2N6344, 2N6349

Preferred Device

Triacs

Silicon Bidirectional 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 main terminal 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 all Four Quadrants
- For 400 Hz Operation, Consult Factory
- Device Marking: Logo, Device Type, e.g., 2N6344, Date Code

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

Rating	Symbol	Value	Unit
*Peak Repetitive Off−State Voltage(1) (T_J = −40 to +110°C, Sine Wave 50 to 60 Hz, Gate Open) 2N6344 2N6349	V_{DRM}, V_{RRM}	600 800	Volts
*On−State RMS Current (T_C = +80°C) Full Cycle Sine Wave 50 to 60 Hz (T_C = +90°C)	$I_{T(RMS)}$	8.0 4.0	Amps
*Peak Non−Repetitive Surge Current (One Full Cycle, Sine Wave 60 Hz, T_C = +25°C) Preceded and followed by rated current	I_{TSM}	100	Amps
Circuit Fusing Consideration (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 (T_C = +80°C, Pulse Width = 2.0 μs)	I_{GM}	2.0	Amps
*Peak Gate Voltage (T_C = +80°C, Pulse Width = 2.0 μs)	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} and V_{RRM} 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.

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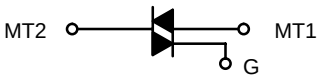
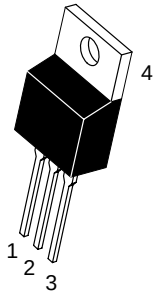
TRIACS
8 AMPERES RMS
600 thru 800 VOLTS





TO−220AB
CASE 221A
STYLE 4

PIN ASSIGNMENT	
1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	Main Terminal 2

ORDERING INFORMATION

Device	Package	Shipping
2N6344	TO220AB	500/Box
2N6349	TO220AB	500/Box

Preferred devices are recommended choices for future use and best overall value.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.2	°C/W
Maximum Lead Temperature for Soldering Purposes 1/8″ from Case for 10 Seconds	T_L	260	°C

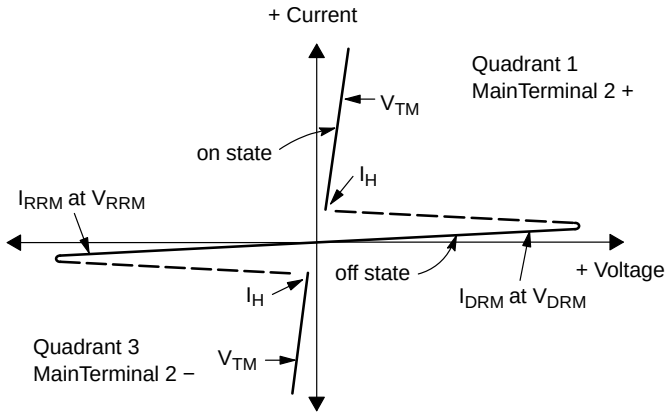
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted; Electricals apply in both directions)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
*Peak Repetitive Blocking Current (V_D = Rated V_{DRM}, V_{RRM}; Gate Open)	T_J = 25°C	I_{DRM}, I_{RRM}	—	—	10	μA
	T_J = 100°C		—	—	2.0	mA
ON CHARACTERISTICS						
*Peak On−State Voltage (I_{TM} = ±11 A Peak; Pulse Width = 1 to 2 ms, Duty Cycle ≤2%)		V_{TM}	—	1.3	1.55	Volts
Gate Trigger Current (Continuous dc) (V_D = 12 Vdc, R_L = 100 Ohms)		I_{GT}				mA
Quadrant I: MT2(+), G(+)	Both		—	12	50	
Quadrant II: MT2(+), G(−)	2N6349 only		—	12	75	
Quadrant III: MT2(−), G(−)	Both		—	20	50	
Quadrant IV: MT2(−), G(+)	2N6349 only		—	35	75	
*MT2(+), G(+); MT2(−), G(−) T_C = −40°C			—	—	100	
*MT2(+), G(−); MT2(−), G(+) T_C = −40°C			—	—	125	
Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc, R_L = 100 Ohms)		V_{GT}				Volts
Quadrant I: MT2(+), G(+)	Both		—	0.9	2.0	
Quadrant II: MT2(+), G(−)	2N6349 only		—	0.9	2.5	
Quadrant III: MT2(−), G(−)	Both		—	1.1	2.0	
Quadrant IV: MT2(−), G(+)	2N6349 only		—	1.4	2.5	
*MT2(+), G(+); MT2(−), G(−) T_C = −40°C			—	—	2.5	
*MT2(+), G(−); MT2(−), G(+) T_C = −40°C			—	—	3.0	
Gate Non−Trigger Voltage (Continuous dc) (V_D = Rated V_{DRM}, R_L = 10 k Ohms, T_J = 100°C)		V_{GD}				Volts
*MT2(+), G(+); MT2(−), G(−); MT2(+), G(−); MT2(−), G(−)			0.2	—	—	
*Holding Current (V_D = 12 Vdc, Gate Open)	T_C = 25°C	I_H	—	6.0	40	mA
(Initiating Current = ±200 mA)	*T_C = −40°C		—	—	75	
*Turn-On Time (V_D = Rated V_{DRM}, I_{TM} = 11 A, I_{GT} = 120 mA, Rise Time = 0.1 μs, Pulse Width = 2 μs)		t_{gt}	—	1.5	2.0	μs
DYNAMIC CHARACTERISTICS						
Critical Rate of Rise of Commutation Voltage (V_D = Rated V_{DRM}, I_{TM} = 11 A, Commutating di/dt = 4.0 A/ms, Gate Unenergized, T_C = 80°C)		dv/dt(c)	—	5.0	—	V/μs

