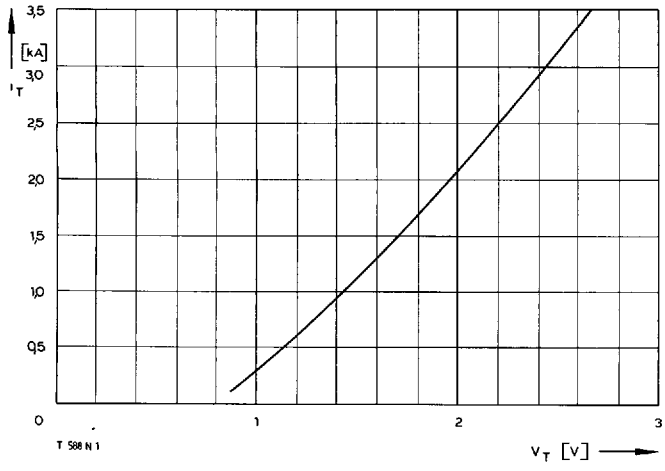
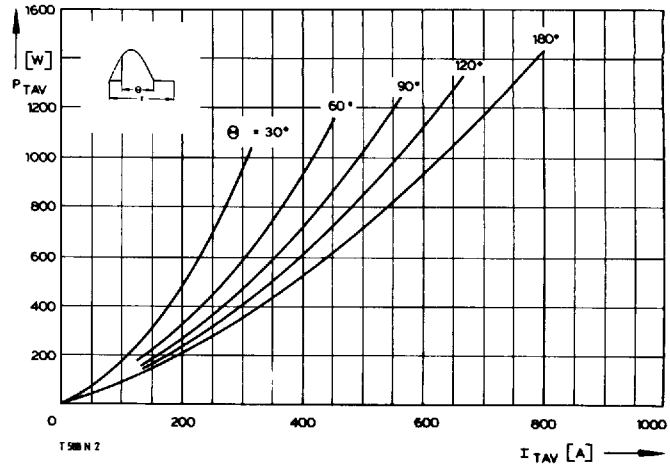
Typenreihe/Type range	T 588 N	400	600	800	1000	1100	1200	1400	1600	1800

