Phase Control Thyristors

V_{RRM} = 800-1200 V
$I_{T(RMS)}$ = 25 A
$I_{T(AV)M}$ = 16 A

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

TO-64

1 = Anode, 2 = Cathode, 3 = Gate

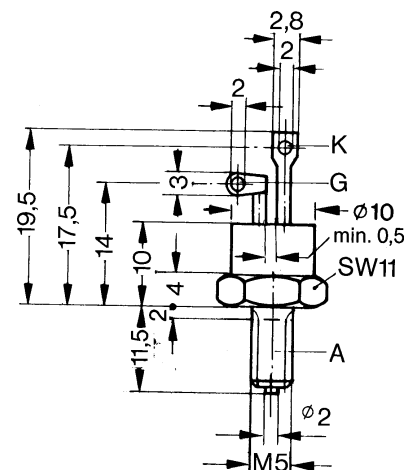| Symbol	Test Conditions		Maximum Ratings	
$I_{T(RMS)}$	$T_{VJ} = T_{VJM}$		25	A
$I_{T(AV)M}$	T_{case} = 85°C; 180° sine		16	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	250	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	270	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	220	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	310	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	306	A²s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	200	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	200	A²s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ f = 50 Hz, t_P =200 μs V_D = 2/3 V_{DRM}	repetitive, I_T = 48 A	150	A/μs
	I_G = 0.2 A di_G/dt = 0.2 A/μs	non repetitive, $I_T = I_{T(AV)M}$	500	A/μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; V_{DR} = 2/3 V_{DRM} $R_{GK} = \infty$; method 1 (linear voltage rise)		1000	V/μs
P_{GM}	$T_{VJ} = T_{VJM}$ t_P = 30 μs		10	W
	$I_T = I_{T(AV)M}$ t_P = 300 μs		5	W
$P_{G(AV)}$			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°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")

Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

1 - 3

Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		$\leq$	3	mA
V_T	I_T = 33 A; $T_{VJ} = 25°C$		$\leq$	1.6	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			1.0	V
r_T				18	mΩ
V_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	$\leq$	2.5	V
		$T_{VJ} = -40°C$	$\leq$	3.5	V
I_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	$\leq$	30	mA
		$T_{VJ} = -40°C$	$\leq$	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	$\leq$	0.2	V
I_{GD}			$\leq$	1	mA
I_L	$T_{VJ} = 25°C$; $t_P = 10$ µs		$\leq$	100	mA
	$I_G = 0.09$ A; $di_G/dt = 0.09$ A/µs				
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$		$\leq$	80	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$		$\leq$	2	µs
	$I_G = 0.09$ A; $di_G/dt = 0.09$ A/µs				
t_q	$T_{VJ} = T_{VJM}$; $I_T = 16$ A, $t_P = 300$ µs; $di/dt = -20$ A/µs		typ.	60	µs
	$V_R = 100$ V; $dv/dt = 20$ V/µs; $V_D = 2/3\ V_{DRM}$				
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
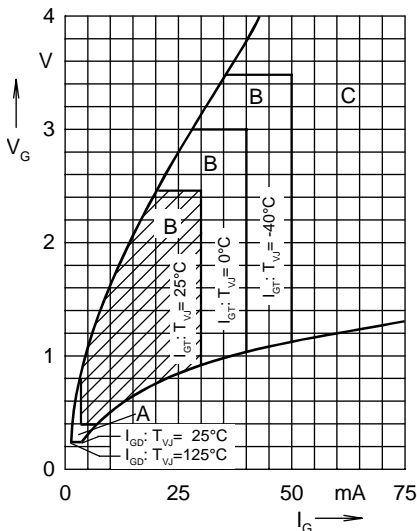Lock washer A5 DIN 128

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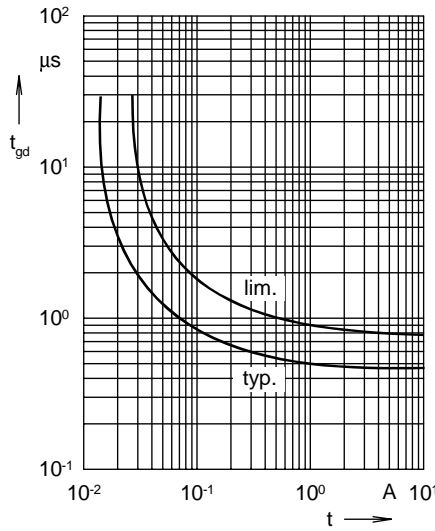   A = no; B = possible; C = safe

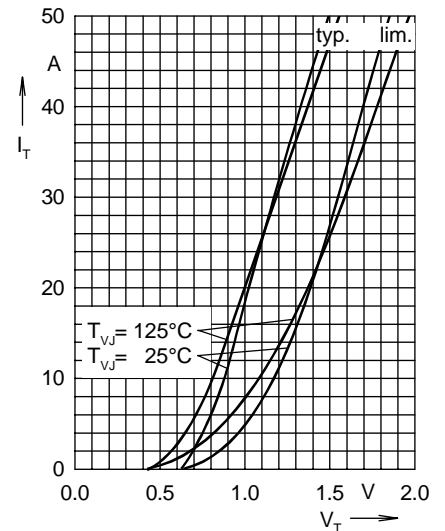Fig. 2 Gate controlled delay time t_{gd}
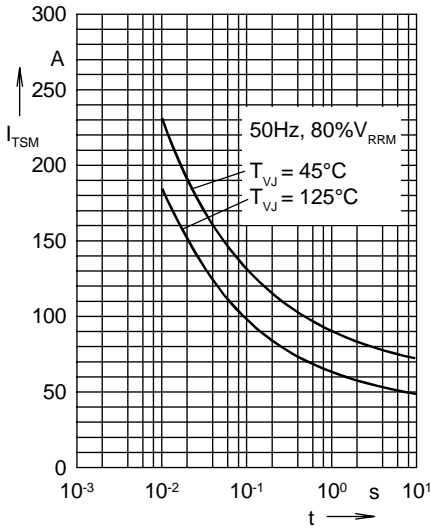

