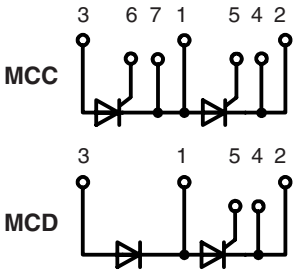
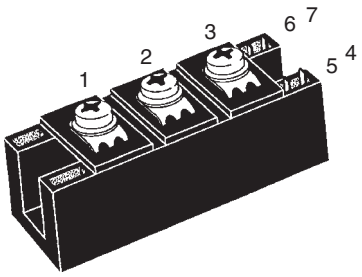
Thyristor Modules

I_{TRMS} = 2x340 A
I_{TAVM} = 2x196 A
V_{RRM} = 1400-1800 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type	
1500	1400	MCC 200-14io1	MCD 200-14io1
1700	1600	MCC 200-16io1	MCD 200-16io1
1900	1800	MCC 200-18io1	MCD 200-18io1





Symbol	Conditions		Maximum Ratings	
I_{TRMS} / I_{FRMS}	$T_{VJ} = T_{VJM}$		340	A
I_{TAVM} / I_{FAVM}	T_C = 90°C; 180° sine		196	A
	T_C = 85°C; 180° sine		216	A
I_{TSM} / I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	8000	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	8600	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	7000	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	7500	A
$\int i^2dt$	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320 000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	311 000	A^2s
	$T_{VJ} = T_{VJM}$;	t = 10 ms (50 Hz), sine	245 000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	236 000	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; f = 50Hz; t_P = 200µs; $V_D = {}^2/_3 V_{DRM}$;	repetitive; I_T = 500 A	100	A/µs
	I_G = 0.5 A; di_G/dt = 0.5 A/µs	non repetitive; I_T = 500 A	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		120	W
	$I_T = I_{TAVM}$; t_P = 500 µs		60	W
P_{GAV}			20	W
V_{RGM}			10	V
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS;	t = 1 min	3000	V~
	$I_{ISOL} \leq$ 1 mA;	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.5-5.5/40-48	Nm/lb.in.
Weight	Typical including screws		125	g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

Features

- International standard package
- Direct copper bonded Al_2O_3 -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873
- Keyed gate/cathode twin pins

Applications

- Motor control
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Contactless switches

Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

IXYS reserves the right to change limits, test conditions and dimensions

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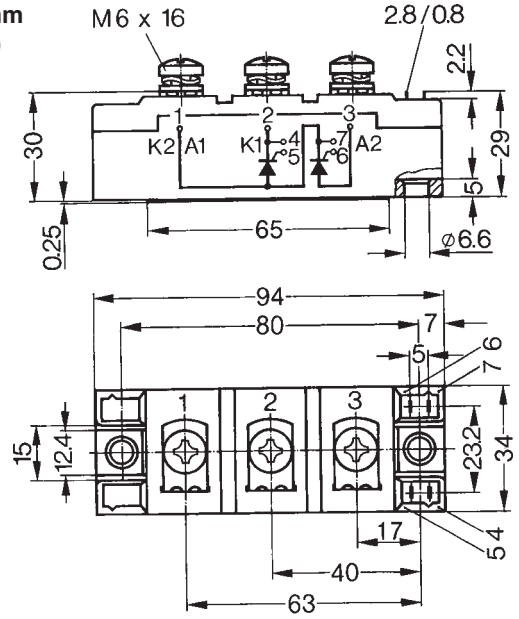
Symbol	Conditions		Characteristic Values	
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		15	mA
V_T / V_F	I_T, I_F = 200 A; T_{VJ} = 25°C		1.20	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)		0.8	V
r_T			1.0	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	2	V
		T_{VJ} = -40°C	3	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	150	mA
		T_{VJ} = -40°C	220	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	0.25	V
I_{GD}			10	mA
I_L	T_{VJ} = 25°C; t_P = 30 µs; V_D = 6 V I_G = 0.5 A; di_G/dt = 0.5 A/µs		200	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		150	mA
t_{gd}	T_{VJ} = 25°C; $V_D = ½\ V_{DRM}$ I_G = 0.5 A; di_G/dt = 0.5 A/µs		2	µs
t_q	$T_{VJ} = T_{VJM}$; I_T = 300 A, t_P = 200 µs; -di/dt = 10 A/µs typ. V_R = 100 V; dv/dt = 50 V/µs; $V_D = {}^2/_3\ V_{DRM}$		200	µs
Q_S	$T_{VJ} = T_{VJM}$; I_T = 300 A, -di/dt = 50 A/µs		550	µC
I_{RM}			235	A
R_{thJC}	per thyristor; DC current		0.13	K/W
	per module		0.065	K/W
R_{thJH}	per thyristor; DC current		0.18	K/W
	per module		0.09	K/W
d_S	Creepage distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s^2

