Phase Control Thyristors

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

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

Not for new application

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 V_D = 2/3 V_{DRM}	repetitive, I_T = 1000 A	100	A/µs
	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} = ∞; 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

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

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

Features
• Thyristor for line frequencies
• International flat base package
• Planar glassivated chip
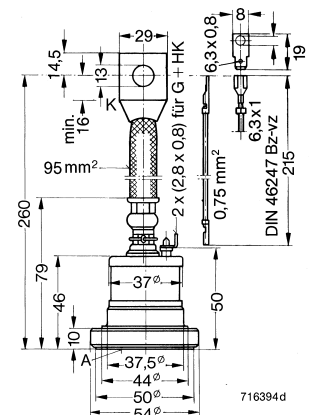• Long-term stability of blocking currents and voltages

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")

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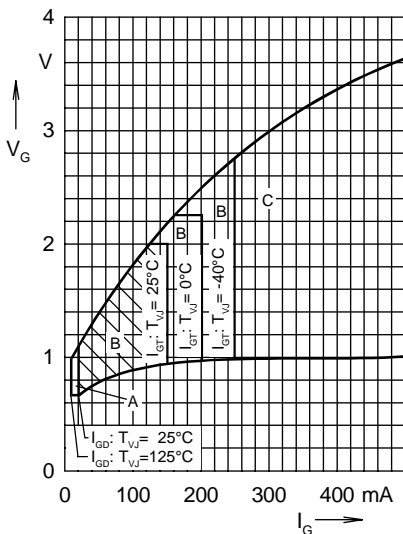| Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		$\leq$	40	mA
V_T	$I_T = 1000$ A; $T_{VJ} = 25°C$		$\leq$	1.43	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			1.0	V
r_T				0.43	mΩ
V_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	$\leq$	2.0	V
		$T_{VJ} = -40°C$	$\leq$	2.8	V
I_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	$\leq$	150	mA
		$T_{VJ} = -40°C$	$\leq$	250	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 $I_G = 0.7$ A; $di_G/dt = 0.7$ A/µs		$\leq$	100	mA
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$		$\leq$	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		$\leq$	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:
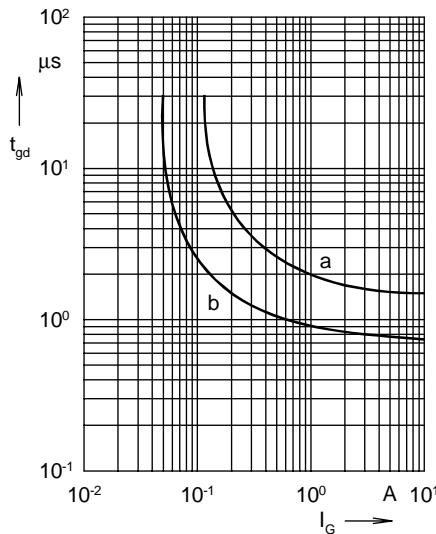A = no; B = possible; C = safe

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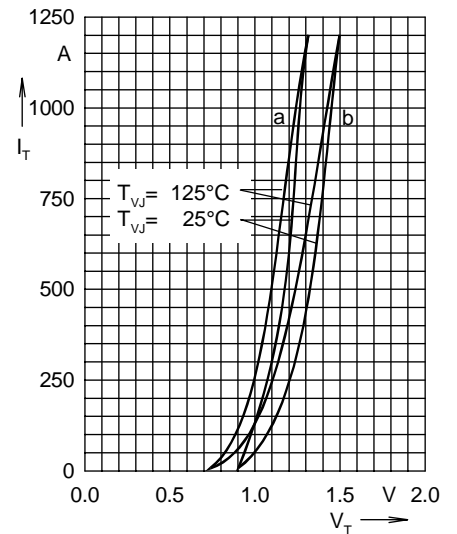a = limit; b = typical

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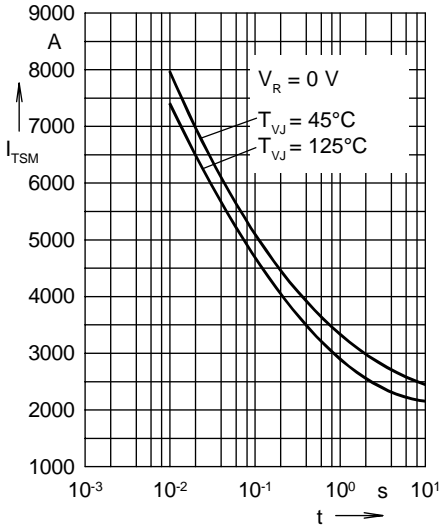a = typical; b = limit

