

Technische Information / Technical Information

eupec

Schnelle Gleichrichterdiode
Fast Diode

D 689 S 20...26

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Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak forward reverse voltage	$T_{vj} = -25^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RRM}	2000	V
			2200	V
			2400	V
			2600	V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	$T_{vj} = +25^{\circ}\text{C} \dots T_{vj\text{max}}$	V_{RSM}	2100	V
			2300	V
			2500	V
			2700	V
Durchlaßstrom-Grenzeffektivwert RMS forward current		I_{FRMSM}	1600	A
Dauergrenzstrom mean forward current	$T_C = 100^{\circ}\text{C}$ $T_C = 60^{\circ}\text{C}$	I_{FAVM}	690	A
			1020	A
Stoßstrom-Grenzwert surge forward current	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$ $T_{vj} = 25^{\circ}\text{C}, t_p = 1\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 1\text{ms}$	I_{FSM}	14000	A
			11500	A
			33400	A
			27500	A
Grenzlastintegral I^2t -value	$T_{vj} = 25^{\circ}\text{C}, t_p = 10\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 10\text{ms}$ $T_{vj} = 25^{\circ}\text{C}, t_p = 1\text{ms}$ $T_{vj} = T_{vj\text{max}}, t_p = 1\text{ms}$	I^2t	980000	A^2s
			661250	A^2s
			557780	A^2s
			378125	A^2s

Charakteristische Werte / Characteristic values

Durchlaßspannung forward voltage	$T_{vj} = T_{vj\text{max}}, i_F = 3000\text{A}$	V_F	max.	2,7	V
Schleusenspannung threshold voltage	$T_{vj} = T_{vj\text{max}}$	$V_{(TO)}$		1	V
Ersatzwiderstand forward slope resistance	$T_{vj} = T_{vj\text{max}}$	r_T		0,5	$\text{m}\Omega$
Typischer Wert der Durchlaßverzögerungsspannung typical value of forward recovery voltage	IEC 747-2 $T_{vj} = T_{vj\text{max}}$ $di_F/dt=50\text{A}/\mu\text{s}, V_R=0\text{V}$	V_{FRM}	typ.	16,5	V ¹⁾
Durchlaßverzögerungszeit forward recovery time	IEC 747-2, Methode / method II $T_{vj} = T_{vj\text{max}}, i_{FM}=3000\text{A}$ $di_F/dt=50\text{A}/\mu\text{s}, V_R=0\text{V}$	t_{fr}	typ.	6,2	μs ¹⁾
Sperrstrom reverse current	$T_{vj} = 25^{\circ}\text{C}, V_R=V_{RRM}$ $T_{vj} = T_{vj\text{max}}, V_R = V_{RRM}$	i_R	max.	25	mA
			max.	250	mA
Rückstromspitze peak reverse recovery current	DIN IEC 747-2, $T_{vj}=T_{vj\text{max}}$ $i_{FM} = 1020\text{A}, -di_F/dt=50\text{A}/\mu\text{s}$ $V_R \leq 0,5 V_{RRM}, V_{RM}=0,8 V_{RRM}$	I_{RM}		155	A ¹⁾
Sperrverzögerungsladung recovered charge	DIN IEC 747-2, $T_{vj}=T_{vj\text{max}}$ $i_{FM} = 1020\text{A}, -di_F/dt=50\text{A}/\mu\text{s}$ $V_R \leq 0,5 V_{RRM}, V_{RM}=0,8 V_{RRM}$	Q_r		970	μAs ¹⁾
Sperrverzögerungszeit reverse recovered time	DIN IEC 747-2, $T_{vj}=T_{vj\text{max}}$ $i_{FM} = 1020\text{A}, -di_F/dt=50\text{A}/\mu\text{s}$ $V_R \leq 0,5 V_{RRM}, V_{RM}=0,8 V_{RRM}$	t_{rr}		9	μs ¹⁾
Sanftheit Softness	$T_{vj} = T_{vj\text{max}}$ $i_{FM} = 760\text{A}, -di_F/dt=500\text{A}/\mu\text{s}$ $V_R \leq 0,5 V_{RRM}, V_{RM}=0,8 V_{RRM}$	SR			$\mu\text{s}/\text{A}$ ²⁾

1) Richtwert für obere Streubereichsgrenze / Upper limit of scatter range (standard value)

2) Richtwert für untere Streubereichsgrenze / Lower limit of scatter range (standard value)

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Thermische Eigenschaften / Thermal properties