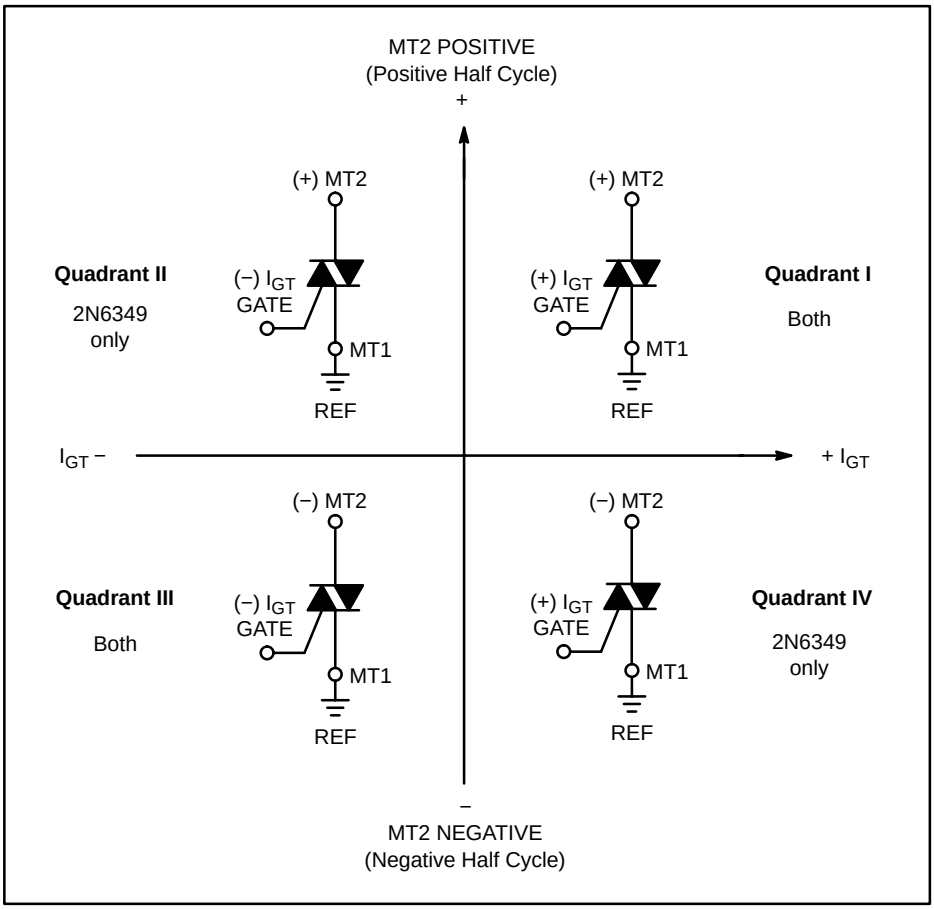
*Indicates JEDEC Registered Data.