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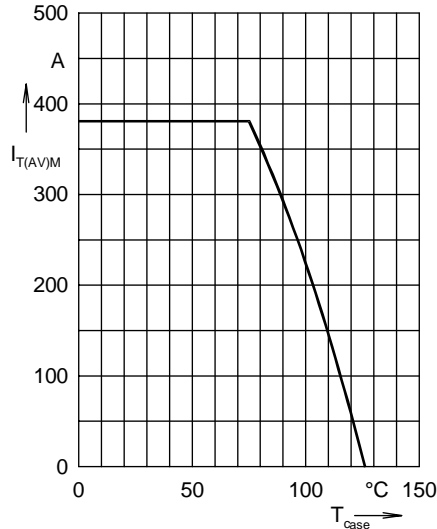I_{TSM}: crest value, t: duration

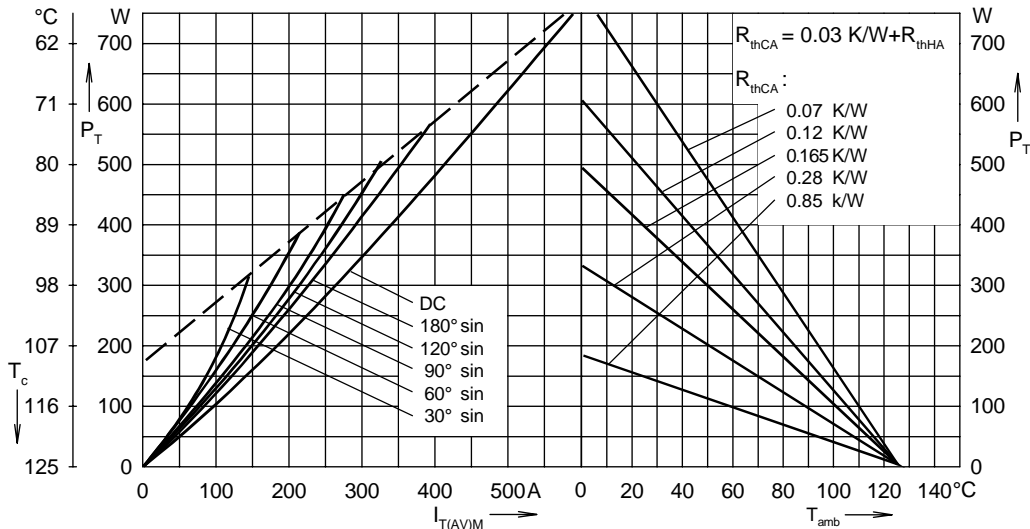Fig. 5 Maximum forward current at
case temperature 180° sine

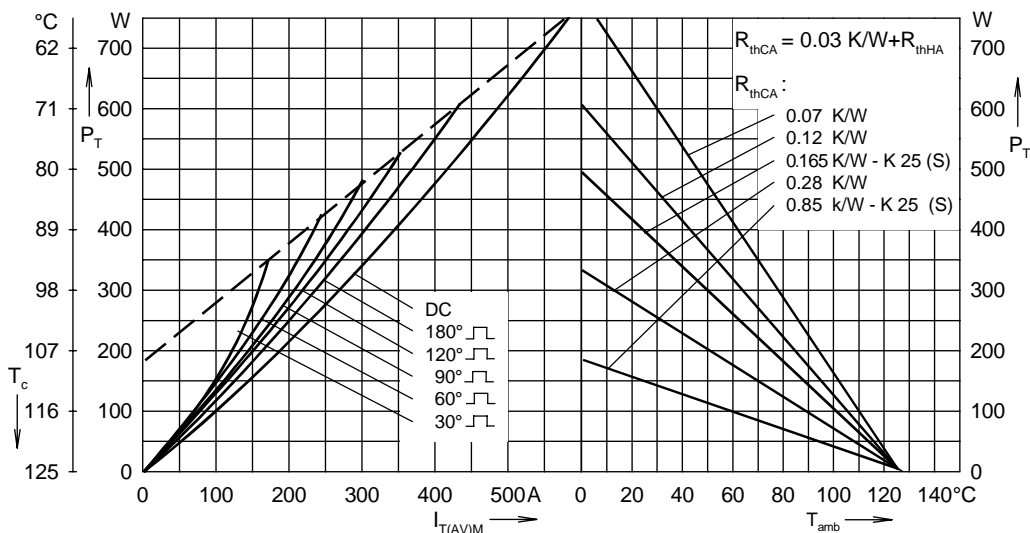Fig. 6 Power dissipation versus on-state current and ambient temperature (sinusoidal current)

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