Technische Information / Technical Information

Netz Gleichrichterdiode
Rectifier Diode

D 4201 N 16 ... 22 T

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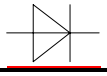

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltage	t_{vj} = -40°C ... $t_{vj\,max}$ f = 50Hz	V_{RRM}	1600 1800 2000 2200	V V V V
Durchlaßstrom-Grenzeffektivwert RMS forward current		I_{FRMSM}	10350	A
Dauergrenzstrom mean forward current	t_C = 100°C, f = 50Hz t_C = 60°C, f = 50Hz	I_{FAVM}	4650 6600	A A
Stoßstrom-Grenzwert surge forward current	t_{vj} = 25°C, t_p = 10ms t_{vj} = $t_{vj\,max}$, t_p = 10ms	I_{FSM}	88 73,5	kA kA
Grenzlastintegral I^2t-value	t_{vj} = 25°C, t_p = 10ms t_{vj} = $t_{vj\,max}$, t_p = 10ms	I^2t	$38,7 \cdot 10^6$ $27,0 \cdot 10^6$	A^2s A^2s

Charakteristische Werte / Characteristic values

Durchlaßspannung forward voltage	t_{vj} = $t_{vj\,max}$, i_F = 4000A	v_F	max 1,0	V
Schleusenspannung threshold voltage	t_{vj} = $t_{vj\,max}$	$V_{(TO)}$	typ 0,62 max 0,7	V
Ersatzwiderstand forward slope resistance	t_{vj} = $t_{vj\,max}$	r_T	typ 0,069 max 0,075	m?
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. 0,480 -0,0000204 -0,00859 0,0090	
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. 0,600 -0,0000249 -0,0219 0,0108	
Sperrstrom reverse current	t_{vj} = $t_{vj\,max}$, v_R = V_{RRM}	i_R	200	mA
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 = 8,2?	Q_r	max 1,75	mAs

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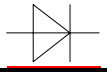

Thermische Eigenschaften / Thermal properties

Innerer Wärmewiderstand thermal resistance, junction to case	beidseitig / two-sided, DC Anode / anode, DC Kathode /cathode, DC	R_{thJC}	max 0,0085 max 0,016 max 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 0,0025 max 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			75DN22	
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

