

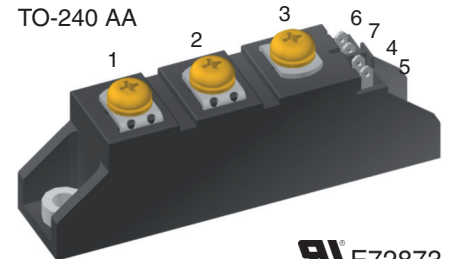
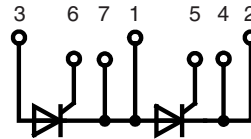
High Voltage Thyristor Module

$$I_{TRMS} = 2 \times 180 \text{ A}$$

$$I_{TAVM} = 2 \times 104 \text{ A}$$

$$V_{RRM} = 2400 \text{ V}$$

V_{RSM}	V_{RRM}	Type
V_{DSM}	V_{DRM}	
V	V	
2500	2400	MCC 94-24io1B



Preliminary data

Symbol	Conditions	Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$	180	A
I_{TAVM}	$T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	104	A
I_{TSM}	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms}$ (50 Hz)	1700	A
	$V_R = 0; t = 8.3 \text{ ms}$ (60 Hz)	1800	A
	$T_{VJ} = T_{VJM}; t = 10 \text{ ms}$ (50 Hz)	1540	A
	$V_R = 0; t = 8.3 \text{ ms}$ (60 Hz)	1640	A
I^2t	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms}$ (50 Hz)	14450	A ² s
	$V_R = 0; t = 8.3 \text{ ms}$ (60 Hz)	13500	A ² s
	$T_{VJ} = T_{VJM}; t = 10 \text{ ms}$ (50 Hz)	11850	A ² s
	$V_R = 0; t = 8.3 \text{ ms}$ (60 Hz)	11300	A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM};$ repetitive, $I_T = 250 \text{ A}$ $f = 50 \text{ Hz}; t_p = 200 \mu\text{s};$	150	A/ μs
	$V_D = \frac{2}{3} V_{DRM};$ non repetitive, $I_T = I_{TAVM}$ $I_G = 0.45 \text{ A};$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	500	A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}; V_D = \frac{2}{3} V_{DRM};$ $R_{GK} = \infty;$ method 1 (linear voltage rise)	1000	V/ μs
P_{GM}	$T_{VJ} = T_{VJM}; t_p = 30 \mu\text{s}$	10	W
	$I_T = I_{T(AV)M}; t_p = 300 \mu\text{s}$	5	W
P_{GAV}		0.5	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 $t = 1 \text{ min}$	3000	V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3600	V~
M_d	Mounting torque (M5)	2.5 - 4	Nm
	Terminal connection torque (M5)	2.5 - 4	Nm
Weight	Typical including screws	90	g

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

Features

- International standard package
- Direct Copper Bonded Al₂O₃-ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873
- Gate-cathode twin pins

Applications

- DC Motor control
- Softstart AC motor controller
- Light, heat and temperature control

