

## Triacs

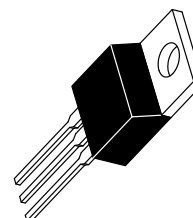
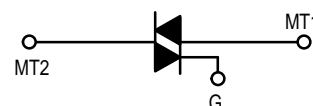
### Silicon Bidirectional Triode Thyristors

... designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies; or wherever full-wave silicon gate controlled solid-state devices are needed. Triac type thyristors switch from a blocking to a conducting state for either polarity of applied anode voltage with positive or negative gate triggering.

- Blocking Voltage to 800 Volts
- All Diffused and Glass Passivated Junctions for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Gate Triggering Guaranteed in Two Modes (2N6344, 2N6344A) or Four Modes (2N6348A, 2N6349)
- For 400 Hz Operation, Consult Factory

**2N6344, A**  
**2N6348A**  
**2N6349**

**TRIACs**  
**8 to 12 AMPERES RMS**  
**600 thru 800 VOLTS**



**CASE 221A-07**  
**(TO-220AB)**  
**STYLE 4**

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

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage <sup>(1)</sup> (Gate Open, $T_J = -40$ to $+110^\circ\text{C}$ ) 1/2 Sine Wave 50 to 60 Hz, Gate Open	$V_{\text{DRM}}$	600 800	Volts
*RMS On-State Current Full Cycle Sine Wave 50 to 60 Hz	$I_{\text{T(RMS)}}$	8 4 12 6	Amps
( $T_C = +80^\circ\text{C}$ ) 2N6344, 2N6349 ( $T_C = +90^\circ\text{C}$ ) ( $T_C = +80^\circ\text{C}$ ) 2N6344A, 2N6348A ( $T_C = +90^\circ\text{C}$ )			
*Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$ ) Preceded and followed by Rated Current	$I_{\text{TSM}}$	100	Amps
Circuit Fusing ( $t = 8.3$ ms)	$I^2t$	40	$\text{A}^2\text{s}$
*Peak Gate Power ( $T_C = +80^\circ\text{C}$ , Pulse Width = 2 $\mu\text{s}$ )	$P_{\text{GM}}$	20	Watts
*Average Gate Power ( $T_C = +80^\circ\text{C}$ , $t = 8.3$ ms)	$P_{\text{G(AV)}}$	0.5	Watt
*Peak Gate Current	$I_{\text{GM}}$	2	Amps
*Peak Gate Voltage	$V_{\text{GM}}$	10	Volts
*Operating Junction Temperature Range	$T_J$	$-40$ to $+125$	$^\circ\text{C}$
*Storage Temperature Range	$T_{\text{stg}}$	$-40$ to $+150$	$^\circ\text{C}$

1.  $V_{\text{DRM}}$  for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	$^{\circ}\text{C/W}$

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^{\circ}\text{C}$ , and Either Polarity of MT2 to MT1 Voltage, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
* Peak Blocking Current ( $V_D = \text{Rated } V_{DRM}$ , gate open) $T_J = 25^{\circ}\text{C}$ $T_J = 100^{\circ}\text{C}$	$I_{DRM}$	— —	— —	10 2	$\mu\text{A}$ $\text{mA}$
* Peak On-State Voltage ( $I_{TM} = 11 \text{ A Peak}$ ; Pulse Width = 1 to 2 ms, Duty Cycle $\leq 2\%$ )	$V_{TM}$	—	1.3	1.55	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 100 \text{ Ohms}$ ) (Minimum Gate Pulse Width = 2 $\mu\text{s}$ ) MT2(+), G(+) All Types MT2(+), G(-) 2N6349 MT2(-), G(-) All Types MT2(-), G(+) 2N6349 *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^{\circ}\text{C}$ 2N6349	$I_{GT}$	— — — — —	12 12 20 35	50 75 50 75	$\text{mA}$
Gate Trigger Voltage (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 100 \text{ Ohms}$ ) (Minimum Gate Pulse Width = 2 $\mu\text{s}$ ) MT2(+), G(+) All Types MT2(+), G(-) 2N6349 MT2(-), G(-) All Types MT2(-), G(+) 2N6349 *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^{\circ}\text{C}$ 2N6349 ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 10 \text{ k Ohms}$ , $T_J = 100^{\circ}\text{C}$ ) *MT2(+), G(+); MT2(-), G(-) All Types *MT2(+), G(-); MT2(-), G(-) 2N6349	$V_{GT}$	— — — — — — 0.2 0.2	0.9 0.9 1.1 1.4	2 2.5 2 2.5 2.5 3	Volts
* Holding Current ( $V_D = 12 \text{ Vdc}$ , Gate Open) $T_C = 25^{\circ}\text{C}$ ( $I_T = 200 \text{ mA}$ ) $*T_C = -40^{\circ}\text{C}$	$I_H$	— —	6 —	40 75	$\text{mA}$
* Turn-On Time ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 11 \text{ A}$ , $I_{GT} = 120 \text{ mA}$ , Rise Time = 0.1 $\mu\text{s}$ , Pulse Width = 2 $\mu\text{s}$ )	$t_{gt}$	—	1.5	2	$\mu\text{s}$
Critical Rate of Rise of Commutation Voltage ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 11 \text{ A}$ , Commutating $di/dt = 4.0 \text{ A/ms}$ , Gate Unenergized, $T_C = 80^{\circ}\text{C}$ )	$dv/dt(c)$	—	5	—	$\text{V}/\mu\text{s}$

