T 195 F

Typenreihe/Type range 200* 400* 600 800 1000 1100 1200 1300*

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte		**Maximum permissible values**		
V_{DRM}		200...1300		V
V_{RRM}		200...1300		V
I_{TRMSM}		450		A
I_{TAVM}	t_C = 85°C	195		A
	t_C = 59°C	287		A
I_{TSM}	t = 10 ms, t_{vj} = 45°C	6700		A
	t = 10 ms, t_{vj} = $t_{vj\,max}$	6000		A
$\int i^2dt$	t = 10 ms, t_{vj} = 45°C	224		kA^2s
	t = 10 ms, t_{vj} = $t_{vj\,max}$	180		kA^2s
$(di/dt)_{cr}$	nicht per./non rep.	1000		A/µs
	per./rep., i_{TM} = 800 A	200		A/µs
	i_G = 1 A, di_G/dt = 1 A/µs			
$(dv/dt)_{cr}$	v_D = 67% V_{DRM}, t_{vj} = $t_{vj\,max}$	[1]	[2]	
	B:	50	50	V/µs
	C*:	400	400	V/µs
	L:	400	50	V/µs
	M*:	1000	400	V/µs

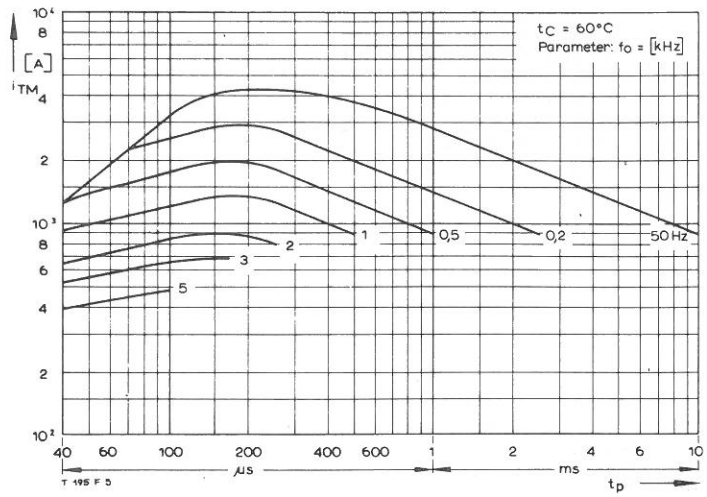
Charakteristische Werte		**Characteristic values**		
v_T	t_{vj} = $t_{vj\,max}$, i_T = 800 A	2,05		V
$V_{(TO)}$	t_{vj} = $t_{vj\,max}$	1,3		V
r_T	t_{vj} = $t_{vj\,max}$	0,85		mΩ
V_{GT}	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	2,2		V
I_{GT}	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	250		mA
	t_{vj} = $t_{vj\,max}$, v_D = 6 V, R_A = 5 Ω	10		mA
I_H	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	250		mA
I_L	t_{vj} = 25°C, v_D = 6 V, R_{GK} ≥ 10 Ω	1		A
	i_G = 1 A, di_G/dt = 1 A/µs, t_g = 20 µs			
i_D	t_{vj} = $t_{vj\,max}$, v_D = V_{DRM}	50		mA
i_R	t_{vj} = $t_{vj\,max}$, v_R = V_{RRM}	50		mA
t_{gd}	i_G = 1 A, di_G/dt = 1 A/µs	1,2		µs
t_q	Prüfbedingungen siehe 3.4.3.2/	S:	18	µs
	test conditions see 3.4.3.2	E:	20	µs
		F:	25	µs
Q_s	t_{vj} = $t_{vj\,max}$, i_{TM} = 300 A, $-di_T/dt$ = 20 A/µs	90		µAs
C_{null}	t_{vj} = 25°C, f = 10 kHz	4		nF

