

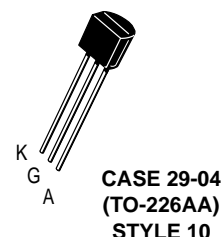
Silicon Controlled Rectifiers

... 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 | $^{\circ}C/W$ |
| 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 | μA |
| | | — | — | 200 | μA |
| Forward "On" Voltage ($I_{TM} = 1$ A Peak) | V_{TM} | — | 1.2 | 1.7 | Volts |
| Gate Trigger Current (Continuous dc) ⁽¹⁾ (Anode Voltage = 6 Vdc, $R_L = 100$ Ohms) | I_{GT} | — | 30 | 200 | μA |
| | | — | — | 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/ μs |

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

CURRENT DERATING

FIGURE 1 — MAXIMUM CASE TEMPERATURE

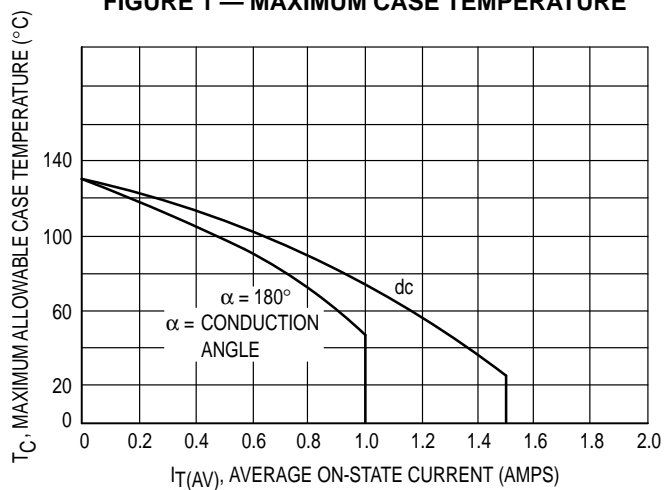


FIGURE 2 — MAXIMUM AMBIENT TEMPERATURE

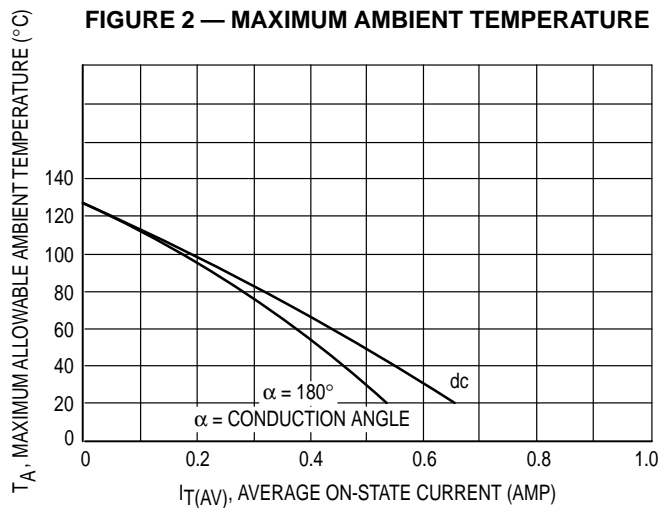


FIGURE 3 — TYPICAL FORWARD VOLTAGE

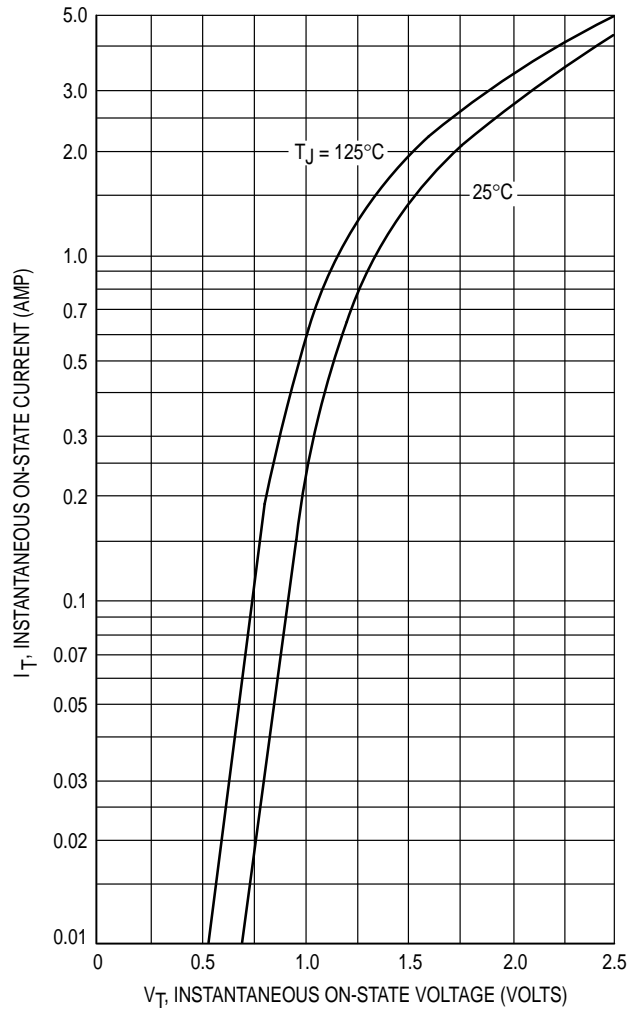
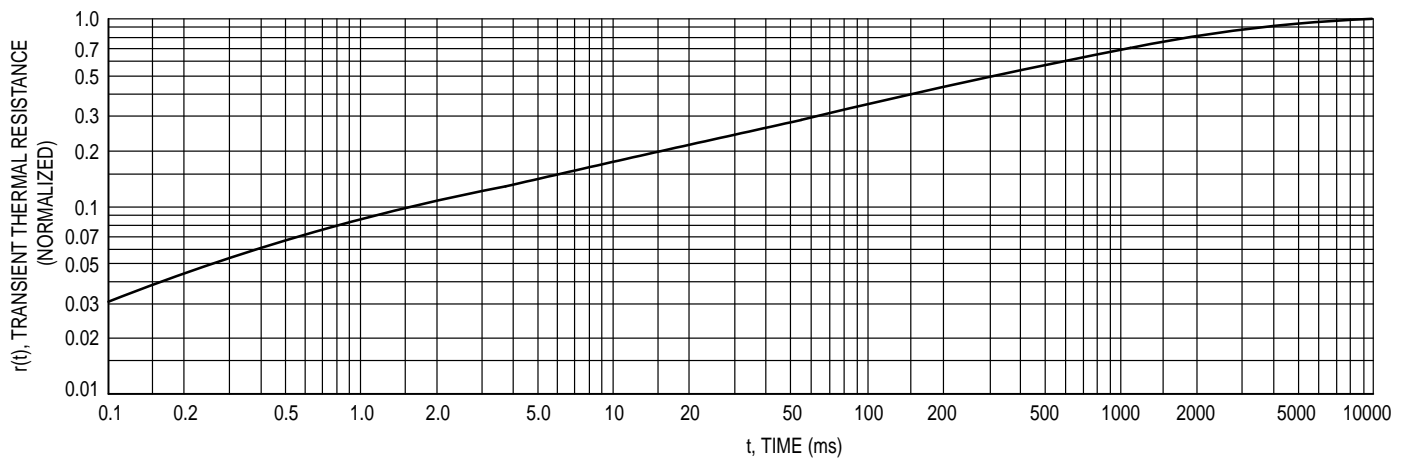


