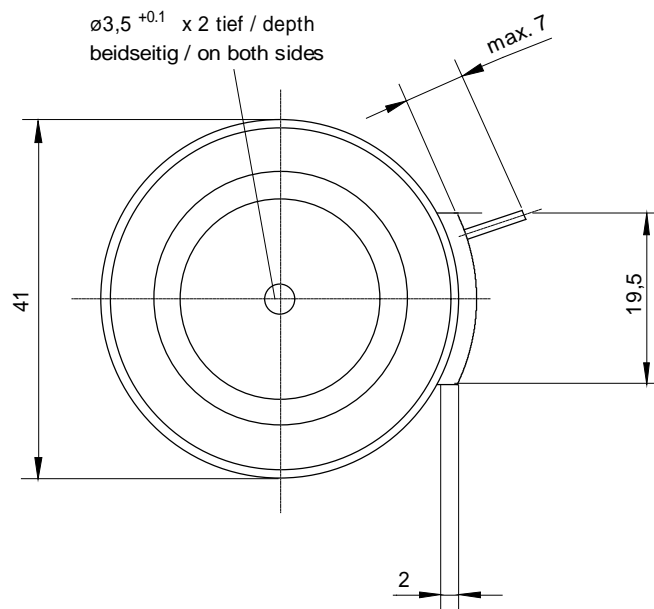
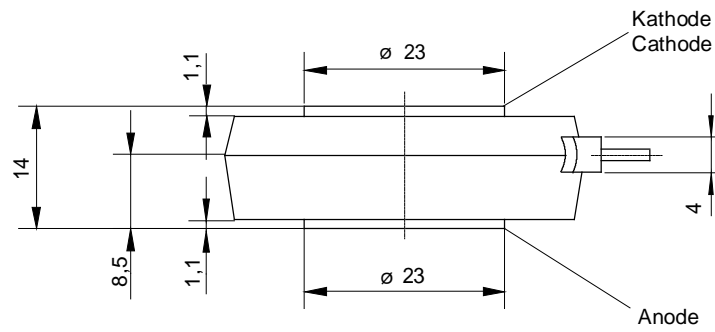


European Power-Semiconductor and Electronics Company GmbH + Co. KG

Leistungsgleichrichterdioden Power Rectifier Diodes D 448 N



D 448 N

Elektrische Eigenschaften

Electrical properties

Höchstzulässige Werte

Maximum rated values

Periodische Spitzensperrspannung	repetitive peak reverse voltage	$t_{vj} = -40^{\circ}\text{C} \dots t_{vj \max}$	V_{RRM}	200, 400 600, 800*	V V
Stoßspitzensperrspannung	non-repetitive peak reverse voltage	$t_{vj} = +25^{\circ}\text{C} \dots t_{vj \max}$	$V_{RSM} = V_{RRM}$	+ 50	V
Durchlaßstrom-Grenzeffektivwert	RMS forward current		I_{FRMSM}	710	A
Dauergrenzstrom	mean forward current	$t_c = 122^{\circ}\text{C}$ $t_c = 130^{\circ}\text{C}$	I_{FAVM}	450 405	A ¹⁾ A
Stoßstrom-Grenzwert	surge forward current	$t_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$ $t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$	I_{FSM}	6,3 5,1	kA kA
Grenzlastintegral	$I^2 t$ -value	$t_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$ $t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$	$I^2 t$	198,5 130	kA^2s kA^2s

Charakteristische Werte

Characteristic values

Durchlaßspannung	on-state voltage	$t_{vj} = t_{vj \max}, i_F = 1,35 \text{ kA}$	V_T	max.	1,44	V
Schleusenspannung	threshold voltage	$t_{vj} = t_{vj \max}$	$V_{T(TO)}$		0,7	V
Ersatzwiderstand	slope resistance	$t_{vj} = t_{vj \max}$	r_T		0,51	m Ω
Sperrstrom	reverse current	$t_{vj} = t_{vj \max}, V_R = V_{RRM}$	i_R	max.	20	mA

