Typenreihe/Type range		T 85 N	400*	600	800	1000	1100	1200	1400	1600	1800*

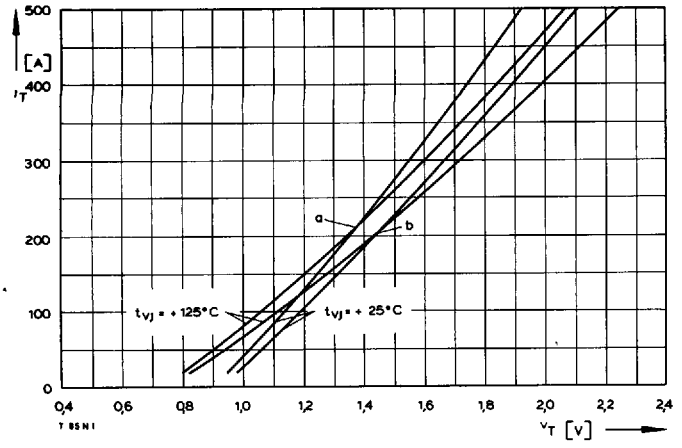
Elektrische Eigenschaften		**Electrical properties**			
Höchstzulässige Werte		Maximum permissible values			
V_{DRM}, V_{RRM}	Periodische Vorwärts- und Rückwärts-Spitzensperrspannung	repetitive peak forward off-state and reverse voltages		400...1800	V
I_{TRMSM}	Effektiver Durchlaßstrom	RMS on-state current		200	A
I_{TAVM}	Dauergrenzstrom	average on-state current	t_C = 85°C	85	A
			t_C = 56°C	127	A
I_{TRM}	Periodischer Spitzenstrom	repetitive peak on-state current		1200	A
I_{TSM}	Stoßstrom-Grenzwert	surge current	t_p = 10 ms, t_{vj} = 45°C	2300	A
			t_p = 10 ms, t_{vj} = $t_{vj\,max}$	2000	A
$\int i^2dt$	Grenzlastintegral	$\int i^2dt$-value	t_p = 10 ms, t_{vj} = 45°C	26500	A^2s
			t_p = 10 ms, t_{vj} = $t_{vj\,max}$	20000	A^2s
$(di/dt)_{cr}$	Kritische Stromsteilheit	critical rate of rise of on-state current	nicht periodisch/non repetitive	800	A/µs
			Dauerbetrieb/continuous operation, i_{TM} = 400 A, v_L = 10 V, i_G = 0,6 A, di_G/dt = 0,6 A/µs	150	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} = 25°C, i_T = 400 A	1,9	V
$V_{(TO)}$	Schleusenspannung	threshold voltage	t_{vj} = $t_{vj\,max}$	1	V
r_T	Ersatzwiderstand	slope resistance	t_{vj} = $t_{vj\,max}$	2,6	mΩ
V_{GT}	Obere Zündspannung	max. gate trigger voltage	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	1,4	V
I_{GT}	Oberer Zündstrom	max. gate trigger current	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	150	mA
	Unterer Zündstrom	min. gate trigger current	t_{vj} = $t_{vj\,max}$, v_D = 6 V, R_A = 5 Ω	5	mA
I_H	Oberer Haltestrom	max. holding current	t_{vj} = 25°C, v_D = 6 V, R_A = 5 Ω	200	mA
I_L	Oberer Einraststrom	max. latching current	t_{vj} = 25°C, v_D = 6 V, R_{GK} ≥ 10 Ω, i_G = 0,6 A, di_G/dt = 0,6 A/µs, t_g = 20 µs	620	mA
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})	25	mA
t_{gd}	Oberer Zündverzug	max. gate controlled delay time	i_G = 0,6 A, di_G/dt = 0,6 A/µs	3	µs
t_q	Typische Freiwerdezeit	typical turn-off time	Prüfbedingungen/test conditions 3.4.3.4	200	µs
C_{null}	Typische Nullkapazität	typical zero capacitance	t_{vj} = 25°C, f = 10 kHz	3	nF

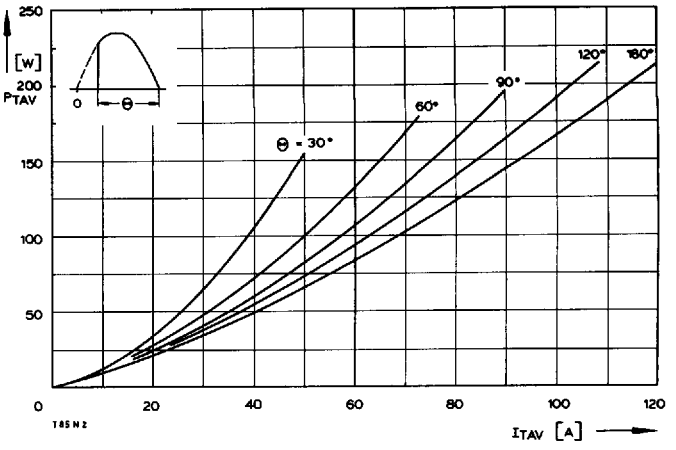
Thermische Eigenschaften		**Thermal properties**		
R_{thJC}	Innerer Wärmewiderstand	thermal resistance, junction to case	Θ = 180°el, sinus	≤ 0,3 °C/W
			DC	≤ 0,28°C/W
$t_{vj\,max}$	Höchstzul. Sperrschichttemperatur	max. junction temperature		125°C
$t_{vj\,op}$	Betriebstemperatur	operating temperature		−40°C...+125°C
t_{stg}	Lagertemperatur	storage temperature		−40°C...+150°C

Mechanische Eigenschaften		**Mechanical properties**		
	Si-Element mit Druckkontakt	Si-pellet with pressure contact		
G	Gewicht	weight		150 g
M	Anzugsdrehmoment	tightening torque		20 Nm
	Maßbilder B/V	outlines B/V	DIN 41892–204 B 3/TO 94	Seite/page 238/239
	Kriechstrecke	creepage distance		8 mm
	Feuchteklasse	humidity classification	DIN 40040	C
	Schüttelfestigkeit	vibration resistance	f = 50 Hz	5x9,81 m/s²

