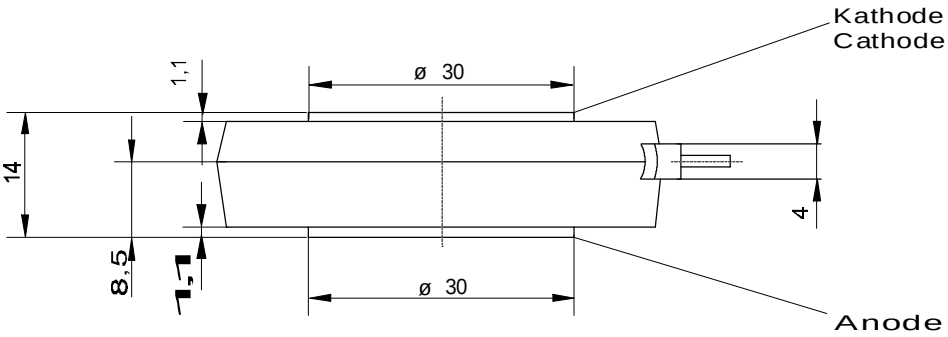
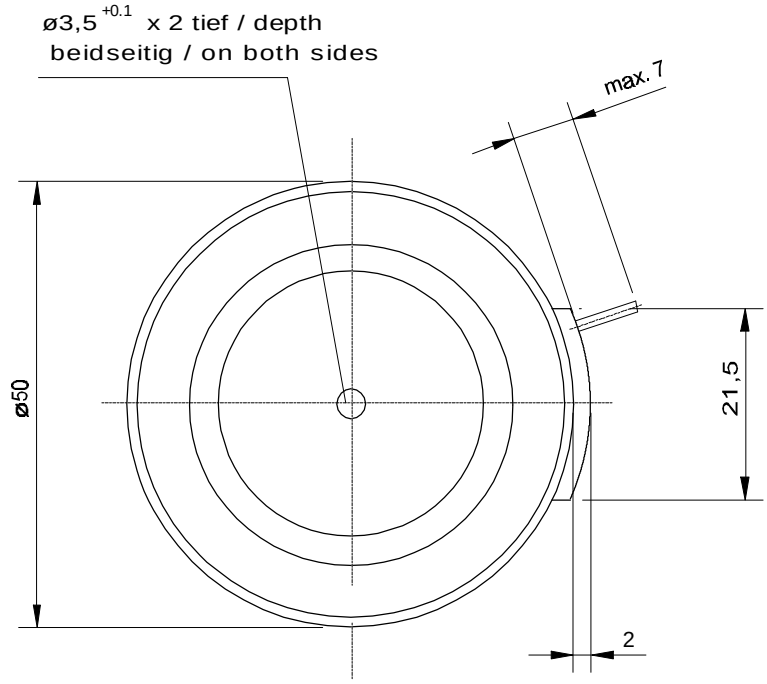
European Power-
Semiconductor and
Electronics Company
GmbH + Co. KG

