

## Triacs

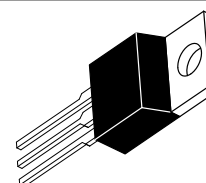
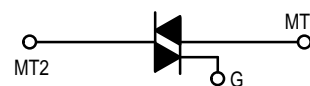
### Silicon Bidirectional Triode Thyristors

... 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 (2N6342, 2N6343, 2N6344, 2N6345) or Four Modes (2N6346, 2N6347, 2N6348, 2N6349)
- For 400 Hz Operation, Consult Factory
- 12 Ampere Devices Available as 2N6342A thru 2N6349A

**2N6342  
thru  
2N6349**

**TRIACs  
8 AMPERES RMS  
200 thru 800 VOLTS**



**CASE 221A-04  
(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	$V_{DRM}$	200 400 600 800	Volts
*RMS On-State Current Full Cycle Sine Wave 50 to 60 Hz	$I_{T(RMS)}$	8 4	Amps
*Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$ ) Preceded and followed by Rated Current	$I_{TSM}$	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 $\mu\text{s}$ )	$P_{GM}$	20	Watts
*Average Gate Power ( $T_C = +80^\circ\text{C}$ , $t = 8.3$ ms)	$P_{G(AV)}$	0.5	Watt
*Peak Gate Current	$I_{GM}$	2	Amps
*Peak Gate Voltage	$V_{GM}$	10	Volts
*Operating Junction Temperature Range	$T_J$	-40 to +125	$^\circ\text{C}$
*Storage Temperature Range	$T_{stg}$	-40 to +150	$^\circ\text{C}$

1.  $V_{DRM}$  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.

REV 1

# 2N6342 thru 2N6349

## THERMAL CHARACTERISTICS

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

## 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	$\mu\text{A}$ 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(-) 2N6346 thru 49 MT2(-), G(-) All Types MT2(-), G(+) 2N6346 thru 49 *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^{\circ}\text{C}$ 2N6346 thru 49	$I_{GT}$	—	12 12 20 35 — —	50 75 50 75 100 125	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(-) 2N6346 thru 49 MT2(-), G(-) All Types MT2(-), G(+) 2N6346 thru 49 *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^{\circ}\text{C}$ 2N6346 thru 49 ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 10 \text{ k Ohms}$ , $T_J = 100^{\circ}\text{C}$ ) *MT2(+), G(+); MT2(-), G(-) All Types *MT2(+), G(-); MT2(-), G(-) 2N6346 thru 49	$V_{GT}$	—	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	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

