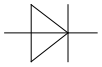
Technische Information / Technical Information

eupec

Netz Gleichrichterdiode
Rectifier Diode

D 3501 N 32 ... 42 T

N



Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltage	f = 50Hz	V_{RRM}	-40°C... $t_{vj\ max}$ 0°C... $t_{vj\ max}$ 3200 3300 3600 3700 4000 4100 4200 4300	 V V V V
Durchlaßstrom-Grenzeffektivwert RMS forward current		I_{FRMSM}	8300	A
Dauergrenzstrom mean forward current	t_C = 100°C, f = 50Hz t_C = 60°C, f = 50Hz	I_{FAVM}	3700 5300	A A
Stoßstrom-Grenzwert surge forward current	t_{vj} = 25°C, t_p = 10ms t_{vj} = $t_{vj\ max}$, t_p = 10ms	I_{FSM}	70 56	kA kA
Grenzlastintegral I^2t-value	t_{vj} = 25°C, t_p = 10ms t_{vj} = $t_{vj\ max}$, t_p = 10ms	I^2t	$25{,}5 \cdot 10^6$ $15{,}68 \cdot 10^6$	A^2s A^2s

Charakteristische Werte / Characteristic values

Durchlaßspannung forward voltage	t_{vj} = $t_{vj\ max}$, i_F = 4000A	v_F	max 1,27	V
Schleusenspannung threshold voltage	t_{vj} = $t_{vj\ max}$	$V_{(TO)}$	typ 0,69 max 0,76	V
Ersatzwiderstand forward slope resistance	t_{vj} = $t_{vj\ max}$	r_T	typ 0,127 max 0,128	mΩ
Durchlaßrechenkennlinie On-state characteristics for calculation $V_F = A + B \cdot i_F + C \cdot \ln(i_F + 1) + D \cdot \sqrt{i_F}$	t_{vj} = $t_{vj\ max}$	 A B C D	typ. 0,580 0,0000170 -0,0255 0,0121	
Durchlaßrechenkennlinie On-state characteristics for calculation $V_F = A + B \cdot i_F + C \cdot \ln(i_F + 1) + D \cdot \sqrt{i_F}$	t_{vj} = $t_{vj\ max}$	 A B C D	max. 0,641 0,0000262 -0,0390 0,0166	
Sperrstrom reverse current	t_{vj} = $t_{vj\ max}$, v_R = V_{RRM}	i_R	200	mA
Rückstromspitze peak reverse recovery current	t_{vj} = $t_{vj\ max}$ I_{FM} = 1500A, -di/dt = 5 A/µs v_R = 0,5 V_{RRM}, C = 4,7µF, R = 8,2Ω	I_{RM}	200	A
Sperrverzögerungsladung recovered charge	t_{vj} = $t_{vj\ max}$ I_{FM} = 1500A, -di/dt = 5 A/µs v_R = 0,5 V_{RRM}, C = 4,7µF, R = 8,2Ω	Q_r	max 7,2	mAs