Thermische Eigenschaften / Thermal properties

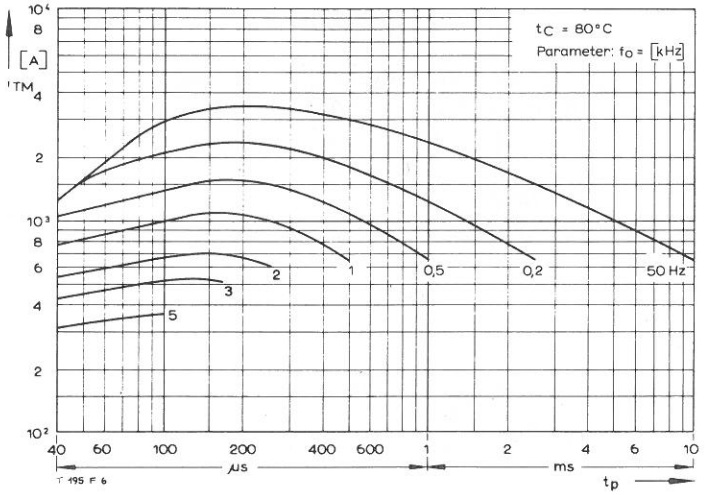
R_{thJC}	Θ = 180°el, sinus	≤ 0,12	°C/W
	DC	≤ 0,116	°C/W
$t_{vj\,max}$		125	°C
$t_{vj\,op}$		– 40°C...+125	°C
t_{stg}		– 40°C...+150	°C

Mechanische Eigenschaften / Mechanical properties

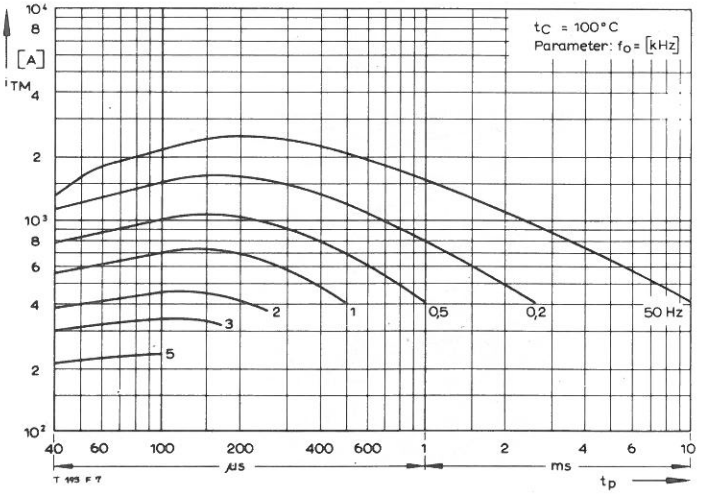
Si-Element mit Druckkontakt	Si-pellet with pressure contact	
G	630	g
M		
F	5,5	kN
	14	mm
Case B DIN 41894–224 A 4	Seite/page 198	



Bild/Fig. 1



Bild/Fig. 2

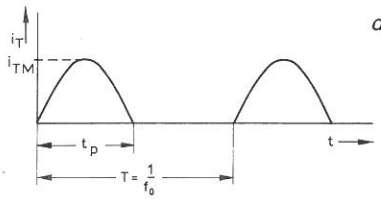


Bild/Fig. 3

Steuergenerator:
i_G = 1 A, t_a = 1 µs,
RC-Glied: R [Ω] ≥ 0,02 v_{DM} [V],
C ≤ 0,22 µF

pulse generator:
i_G = 1 A, t_a = 1 µs,
RC network: R [Ω] ≥ 0.02 v_{DM} [V],
C ≤ 0.22 µF

