

Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

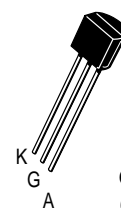
PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic TO-226AA package which is readily adaptable for use in automatic insertion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

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

MCR100-6
MCR100-8

Motorola preferred devices

SCRs
0.8 AMPERE RMS
400 thru 600 VOLTS



CASE 29-04
(TO-226AA)
STYLE 10

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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage ⁽¹⁾ ($T_J = 25$ to 125°C , $R_{GK} = 1 \text{ k}\Omega$) MCR100-6 MCR100-8	V_{DRM} and V_{RRM}	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	A^2s
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 μs , 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.

REV 1

MCR100-6 MCR100-8

THERMAL CHARACTERISTICS

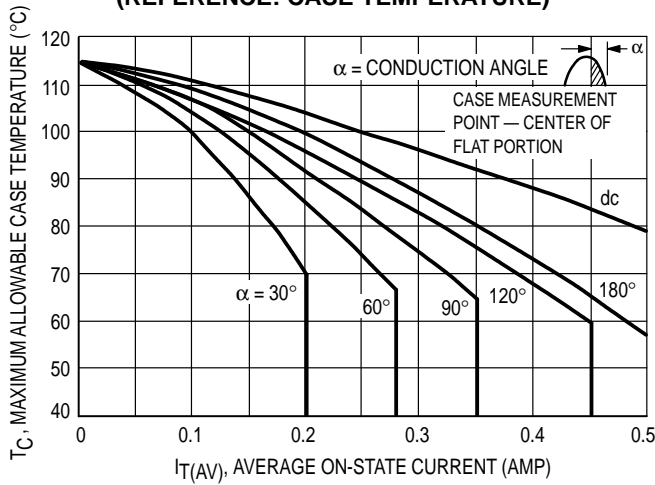
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	75	$^{\circ}C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	$^{\circ}C/W$

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

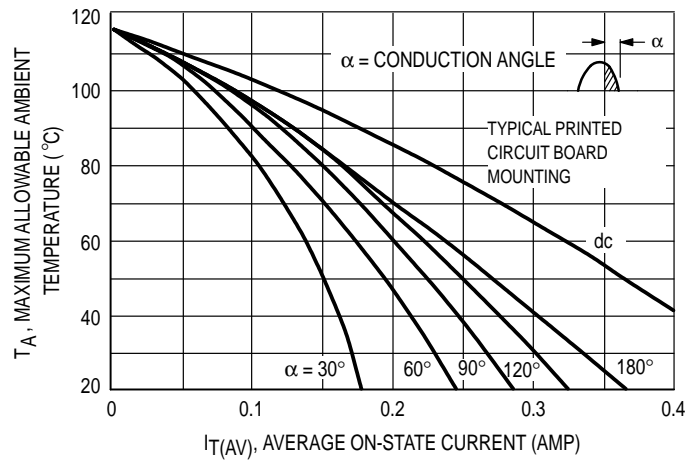
Characteristic	Symbol	Min	Max	Unit
Peak Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$)	I_{DRM}, I_{RRM}	—	10 100	μA μA
Forward "On" Voltage ⁽¹⁾ ($I_{TM} = 1\text{ A Peak @ } T_A = 25^{\circ}C$)	V_{TM}	—	1.7	Volts
Gate Trigger Current (Continuous dc) ⁽²⁾ (Anode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

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

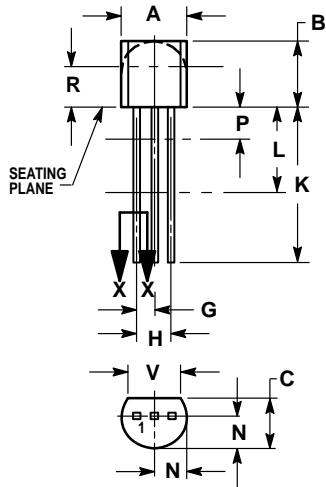
**FIGURE 1 – MCR100-8 CURRENT DERATING
(REFERENCE: CASE TEMPERATURE)**



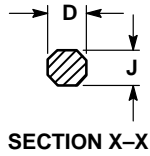
**FIGURE 2 – MCR100-8 CURRENT DERATING
(REFERENCE: AMBIENT TEMPERATURE)**



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. 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	0.021	0.407	0.533
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 29-11
 (TO-226AA)
 ISSUE AJ

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