

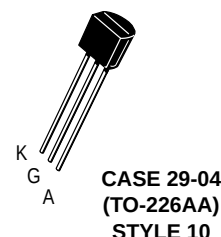
Silicon Controlled Rectifiers

... 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 μ 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°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	A^2s
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 μ 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	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	160	$^{\circ}\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$) $T_C = 25^{\circ}\text{C}$ $T_C = 125^{\circ}\text{C}$	I_{DRM}, I_{RRM}	— —	— —	10 200	μA μA
Forward "On" Voltage ($I_{TM} = 1 \text{ A Peak}$)	V_{TM}	—	1.2	1.7	Volts
Gate Trigger Current (Continuous dc) ⁽¹⁾ (Anode Voltage = 6 Vdc, $R_L = 100 \text{ Ohms}$) $T_C = 25^{\circ}\text{C}$ $T_C = -40^{\circ}\text{C}$	I_{GT}	— —	30 —	200 500	μA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7 Vdc, $R_L = 100 \text{ Ohms}$) (Anode Voltage = Rated V_{DRM} , $R_L = 100 \text{ Ohms}$) $T_C = 25^{\circ}\text{C}$ $T_C = -40^{\circ}\text{C}$ $T_C = 125^{\circ}\text{C}$	V_{GT} V_{GD}	— 0.1	— —	0.8 1.2 —	Volts
Holding Current (Anode Voltage = 12 Vdc) $T_C = 25^{\circ}\text{C}$ $T_C = -40^{\circ}\text{C}$	I_H	— —	2 —	5 10	mA
Forward Voltage Application Rate ($T_C = 125^{\circ}\text{C}$)	dv/dt	—	25	—	$\text{V}/\mu\text{s}$

