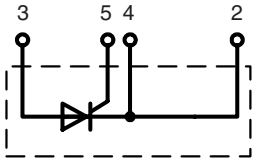
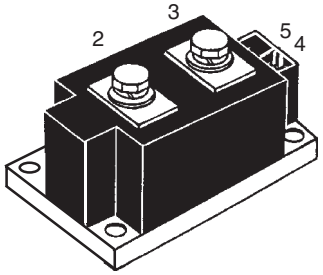
High Power Single Thyristor Module

I_{TRMS} = 928 A
I_{TAV} = 600 A
V_{RRM} = 1600-2200 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1700	1600	MCO 600-16io1
1900	1800	MCO 600-18io1
2100	2000	MCO 600-20io1
2300	2200	MCO 600-22io1





Symbol	Conditions		Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$		928	A
I_{TAV}	T_C = 85°C; 180° sine		600	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz)	15000	A
	V_R = 0	t = 8.3 ms (60 Hz)	16000	A
	$T_{VJ} = T_{VJM}$;	t = 10 ms (50 Hz)	13000	A
	V_R = 0	t = 8.3 ms (60 Hz)	14400	A
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz)	1125000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz)	1062000	A^2s
	$T_{VJ} = T_{VJM}$;	t = 10 ms (50 Hz)	845000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz)	813000	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ f = 50Hz; I_G = 1A $V_D = {}^2/_3 V_{DRM}$	repetitive, I_T = 960A	100	A/µs
	t_P = 200 µs, di_G/dt = 1 A/µs	non repetitive, $I_T = I_{TAVM}$	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}			30	W
V_{RGM}			10	V
T_{VJ}			-40...140	°C
T_{VJM}			140	°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)		4.5-7/40-62	Nm/lb.in.
	Terminal connection torque (M8)		11-13/97-115	Nm/lb.in.
Weight	Typical including screws		650	g

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

Features

- Direct copper bonded Al_2O_3-ceramic with copper base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL applied
- Keyed gate/cathode twin pins

Applications

- Motor control, softstarter
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Solid state switches

Advantages

- Improved temperature and power cycling
- Reduced protection circuits

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

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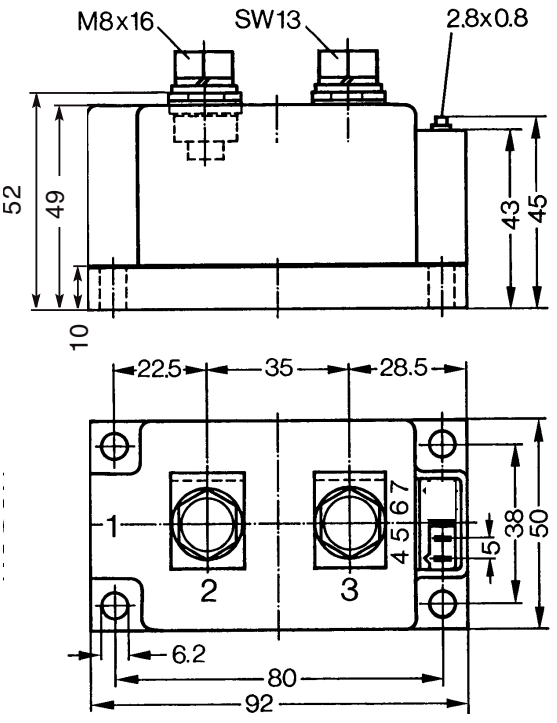
Symbol	Conditions		Characteristic Values	
I_{RRM}	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$		60	mA
V_T	I_T = 600 A; T_{VJ} = 25°C		1.15	V
V_{T0}	For power-loss calculations only ($T_{VJ} = T_{VJM}$)		0.77	V
r_T			0.42	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	2	V
		T_{VJ} = -40°C	3	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	300	mA
		T_{VJ} = -40°C	400	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	0.25	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	10	mA
I_L	T_{VJ} = 25°C; V_D = 6 V; t_P = 30 µs di_G/dt = 1 A/µs; I_G = 1 A		400	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; $R_{GK} = \infty$		300	mA
t_{gd}	T_{VJ} = 25°C; $V_D = ½\ V_{DRM}$ di_G/dt = 1A/µs; I_G = 1A		2	µs
t_q	$T_{VJ} = T_{VJM}$; V_R = 100 V; $V_D = {}^2/_3\ V_{DRM}$; t_P = 200 µs dv/dt = 50 V/µs; I_T = 500 A; -di/dt = 10 A/µs	typ.	350	µs
R_{thJC}	DC current		0.065	K/W
R_{thJK}	DC current		0.085	K/W
d_S	Creep distance on surface		12.7	mm
d_A	Strike distance in 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 180 L** (L = Left for pin pair 4/5) { UL 758, style 1385, File E 38136, CSA class 5851, guide 460-1-1, appl. 41234