Thermische Eigenschaften

Thermal properties

Innerer Widerstand	thermal resistance, junction to case	beidseitig/two-sided, $\Theta = 180^{\circ} \sin$	R_{thJC}	max.	0,102	$^{\circ}\text{C}/\text{W}$
		beidseitig/two sided, DC		max.	0,097	$^{\circ}\text{C}/\text{W}$
		Anode/anode, $\Theta = 180^{\circ} \sin$		max.	0,155	$^{\circ}\text{C}/\text{W}$
		Anode/anode, DC		max.	0,150	$^{\circ}\text{C}/\text{W}$
		Kathode/cathode, $\Theta = 180^{\circ} \sin$		max.	0,280	$^{\circ}\text{C}/\text{W}$
		Kathode/cathode, DC		max.	0,275	$^{\circ}\text{C}/\text{W}$
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	beidseitig /two-sided	R_{thCK}	max.	0,015	$^{\circ}\text{C}/\text{W}$
		einseitig /single-sided		max.	0,030	$^{\circ}\text{C}/\text{W}$
Höchstzul.Sperrschichttemperatur	max. junction temperature		$t_{vj \max}$		180	$^{\circ}\text{C}$
Betriebstemperatur	operating temperature		$t_{c \text{ op}}$		-40...+150	$^{\circ}\text{C}$
Lagertemperatur	storage temperature		t_{stg}		-40...+150	$^{\circ}\text{C}$

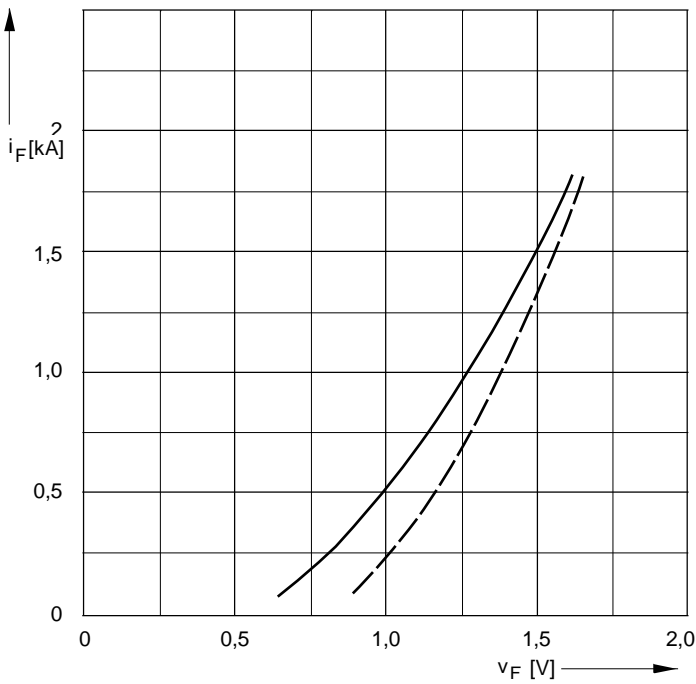
Mechanische Eigenschaften

Mechanical properties

Si-Element mit Druckkontakt	Si-pellet with pressure contact	$\varnothing = 17 \text{ mm}$				
Anpreßkraft	clamping force	Gehäuseform/case design T	F		2,6...4,6	kN
Gewicht	weight		G	typ.	75	g
Kriechstrecke	creepage distance				25	mm
Feuchteklasse	humidity classification	DIN 40040				C
Schwingfestigkeit	vibration resistance	$f = 50 \text{ Hz}$			50	m/s^2
Maßbild	outline					Seite/page

