ V$ $I_{GM} = 0,75\ A, di_G/dt = 0,75\ A/\mu s$	$(di_T/dt)_{cr}$	120	A/ $\mu s$
Kritische Spannungssteilheit	critical rate of rise of off-state voltage	$t_{vj} = t_{vj\ max}, V_D = 0,67\ V_{DRM}$ 6.Kennbuchstabe/6th letter B 6.Kennbuchstabe/6th letter C 6.Kennbuchstabe/6th letter L 6.Kennbuchstabe/6th letter M	$(dv_D/dt)_{cr}$	2) 50 500 500 1000	3) V/ $\mu s$ V/ $\mu s$ V/ $\mu s$ V/ $\mu s$
<b>Charakteristische Werte</b>		<b>Characteristic values</b>			
Durchlaßspannung	on-state voltage	$t_{vj} = t_{vj\ max}, i_T = 230\ A$	$V_T$	max. 2,20	V
Schleusenspannung	threshold voltage	$t_{vj} = t_{vj\ max}$	$V_{T(TO)}$	1,30	V
Ersatzwiderstand	slope resistance	$t_{vj} = t_{vj\ max}$	$r_T$	3,4	m $\Omega$
Zündstrom	gate trigger current	$t_{vj} = 25^{\circ}C, V_D = 12\ V$	$I_{GT}$	max. 150	mA
Zündspannung	gate trigger voltage	$t_{vj} = 25^{\circ}C, V_D = 12\ V$	$V_{GT}$	max. 1,4	V
Nicht zündender Steuerstrom	gate non-trigger current	$t_{vj} = t_{vj\ max}, V_D = 12\ V$ $t_{vj} = t_{vj\ max}, V_D = 0,5\ V_{DRM}$	$I_{GD}$	max. 5 max. 2,5	mA
Nicht zündende Steuerspann.	gate non-trigger voltage	$t_{vj} = t_{vj\ max}, V_D = 0,5\ V_{DRM}$	$V_{GD}$	max. 0,2	V
Haltestrom	holding current	$t_{vj} = 25^{\circ}C, V_D = 12\ V, R_A = 5\ \Omega$	$I_H$	max. 250	mA
Einraststrom	latching current	$t_{vj} = 25^{\circ}C, V_D = 12\ V, R_{GK} > 20\ \Omega$ $i_{GM} = 0,75\ A, di_G/dt = 0,75\ A/\mu s, t_g = 20$	$I_L$	max. 1000	mA
Vorwärts- und Rückwärts-Sperrstrom	forward off-state and reverse currents	$t_{vj} = t_{vj\ max}$ $V_D = V_{DRM}, V_R = V_{RRM}$	$i_D, i_R$	max. 25	mA
Zündverzögerung	gate controlled delay time	DIN IEC 747-6, $t_{vj} = 25^{\circ}C$ $i_{GM} = 0,75\ A, di_G/dt = 0,75\ A/\mu s$	$t_{gd}$	max. 1,4	$\mu s$
Freiwerdezeit	circuit commutated turn-off time	$t_{vj} = t_{vj\ max}, I_{TM} = I_{TAVM}$ $V_{RM} = 100\ V, V_{DM} = 0,67\ V_{DRM}$ - $di_T/dt = 20\ A/\mu s$ 5.Kennbuchstabe/5th letter C 5.Kennbuchstabe/5th letter D 5.Kennbuchstabe/5th letter E 5.Kennbuchstabe/5th letter F	$t_q$	max. 12 max. 15 max. 20 max. 25	$\mu s$
Isolations-Prüfspannung	insulation test voltage	RMS, f = 50 Hz, 1 min.	$V_{ISOL}$	2,5	kV
<b>Thermische Eigenschaften</b>		<b>Thermal properties</b>			
Innere Wärmewiderstand	thermal resistance, junction to case	pro Modul/per module, $\Theta = 180^{\circ}\ sin$ pro Zweig/per arm, $\Theta = 180^{\circ}\ sin$ pro Modul/per module, DC pro Zweig/per arm, DC	$R_{thJC}$	max. 0,26 max. 0,52 max. 0,25 max. 0,50	$^{\circ}C/W$
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	pro Modul/per module pro Zweig/per arm	$R_{thCK}$	max. 0,08 max. 0,16	$^{\circ}C/W$
Höchstzul. Sperrschichttemp.	max. junction temperature		$t_{vj\ max}$	125	$^{\circ}C$
Betriebstemperatur	operating temperature		$t_{c\ op}$	-40...+125	$^{\circ}C$
Lagertemperatur	storage temperature		$t_{stg}$	-40...+130	$^{\circ}C$
<b>Mechanische Eigenschaften</b>		<b>Mechanical properties</b>			
Innere Isolation	internal insulation			AIN	
Anzugsdrehmoment für mech. Befestigung	mounting torque	Toleranz/tolerance +/- 15%	M1	4	Nm
Anzugsdrehmoment für elektrische Anschlüsse	terminal connection torque	Toleranz/tolerance +5%/ -10%	M2	4	Nm
Gewicht	weight		G	typ. 180	g
Kriechstrecke	creepage distance			12,5	mm
Schwingfestigkeit	vibration resistance	f = 50 Hz		50	m/s <sup>2</sup>

1) 1300V auf Anfrage / 1300V on demand

2) Werte nach DIN IEC 747-6 (ohne vorrausgehende Kommutierung). / Values to DIN IEC 747-6 (without prior commutation)

3) Unmittelbar nach der Freiwerdezeit, vgl. Meßbedingungen für  $t_q$  / Immediately after circuit commutated turn-off time, see parameters  $t_q$ .



TT 46 N/1

Bild / Fig. 1

Sperrverzögerungsladung / Recovered Charge  $Q_r = f(di/dt)$

$t_{vj} = t_{vj \max}$ ,  $V_R = 0,5 V_{RRM}$ ,  $V_{RM} = 0,8 V_{RRM}$

Parameter: Durchlaßstrom / on-state current  $I_{TM}$

Analytische Elemente des transienten Wärmewiderstandes  $Z_{thJC}$  pro Zweig für DC  
Analytical elements of transient thermal impedance  $Z_{thJC}$  per arm for DC

Pos. n	1	2	3	4	5	6	7
$R_{thn} [^{\circ}C/W]$	0,0218	0,0426	0,1886	0,247			
$\tau_n [s]$	0,000945	0,01	0,31	1,762			

Analytische Funktion / Analytical function:

$$Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} (1 - e^{-\frac{t}{\tau_n}})$$

## **Terms & Conditions of Usage**

### **Attention**

The present product data is exclusively subscribed to technically experienced staff. This Data Sheet is describing the specification of the products for which a warranty is granted exclusively pursuant the terms and conditions of the supply agreement. There will be no guarantee of any kind for the product and its specifications. Changes to the Data Sheet are reserved.

You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Should you require product information in excess of the data given in the Data Sheet, please contact your local Sales Office via "www.eupec.com / sales & contact".

### **Warning**

Due to technical requirements the products may contain dangerous substances. For information on the types in question please contact your local Sales Office via "www.eupec.com / sales & contact".