# **Silicon Controlled Rectifiers**

# **Reverse Blocking Triode Thyristors**

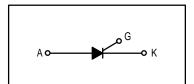
PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-226AA package which is readily adaptable for use in automatic insertion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

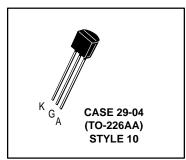
- Sensitive Gate Trigger Current 200 μA Maximum
- Low Reverse and Forward Blocking Current 100 μA Maximum, T<sub>C</sub> = 125°C
- Low Holding Current 5 mA Maximum
- · Glass-Passivated Surface for Reliability and Uniformity

# MCR100 Series\*

\*Motorola preferred devices

SCRs 0.8 AMPERE RMS 100 thru 600 VOLTS





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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage(1) $(T_J=25 \text{ to } 125^{\circ}\text{C},  R_{GK}=1 \text{ k}\Omega \qquad \qquad \text{MCR100-3} \\ \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \text{MCR100-4} \\ \qquad $	VDRM and VRRM	100 200 400 600	Volts
Forward Current RMS (See Figures 1 & 2) (All Conduction Angles)	I <sub>T(RMS)</sub>	0.8	Amps
Peak Forward Surge Current, T <sub>A</sub> = 25°C (1/2 Cycle, Sine Wave, 60 Hz)	ITSM	10	Amps
Circuit Fusing Considerations (t = 8.3 ms)	l <sup>2</sup> t	0.415	A <sup>2</sup> s
Peak Gate Power — Forward, T <sub>A</sub> = 25°C	P <sub>GM</sub>	0.1	Watts
Average Gate Power — Forward, T <sub>A</sub> = 25°C	P <sub>GF(AV)</sub>	0.01	Watt
Peak Gate Current — Forward, T <sub>A</sub> = 25°C (300 μs, 120 PPS)	<sup>I</sup> GFM	1	Amp
Peak Gate Voltage — Reverse	VGRM	5	Volts
Operating Junction Temperature Range @ Rated V <sub>RRM</sub> and V <sub>DRM</sub>	TJ	-40 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C
Lead Solder Temperature (< 1/16" from case, 10 s max)		+230	°C

<sup>1.</sup> VDRM and VRRM 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

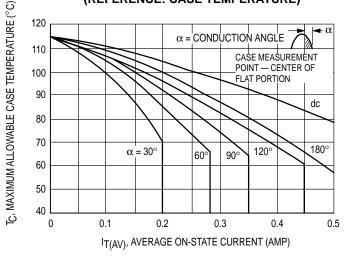
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{ heta JC}$	75	°C/W
Thermal Resistance, Junction to Ambient	$R_{ heta JA}$	200	°C/W

## **ELECTRICAL CHARACTERISTICS** (T<sub>C</sub> = 25°C, R<sub>GK</sub> = 1 k $\Omega$ unless otherwise noted.)

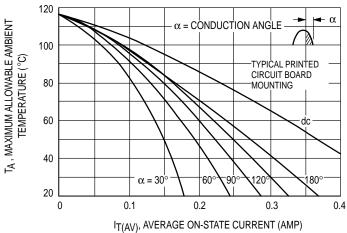
Characteristic		Symbol	Min	Max	Unit
Peak Forward or Reverse Blocking Current (VAK = Rated VDRM or VRRM)	T <sub>C</sub> = 25°C T <sub>C</sub> = 125°C	I <sub>DRM</sub> , I <sub>RRM</sub>		10 100	μΑ μΑ
Forward "On" Voltage <sup>(1)</sup> (I <sub>TM</sub> = 1 A Peak @ T <sub>A</sub> = 25°C)		∨тм	_	1.7	Volts
Gate Trigger Current (Continuous dc) <sup>(2)</sup> (Anode Voltage = 7 Vdc, R <sub>L</sub> = 100 Ohms)	T <sub>C</sub> = 25°C	lGT	_	200	μΑ
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, R <sub>L</sub> = 100 Ohms) (Anode Voltage = Rated V <sub>DRM</sub> , R <sub>L</sub> = 100 Ohms)	$T_{C} = 25^{\circ}C$ $T_{C} = -40^{\circ}C$ $T_{C} = 125^{\circ}C$	Vgт	— — 0.1	0.8 1.2 —	Volts
Holding Current (Anode Voltage = 7 Vdc, initiating current = 20 mA)	$T_C = 25^{\circ}C$ $T_C = -40^{\circ}C$	Ιн		5 10	mA

<sup>1.</sup> Forward current applied for 1 ms maximum duration, duty cycle ≤ 1%.

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

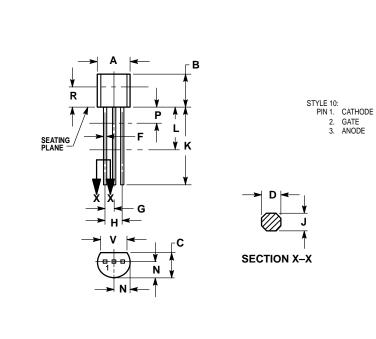


## FIGURE 2 - MCR100-7, MCR100-8 CURRENT DERATING (REFERENCE: AMBIENT TEMPERATURE)



<sup>2.</sup>  $R_{\mbox{GK}}$  current is not included in measurement.

## **PACKAGE DIMENSIONS**



- 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.

	INC	INCHES MILLIMETER		IETERS
DIM	MIN	MAX	MIN	MAX
Α	0.175	0.205	4.45	5.20
В	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
ם	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
Н	0.095	0.105	2.42	2.66
7	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
Р		0.100		2.54
R	0.115		2.93	
٧	0.135		3.43	

**CASE 29-04** (TO-226AA)

#### **MCR100 Series**

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