

Thyristor Module

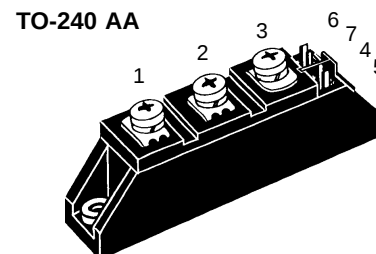
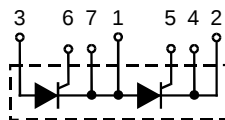
Preliminary data

$$I_{TRMS} = 2 \times 100 \text{ A}$$

$$I_{TAVM} = 2 \times 64 \text{ A}$$

$$V_{RRM, DRM} = 1600 \text{ V}$$

V_{RSM}	V_{RRM}	Type
V_{DSM}	V_{DRM}	
V	V	
1700	1600	MCC 60-16io1 B



Symbol	Conditions	Maximum Ratings
I_{TRMS}, I_{FRMS} I_{TAVM}	$T_{VJ} = T_{VJM}$ $T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	100 A 64 A
I_{TSM}, I_{FSM}	$T_{VJ} = 45^\circ\text{C};$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ 1150 A $t = 8.3 \text{ ms (60 Hz), sine}$ 1230 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ 1000 A $t = 8.3 \text{ ms (60 Hz), sine}$ 1070 A
I^2dt	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ 6610 A ² s $t = 8.3 \text{ ms (60 Hz), sine}$ 6350 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ 5000 A ² s $t = 8.3 \text{ ms (60 Hz), sine}$ 4810 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50\text{Hz}, t_p = 200\mu\text{s}$ $V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.45 \text{ A}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	repetitive, $I_T = 150 \text{ A}$ 150 A/ μs non repetitive, $I_T = I_{TAVM}$ 500 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM};$ $R_{GK} = \infty; \text{method 1 (linear voltage rise)}$	$V_{DR} = \frac{2}{3} V_{DRM}$ 1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30 \mu\text{s}$ 10 W $t_p = 300 \mu\text{s}$ 5 W
P_{GAV}		0.5 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 $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ 3000 V~ $t = 1 \text{ s}$ 3600 V~
M_d	Mounting torque (M5) Terminal connection torque (M5)	2.5-4.0/22-35 Nm/lb.in.
Weight	Typical including screws	90 g

Features

- International standard package
- Direct copper bonded Al_2O_3 -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- Gate-cathode twin pins

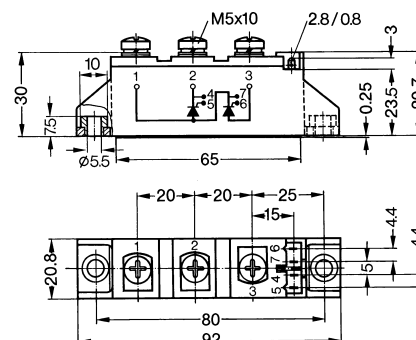
Applications

- 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

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions

Symbol	Conditions	Characteristic Values	
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	20	mA
V_T, V_F	$I_T, I_F = 200 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.70	V
V_{T0}	$T_{VJ} = 125^\circ\text{C}; \text{ For power-loss calculations only}$	0.85	V
r_T	$T_{VJ} = T_{VJM}$	4.8	m Ω
V_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	1.4	V
	$T_{VJ} = -40^\circ\text{C}$	1.6	V
I_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	100	mA
	$T_{VJ} = -40^\circ\text{C}$	200	mA
V_{GD}	$T_{VJ} = T_{VJM}; V_D = \frac{2}{3} V_{DRM}$	0.2	V
I_{GD}		10	mA
I_L	$T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}, V_D = 6 \text{ V}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	450	mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	200	mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = \frac{1}{2} V_{DRM}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	2	μs
t_q	$T_{VJ} = T_{VJM}; I_T = 120 \text{ A}, t_p = 200 \mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s typ.}$ $V_R = 100 \text{ V}; dv/dt = 20 \text{ V}/\mu\text{s}; V_D = \frac{2}{3} V_{DRM}$	150	μs
Q_S	$T_{VJ} = T_{VJM}; I_T, I_F = 50 \text{ A}, -di/dt = 0.64 \text{ A}/\mu\text{s}$	110	μC
I_{RM}		12	A
R_{thJC}	per thyristor/diode; DC current	0.5	K/W
	per module	0.25	K/W
R_{thCH}	per thyristor/diode; DC current	typ. 0.1	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 module-type MCC 60 version 1 B

Keyed gate/cathode twin plugs with wire length = 350 mm, gate = yellow, cathode = red

Type **ZY 200L** (L = Left for pin pair 4/5) } UL 758, style 1385,

Type **ZY 200R** (R = right for pin pair 6/7) } CSA class 5851, guide 460-1-1

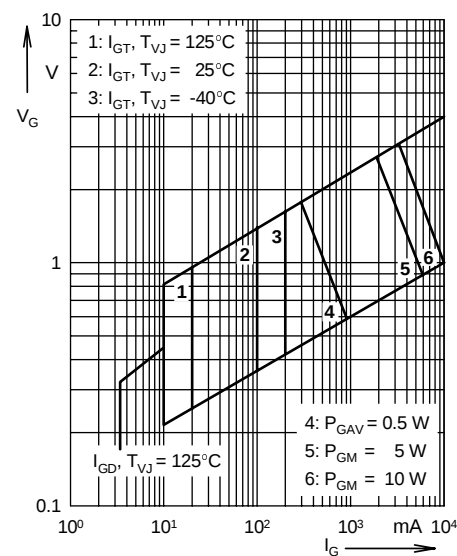


Fig. 1 Gate trigger characteristics

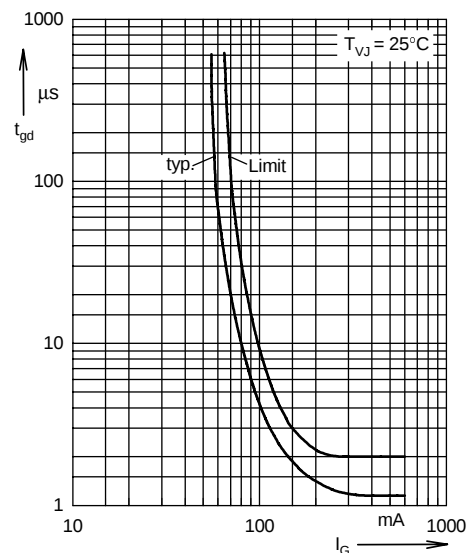


Fig. 2 Gate trigger delay time