

Silicon Controlled Rectifier Reverse Blocking Triode Thyristors

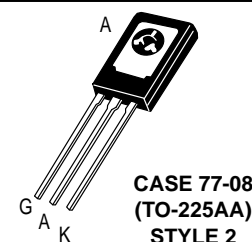
... Glassivated PNP devices designed for high volume consumer applications such as temperature, light, and speed control; process and remote control, and warning systems where reliability of operation is important.

- Glassivated 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

**C106
Series***

*Motorola preferred devices

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



MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

| Rating | Symbol | Value | Unit |
|---|---|--------------------------------|------------------|
| Peak Repetitive Forward and Reverse Blocking Voltage ⁽¹⁾ (R _{GK} = 1 kΩ) (T _C = -40° to 110°C) | V _{DRM} or V _R RM | 50 100 200 400 600 | Volts |
| RMS Forward Current (All Conduction Angles) | I _{T(RMS)} | 4 | Amps |
| Average Forward Current (T _A = 30°C) | I _{T(AV)} | 2.55 | Amps |
| Peak Non-repetitive Surge Current (1/2 Cycle, 60 Hz, T _J = -40 to +110°C) | I _{TSM} | 20 | Amps |
| Circuit Fusing (t = 8.3 ms) | I ² t | 1.65 | A ² s |
| Peak Gate Power | P _{GM} | 0.5 | Watt |
| Average Gate Power | P _{G(AV)} | 0.1 | Watt |
| Peak Forward Gate Current | I _{GFM} | 0.2 | Amp |

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, (cont.) 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.

Preferred devices are Motorola recommended choices for future use and best overall value.

C106 Series

MAXIMUM RATINGS — continued

| Rating | Symbol | Value | Unit |
|--------------------------------------|-----------|-------------|---------|
| Peak Reverse Gate Voltage | V_{GRM} | 6 | Volts |
| Operating Junction Temperature Range | T_J | -40 to +110 | °C |
| Storage Temperature Range | T_{stg} | -40 to +150 | °C |
| Mounting Torque ⁽¹⁾ | — | 6 | in. lb. |

1. Torque rating applies with use of compression washer (B52200F006). Mounting torque in excess of 6 in. lb. 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 +200°C. For optimum results, an activated flux (oxide removing) is recommended.

THERMAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, $R_{GK} = 1\text{ k}\Omega$ unless otherwise noted.)

| 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 ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|-----------------------|--------------------|-------------|---------------|--------------------------------|
| Peak Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$, $R_{GK} = 1000\text{ Ohms}$) $T_J = 25^\circ\text{C}$ $T_J = 110^\circ\text{C}$ | I_{DRM} , I_{RRM} | — — | — — | 10 100 | μA μA |
| Forward "On" Voltage ($I_{FM} = 1\text{ A Peak}$) | V_{TM} | — | — | 2.2 | Volts |
| Gate Trigger Current (Continuous dc) ($V_{AK} = 6\text{ Vdc}$, $R_L = 100\text{ Ohms}$) ($V_{AK} = 6\text{ Vdc}$, $R_L = 100\text{ Ohms}$, $T_C = -40^\circ\text{C}$) | I_{GT} | — — | 30 75 | 200 500 | μA |
| Gate Trigger Voltage (Continuous dc) ($V_{AK} = 6\text{ Vdc}$, $R_L = 100\text{ Ohms}$, $R_{GK} = 1000\text{ Ohms}$) ($V_{AK} = \text{Rated } V_{DRM}$, $R_L = 3000\text{ Ohms}$, $R_{GK} = 1000\text{ Ohms}$, $T_J = 110^\circ\text{C}$) $T_J = 25^\circ\text{C}$ $T_J = -40^\circ\text{C}$ | V_{GT} | 0.4 0.5 0.2 | — — — | 0.8 1 — | Volts |
| Holding Current ($V_D = 12\text{ Vdc}$, $R_{GK} = 1000\text{ Ohms}$) $T_J = 25^\circ\text{C}$ $T_J = -40^\circ\text{C}$ $T_J = +110^\circ\text{C}$ | I_{HX} | 0.3 0.4 0.14 | — — — | 3 6 2 | mA |
| Forward Voltage Application Rate ($T_J = 110^\circ\text{C}$, $R_{GK} = 1000\text{ Ohms}$, $V_D = \text{Rated } V_{DRM}$) | dv/dt | — | 8 | — | $\text{V}/\mu\text{s}$ |
| Turn-On Time | t_{gt} | — | 1.2 | — | μs |
| Turn-Off Time | t_q | — | 40 | — | μs |

