

# Silicon Controlled Rectifiers

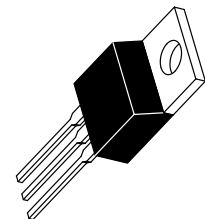
## Reverse Blocking Triode Thyristors

... designed primarily for full-wave ac control applications, such as motor controls, heating controls and power supplies; or wherever half-wave silicon gate-controlled, solid-state devices are needed.

- Glass Passivated Junctions and Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 50 Volts

**C122F1**

**SCR**  
**8 AMPERES RMS**  
**50 VOLTS**



**CASE 221A-07**  
**(TO-220AB)**  
**STYLE 3**

### MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage <sup>(1)</sup> (T <sub>J</sub> = 25 to 100°C, Gate Open) Repetitive Peak Reverse Voltage	V <sub>DRM</sub> V <sub>RRM</sub>	50	Volts
Peak Non-repetitive Reverse Voltage <sup>(1)</sup>	V <sub>RSM</sub>	75	Volts
Forward Current RMS (All Conduction Angles) T <sub>C</sub> ≤ 75°C	I <sub>T(RMS)</sub>	8	Amps
Peak Forward Surge Current (1/2 Cycle, Sine Wave, 60 Hz)	I <sub>TSM</sub>	90	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I <sup>2</sup> t	34	A <sup>2</sup> s

1. V<sub>DRM</sub> and V<sub>RRM</sub> 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.

# C122F1

## MAXIMUM RATINGS — continued

Rating	Symbol	Value	Unit
Forward Peak Gate Power ( $t = 10 \mu\text{s}$ )	$P_{GM}$	5	Watts
Forward Average Gate Power	$P_{G(AV)}$	0.5	Watt
Forward Peak Gate Current	$I_{GM}$	2	Amps
Operating Junction Temperature Range	$T_J$	-40 to +100	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +125	$^{\circ}\text{C}$

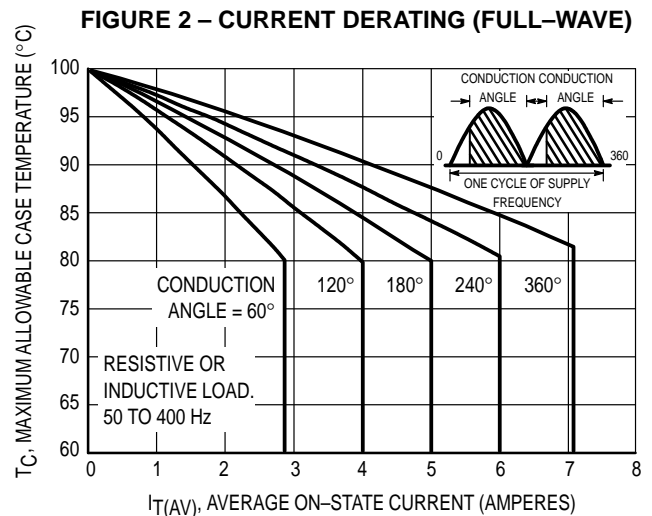
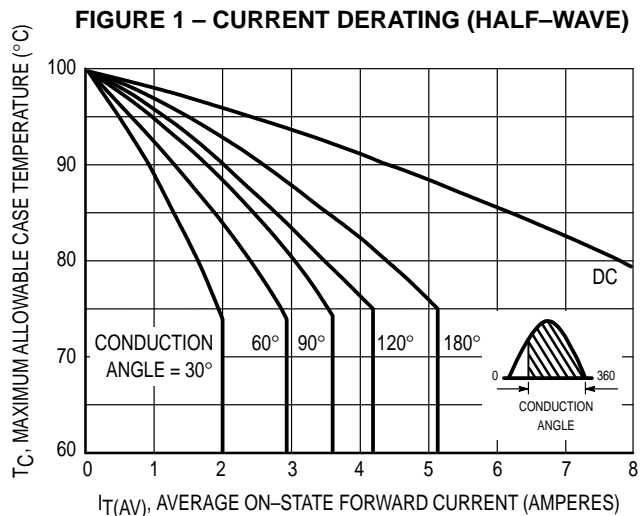
## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.8	$^{\circ}\text{C}/\text{W}$