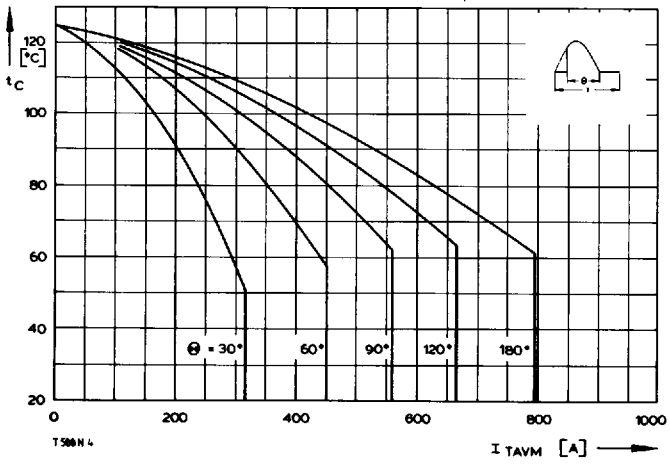
Elektrische Eigenschaften	**Electrical properties**					
Höchstzulässige Werte	Maximum permissible values					
V_{DRM}, V_{RRM} Periodische Vorwärts- und Rückwärts-Spitzensperrspannung	repetitive peak forward off-state and reverse voltages				400...1800	V
I_{TRMSM} Effektiver Durchlaßstrom	RMS on-state current				1250	A
I_{TAVM} Dauergrenzstrom	average on-state current	t_C = 85°C			588	A
		t_C = 61°C			795	A
I_{TRM} Periodischer Spitzenstrom	repetitive peak on-state current				7,5	kA
I_{TSM} Stoßstrom-Grenzwert	surge current	t_p = 10 ms, $t_{vj} \leq$ 45°C			9,4	kA
		t_p = 10 ms, $t_{vj} = t_{vj\,max}$			8	kA
$\int i^2dt$ Grenzlastintegral	$\int i^2dt$-value	t_p = 10 ms, $t_{vj} \leq$ 45°C			442000	A^2s
		t_p = 10 ms, $t_{vj} = t_{vj\,max}$			320000	A^2s
$(di/dt)_{cr}$ Kritische Stromsteilheit	critical rate of rise of on-state current	nicht periodisch/non repetitive			1000	A/µs
		Dauerbetrieb/continuous operation, i_{TM} = 2,4 kA, i_G = 1 A, di_G/dt = 1 A/µs			200	A/µs
$(dv/dt)_{cr}$ Kritische Spannungssteilheit	critical rate of rise of off-state voltage	v_D = 67% V_{DRM}, $t_{vj} = t_{vj\,max}$				
		5. Kennbuchstabe/5th letter C			400	V/µs
		5. Kennbuchstabe/5th letter F			1000	V/µs
Charakteristische Werte	Characteristic values					
v_T Obere Durchlaßspannung	max. on-state voltage	$t_{vj} = t_{vj\,max}$, i_T = 2,4 kA			2,15	V
$V_{(TO)}$ Schleusenspannung	threshold voltage	$t_{vj} = t_{vj\,max}$			0,8	V
r_T Ersatzwiderstand	slope resistance	$t_{vj} = t_{vj\,max}$			0,5	mΩ
V_{GT} Obere Zündspannung	max. gate trigger voltage	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω			2,2	V
I_{GT} Oberer Zündstrom	max. gate trigger current	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω			250	mA
Unterer Zündstrom	min. gate trigger current	$t_{vj} = t_{vj\,max}$, v_D = 6 V, R_A = 5 Ω			10	mA
I_H Oberer Haltestrom	max. holding current	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω			300	mA
I_L Oberer Einraststrom	max. latching current	t_{vj} = 25°C, v_D = 6 V, $R_{GK} \geq$ 10 Ω, i_G = 1 A, di_G/dt = 1 A/µs, t_g = 20 µs			1,2	A
i_D, i_R Oberer Vorwärts- und Rückwärts-Sperrstrom	max. forward off-state and reverse currents	$t_{vj} = t_{vj\,max}$, $v_D = V_{DRM}$ ($v_R = V_{RRM}$)			50	mA
t_{gd} Oberer Zündverzug	max. gate controlled delay time	i_G = 1 A, di_G/dt = 1 A/µs			4	µs
t_q Typische Freiwerdezeit	typical turn-off time	Prüfbedingungen/test conditions 3.4.3.4			250	µs
C_{null} Typische Nullkapazität	typical zero capacitance	t_{vj} = 25°C, f = 10 kHz			5	nF
Thermische Eigenschaften	**Thermal properties**					
Innerer Wärmewiderstand	thermal resistance, junction to case					
R_{thJC} für beidseitige Kühlung	for two-sided cooling	Θ = 180°el, sinus			≤ 0,045	°C/W
		DC			≤ 0,041	°C/W
$R_{thJC(A)}$ für anodenseitige Kühlung	for anode-sided cooling	Θ = 180°el, sinus			≤ 0,074	°C/W
		DC			≤ 0,07	°C/W
$R_{thJC(K)}$ für kathodenseitige Kühlung	for cathode-sided cooling	Θ = 180°el, sinus			≤ 0,104	°C/W
		DC			≤ 0,1	°C/W
R_{thCK} Wärmewiderstand für einen Übergang zwischen Gehäuse und Kühlkörper	single sided thermal resistance, case to heatsink				0,015	°C/W
$t_{vj\,max}$ Höchstzul. Sperrschichttemperatur	max. junction temperature				125	°C
$t_{vj\,op}$ Betriebstemperatur	operating temperature				−40°C...+125	°C
t_{stg} Lagertemperatur	storage temperature				−40°C...+140	°C
Mechanische Eigenschaften	**Mechanical properties**					
G Gewicht	weight				100	g
F Anpreßkraft	clamping force				8...12	kN
Maßbild	outline	DIN 41814–152 A 4			Seite/page 240	
Kriechstrecke	creepage distance				17	mm
Feuchteklasse	humidity classification	DIN 40040			C	
Schüttelfestigkeit	vibration resistance	f = 50 Hz			5x9,81	m/s^2



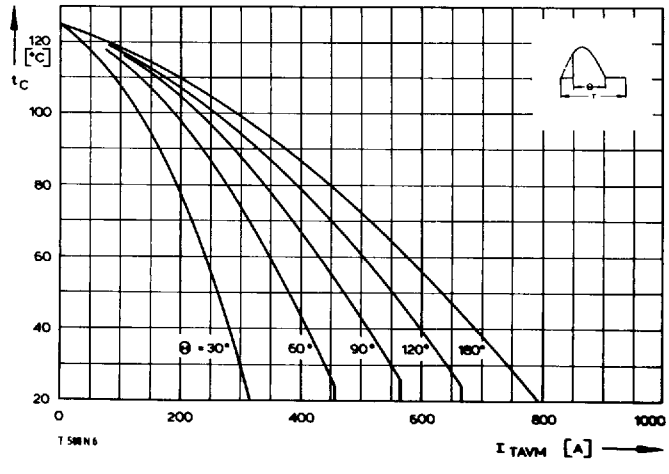
Bild/Fig. 1
Grenzdurchlaßkennlinie bei $t_{vj\,max}$
Max. on-state characteristic at $t_{vj\,max}$