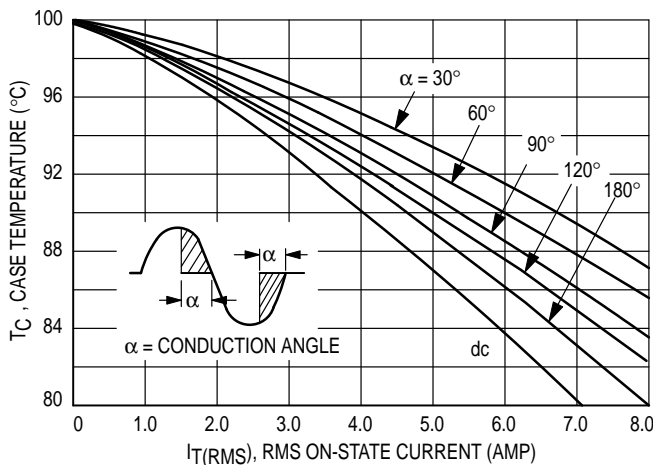


FIGURE 2 – ON-STATE POWER DISSIPATION

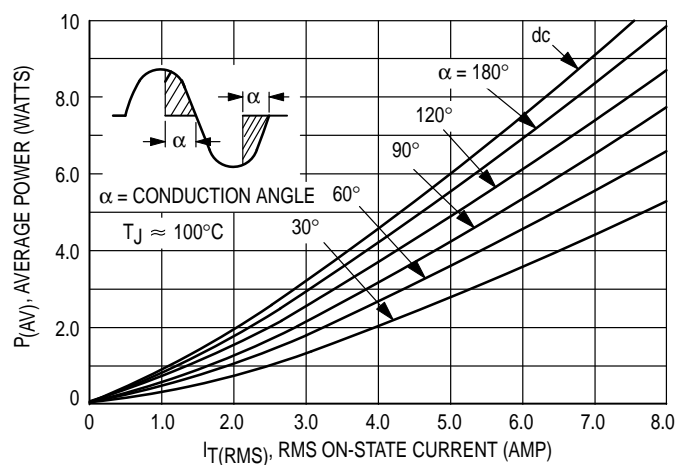


FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

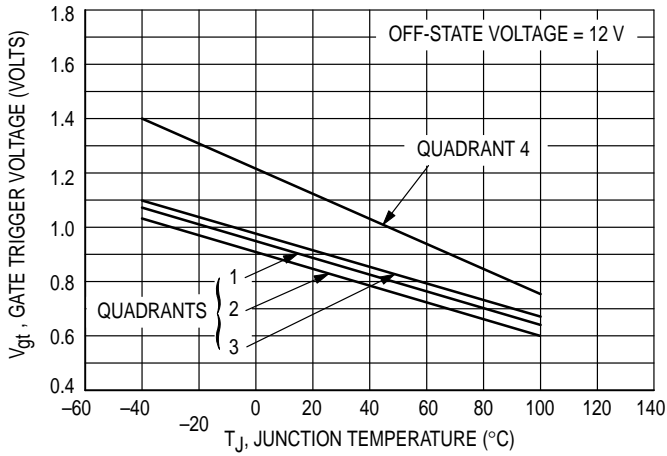


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

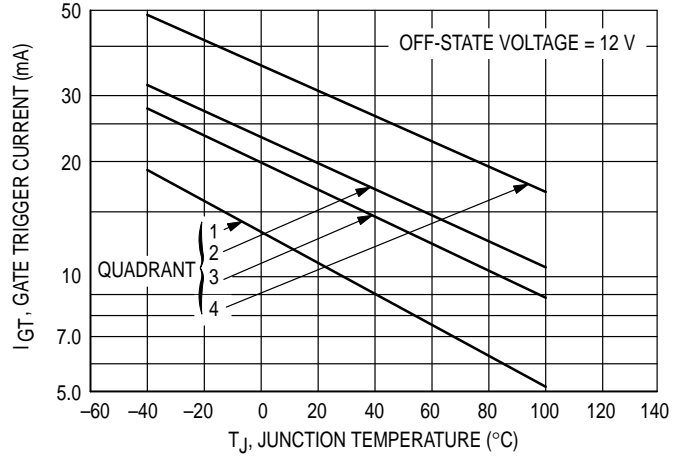


FIGURE 5 – ON-STATE CHARACTERISTICS

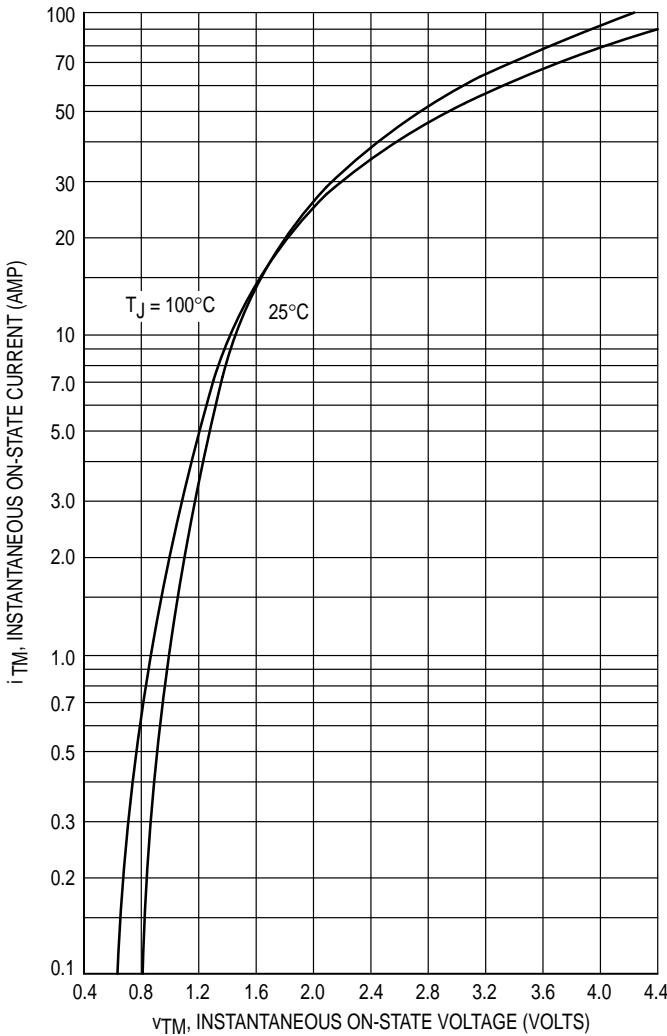


FIGURE 6 – TYPICAL HOLDING CURRENT

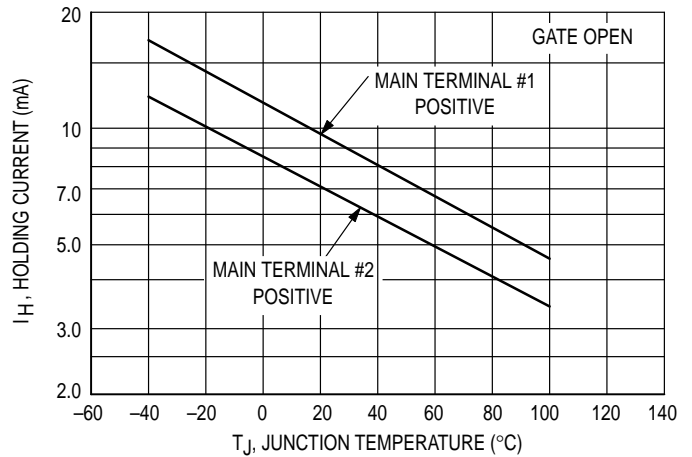


FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