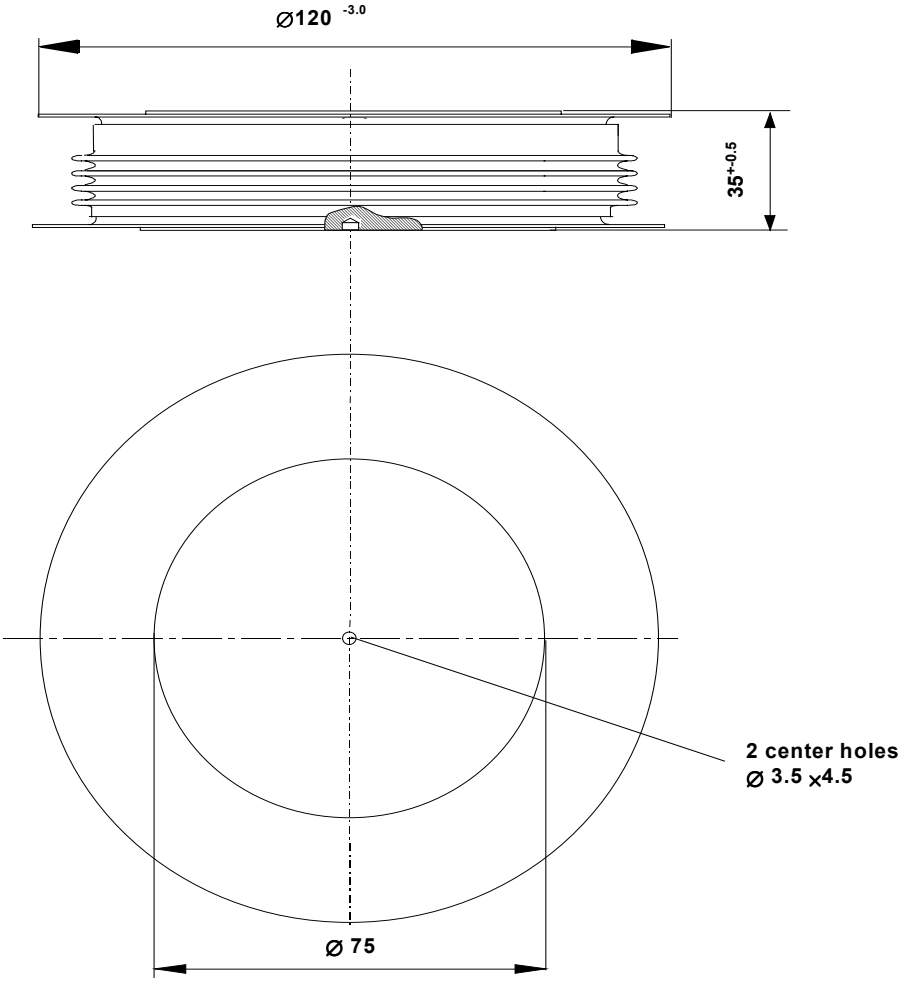
Thermische Eigenschaften / Thermal properties

Innerer Wärmewiderstand thermal resistance, junction to case	beidseitig / two-sided, DC Anode / anode, DC Kathode /cathode, DC	R_{thJC}	max max max	0,0085 0,016 0,018	°C/W °C/W °C/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	Kühlfläche / cooling surface beidseitig / two-sided einseitig / single sided	R_{thCK}	max max	0,0025 0,005	°C/W °C/W
Höchstzulässige Sperrschichttemperatur max. junction temperature		$t_{vj\ max}$		160	°C
Betriebstemperatur operating temperature		$t_{c\ op}$		-40...+160	°C
Lagertemperatur storage temperature		t_{stg}		-40...+160	°C

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage case, see appendix				Seite 3	
Si - Element mit Druckkontakt Si - pellet with pressure contact				75DN42	
Anpreßkraft clamping force		F		36...52	kN
Gewicht weight		G	typ	1700	g
Kriechstrecke creepage distance				40	mm
Luftstrecke air distance				30	mm
Feuchteklasse humidity classification	DIN 40040			C	
Schwingfestigkeit vibration resistance	f = 50Hz			50	m/s^2