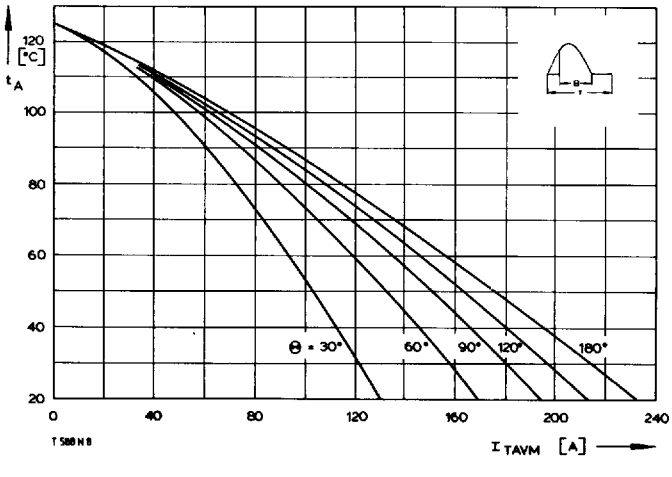
Bild/Fig. 2
Durchlaßverlustleistung P_{TAV}/On-state power loss P_{TAV}
Parameter: Stromflußwinkel Θ/current conduction angle Θ



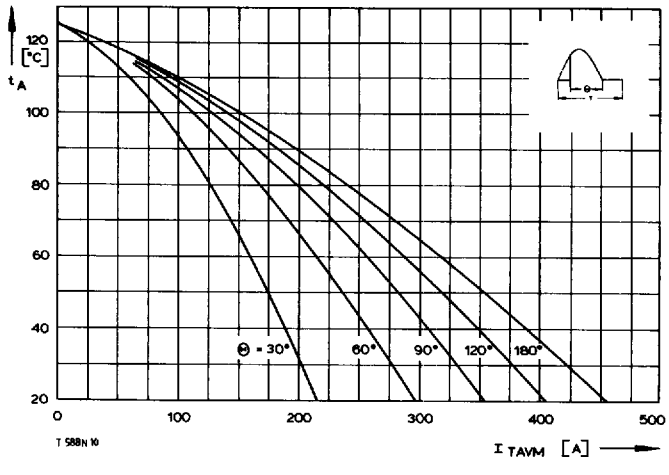
Bild/Fig. 3
Höchstzulässige Gehäusetemperatur t_C bei beidseitiger Kühlung
Maximum allowable case temperature t_C at two-sided cooling



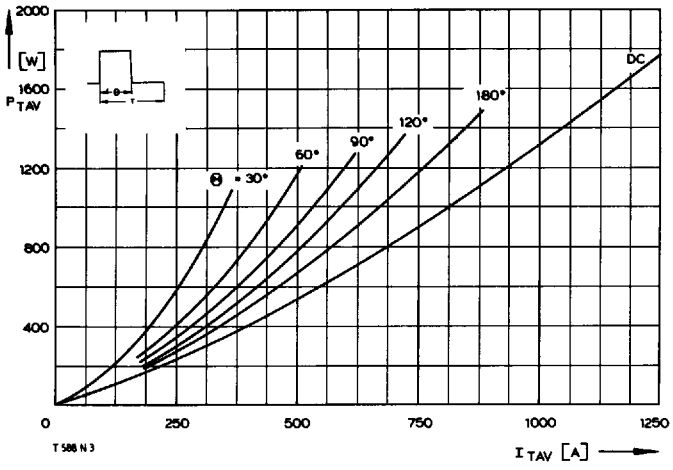
Bild/Fig. 4
Höchstzulässige Gehäusetemperatur t_C bei anodenseitiger Kühlung
Maximum allowable case temperature t_C at anode sided cooling