Voltage Current Characteristic of Triacs (Bidirectional Device)

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



Quadrant Definitions for a Triac



All polarities are referenced to MT1.
With in−phase signals (using standard AC lines) quadrants I and III are used.

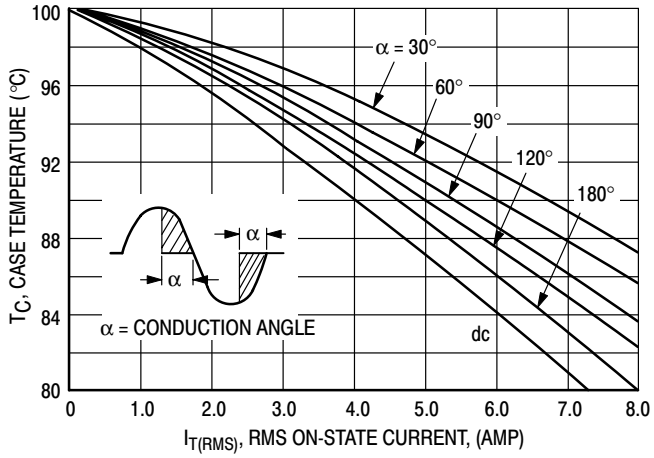


Figure 1. RMS Current Derating

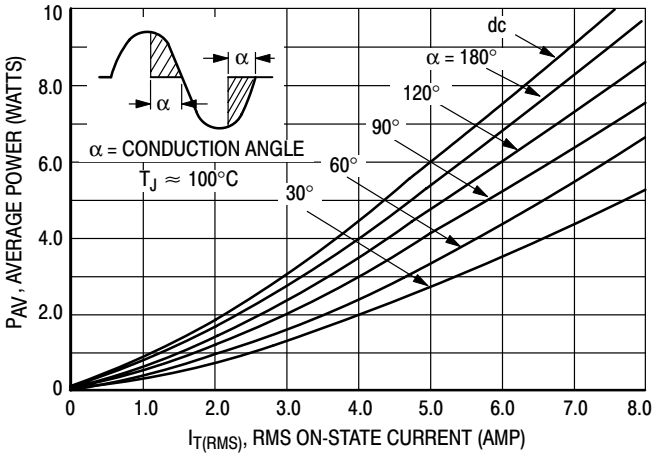


Figure 2. On−State Power Dissipation