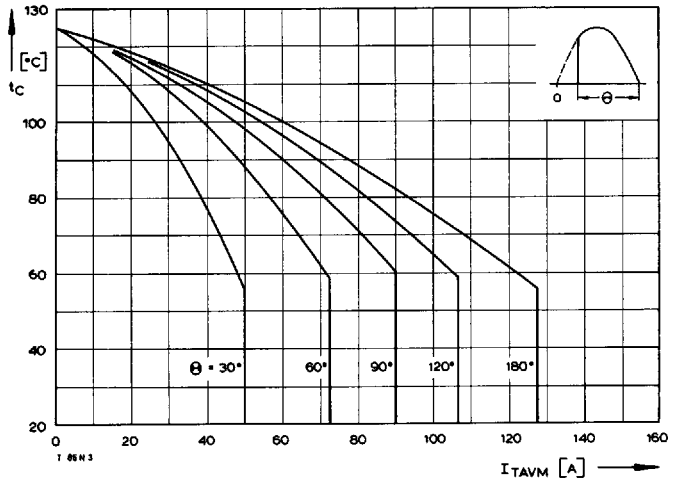
* Für größere Stückzahlen bitte Liefertermin erfragen/Delivery for larger quantities on request



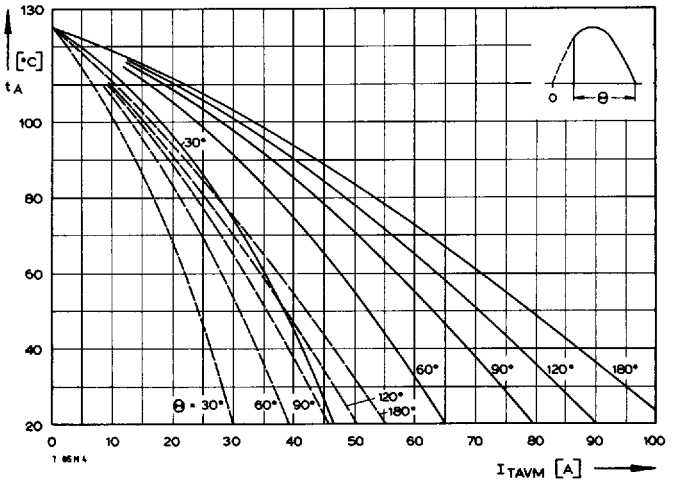
Bild/Fig. 1
Durchlaßkennlinien/On-state characteristics
a – Typische Kennlinien/typical characteristics
b – Grenzkennlinien/limiting characteristics



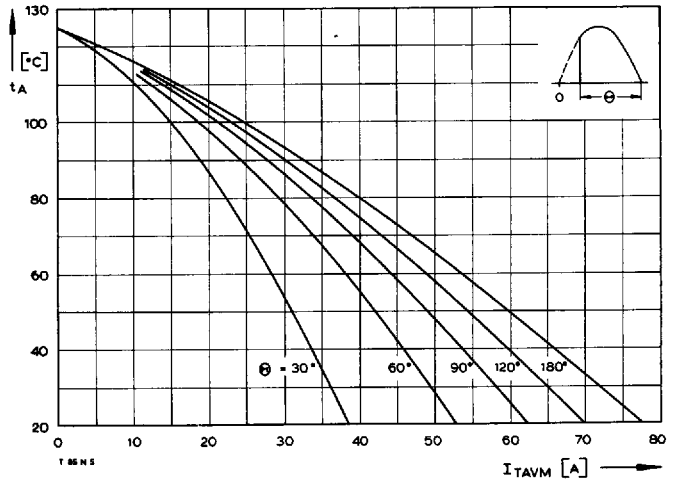
Bild/Fig. 2
Durchlaßverlustleistung P_T/On-state power loss P_T
Parameter: Stromflußwinkel Θ/current conduction angle Θ



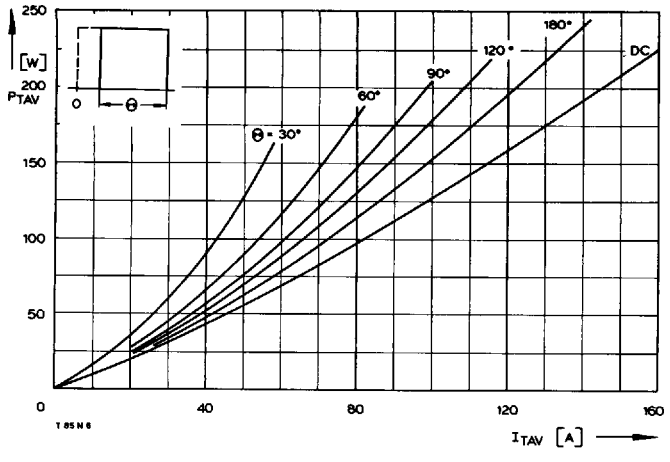
Bild/Fig. 3
Höchstzulässige Gehäusetemperatur t_C
Maximum allowable case temperature t_C



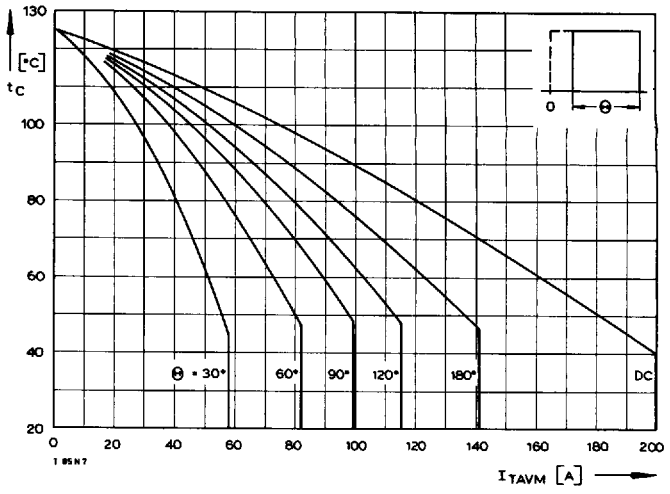
Bild/Fig. 4
Höchstzulässige Kühlmitteltemperatur t_A, Kühlkörper **KL 42**
Maximum allowable cooling medium temperature t_A, heatsink type **KL 42**
– – – – – **Luftselbst**kühlung/**natural** cooling
——— **Verstärkte** Luftkühlung/**forced** cooling