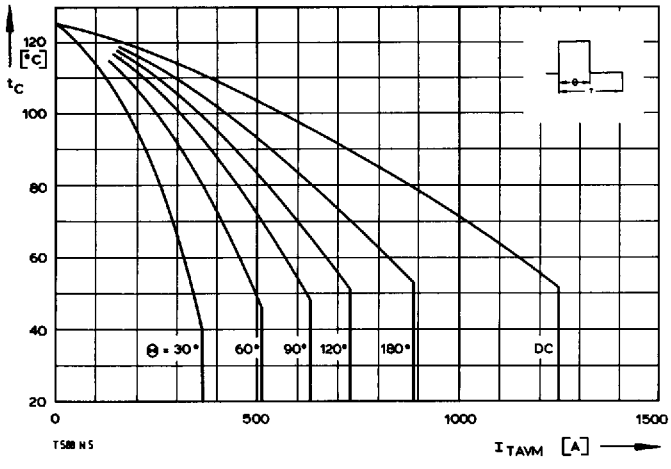
Bild/Fig. 5
Höchstzulässige Kühlmitteltemperatur t_A bei beidseitiger Luftselbstkühlung, Kühlkörper K 0,36 S.
Maximum allowable cooling medium temperature t_A at natural two-sided cooling, heatsink type K 0.36 S.



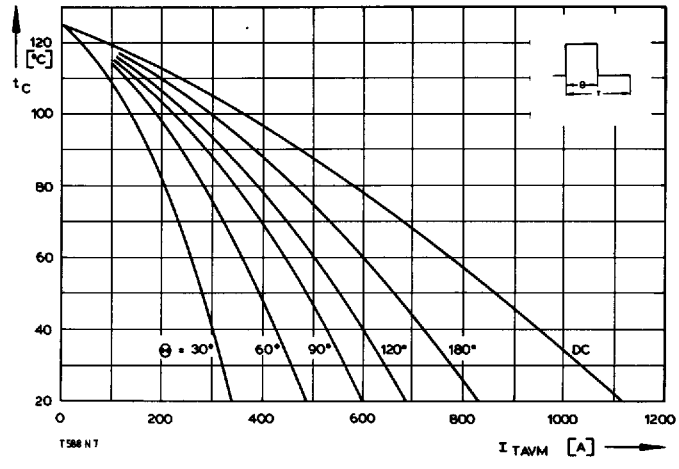
Bild/Fig. 6
Höchstzulässige Kühlmitteltemperatur t_A bei verstärkter beidseitiger Luftkühlung, Kühlkörper K 0,12 F, V_L = 50 l/s.
Maximum allowable cooling medium temperature t_A at forced two-sided cooling, heatsink type K 0.12 F, V_L = 50 l/s.



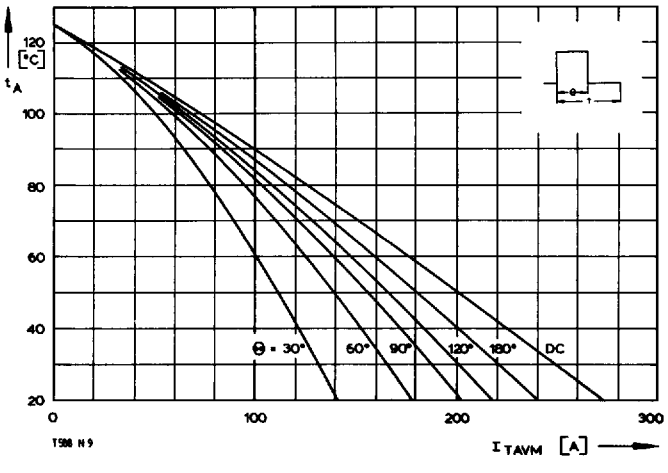
Bild/Fig. 7
Durchlaßverlustleistung P_{TAV}/On-state power loss P_{TAV}
Parameter: Stromflußwinkel Θ/current conduction angle Θ



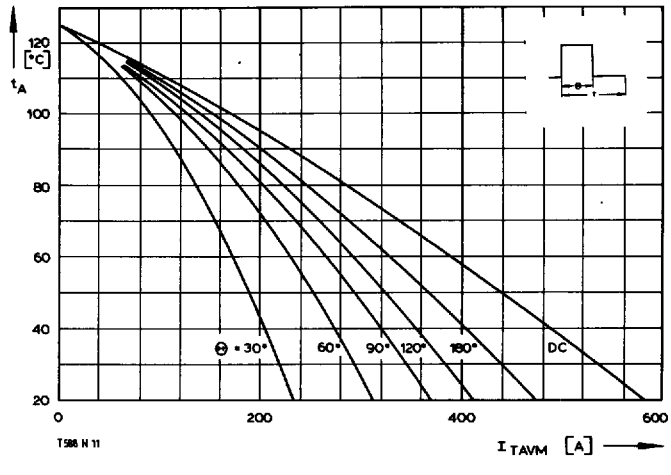
Bild/Fig. 8
Höchstzulässige Gehäusetemperatur t_C bei beidseitiger Kühlung
Maximum allowable case temperature t_C at two-sided cooling