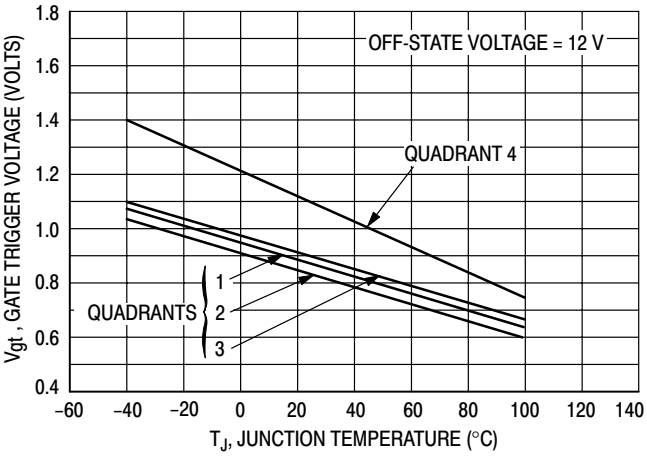


Figure 3. Typical Gate Trigger Voltage

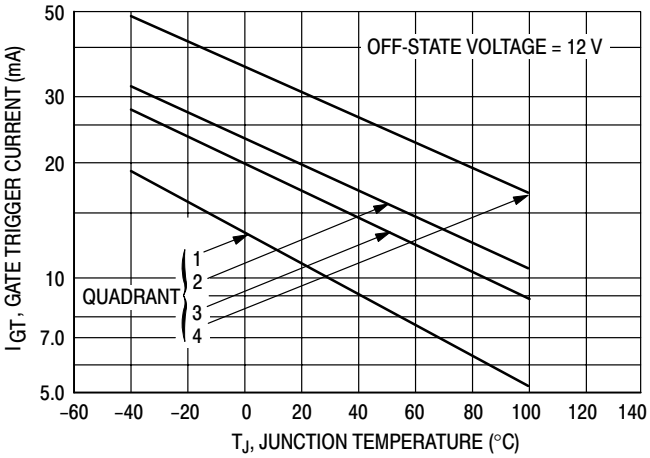


Figure 4. Typical Gate Trigger Current

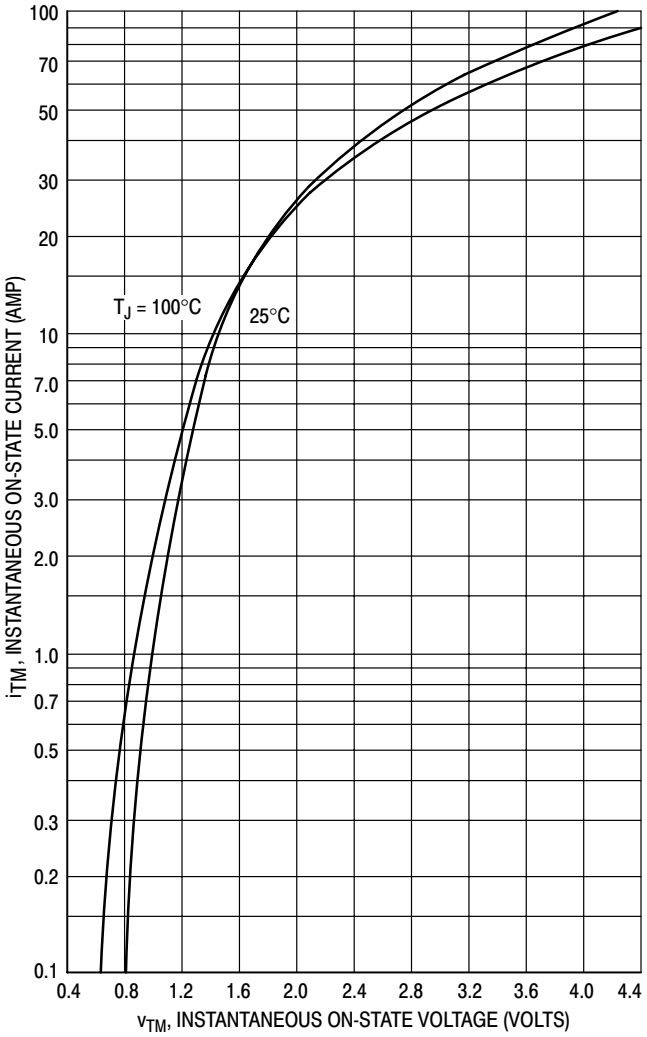


Figure 5. On−State Characteristics

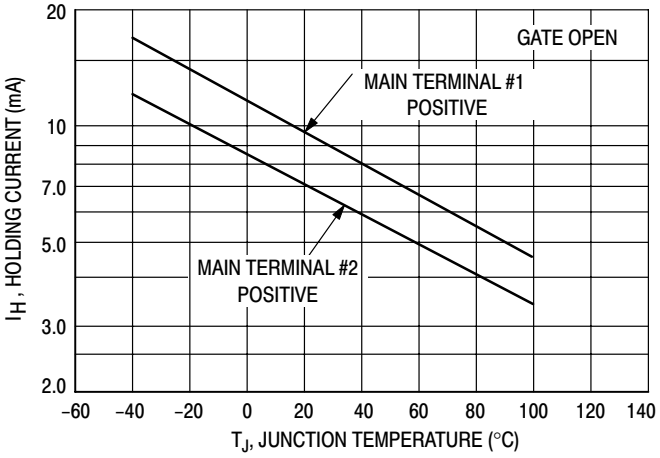


Figure 6. Typical Holding Current

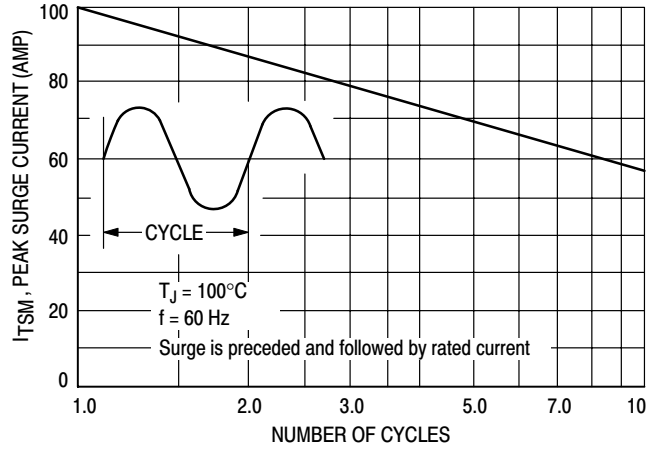


Figure 7. Maximum Non−Repetitive Surge Current

