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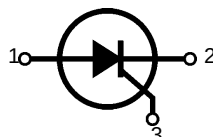
Phase Control Thyristors

$$V_{RRM} = 800-1200 \text{ V}$$

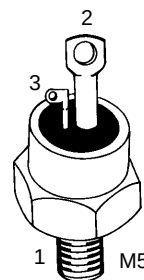
$$I_{T(RMS)} = 25 \text{ A}$$

$$I_{T(AV)M} = 16 \text{ A}$$

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	CS 8-08io2
1300	1200	CS 8-12io2



TO-64



1 = Anode, 2 = Cathode, 3 = Gate

Symbol	Test Conditions	Maximum Ratings
$I_{T(RMS)}$	$T_{VJ} = T_{VJM}$	25 A
$I_{T(AV)M}$	$T_{case} = 85^{\circ}\text{C}; 180^{\circ}$ sine	16 A
I_{TSM}	$T_{VJ} = 45^{\circ}\text{C};$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$ 250 A 270 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$ 200 A 220 A
	$T_{VJ} = 45^{\circ}\text{C}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$ 310 A ² s 306 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$ 200 A ² s 200 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50 \text{ Hz}, t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.2 \text{ A}$ $di_G/dt = 0.2 \text{ A}/\mu\text{s}$	repetitive, $I_T = 48 \text{ A}$ 150 A/ μs
		non repetitive, $I_T = I_{T(AV)M}$ 500 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM};$ $R_{GK} = \infty; \text{method 1 (linear voltage rise)}$	$V_{DR} = 2/3 V_{DRM}$ 1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = I_{T(AV)M}$	$t_p = 30 \mu\text{s}$ $t_p = 300 \mu\text{s}$ 10 W 5 W
$P_{G(AV)}$		0.5 W
V_{RGM}		10 V
T_{VJ}		-40...+125 $^{\circ}\text{C}$
T_{VJM}		125 $^{\circ}\text{C}$
T_{stg}		-40...+125 $^{\circ}\text{C}$
M_d	Mounting torque	2.5 Nm 22 lb.in.
Weight		6 g

Features

- Thyristor for line frequencies
- International standard package JEDEC TO-64
- Planar glassivated chip
- Long-term stability of blocking currents and voltages

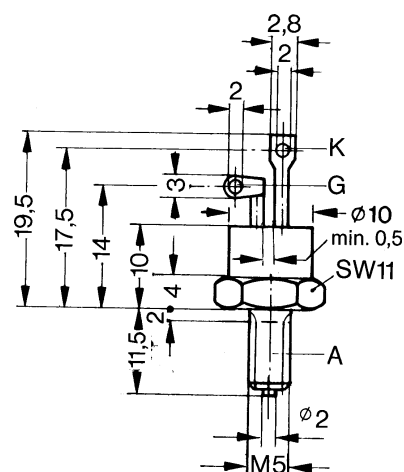
Applications

- Motor control
- Power converter
- AC power controller

Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions	Characteristic Values
I_R, I_D	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	≤ 3 mA
V_T	$I_T = 33$ A; $T_{VJ} = 25^\circ\text{C}$	≤ 1.6 V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$)	1.0 V
r_T		18 mΩ
V_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	≤ 2.5 V
	$T_{VJ} = -40^\circ\text{C}$	≤ 3.5 V
I_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	≤ 30 mA
	$T_{VJ} = -40^\circ\text{C}$	≤ 50 mA
V_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	≤ 0.2 V
I_{GD}		≤ 1 mA
I_L	$T_{VJ} = 25^\circ\text{C}; t_p = 10$ μs $I_G = 0.09$ A; $di_G/dt = 0.09$ A/μs	≤ 100 mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6$ V; $R_{GK} = \infty$	≤ 80 mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.09$ A; $di_G/dt = 0.09$ A/μs	≤ 2 μs
t_q	$T_{VJ} = T_{VJM}; I_T = 16$ A; $t_p = 300$ μs; $di/dt = -20$ A/μs $V_R = 100$ V; $dv/dt = 20$ V/μs; $V_D = 2/3 V_{DRM}$	typ. 60 μs
R_{thJC}	DC current	1.5 K/W
R_{thJH}	DC current	2.5 K/W
d_s	Creepage distance on surface	1.55 mm
d_A	Strike distance through air	1.55 mm
a	Max. acceleration, 50 Hz	50 m/s ²

Accessories:

Nut M5 DIN 439/SW8

Lock washer A5 DIN 128

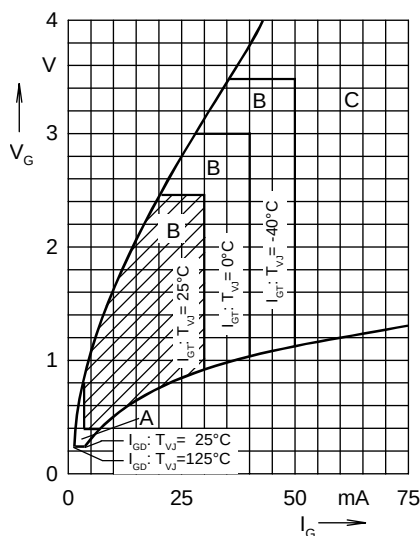


Fig. 1 Gate voltage and gate current
Triggering:
A = no; B = possible; C = safe

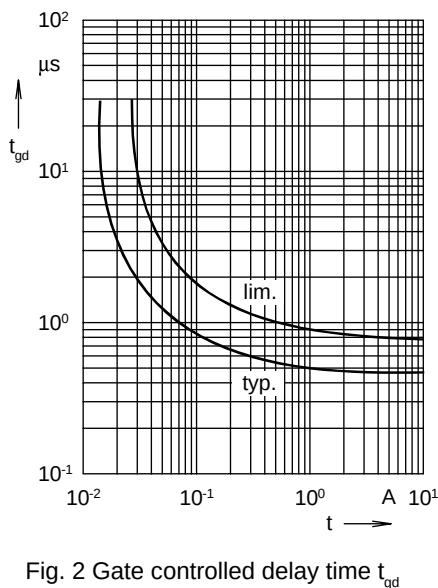


Fig. 2 Gate controlled delay time t_{gd}

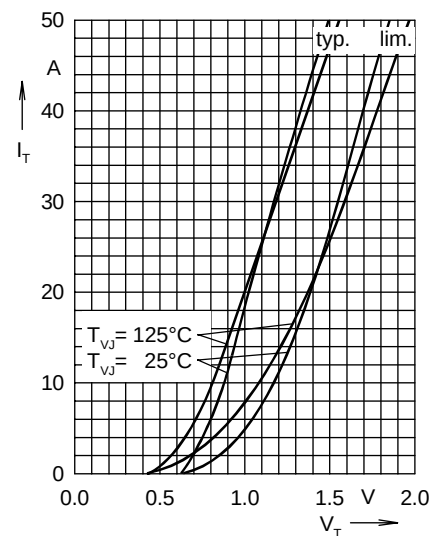


Fig. 3 On-state characteristics

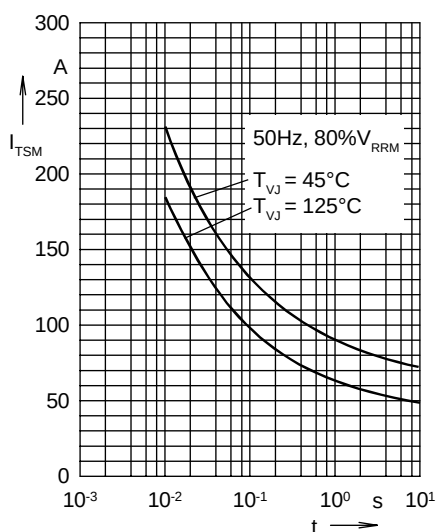


Fig. 4 Surge overload current
 I_{TSM} : crest value, t : duration

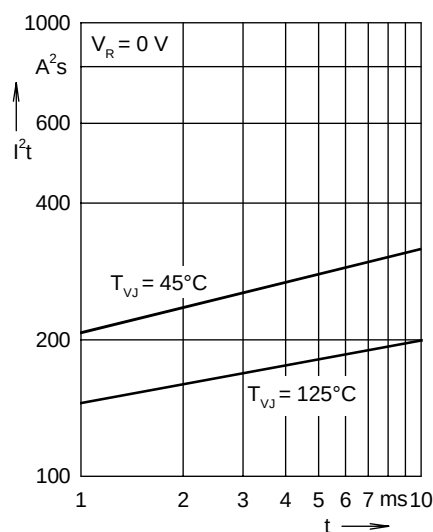


Fig. 5 I^2t versus time (1-10 ms)

