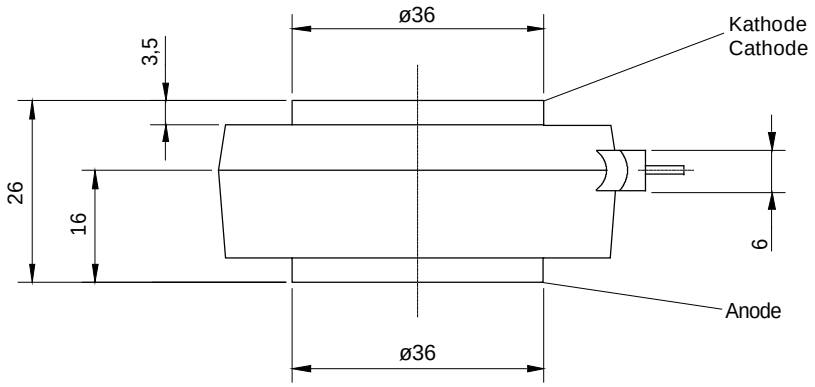
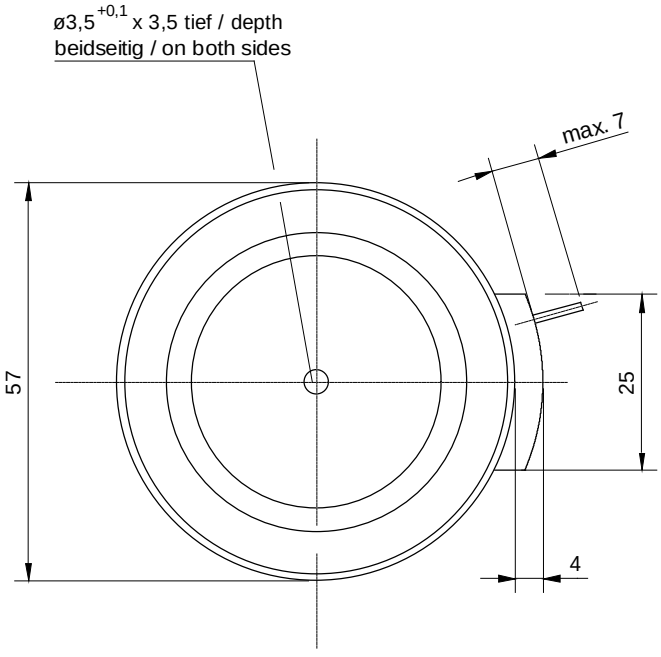
European Power-
Semiconductor and
Electronics Company
GmbH + Co. KG