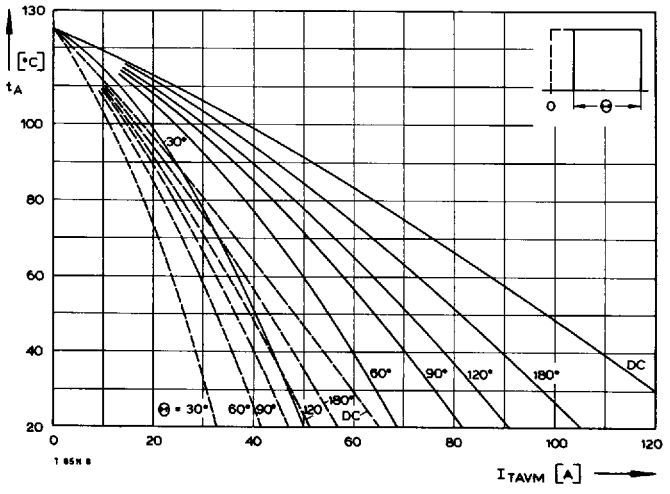
Bild/Fig. 5
Höchstzulässige Kühlmitteltemperatur t_A bei **Luftselbst**kühlung,
Kühlkörper **KL 91**
Maximum allowable cooling medium temperature t_A at **natural** cooling,
heatsink type **KL 91**



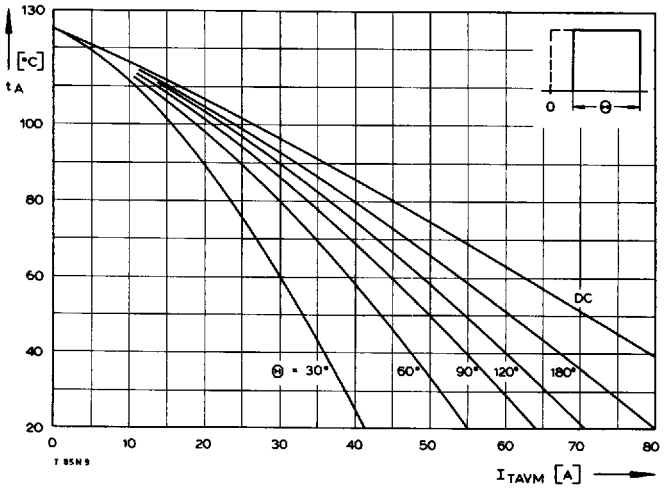
Bild/Fig. 6
Durchlaßverlustleistung P_T/On-state power loss P_T
Parameter: Stromflußwinkel Θ/current conduction angle Θ



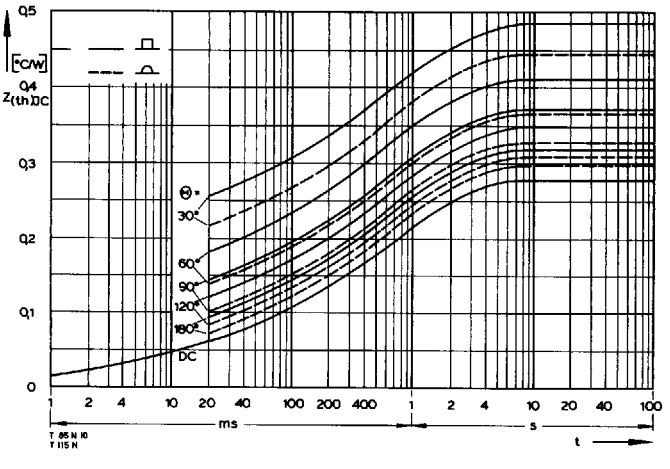
Bild/Fig. 7
Höchstzulässige Gehäusetemperatur t_C
Maximum allowable case temperature t_C



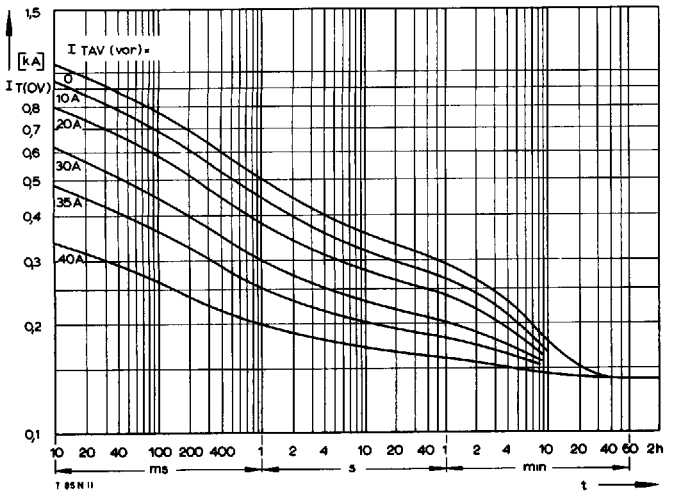
Bild/Fig. 8
Höchstzulässige Kühlmitteltemperatur t_A, Kühlkörper **KL 42**
Maximum allowable cooling medium temperature t_A, heatsink type **KL 42**
– – – – – **Luftselbst**kühlung/**natural** cooling
——— **Verstärkte** Luftkühlung/**forced** cooling



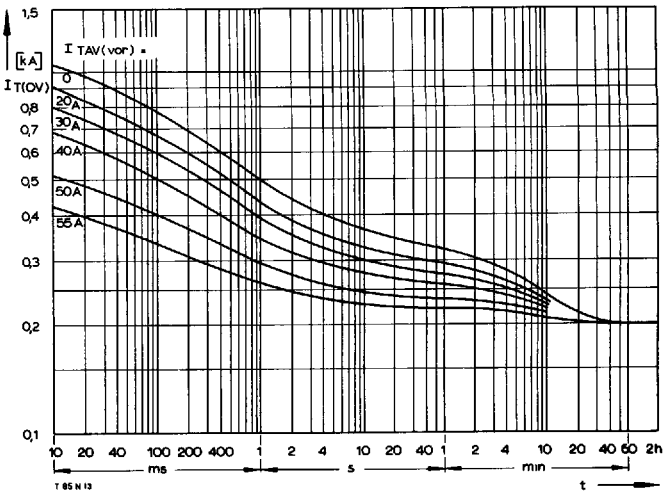
Bild/Fig. 9
Höchstzulässige Kühlmitteltemperatur t_A bei **Luftselbst**kühlung,
Kühlkörper **KL 91**
Maximum allowable cooling medium temperature t_A at **natural** cooling,
heatsink type **KL 91**



