

# Triacs

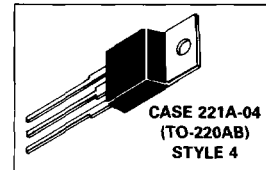
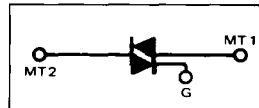
## Silicon Bidirectional Triode Thyristors

... 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 (2N6342A, 2N6343A, 2N6344A, 2N6345A) or Four Modes (2N6346A, 2N6347A, 2N6348A, 2N6349A)
- For 400 Hz Operation, Consult Factory
- 8 Ampere Devices Available as 2N6342 thru 2N6349

**2N6342A  
thru  
2N6345A  
2N6346A  
thru  
2N6349A**

**TRIACS  
12 AMPERES RMS  
200 thru 800 VOLTS**



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

Rating	Symbol	Value	Unit
*Peak Repetitive Off-State Voltage, Note 1 (Gate Open, $T_J = -40$ to $+110^\circ\text{C}$ ) 1/2 Sine Wave 50 to 60 Hz, Gate Open  <i>2N6342A, 2N6346A</i> <i>2N6343A, 2N6347A</i> <i>2N6344A, 2N6348A</i> <i>2N6345A, 2N6349A</i>	$V_{DRM}$	200 400 600 800	Volts
*RMS On-State Current ( $T_C = +80^\circ\text{C}$ ) (Full Cycle Sine Wave 50 to 60 Hz) ( $T_C = +95^\circ\text{C}$ )	$I_T(\text{RMS})$	12 6	Amps
*Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$ ) Preceded and Followed by Rated Current	$I_{TSM}$	120	Amps
Circuit Fusing ( $t = 8.3$ ms)	$I^2t$	59	$\text{A}^2\text{s}$
*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	$V_{GM}$	$\pm 10$	Volts
*Operating Junction Temperature Range	$T_J$	$-40$ to $+125$	$^\circ\text{C}$
*Storage Temperature Range	$T_{stg}$	$-40$ to $+150$	$^\circ\text{C}$

\*Indicates JEDEC Registered Data.

Note 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.

Devices listed in bold, italic are Motorola preferred devices.

## 2N6342A thru 2N6349A

### THERMAL CHARACTERISTICS

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Blocking Current ( $V_D = \text{Rated } V_{DRM}$ , gate open) $T_J = 25^\circ\text{C}$ $T_J = 110^\circ\text{C}$	$I_{DRM}$	—	—	10 2	$\mu\text{A}$ mA
*Peak On-State Voltage (Either Direction) ( $I_{TM} = 17 \text{ A Peak}$ ; Pulse Width = 1 to 2 ms, Duty Cycle $\leq 2\%$ )	$V_{TM}$	—	1.3	1.75	Volts
Gate Trigger Current (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 100 \text{ Ohms}$ ) MT2(+), G(+) All Types MT2(+), G(-) 2N6346A thru 2N6349A MT2(-), G(-) All Types MT2(-), G(+) 2N6346A thru 2N6349A *MT2(+), G(+); MT2(-), G(-) $T_C = -40^\circ\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^\circ\text{C}$ 2N6346A thru 2N6349A	$I_{GT}$	—	6 6 10 25	50 75 50 75	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12 \text{ Vdc}$ , $R_L = 100 \text{ ohms}$ ) MT2(+), G(+) All Types MT2(+), G(-) 2N6346A thru 2N6349A MT2(-), G(-) All Types MT2(-), G(+) 2N6346A thru 2N6349A *MT2(+), G(+); MT2(-), G(-) $T_C = -40^\circ\text{C}$ All Types *MT2(+), G(-); MT2(-), G(+) $T_C = -40^\circ\text{C}$ 2N6346A thru 2N6349A ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 10 \text{ k ohms}$ , $T_J = 100^\circ\text{C}$ ) *MT2(+), G(+); MT2(-), G(-) All Types *MT2(+), G(-); MT2(-), G(-) 2N6346A thru 2N6349A	$V_{GT}$	—	0.9 0.9 1.1 1.4	2 2.5 2 2.5	Volts
Holding Current (Either Direction) ( $V_D = 12 \text{ Vdc}$ , 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 ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 17 \text{ A}$ , $I_{GT} = 120 \text{ mA}$ , 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 ( $V_D = \text{Rated } V_{DRM}$ , $I_{TM} = 17 \text{ A}$ , Commutating $di/dt = 6.1 \text{ A/ms}$ , Gate Unenergized, $T_C = 80^\circ\text{C}$ )	$dv/dt(c)$	—	5	—	V/ $\mu\text{s}$

\*Indicates JEDEC Registered Data.

FIGURE 1 – RMS CURRENT DERATING

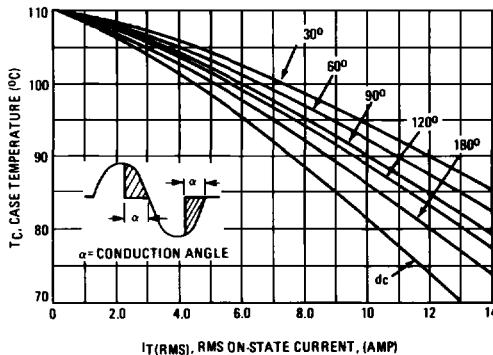
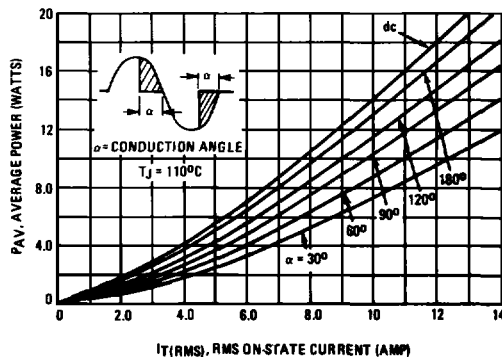


