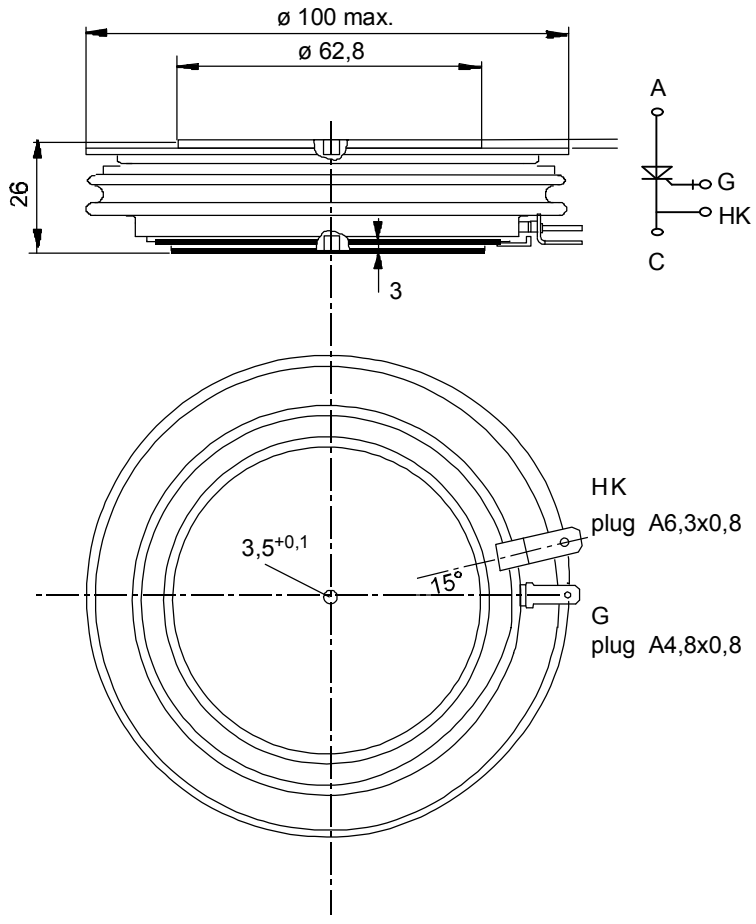
European Power-
Semiconductor and
Electronics Company

Marketing Information
T 1101 S



08.07.1997

T 1101 S

Elektrische Eigenschaften Electrical properties

Höchstzulässige Werte	*Maximum rated values*					
Periodische Vorwärts- und Rückwärts-Spitzensperrspannung	repetitive peak forward off-state and reverse voltages	t_{vj} = -40°C...$t_{vj\,max}$	V_{DRM}, V_{RRM}		3000 2800	V
Vorwärts-Stoßspitzensperrspannung	non-repetitive peak forward off-state voltage	t_{vj} = -40°C...$t_{vj\,max}$	$V_{DSM} = V_{DRM}$		3000 2800	V
Rückwärts-	non-repetitive peak reverse voltage	t_{vj} = +25°C...$t_{vj\,max}$	$V_{RSM} = V_{RRM}$		3100 2900	V
Durchlaßstrom-Grenzeffektivwert	RMS on-state current		I_{TRMSM}		2500	A
Dauergrenzstrom	average on-state current	t_c = 85°C, f = 50Hz	I_{TAVM}		1060	A
		t_c = 60°C, f = 50Hz			1560	A
Stoßstrom-Grenzwert	surge current	t_{vj} = 25°C, t_p = 10 ms	I_{TSM}		28	kA
		t_{vj} = $t_{vj\,max}$, t_p = 10 ms			26	kA
Grenzlastintegral	I^2t-value	t_{vj} = 25°C, t_p = 10 ms	I^2t		$3{,}92 \cdot 10^6$	A^2s
		t_{vj} = $t_{vj\,max}$, t_p = 10 ms			$3{,}38 \cdot 10^6$	A^2s
Kritische Stromsteilheit	critical rate of rise of on-state	DIN IEC 747-6, f = 50 Hz iGM= 1,5 A, di_G/dt = 3 A/µs	$(di_T/dt)_{cr}$		300	A/µs
Kritische Spannungssteilheit	critical rate of rise of off-state	t_{vj} = $t_{vj\,max}$, v_D = 67% V_{DRM} 5.Kennbuchstabe/5th letter F	$(dv/dt)_{cr}$		1000	V/µs [1]

nach DIN IEC 747 - 6 (ohne vorausgehende Kommutierung). / Values to DIN IEC / 747-6 (without prior comm