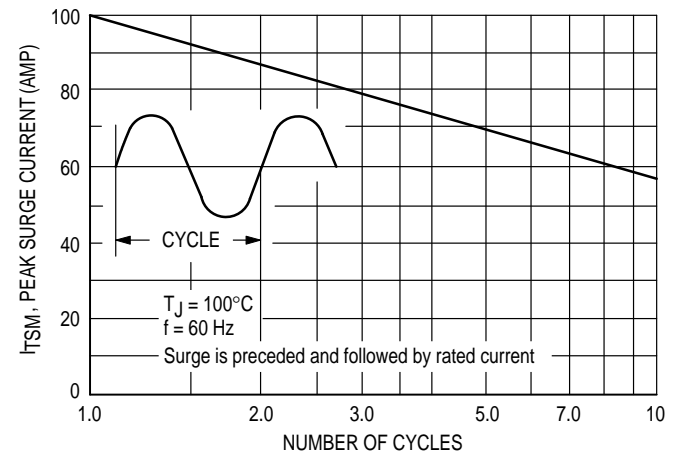
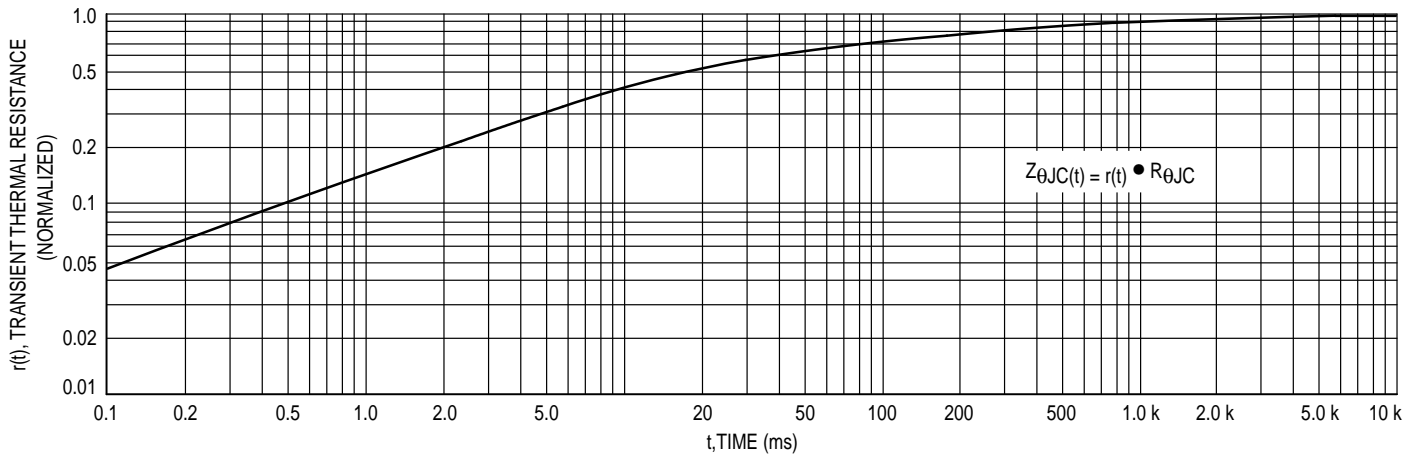
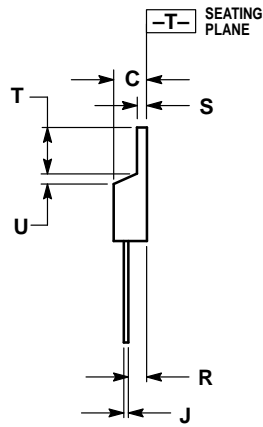
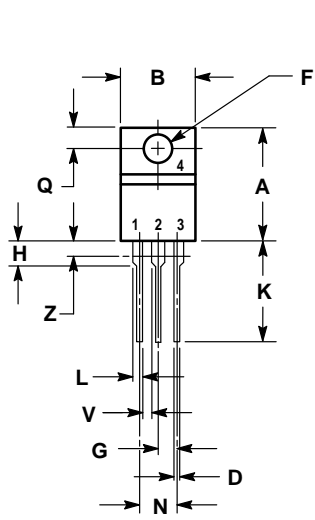


FIGURE 8 – TYPICAL THERMAL RESPONSE



PACKAGE DIMENSIONS



STYLE 4:  
 PIN 1. MAIN TERMINAL 1  
 2. MAIN TERMINAL 2  
 3. GATE  
 4. MAIN TERMINAL 2

- 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	0.055	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)

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