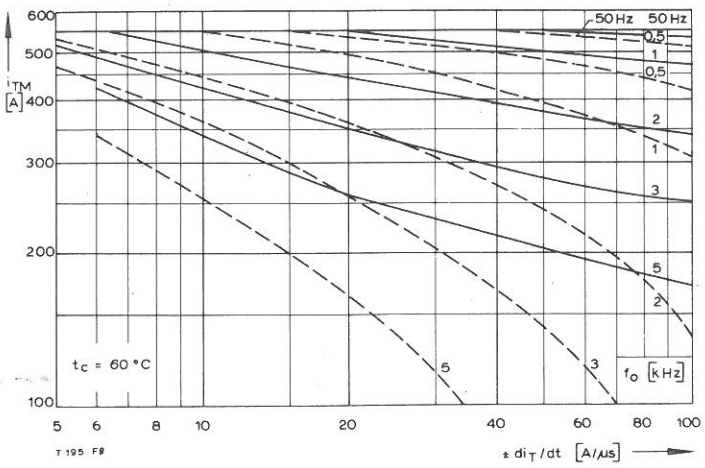
dv_F/dt ≤ 600 V/µs



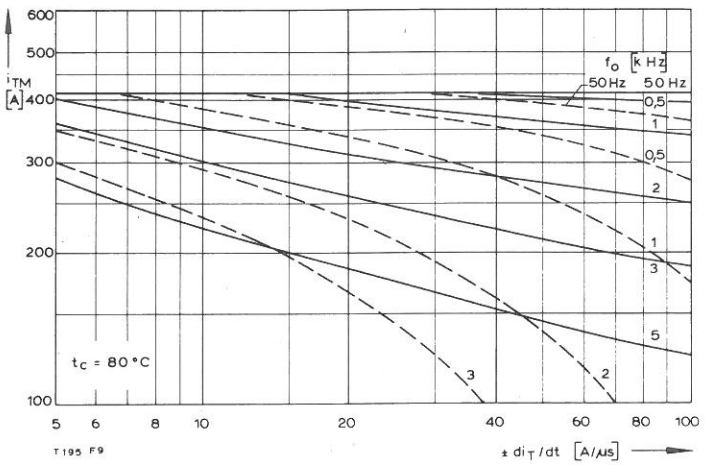
* Für größere Stückzahlen bitte Liefertermin erfragen/
Delivery for larger quantities on request

1) Werte nach DIN 41787 (ohne vorausgehende Kommutierung)/
Values to DIN 41787 (without prior commutation)

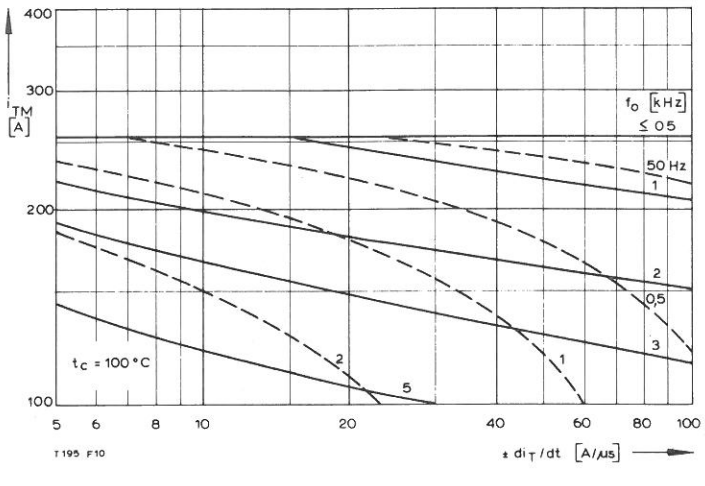
2) Unmittelbar nach der Freiwerdezeit/Immediately after turn-off time