Leistungsgleichrichterdioden
Power Rectifier Diodes
D 1049 N

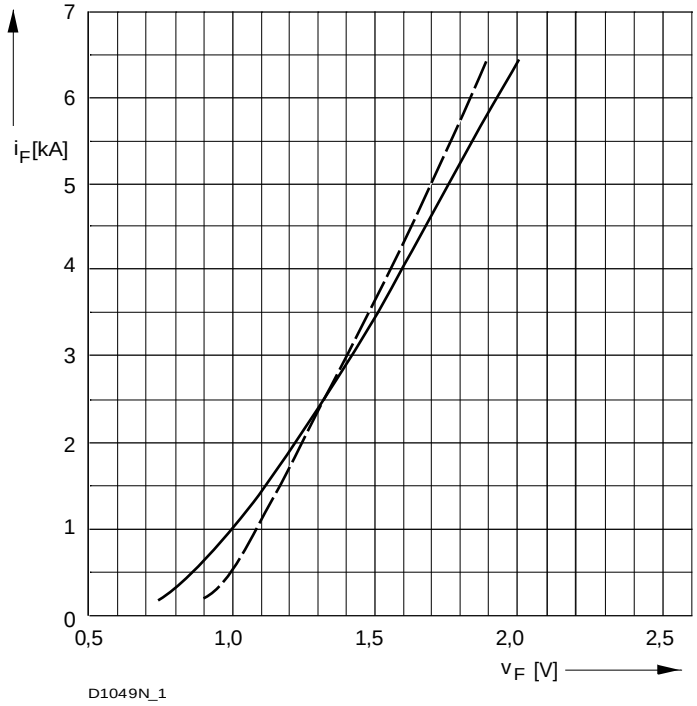




VWK July 1996

D 1049 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}		2,59	kA
Dauergrenzstrom	mean forward current	t_c = 130 °C	I_{FAVM}		1,05	kA
		t_c = 86 °C			1,65	kA
Stoßstrom-Grenzwert	surge forward current	t_{vj} = 25°C, t_p = 10 ms	I_{FSM}		24	kA
		$t_{vj} = t_{vj\ max}$, t_p = 10 ms			18,5	kA
Grenzlastintegral	I^2t-value	t_{vj} = 25°C, t_p = 10 ms	I^2t		2880	kA^2s
		$t_{vj} = t_{vj\ max}$, t_p = 10 ms			1710	kA^2s
Charakteristische Werte	**Characteristic values**					
Durchlaßspannung	on-state voltage	$t_{vj} = t_{vj\ max}$, i_F = 5 kA	V_T	max.	1,76	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		0,17	mΩ
Sperrstrom	reverse current	$t_{vj} = t_{vj\ max}$, $V_R = V_{RRM}$	i_R	max.	60	mA
Thermische Eigenschaften	**Thermal properties**					
Innerer Widerstand	thermal resistance, junction	beidseitig/two-sided, Θ =180° sin	R_{thJC}	max.	0,038	°C/W
	to case	beidseitig/two sided, DC		max.	0,035	°C/W
		Anode/anode, Θ =180° sin		max.	0,064	°C/W
		Anode/anode, DC		max.	0,061	°C/W
		Kathode/cathode, Θ =180° sin		max.	0,085	°C/W
		Kathode/cathode, DC		max.	0,082	°C/W
Übergangs-Wärmewiderstand	thermal resistance,case to heatsink	beidseitig /two-sided	R_{thCK}	max.	0,005	°C/W
		einseitig /single-sided		max.	0,010	°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	∅ = 36 mm				
Anpreßkraft	clamping force	Gehäuseform/case design T	F		10...24	kN
Gewicht	weight		G	typ.	280	g
Kriechstrecke	creepage distance				36	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

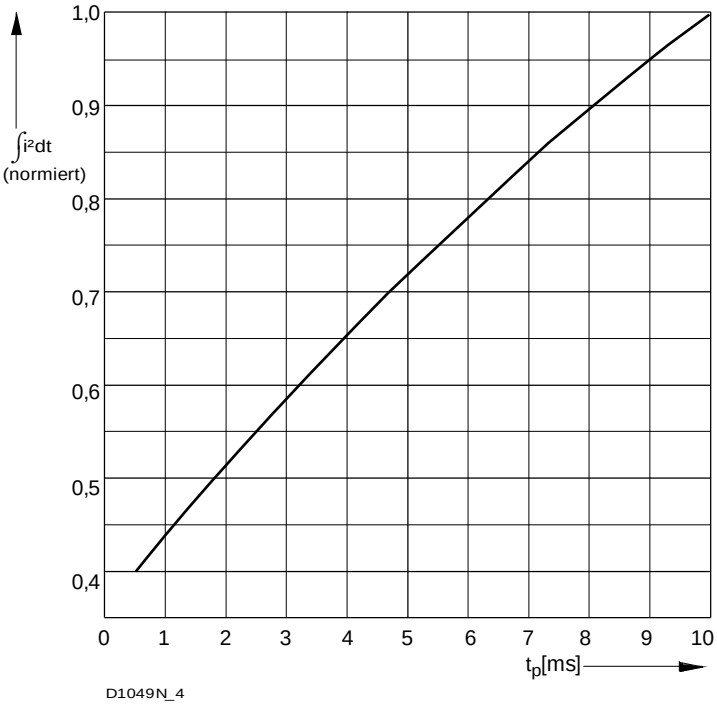


Bild / Fig. 2
Normiertes Grenzlastintegral / Normalized i²t
$\int i^2dt = f(t_p)$

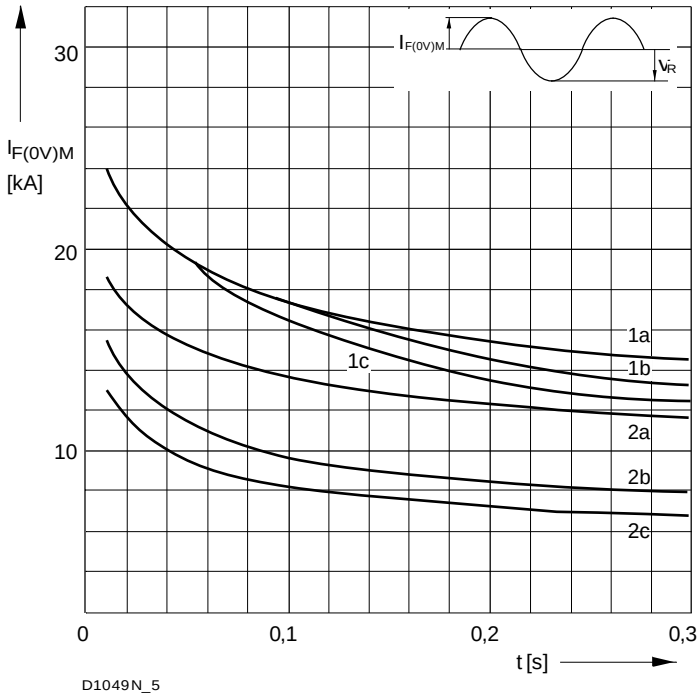


Bild / Fig. 3
Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
1 - $I_{FAV(vor)}$ = 0 A; $t_{vj} = t_C$ = 25 °C
2 - $I_{FAV(vor)}$ = 1050 A; t_C = 130 °C; t_{vj} = 180 °C
a - $v_R \leq 50$ V
b - v_R = 0,5 V_{RRM}
c - v_R = 0,8 V_{RRM}