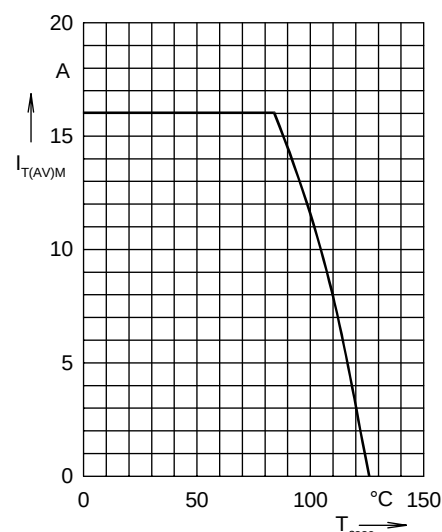


Fig. 6 Maximum forward current at case temperature 180° sine

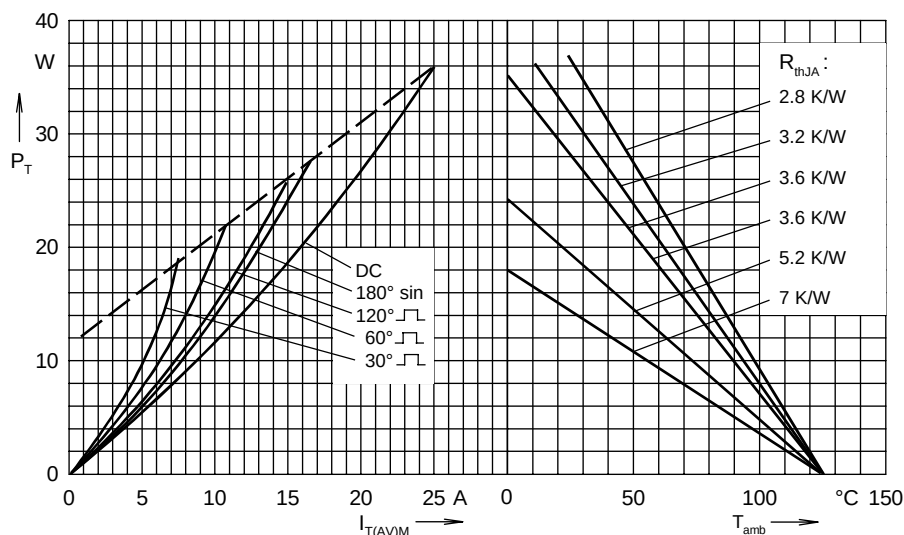


Fig. 7 Power dissipation versus on-state current and ambient temperature

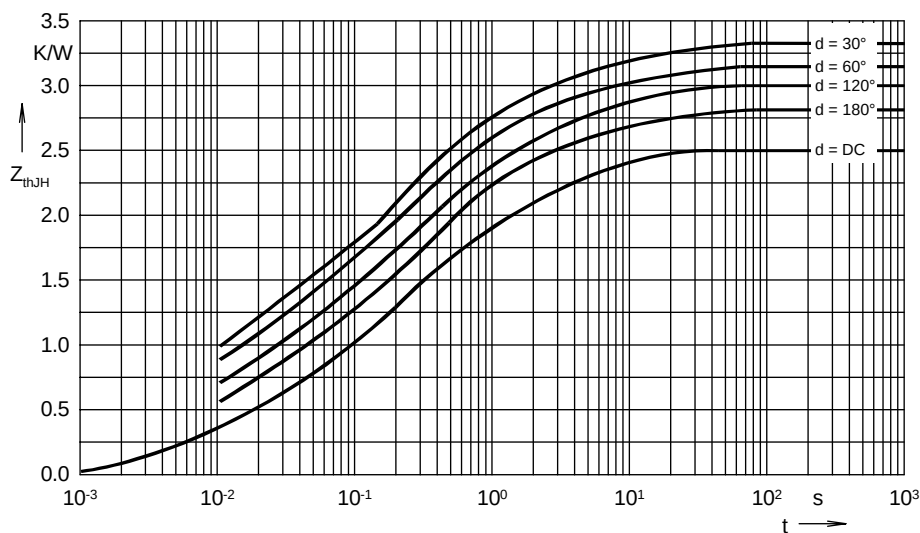


Fig. 8 Transient thermal impedance junction to heatsink

R_{thJH} for various conduction angles d :

d	R_{thJH} (K/W)
DC	2.5
180°	2.79
120°	2.95
60°	3.17
30°	3.32

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.252	0.005
2	0.333	0.0225
3	0.5	0.145
4	0.833	0.43
5	0.416	2.75
6	0.166	23