

# Silicon Controlled Rectifiers

## Reverse Blocking Triode Thyristors

... designed for industrial and consumer applications such as power supplies; battery chargers; temperature, motor, light, and welder controls.

- Economical for a Wide Range of Uses
- High Surge Current —  $I_{TSM} = 550$  Amps
- Rugged Construction in Either Pressfit, Stud, or Isolated Stud
- Glass Passivated Junctions for Maximum Reliability

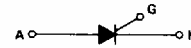
### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage, Note 1 ( $T_J = 25$ to $125^\circ\text{C}$ , Gate Open)	$V_{DRM}$ or $V_{RRM}$	50	Volts
MCR63-( )A		100	
MCR64-		200	
MCR65-		400	
		600	
		800	
Non-Repetitive Peak Reverse Blocking Voltage ( $t \leq 5$ ms), Note 1	$V_{RSM}$	75	Volts
MCR63-( )A		150	
MCR64-		300	
MCR65-		500	
		700	
		900	
Forward Current RMS	$I_T(\text{RMS})$	55	Amps
Peak Surge Current (One Cycle, 60 Hz, $T_J = -40$ to $+125^\circ\text{C}$ )	$I_{TSM}$	550	Amps
Circuit Fusing Considerations ( $t = 8.3$ ms)	$I^2t$	1255	$\text{A}^2\text{s}$
Peak Gate Power	$P_{GFM}$	20	Watts
Average Gate Power (Pulse Width $\leq 2 \mu\text{s}$ )	$P_{GF(AV)}$	0.5	Watt
Peak Forward Gate Current	$I_{GFM}$	2	Amps
Peak Gate Voltage — Forward	$V_{GFM}$	10	Volts
Reverse	$V_{GRM}$	10	
Operating Junction Temperature Range	$T_J$	$-40$ to $+125$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-40$ to $+150$	$^\circ\text{C}$
Stud Torque	—	30	in. lb.

Note 1.  $V_{DRM}$  and  $V_{RRM}$  for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

**MCR63-( )A Series**  
**MCR64 Series**  
**MCR65 Series**

SCRs  
**55 AMPERES RMS**  
**50 thru 800 VOLTS**



**CASE 263-04**  
**STYLE 1**  
**MCR64 Series**



**CASE 174-04**  
**STYLE 1**  
**MCR63-( )A Series**



**CASE 311-02**  
**STYLE 1**  
**MCR65 Series**

MCR63-( )A Series • MCR64 Series • MCR65 Series

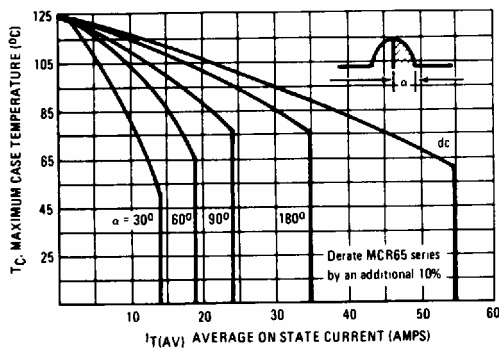
**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case Pressfit and Stud Isolated Stud	$R_{\theta JC}$	1 1.1	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^{\circ}C$  unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Peak Forward or Reverse Blocking Current ( $V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}, \text{ Gate Open}$ ) $T_J = 25^{\circ}C$ $T_J = 125^{\circ}C$	$I_{DRM}, I_{RRM}$	— —	10 2	$\mu A$ mA
Forward "On" Voltage ( $I_{TM} = 175 \text{ A Peak}$ )	$V_{TM}$	—	2	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12 \text{ V}, R_L = 50 \Omega$ ) $T_C = 25^{\circ}C$ $T_C = -40^{\circ}C$	$I_{GT}$	— —	40 75	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12 \text{ V}, R_L = 50 \Omega$ ) $T_C = 25^{\circ}C$ $T_C = -40^{\circ}C$ ( $V_D = \text{Rated } V_{DRM}, R_L = 1 \text{ k}\Omega, T_J = 125^{\circ}C$ )	$V_{GT}$	— — 0.2	3 3.5 —	Volts
Holding Current ( $V_D = 12 \text{ V}, R_L = 50 \Omega, \text{ Gate Open}$ )	$I_H$	—	60	mA
Forward Voltage Application Rate ( $T_J = 125^{\circ}C, V_D = \text{Rated } V_{DRM}$ )	dv/dt	50	—	V/ $\mu s$

**FIGURE 1 – AVERAGE CURRENT DERATING**



**FIGURE 2 – POWER DISSIPATION**

