

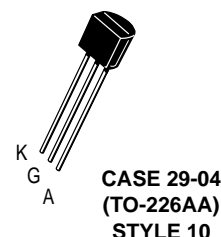
# Silicon Controlled Rectifiers

... designed and tested for repetitive peak operation required for CD ignition, fuel ignitors, flash circuits, motor controls and low-power switching applications.

- 150 Amperes for 2  $\mu$ s Safe Area
- High dv/dt
- Very Low Forward "On" Voltage at High Current
- Low-Cost TO-226AA (TO-92)

**MCR22-2  
thru  
MCR22-8**

**SCRs  
1.5 AMPERES RMS  
50 thru 600 VOLTS**



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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage ( $R_{GK} = IK, T_J = 25$ to $125^\circ\text{C}$ )	$V_{DRM}, V_{RRM}$	50 100 200 400 600	Volts
On-State Current RMS (All Conduction Angles)	$I_T(\text{RMS})$	1.5	Amps
Peak Non-repetitive Surge Current, $T_A = 25^\circ\text{C}$ (1/2 Cycle, Sine Wave, 60 Hz)	$I_{TSM}$	15	Amps
Circuit Fusing Considerations ( $t = 8.3$ ms)	$I^2t$	0.9	$\text{A}^2\text{s}$
Peak Gate Power, $T_A = 25^\circ\text{C}$	$P_{GM}$	0.5	Watt
Average Gate Power, $T_A = 25^\circ\text{C}$	$P_{G(AV)}$	0.1	Watt
Peak Forward Gate Current, $T_A = 25^\circ\text{C}$ (300 $\mu$ s, 120 PPS)	$I_{FGM}$	0.2	Amp
Peak Reverse Gate Voltage	$V_{RGM}$	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 (Lead Length $\geq 1/16''$ 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.

# MCR22-2 thru MCR22-8

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	$^{\circ}C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	160	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}C$ unless otherwise noted. $R_{GK} = 1000$ Ohms.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current ( $V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$ )	$I_{DRM}, I_{RRM}$	—	—	10	$\mu A$
		—	—	200	$\mu A$
Forward "On" Voltage ( $I_{TM} = 1$ A Peak)	$V_{TM}$	—	1.2	1.7	Volts
Gate Trigger Current (Continuous dc) <sup>(1)</sup> (Anode Voltage = 6 Vdc, $R_L = 100$ Ohms)	$I_{GT}$	—	30	200	$\mu A$
		—	—	500	
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, $R_L = 100$ Ohms)	$V_{GT}$	—	—	0.8	Volts
(Anode Voltage = Rated $V_{DRM}$ , $R_L = 100$ Ohms)	$V_{GD}$	0.1	—	—	
Holding Current (Anode Voltage = 12 Vdc)	$I_H$	—	2	5	mA
		—	—	10	
Forward Voltage Application Rate ( $T_C = 125^{\circ}C$ )	dv/dt	—	25	—	V/ $\mu s$

1.  $R_{GK}$  Current Not Included in Measurement.