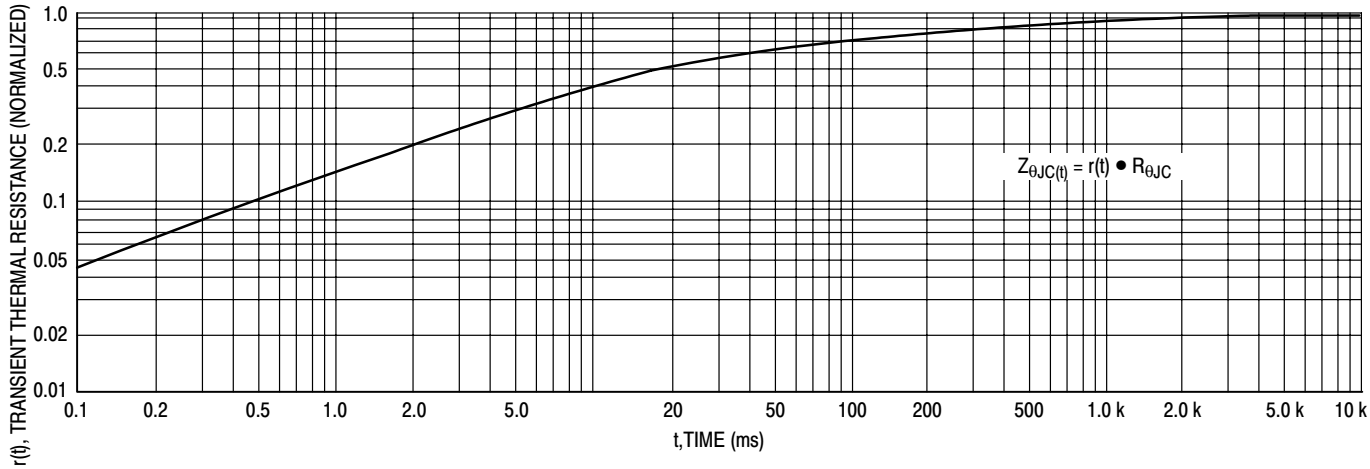
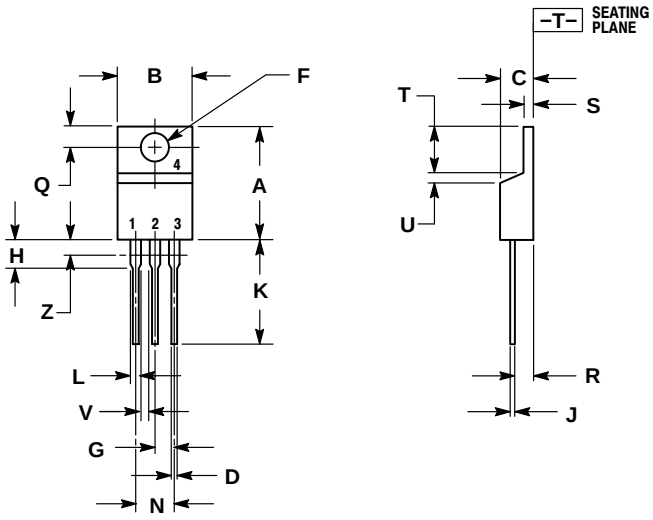


Figure 8. Typical Thermal Response

PACKAGE DIMENSIONS

TO−220AB
CASE 221A−07
ISSUE AA



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	0.060	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

PUBLICATION ORDERING INFORMATION

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2N6344/D

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