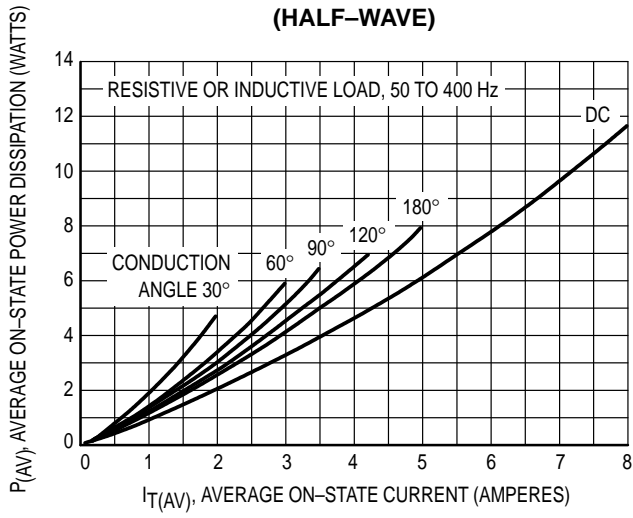
## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current ( $V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}, \text{ Gate Open}$ ) $T_C = 25^{\circ}\text{C}$ $T_C = 100^{\circ}\text{C}$	$I_{DRM}, I_{RRM}$	—	—	10 0.5	$\mu\text{A}$ mA
Peak On-State Voltage <sup>(1)</sup> ( $I_{TM} = 16 \text{ A Peak}, T_C = 25^{\circ}\text{C}$ )	$V_{TM}$	—	—	1.83	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 6 \text{ V}, R_L = 91 \text{ Ohms}, T_C = 25^{\circ}\text{C}$ ) ( $V_D = 6 \text{ V}, R_L = 45 \text{ Ohms}, T_C = -40^{\circ}\text{C}$ )	$I_{GT}$	—	—	25 40	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 6 \text{ V}, R_L = 91 \text{ Ohms}, T_C = 25^{\circ}\text{C}$ ) ( $V_D = 6 \text{ V}, R_L = 45 \text{ Ohms}, T_C = -40^{\circ}\text{C}$ ) ( $V_D = \text{Rated } V_{DRM}, R_L = 1000 \text{ Ohms}, T_C = 100^{\circ}\text{C}$ )	$V_{GT}$	— — 0.2	— — —	1.5 2 —	Volts
Holding Current ( $V_D = 24 \text{ Vdc}, I_T = 0.5 \text{ A}, 0.1 \text{ to } 10 \text{ ms Pulse},$ Gate Trigger Source = 7 V, 20 Ohms) $T_C = 25^{\circ}\text{C}$ $T_C = -40^{\circ}\text{C}$	$I_H$	— —	— —	30 60	mA
Turn-Off Time ( $V_D = \text{Rated } V_{DRM}$ ) ( $I_{TM} = 8 \text{ A}, I_R = 8 \text{ A}$ )	$t_q$	—	50	—	$\mu\text{s}$
Critical Rate-of-Rise of Off-State Voltage ( $V_D = \text{Rated } V_{DRM}, \text{ Linear}, T_C = 100^{\circ}\text{C}$ )	$dv/dt$	—	50	—	$\text{V}/\mu\text{s}$

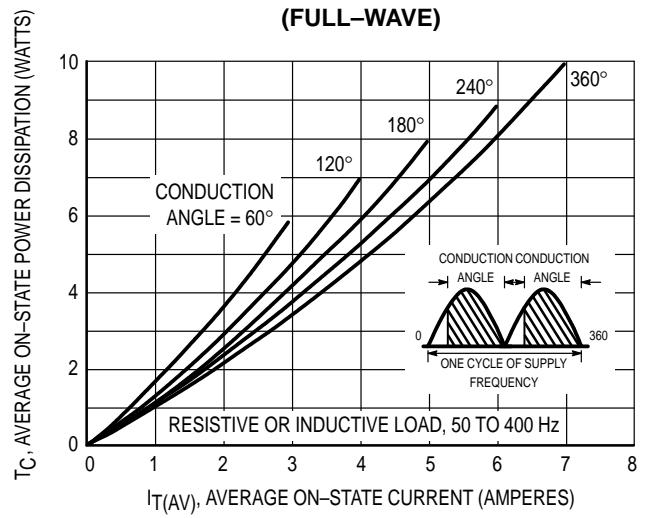
1. Pulse Test: Pulse Width = 1 ms, Duty Cycle  $\leq 2\%$ .