Charakteristische Werte Characteristic values

				typ.	*max.*	
Durchlaßspannung	on-state voltage	t_{vj} = $t_{vj\,max}$, i_T = 4000 A	v_T	2,2	2,45	V
Durchlaßrechenkennlinien	on-state charakteristiks for $V_T = A+b*i_T+Cin(i_T+1)+D*\sqrt{i_T}$	t_{vj} = $t_{vj\,max}$	A	1,28426377	1,55260105	
			B	0,00005855	0,00005965	
			C	-0,10831138	-0,14496651	
			D	0,02497425	0,02943469	
Schleusenspannung	threshold voltage	t_{vj} = $t_{vj\,max}$	$V_{T(TO)}$	1,12	1,25	V
Ersatzwiderstand	slope resistance	t_{vj} = $t_{vj\,max}$	r_T	0,27	0,3	mΩ
Zündstrom	gate trigger current	t_{vj} = 25 °C, v_D = 6 V	I_{GT}		300	mA
Zündspannung	gate trigger voltage	t_{vj} = 25 °C, v_D = 6 V	V_{GT}		2	V
Nicht zündender Steuerstrom	gate non-trigger current	t_{vj} = 25°C, v_D = 6 V	I_{GD}		60	mA
		t_{vj} = $t_{vj\,max}$, v_D = 0,5 V_{DRM}			15	mA
Nicht zündende Steuerspannung	gate non-trigger voltage	t_{vj} = $t_{vj\,max}$, v_D = 0,5 V_{DRM}	V_{GD}		0,3	V
Haltestrom	holding current	t_{vj} = 25 °C, v_D = 12 V	I_H		400	mA
Einraststrom	latching current	t_{vj} = 25 °C,v_D = 12 V, i_{GM} = 1,5A di_G/dt = 3 A/µs, t_g = 15 µs	I_L		2	A
Vorwärts- und Rückwärts-	forward off-state and reverse	t_{vj} = $t_{vj\,max}$, v_D = V_{DRM}, v_R = V_{RRM}	i_D, i_R		250	mA
Zündverzug	gate controlled delay time	DIN IEC 747-6 t_{vj}=25°C, i_{GM} = 1,5A, di_G/dt = 3	t_{gd}		2	µs
Freiwerdezeit	circuit commutated turn-off time	t_{vj} = $t_{vj\,max}$, i_{TM} = 1500 A, V_{RM} 0 100V, V_{DM} = 0,67 V_{DRM}, dV_D/dt 0 20V/µs, $-di_T/dt$ 0 100A/µs 4.Kennziffer / 4th number 2	t_q		200	µs
Sperrverzögerungsladung	recovered charge	t_{vj} = $t_{vj\,max}$, I_{TM}= 1500A,	Q_r		6000	mAs
Rückstromspitze	peak reverse recovery current	V_R = 0,5*V_{RRM}, V_{RM} = 0,8*V_{RRM}	I_{RM}		620	A

Thermische Eigenschaften Thermal properties

Innerer Wärmewiderstand für beidseitige Kühlung	thermal resistance, junction to case for two-sided cooling	Θ =180° sin, beidseitig / two-sided DC	R_{thJC}	0,016 0,015	°C/W °C/W
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	beidseitig / two-sided	R_{thCK}	0,004	°C/W
Höchstzul.Sperrschichttemperatur	max. junction temperature		$t_{vj\,max}$	120	°C
Betriebstemperatur	operating temperature		$t_{c\,op}$	-40...+120	°C
Lagertemperatur	storage temperature		t_{stg}	-40...+150	°C