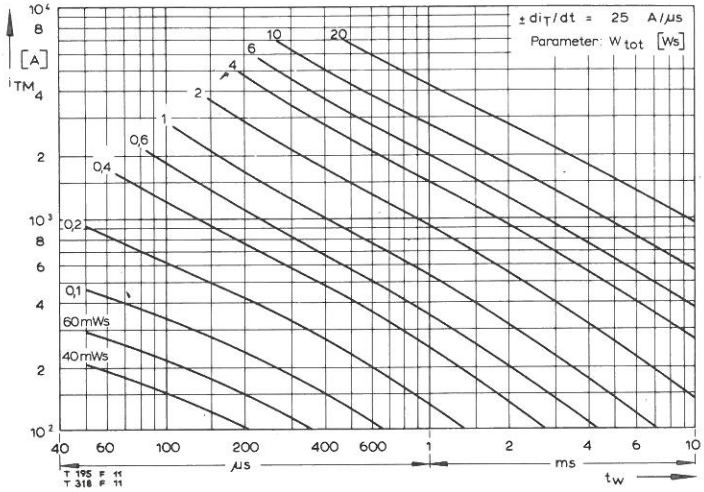
Bild/Fig. 4



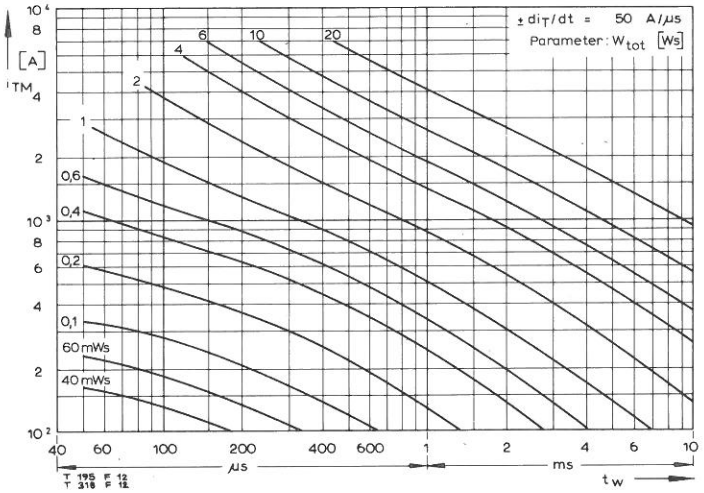
Bild/Fig. 5



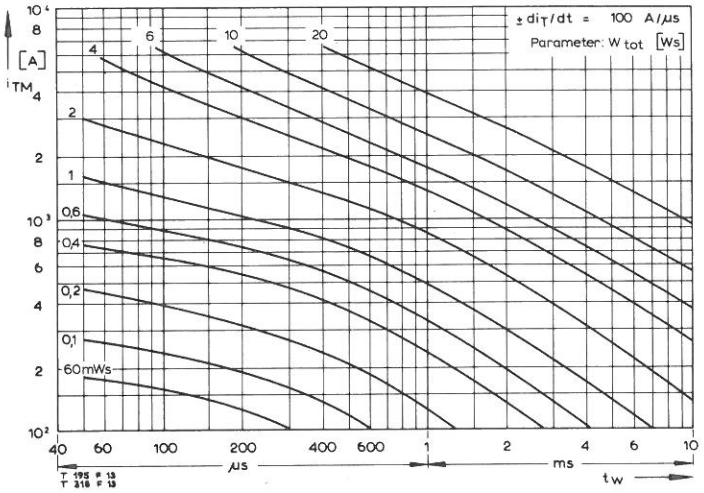
Bild/Fig. 6



Bild/Fig. 7



Bild/Fig. 8

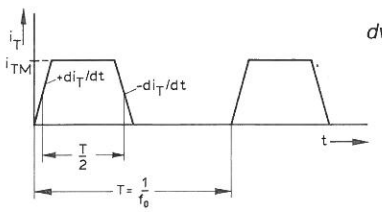


Bild/Fig. 9

Steuergenerator:
i_G = 1 A, t_a = 1 µs,
RC-Glied: R [Ω] ≥ 0,02 v_{DM} [V],
C ≤ 0,33 µF

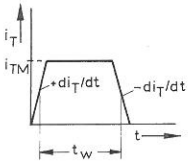
pulse generator:
i_G = 1 A, t_a = 1 µs,
RC network: R [Ω] ≥ 0.02 v_{DM} [V],
C ≤ 0.33 µF