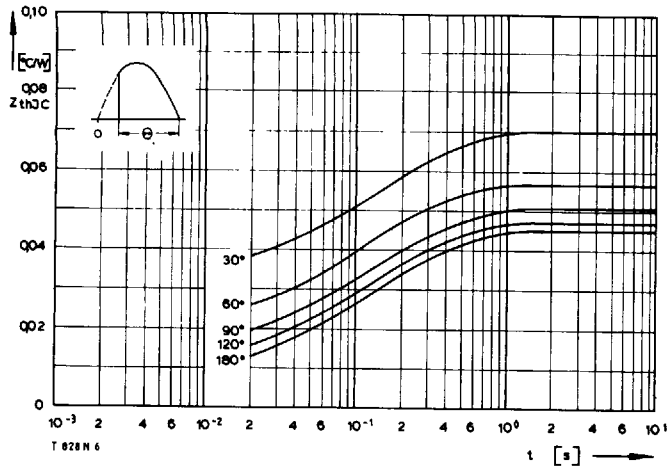
Bild/Fig. 9
Höchstzulässige Gehäusetemperatur t_C bei anodenseitiger Kühlung
Maximum allowable case temperature t_C at anode sided cooling



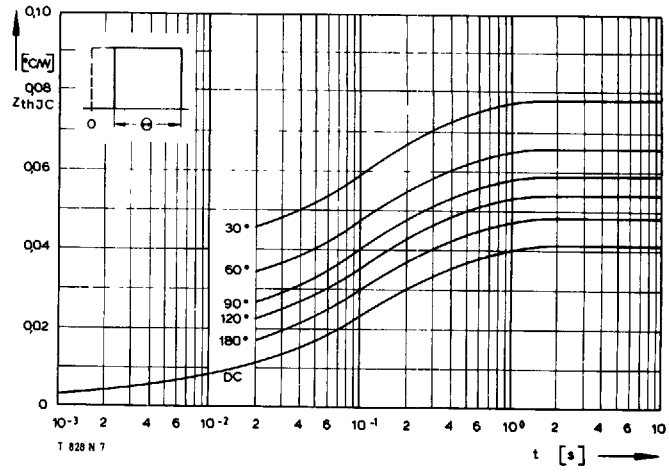
Bild/Fig. 10
Höchstzulässige Kühlmitteltemperatur t_A bei beidseitiger Luftselbstkühlung, Kühlkörper K 0,36 S.
Maximum allowable cooling medium temperature t_A at natural two-sided cooling, heatsink type K 0.36 S.



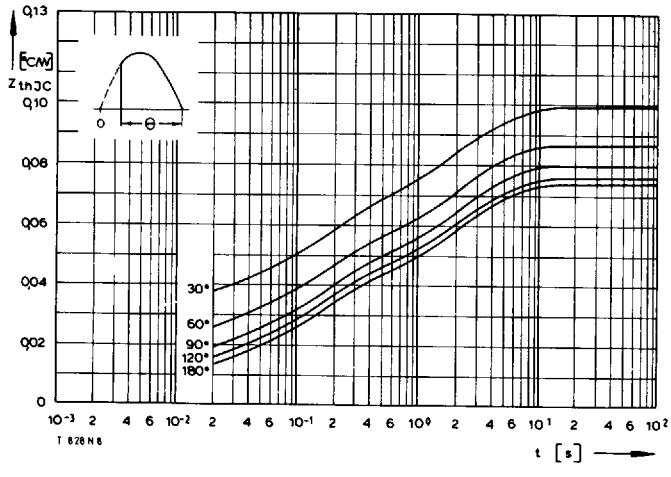
Bild/Fig. 11
Höchstzulässige Kühlmitteltemperatur t_A bei verstärkter beidseitiger Luftkühlung, Kühlkörper K 0,12 F, V_L = 50 l/s.
Maximum allowable cooling medium temperature t_A at forced two-sided cooling, heatsink type K 0.12 F, V_L = 50 l/s.