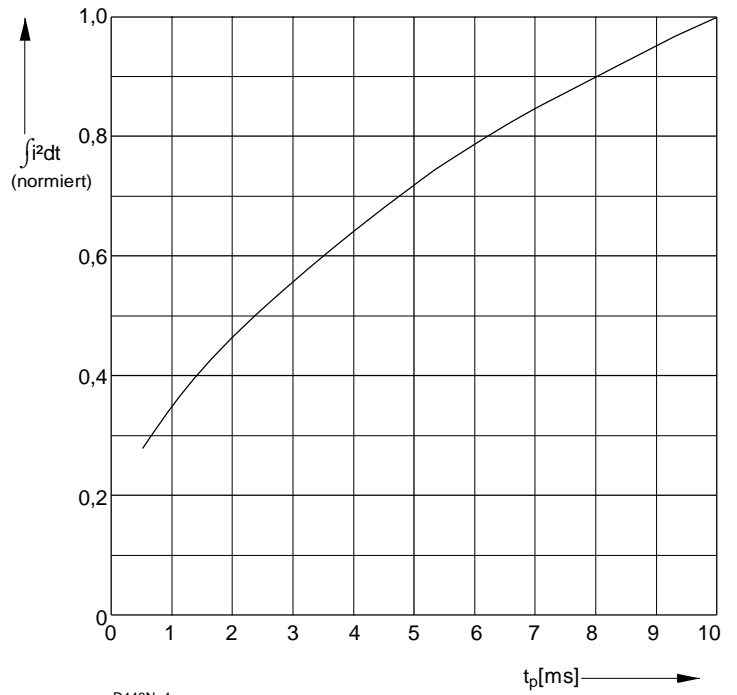
* Bitte Liefertermin erfragen / Delivery on request