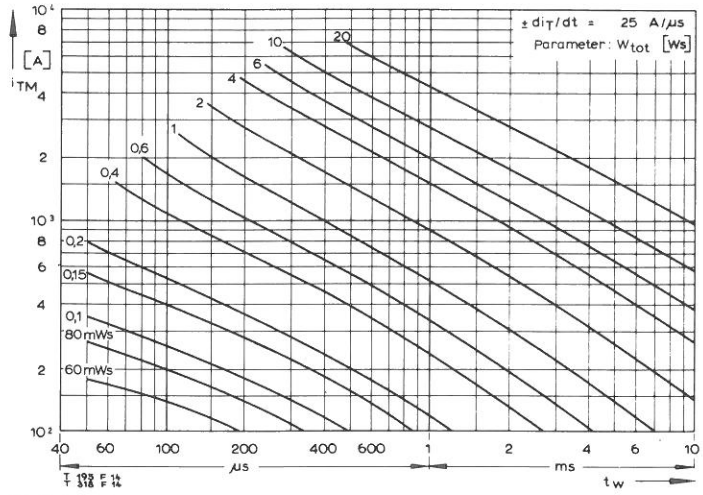
dv_R/dt ≤ 600 V/µs



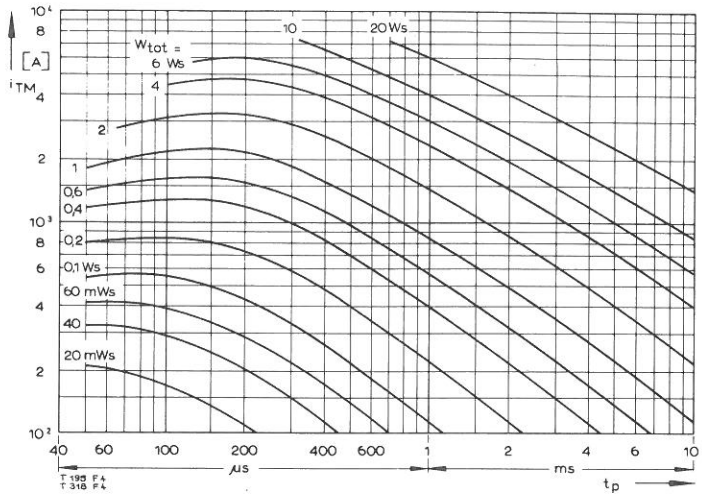
Steuergenerator:
i_G = 1 A, t_a = 1 µs,
RC-Glied: R [Ω] ≥ 0,02 v_{DM} [V],
C ≤ 0,33 µF

pulse generator:
i_G = 1 A, t_a = 1 µs,
RC network: R [Ω] ≥ 0.02 v_{DM} [V],
C ≤ 0.33 µF

