

## Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

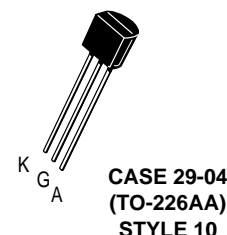
PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-226AA package which is readily adaptable for use in automatic insertion equipment.

- Sensitive Gate Trigger Current — 200  $\mu$ A Maximum
- Low Reverse and Forward Blocking Current — 100  $\mu$ A Maximum,  $T_C = 125^\circ\text{C}$
- Low Holding Current — 5 mA Maximum
- Glass-Passivated Surface for Reliability and Uniformity

### MCR100 Series\*

\*Motorola preferred devices

SCRs  
0.8 AMPERE RMS  
100 thru 600 VOLTS



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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage <sup>(1)</sup> ( $T_J = 25$ to $125^\circ\text{C}$ , $R_{GK} = 1\text{ k}\Omega$ ) MCR100-3 MCR100-4 MCR100-6 MCR100-8	$V_{DRM}$ and $V_{RRM}$	100 200 400 600	Volts
Forward Current RMS (See Figures 1 & 2) (All Conduction Angles)	$I_T(\text{RMS})$	0.8	Amps
Peak Forward Surge Current, $T_A = 25^\circ\text{C}$ (1/2 Cycle, Sine Wave, 60 Hz)	$I_{TSM}$	10	Amps
Circuit Fusing Considerations ( $t = 8.3\text{ ms}$ )	$I^2t$	0.415	$\text{A}^2\text{s}$
Peak Gate Power — Forward, $T_A = 25^\circ\text{C}$	$P_{GM}$	0.1	Watts
Average Gate Power — Forward, $T_A = 25^\circ\text{C}$	$P_{GF(AV)}$	0.01	Watt
Peak Gate Current — Forward, $T_A = 25^\circ\text{C}$ (300 $\mu\text{s}$ , 120 PPS)	$I_{GFM}$	1	Amp
Peak Gate Voltage — Reverse	$V_{GRM}$	5	Volts
Operating Junction Temperature Range @ Rated $V_{RRM}$ and $V_{DRM}$	$T_J$	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +150	$^\circ\text{C}$
Lead Solder Temperature ( $< 1/16''$ from case, 10 s max)	—	+230	$^\circ\text{C}$

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.

**Preferred** devices are Motorola recommended choices for future use and best overall value.

# MCR100 Series

## THERMAL CHARACTERISTICS

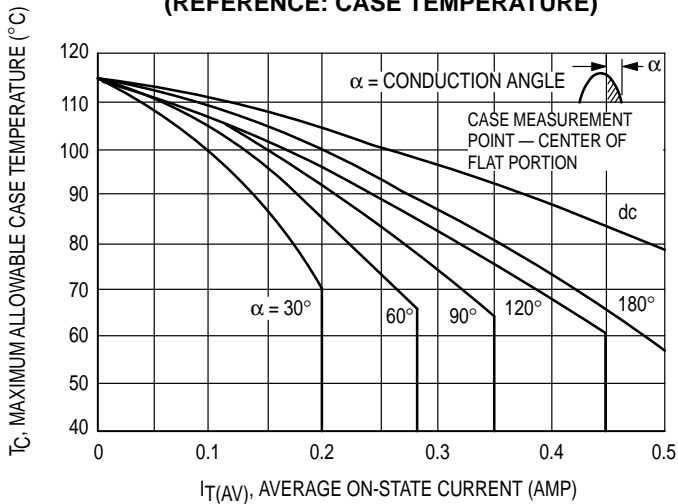
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	75	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^{\circ}\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}\text{C}$ , $R_{GK} = 1 \text{ k}\Omega$ unless otherwise noted.)

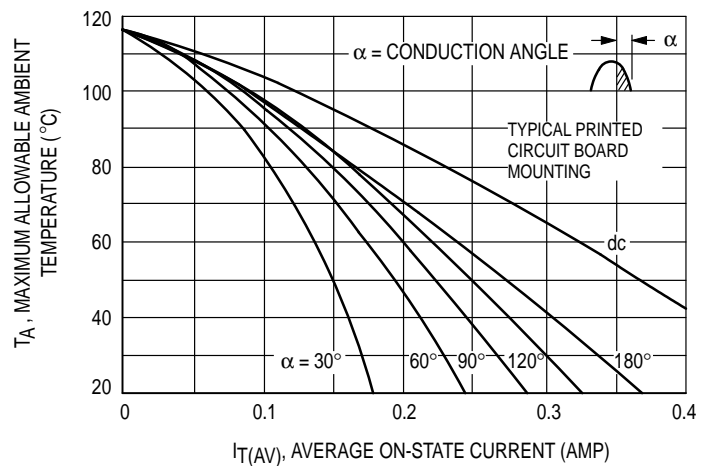
Characteristic	Symbol	Min	Max	Unit
Peak Forward or Reverse Blocking Current ( $V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$ )	$I_{DRM}, I_{RRM}$	—	10 100	$\mu\text{A}$ $\mu\text{A}$
Forward "On" Voltage(1) ( $I_{TM} = 1 \text{ A Peak @ } T_A = 25^{\circ}\text{C}$ )	$V_{TM}$	—	1.7	Volts
Gate Trigger Current (Continuous dc)(2) (Anode Voltage = 7 Vdc, $R_L = 100 \text{ Ohms}$ )	$I_{GT}$	—	200	$\mu\text{A}$
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, $R_L = 100 \text{ Ohms}$ ) (Anode Voltage = Rated $V_{DRM}$ , $R_L = 100 \text{ Ohms}$ )	$V_{GT}$	— — 0.1	0.8 1.2 —	Volts
Holding Current (Anode Voltage = 7 Vdc, initiating current = 20 mA)	$I_H$	— —	5 10	mA

1. Forward current applied for 1 ms maximum duration, duty cycle  $\leq 1\%$ .
2.  $R_{GK}$  current is not included in measurement.

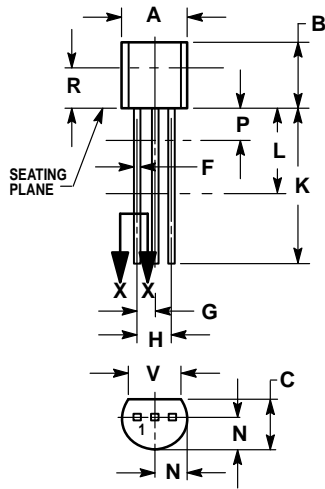
**FIGURE 1 – MCR100-7, MCR100-8 CURRENT DERATING (REFERENCE: CASE TEMPERATURE)**



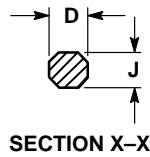
**FIGURE 2 – MCR100-7, MCR100-8 CURRENT DERATING (REFERENCE: AMBIENT TEMPERATURE)**



PACKAGE DIMENSIONS



STYLE 10:  
 PIN 1. CATHODE  
 2. GATE  
 3. ANODE



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
  4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

CASE 29-04  
 (TO-226AA)

## MCR100 Series

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MCR100/D

