

Triacs

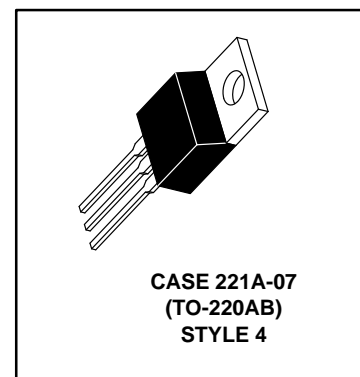
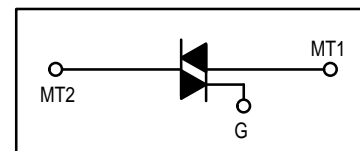
Silicon Bidirectional Triode Thyristors

... 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 Four Modes (2N6348A, 2N6349A)
- For 400 Hz Operation, Consult Factory
- 8 Ampere Devices Available as 2N6344 thru 2N6349

2N6348A
2N6349A

TRIACs
12 AMPERES RMS
600 and 800 VOLTS



MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

| Rating | Symbol | Value | Unit |
|---|---------------------|-------------|------------------|
| *Peak Repetitive Off-State Voltage ⁽¹⁾ (Gate Open, T _J = -40 to +110°C 1/2 Sine Wave 50 to 60 Hz, Gate Open 2N6348A 2N6349A | V _{DRM} | 600 800 | Volts |
| *RMS On-State Current (T _C = +80°C) (Full Cycle Sine Wave 50 to 60 Hz) (T _C = +95°C) | I _{T(RMS)} | 12 6 | Amps |
| *Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, T _C = +80°C) Preceded and Followed by Rated Current | I _{TSM} | 120 | Amps |
| Circuit Fusing (t = 8.3 ms) | I ² t | 59 | A ² s |
| *Peak Gate Power (T _C = +80°C, Pulse Width = 2 μs) | P _{GM} | 20 | Watts |
| *Average Gate Power (T _C = +80°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 | °C |
| *Storage Temperature Range | T _{stg} | -40 to +150 | °C |

*Indicates JEDEC Registered Data.

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.

2N6348A 2N6349A

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 Blocking Current ($V_D = \text{Rated } V_{DRM}$, gate open) $T_J = 25^{\circ}C$ $T_J = 110^{\circ}C$ | I_{DRM} | — — | — — | 10 2 | μA mA |
| *Peak On-State Voltage (Either Direction) ($I_{TM} = 17$ A Peak; Pulse Width = 1 to 2 ms, Duty Cycle $\leq 2\%$) | V_{TM} | — | 1.3 | 1.75 | Volts |
| Gate Trigger Current (Continuous dc) ($V_D = 12$ Vdc, $R_L = 100$ Ohms) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}C$ *MT2(+), G(-); MT2(-), G(+), $T_C = -40^{\circ}C$ | I_{GT} | — — — — — | 6 6 10 25 | 50 75 50 75 | mA |
| Gate Trigger Voltage (Continuous dc) ($V_D = 12$ Vdc, $R_L = 100$ ohms) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+) *MT2(+), G(+); MT2(-), G(-) $T_C = -40^{\circ}C$ *MT2(+), G(-); MT2(-), G(+), $T_C = -40^{\circ}C$ ($V_D = \text{Rated } V_{DRM}$, $R_L = 10$ k ohms, $T_J = 100^{\circ}C$) *MT2(+), G(+); MT2(-), G(-) *MT2(+), G(-); MT2(-), G(-) | V_{GT} | — — — — — 0.2 0.2 | 0.9 0.9 1.1 1.4 | 2 2.5 2 2.5 3 | Volts |
| Holding Current (Either Direction) ($V_D = 12$ Vdc, Gate Open) $T_C = 25^{\circ}C$ ($I_T = 200$ mA) $*T_C = -40^{\circ}C$ | I_H | — — | 6 — | 40 75 | mA |
| *Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 17$ A, $I_{GT} = 120$ mA, Rise Time = 0.1 μs , Pulse Width = 2 μs) | t_{gt} | — | 1.5 | 2 | μs |
| Critical Rate of Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 17$ A, Commutating $di/dt = 6.1$ A/ms, Gate Unenergized, $T_C = 80^{\circ}C$) | $dv/dt(c)$ | — | 5 | — | V/ μs |

*Indicates JEDEC Registered Data.

