

## Silicon Controlled Rectifiers

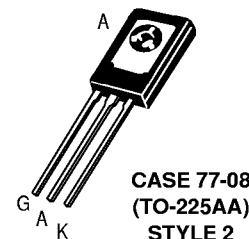
### Reverse Blocking Triode Thyristors

... 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.

- Passivated 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
- Recommended Electrical Replacement for C106

**2N6240**

**SCRs**  
**4 AMPERES RMS**  
**400 VOLTS**



**CASE 77-08**  
**(TO-225AA)**  
**STYLE 2**

#### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value	Unit
*Repetitive Peak Forward and Reverse Blocking Voltage <sup>(1)</sup> (1/2 Sine Wave) ( $R_{GK} = 1000\text{ ohms}$ , $T_C = -40$ to $+110^\circ\text{C}$ )	$V_{DRM}$ or $V_{RRM}$	400	Volts
*Non-repetitive Peak Reverse Blocking Voltage (1/2 Sine Wave, $R_{GK} = 1000\text{ ohms}$ , $T_C = -40^\circ$ to $+110^\circ\text{C}$ )	$V_{RSM}$	450	Volts
*Average On-State Current ( $T_C = -40$ to $+90^\circ\text{C}$ ) ( $T_C = +100^\circ\text{C}$ )	$I_{T(AV)}$	2.6 1.6	Amps
*Surge On-State Current (1/2 Sine Wave, 60 Hz, $T_C = +90^\circ\text{C}$ ) (1/2 Sine Wave, 1.5 ms, $T_C = +90^\circ\text{C}$ )	$I_{TSM}$	25 35	Amps
Circuit Fusing ( $t = 8.3\text{ ms}$ )	$I^2t$	2.6	$\text{A}^2\text{s}$
*Peak Gate Power (Pulse Width = $10\text{ }\mu\text{s}$ , $T_C = 90^\circ\text{C}$ )	$P_{GM}$	0.5	Watts

\*Indicates JEDEC Registered Data.

(continued)

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.



## 2N6240

### MAXIMUM RATINGS — continued ( $T_J = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value	Unit
*Average Gate Power ( $t = 8.3\text{ ms}$ , $T_C = 90^\circ\text{C}$ )	$P_{G(AV)}$	0.1	Watt
Peak Forward Gate Current	$I_{GM}$	0.2	Amp
Peak Reverse Gate Voltage	$V_{RGM}$	6	Volts
*Operating Junction Temperature Range	$T_J$	$-40$ to $+110$	$^\circ\text{C}$
*Storage Temperature Range	$T_{stg}$	$-40$ to $+150$	$^\circ\text{C}$
Mounting Torque <sup>(1)</sup>	—	6	in. lb.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	—	3	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	—	75	$^\circ\text{C/W}$

\*Indicates JEDEC Registered Data.

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

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Forward or Reverse Blocking Current ( $V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$ ) $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	$I_{DRM}, I_{RRM}$	— —	— —	10 200	$\mu\text{A}$ $\mu\text{A}$
*Peak Forward "On" Voltage ( $I_{TM} = 8.2\text{ A}$ Peak, Pulse Width = 1 to 2 ms, 2% Duty Cycle)	$V_{TM}$	—	—	2.2	Volts
Gate Trigger Current (Continuous dc) <sup>(2)</sup> ( $V_{AK} = 12\text{ Vdc}$ , $R_L = 24\text{ Ohms}$ ) *( $V_{AK} = 12\text{ Vdc}$ , $R_L = 24\text{ Ohms}$ , $T_C = -40^\circ\text{C}$ )	$I_{GT}$	— —	— —	200 500	$\mu\text{A}$
Gate Trigger Voltage (Continuous dc) (Source Voltage = 12 V, $R_S = 50\text{ Ohms}$ ) *( $V_{AK} = 12\text{ Vdc}$ , $R_L = 24\text{ Ohms}$ , $T_C = -40^\circ\text{C}$ )	$V_{GT}$	—	—	1	Volts
Gate Non-Trigger Voltage ( $V_{AK} = \text{Rated } V_{DRM}$ , $R_L = 100\text{ Ohms}$ , $T_C = 110^\circ\text{C}$ )	$V_{GD}$	0.2	—	—	Volts
Holding Current ( $V_{AK} = 12\text{ Vdc}$ , $I_{GT} = 2\text{ mA}$ ) $T_C = 25^\circ\text{C}$ *(Initiating On-State Current = 200 mA) $T_C = -40^\circ\text{C}$	$I_H$	— —	— —	5 10	mA
*Total Turn-On Time (Source Voltage = 12 V, $R_S = 6\text{ k Ohms}$ ) ( $I_{TM} = 8.2\text{ A}$ , $I_{GT} = 2\text{ mA}$ , Rated $V_{DRM}$ ) (Rise Time = 20 ns, Pulse Width = 10 $\mu\text{s}$ )	$t_{gt}$	—	2	—	$\mu\text{s}$
Forward Voltage Application Rate ( $V_D = \text{Rated } V_{DRM}$ , $T_C = 110^\circ\text{C}$ )	$dv/dt$	—	10	—	$\text{V}/\mu\text{s}$