## CURRENT DERATING

FIGURE 1 — MAXIMUM CASE TEMPERATURE

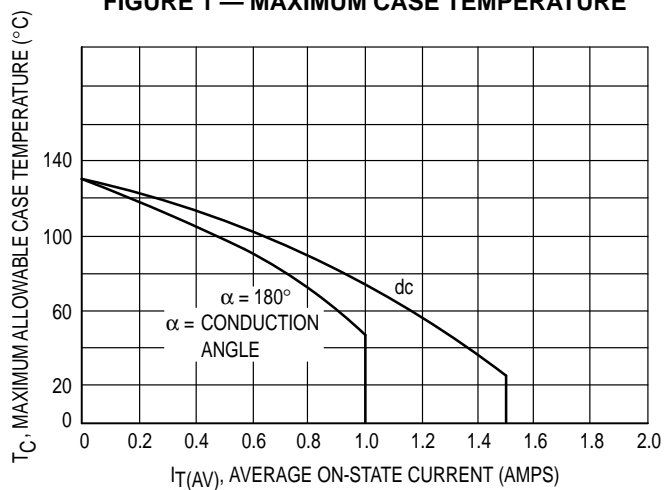


FIGURE 2 — MAXIMUM AMBIENT TEMPERATURE

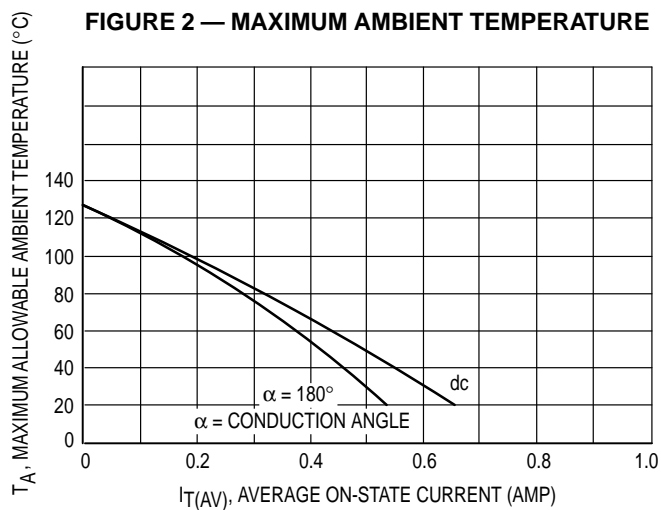


FIGURE 3 — TYPICAL FORWARD VOLTAGE

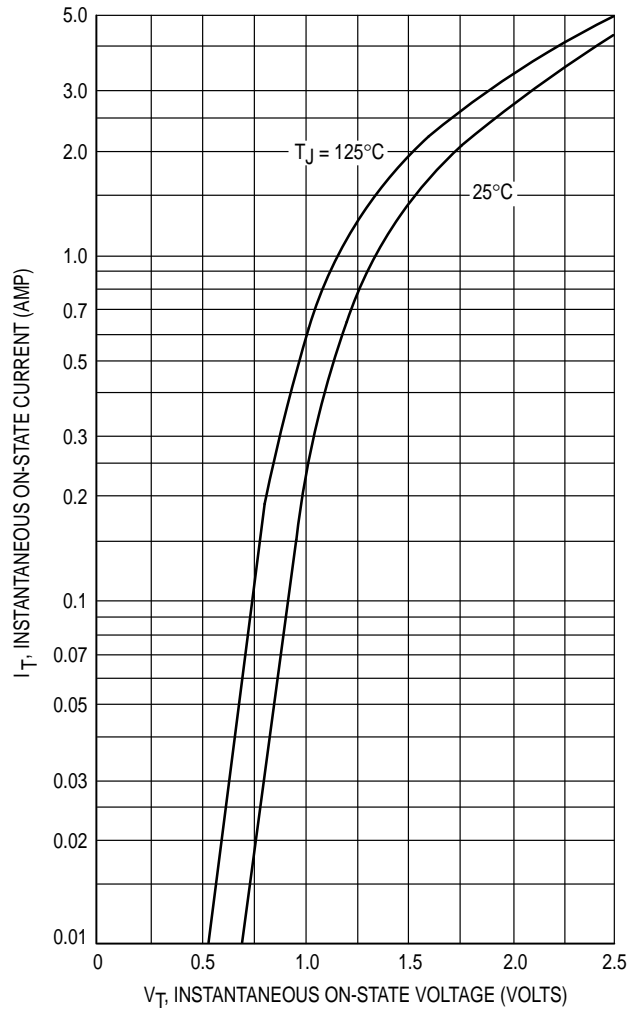
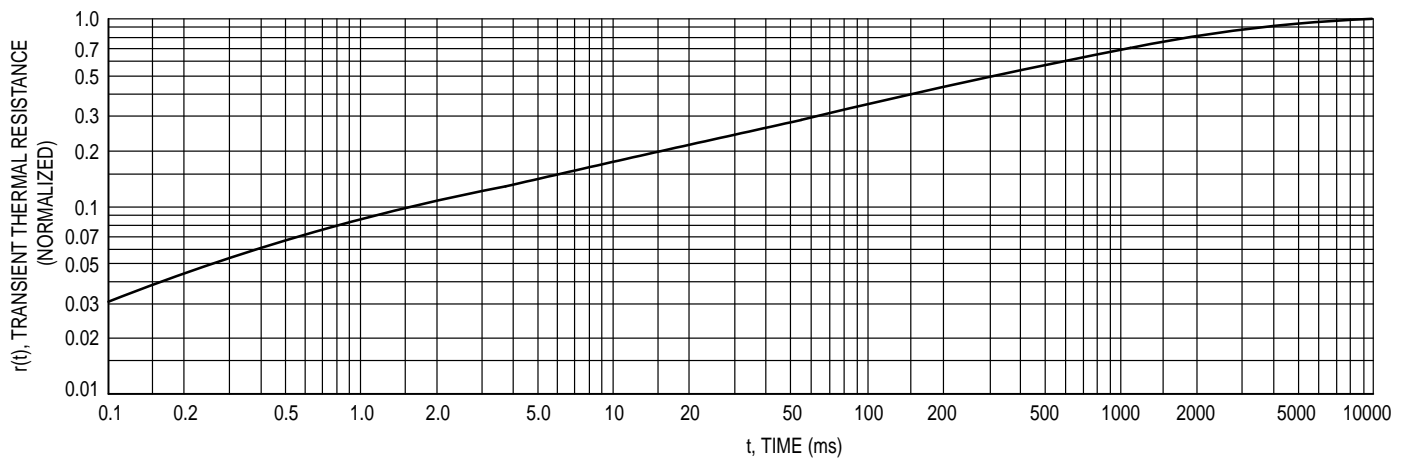