Optional accessories for modules
Keyed gate/cathode twin plugs with wire length = 350 mm, gate = yellow, cathode = red
Type **ZY 180L** (L = Left for pin pair 4/5) } UL 758, style 1385,
Type **ZY 180R** (R = right for pin pair 6/7) } CSA class 5851, guide 460-1-1

Dimensions in mm
(1 mm = 0.0394")



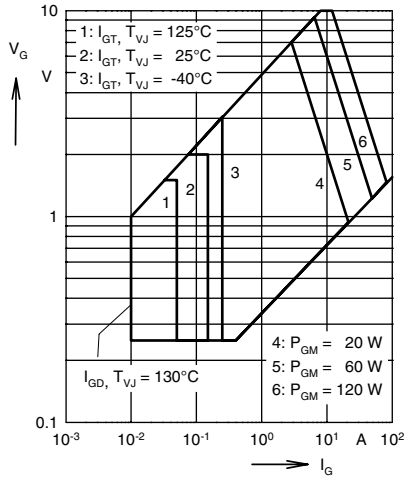


Fig. 1 Gate trigger characteristics

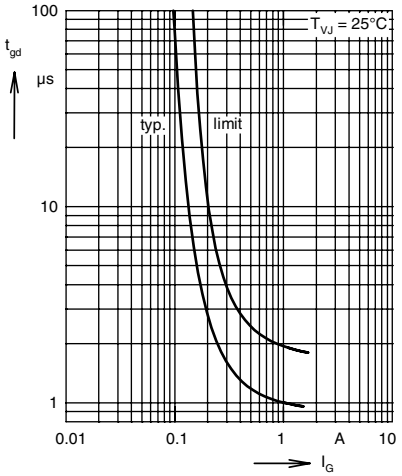


Fig. 2 Gate trigger delay time

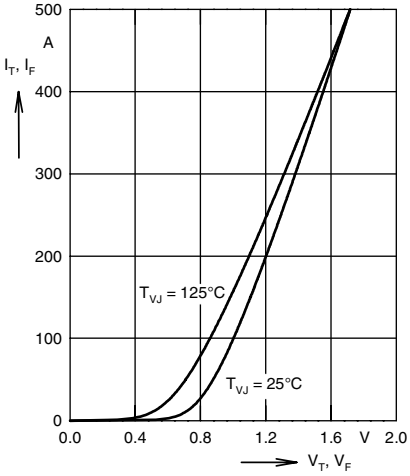


Fig. 3 Forward current versus voltage drop

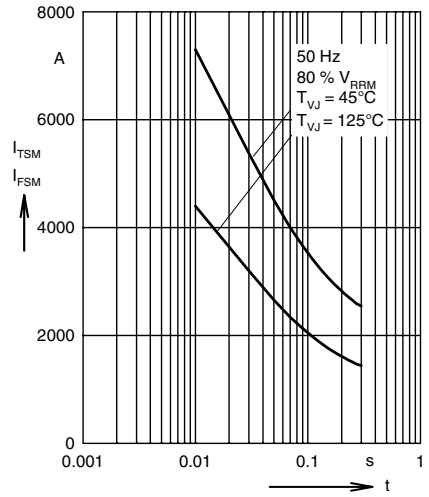


Fig. 4 Surge overload current
$I_{TSM/FSM}$: Crest value, t: duration

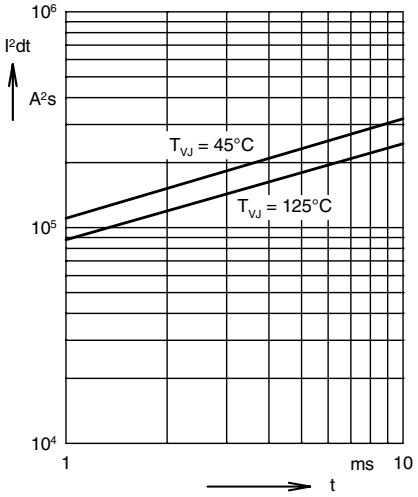


Fig. 5 I^2dt versus time (1-10 ms)