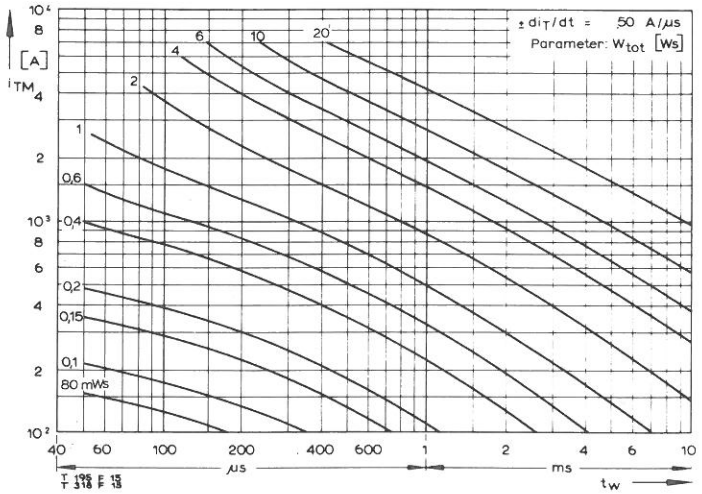




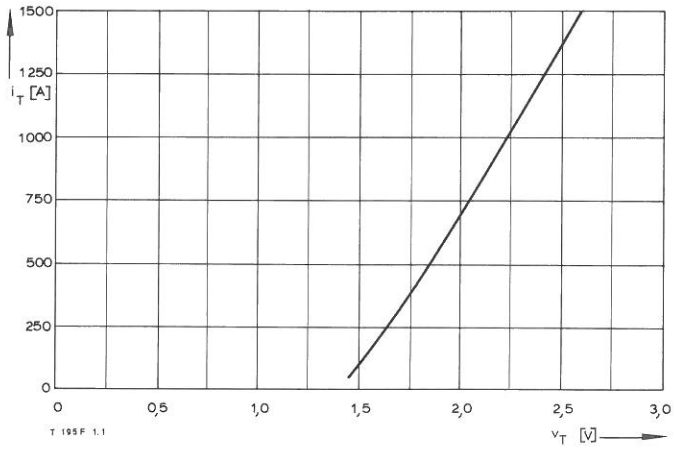
Bild/Fig. 10



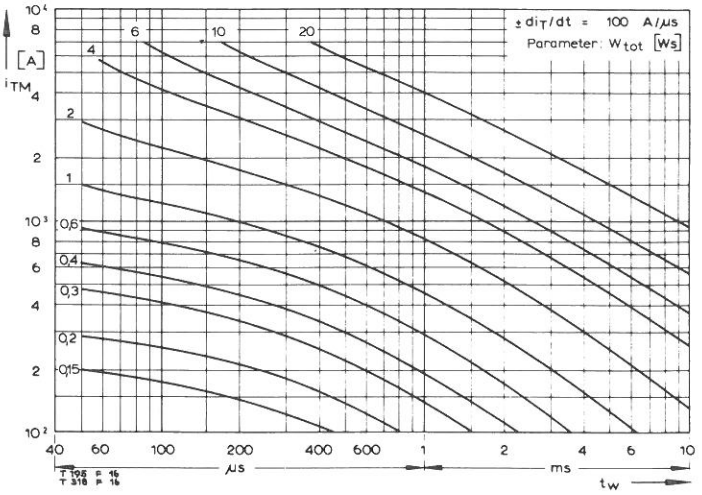
Bild/Fig. 13



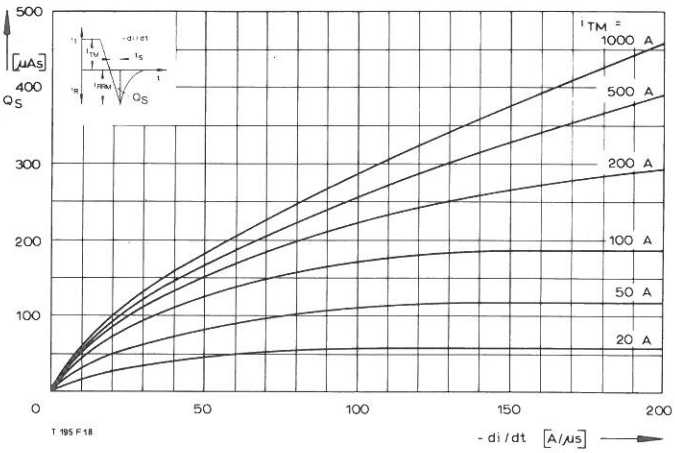
Bild/Fig. 11



Bild/Fig. 14

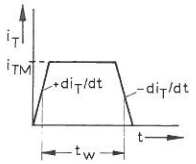


Bild/Fig. 12



Bild/Fig. 15

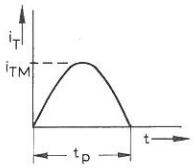
Steuergenerator:
i_G = 1 A, t_a = 1 µs,
RC-Glied: R [Ω] ≥ 0,02 v_{DM} [V],
C ≤ 0,33 µF



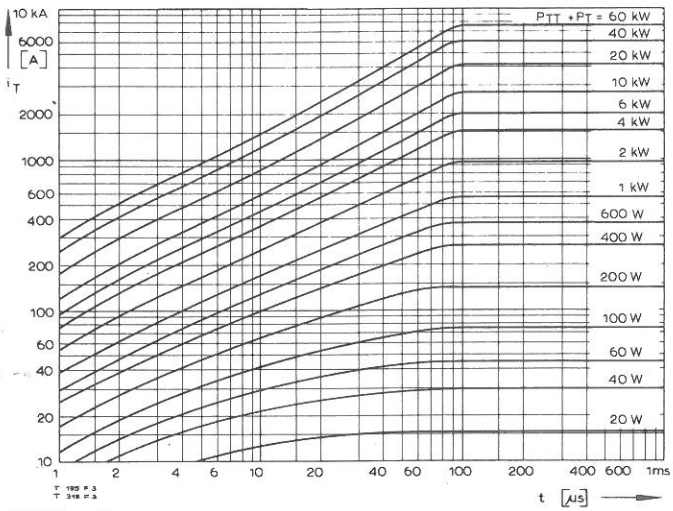
pulse generator:
i_G = 1 A, t_a = 1 µs,
RC network: R [Ω] ≥ 0.02 v_{DM} [V],
C ≤ 0.33 µF