Fig. 3 On-state characteristics

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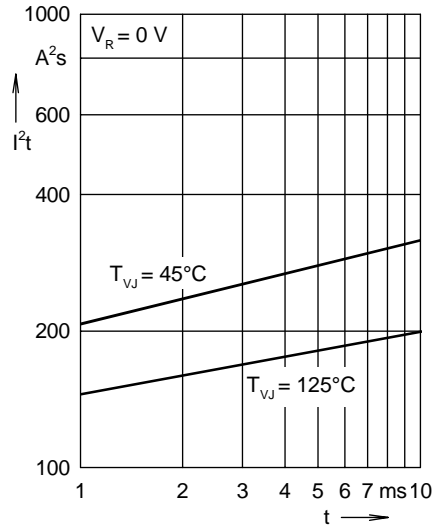I_{TSM}: crest value, t: duration

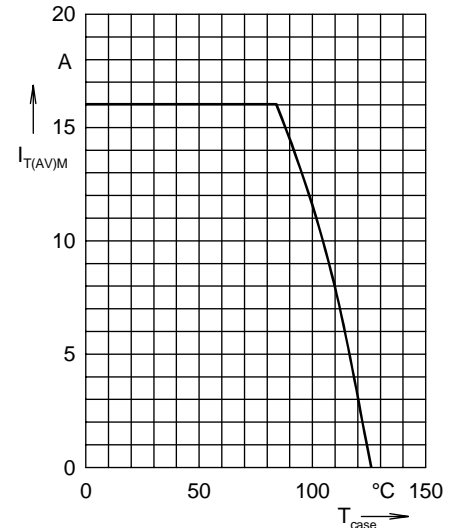Fig. 5 I^2t versus time (1-10 ms)

Fig. 6 Maximum forward current at case temperature 180° sine
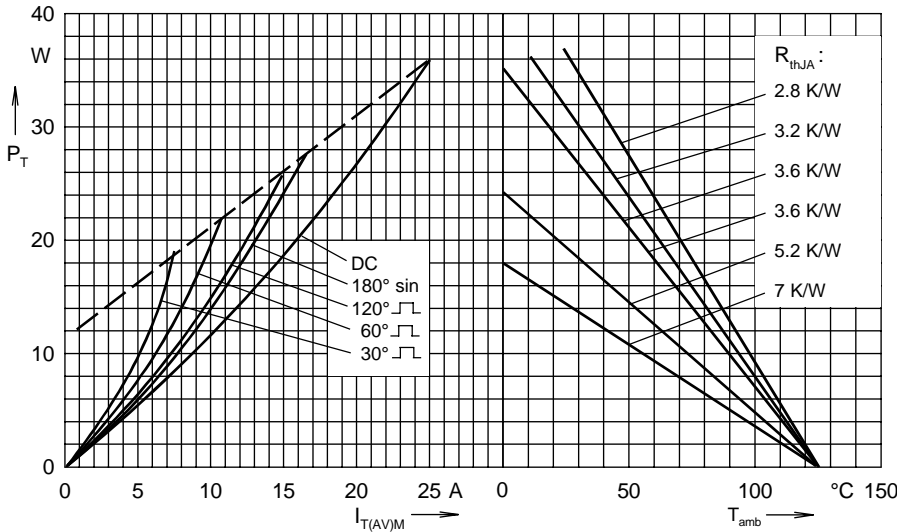
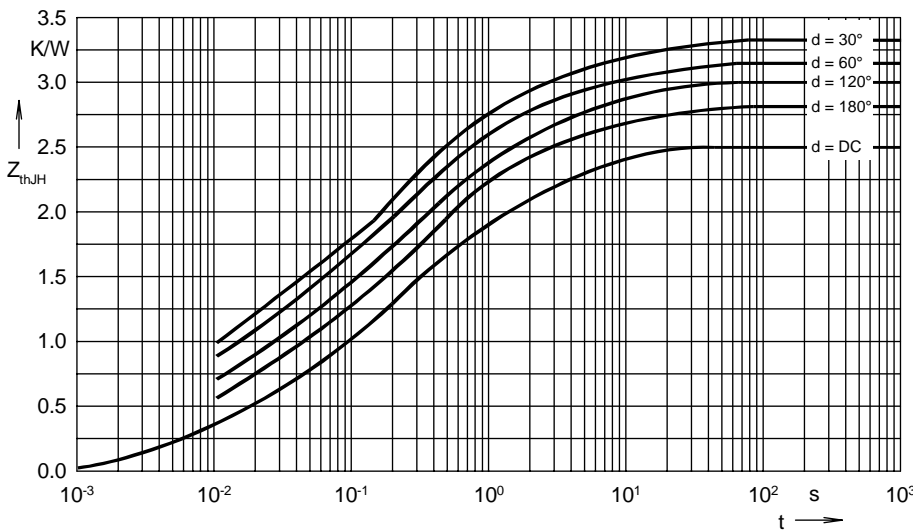Fig. 7 Power dissipation versus on-state current and ambient temperature

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