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

CURRENT DERATING

FIGURE 1 — MAXIMUM CASE TEMPERATURE

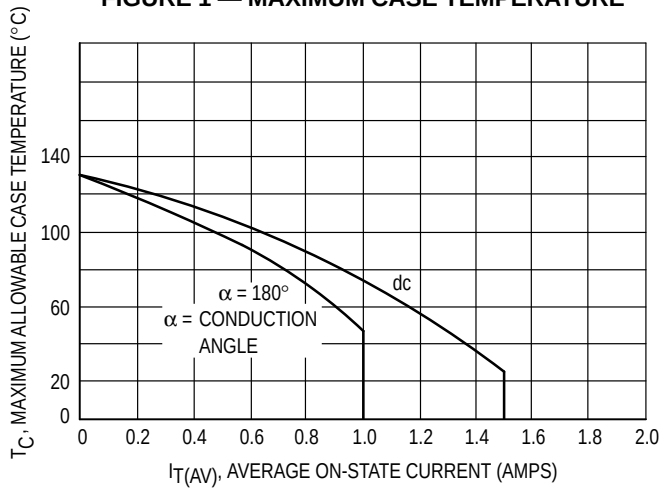


FIGURE 2 — MAXIMUM AMBIENT TEMPERATURE

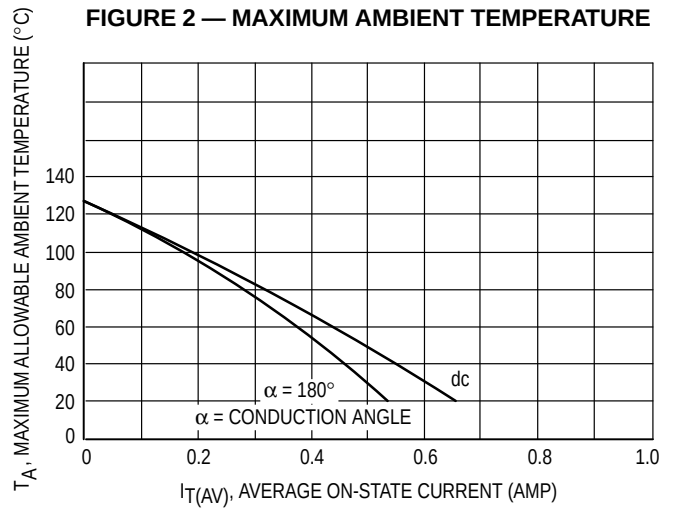


FIGURE 3 — TYPICAL FORWARD VOLTAGE

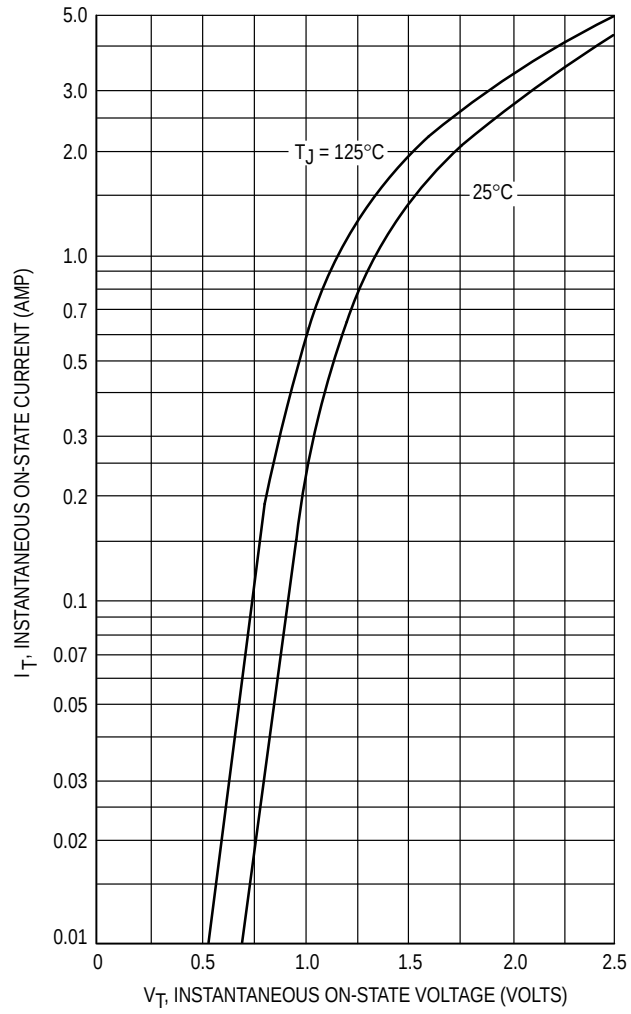
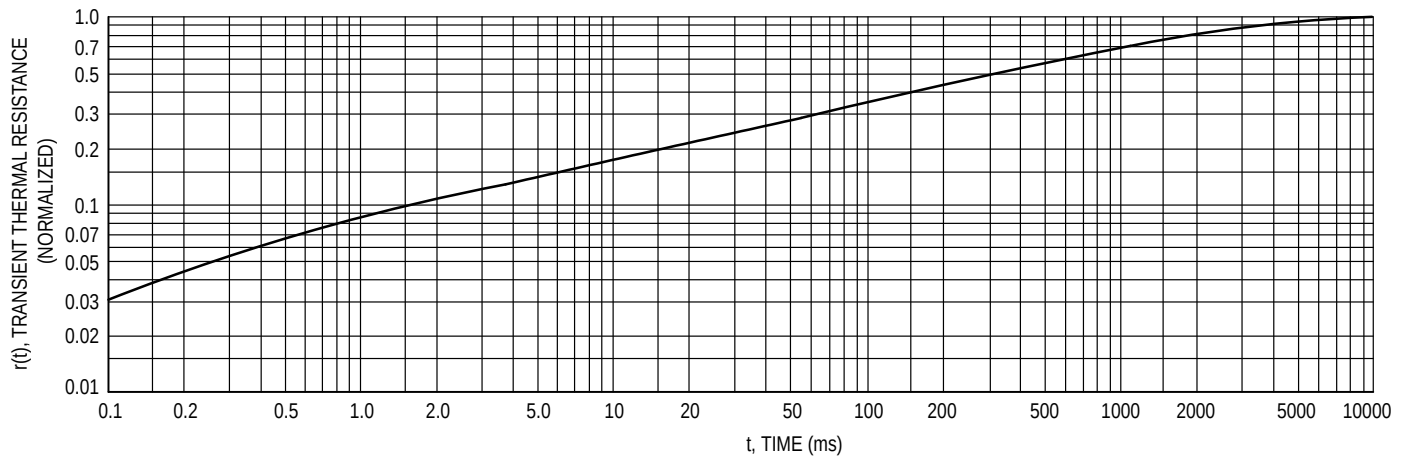