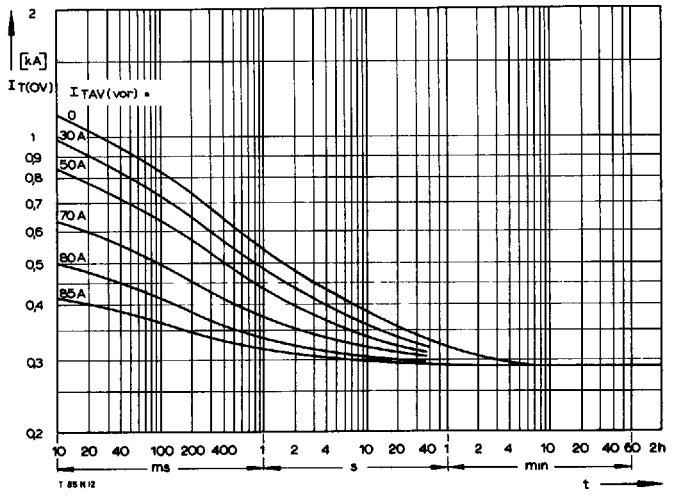
Bild/Fig. 10
Transienter innerer Wärmewiderstand $Z_{(th)JC}$ bei sinus- und rechteckförmigem Stromverlauf.
Transient thermal impedance $Z_{(th)JC}$, junction to case at sinusoidal and square wave current.



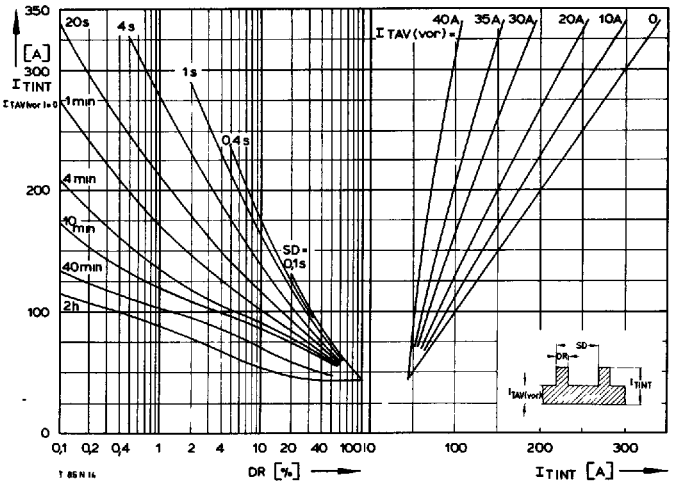
Bild/Fig. 11
Überstrom $I_{T(OV)}$ bei **Luftselbst**kühlung, t_A = 45°C, Kühlkörper **KL 42**
Overload on-state current $I_{T(OV)}$ at **natural** cooling, t_A = 45°C,
heatsink type **KL 42**
Parameter: Vorlaststrom/pre-load current $I_{TAV(vor)}$



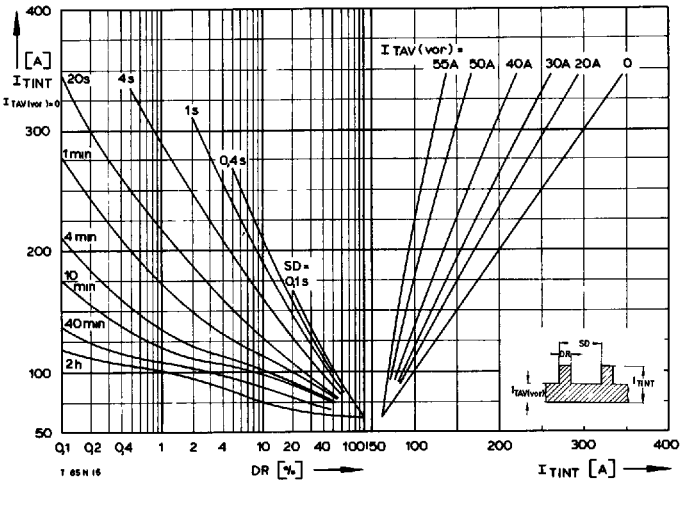
Bild/Fig. 12
Überstrom $I_{T(OV)}$ bei **Luftselbst**kühlung, t_A = 45°C, Kühlkörper **KL 91**
Overload on-state current $I_{T(OV)}$ at **natural** cooling, t_A = 45°C,
heatsink type **KL 91**
Parameter: Vorlaststrom/pre-load current $I_{TAV(vor)}$



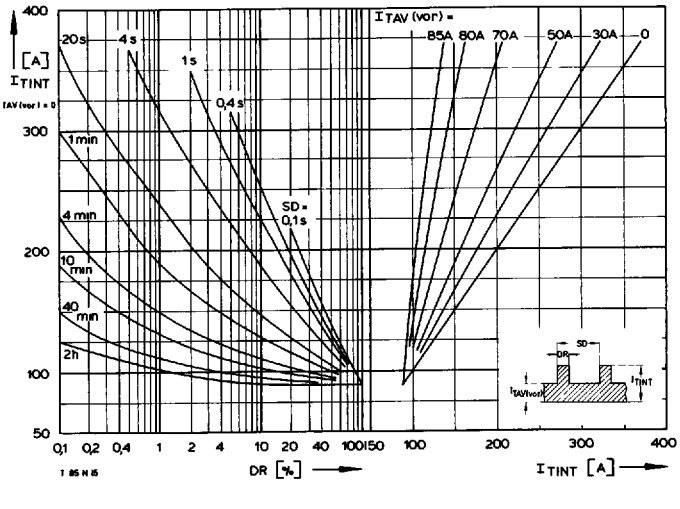
Bild/Fig. 13
Überstrom $I_{T(OV)}$ bei **verstärkter** Luftkühlung, t_A = 35°C, Kühlkörper **KL 42**
Overload on-state current $I_{T(OV)}$ at **forced** cooling, t_A = 35°C,
heatsink type **KL 42**
Parameter: Vorlaststrom/pre-load current $I_{TAV(vor)}$