Innerer Wärmewiderstand thermal resistance, junction to case	Kühlfläche / cooling surface beidseitig / two-sided, $\Theta = 180^\circ\text{sin}$	R_{thJC}	max. 0,039	$^\circ\text{C/W}$
	beidseitig / two-sided, DC		max. 0,036	$^\circ\text{C/W}$
	Anode / anode, $\Theta = 180^\circ\text{sin}$		max. 0,063	$^\circ\text{C/W}$
	Anode / anode, DC		max. 0,060	$^\circ\text{C/W}$
	Kathode / cathode, $\Theta = 180^\circ\text{sin}$		max. 0,093	$^\circ\text{C/W}$
	Kathode / cathode, DC		max. 0,090	$^\circ\text{C/W}$
Übergangs- Wärmewiderstand thermal resistance, case to heatsink	Kühlfläche / cooling surface beidseitig / two-sided	R_{thCK}	max. 0,005	$^\circ\text{C/W}$
	einseitig / single-sided		max. 0,010	$^\circ\text{C/W}$
Höchstzulässige Sperrschichttemperatur max. junction temperature		$T_{\text{vj max}}$	150	$^\circ\text{C}$
Betriebstemperatur operating temperature		$T_{\text{c op}}$	-40...+150	$^\circ\text{C}$
Lagertemperatur storage temperature		T_{stg}	-40...+150	$^\circ\text{C}$

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see appendix			Seite 3 page 3	
Si-Element mit Druckkontakt Si-pellet with pressure contact	Durchmesser/diameter 38mm			
Anpreßkraft clamping force		F	10...24	kN
Gewicht weight		G	typ. 270	g
Kriechstrecke creepage distance			28	mm
Feuchteklasse humidity classification	DIN 40040		C	
Schwingfestigkeit vibration resistance	f = 50Hz		5x9,81	m/s ²

Kühlkörper / heatsinks: K0,05F ; K0,08F ; 2K0,024W

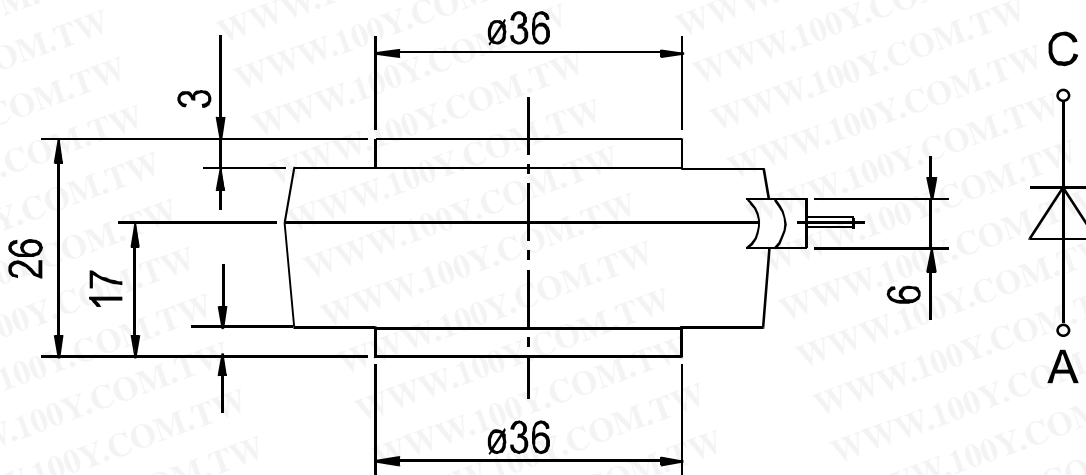
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Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen./ The technical Information specifies semiconductor devices but promises no characteristics. It is valid in combination with the belonging technical notes.

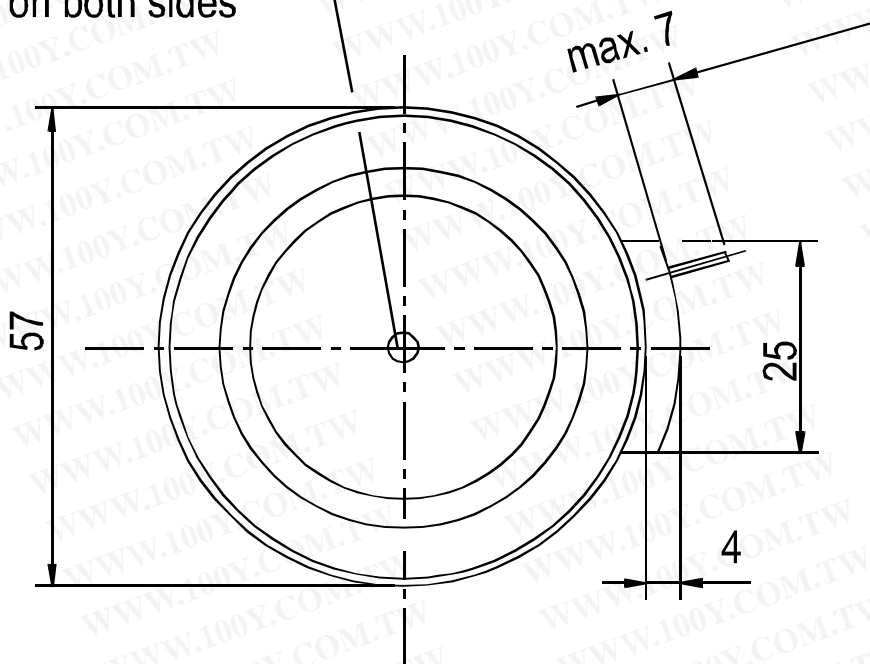
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$\varnothing 3,5^{+0,1} \times 3,5$ deep
on both sides



