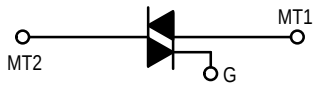
Triacs
Silicon Bidirectional Triode Thyristors

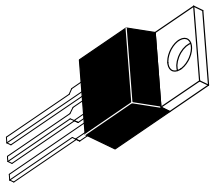
2N6342 thru 2N6349

TRIACs
8 AMPERES RMS
200 thru 800 VOLTS

. . . 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





CASE 221A-04
(TO-220AB)
STYLE 4

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	2N6342, 2N6346 2N6343, 2N6347 2N6344, 2N6348 2N6345, 2N6349	V_{DRM}	 200 400 600 800	Volts
*RMS On-State Current Full Cycle Sine Wave 50 to 60 Hz	(T_C = +80°C) (T_C = +90°C)	$I_{T(RMS)}$	8 4	Amps
*Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, T_C = +80°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°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

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

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C, and Either Polarity of MT2 to MT1 Voltage, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Blocking Current	I_{DRM}				
(V_D = Rated V_{DRM}, gate open) T_J = 25°C		—	—	10	μA
T_J = 100°C		—	—	2	mA
*Peak On-State Voltage	V_{TM}	—	1.3	1.55	Volts
(I_{TM} = 11 A Peak; Pulse Width = 1 to 2 ms, Duty Cycle ≤ 2%)					
Gate Trigger Current (Continuous dc)	I_{GT}				mA
(V_D = 12 Vdc, R_L = 100 Ohms)					
(Minimum Gate Pulse Width = 2 μs)					
MT2(+), G(+) All Types		—	12	50	
MT2(+), G(–) 2N6346 thru 49		—	12	75	
MT2(–), G(–) All Types		—	20	50	
MT2(–), G(+) 2N6346 thru 49		—	35	75	
*MT2(+), G(+); MT2(–), G(–) T_C = –40°C All Types		—	—	100	
*MT2(+), G(–); MT2(–), G(+) T_C = –40°C 2N6346 thru 49		—	—	125	
Gate Trigger Voltage (Continuous dc)	V_{GT}				Volts
(V_D = 12 Vdc, R_L = 100 Ohms)					
(Minimum Gate Pulse Width = 2 μs)					
MT2(+), G(+) All Types		—	0.9	2	
MT2(+), G(–) 2N6346 thru 49		—	0.9	2.5	
MT2(–), G(–) All Types		—	1.1	2	
MT2(–), G(+) 2N6346 thru 49		—	1.4	2.5	
*MT2(+), G(+); MT2(–), G(–) T_C = –40°C All Types		—	—	2.5	
*MT2(+), G(–); MT2(–), G(+) T_C = –40°C 2N6346 thru 49		—	—	3	
(V_D = Rated V_{DRM}, R_L = 10 k Ohms, T_J = 100°C)					
*MT2(+), G(+); MT2(–), G(–) All Types		0.2	—	—	
*MT2(+), G(–); MT2(–), G(–) 2N6346 thru 49		0.2	—	—	
*Holding Current	I_H				mA
(V_D = 12 Vdc, Gate Open) T_C = 25°C		—	6	40	
(I_T = 200 mA) *T_C = –40°C		—	—	75	
*Turn-On Time	t_{gt}	—	1.5	2	μs
(V_D = Rated V_{DRM}, I_{TM} = 11 A, I_{GT} = 120 mA, Rise Time = 0.1 μs, Pulse Width = 2 μs)					
Critical Rate of Rise of Commutation Voltage	dv/dt(c)	—	5	—	V/μs
(V_D = Rated V_{DRM}, I_{TM} = 11 A, Commutating di/dt = 4.0 A/ms, Gate Unenergized, T_C = 80°C)					

*Indicates JEDEC Registered Data.