Mechanische Eigenschaften Mechanical properties

Anpreßkraft	clamping force		F	27...40	kN
Gewicht	weight		G	typ. 850	g
Kriechstrecke	creepage distance			27	mm
Luftstrecke				12	mm
Feuchteklasse	humidity classification	DIN 40040		C	
Schwingfestigkeit	vibration resistance	f = 50 Hz		50	m/s²

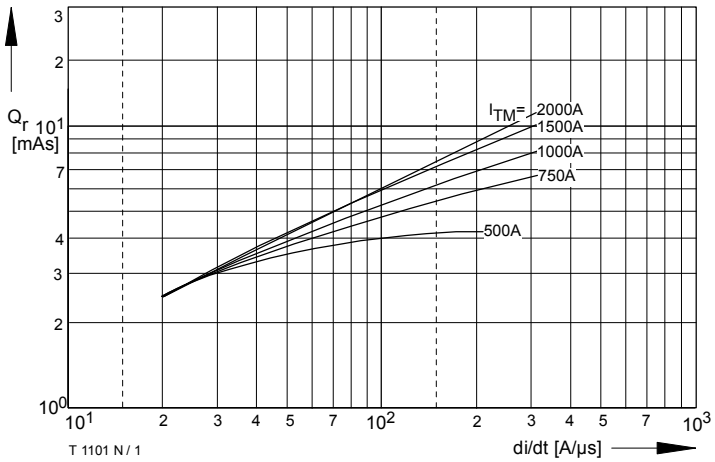


Bild / Fig. 1
Sperrverzögerungsladung / Recovered charge Q_r=f(-di/dt)
Obergrenze / upper limit (98% value)
t_{vj}=$t_{vj\ max}$, V_R = 0,5 V_{RRM}
Parameter: Durchlaßstrom / On - state current I_{TM}

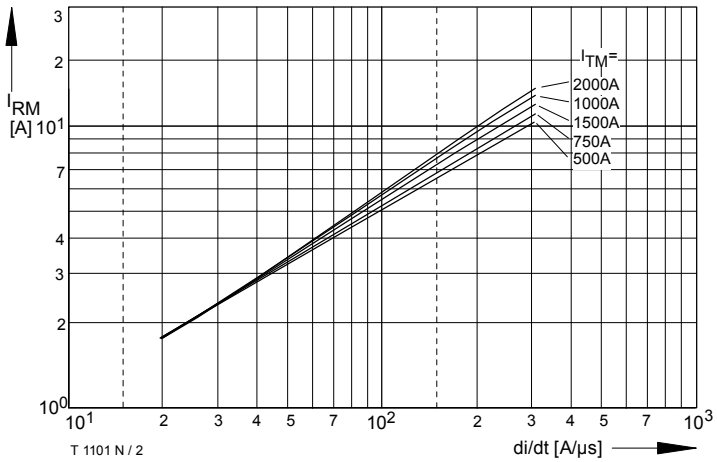


Bild / Fig. 2
Rückstromspitze / peak reverse recovery current, I_{RM}=f(-di/dt)
Obergrenze / upper limit (98% value)
t_{vj}=$t_{vj\ max}$, V_R = 0,5 V_{RRM}
Parameter: Durchlaßstrom / On - state current I_{TM}

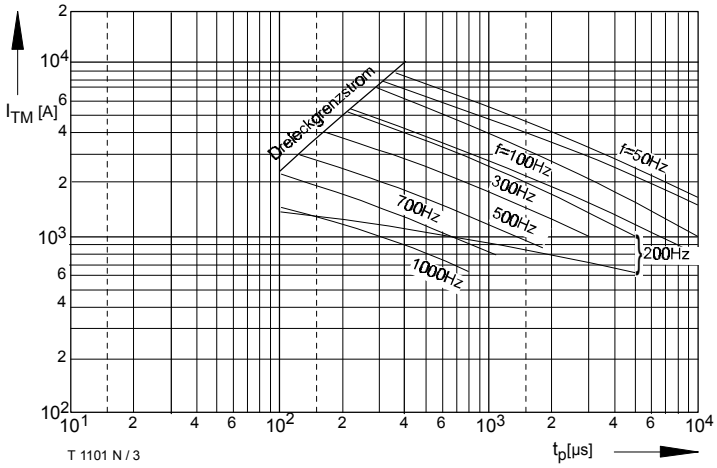


Bild / Fig. 3
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
I_{TM}=f(t_p)
Parameter: T_C=100°C, di/dt=50A/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