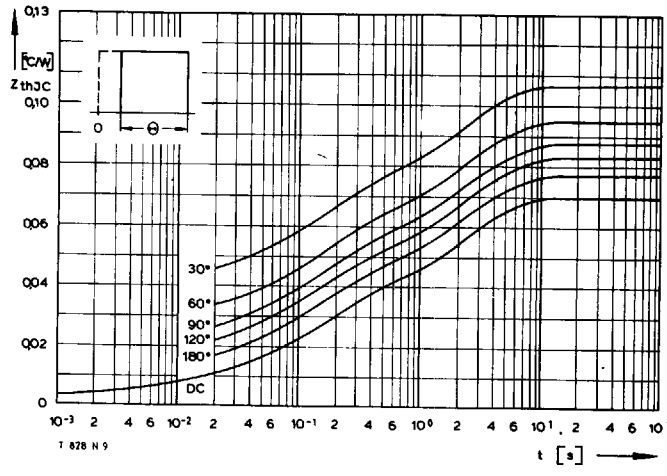
Bild/Fig. 12
Transienter innerer Wärmewiderstand $Z_{(th)JC}$
Transient thermal impedance, junction case, $Z_{(th)JC}$
beidseitige Kühlung/two-sided cooling



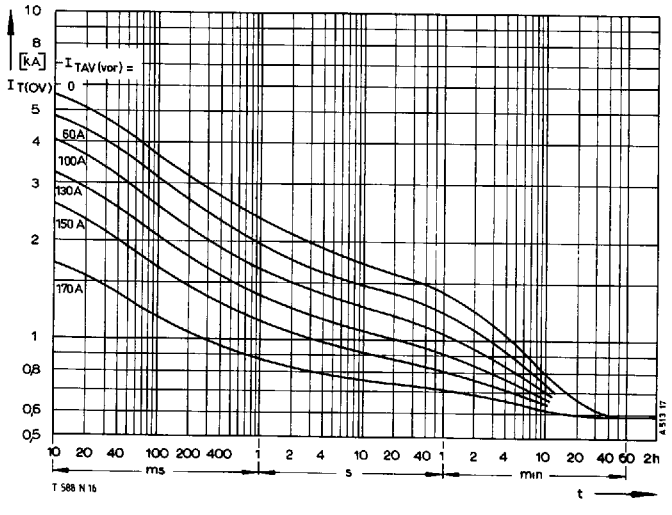
Bild/Fig. 13
Transienter innerer Wärmewiderstand $Z_{(th)JC}$
Transient thermal impedance, junction case, $Z_{(th)JC}$
beidseitige Kühlung/two-sided cooling



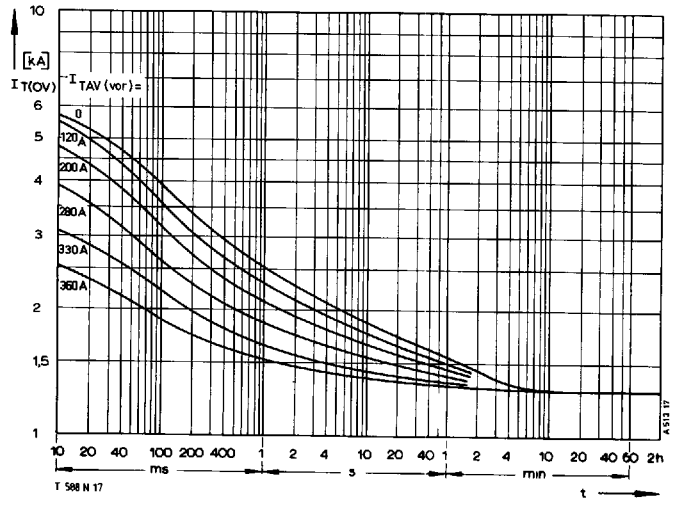
Bild/Fig. 14
Transienter innerer Wärmewiderstand $Z_{(th)JC}$
Transient thermal impedance, junction case, $Z_{(th)JC}$
anodenseitige Kühlung/anode sided cooling



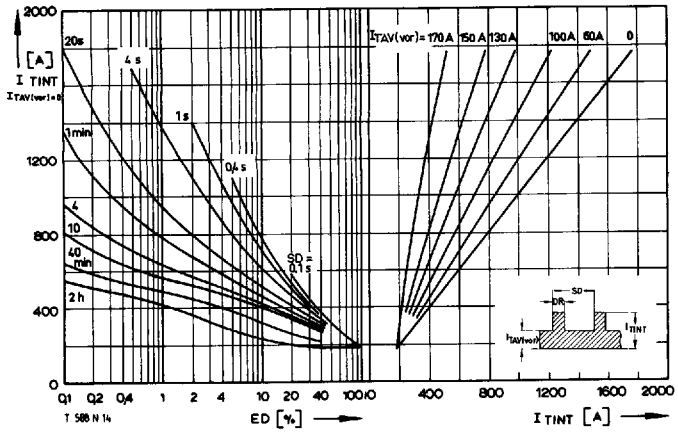
Bild/Fig. 15
Transienter innerer Wärmewiderstand $Z_{(th)JC}$
Transient thermal impedance, junction case, $Z_{(th)JC}$
anodenseitige Kühlung/anode sided cooling