FIGURE 1 – RMS CURRENT DERATING

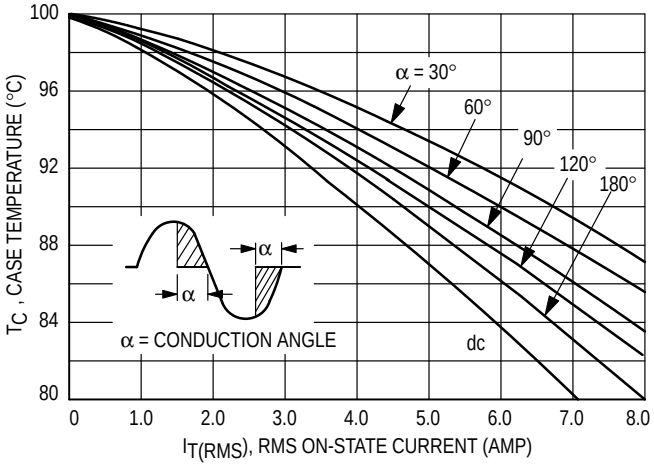


FIGURE 2 – ON-STATE POWER DISSIPATION

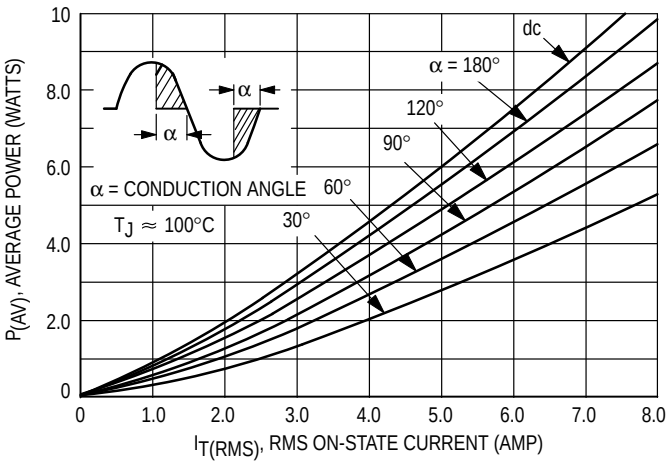


FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

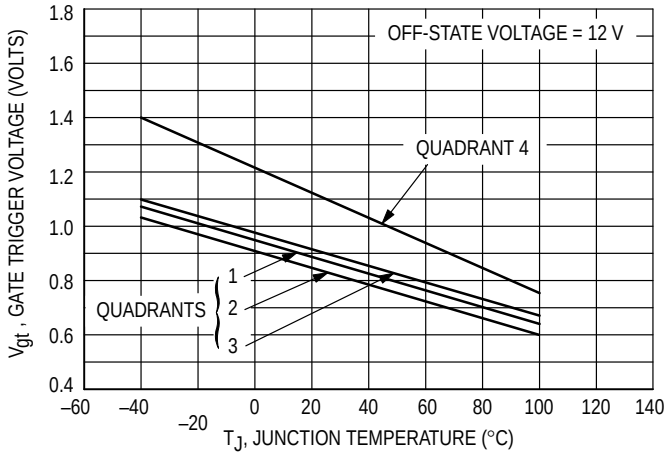


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

