

Silicon Controlled Rectifiers

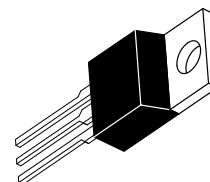
Reverse Blocking Triode Thyristors

... 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 800 Volts
- Different Leadform Configurations, Suffix (2) thru (6) available, see Leadform Options (Section 4) for Information

**C122()1
Series**

**SCRs
8 AMPERES RMS
50 thru 800 VOLTS**



**CASE 221A-04
(TO-220AB)
STYLE 3**

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

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage ⁽¹⁾ ($T_J = 25$ to 100°C , Gate Open)	V_{DRM}		Volts
Repetitive Peak Reverse Voltage	V_{RRM}	50 100 200 400 600 800	
Peak Non-repetitive Reverse Voltage ⁽¹⁾	V_{RSM}	75 200 300 500 700 800	Volts
Forward Current RMS (All Conduction Angles)	$I_{\text{T(RMS)}}$	8	Amps
Peak Forward Surge Current (1/2 Cycle, Sine Wave, 60 Hz)	I_{TSM}	90	Amps
Circuit Fusing Considerations ($t = 8.3$ ms)	I^2t	34	A^2s

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.

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	$^{\circ}\text{C/W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$, Gate Open) $T_C = 25^{\circ}\text{C}$ $T_C = 100^{\circ}\text{C}$	I_{DRM}, I_{RRM}	— —	— —	10 0.5	μA mA
Peak On-State Voltage ⁽¹⁾ ($I_{TM} = 16 \text{ A Peak}$, $T_C = 25^{\circ}\text{C}$)	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 to 10 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	—	μs
Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, 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 1 – CURRENT DERATING (HALF-WAVE)

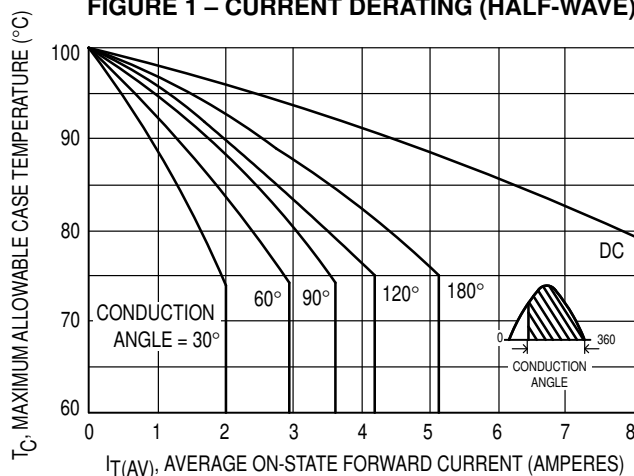


FIGURE 2 – CURRENT DERATING (FULL-WAVE)

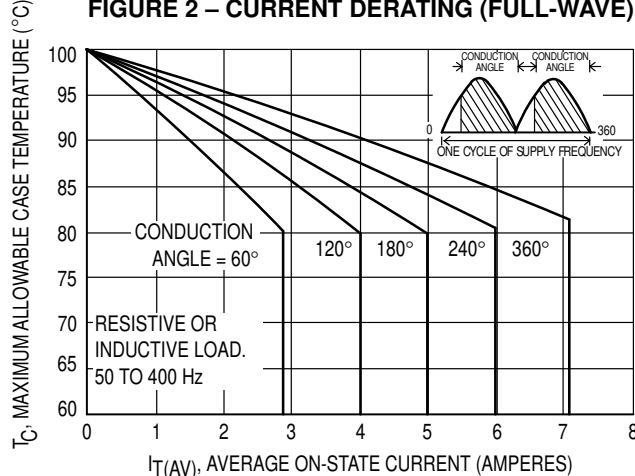


FIGURE 3 – MAXIMUM POWER DISSIPATION (HALF-WAVE)

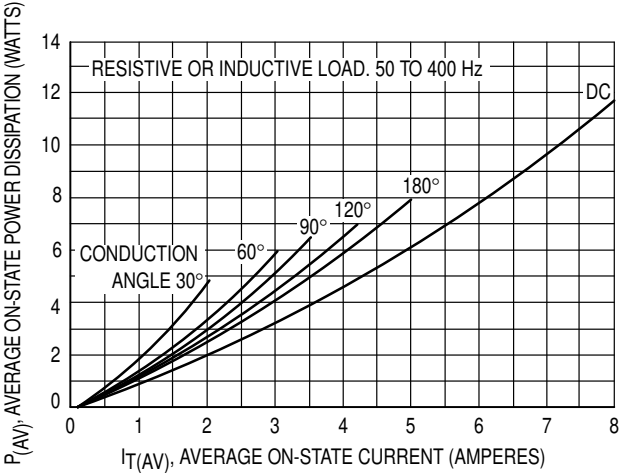


FIGURE 4 – MAXIMUM POWER DISSIPATION (FULL-WAVE)

