

Triacs

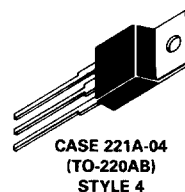
Silicon Bidirectional Triode Thyristors

... 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**



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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	V_{DRM}	200 400 600 800	Volts
		2N6342, 2N6346 2N6343, 2N6347 2N6344, 2N6348 2N6345, 2N6349	
*RMS On-State Current Full Cycle Sine Wave 50 to 60 Hz	$I_T(\text{RMS})$	8 4	Amps
		($T_C = +80^\circ\text{C}$) ($T_C = +90^\circ\text{C}$)	
*Peak Non-Repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$) Preceded and followed by Rated Current	I_{TSM}	100	Amps
Circuit Fusing ($t = 8.3$ ms)	I^2t	40	A^2s
*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)	$P_{G(\text{AV})}$	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	$^\circ\text{C}$

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.

2N6342 thru 2N6349

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	°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	μA
		—	—	2	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 μs) MT2(+), G(+) All Types MT2(+), G(-) 2N6346 thru 49 MT2(-), G(-) All Types MT2(-), G(+) 2N6346 thru 49	I_{GT}	—	12	50	mA
		—	12	75	
		—	20	50	
		—	35	75	
		—	—	100	
*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		—	—	125	
		—	—	—	
Gate Trigger Voltage (Continuous dc) ($V_D = 12 \text{ Vdc}$, $R_L = 100 \text{ Ohms}$) (Minimum Gate Pulse Width = 2 μs) MT2(+), G(+) All Types MT2(+), G(-) 2N6346 thru 49 MT2(-), G(-) All Types MT2(-), G(+) 2N6346 thru 49	V_{GT}	—	0.9	2	Volts
		—	0.9	2.5	
		—	1.1	2	
		—	1.4	2.5	
		—	—	2.5	
		—	—	3	
		—	—	—	
		—	—	—	
		—	—	—	
		—	—	—	
*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 ($V_D = \text{Rated } V_{DRM}$, $R_L = 10 \text{ k Ohms}$, $T_J = 100^\circ\text{C}$)		0.2	—	—	
		0.2	—	—	
*MT2(+), G(+); MT2(-), G(-) All Types *MT2(+), G(-); MT2(-), G(+) 2N6346 thru 49		—	—	—	
		—	—	—	
*Holding Current ($V_D = 12 \text{ Vdc}$, Gate Open) ($I_T = 200 \text{ mA}$) $T_C = 25^\circ\text{C}$ $*T_C = -40^\circ\text{C}$	I_H	—	6	40	mA
		—	—	75	
*Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 11 \text{ A}$, $I_{GT} = 120 \text{ mA}$, Rise Time = 0.1 μs , Pulse Width = 2 μs)	t_{gt}	—	1.5	2	μs
Critical Rate of Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 11 \text{ A}$, Commutating $di/dt = 4.0 \text{ A/ms}$, Gate Unenergized, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	—	5	—	V/ μs

*Indicates JEDEC Registered Data.

FIGURE 1 - RMS CURRENT DERATING

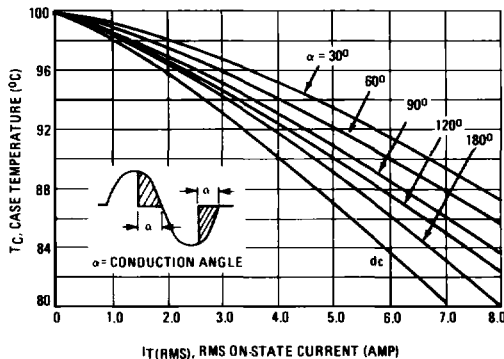
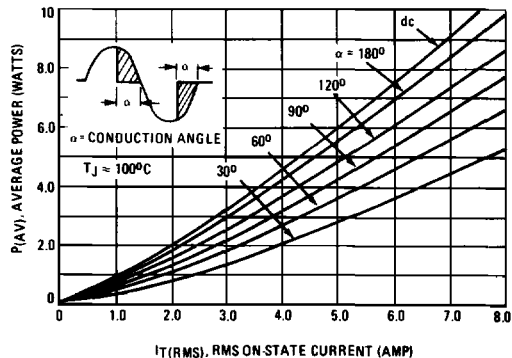


