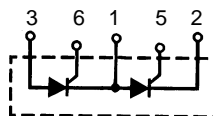
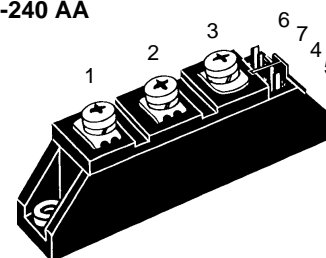


# Thyristor Modules

$V_{RSM}$	$V_{RRM}$	Type
$V_{DSM}$	$V_{DRM}$	
V	V	
900	800	MCC 21-08io8 B
1300	1200	MCC 21-12io8 B
1500	1400	MCC 21-14io8 B
1700	1600	MCC 21-16io8 B


**TO-240 AA**


Symbol	Conditions	Maximum Ratings	
$I_{TRMS}$	$T_{VJ} = T_{VJM}$	33	A
$I_{TAVM}$	$T_C = 85^\circ\text{C}; 180^\circ$ sine	21	A
$I_{TSM}$	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	320 A 350 A
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	280 A 310 A
$P_{dt}$	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	500 A <sup>2</sup> s 520 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	390 A <sup>2</sup> s 400 A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}; f = 50\text{Hz}; t_p = 200\mu\text{s}$	repetitive, $I_T = 45\text{ A}$	150 A/ $\mu\text{s}$
	$V_D = 2/3 V_{DRM}; I_G = 0.45\text{ A}; di_G/dt = 0.45\text{ A}/\mu\text{s}$	non repetitive, $I_T = I_{TAVM}$	500 A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}; R_{GK} = \infty; \text{method 1 (linear voltage rise)}$		1000 V/ $\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}; t_p = 30\mu\text{s}$		10 W
	$I_T = I_{TAVM}; t_p = 300\mu\text{s}$		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 min	3000	V~
	$I_{ISOL} \leq 1\text{ mA}; t = 1\text{ s}$	3600	V~
$M_d$	Mounting torque (M5)	2.5-4.0/22-35	Nm/lb.in.
	Terminal connection torque (M5)	2.5-4.0/22-35	Nm/lb.in.
<b>Weight</b>	Typical including screws	90	g

**Features**

- International standard package, JEDEC TO-240 AA
- Direct copper bonded  $\text{Al}_2\text{O}_3$  -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873
- Gate-cathode twin pins for version 1B

**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

Data according to DIN/IEC 747 and refer to a single thyristor unless otherwise stated.

Symbol	Conditions	Characteristic Values
$I_{RRM}, I_{DRM}$	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	5 mA
$V_T$	$I_T = 45 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.6 V
$V_{T0}$	For power-loss calculations only ( $T_{VJ} = 125^\circ\text{C}$ )	0.85 V
$r_T$		15 mΩ
$V_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	1.0 V 1.2 V
$I_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	65 mA 80 mA
$V_{GD}$	$T_{VJ} = T_{VJM}; V_D = \frac{2}{3} V_{DRM}$	0.2 V
$I_{GD}$		5 mA
$I_L$	$T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}; V_D = 6 \text{ V}$ $I_G = 0.3 \text{ A}; di_G/dt = 0.3 \text{ A}/\mu\text{s}$	150 mA
$I_H$	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	100 mA
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}; V_D = \frac{1}{2} V_{DRM}$ $I_G = 0.3 \text{ A}; di_G/dt = 0.3 \text{ A}/\mu\text{s}$	2 μs
$t_q$	$T_{VJ} = T_{VJM}; I_T = 15 \text{ A}, t_p = 300 \mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s}$ typ. $V_R = 100 \text{ V}; dv/dt = 20 \text{ V}/\mu\text{s}; V_D = \frac{2}{3} V_{DRM}$	150 μs
$I_{RM}$	$T_{VJ} = T_{VJM}; I_T = 30 \text{ A}, -di/dt = 0.3 \text{ A}/\mu\text{s}$	4 A
$R_{thJC}$	per thyristor; DC current	1.1 K/W
	per module	0.55 K/W
$R_{thJK}$	per thyristor; DC current	1.3 K/W
	per module	0.65 K/W
	other values see Fig. 8/9	
$d_s$	Creepage distance on surface	12.7 mm
$d_A$	Strike distance through air	9.6 mm
$a$	Maximum allowable acceleration	50 m/s <sup>2</sup>

Optional accessories for module-type MCC 23 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

### Dimensions in mm (1 mm = 0.0394")

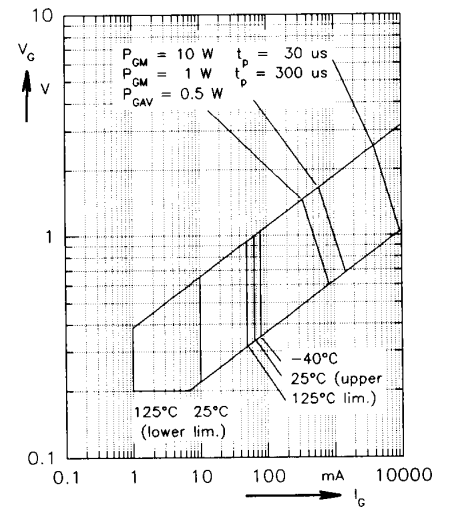
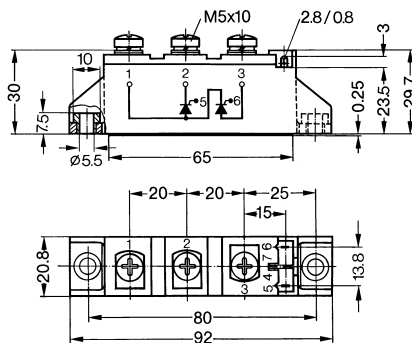


Fig. 1 Gate trigger characteristics

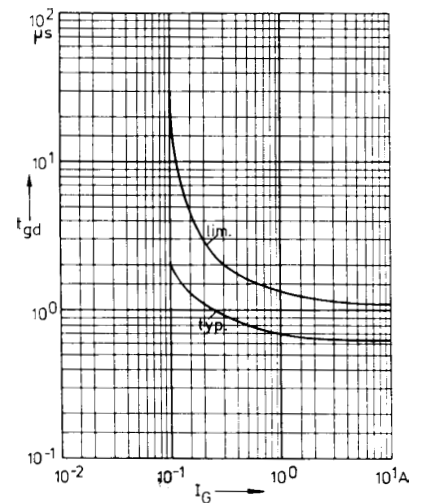


Fig. 2 Gate trigger delay time