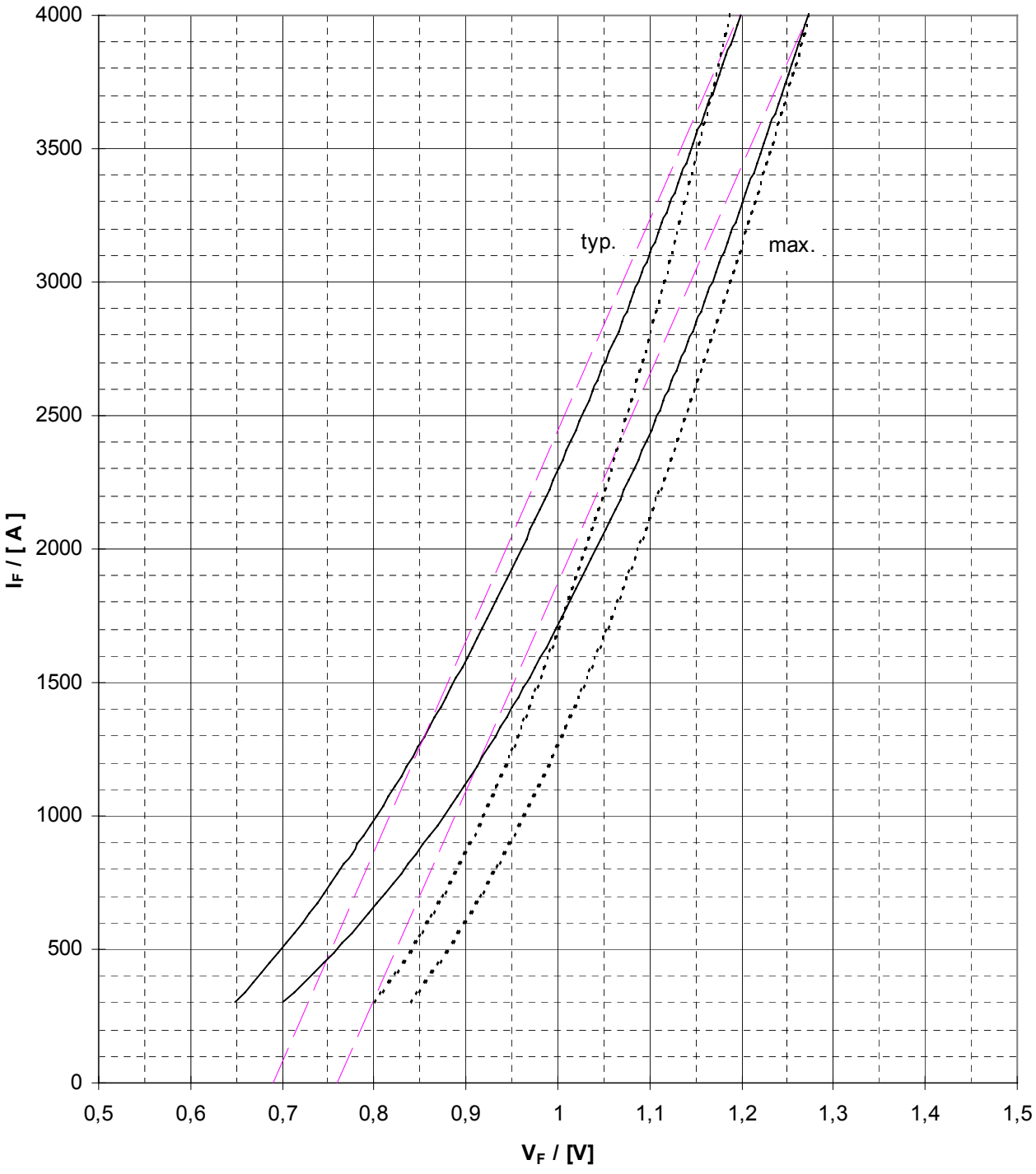
Maßbild / Outline



On-State Characteristics (v_F)