FIGURE 4 — THERMAL RESPONSE



TYPICAL CHARACTERISTICS

FIGURE 5 — GATE TRIGGER VOLTAGE

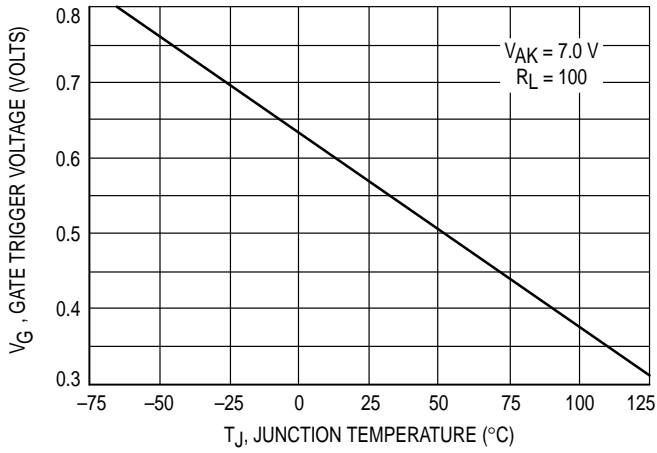


FIGURE 6 — TYPICAL GATE TRIGGER CURRENT

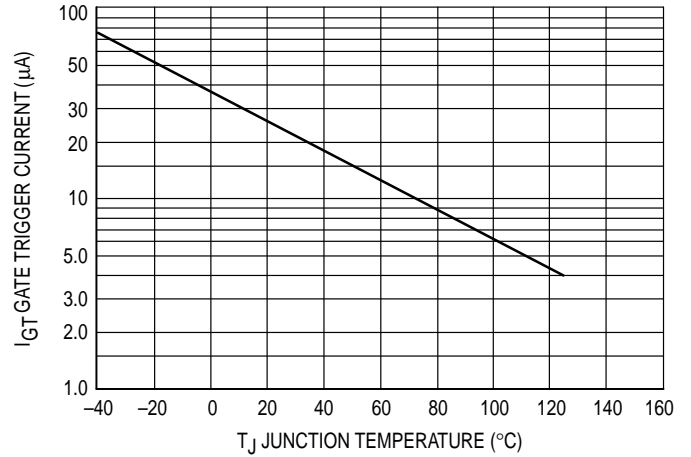


FIGURE 7 — HOLDING CURRENT

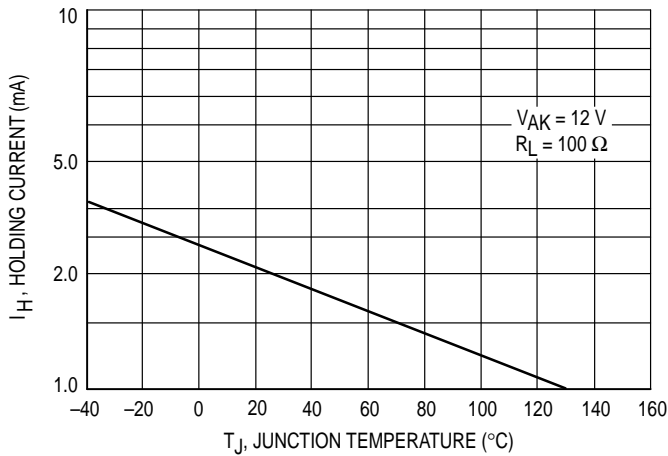
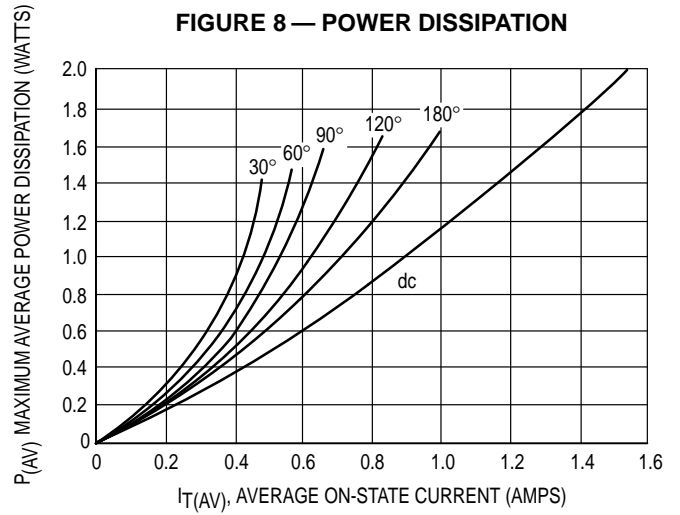
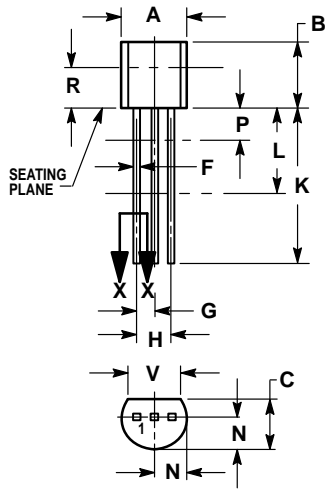


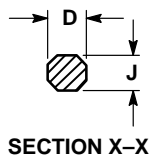
FIGURE 8 — POWER DISSIPATION



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. 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.

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	0.022	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)

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