D 448 N



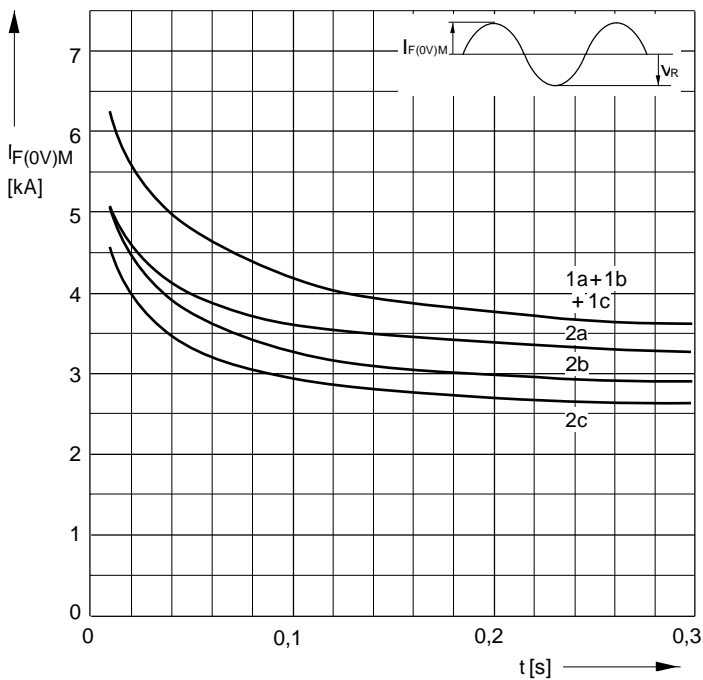
D448N_1

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



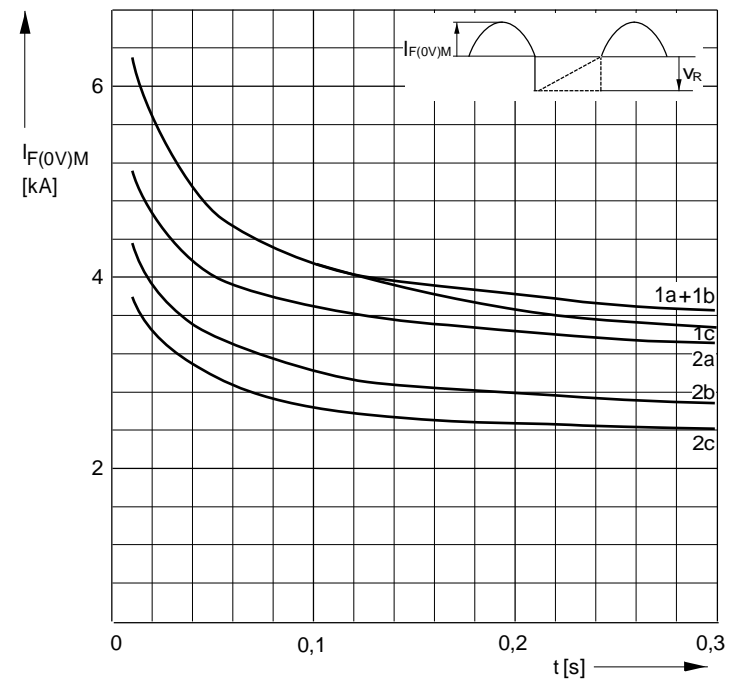
D448N_4

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



D448N_5

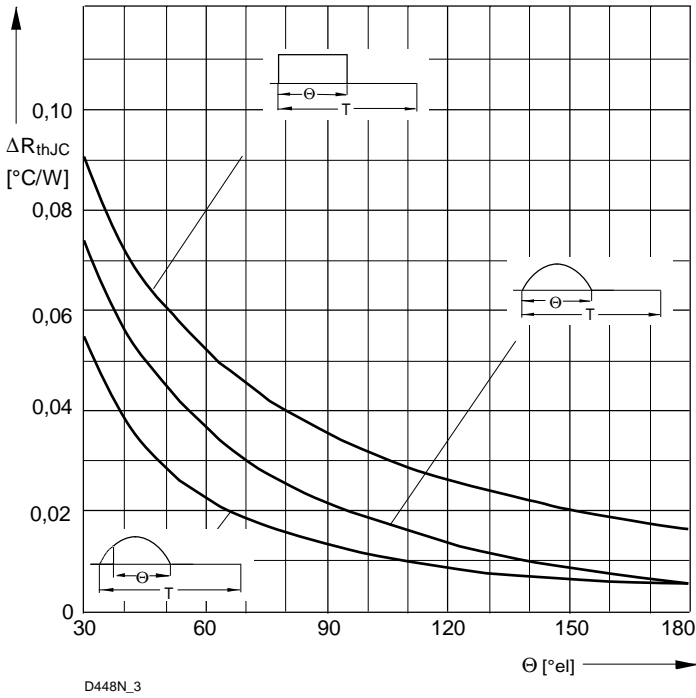
Bild / Fig. 3
 Grenzstrom / Maximum overload forward current $I_{F(OV)M} = f(t)$
 1 - $I_{FAV(vor)} = 0\text{ A}$; $t_{vj} = t_c = 25\text{ °C}$
 2 - $I_{FAV(vor)} = 450\text{ A}$; $t_c = 122\text{ °C}$; $t_{vj} = 180\text{ °C}$
 a - $V_R \leq 50\text{ V}$
 b - $V_R = 0,5 V_{RRM}$
 c - $V_R = 0,8 V_{RRM}$