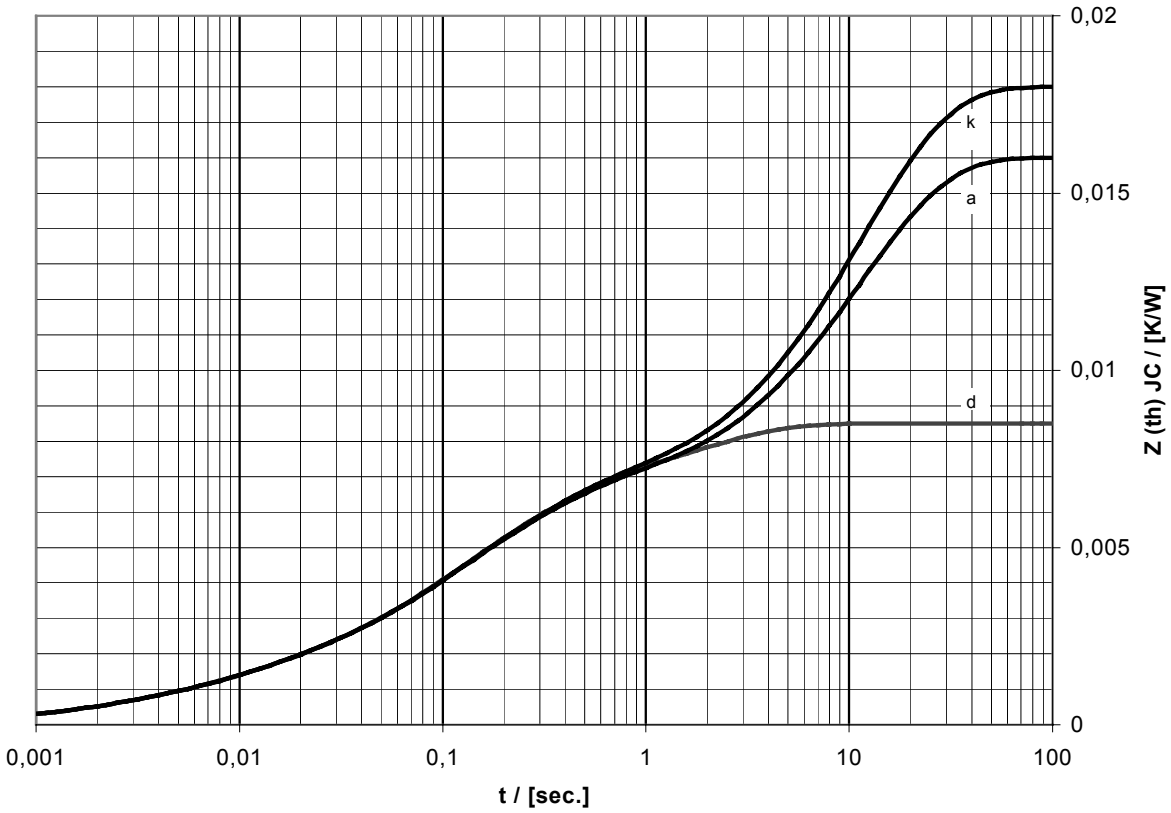
typical and limiting on state charcteristic