FIGURE 4 — THERMAL RESPONSE



TYPICAL CHARACTERISTICS

FIGURE 5 — GATE TRIGGER VOLTAGE

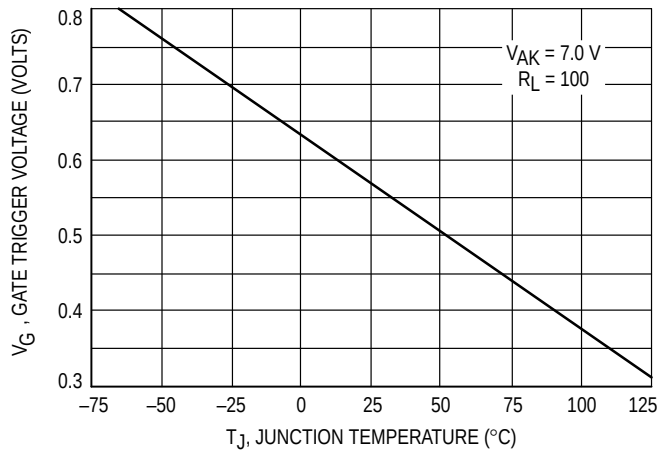


FIGURE 6 — TYPICAL GATE TRIGGER CURRENT

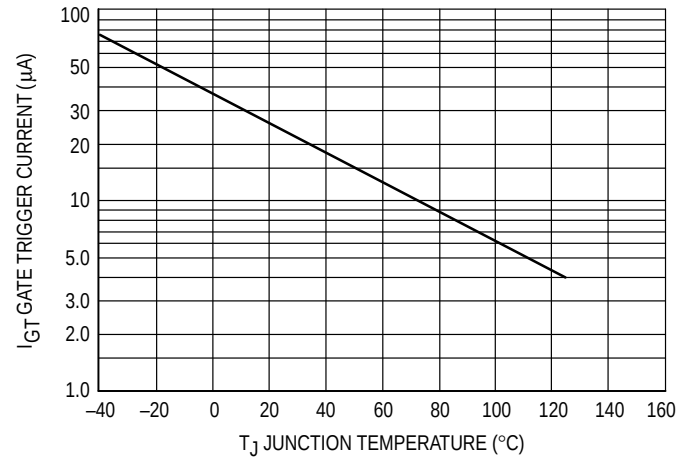


FIGURE 7 — HOLDING CURRENT

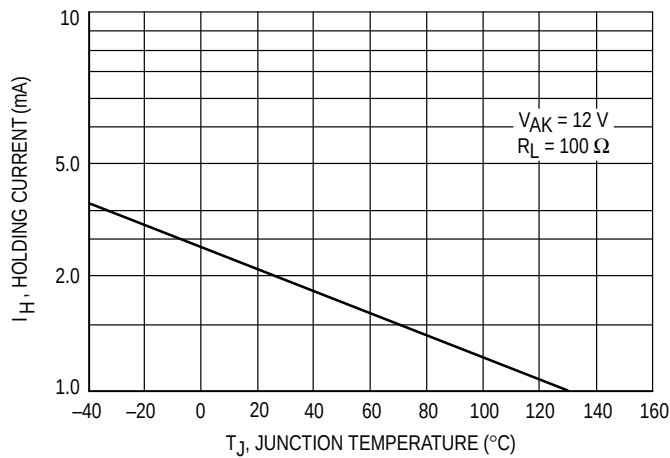
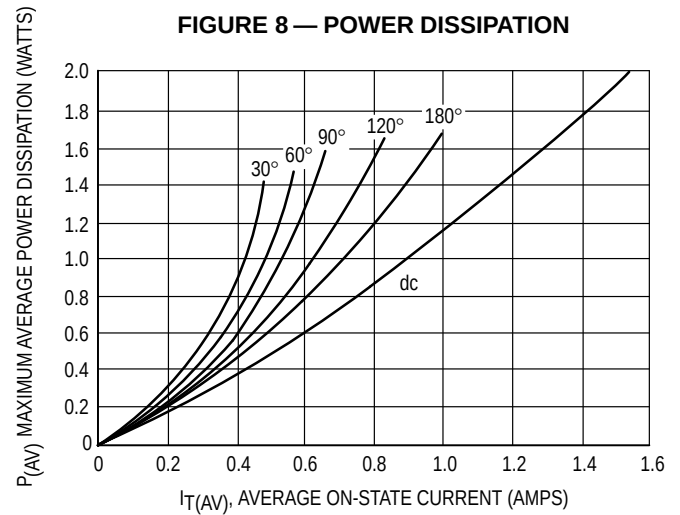
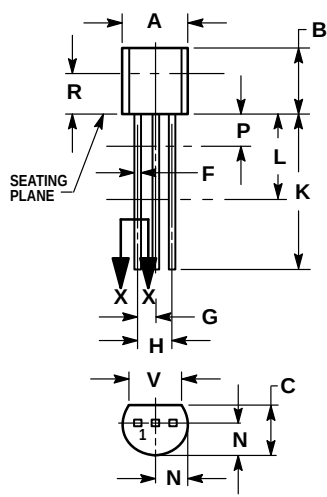


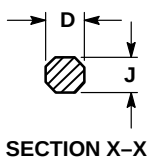
FIGURE 8 — POWER DISSIPATION



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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