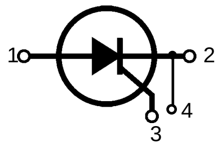
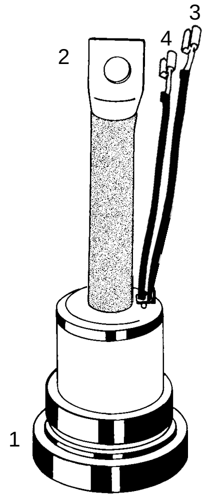
Phase Control Thyristors

V_{RRM} = 1200-1800 V
$I_{T(RMS)}$ = 600 A
$I_{T(AV)M}$ = 380 A

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	CS 300-12io3
1700	1600	CS 300-16io3
1900	1800	CS 300-18io3

Not for new application





1 = Anode, 2 = Cathode,
3 = Gate, 4 = Auxiliary Cathode

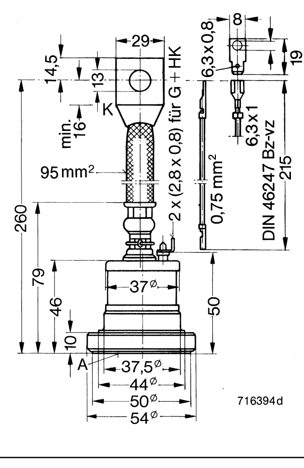
Symbol	Test Conditions		Maximum Ratings	
$I_{T(RMS)}$	$T_{VJ} = T_{VJM}$		600	A
$I_{T(AV)M}$	T_{case} = 85°C; 180° sine		330	A
	T_{case} = 75°C; 180° sine		380	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	8500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	9000	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	8000	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	8500	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	360 000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	340 000	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	320 000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	303 500	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ f = 50 Hz, t_P = 200 µs	repetitive, I_T = 1000 A	100	A/µs
	V_D = 2/3 V_{DRM} I_G = 1 A di_G/dt = 1 A/µs	non repetitive, $I_T = I_{T(AV)M}$	500	A/µs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; method 1 (linear voltage rise)	V_{DR} = 2/3 V_{DRM}	1000	V/µs
P_{GM}	$T_{VJ} = T_{VJM}$	t_P = 30 µs	120	W
	$I_T = I_{T(AV)M}$	t_P = 10 ms	10	W
V_{RGM}			10	V
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
M_d	Mounting torque		3.5	Nm
			31	lb.in.
Weight			500	g

Features
- Thyristor for line frequencies
- International flat base package
- 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	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	40	mA
V_T	I_T = 1000 A; T_{VJ} = 25°C		≤	1.43	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			1.0	V
r_T				0.43	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	2.0	V
		T_{VJ} = -40°C	≤	2.8	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	150	mA
		T_{VJ} = -40°C	≤	250	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 = 10 µs I_G = 0.7 A; di_G/dt = 0.7 A/µs		≤	100	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	T_{VJ} = 25°C; $V_D = 1/2\ V_{DRM}$ I_G = 0.7 A; di_G/dt = 0.7 A/µs		≤	2	µs
t_q	$T_{VJ} = T_{VJM}$; I_T =330 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.	150	µs
R_{thJC}	DC current			0.09	K/W
R_{thJH}	DC current			0.12	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

