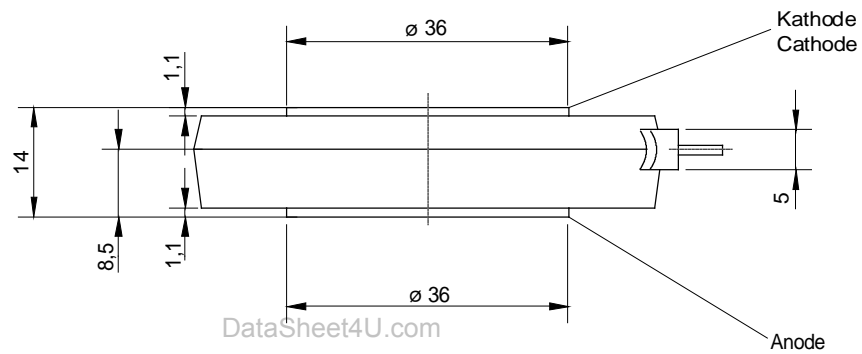
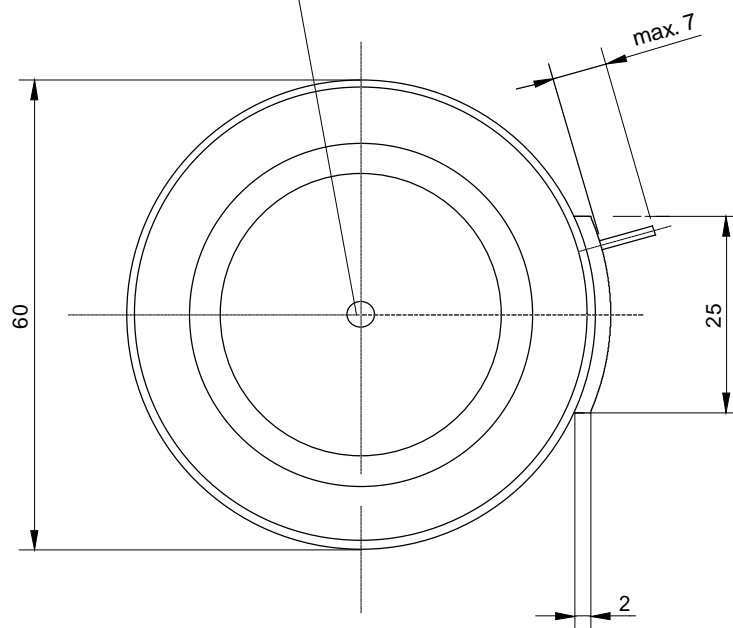


European Power-Semiconductor and Electronics Company GmbH + Co. KG

Leistungsgleichrichterdioden Power Rectifier Diodes D 2228 N



$\varnothing 3,5^{+0.1} \times 2$ tief / depth
beidseitig / on both sides



D 2228 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}	4	kA
Dauergrenzstrom	mean forward current	$t_c = 110^{\circ}\text{C}$	I_{FAVM}	2,23	kA
		$t_c = 95^{\circ}\text{C}$		2,55	kA
Stoßstrom-Grenzwert	surge forward current	$t_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$	I_{FSM}	33	kA
		$t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$		28,5	kA
Grenzlastintegral	$I^2 t$ -value	$t_{vj} = 25^{\circ}\text{C}, t_p = 10 \text{ ms}$	$I^2 t$	5445	kA^2s
		$t_{vj} = t_{vj \max}, t_p = 10 \text{ ms}$		4061	kA^2s

Charakteristische Werte**Characteristic values**

Durchlaßspannung	on-state voltage	$t_{vj} = t_{vj \max}, i_F = 7,7 \text{ kA}$	V_T	max.	1,5	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		0,0975	$\text{m}\Omega$
Sperrstrom	reverse current	$t_{vj} = t_{vj \max}, V_R = V_{RRM}$	i_R	max.	50	mA

