

# MCR407-1 (SILICON)

thru

# MCR407-4



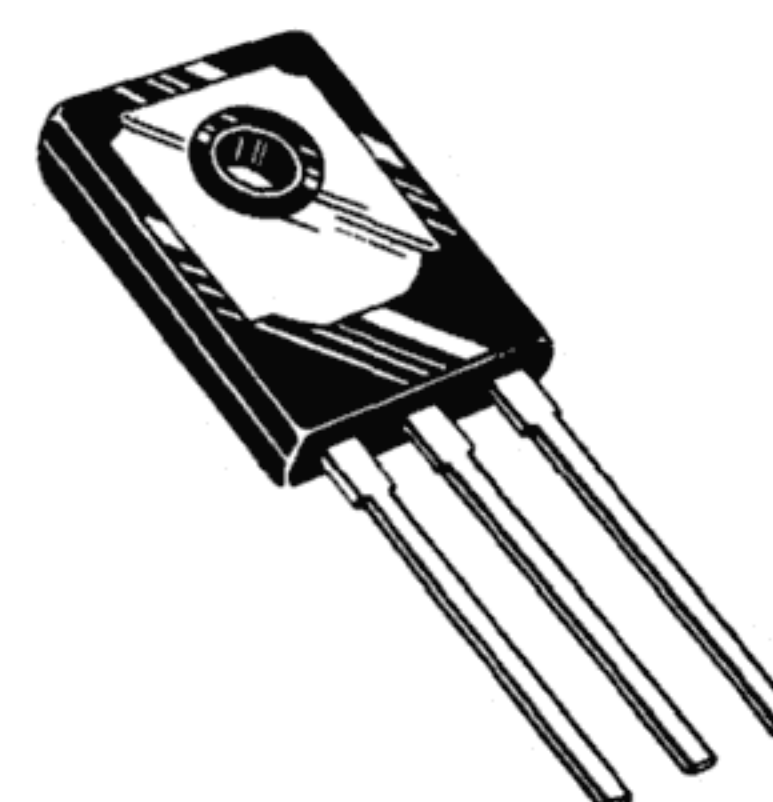
## PLASTIC SILICON CONTROLLED RECTIFIERS

... Annular PNP 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.

- Annular 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

## THYRISTORS

**4.0 AMPERES RMS**  
**30 thru 200 VOLTS**

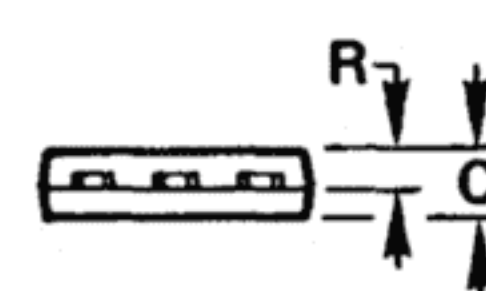
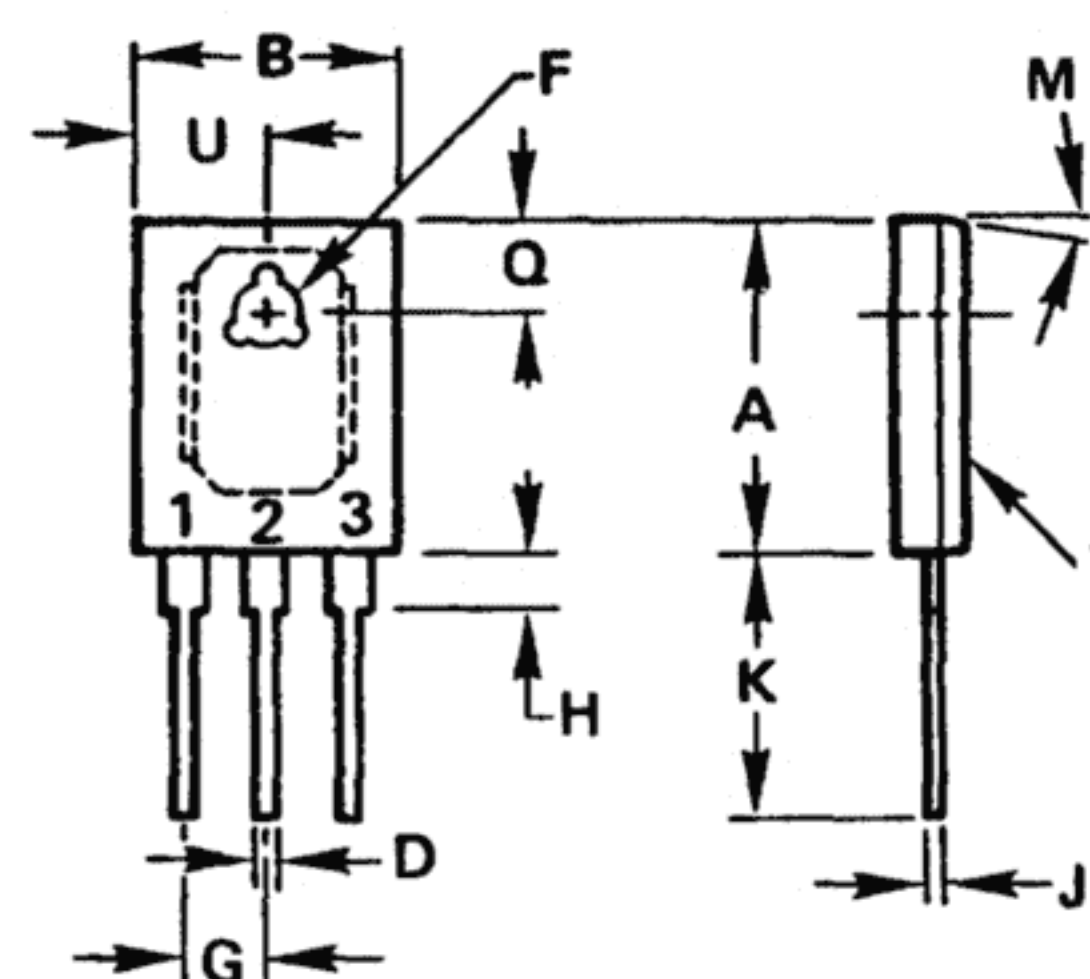


## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Reverse Blocking Voltage (Note 1) MCR407-1	$V_{RRM}$	30	Volts
-2		60	
-3		100	
-4		200	
RMS On-State Current (All Conduction Angles)	$I_T(RMS)$	4.0	Amp
Average On-State Current ( $T_C = 89^\circ C$ )	$I_T(AV)$	2.55	Amp
Peak Non-Repetitive Surge Current (One cycle, 60 Hz, $T_J = -40$ to $+110^\circ C$ )	$I_{TSM}$	20	Amp
Circuit Fusing Considerations ( $T_J = -40$ to $+110^\circ C$ ) $t = 1.0$ to $8.3$ ms)	$I^2t$	1.6	$A^2s$
Peak Gate Power	$P_{GFM}$	0.5	Watt
Average Gate Power	$P_{GF(AV)}$	0.1	Watt
Peak Gate Current	$I_{GFM}$	0.2	Amp
Peak Gate Voltage	$V_{GRM}$	6.0	Volts
Operating Junction Temperature Range	$T_J$	$-40$ to $+110$	$^\circ C$
Storage Temperature Range	$T_{stg}$	$-40$ to $+150$	$^\circ C$
Mounting Torque (6-32 Screw) (Note 2)	—	8.0	in. lb.

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.0	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^\circ C/W$



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	16.13	16.38	0.635	0.645
B	12.57	12.83	0.495	0.505
C	3.18	3.43	0.125	0.135
D	1.09	1.24	0.043	0.049
F	3.51	3.76	0.138	0.148
G	4.22 BSC		0.166 BSC	
H	2.67	2.92	0.105	0.115
J	0.813	0.864	0.032	0.034
K	15.11	16.38	0.595	0.645
M	90 TYP		90 TYP	
Q	4.70	4.95	0.185	0.195
R	1.91	2.16	0.075	0.085
U	6.22	6.48	0.245	0.255

CASE 90-05

NOTE:  
1. LEADS WITHIN .005" RAD OF TRUE POSITION (TP) AT MMC



**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^{\circ}\text{C}$  unless otherwise noted,  $R_{GK} = 1000\text{ ohms}$ )