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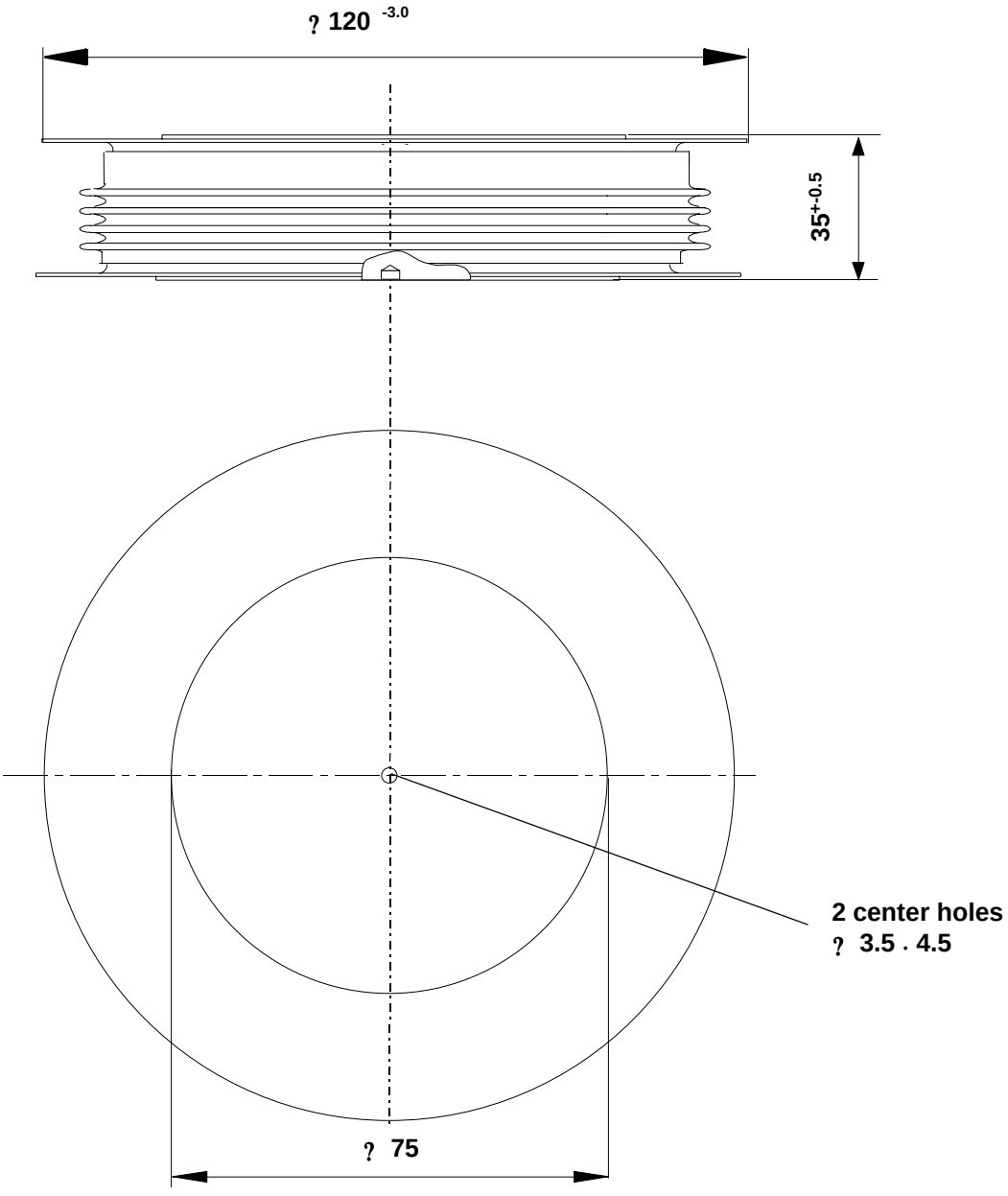
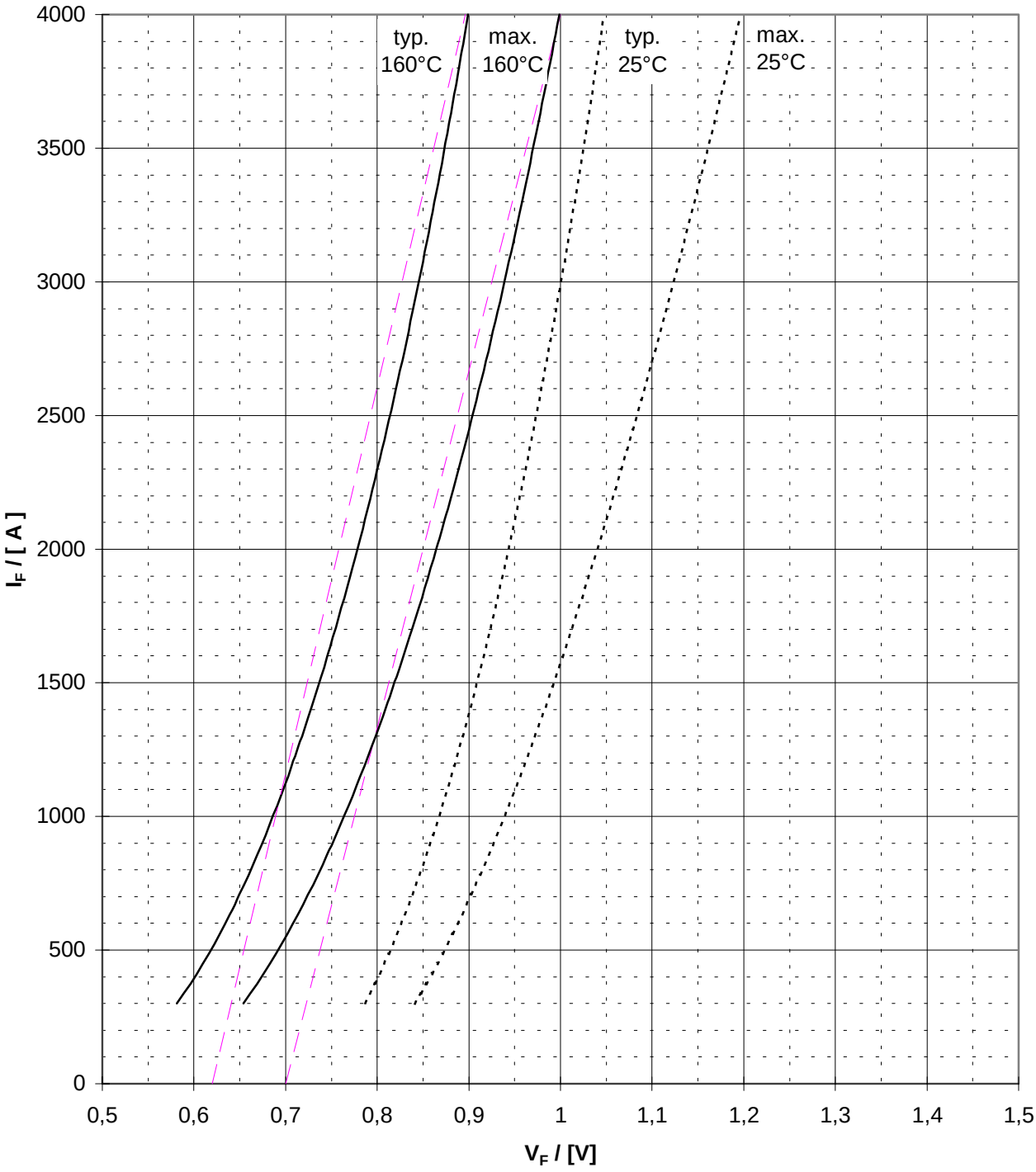
Outline Drawing