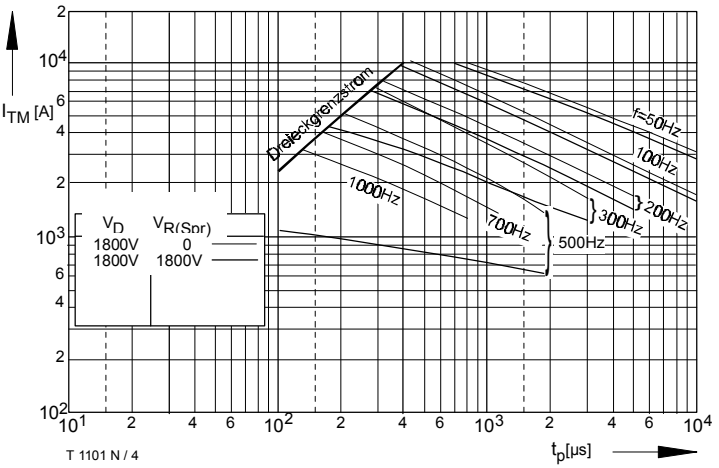


Bild / Fig. 4
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
I_{TM}=f(t_p)
Parameter: T_C=80°C, di/dt=50A/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

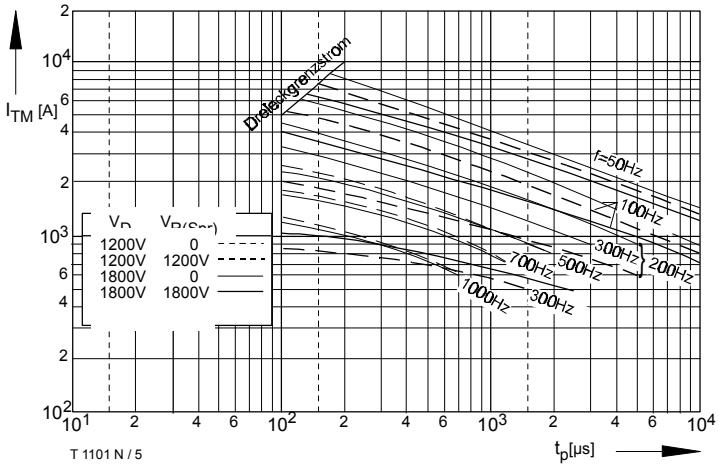


Bild / Fig. 5
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
I_{TM}=f(t_p)
Parameter: T_C=100°C, di/dt=100A/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

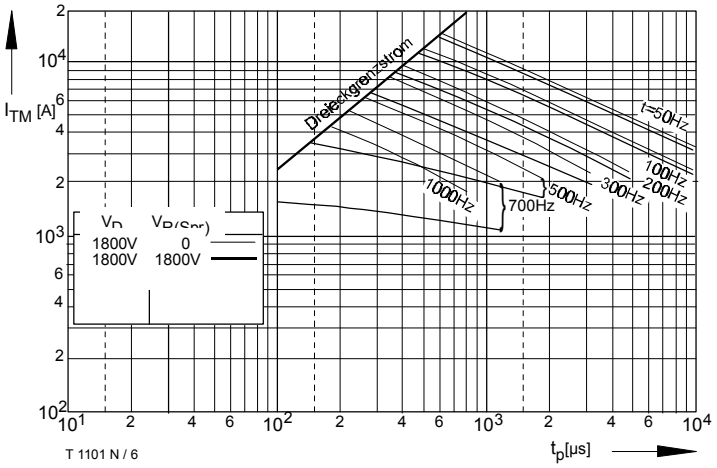


Bild / Fig. 6
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
I_{TM}=f(t_p)
Parameter: T_C=60°C, di/dt=50SA/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