\*Indicates JEDEC Registered Data.

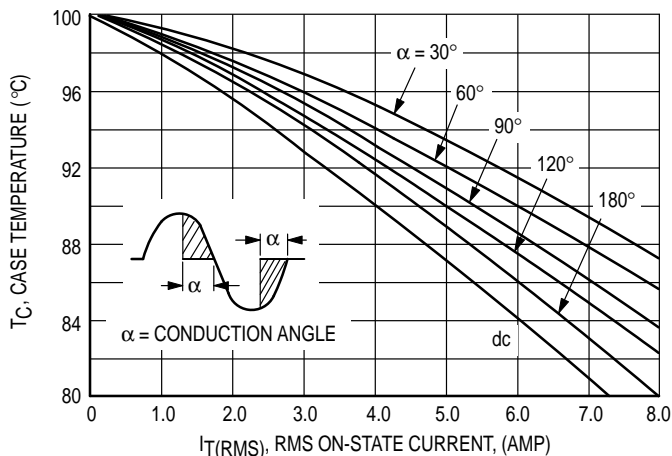
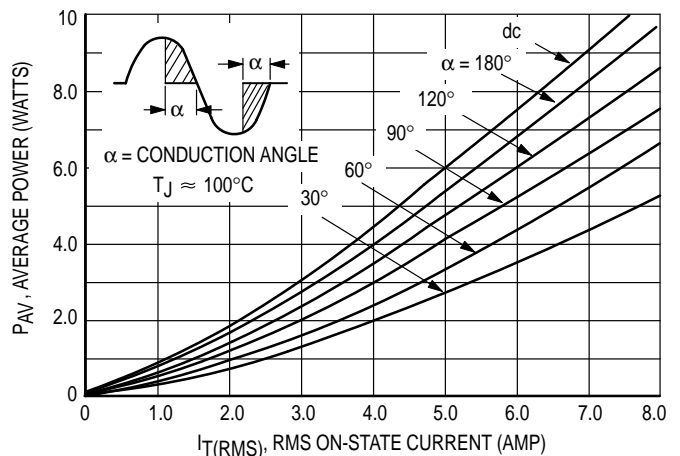
**FIGURE 1 – RMS CURRENT DERATING**