On-State Characteristics (v_F)

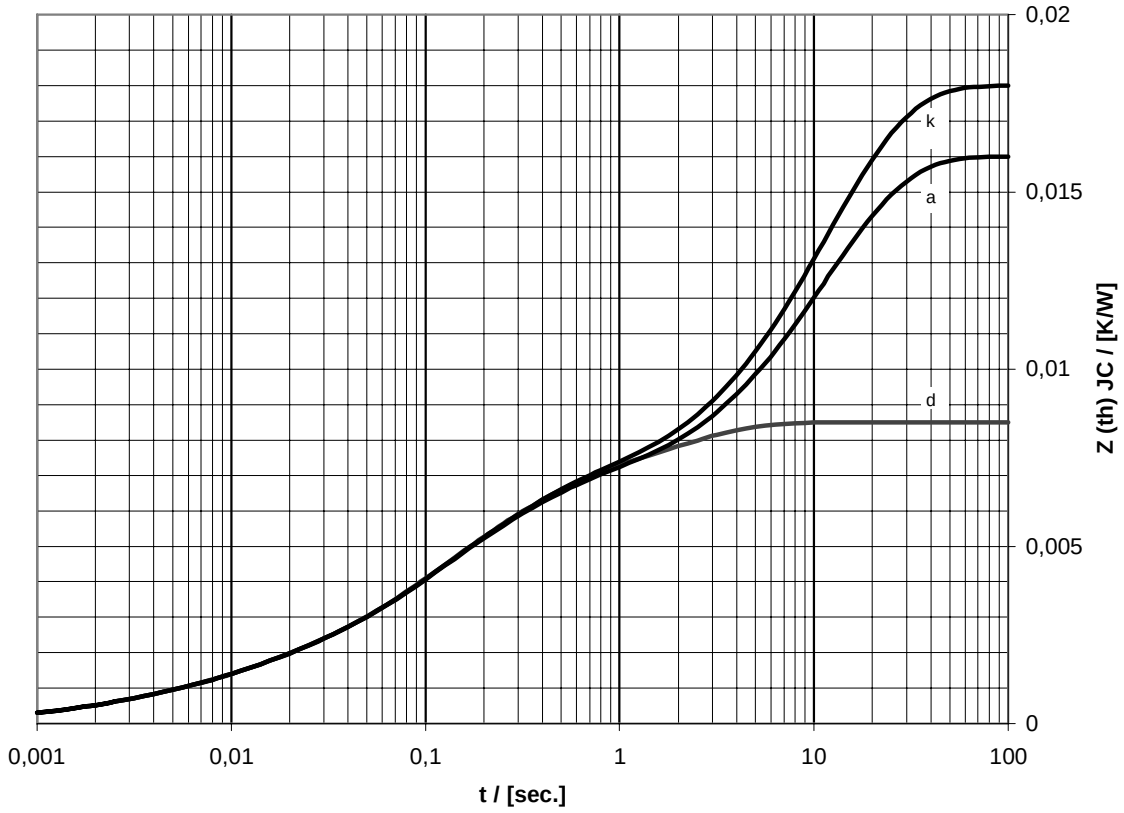
typical and limiting on state charcteristic