FIGURE 1 – RMS CURRENT DERATING

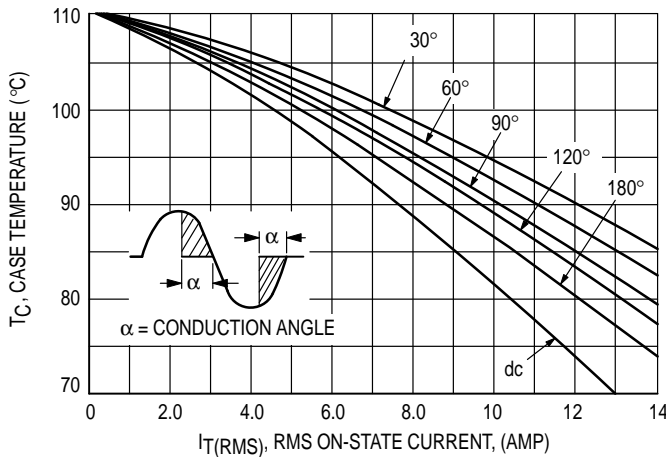


FIGURE 2 – ON-STATE POWER DISSIPATION

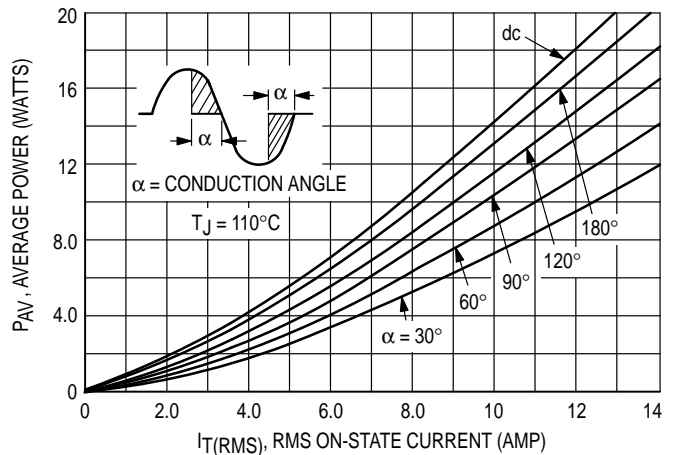


FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

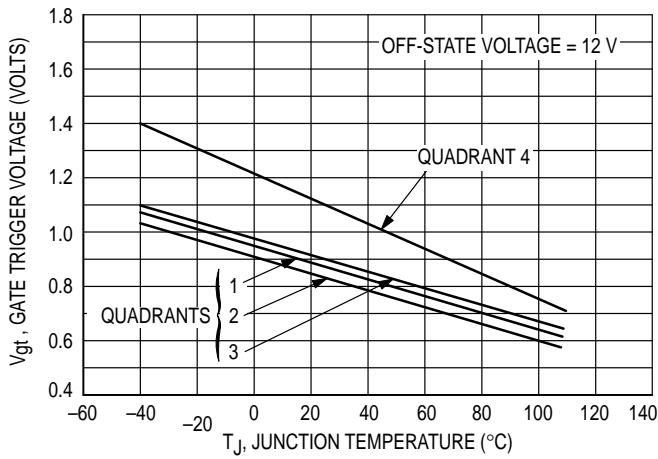


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