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


FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

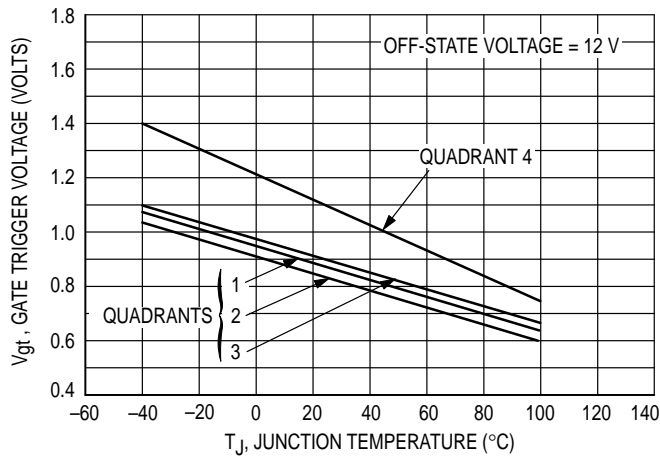


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

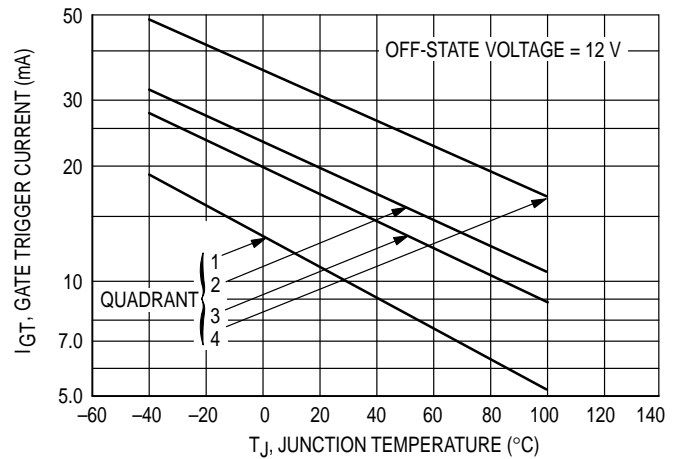


FIGURE 5 – ON-STATE CHARACTERISTICS

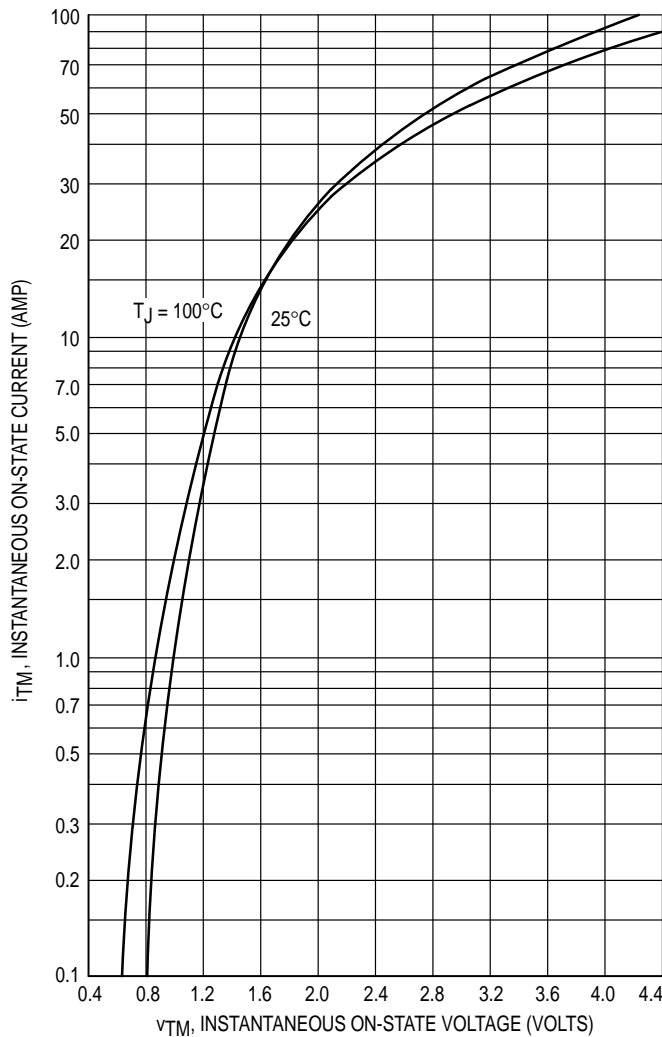


FIGURE 6 – TYPICAL HOLDING CURRENT

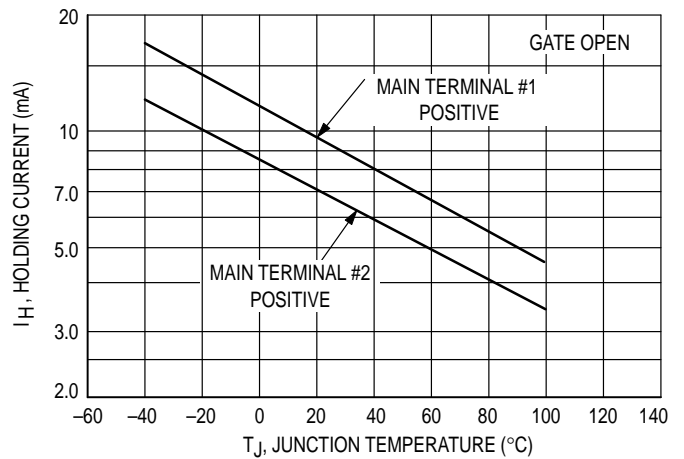
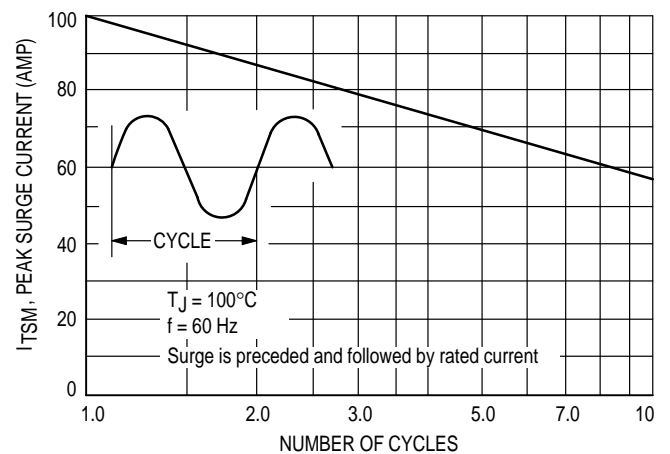
