

Silicon Controlled Rectifier Reverse Blocking Triode Thyristors

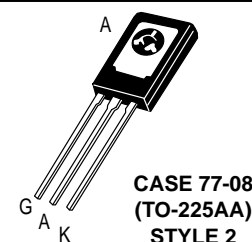
... Glassivated PNP devices designed for high volume consumer applications such as temperature, light, and speed control; process and remote control, and warning systems where reliability of operation is important.

- 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

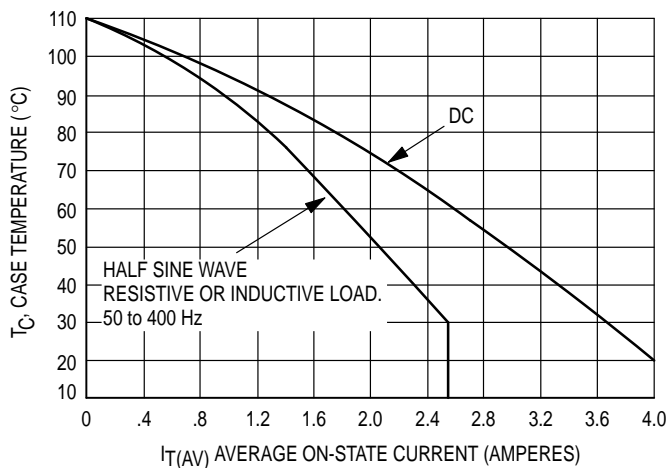
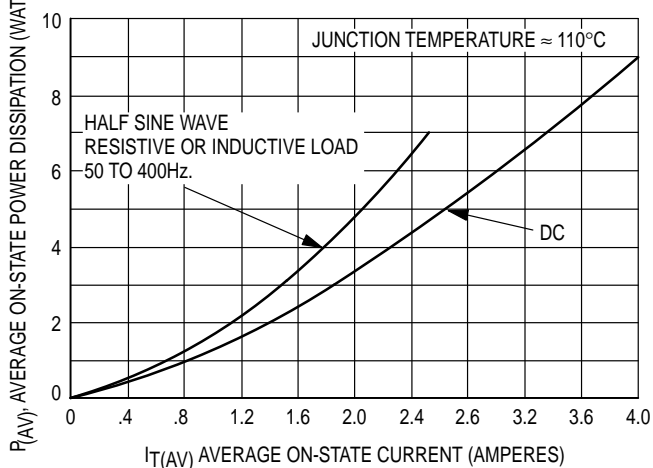
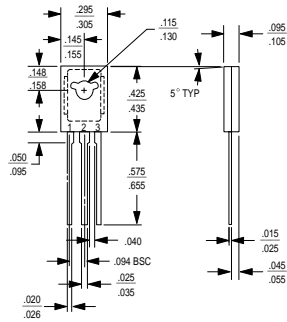


FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION

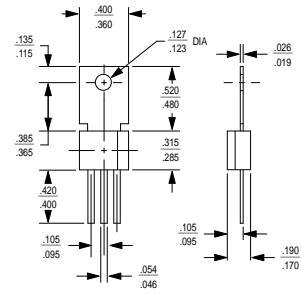


Package Interchangeability

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.

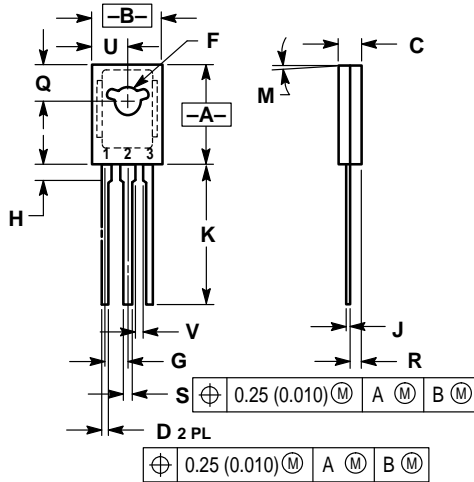


Motorola C-106 Package



Competitive C-106 Package

PACKAGE DIMENSIONS



NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

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

CASE 77-08
 (TO-225AA)

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