FIGURE 1 – AVERAGE CURRENT DERATING

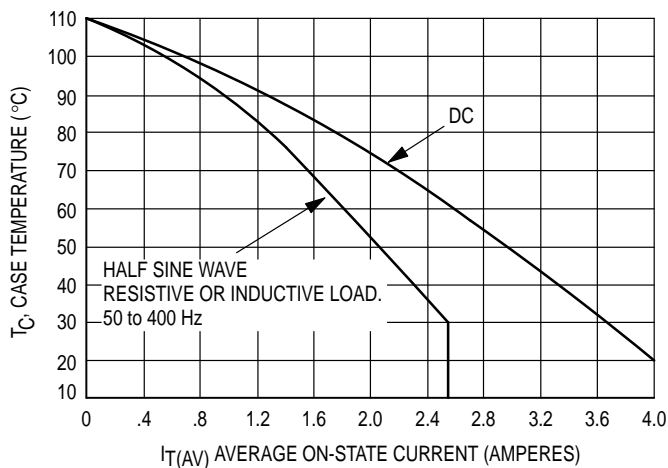
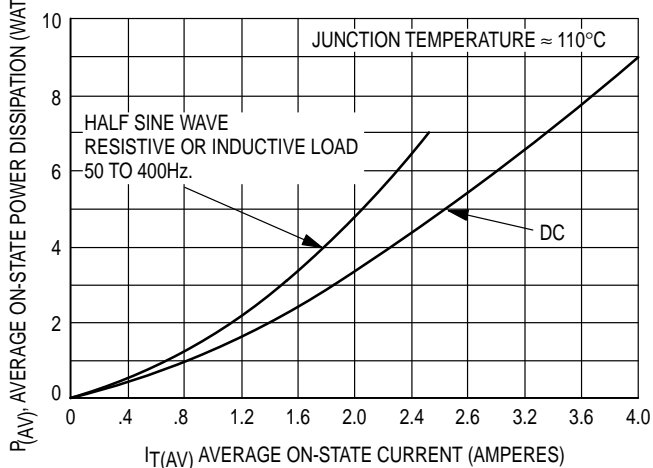
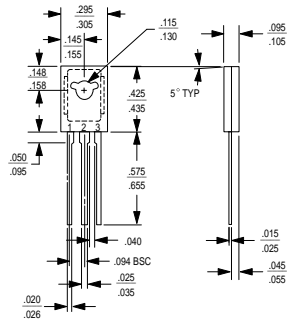


FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION

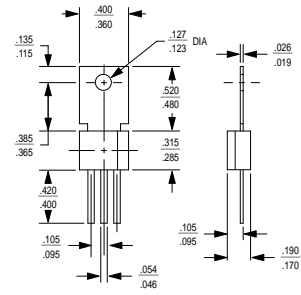


Package Interchangeability

The dimensional diagrams below compare the critical dimensions of the Motorola C-106 package with competitive devices. It has been demonstrated that the smaller dimensions of the Motorola package make it compatible in most lead-mount and chassis-mount applications. The user is advised to compare all critical dimensions for mounting compatibility.