Thermische Eigenschaften**Thermal properties**

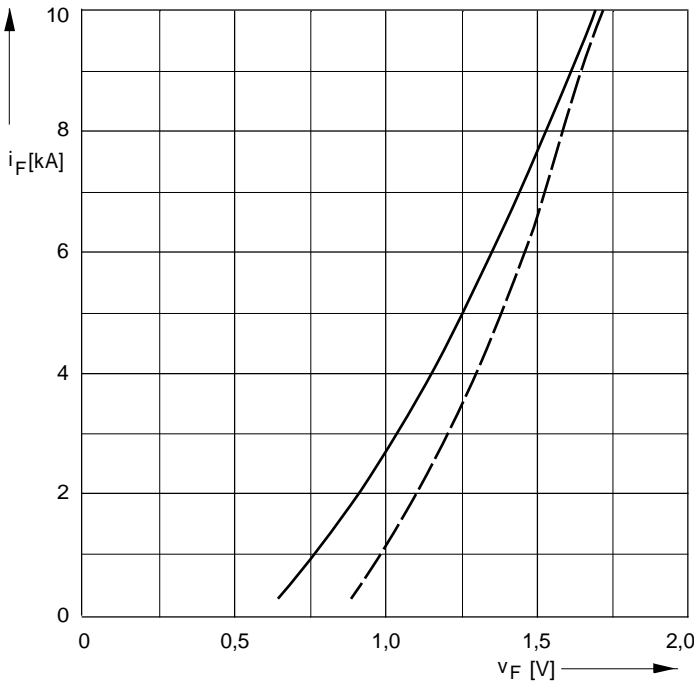
Innerer Widerstand	thermal resistance, junction to case	beidseitig/two-sided, $\Theta = 180^{\circ} \text{ sin}$	R_{thJC}	max.	0,0254	$^{\circ}\text{C}/\text{W}$
		beidseitig/two sided, DC		max.	0,0240	$^{\circ}\text{C}/\text{W}$
		Anode/anode, $\Theta = 180^{\circ} \text{ sin}$		max.	0,0414	$^{\circ}\text{C}/\text{W}$
		Anode/anode, DC		max.	0,0400	$^{\circ}\text{C}/\text{W}$
		Kathode/cathode, $\Theta = 180^{\circ} \text{ sin}$		max.	0,0614	$^{\circ}\text{C}/\text{W}$
		Kathode/cathode, DC		max.	0,0600	$^{\circ}\text{C}/\text{W}$
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	beidseitig /two-sided	R_{thCK}	max.	0,005	$^{\circ}\text{C}/\text{W}$
		einseitig /single-sided		max.	0,010	$^{\circ}\text{C}/\text{W}$
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	$\varnothing = 36 \text{ mm}$				
Anpreßkraft	clamping force	Gehäuseform/case design T	F		12...24	kN
Gewicht	weight		G	typ.	160	g
Kriechstrecke	creepage distance				27	mm
Feuchteklasse	humidity classification	DIN 40040				C
Schwingfestigkeit	vibration resistance	$f = 50 \text{ Hz}$			50	m/s^2
Maßbild	outline					Seite/page

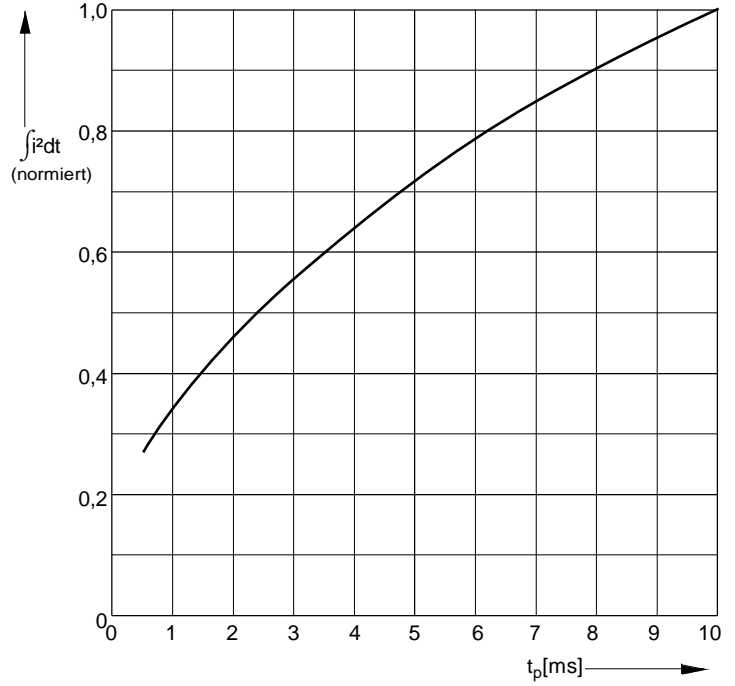
* Bitte Liefertermin erfragen /Delivery on request

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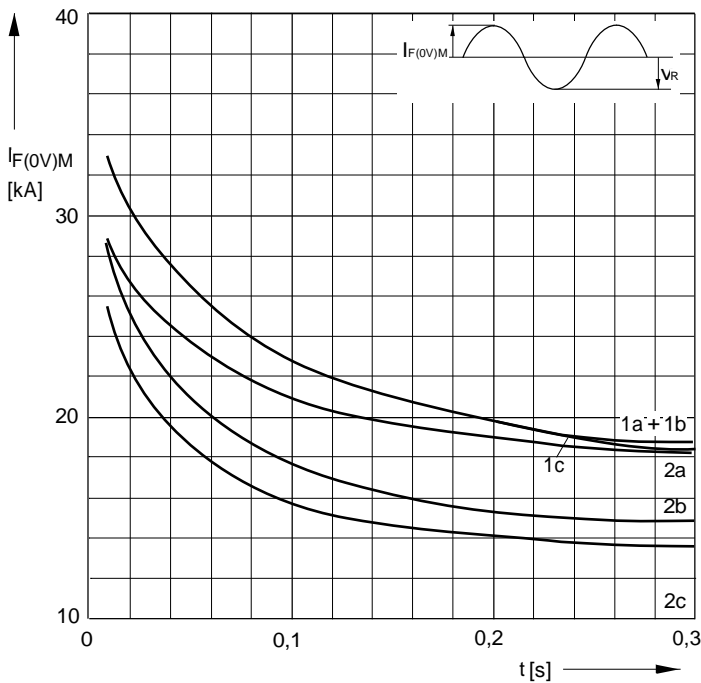
D2228N_1