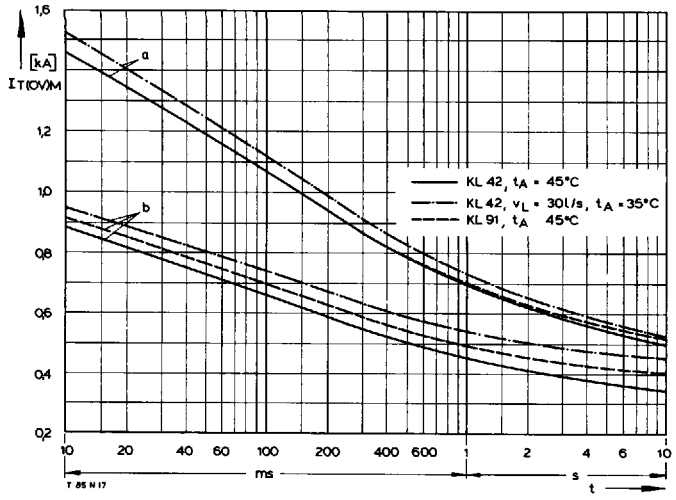
Bild/Fig. 14
Höchstzulässiger Durchlaßstrom I_{TINT} bei Aussetzbetrieb und **Luftselbst**kühlung,
t_A = 45°C, Kühlkörper **KL 42**
Limiting on-state current I_{TINT} during intermittent operation at **natural** cooling,
t_A = 45°C, heatsink type **KL 42**
Parameter: Spieldauer/cycle duration SD
Vorlaststrom/pre-load current $I_{TAV(vor)}$



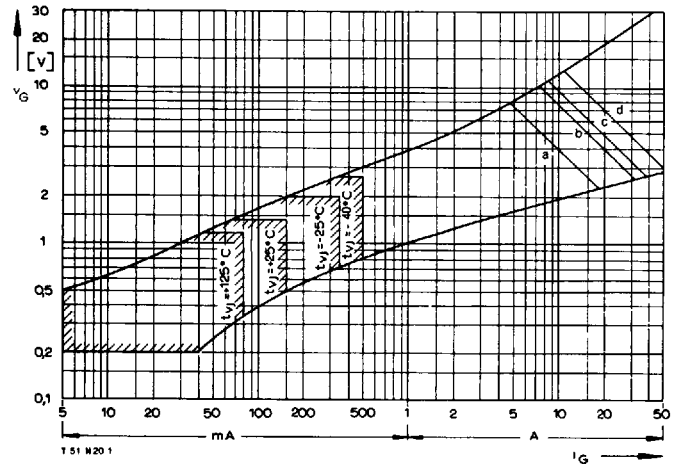
Bild/Fig. 15
Höchstzulässiger Durchlaßstrom I_{TINT} bei Aussetzbetrieb und **Luftselbst**kühlung,
t_A = 45°C, Kühlkörper **KL 91**
Limiting on-state current I_{TINT} during intermittent operation at **natural** cooling,
t_A = 45°C, heatsink type **KL 91**
Parameter. Spieldauer/cycle duration SD
Vorlaststrom/pre-load current $I_{TAV(vor)}$



Bild/Fig. 16
Hochstzulassiger Durchlaßstrom I_{TINT} bei Aussetzbetrieb und **verstärkter**
Luftkühlung, t_A = 35°C, Kühlkörper **KL 42**
Limiting on-state current I_{TINT} during intermittent operation at **forced** cooling,
t_A = 35°C, heatsink type **KL 42**
Parameter: Spieldauer/cycle duration SD
Vorlaststrom/pre-load current $I_{TAV(vor)}$

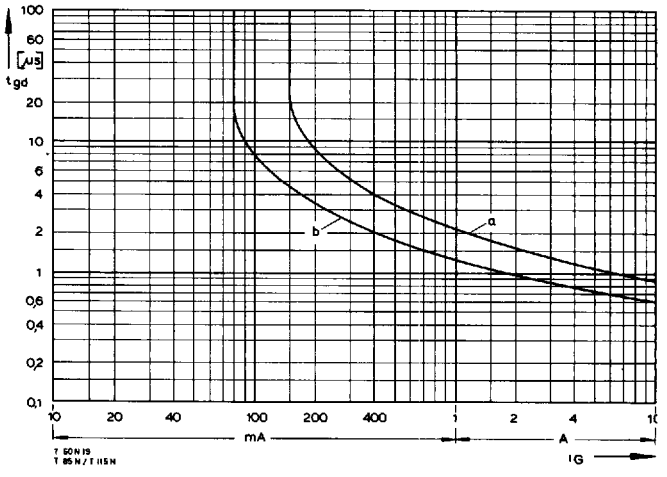


Bild/Fig. 17
Grenzstrom $I_{T(OV)M}$ bei Luftselbstkühlung und verstärkter Luftkühlung, Kuhlkörper KL 42... und KL 91..., u_{RM} = 0,8 U_{RRM}.
Limiting overload on-state current $I_{T(OV)M}$ at natural and forced cooling, heatsink type KL 42... and KL 91..., u_{RM} = 0.8 U_{RRM}.
a – Belastung aus Leerlauf/current surge under no-load conditions
b – Belastung nach Betneb mit Dauergrenzstrom I_{TAVM}/ current surge occurs during operation at limiting mean on-state current rating I_{TAVM}

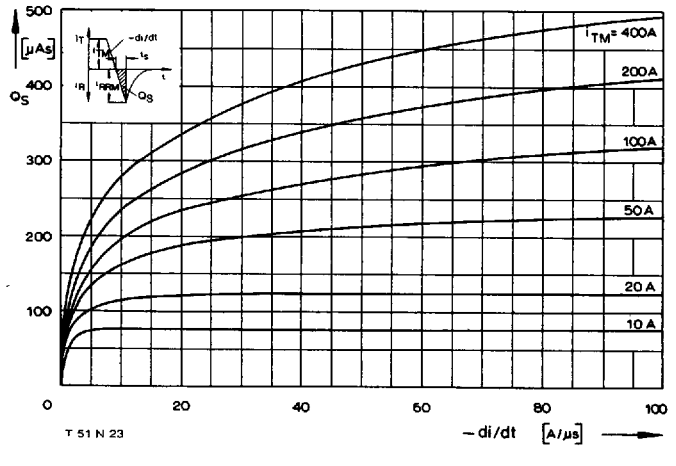


Bild/Fig. 18
Zündbereich und Spitzensteuerleistung bei $v_D \geq 6$ V.
Gate characteristic and peak gate power dissipation at $v_D \geq 6$ V.