__ t_{vj} = 160° C
.... t_{vj} = 25° C



Transient thermal Impedance for constant-current

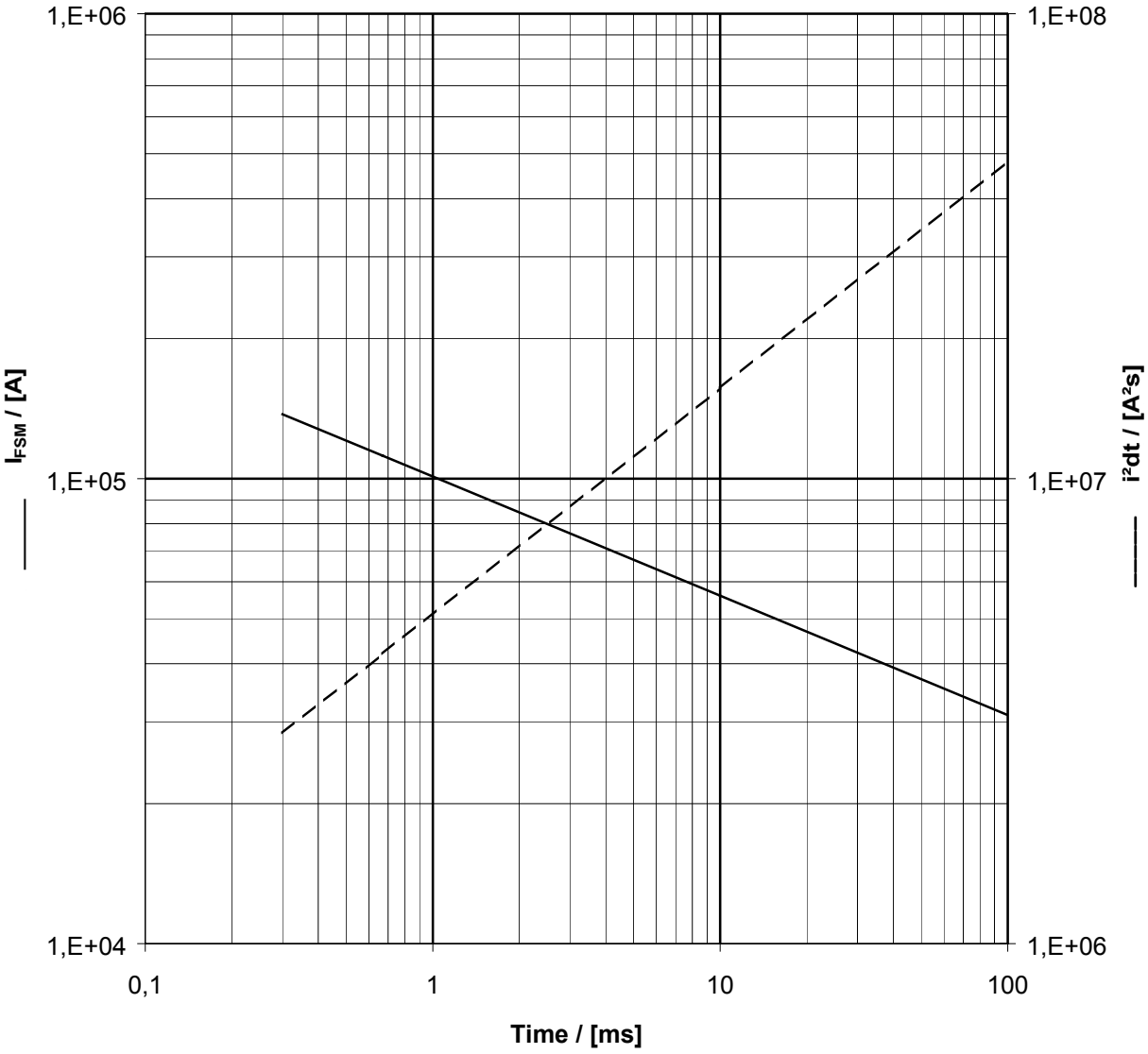
	Double side cooled		Anode side cooled		Cathode side cooled	
	r [K/W]	[s]	r [K/W]	[s]	r [K/W]	[s]
1	0,002	1,84	0,0095	11,5	0,0115	11,7
2	0,003	0,24	0,003	0,24	0,003	0,24
3	0,0022	0,071	0,0022	0,071	0,0022	0,071
4	0,0009	0,0097	0,0009	0,0097	0,0009	0,0097
5	0,0004	0,0018	0,0004	0,0018	0,0004	0,0018
Σ	0,0085	-	0,016	-	0,018	-



Surge Current Characteristics $I_{FSM} = f(t_p)$

I^2t value $i^2\,dt = f(t_p)$

Sine half-wave, t_{vj} =160 ° C , v_R = 0



Sperrverzögerungsladung $Q_r = f (- di/dt)$
Reverse recovered charge .

t_{vj} = 160° C ,I_{FM} = 1500 A, v_R = 0,5 V_{RRM}
C = 4,7 µF , R = 8,2 Ω

___ max.
..... typ.