Silicon Controlled Rectifiers
Reverse Blocking Triode Thyristors

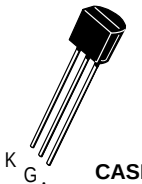
MCR100 Series*

***Motorola preferred devices**

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_C = 125°C
- Low Holding Current — 5 mA Maximum
- Glass-Passivated Surface for Reliability and Uniformity

SCRs
0.8 AMPERE RMS
100 thru 600 VOLTS



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

MAXIMUM RATINGS (T_J = 25°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 kΩ) 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)	$I_{T(RMS)}$	0.8	Amps
Peak Forward Surge Current, T_A = 25°C (1/2 Cycle, Sine Wave, 60 Hz)	I_{TSM}	10	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I^2t	0.415	A^2s
Peak Gate Power — Forward, T_A = 25°C	P_{GM}	0.1	Watts
Average Gate Power — Forward, T_A = 25°C	$P_{GF(AV)}$	0.01	Watt
Peak Gate Current — Forward, T_A = 25°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	°C
Storage Temperature Range	T_{stg}	–40 to +150	°C
Lead Solder Temperature (< 1/16″ from case, 10 s max)	—	+230	°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.

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C, R_{GK} = 1 kΩ unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
Peak Forward or Reverse Blocking Current (V_{AK} = Rated V_{DRM} or V_{RRM})	T_C = 25°C T_C = 125°C	I_{DRM}, I_{RRM}	 —	10 100	μA μA
Forward "On" Voltage(1) (I_{TM} = 1 A Peak @ T_A = 25°C)		V_{TM}	—	1.7	Volts
Gate Trigger Current (Continuous dc)(2) (Anode Voltage = 7 Vdc, R_L = 100 Ohms)	T_C = 25°C	I_{GT}	—	200	μA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, R_L = 100 Ohms) (Anode Voltage = Rated V_{DRM}, R_L = 100 Ohms)	T_C = 25°C T_C = –40°C T_C = 125°C	V_{GT}	— — 0.1	0.8 1.2 —	Volts
Holding Current (Anode Voltage = 7 Vdc, initiating current = 20 mA)	T_C = 25°C T_C = –40°C	I_H	— —	5 10	mA

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

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

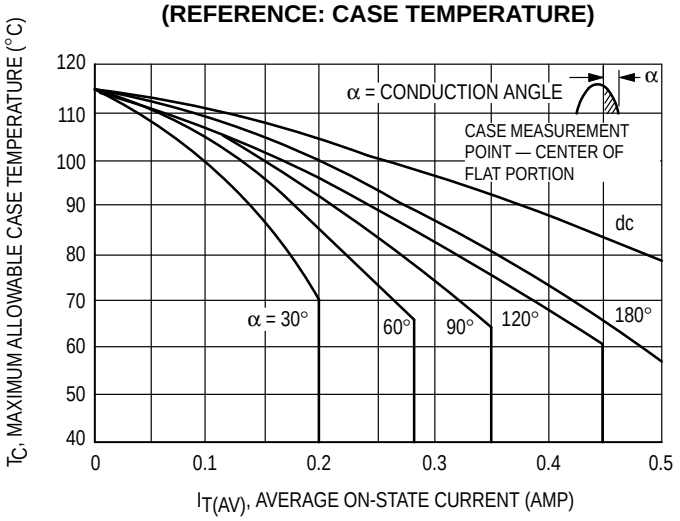
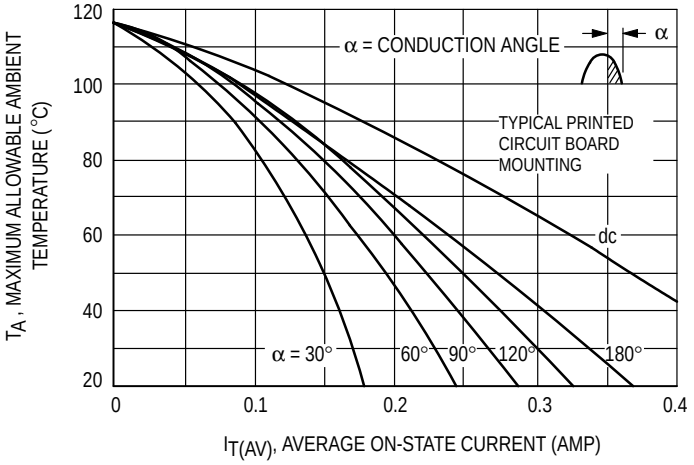
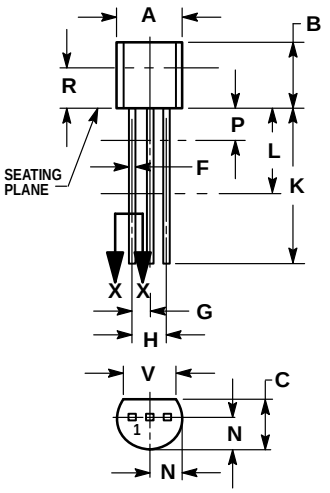


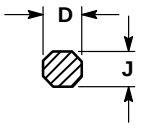
FIGURE 2 – MCR100-7, MCR100-8 CURRENT DERATING (REFERENCE: AMBIENT TEMPERATURE)



PACKAGE DIMENSIONS



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



SECTION X–X

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.

	INCHES		MILLIMETERS	
DIM	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)

Literature Distribution Centers:
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