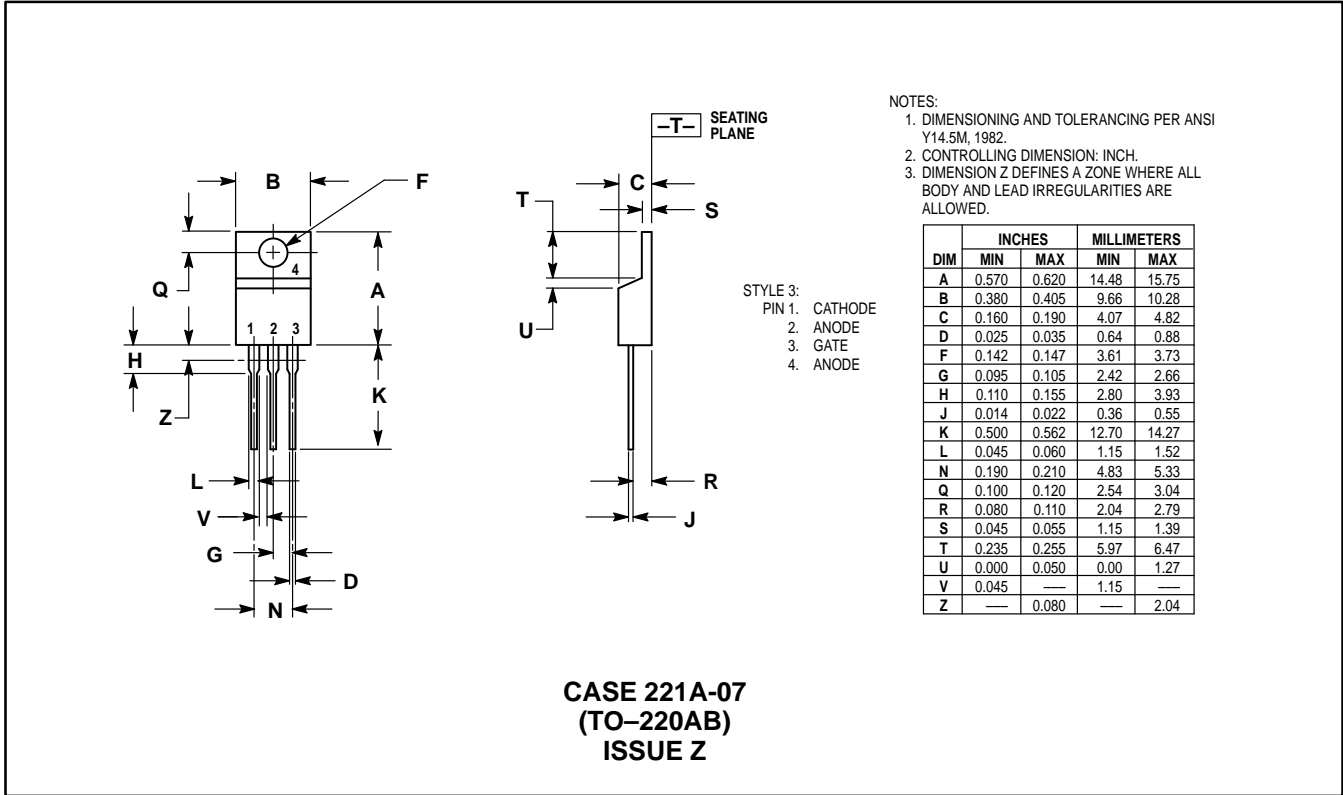
**FIGURE 3 – MAXIMUM POWER DISSIPATION (HALF-WAVE)**



**FIGURE 4 – MAXIMUM POWER DISSIPATION (FULL-WAVE)**



PACKAGE DIMENSIONS



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