\*Indicates JEDEC Registered Data.

1. Torque rating applies with use of compression washer (B52200F006 or equivalent). 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. (See AN-209 B)  
For soldering purposes (either terminal connection or device mounting), soldering temperatures shall not exceed  $+200^\circ\text{C}$ . For optimum results an activated flux (oxide removing) is recommended.
2. Measurement does not include  $R_{GK}$  current.

FIGURE 1 – MAXIMUM CASE TEMPERATURE

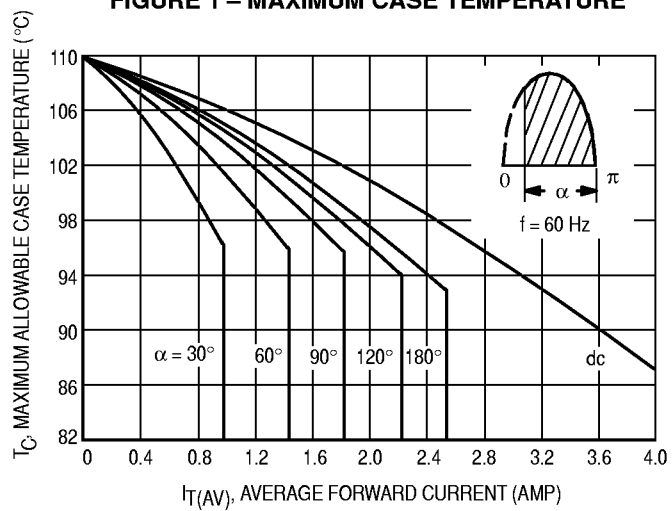
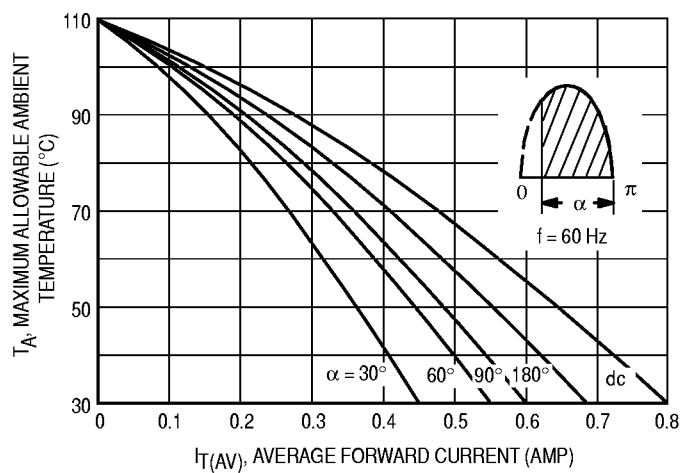
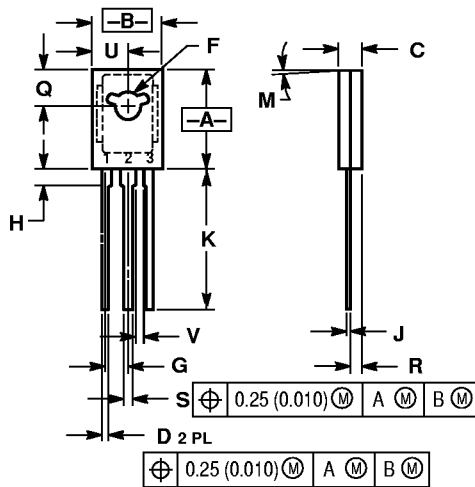


FIGURE 2 – MAXIMUM AMBIENT TEMPERATURE



## 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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