Leistungsgleichrichterdioden
Power Rectifier Diodes
D 798 N

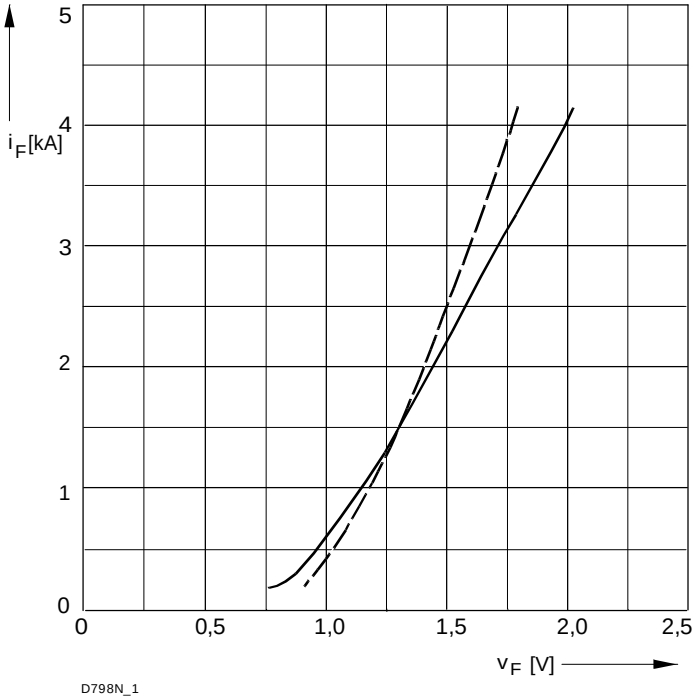




VWK July 1996

D 798 N

Elektrische Eigenschaften	**Electrical properties**					
Höchstzulässige Werte	**Maximum rated values**					
Periodische Spitzensperrspannung	repetitive peak reverse voltage	t_{vj} = -40°C... $t_{vj\,max}$	V_{RRM}		800, 1200	V
					1400, 1800	V
Stoßspitzensperrspannung	non-repetitive peak reverse voltage	t_{vj} = +25°C... $t_{vj\,max}$	$V_{RSM} = V_{RRM}$		+ 100	V
Durchlaßstrom-Grenzeffektivwert	RMS forward current		I_{FRMSM}		1650	A
Dauergrenzstrom	mean forward current	t_c = 130 °C	I_{FAVM}		800	A
		t_c = 106 °C			1050	A
Stoßstrom-Grenzwert	surge forward current	t_{vj} = 25°C, t_p = 10 ms	I_{FSM}		14,8	kA
		$t_{vj} = t_{vj\,max}$, t_p = 10 ms			11,8	kA
Grenzlastintegral	I^2t-value	t_{vj} = 25°C, t_p = 10 ms	I^2t		1095	kA^2s
		$t_{vj} = t_{vj\,max}$, t_p = 10 ms			696	kA^2s
Charakteristische Werte	**Characteristic values**					
Durchlaßspannung	on-state voltage	$t_{vj} = t_{vj\,max}$, i_F = 3,2 kA	V_T	max.	1,77	V
Schleusenspannung	threshold voltage	$t_{vj} = t_{vj\,max}$	$V_{T(TO)}$		0,81	V
Ersatzwiderstand	slope resistance	$t_{vj} = t_{vj\,max}$	r_T		0,28	mΩ
Sperrstrom	reverse current	$t_{vj} = t_{vj\,max}$, $V_R = V_{RRM}$	i_R	max.	50	mA
Thermische Eigenschaften	**Thermal properties**					
Innerer Widerstand	thermal resistance, junction	beidseitig/two-sided, Θ =180° sin	R_{thJC}	max.	0,0460	°C/W
	to case	beidseitig/two sided, DC		max.	0,0415	°C/W
		Anode/anode, Θ =180° sin		max.	0,0755	°C/W
		Anode/anode, DC		max.	0,0710	°C/W
		Kathode/cathode, Θ =180° sin		max.	0,1045	°C/W
		Kathode/cathode, DC		max.	0,1000	°C/W
Übergangs-Wärmewiderstand	thermal resistance,case to heatsink	beidseitig /two-sided	R_{thCK}	max.	0,0075	°C/W
		einseitig /single-sided		max.	0,0150	°C/W
Höchstzul.Sperrschichttemperatur	max. junction temperature		$t_{vj\,max}$		180	°C
Betriebstemperatur	operating temperature		$t_{c\,op}$		-40...+150	°C
Lagertemperatur	storage temperature		t_{stg}		-40...+150	°C
Mechanische Eigenschaften	**Mechanical properties**					
Si-Element mit Druckkontakt	Si-pellet with pressure contact	∅ = 30 mm				
Anpreßkraft	clamping force	Gehäuseform/case design T	F		6...15	kN
Gewicht	weight		G	typ.	110	g
Kriechstrecke	creepage distance				25	mm
Feuchteklasse	humidity classification	DIN 40040				C
Schwingfestigkeit	vibration resistance	f = 50 Hz			50	m/s^2
Maßbild	outline				Seite/page	



Bild/Fig. 1
Grenzdurchlaßkennlinie
Limiting forward characteristic $i_F = f(v_F)$
——— t_{vj} = 180 °C
— — — — t_{vj} = 25 °C

