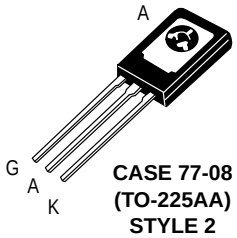
Silicon Controlled Rectifiers

MCR506 Series

. . . PNPN devices designed for high volume consumer applications such as temperature, light, and speed control; process and remote control, and warning systems where reliability of operation is important.

- Passivated Surface for Reliability and Uniformity
- Power Rated at Economical Prices
- Practical Level Triggering and Holding Characteristics
- Flat, Rugged, Thermopad Construction for Low Thermal Resistance, High Heat Dissipation and Durability.

SCRs
6 AMPERES RMS
50 thru 600 VOLTS



CASE 77-08
(TO-225AA)
STYLE 2

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 110°C, R_{GK} = 1 kΩ) MCR506-2 MCR506-3 MCR506-4 MCR506-6 MCR506-8	V_{DRM} V_{RRM}	 50 100 200 400 600	Volts
RMS Forward Current (All Conduction Angles)	$I_{T(RMS)}$	6	Amp
Average Forward Current (T_C = 93°C)	$I_{T(AV)}$	3.82	Amp
Peak Non-repetitive Surge Current (1/2 Cycle, 60 Hz, T_J = –40 to 110°C)	I_{TSM}	40	Amp
Circuit Fusing Considerations (t = 8.3 ms)	I^2t	2.6	A^2s
Peak Gate Power	P_{GM}	0.5	Watt
Average Gate Power	$P_{G(AV)}$	0.1	Watt
Peak Forward Gate Current	I_{GM}	0.2	Amp
Peak Reverse Gate Voltage	V_{RGM}	6	Volts
Operating Junction Temperature Range	T_J	–40 to 110	°C
Storage Temperature Range	T_{stg}	–40 to 150	°C
Mounting Torque(2)	—	6	in. lb.

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.
2. Torque rating applies with use of torque washer (Shakeproof WD19523 or equivalent). Mounting torque in excess of 6 in. lb. does not appreciably lower case-to-sink thermal resistance. Anode lead and heat sink contact pad are common. (See AN290 B)
   For soldering purposes (either terminal connection or device mounting), soldering temperatures shall not exceed +225°C. For optimum results, an activated flux (oxide removing) is recommended.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C, R_{GK} = 1000 Ohms unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward Blocking Current (V_D = Rated V_{DRM}, T_J = 110°C)	I_{DRM}	—	—	200	μA
Peak Reverse Blocking Current (V_R = Rated V_{RRM}, T_J = 110°C)	I_{RRM}	—	—	200	μA
Forward "On" Voltage (I_{TM} = 12 A Peak)	V_{TM}	—	—	1.9	Volts
Gate Trigger Current (Continuous dc) (V_{AK} = 7 Vdc, R_L = 100 Ohms) (V_{AK} = 7 Vdc, R_L = 100 Ohms, T_C = –40°C)	I_{GT}	 — —	 — —	 200 500	μA
Gate Trigger Voltage (Continuous dc) (V_{AK} = 7 Vdc, R_L = 100 Ohms, T_C = 25°C)	V_{GT}	—	—	1	Volts
Gate Non-Trigger Voltage (V_{AK} = Rated V_{DRM}, R_L = 100 Ohms, T_J = 110°C)	V_{GD}	0.2	—	—	Volts
Holding Current (V_{AK} = 7 Vdc, T_C = 25°C)	I_H	—	—	5	mA
Forward Voltage Application Rate (V_D = Rated V_{DRM}, Exponential Waveform, T_J = 110°C)	dv/dt	—	10	—	V/μs

FIGURE 1 — CURRENT DERATING

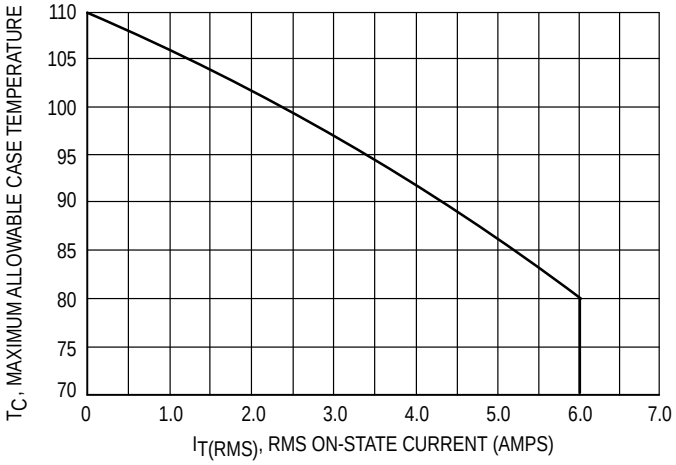
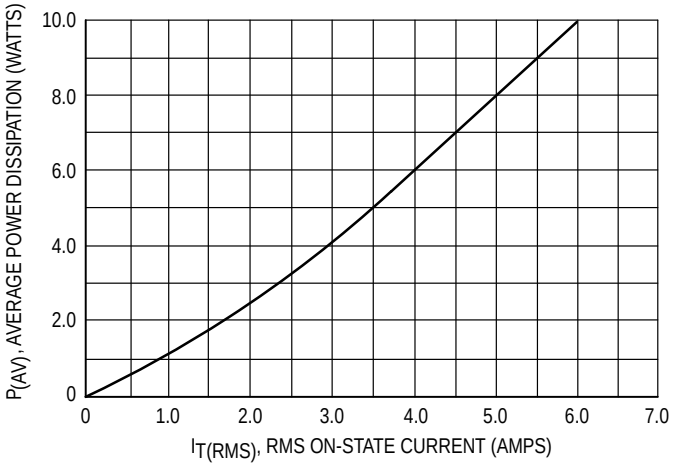
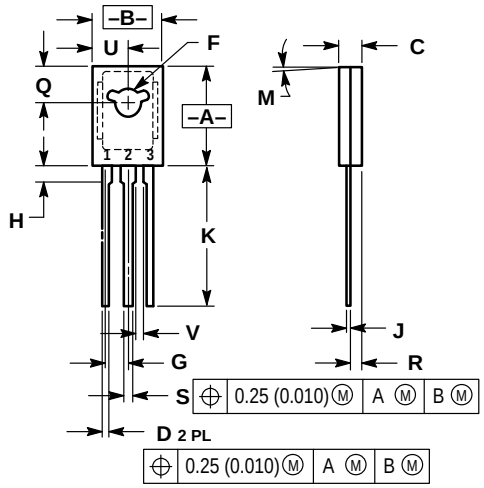


FIGURE 2 — POWER DISSIPATION



PACKAGE DIMENSIONS



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

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

CASE 77–08
(TO–225AA)

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