Parameter:		a	b	c	d
Steuerimpulsdauer/Pulse duration t_g	[ms]	10	1	0,5	0,1
Höchstzulässige Spitzensteuerleistung/ Maximum allowable peak gate power	[W]	40	80	100	150

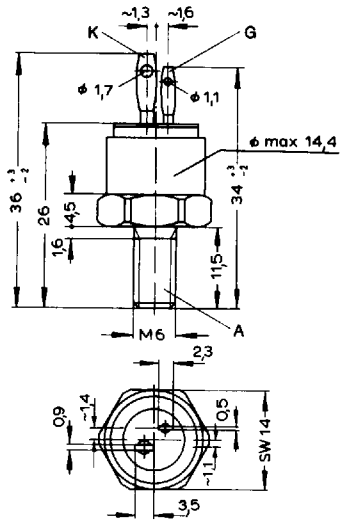


Bild/Fig. 19
Zündverzug t_{gd} bei i_{TM} = 30 A, t_{vj} = 25°C.
Gate controlled delay time t_{gd} at i_{TM} = 30 A, t_{vj} = 25°C
a – äußerster Verlauf/limiting characteristic
b – typischer Verlauf/typical characteristic



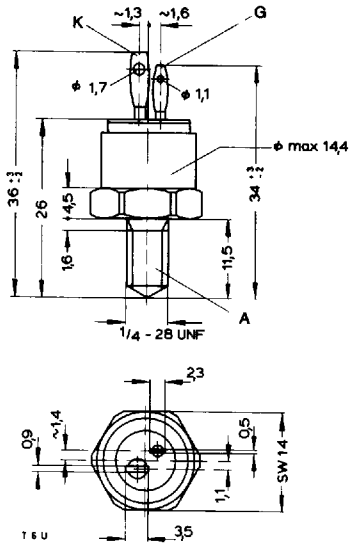
Bild/Fig. 20
Nachlaufladung Q_S in Abhängigkeit von der abkommutierenden Stromsteilheit $-di/dt$ bei t_{vj} = 125°C.
Der angegebene Verlauf wird von 90% aller Thyristoren nicht überschritten.
Lag charge Q_S versus the rate of decay of the forward on-state current $-di/dt$ at t_{vj} = 125°C.
These curves are valid for 90% of all thyristors.

Maßbilder/Outlines



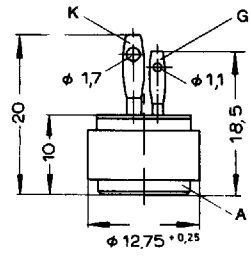
1

T 7 N...C
T 10 N...C
T 13 N...C



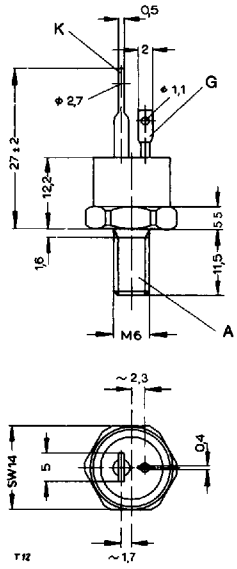
2

T 7 N...U
T 10 N...U
T 13 N...U



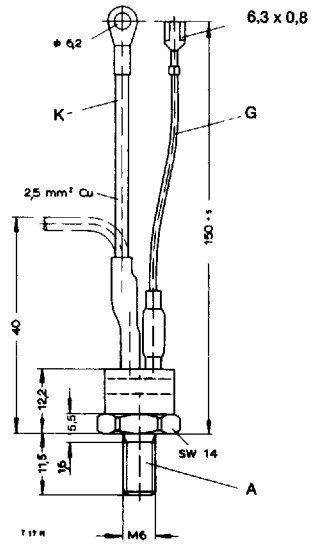
3

T 7 N...H
T 10 N...H
T 13 N...H



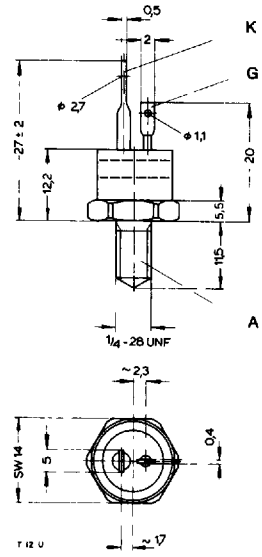
4

T 12 N...C
T 15.1 N...C
T 17 N...C
T 24 N...C
T 31 N...C



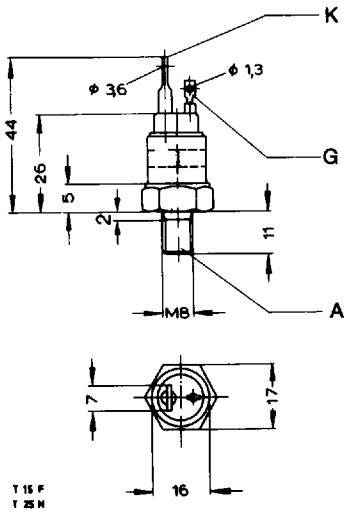
5

T 17 N...B
T 24 N...B
T 31 N...B

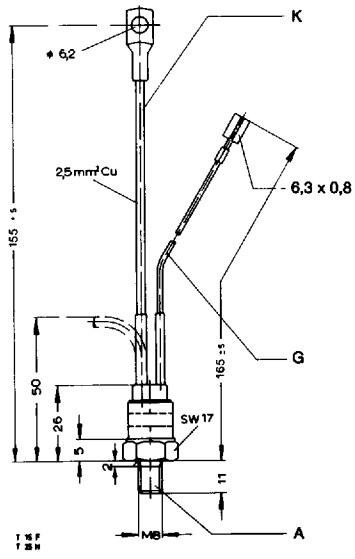


6

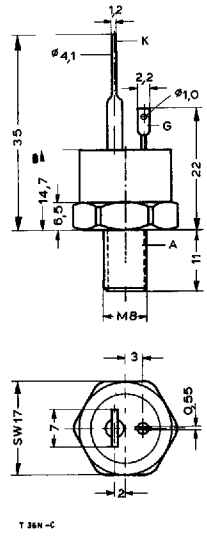
T 12 N...U
T 15.1 N...U
T 17 N...U
T 24 N...U
T 31 N...U