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



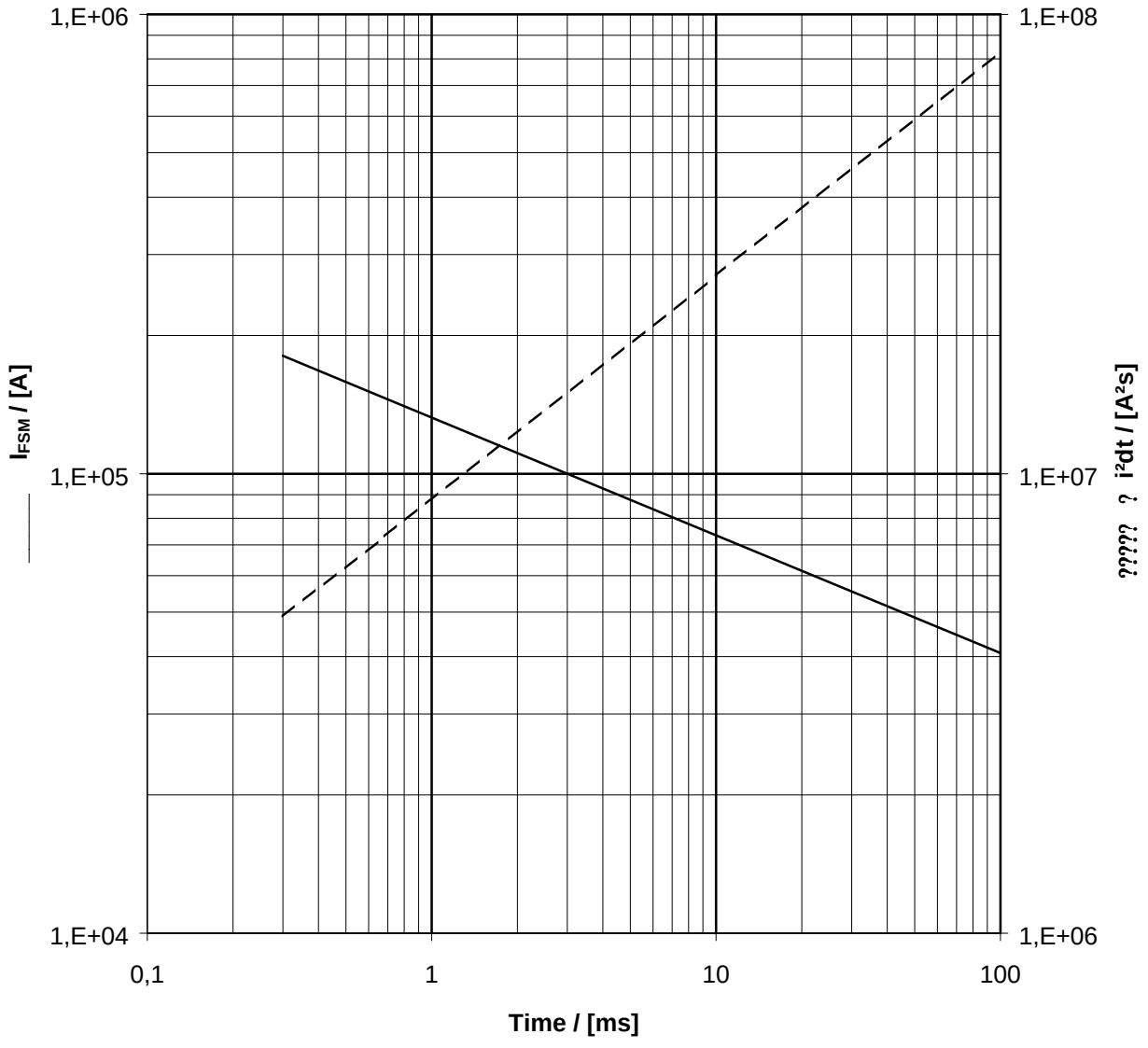
Transient thermal Impedance for constant-current

	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
?	0,085	-	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 $Q_r = f (- di/dt)$
recovered charge .

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