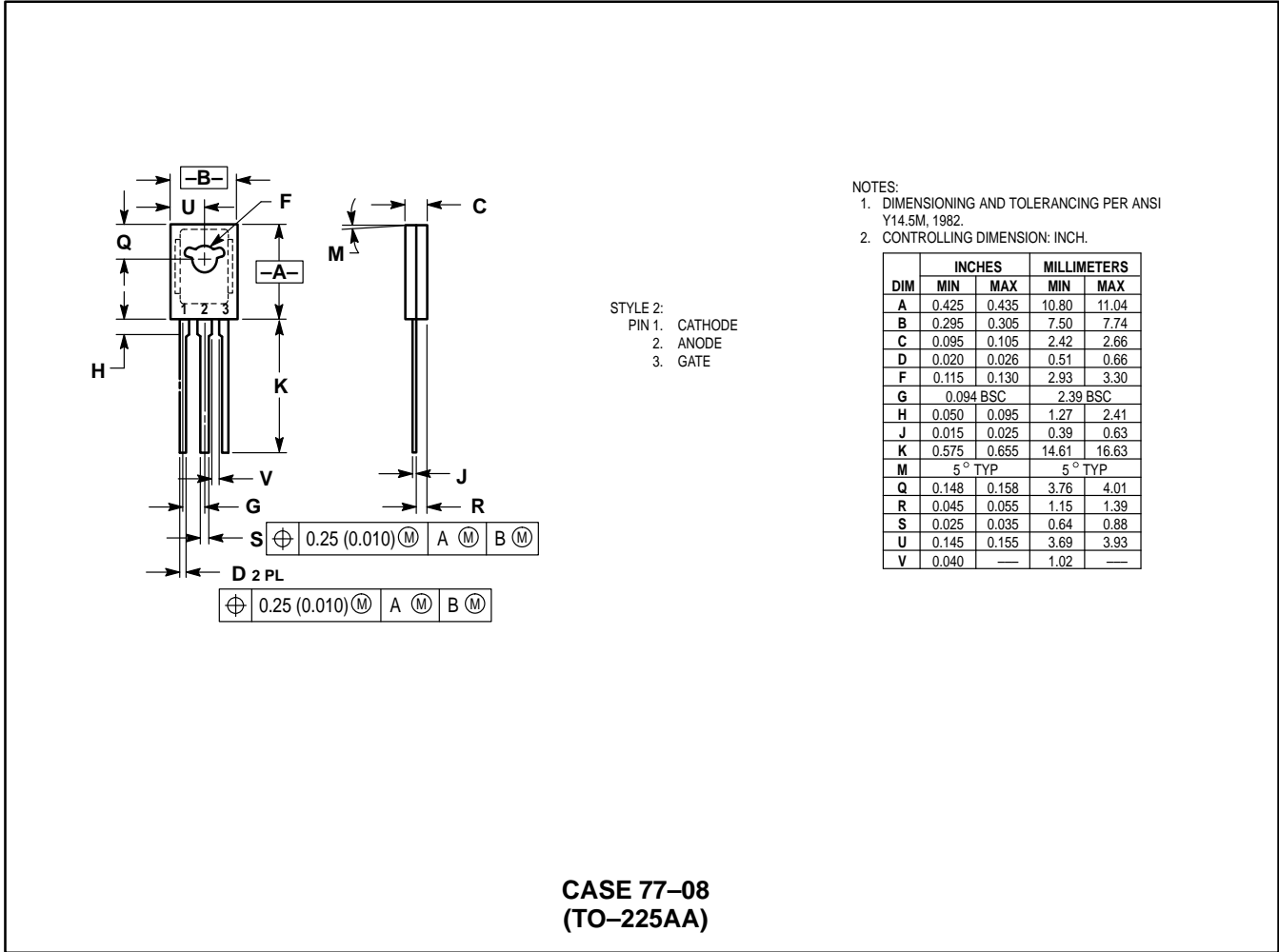


Motorola C-106 Package



Competitive C-106 Package

PACKAGE DIMENSIONS



CASE 77-08
(TO-225AA)

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