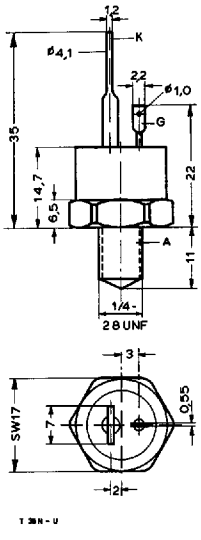
7 T 16 N...C
T 25 N...C



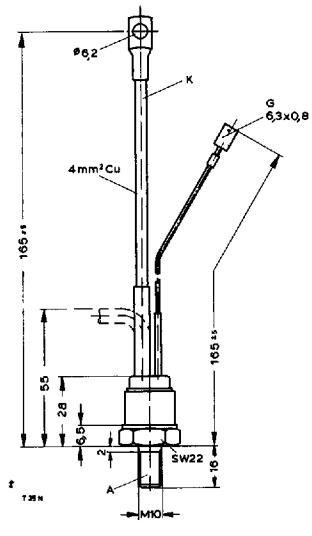
8 T 16 N...B
T 25 N...B



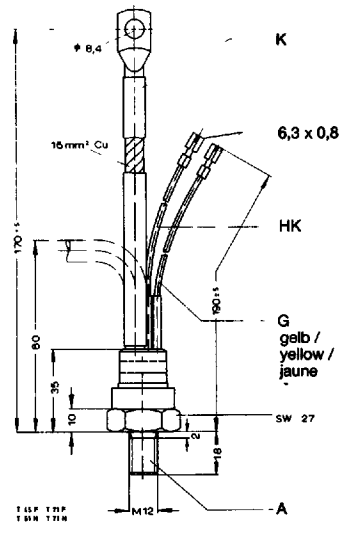
9 T 36 N...C
T 46 N...C



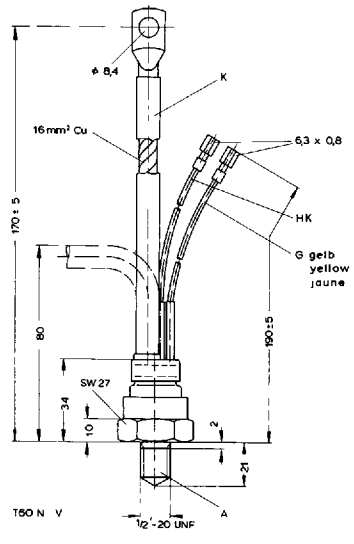
10 T 36 N...U
T 46 N...U



11 T 35 N...B
T 45 N...B

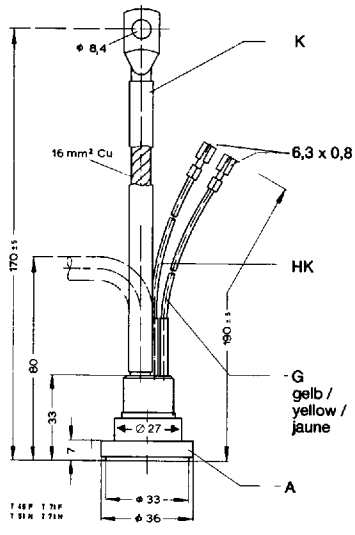


12 T 60 N...B
T 85 N...B
T 115 N...B



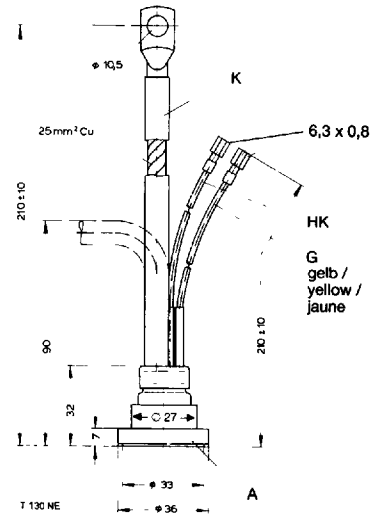
13

T 60 N...V
T 85 N...V
T 115 N...V



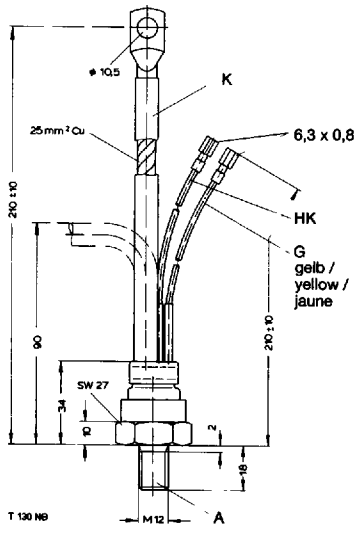
14

T 115 N...E



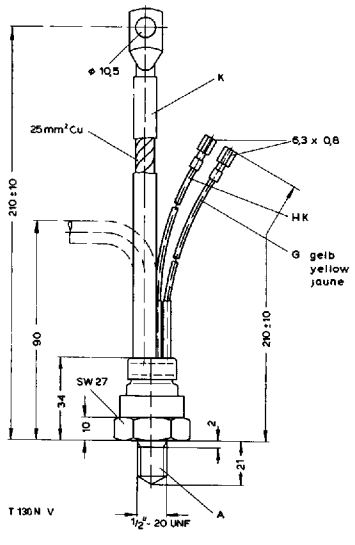
15

T 130 N...E
T 160 N...E



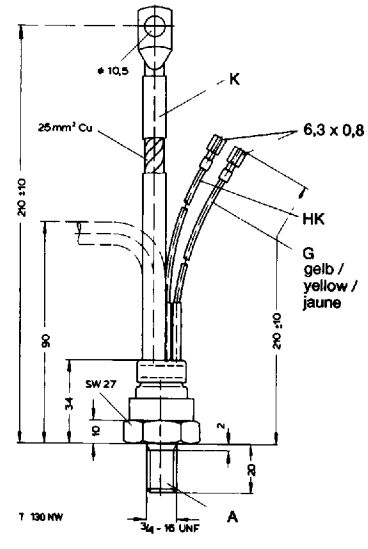
16

T 130 N...B
T 160 N...B
T 210 N...B



17

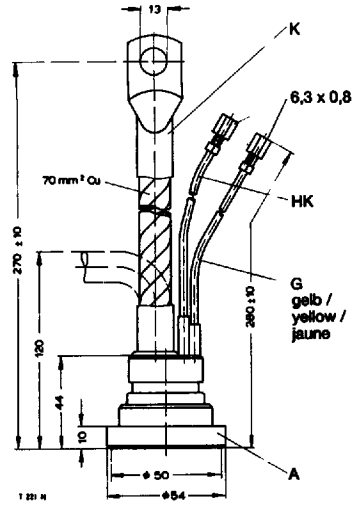
T 130 N...V
T 160 N...V
T 210 N...V



18

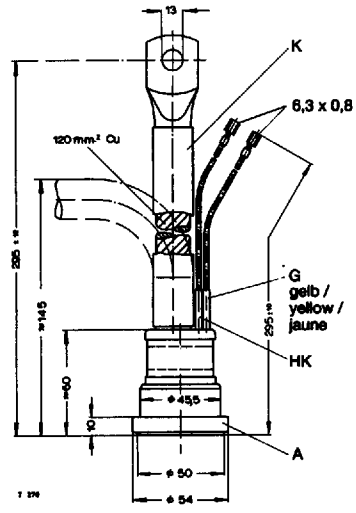