dv_R/dt ≤ 600 V/µs

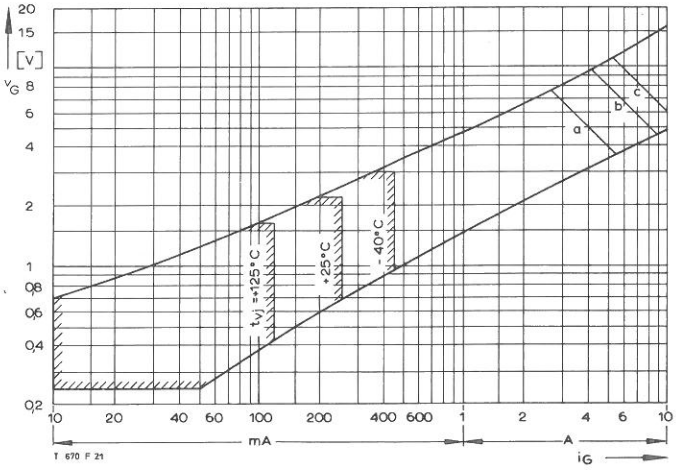
(zu Bild/to Fig. 13)
Steuergenerator:
i_G = 1 A, t_a = 1 µs,
RC-Glied: R [Ω] ≥ 0,02 v_{DM} [V],
C ≤ 0,22 µF



pulse generator:
i_G = 1 A, t_a = 1 µs,
RC network: R [Ω] ≥ 0.02 v_{DM} [V],
C ≤ 0.22 µF

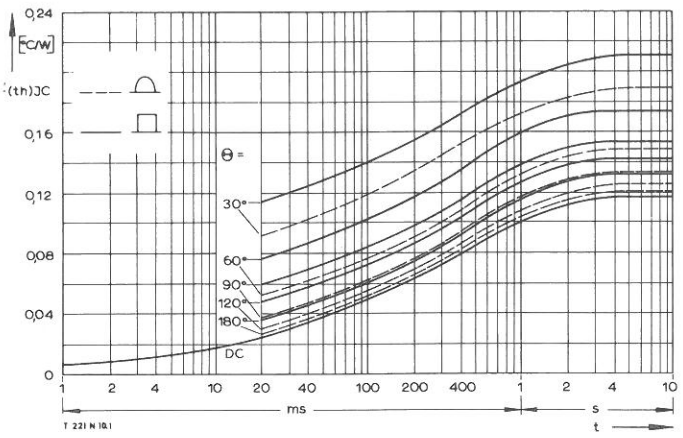


Bild/Fig. 16
Diagramm zur Ermittlung der Summe aus Einschalt- und Durchlaßverlustleistung ($P_{TT} + P_T$).
Diagram for the determination of the sum of the turn-on and forward on-state power loss ($P_{TT} + P_T$).

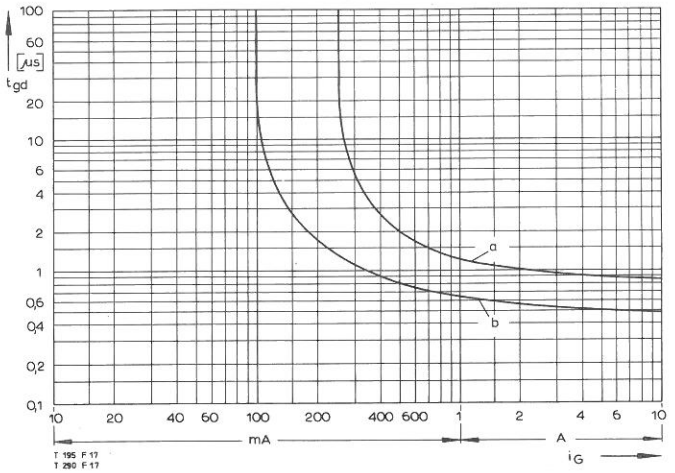


Bild/Fig. 18
Zündbereich und Spitzensteuerleistung bei $v_D \geq 6$ V.
Gate characteristic and peak gate power dissipation at $v_D \geq 6$ V.

