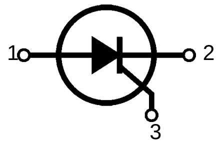
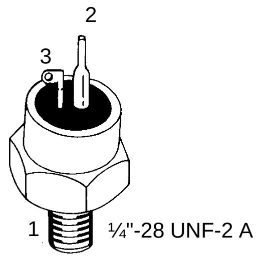
Phase Control Thyristors

V_{RRM} = 800-1400 V
$I_{T(RMS)}$ = 120 A
$I_{T(AV)M}$ = 69 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	CS 35-08io4
1300	1200	CS 35-12io4
1500	1400	CS 35-14io4



TO-208AC
(TO-65)



1 = Anode, 2 = Cathode, 3 = Gate

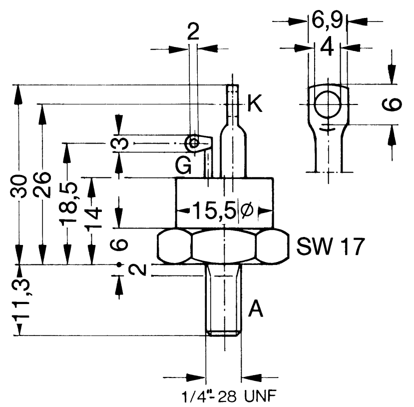
Symbol	Test Conditions		Maximum Ratings	
$I_{T(RMS)}$	T_{VJ} = T_{VJM}		120	A
$I_{T(AV)M}$	T_{case} = 85°C; 180° sine		63	A
	T_{case} = 80°C; 180° sine		69	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1340	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	7200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	7550	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	6050	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	6500	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} f = 50 Hz, t_P =200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 150 A	150	A/µs
	I_G = 0.5 A di_G/dt = 0.5 A/µs	non repetitive, I_T = $I_{T(AV)M}$	400	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; R_{GK} = ∞; method 1 (linear voltage rise)	V_{DR} = 2/3 V_{DRM}	1000	V/µs
P_{GM}	T_{VJ} = T_{VJM}	t_P = 30 µs	10	W
	I_T = $I_{T(AV)M}$	t_P = 500 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			20	g

Features
- Thyristor for line frequencies
- International standard package JEDEC TO-208AC
- 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

Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	10	mA
V_T	I_T = 150 A; T_{VJ} = 25°C		≤	1.5	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			0.85	V
r_T				3.5	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	1.9	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	100	mA
		T_{VJ} = -40°C	≤	200	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°C; t_P = 30 µs I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	100	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	80	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	2	µs
t_q	$T_{VJ} = T_{VJM}$; I_T = 50 A, t_P = 200 µs; di/dt = -10 A/µs V_R = 100 V; dv/dt = 10 V/µs; V_D = 2/3 V_{DRM}		typ.	100	µs
R_{thJC}	DC current			0.4	K/W
R_{thJH}	DC current			0.6	K/W
d_S	Creepage distance on surface			1.7	mm
d_A	Strike distance through air			1.7	mm
a	Max. acceleration, 50 Hz			50	m/s²