T 130 N...W
T 160 N...W
T 210 N...W

Maßbilder/Outlines



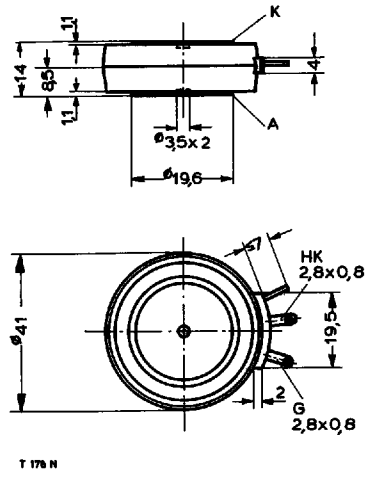
T 175 N
T 221 N
T 235 N
T 236 N
T 345 N

19



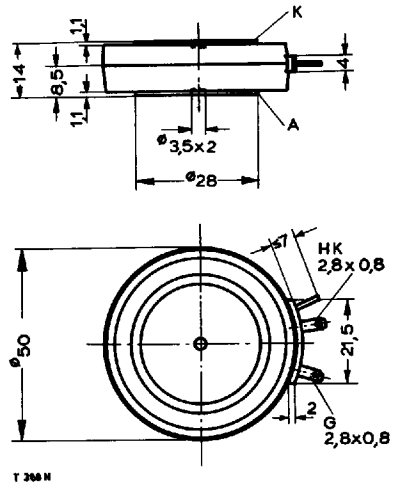
T 270 N

20



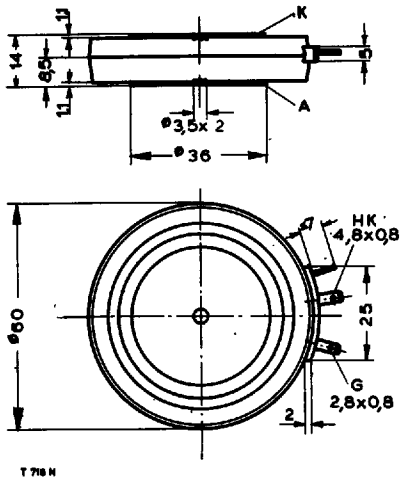
T 178 N
T 198 N
T 218 N
T 298 N
T 348 N
T 358 N
T 398 N

21



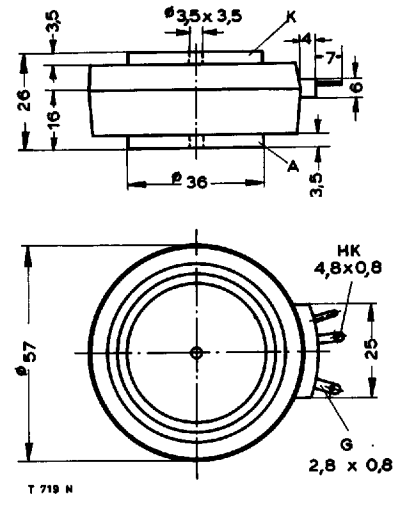
T 308 N
T 388 N
T 508 N
T 588 N
T 828 N

22



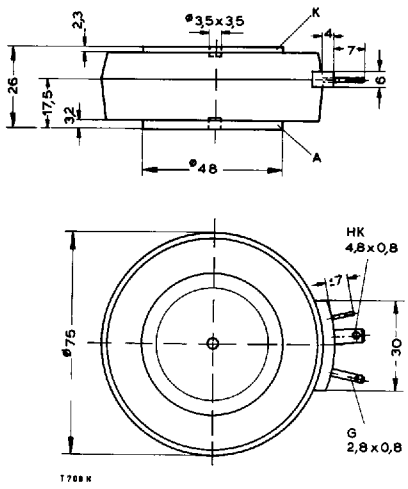
T 718 N
T 1258 N

23



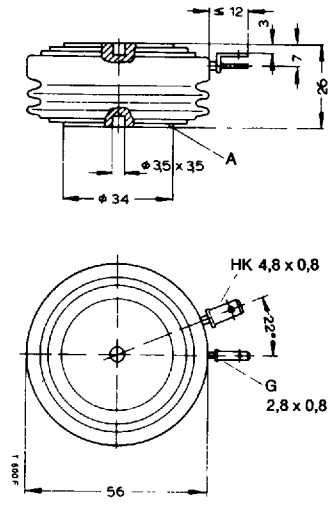
T 459 N
T 509 N
T 529 N
T 719 N
T 1259 N

24



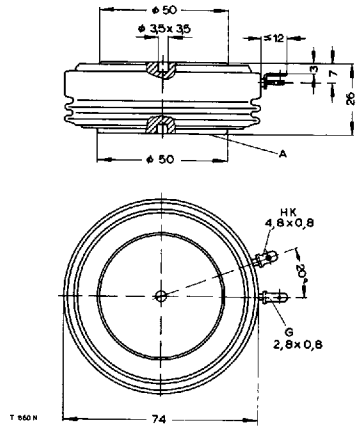
T 709 N
T 869 N
T 949 N
T 1059 N
T 1099 N
T 1209 N

25



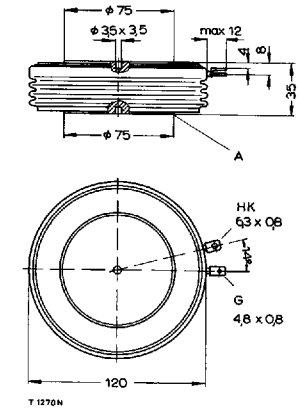
26

T 380 N



T 625 N
T 860 N
T 1050 N
T 1200 N

27



T 1270 N
T 1580 N
T 1900 N

28