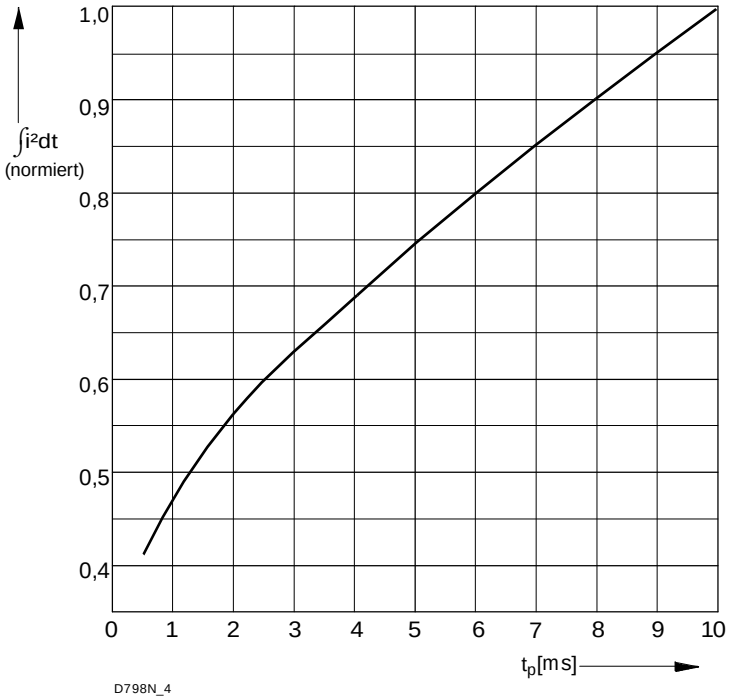


Bild / Fig. 2
Normiertes Grenzlastintegral / Normalized i²t
$\int i^2dt = f(t_p)$

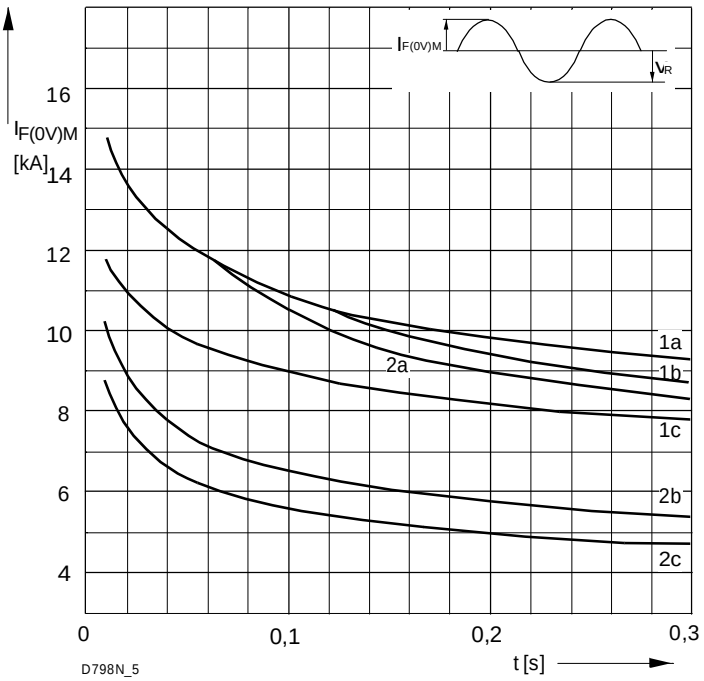


Bild / Fig. 3
Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
1 - $I_{FAV(vor)}$ = 0 A; $t_{vj} = t_C$ = 25 °C
2 - $I_{FAV(vor)}$ = 800 A; t_C = 130 °C; t_{vj} = 180 °C
a - $v_R \leq 50$ V
b - $v_R = 0{,}5\ V_{RRM}$
c - $v_R = 0{,}8\ V_{RRM}$