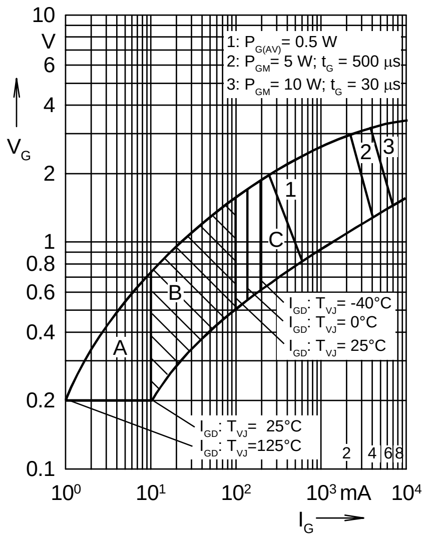


Fig. 1 Gate trigger range
Triggering:
A = no; B = possible, C = safe

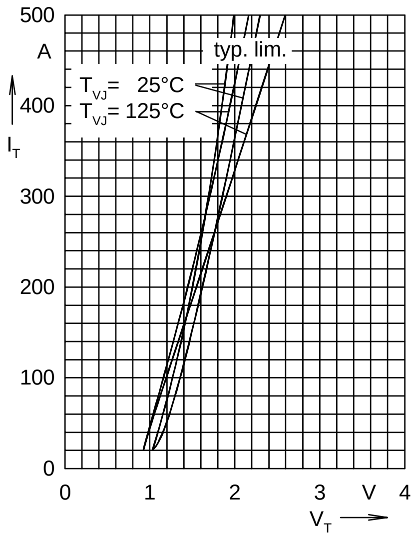


Fig. 2 On-state characteristics

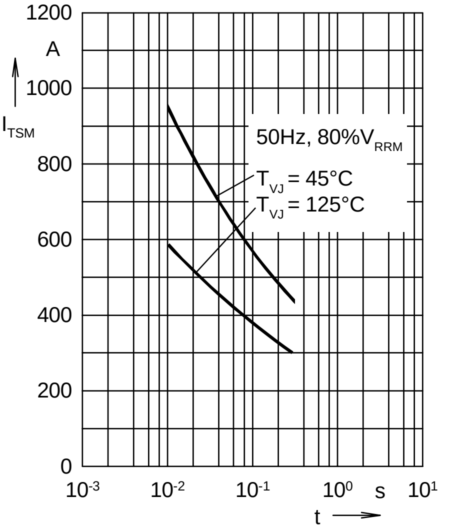


Fig. 3 Surge overload current
I_{TSM}: crest value, t: duration

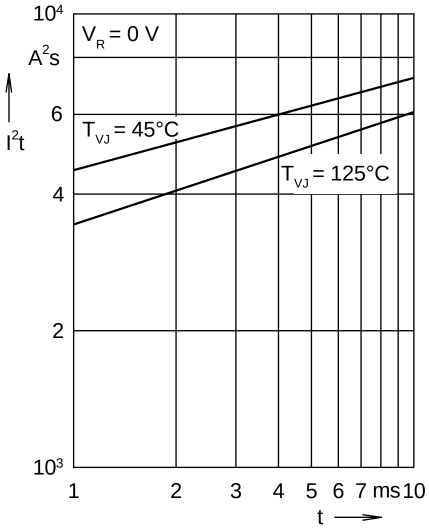


Fig. 4 I^2t versus time (1-10 ms)

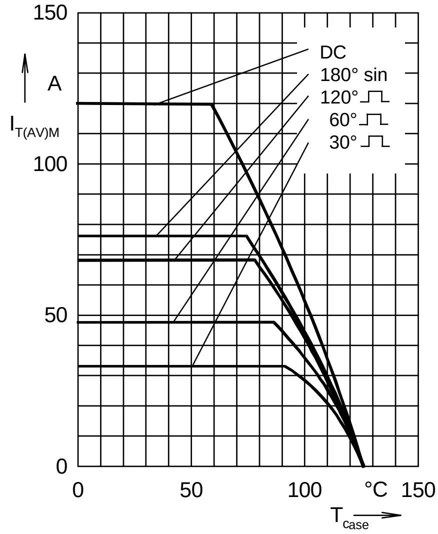


Fig. 5 Maximum forward current at case temperature

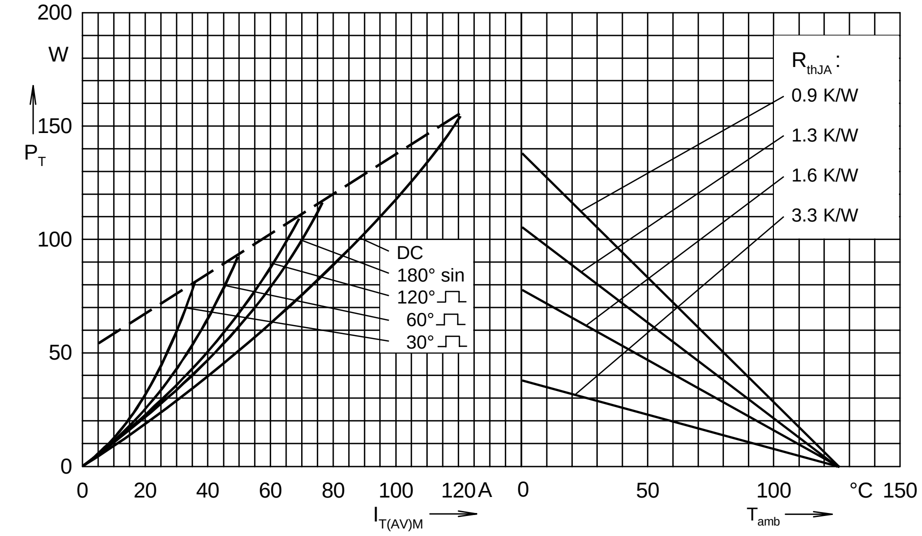


Fig. 6 Power dissipation versus on-state current and ambient temperature

R_{thJH} for various conduction angles d:

d	R_{thJH} (K/W)
DC	0.6
180°	0.65
120°	0.677
60°	0.725
30°	0.775

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.01	0.001
2	0.09	0.013
3	0.30	0.3
4	0.20	0.9

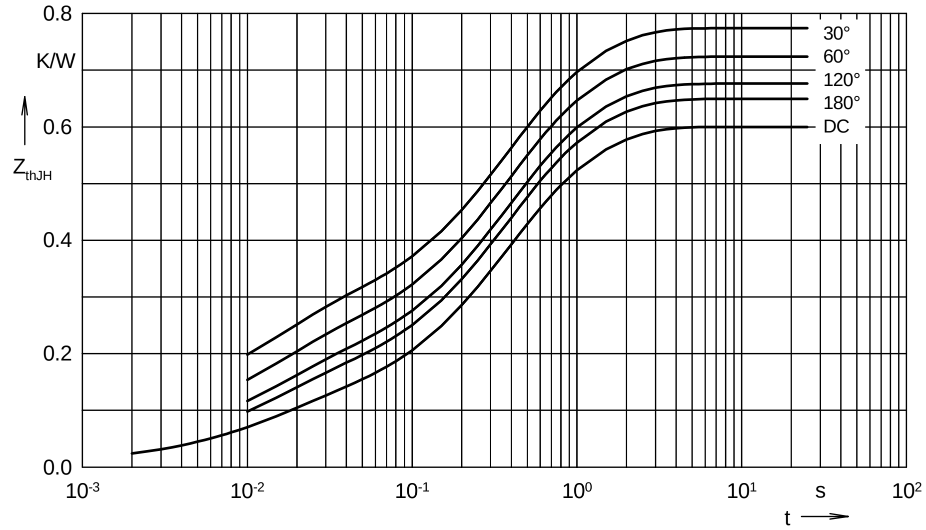


Fig. 7 Transient thermal impedance junction to heatsink