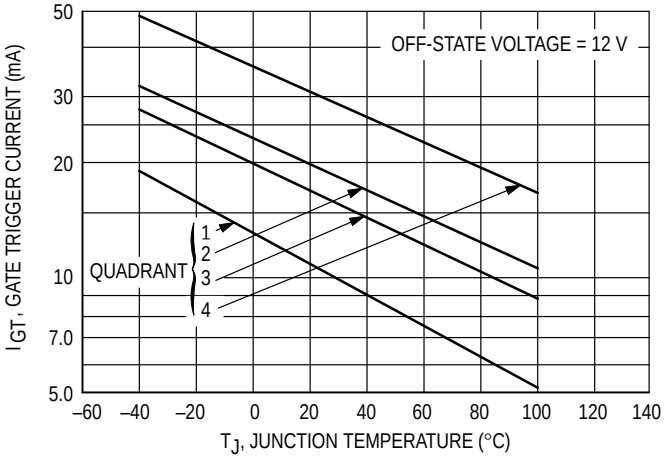


FIGURE 5 – ON-STATE CHARACTERISTICS

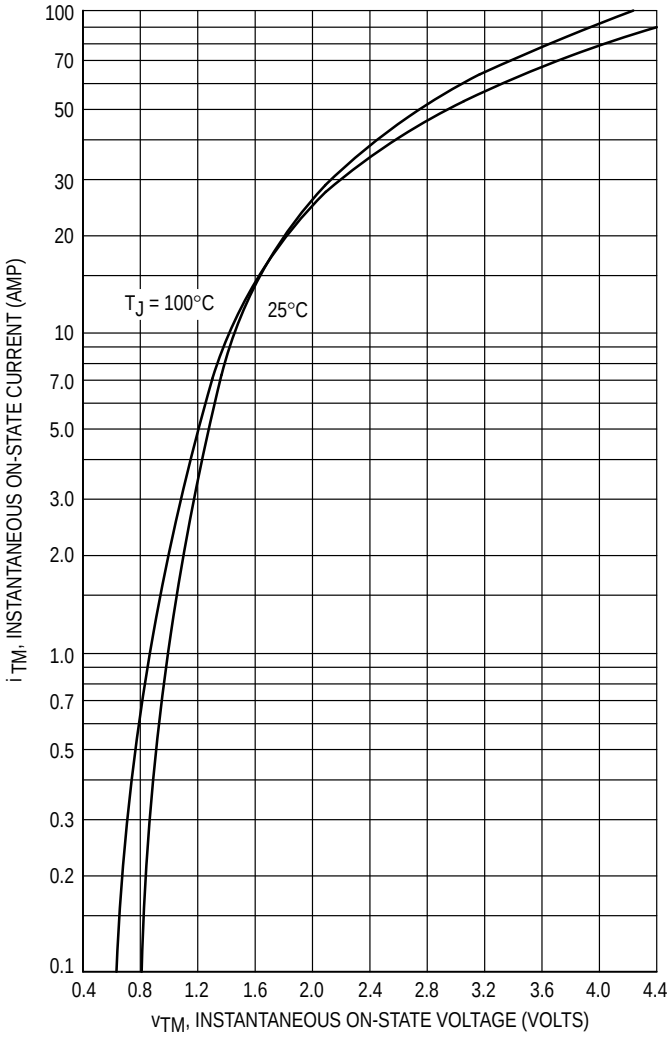


FIGURE 6 – TYPICAL HOLDING CURRENT

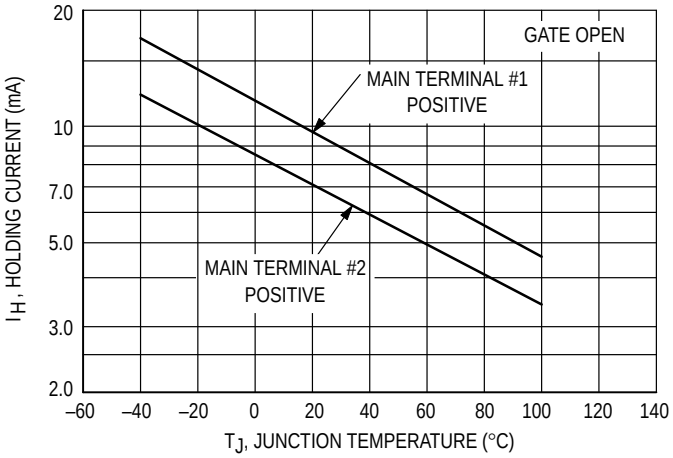


FIGURE 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

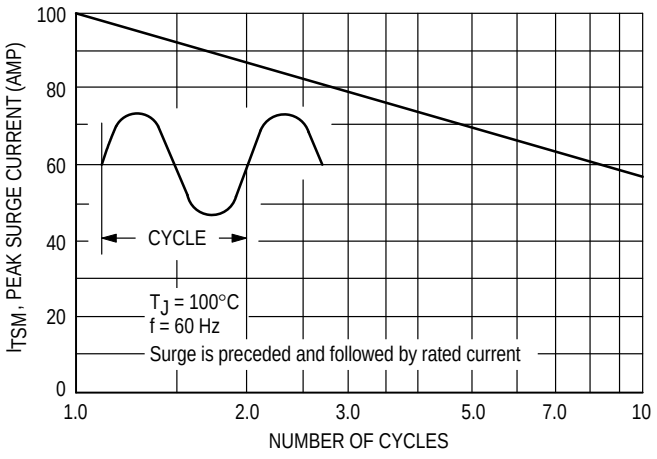
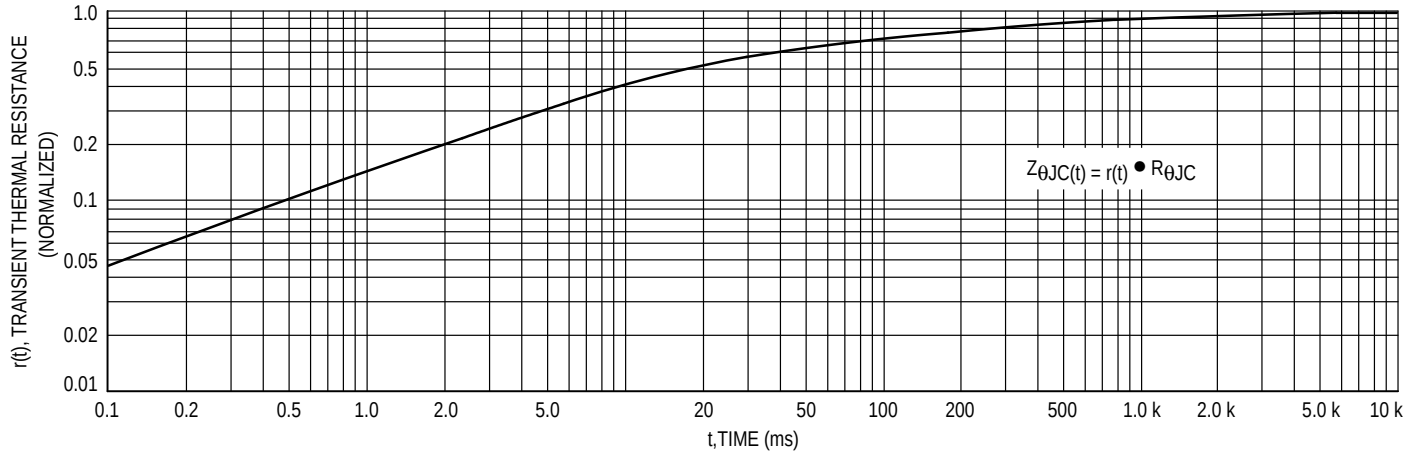
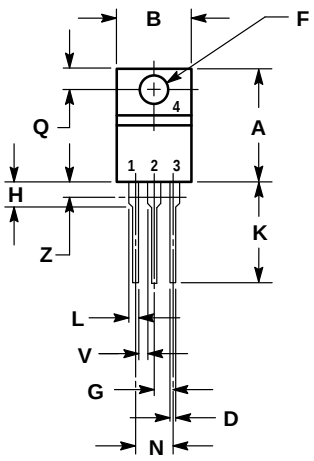
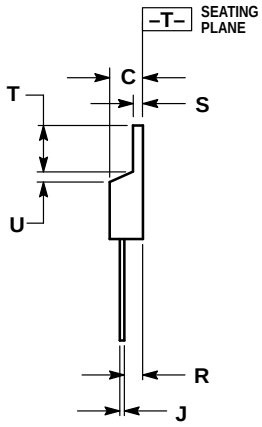


FIGURE 8 – TYPICAL THERMAL RESPONSE



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.

	INCHES		MILLIMETERS	
DIM	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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