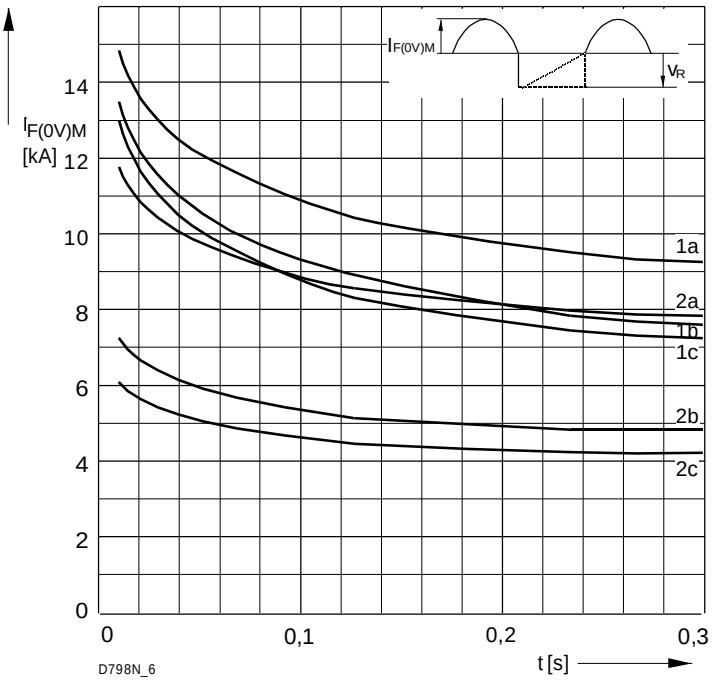


Bild / Fig. 4
Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
1 - $I_{FAV(vor)}$ = 0 A; $t_{vj} = t_C$ = 25 °C
2 - $I_{FAV(vor)}$ = 800 A; t_C = 130 °C; t_{vj} = 180 °C
a - $v_R \leq 50$ V
b - $v_R = 0{,}5\ V_{RRM}$
c - $v_R = 0{,}8\ V_{RRM}$

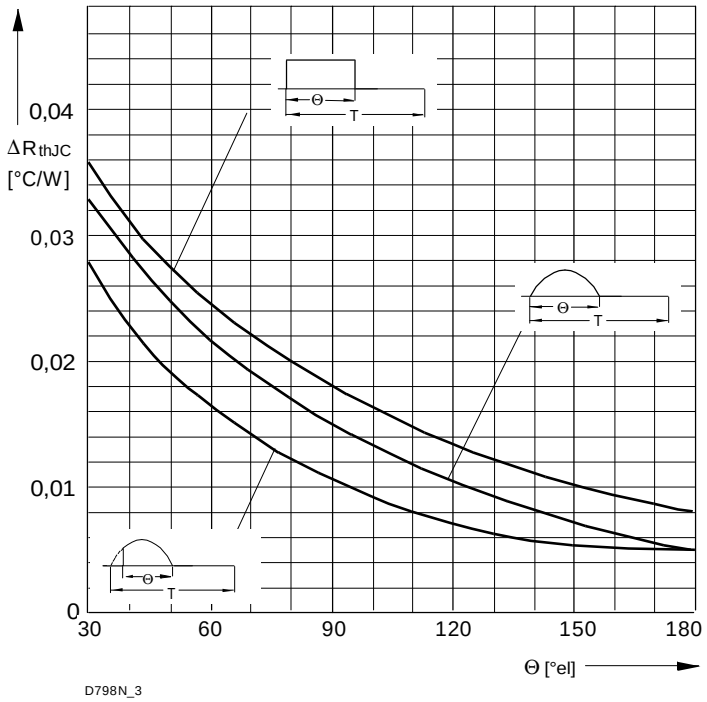


Bild / Fig. 5
Differenz zwischen den Wärmewiderständen
für Pulsstrom und DC
Difference between the values of thermal resistance for
pulse current and DC
Parameter: Stromkurvenform / Current waveform