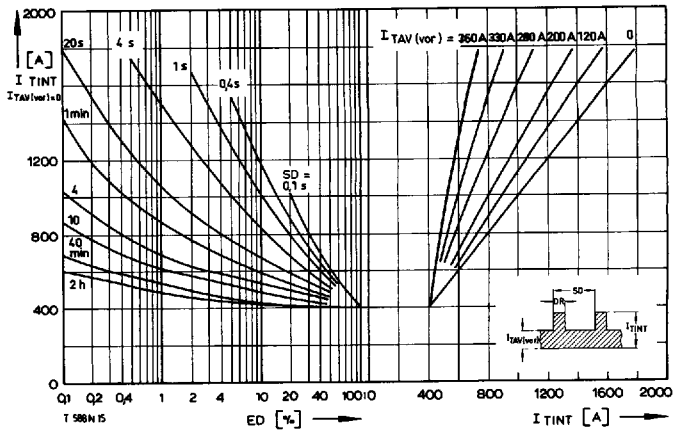
Bild/Fig. 16
Überstrom $I_{T(OV)}$ bei beidseitiger Luftselbstkühlung, t_A = 45°C,
Kühlkörper K 0,36 S.
Overload on-state current $I_{T(OV)}$ at natural two-sided cooling, t_A = 45°C,
heatsink type K 0.36 S.
Parameter: Vorlaststrom/pre-load current $I_{TAV(vor)}$



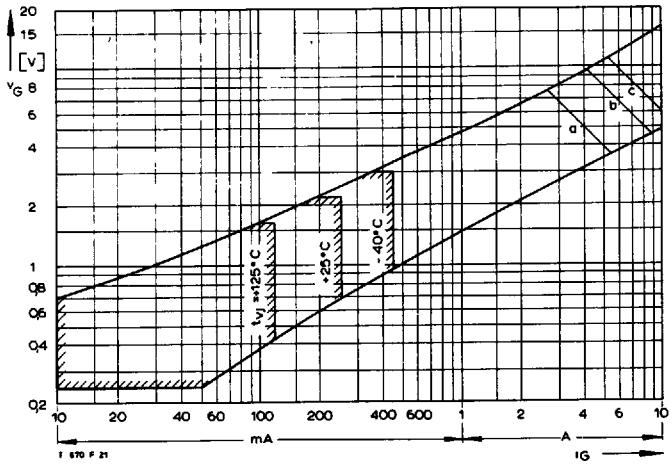
Bild/Fig. 17
Überstrom $I_{T(OV)}$ bei verstärkter beidseitiger Luftkühlung, t_A = 35°C,
Kühlkörper K 0,12 F, V_L = 50 l/s.
Overload on-state current $I_{T(OV)}$ at forced two-sided cooling, t_A = 35°C,
heatsink type K 0.12 F, V_L = 50 l/s.
Parameter: Vorlaststrom/pre-load current $I_{TAV(vor)}$



Bild/Fig. 18
Höchstzulässiger Durchlaßstrom I_{TINT} bei Aussetzbetrieb und beidseitiger Luftselbstkühlung, t_A = 45°C, Kühlkörper K 0,36 S.
Limiting on-state current I_{TINT} during intermittent operation at natural two-sided cooling, t_A = 45°C, heatsink type K 0.36 S.
Parameter: Spieldauer/cycle duration SD
Vorlaststrom/pre-load current $I_{TAV(vor)}$