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



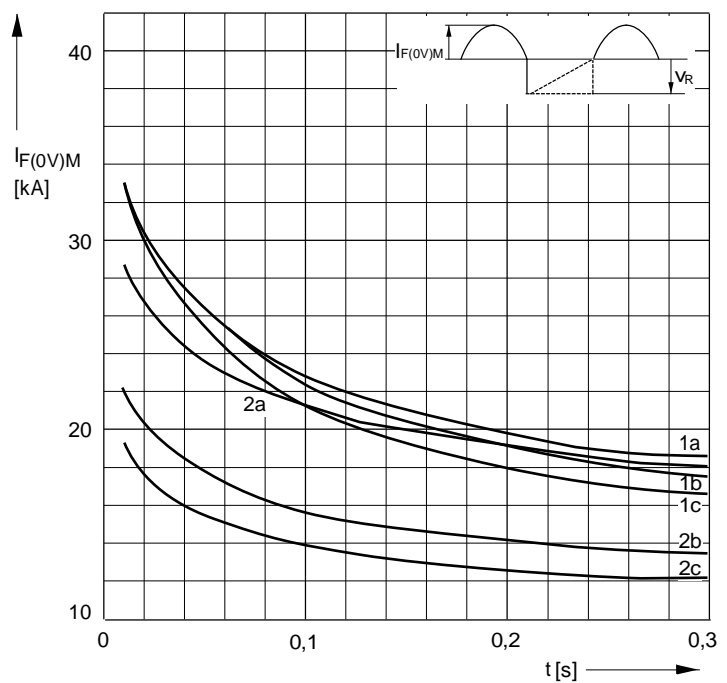
D2228N_4

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



D2228N_5

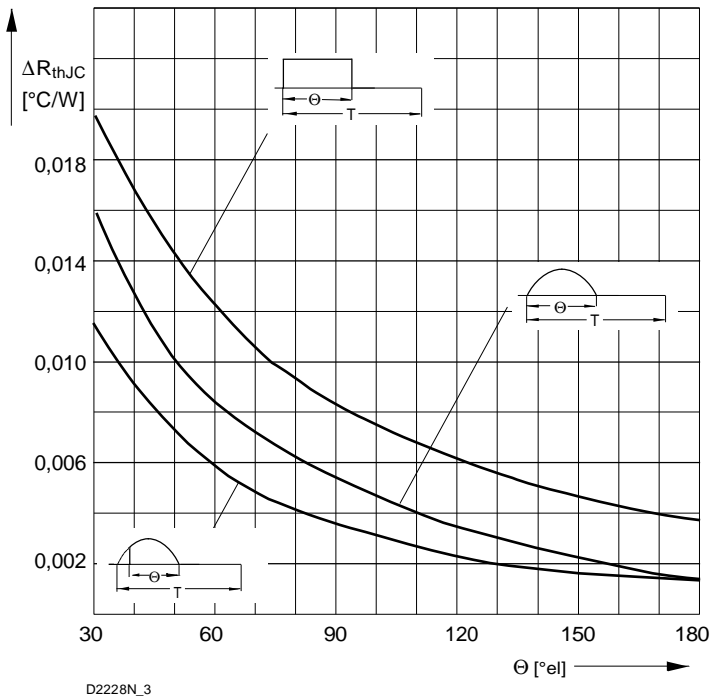
Bild / Fig. 3
 Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
 1 - $I_{FAV(vor)} = 0\text{ A}$; $t_{vj} = t_c = 25\text{ °C}$
 2 - $I_{FAV(vor)} = 2550\text{ A}$; $t_c = 95\text{ °C}$; $t_{vj} = 180\text{ °C}$
 a - $v_R \leq 50\text{ V}$
 b - $v_R = 0,5\text{ VRRM}$
 c - $v_R = 0,8\text{ VRRM}$