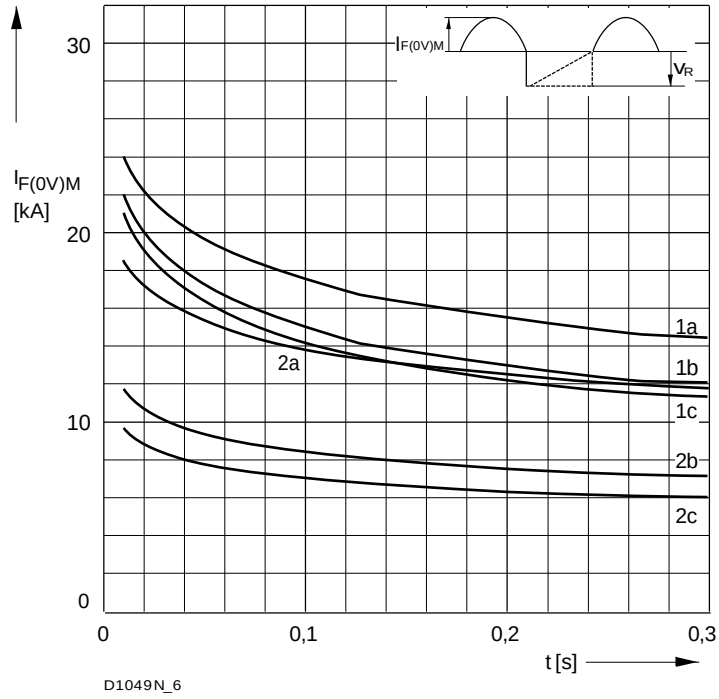


Bild / Fig. 4
Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
1 - $I_{FAV(vor)}$ = 0 A; $t_{vj} = t_C$ = 25 °C
2 - $I_{FAV(vor)}$ = 1050 A; t_C = 130 °C; t_{vj} = 180 °C
a - $v_R \leq 50$ V
b - v_R = 0,5 V_{RRM}
c - v_R = 0,8 V_{RRM}

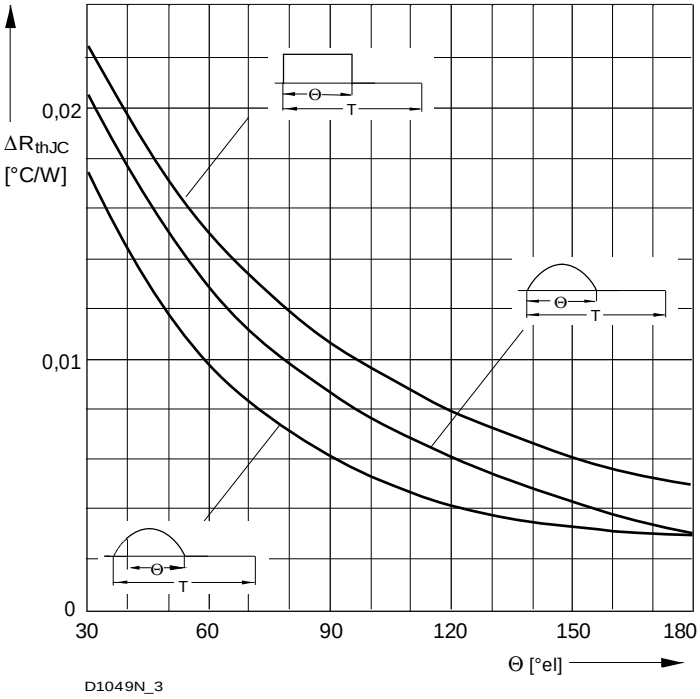


Bild / Fig. 5
Differenz zwischen den Wärmewiderständen
für Pulsstrom und DC
Difference between the values of thermal resistance for
pulse current and DC
Parameter: Stromkurvenform / Current waveform