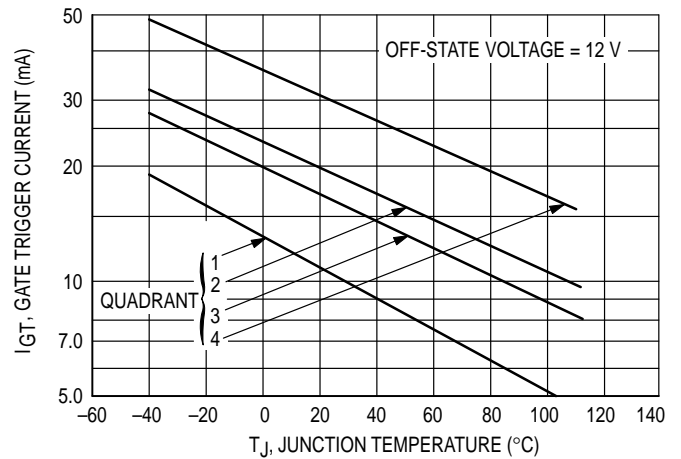


FIGURE 5 – ON-STATE CHARACTERISTICS

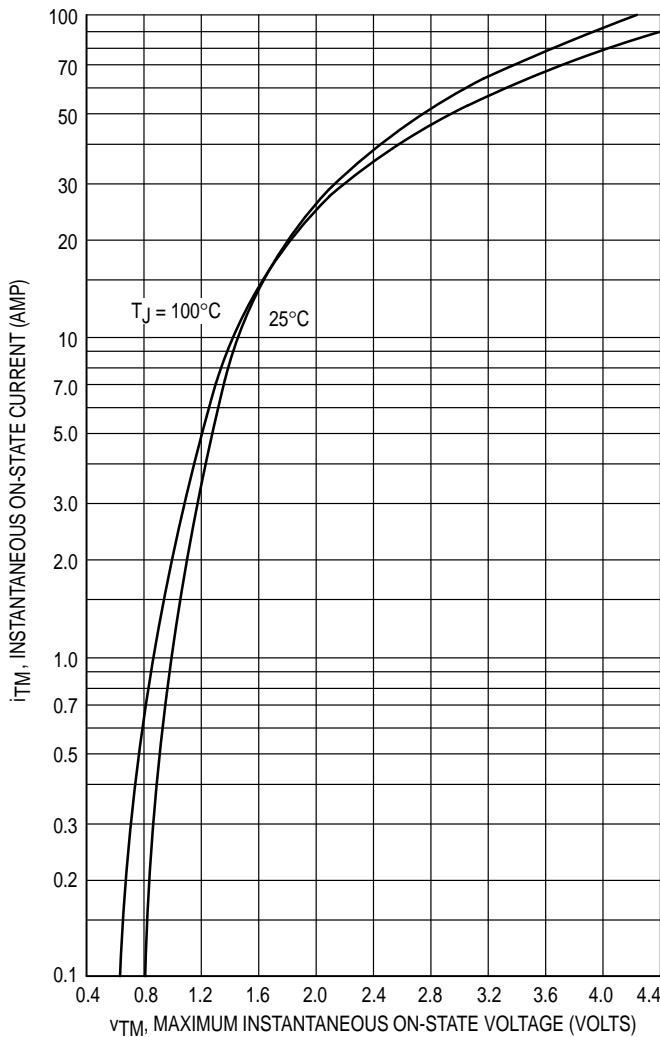


FIGURE 6 – TYPICAL HOLDING CURRENT

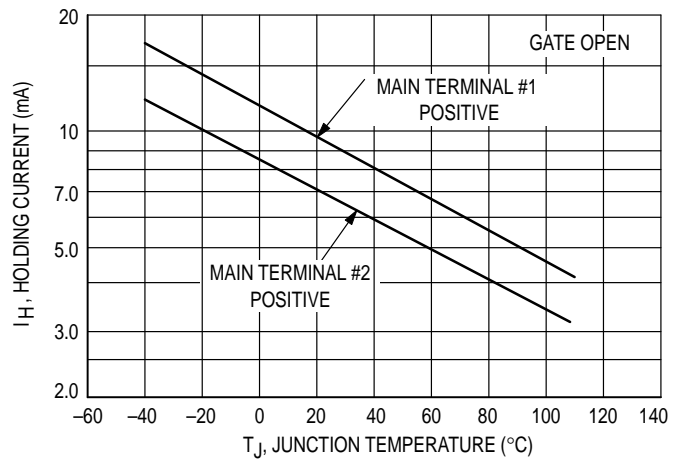


FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

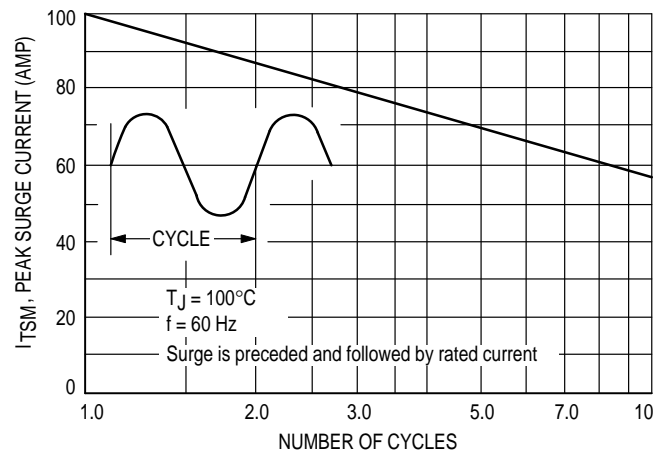