FIGURE 2 – ON-STATE POWER DISSIPATION



2N6342A thru 2N6349A

FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

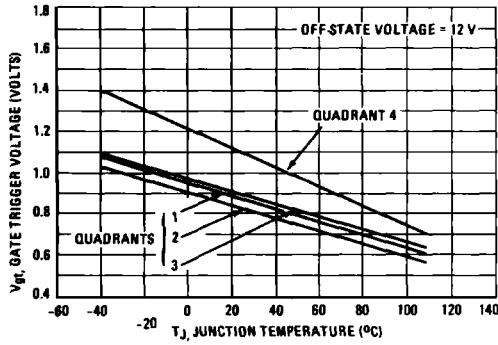


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

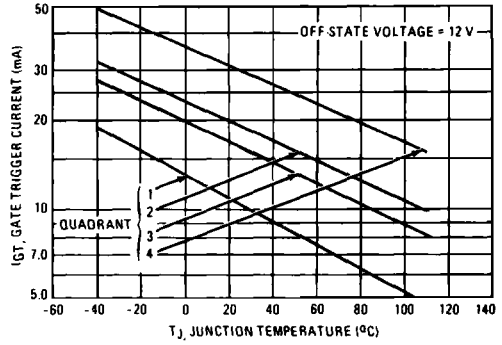


FIGURE 5 – ON-STATE CHARACTERISTICS

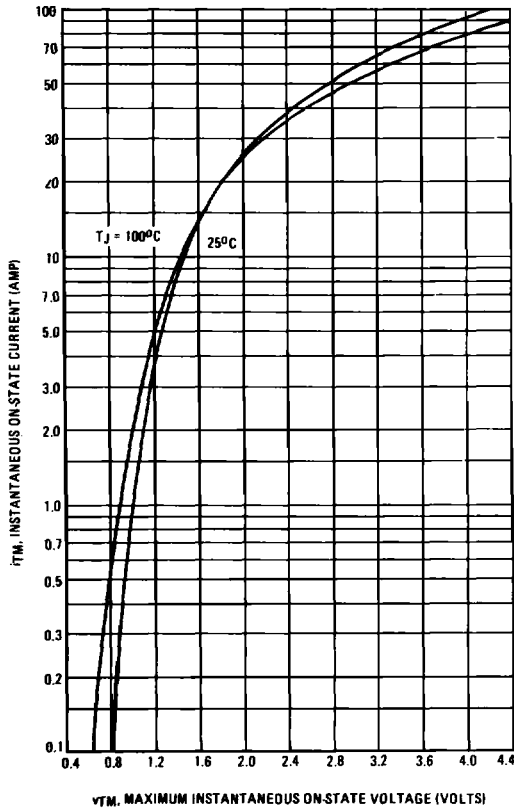


FIGURE 6 – TYPICAL HOLDING CURRENT

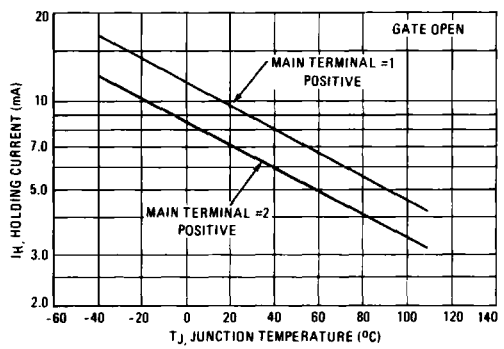
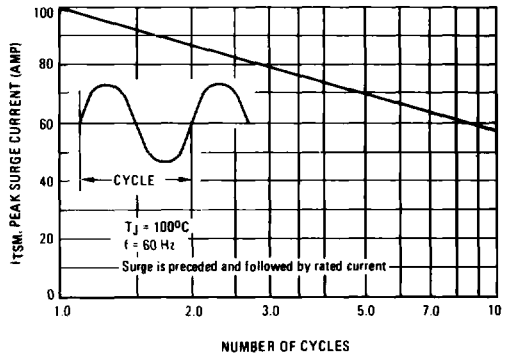


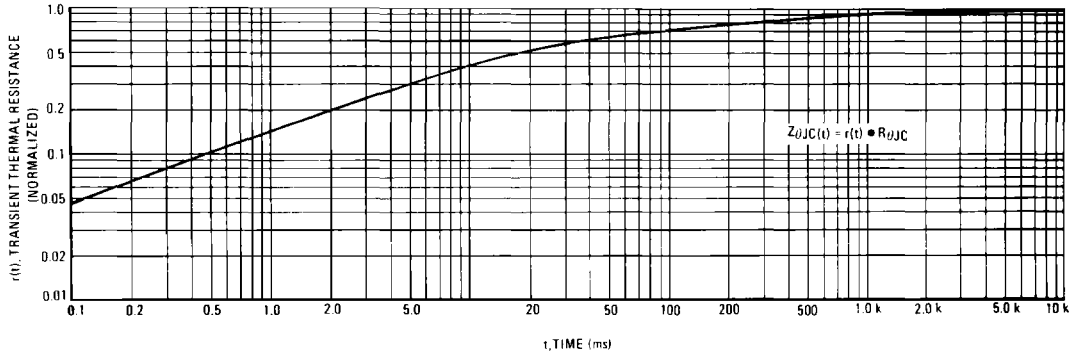
FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT



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# 2N6342A thru 2N6349A

FIGURE 8 – TYPICAL THERMAL RESPONSE



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