FIGURE 2 - ON-STATE POWER DISSIPATION



2N6342 thru 2N6349

FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

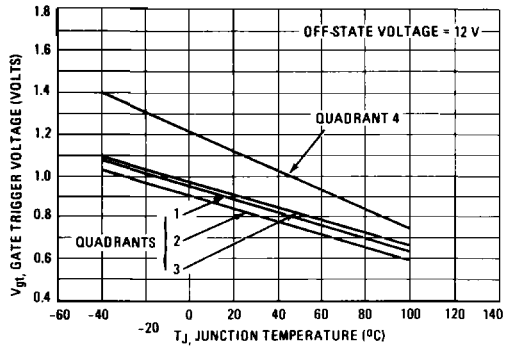


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

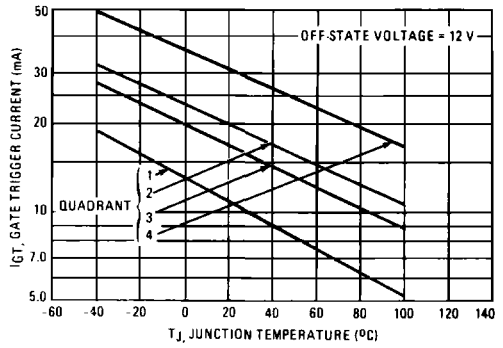


FIGURE 5 – ON-STATE CHARACTERISTICS

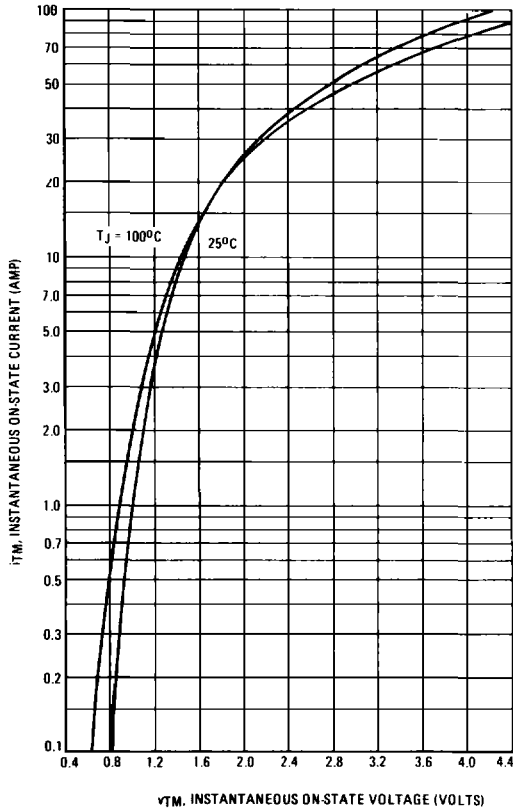


FIGURE 6 – TYPICAL HOLDING CURRENT

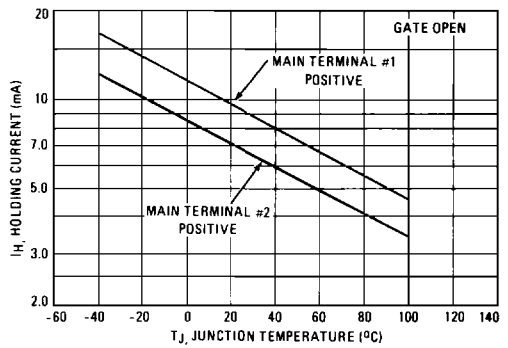
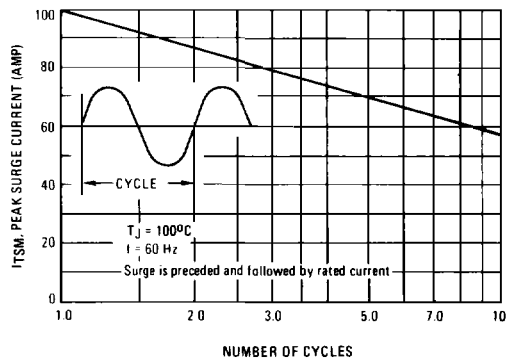


FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT



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2N6342 thru 2N6349

FIGURE 8 - TYPICAL THERMAL RESPONSE