Dimensions in mm (1 mm = 0.0394")



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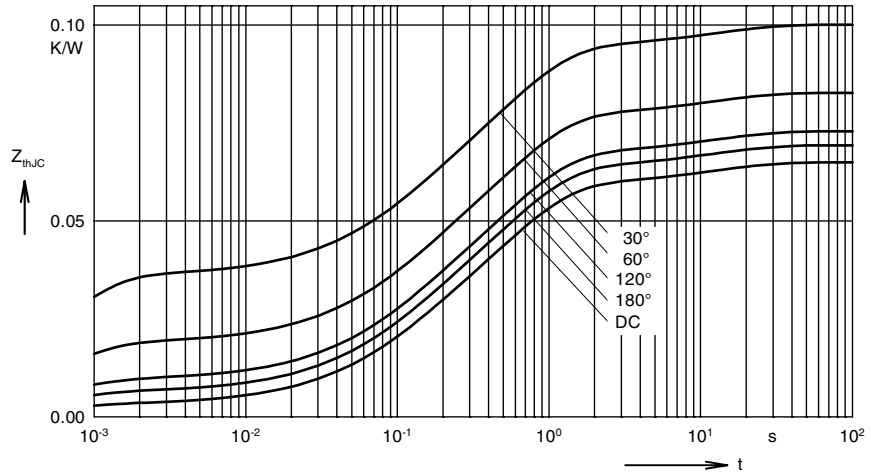

Fig. 1 Transient thermal impedance junction to case (per thyristor)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.065
180°	0.069
120°	0.073
60°	0.083
30°	0.1

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0031	0.00054
2	0.0168	0.098
3	0.039	0.54
4	0.0061	12

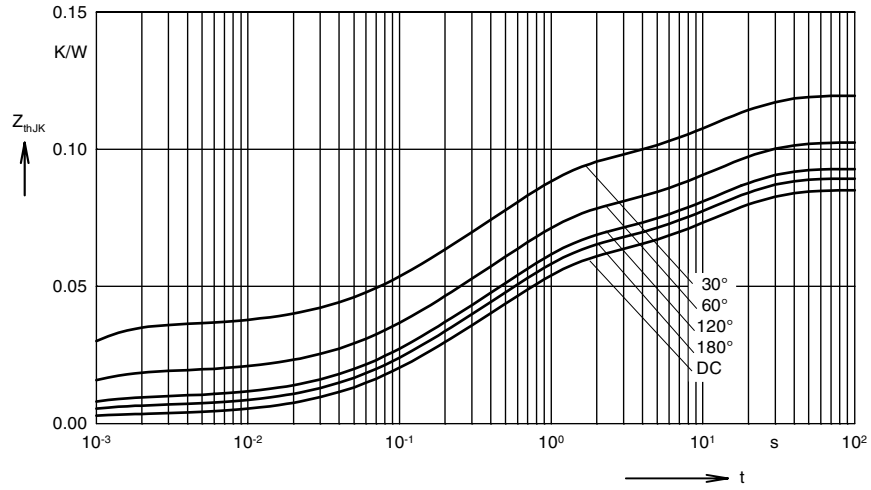

Fig. 2 Transient thermal impedance junction to heatsink (per thyristor)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.085
180°	0.089
120°	0.093
60°	0.102
30°	0.119

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0031	0.00054
2	0.0168	0.098
3	0.039	0.54
4	0.0061	12
5	0.02	12