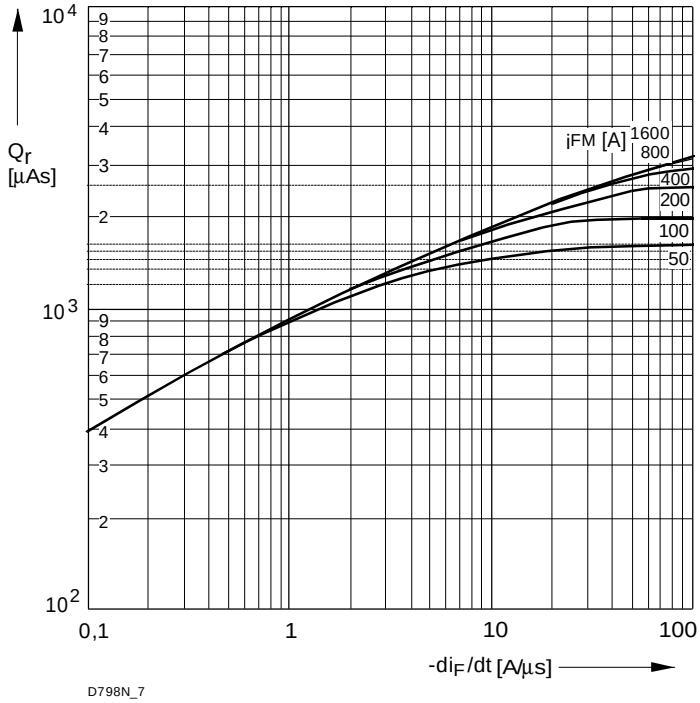


Bild / Fig. 6
Sperrverzögerungsladung / Recovered charge $Q_r = f(-di_F/dt)$
$t_{vj} = t_{vjmax}$; $v_R \leq 0,5\ V_{RRM}$; $V_{RM} = 0,8\ V_{RRM}$
Beschaltung / Snubber: C = 0,68 µF; R = 5,6 Ω
Parameter: Durchlaßstrom / Forward current i_{FM}

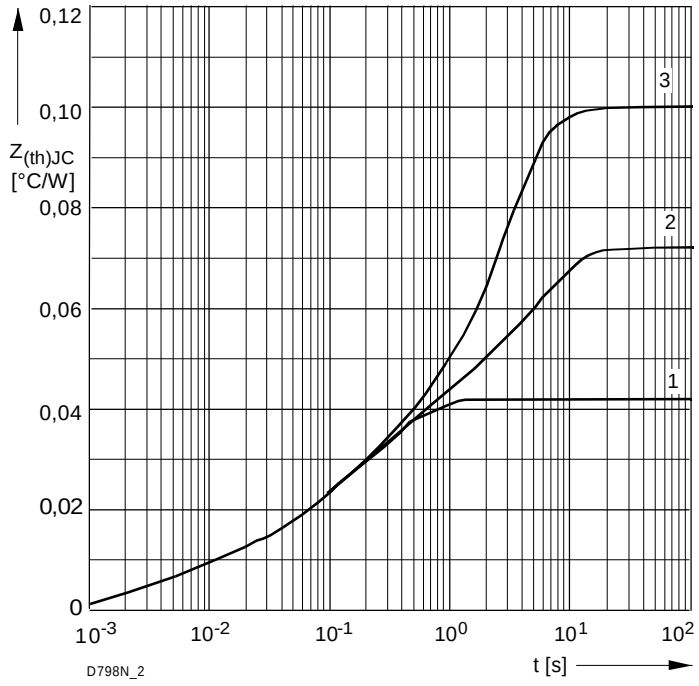


Bild / Fig. 7
Transienter innerer Wärmewiderstand
Transient thermal impedance $Z_{thJC} = f(t)$, DC
1 - Beidseitige Kühlung / Two-sided cooling
2 - Anodenseitige Kühlung / Anode-sided cooling
3 - Kathodenseitige Kühlung / Cathode-sided cooling

Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC
Analytical elements of transient thermal impedance Z_{thJC} for C

Kühlg. Cooling	Pos. n	1	2	3	4	5	6	7
1	R_{thn} °C/W	0,00031	0,00579	0,0114	0,024			
	τ_n [s]	0,000136	0,00233	0,0462	0,298			
2	R_{thn} °C/W	0,0006	0,0055	0,0055	0,0223	0,0371		
	τ_n [s]	0,000232	0,002548	0,027467	0,152979	3,870018		
3	R_{thn} °C/W	0,000598	0,005532	0,00457	0,0184	0,0709		
	τ_n [s]	0,000234	0,00257	0,0278	0,118	2,822		

1 - Beidseitige Kühlung / Two-sided cooling
2 - Anodenseitige Kühlung / Anode-sided cooling
3 - Kathodenseitige Kühlung / Cathode-sided cooling

Analytische Funktion / Analytical function

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