

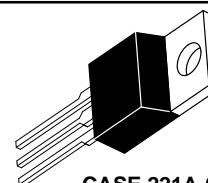
## Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

... designed primarily for half-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 with 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

**S2800  
Series**

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



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

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

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage <sup>(1)</sup> (T <sub>J</sub> = 25 to 100°C, Gate Open)	V <sub>RRM</sub> V <sub>DRM</sub>		Volts
F		50	
A		100	
B		200	
S2800 D		400	
M		600	
N		800	
Peak Non-repetitive Reverse Voltage and Non-Repetitive Off-State Voltage <sup>(1)</sup>	V <sub>RSM</sub> V <sub>DSM</sub>		Volts
F		75	
A		125	
B		250	
S2800 D		500	
M		700	
N		900	
RMS Forward Current (All Conduction Angles) T <sub>C</sub> = 75°C	I <sub>T(RMS)</sub>	10	Amps
Peak Forward Surge Current (1 Cycle, Sine Wave, 60 Hz, T <sub>C</sub> = 80°C)	I <sub>TSM</sub>	100	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I <sup>2</sup> t	40	A <sup>2</sup> s
Forward Peak Gate Power (t ≤ 10 μs)	P <sub>GM</sub>	16	Watts
Forward Average Gate Power	P <sub>G(AV)</sub>	0.5	Watt
Operating Junction Temperature Range	T <sub>J</sub>	-40 to +100	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C

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, 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.

# S2800 Series

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}C$ 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) $T_C = 25^{\circ}C$ $T_C = 100^{\circ}C$	$I_{DRM}$ , $I_{RRM}$	— —	— —	10 2	$\mu A$ mA
Instantaneous On-State Voltage, ( $I_{TM} = 30 \text{ A Peak}$ , Pulse Width $\leq 1 \text{ ms}$ , Duty Cycle $\leq 2\%$ )	$V_T$	—	1.7	2	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 30 \text{ Ohms}$ )	$I_{GT}$	—	8	15	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 30 \text{ Ohms}$ )	$V_{GT}$	—	0.9	1.5	Volts
Holding Current (Gate Open, $V_D = 12 \text{ Vdc}$ , $I_T = 150 \text{ mA}$ )	$I_H$	—	10	20	mA
Gate Controlled Turn-On Time ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 2 \text{ A}$ , $I_{GR} = 80 \text{ mA}$ )	$t_{gt}$	—	1.6	—	$\mu s$
Circuit Commutated Turn-Off Time ( $V_D = V_{DRM}$ , $I_{TM} = 2 \text{ A}$ , Pulse Width = $50 \mu s$ , $dv/dt = 200 \text{ V}/\mu s$ , $di/dt = 10 \text{ A}/\mu s$ , $T_C = 75^{\circ}C$ )	$t_q$	—	25	—	$\mu s$
Critical Rate-of-Rise of Off-State Voltage ( $V_D = \text{Rated } V_{DRM}$ , Exponential Rise, $T_C = 100^{\circ}C$ )	$dv/dt$	—	100	—	$V/\mu s$

FIGURE 1 – CURRENT DERATING

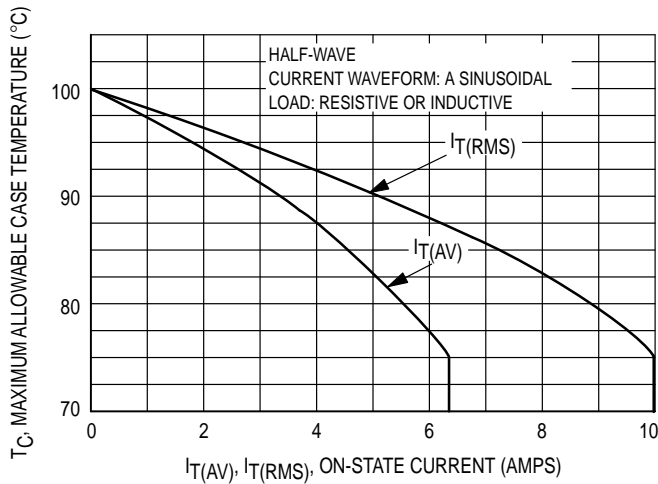
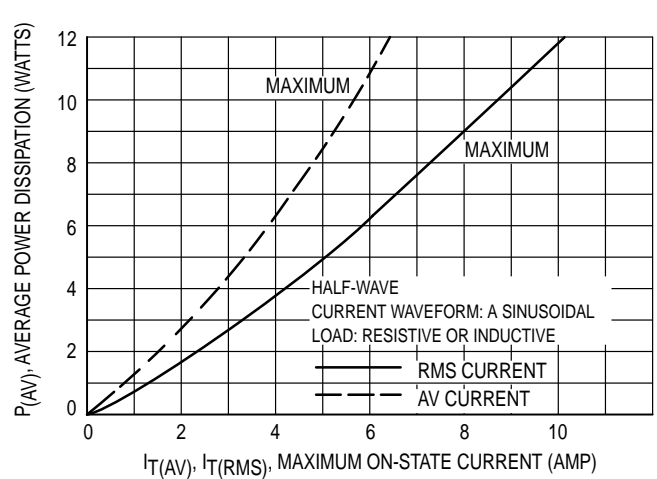
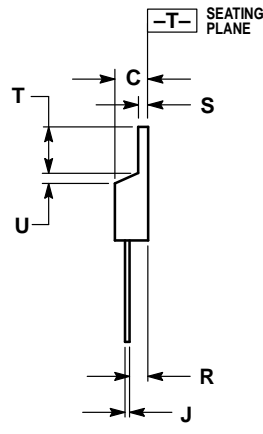
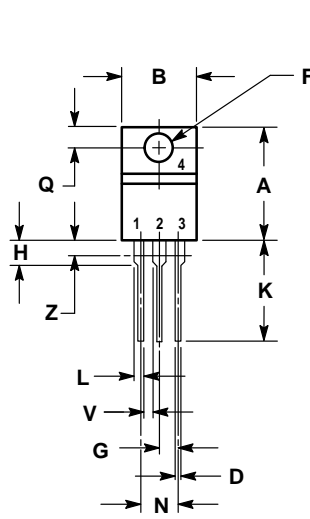


FIGURE 2 – POWER DISSIPATION



PACKAGE DIMENSIONS



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

NOTES:  
 1. DIMENSION AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.  
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.022	0.36	0.55
K	0.500	0.562	12.70	14.27
L	0.045	0.055	1.15	1.39
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

CASE 221A-04  
 (TO-220AB)

## S2800 Series

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S2800/D

