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European Power-
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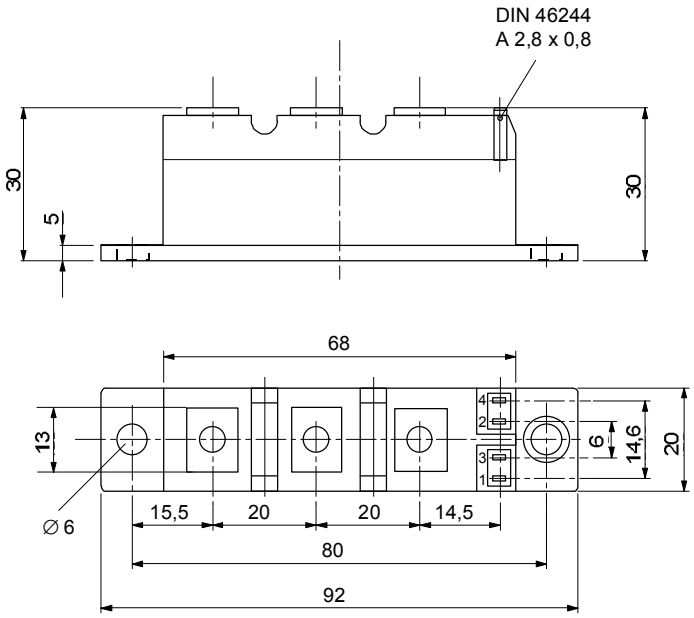
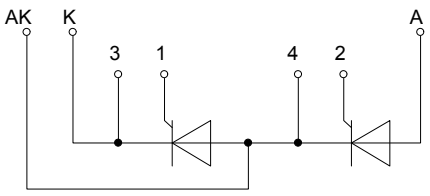
Marketing Information
TT 46 F 08...13





MA2-BE, 24. May 1994

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Elektrische Eigenschaften	Electrical properties				
Höchstzulässige Werte	*Maximum rated values*				
Periodische Vorwärts- und Rückwärts-Spitzensperrspann.	repetitive peak forward off-state and reverse voltages	$t_{vj} = -t_{c\,op}$ ...$t_{vj\,max}$	V_{DRM}, V_{RRM}	800, 1000, 1100 1200, 1300	V [1]
Vorwärts-Stoßspitzensperrspannung	non-repetitive peak forward off-state voltage	$t_{vj} = -t_{c\,op}$ ...$t_{vj\,max}$	V_{DSM}	800, 1000, 1100 1200, 1300	V
Rückwärts-Stoßspitzensperrspannung	non-repetitive peak reverse voltage	t_{vj} = +25°C...$t_{vj\,max}$	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°C	I_{TAVM}	45	A
		t_c = 48°C		76	A
Stoßstrom-Grenzwert	surge current	t_{vj} = 25°C, t_p = 10 ms	I_{TSM}	1300	A
		$t_{vj} = t_{vj\,max}$, t_p = 10 ms		1150	A
Grenzlastintegral	I^2t-value	t_{vj} = 25°C, t_p = 10 ms	I^2t	8450	A^2s
		$t_{vj} = t_{vj\,max}$, t_p = 10 ms		6600	A^2s
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/µs	$(di_T/dt)_{cr}$	120	A/µs
Kritische Spannungssteilheit	critical rate of rise of off-state voltage	$t_{vj} = t_{vj\,max}$, v_D = 0,67 V_{DRM}	$(dv_D/dt)_{cr}$	2) 3)	V/µs
		6.Kennbuchstabe/6th letter B		50 50	
		6.Kennbuchstabe/6th letter C		500 500	V/µs
		6.Kennbuchstabe/6th letter L		500 50	V/µs
		6.Kennbuchstabe/6th letter M		1000 500	V/µs
Charakteristische Werte	*Characteristic values*				
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	mΩ
Zündstrom	gate trigger current	t_{vj} = 25 °C, v_D = 12 V	I_{GT}	max. 150	mA
Zündspannung	gate trigger voltage	t_{vj} = 25 °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	I_{GD}	max. 5	mA
		$t_{vj} = t_{vj\,max}$, v_D = 0,5 V_{DRM}		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 °C, v_D = 12 V, R_A = 5 Ω	I_H	max. 250	mA
Einraststrom	latching current	t_{vj} = 25 °C,v_D = 12 V, R_{GK} > = 20 Ω i_{GM} = 0,75 A, di_G/dt = 0,75 A/µs, 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
Zündverzug	gate controlled delay time	DIN IEC 747-6, t_{vj} = 25°C i_{GM} = 0,75 A, di_G/dt = 0,75 A/µs	t_{gd}	max. 1,4	µs
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/µs	t_q		
		5.Kennbuchstabe/5th letter C		max. 12	µs
		5.Kennbuchstabe/5th letter D		max. 15	µs
		5.Kennbuchstabe/5th letter E		max. 20	µs
		5.Kennbuchstabe/5th letter F		max. 25	µs
Isolations-Prüfspannung	insulation test voltage	RMS, f = 50 Hz, 1 min.	V_{ISOL}	2,5	kV
Thermische Eigenschaften	Thermal properties				
Innerer Wärmewiderstand	thermal resistance, junction to case	pro Modul/per module,Θ =180° sin	R_{thJC}	max. 0,26	°C/W
		pro Zweig/per arm,Θ =180° sin		max. 0,52	°C/W
		pro Modul/per module, DC		max. 0,25	°C/W
		pro Zweig/per arm, DC		max. 0,50	°C/W
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	pro Modul/per module	R_{thCK}	max. 0,08	°C/W
		pro Zweig/per arm		max. 0,16	°C/W
Höchstzul.Sperrschichttemp.	max. junction temperature		$t_{vj\,max}$	125	°C
Betriebstemperatur	operating temperature		$t_{c\,op}$	-40...+125	°C
Lagertemperatur	storage temperature		t_{stg}	-40...+130	°C
Mechanische Eigenschaften	Mechanical properties				
Innere Isolation	internal insulation			AlN	
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^2

[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. / Immediatly after circuit commutated turn-off time, see parameters t_q.

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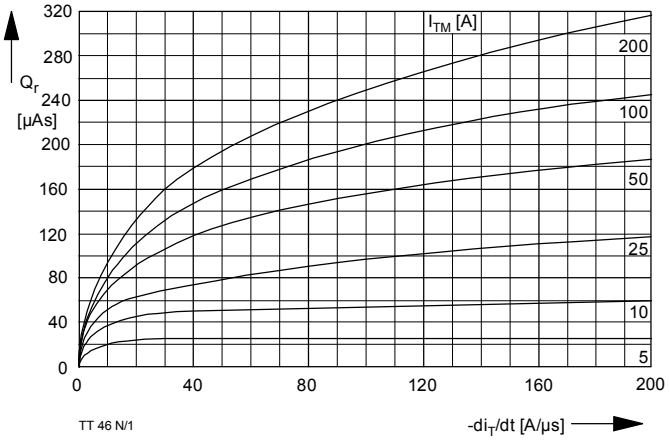

Bild / Fig. 1
Sperrverzögerungsladung / Recovered Charge Qr = f(di/dt)
$t_{vj} = t_{vj\ max}$, $v_R = 0{,}5\ V_{RRM}$, $v_{RM} = 0{,}8\ V_{RRM}$
Parameter: Durchlaßstrom / on-state current I_{TM}

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}[°C/W]	0,0218	0,0426	0,1886	0,247			
τ_n [s]	0,000945	0,01	0,31	1,762			

Analytische Funktion / Analytical function:

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

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