D448N_6

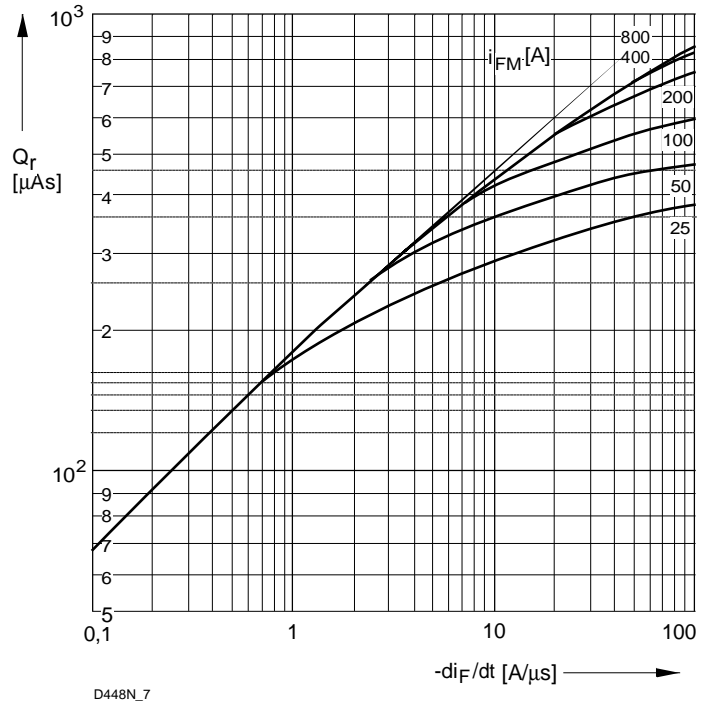
Bild / Fig. 4
 Grenzstrom / Maximum overload forward current $I_{F(OV)M} = f(t)$
 1 - $I_{FAV(vor)} = 0\text{ A}$; $t_{vj} = t_c = 25\text{ °C}$
 2 - $I_{FAV(vor)} = 450\text{ A}$; $t_c = 122\text{ °C}$; $t_{vj} = 180\text{ °C}$
 a - $V_R \leq 50\text{ V}$
 b - $V_R = 0,5 V_{RRM}$
 c - $V_R = 0,8 V_{RRM}$

D 448 N



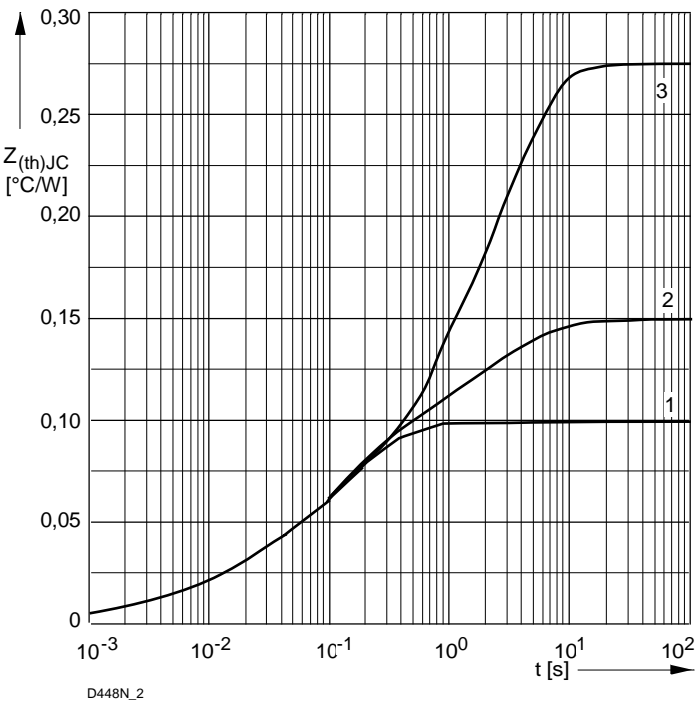
D448N_3

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



D448N_7

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: $C = 0,68 \mu F$; $R = 5,6 \Omega$
 Parameter: Durchlaßstrom / Forward current i_{FM}



D448N_2

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	$R_{thn} \text{ } ^\circ\text{C/W}$	0,00132	0,00668	0,0049	0,034	0,0501		
	$\tau_n \text{ [s]}$	0,000065	0,000841	0,0113	0,0409	0,2		
2	$R_{thn} \text{ } ^\circ\text{C/W}$	0,00111	0,00652	0,01257	0,0303	0,0405	0,0257	0,0333
	$\tau_n \text{ [s]}$	0,000056	0,00075	0,015	0,0611	0,182	1,61	4,15
3	$R_{thn} \text{ } ^\circ\text{C/W}$	0,00119	0,00651	0,00873	0,04197	0,0416	0,175	
	$\tau_n \text{ [s]}$	0,000059	0,000773	0,0129	0,0552	0,524	3,11	

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

Analytische Funktion / Analytical function

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