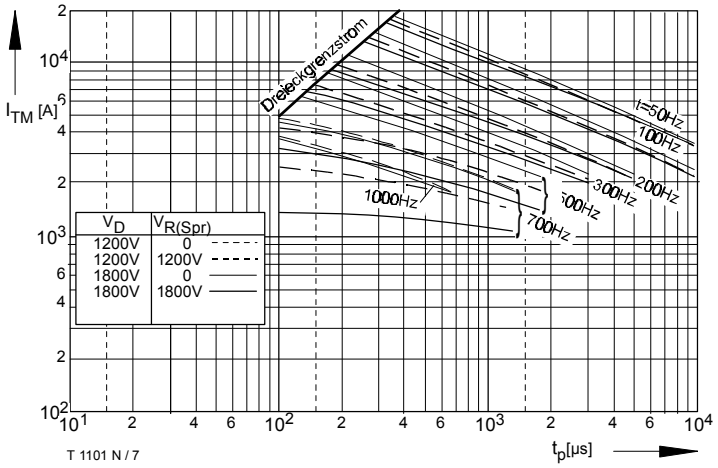


Bild / Fig. 7
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
$I_{TM}=f(t_p)$
Parameter: T_C=60°C, di/dt=100A/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

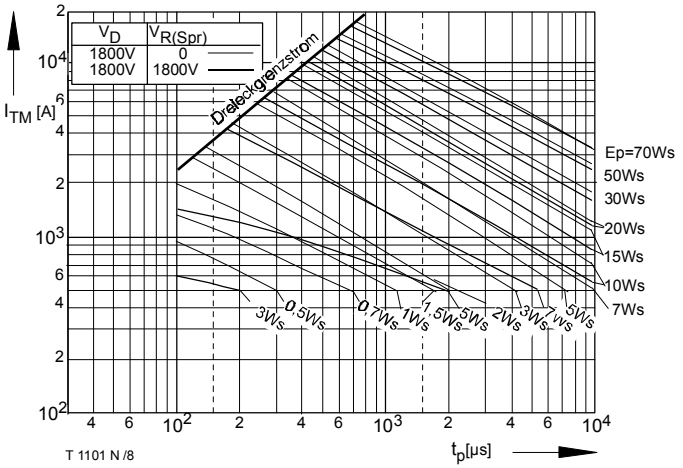


Bild / Fig. 8
Gesamtverluste / total losses, $P_{tot}=E_p \cdot f$
Parameter: Trapetzstrom / square wave current, di/dt=50A/µs
V_D, $V_{R(Spr)}$, f, Beschaltung / RC - Snubber

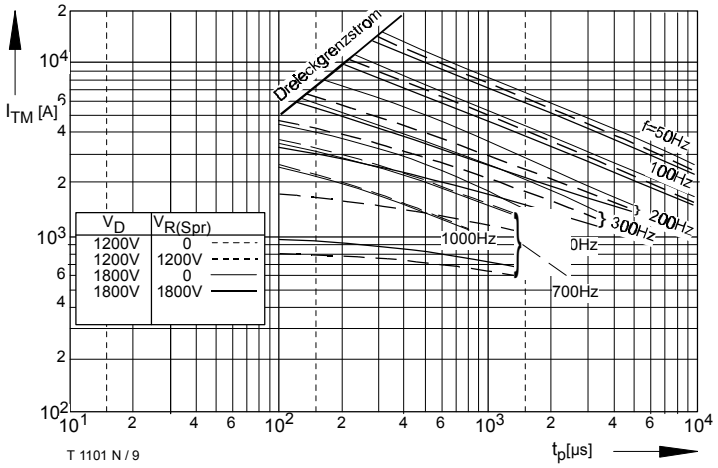


Bild / Fig. 9
Stromtragfähigkeit (Trapezstrom) / current capability (square wave)
$I_{TM}=f(t_p)$
Parameter: T_C=80°C, di/dt=100A/µs
V_D, $V_{R(Spr)}$, F, Beschaltung / RC - Snubber