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Kühlung cooling	Analytische Elemente des transienten Wärmewiderstandes Z_{thJC} für DC Analytical elements of transient thermal impedance Z_{thJC} for DC							
	Pos.n	1	2	3	4	5	6	7
beidseitig two-sided	R_{thn} [°C/W]	0,000044	0,00331	0,003256	0,015	0,01439		
	τ_n [s]	0,000141	0,00238	0,0234	0,164	1,14		
anodenseitig anode-sided	R_{thn} [°C/W]	0,000052	0,003458	0,00658	0,0156	0,03431		
	τ_n [s]	0,000161	0,00247	0,0433	0,261	6,29		
kathodenseitig cathode-sided	R_{thn} [°C/W]	0,000048	0,0034	0,004162	0,0145	0,0153	0,05259	
	τ_n [s]	0,000151	0,00243	0,0315	0,17	4,56	8,86	

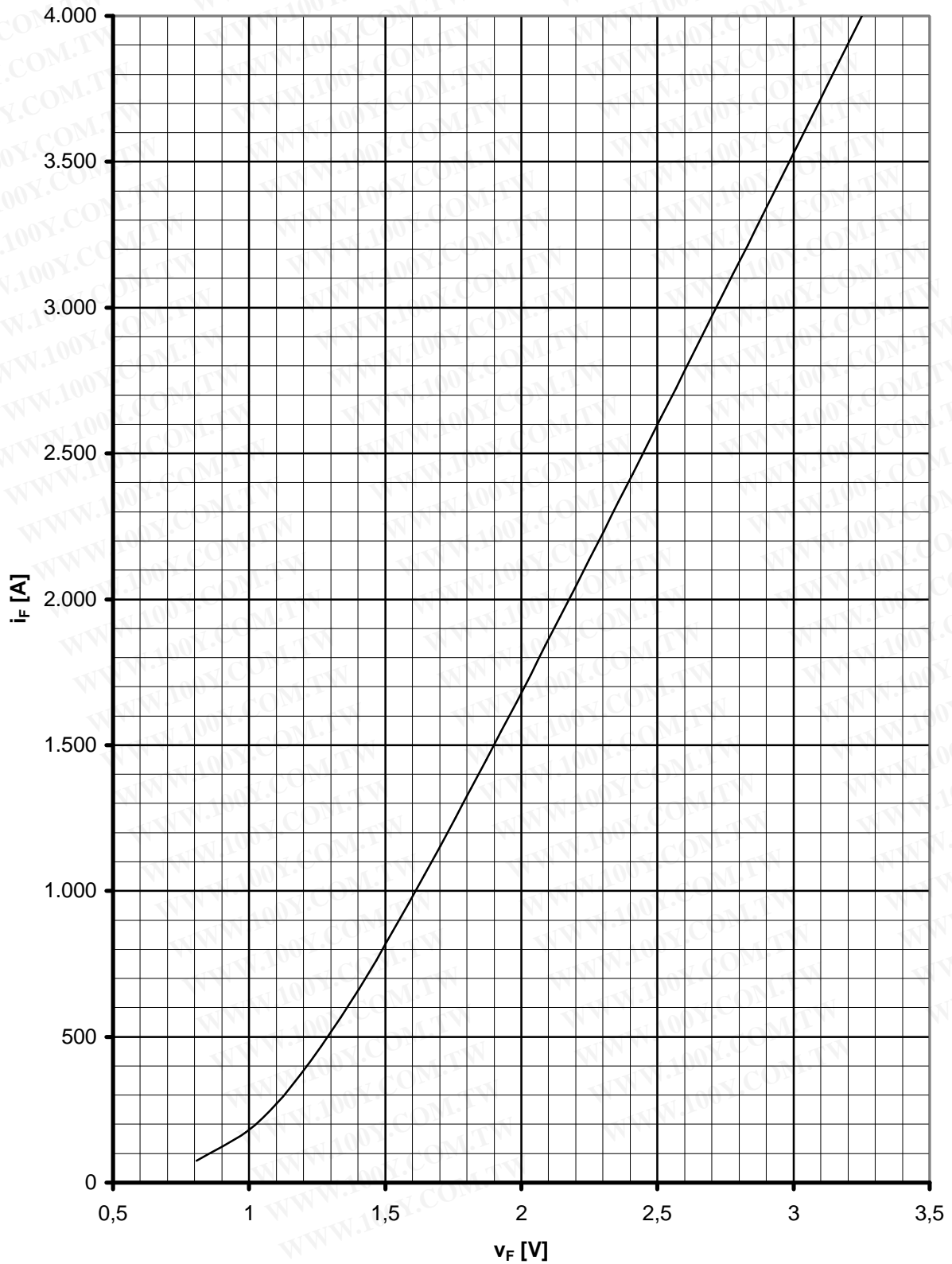
Analytische Funktion / analytical function : $Z_{thJC} = \sum_{n=1}^{n_{max}} R_{thn} (1 - \text{EXP}(-t / \tau_n))$

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Grenzdurchlaßkennlinie / Limiting On-state characteristic $i_F=f(v_F)$

$T_{vj} = T_{vj\ max}$

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