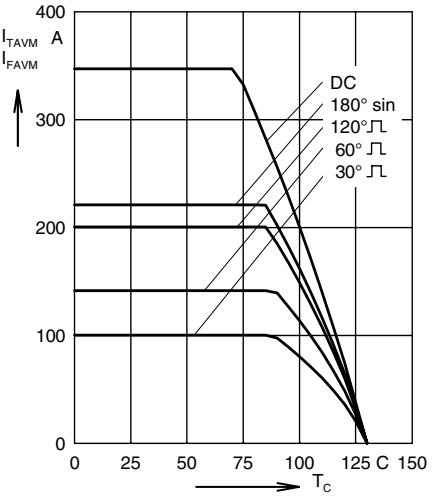


Fig. 6 Maximum forward current at case temperature

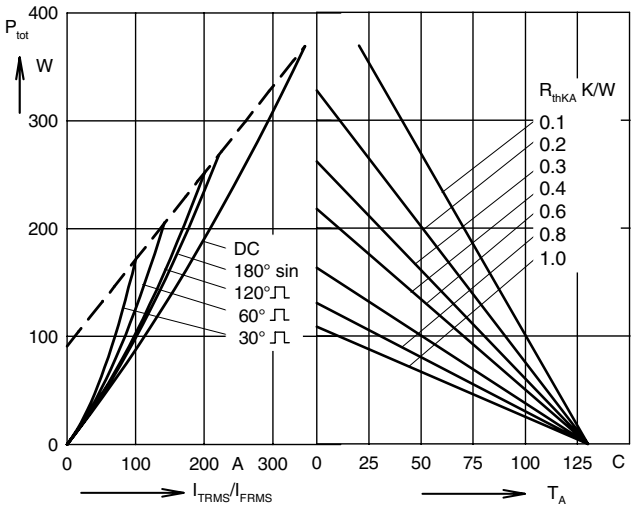


Fig. 7 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

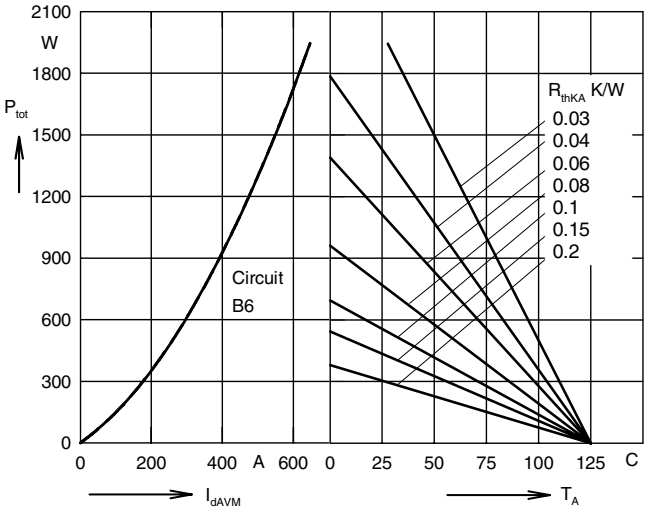
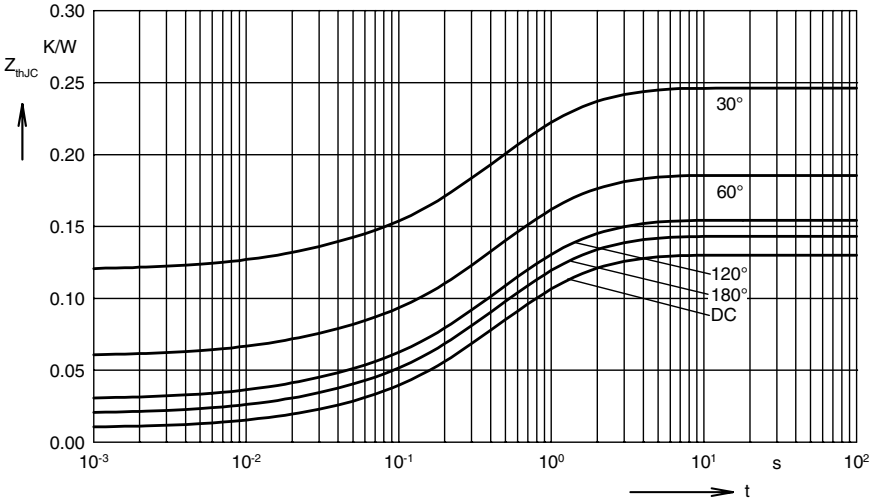


Fig. 8 3~ rectifier bridge: Power dissipation versus direct output current and ambient temperature



Constants for Z_{thJC} calculation (DC):

i	R_{thi} (K/W)	t_i (s)
1	0.01	0.00014
2	0.0065	0.019
3	0.025	0.18
4	0.0615	0.52
5	0.027	1.6

Fig. 9 Transient thermal impedance junction to case at various condition angles (per thyristor or diode)