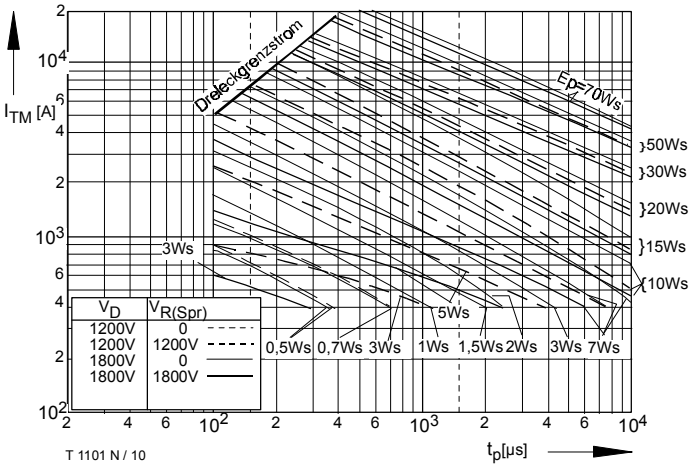


Bild / Fig. 10
Gesamtverluste / total losses, $P_{tot}=E_p \cdot f$
Parameter: Trapetzstrom / square wave current, di/dt=100A/µs
V_D, $V_{R(Spr)}$, f, Beschaltung / RC - Snubber

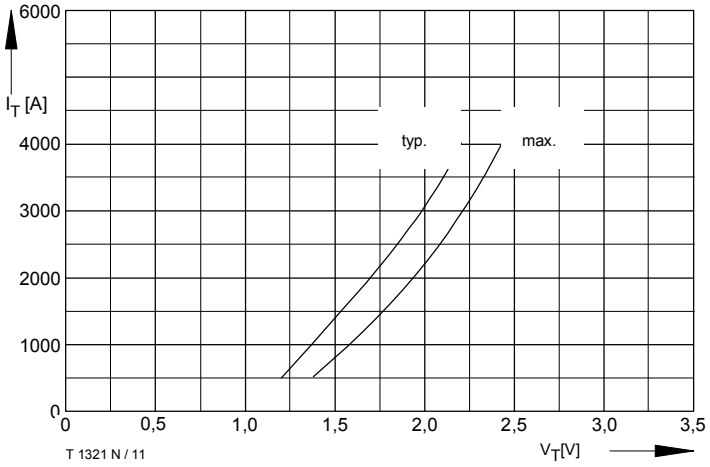


Bild / Fig. 11
Grenzdurchlaßkennlinie / Limiting on-state characteristics
$i_T = f(v_T)$, t_{vj}=120°C

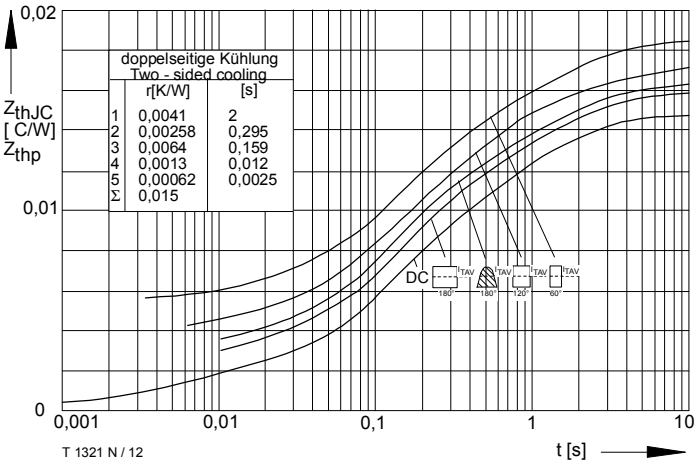


Bild / Fig. 12
Transistenter innerer Wärmewiderstand / Transient thermal impendance
$Z_{thJC}=F(t)$
Parameter: Stromflußwinkel / current conduction angle θ
Beidseitige Kühlung / Two - sided cooling