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*



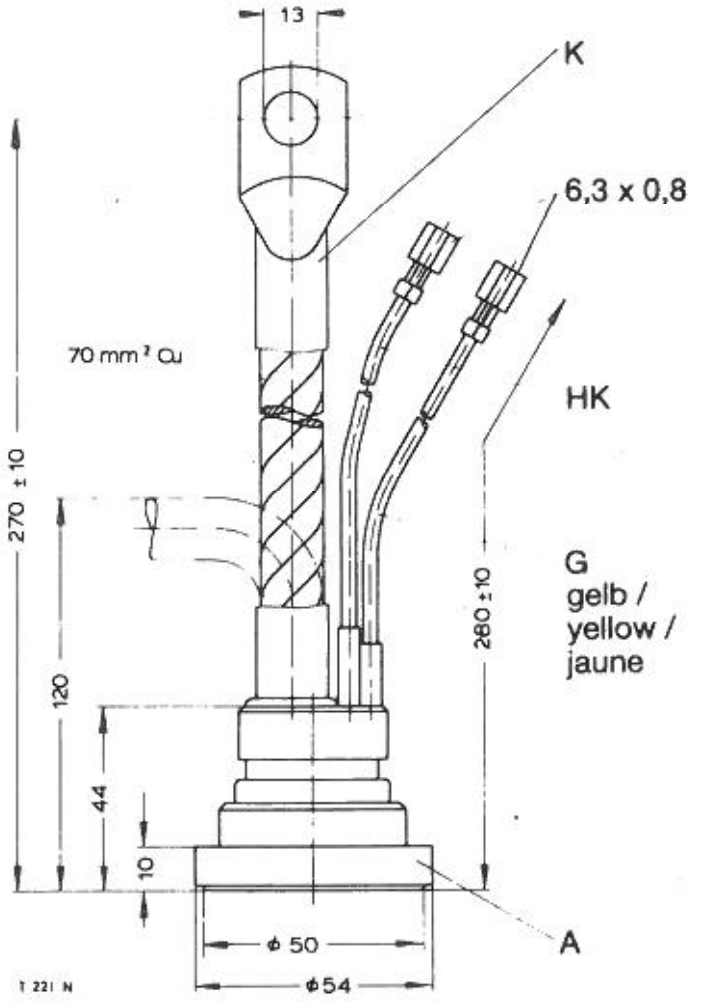
Bild/Fig. 17
Transienter innerer Wärmewiderstand $Z_{(th)JC}$ bei sinus- und trapezförmigem Stromverlauf.
Transient thermal impedance, junction to case, $Z_{(th)JC}$ at sinusoidal and trapezoidal current waveform.



Bild/Fig. 19
Zündverzug t_{gd} nach DIN 41787 bei t_a = 1 µs, t_{vj} = 25°C.
Gate controlled delay time t_{gd} to DIN 41787 at t_a = 1 µs, t_{vj} = 25°C.
a – äußerster Verlauf/limiting characteristic
b – typischer Verlauf/typical characteristic

Tabelle 1 – Größen des thermischen Ersatzschaltbildes, Konstantstrom

	i	1	2	3	4	5	6	7
Z_{thJC}	R_{thi} [°C/W]	0,010579	0,005876	0,014042	0,015340	0,016802	0,017588	0,035980
	τ_i [s]	0,001165	0,019216	0,040454	0,168098	0,222096	0,804720	0,838218
$Z_{thJC(A)}$	R_{thi} [°C/W]							
	τ_i [s]							
$Z_{thJC(K)}$	R_{thi} [°C/W]							
	τ_i [s]							


13
K
6,3 x 0,8
70 mm² Cu
HK
270 ± 10
120
44
10
280 ± 10
G
gelb /
yellow /
jaune
A
ϕ 50
ϕ54
T 221 N

T 195 F...