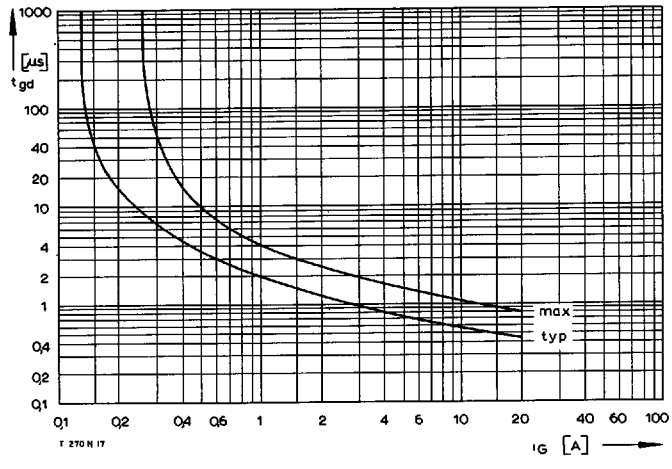


Bild/Fig. 19
Höchstzulässiger Durchlaßstrom I_{TINT} bei Aussetzbetrieb und verstärkter beidseitiger Luftkühlung, t_A = 35°C, Kühlkörper K 0,12 F, V_L = 50 l/s.
Limiting on-state current I_{TINT} during intermittent operation at forced two-sided cooling, t_A = 35°C, heatsink type K 0.12 F, V_L = 50 l/s.
Parameter: Spieldauer/cycle duration SD
Vorlaststrom/pre-load current $I_{TAV(vor)}$

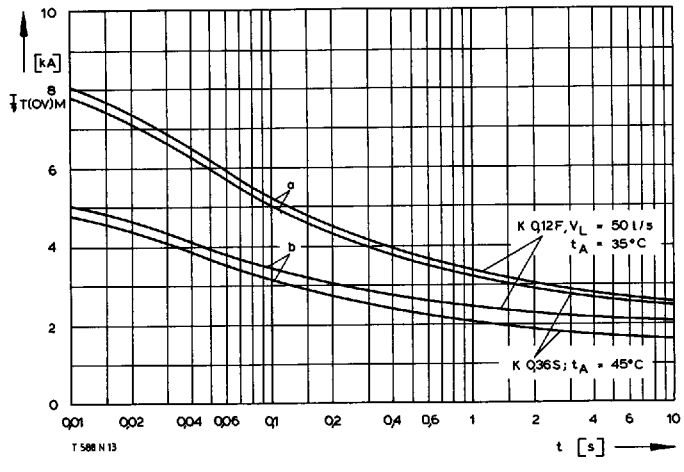


Bild/Fig. 20
Zündbereich und Spitzensteuerleistung bei $v_D \geq 6$ V.
Gate characteristic and peak gate power dissipation at $v_D \geq 6$ V.

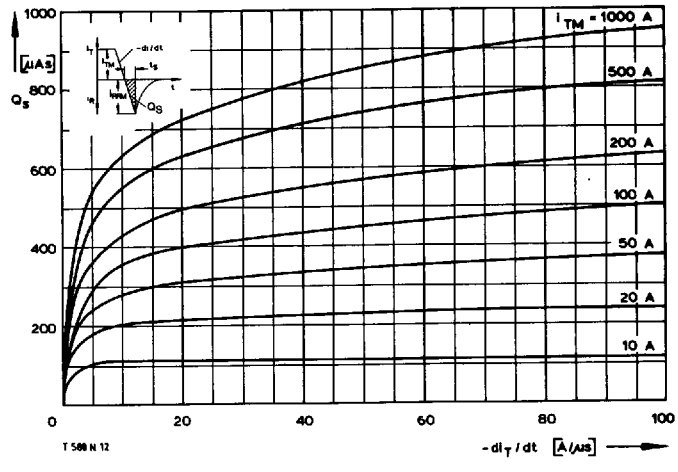
Parameter:		a	b	c
Steuerimpulsdauer/Pulse duration t_g	[ms]	10	1	0,5
Höchstzulässige Spitzensteuerleistung/ Maximum allowable peak gate power	[W]	20	40	60



Bild/Fig. 21
Zündverzug t_{gd} bei i_{TM} = 100 A, t_{vj} = 25°C.
Gate controlled delay time t_{gd} at I_{TM} = 100 A, t_{vj} = 25°C.



Bild/Fig. 22
Grenzstrom $I_{T(OV)M}$ bei beidseitiger Kühlung, Kühlkörper K 0,36 S und K 0,12 F.
Limiting overload on-state current $I_{T(OV)M}$ at two-sided cooling, heatsink type K 0.36 S and K 0.12 F.
a – Belastung aus Leerlauf/current surge under no-load conditions
b – Belastung im Anschluß an Betrieb mit Dauergrenzstrom I_{TAVM}/ current surge occurs during operation at limiting mean on-state current rating I_{TAVM}



Bild/Fig. 23
Nachlaufladung Q_S in Abhängigkeit von der abkommutierenden Stromsteilheit $-di_T/dt$ bei $t_{vj\,max}$.
Lag charge Q_S versus the rate of decay of the forward on-state current $-di_T/dt$ at $t_{vj\,max}$.