Advantages

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

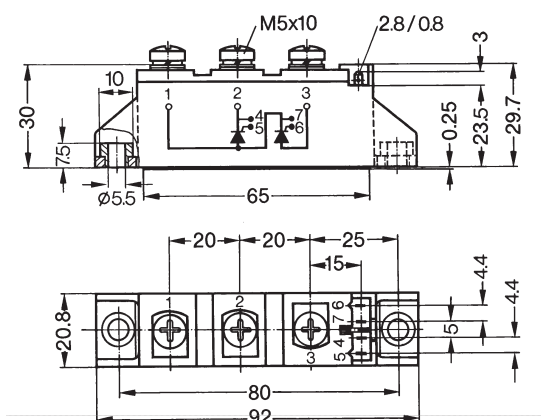
Symbol	Conditions	Characteristic Values	
		typ.	max.
I_{RRM}, I_{DRM}	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	15 mA
V_T	$I_T = 300$ A	$T_{VJ} = 25^\circ\text{C}$	1.74 V
V_{T0}	For power-loss calculations only		0.85 V
r_t		$T_{VJ} = T_{VJM}$	3.2 mΩ
V_{GT}	$V_D = 6$ V	$T_{VJ} = 25^\circ\text{C}$	1.5 V
		$T_{VJ} = -40^\circ\text{C}$	1.6 V
I_{GT}	$V_D = 6$ V	$T_{VJ} = 25^\circ\text{C}$	100 mA
		$T_{VJ} = -40^\circ\text{C}$	200 mA
V_{GD}	$V_D = \frac{2}{3} V_{DRM}$	$T_{VJ} = T_{VJM}$	0.25 V
I_{GD}			10 mA
I_L	$t_p = 30 \mu\text{s}; V_D = 6$ V $I_G = 0.45$ A; $di_G/dt = 0.45$ A/ μs	$T_{VJ} = 25^\circ\text{C}$	200 mA
I_H	$V_D = 6$ V; $R_{GK} = \infty$;	$T_{VJ} = 25^\circ\text{C}$	150 mA
t_{gd}	$V_D = \frac{1}{2} V_{DRM}$ $I_G = 0.45$ A; $di_G/dt = 0.45$ A/ μs	$T_{VJ} = 25^\circ\text{C}$	2 μs
t_q	$V_D = \frac{2}{3} V_{DRM}$ $dv/dt = 20$ V/ μs ; $-di/dt = 10$ A/ μs $I_T = 150$ A; $V_R = 100$ V; $t_p = 200 \mu\text{s}$	$T_{VJ} = T_{VJM}$	185 μs
Q_S	$I_T = 50$ A; $-di/dt = 6$ A/ μs	$T_{VJ} = T_{VJM}$	170 μC
I_{RM}			45 A
R_{thJC}	per thyristor; DC current per module		0.22 K/W 0.11 K/W
R_{thJK}	per thyristor; DC current per module		0.42 K/W 0.21 K/W
d_s	Creeping distance on surface		12.7 mm
d_A	Creepage 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 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")



d	R_{thJC} [K/W]
DC	0.22
180°	0.23
120°	0.25
60°	0.27
30°	0.28

i	R_{thi} [K/W]	t_i [s]
1	0.0066	0.0019
2	0.0678	0.0477
3	0.1456	0.344

d	R_{thJK} [K/W]
DC	0.42
180°	0.43
120°	0.45
60°	0.47
30°	0.48

i	R_{thi} [K/W]	t_i [s]
1	0.0066	0.0019
2	0.0678	0.0477
3	0.1456	0.344
4	0.2	1.32

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

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2 - 2

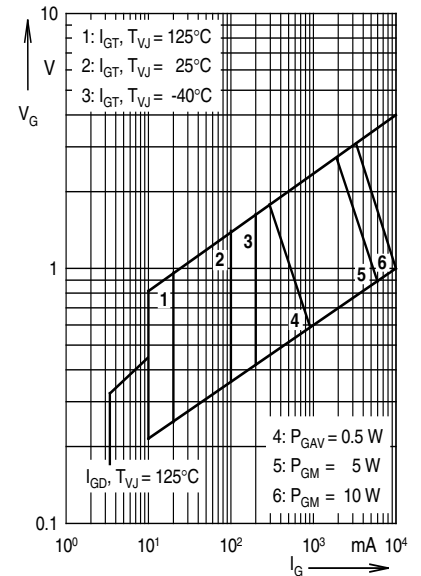


Fig. 1 Gate trigger characteristics

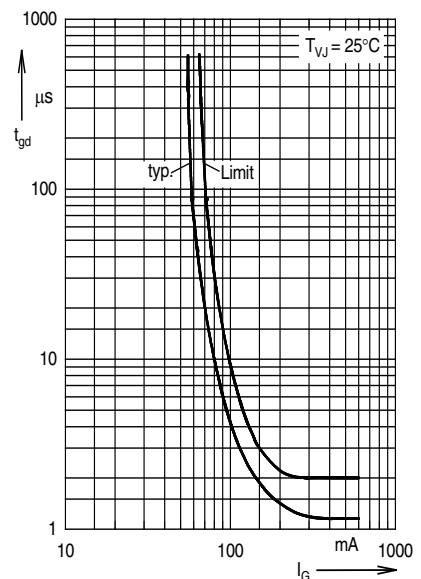


Fig. 2 Gate trigger delay time