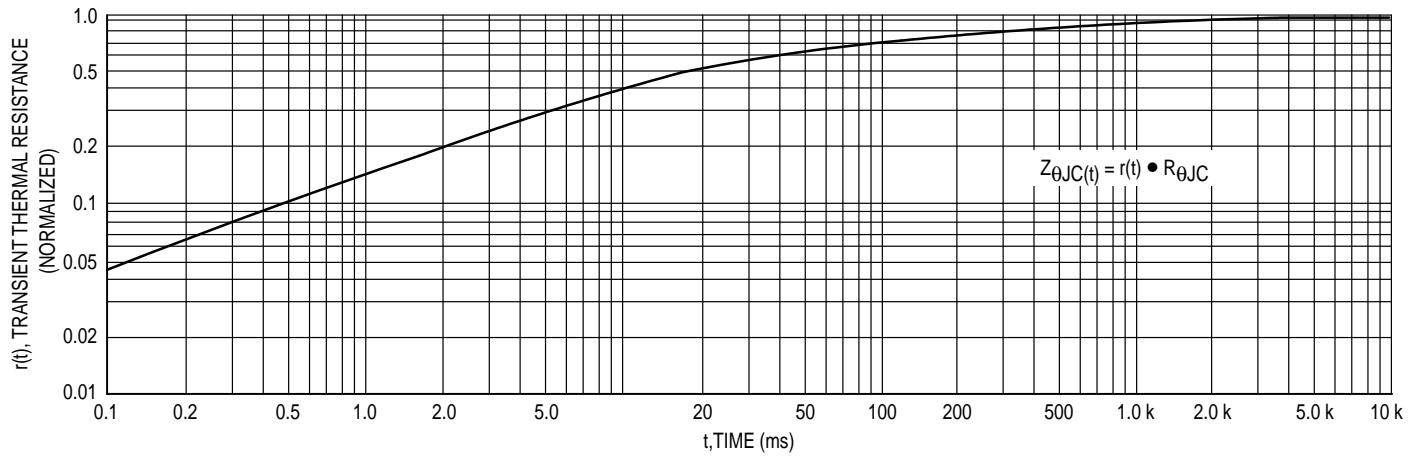


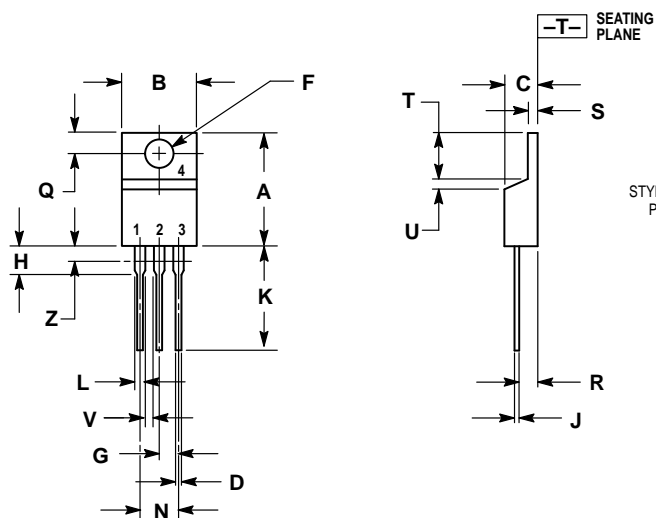
FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT



**FIGURE 8 – TYPICAL THERMAL RESPONSE**



## PACKAGE DIMENSIONS




NOTES:  
1. DIMENSIONING 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	0.060	1.15	1.52
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-07  
(TO-220AB)  
ISSUE Z

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