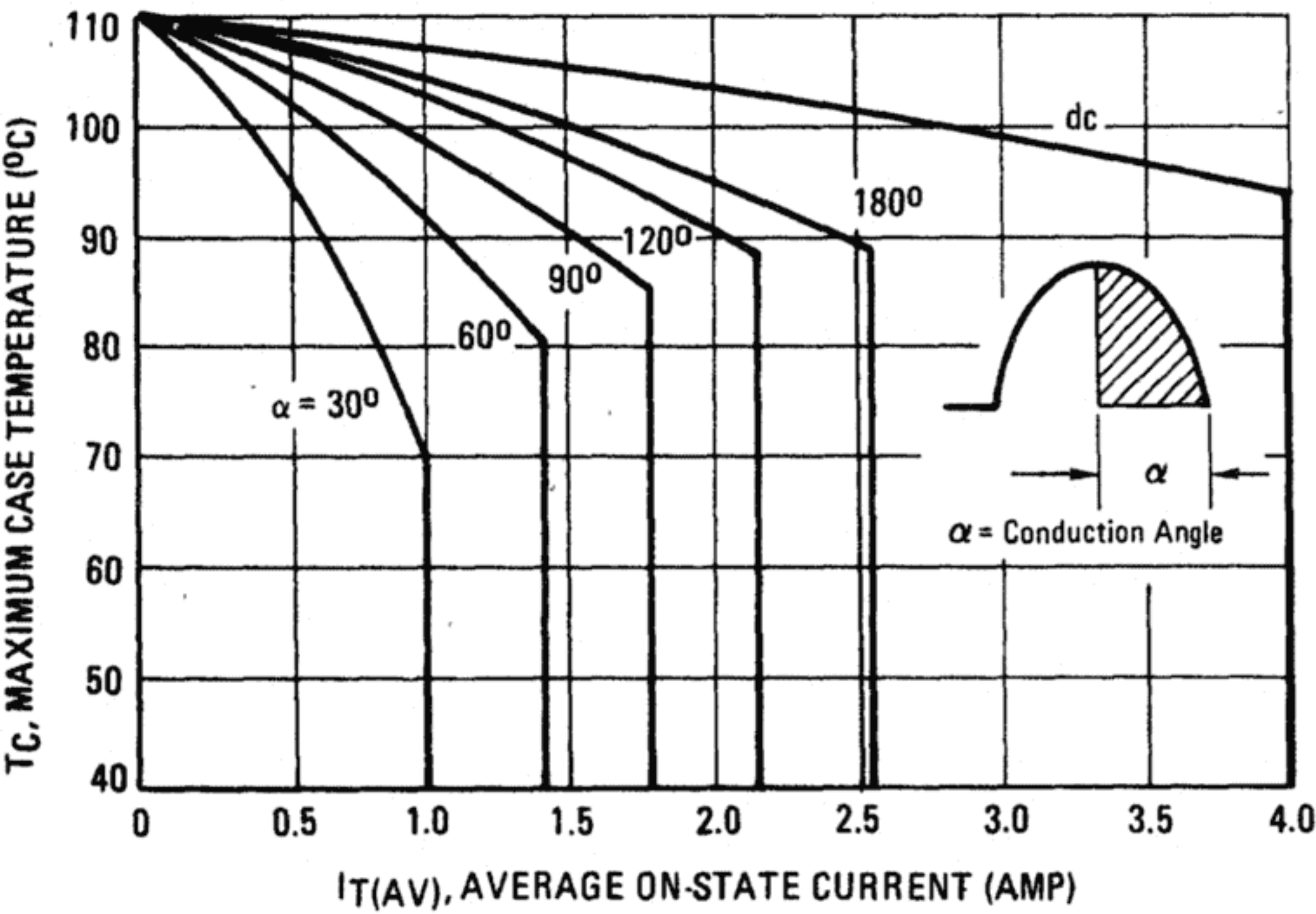
Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward Blocking Voltage ( $T_J = 110^{\circ}\text{C}$ ) Note 1	$V_{\text{DRM}}$	30	—	—	Volts
MCR407-1		60	—	—	
-2		100	—	—	
-3		200	—	—	
-4		—	—	—	
Peak Forward Blocking Current (Rated $V_{\text{DRM}}$ , $T_J = 100^{\circ}\text{C}$ )	$I_{\text{DRM}}$	—	—	100	$\mu\text{A}$
Peak Reverse Blocking Current (Rated $V_{\text{RRM}}$ , $T_J = 110^{\circ}\text{C}$ )	$I_{\text{RRM}}$	—	—	100	$\mu\text{A}$
Peak On-State Voltage ( $I_{\text{TM}} = 4.0\text{ A}$ )	$V_{\text{TM}}$	—	—	2.6	Volts
Gate Trigger Current (Continuous dc) (Anode Voltage = 7.0 Vdc, $R_L = 100\text{ ohms}$ )	$I_{\text{GT}}$	—	—	500	$\mu\text{A}$
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7.0 Vdc, $R_L = 100\text{ ohms}$ ) (Anode Voltage = Rated $V_{\text{DRM}}$ , $R_L = 100\text{ ohms}$ , $T_J = 110^{\circ}\text{C}$ )	$V_{\text{GT}}$	— 0.2	— —	1.0 —	Volts
Holding Current (Anode Voltage = 7.0 Vdc)	$I_{\text{H}}$	—	—	5.0	mA
Forward Voltage Application Rate ( $T_J = 110^{\circ}\text{C}$ )	dv/dt	—	10	—	V/ $\mu\text{s}$

**NOTES:**

1.  $V_{\text{DRM}}$  and  $V_{\text{RRM}}$  for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage but positive gate voltage shall not be applied concurrently with a negative potential on the anode. When checking forward or reverse blocking capability, thyristor devices should not be tested with a constant current source in a manner that the voltage applied exceeds the rated blocking voltage.
2. Torque rating applies with use of torque washer (Shakeproof WD19522 #6 or equivalent). Mounting torque in excess of 8 in. lbs. does not appreciably lower case-to-sink thermal resistance. Anode lead and heatsink contact pad are common.  
For soldering purposes (either terminal connection or device mounting), soldering temperatures shall not exceed  $+225^{\circ}\text{C}$ . For optimum results, an activated flux (oxide removing) is recommended.

**CURRENT DERATING**

**FIGURE 1 – MAXIMUM CASE TEMPERATURE**



**FIGURE 2 – MAXIMUM AMBIENT TEMPERATURE**