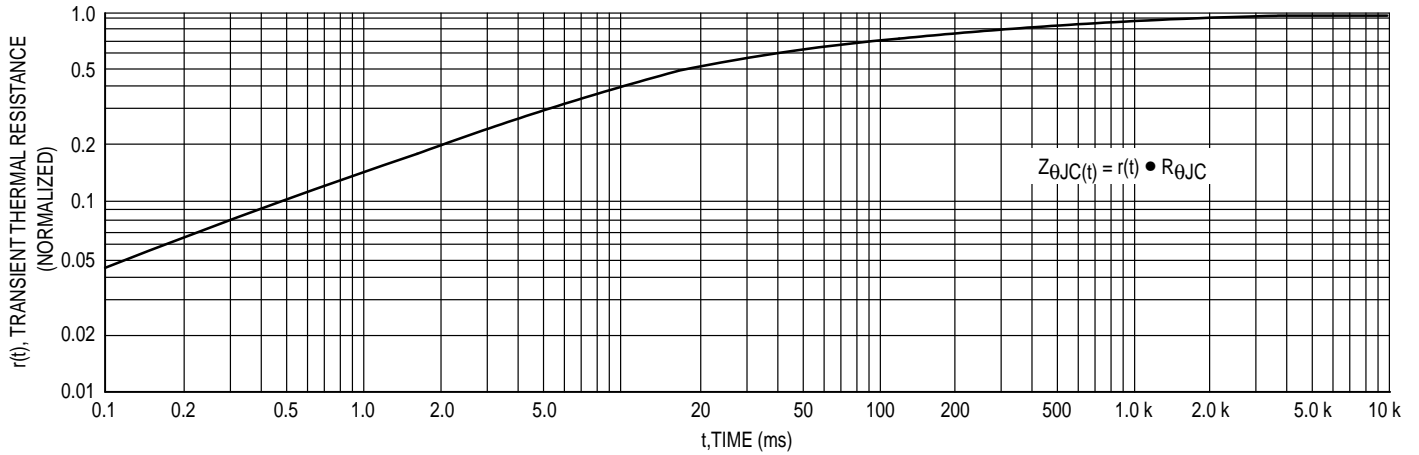


FIGURE 8 – TYPICAL THERMAL RESPONSE



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 |

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

**CASE 221A-07
 (TO-220AB)
 ISSUE Z**

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