D2228N_6

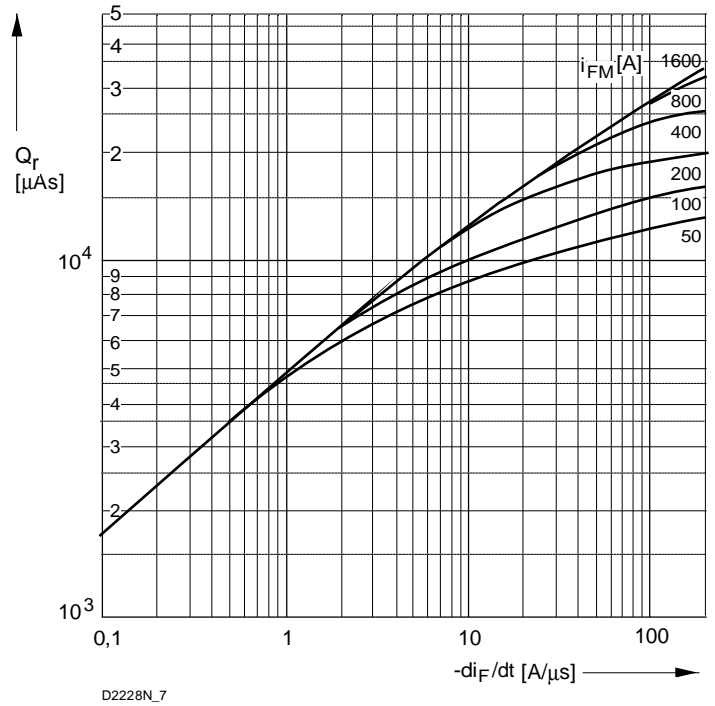
Bild / Fig. 4
 Grenzstrom / Maximum overload forward current $I_{F(0V)M} = f(t)$
 1 - $I_{FAV(vor)} = 0\text{ A}$; $t_{vj} = t_c = 25\text{ °C}$
 2 - $I_{FAV(vor)} = 2550\text{ A}$; $t_c = 95\text{ °C}$; $t_{vj} = 180\text{ °C}$
 a - $v_R \leq 50\text{ V}$
 b - $v_R = 0,5\text{ VRRM}$
 c - $v_R = 0,8\text{ VRRM}$

D 2228 N



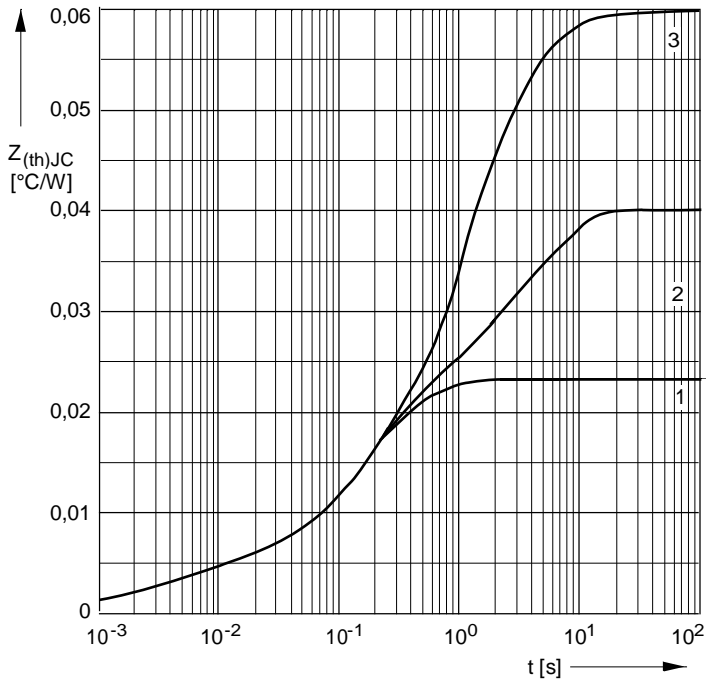
D2228N_3

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



D2228N_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: $C = 1,5 \mu F$; $R = 2,7 \Omega$
 Parameter: Durchlaßstrom / Forward current i_{FM}



D2228N_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	$R_{thn} \text{ } ^\circ\text{C/W}$	0,000059	0,000649	0,001732	0,0013	0,00386	0,0146	0,0018
	$\tau_n \text{ [s]}$	0,000273	0,000235	0,00207	0,0136	0,0685	0,211	0,91
2	$R_{thn} \text{ } ^\circ\text{C/W}$	0,000084	0,00111	0,002396	0,00496	0,0113	0,01047	0,00968
	$\tau_n \text{ [s]}$	0,0000321	0,000403	0,0033	0,0747	0,195	2,28	6,34
3	$R_{thn} \text{ } ^\circ\text{C/W}$	0,000079	0,000951	0,00199	0,00788	0,0331	0,016	
	$\tau_n \text{ [s]}$	0,0000311	0,000352	0,00346	0,0646	1,15	3,61	

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

Analytische Funktion / Analytical function

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

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