FIGURE 4 — THERMAL RESPONSE



TYPICAL CHARACTERISTICS

FIGURE 5 — GATE TRIGGER VOLTAGE

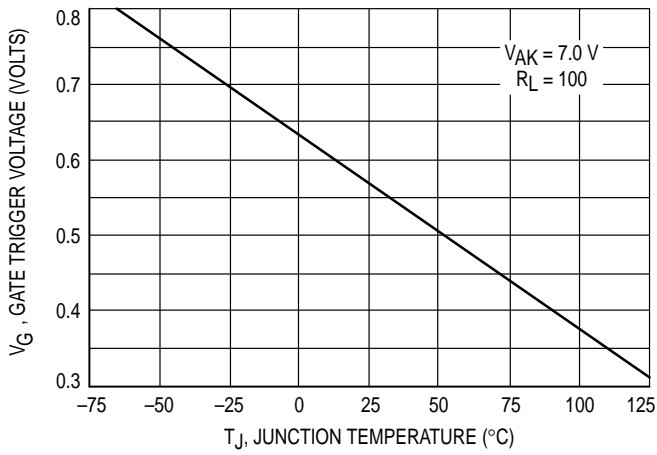


FIGURE 6 — TYPICAL GATE TRIGGER CURRENT

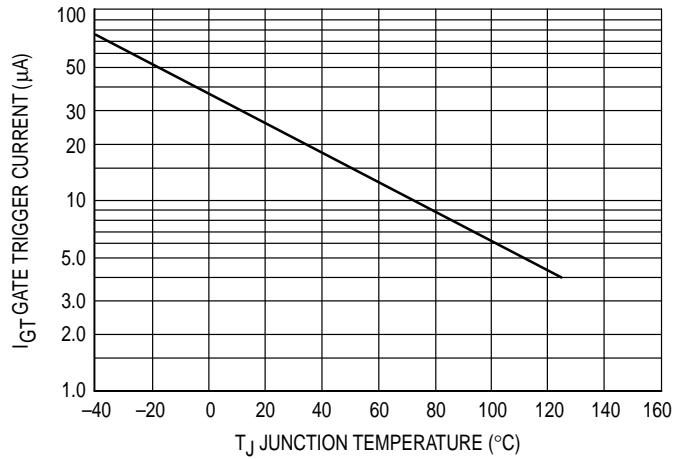


FIGURE 7 — HOLDING CURRENT

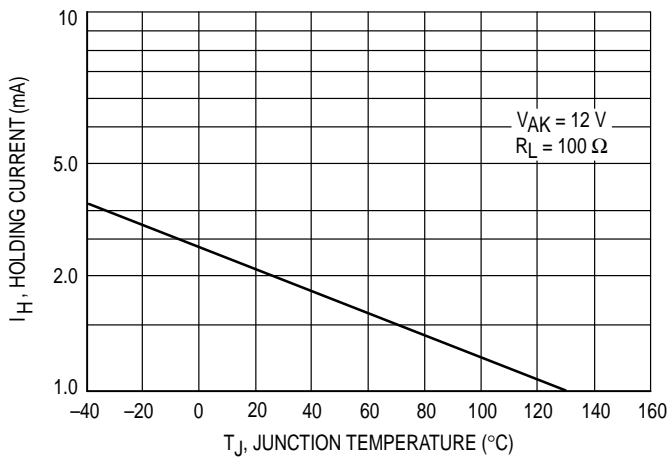
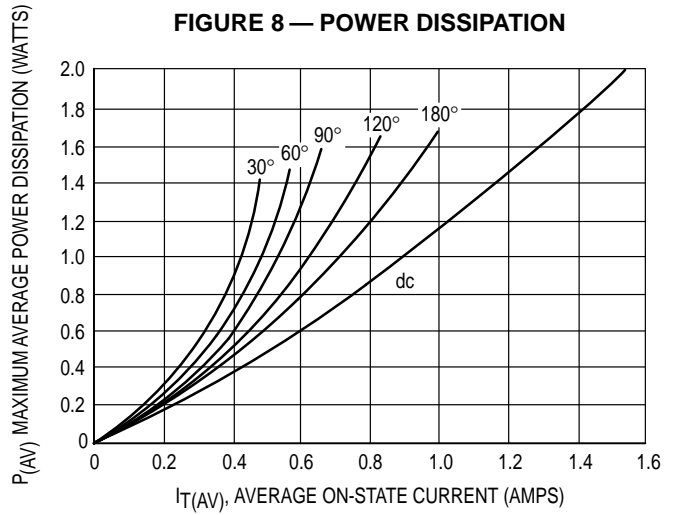
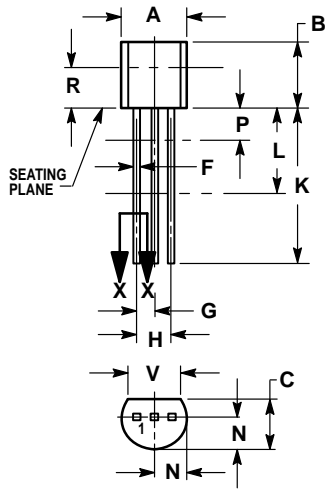


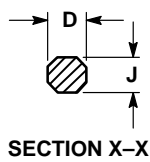
FIGURE 8 — POWER DISSIPATION



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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