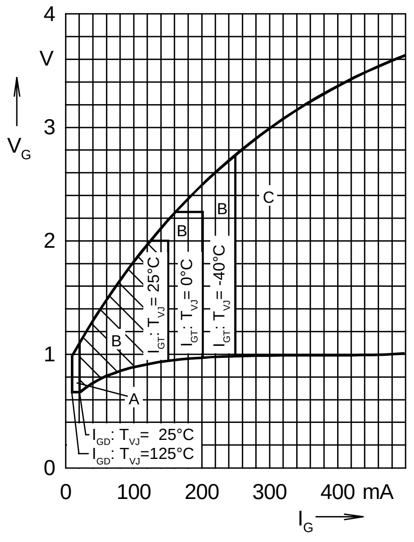


Fig. 1 Gate voltage and gate current
Triggering:
A = no; B = possible; C = safe

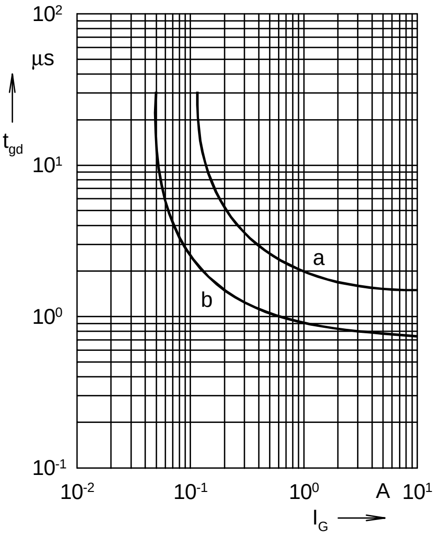


Fig. 2 Gate controlled delay time t_{gd}
a = limit; b = typical

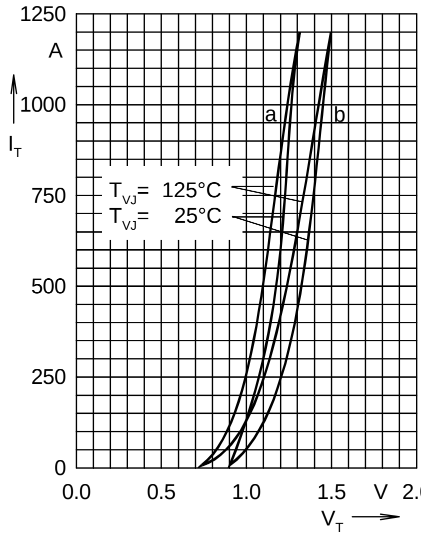


Fig. 3 On-state characteristics
a = typical; b = limit

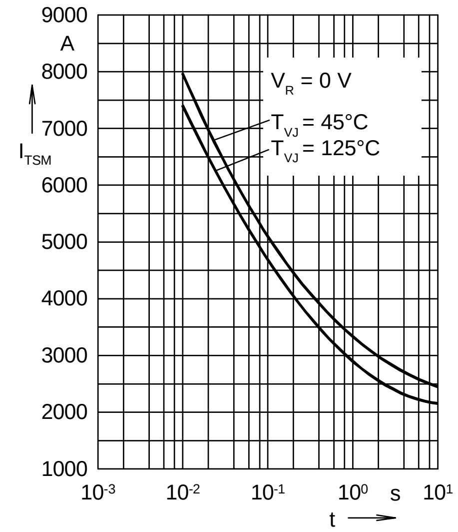


Fig. 4 Surge overload current
I_{TSM}: crest value, t: duration

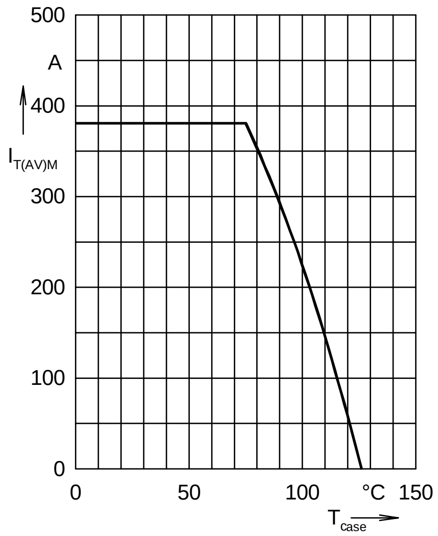


Fig. 5 Maximum forward current at case temperature 180° sine

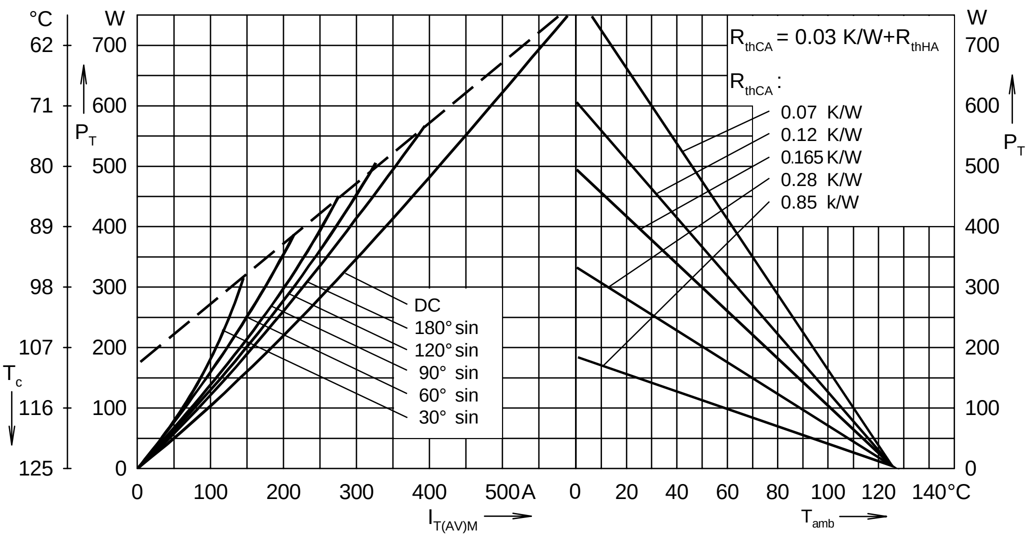


Fig. 6 Power dissipation versus on-state current and ambient temperature (sinusoidal current)

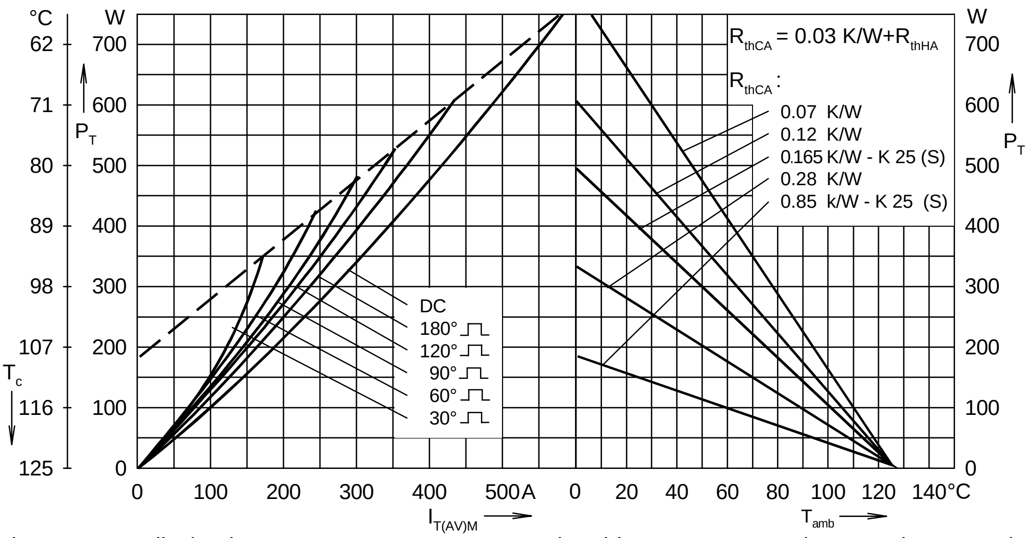


Fig. 7 Power dissipation versus on-state current and ambient temperature (rectangular current)