

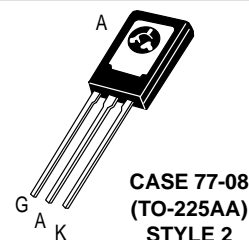
## Silicon Controlled Rectifier Reverse Blocking Triode Thyristors

... 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**

**SCRs  
4 AMPERES RMS  
200 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 <sup>(1)</sup> ( $R_{GK} = 1\text{ k}\Omega$ ) ( $T_C = -40^\circ$ to $110^\circ\text{C}$ )	$V_{DRM}$ or $V_{RRM}$	200 400 600	Volts
RMS Forward Current (All Conduction Angles)	$I_T(\text{RMS})$	4	Amps
Average Forward Current ( $T_A = 30^\circ\text{C}$ )	$I_T(\text{AV})$	2.55	Amps
Peak Non-repetitive Surge Current (1/2 Cycle, 60 Hz, $T_J = -40$ to $+110^\circ\text{C}$ )	$I_{TSM}$	20	Amps
Circuit Fusing ( $t = 8.3\text{ ms}$ )	$I^2t$	1.65	$\text{A}^2\text{s}$
Peak Gate Power	$P_{GM}$	0.5	Watt
Average Gate Power	$P_{G(\text{AV})}$	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.

REV 1

## 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 <sup>(1)</sup>	—	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.

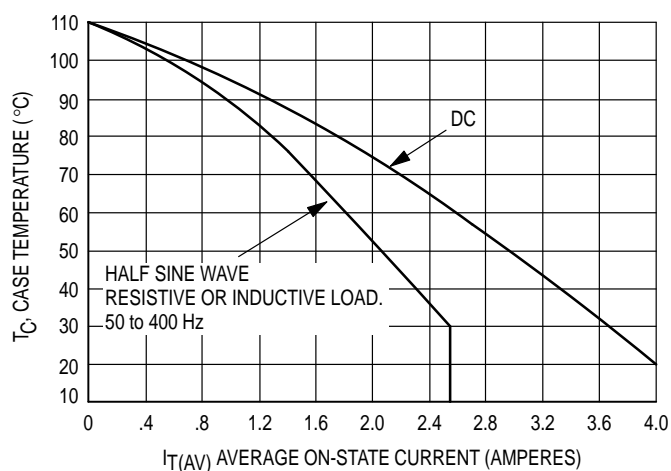
### THERMAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ , $R_{GK} = 1\text{ k}\Omega$ unless otherwise noted.)

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

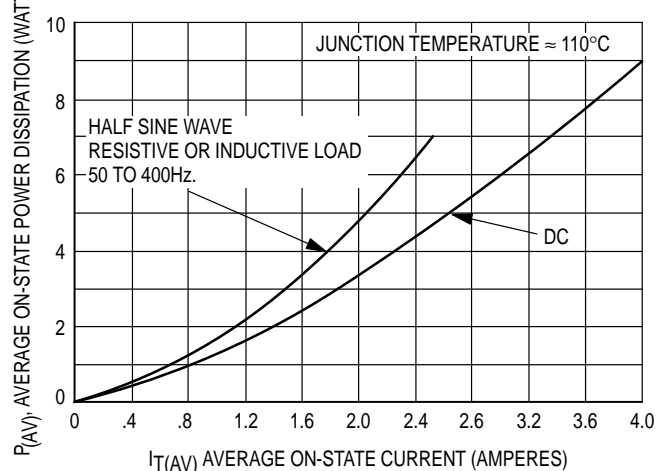
### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted.)

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	$\mu\text{A}$ $\mu\text{A}$
Forward "On" Voltage ( $I_{FM} = 1\text{ A Peak for C106B, D, \& M}$ ) ( $I_{FM} = 4\text{ A Peak for C106D1, \& M1}$ )	$V_{TM}$	—	—	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	$\mu\text{A}$
Gate Trigger Voltage (Continuous dc) ( $V_{AK} = 6\text{ Vdc}$ , $R_L = 100\text{ Ohms}$ , $R_{GK} = 1000\text{ Ohms}$ ) $T_J = 25^\circ\text{C}$ ( $V_{AK} = \text{Rated } V_{DRM}$ , $R_L = 3000\text{ Ohms}$ , $R_{GK} = 1000\text{ Ohms}$ , $T_J = 110^\circ\text{C}$ ) $T_J = -40^\circ\text{C}$	$V_{GT}$	0.4 0.5 0.2	— — —	0.8 1 —	Volts
Holding Current ( $V_D = 12\text{ Vdc}$ , $R_{GK} = 1000\text{ Ohms}$ ) $T_J = 25^\circ\text{C}$ $T_J = -40^\circ\text{C}$ $T_J = +110^\circ\text{C}$	$I_H$	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	—	V/ $\mu\text{s}$
Turn-On Time	$t_{gt}$	—	1.2	—	$\mu\text{s}$
Turn-Off Time	$t_q$	—	40	—	$\mu\text{s}$

**FIGURE 1 – AVERAGE CURRENT DERATING**

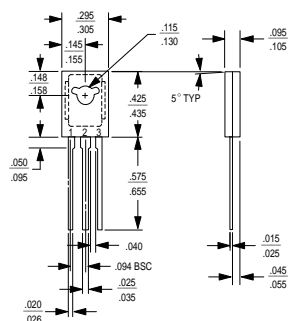


**FIGURE 2 – MAXIMUM ON-STATE POWER DISSIPATION**

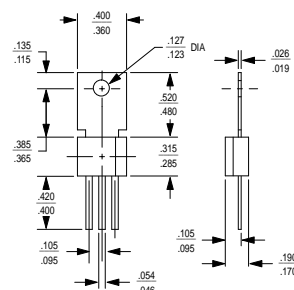


### Package Interchangeability

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.

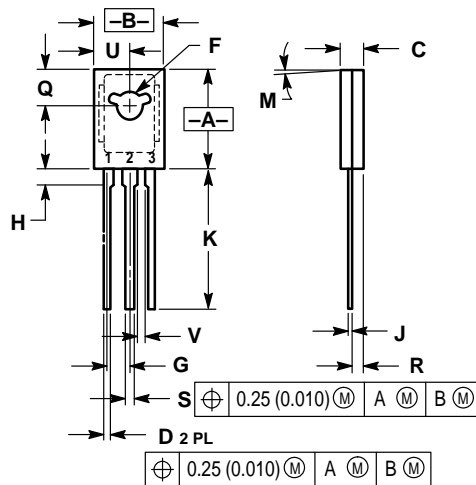


**Motorola C-106 Package**



**Competitive C-106 Package**

## PACKAGE DIMENSIONS




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

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

CASE 77-08  
(TO-225AA)

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