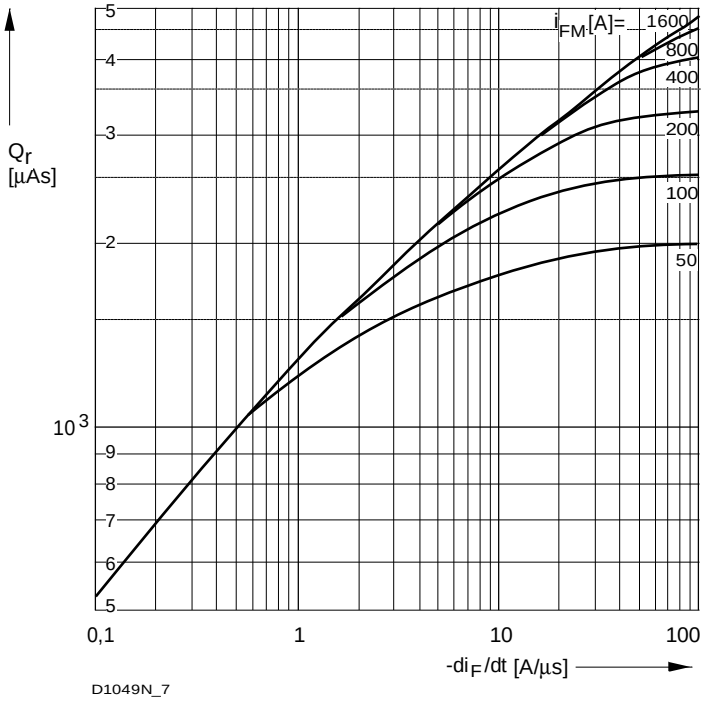


Bild / Fig. 6
Sperrverzögerungsladung / Recovered charge Q r = f(-di F/dt)
t vj = t vjmax; v R ≤ 0,5 V RRM; V RM = 0,8 V RRM
Beschaltung / Snubber: C = 1 µF; R = 3,9 Ω
Parameter: Durchlaßstrom / Forward current i FM

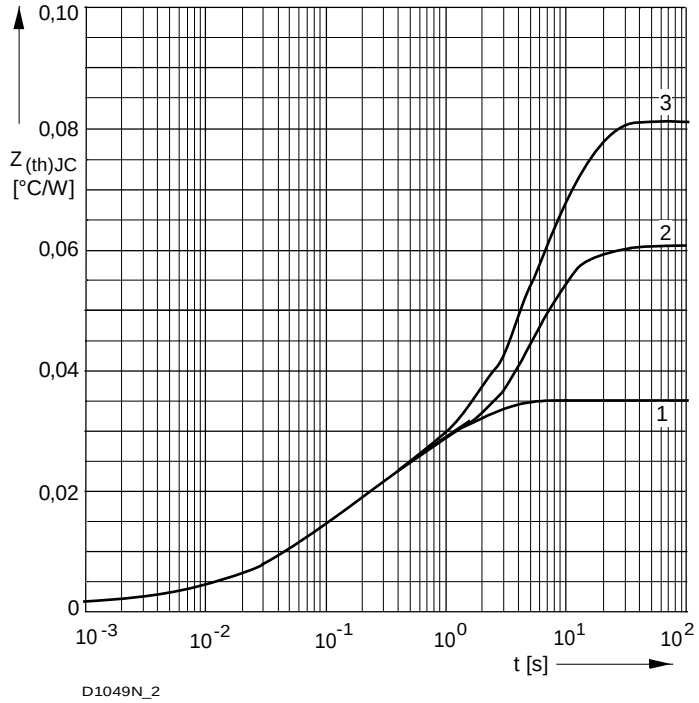


Bild / Fig. 7
Transienter innerer Wärmewiderstand
Transient thermal impedance Z thJC = f(t), DC
1 - Beidseitige Kühlung / Two-sided cooling
2 - Anodenseitige Kühlung / Anode-sided cooling
3 - Kathodenseitige Kühlung / Cathode-sided cooling

Analytische Elemente des transienten Wärmewiderstandes Z thJC für DC
Analytical elements of transient thermal impedance Z thJC for DC

Kühlg. Cooling	Pos. n	1	2	3	4	5	6	7
1	R_{thn} °C/W	0,000008	0,000782	0,00342	0,00369	0,0131	0,014	
	τ_n [s]	0,00002	0,000583	0,00336	0,0458	0,173	0,999	
2	R_{thn} °C/W	0,000008	0,000772	0,00339	0,0028	0,01713	0,0369	
	τ_n [s]	0,00002	0,000581	0,00333	0,0381	0,182	5,83	
3	R_{thn} °C/W	0,000008	0,00052	0,00305	0,00184	0,0169	0,00538	0,0543
	τ_n [s]	0,00002	0,000479	0,00254	0,0163	0,146	6,65	6,82

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

Analytische Funktion / Analytical function

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

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".