

T2800D

Triacs

Silicon Bidirectional Thyristors

Designed primarily for full-wave ac control applications, such as light dimmers, motor controls, heating controls and power supplies.

- Blocking Voltage to 400 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
- Four Quadrant Gating
- Device Marking: Logo, Device Type, e.g., T2800D, 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 +125°C, Gate Open)	V _{DRM} , V _{RRM}	400	Volts
On-State RMS Current (All Conduction Angles, T _C = +80°C)	I _{T(RMS)}	8.0	Amps
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, T _J = +80°C)	I _{TSM}	100	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I ² t	40	A ² s
Peak Gate Power (Pulse Width = 10 μs, T _C = +80°C)	P _{GM}	16	Watts
Average Gate Power (t = 8.3 ms, T _C = +80°C)	P _{G(AV)}	0.35	Watt
Peak Gate Current (Pulse Width = 10 μs, T _C = +80°C)	I _{GM}	4.0	Amps
Operating Junction Temperature Range	T _J	-40 to +125	°C
Storage Temperature Range	T _{stg}	-40 to +150	°C

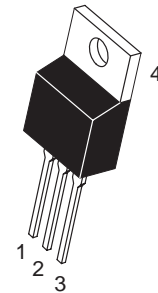
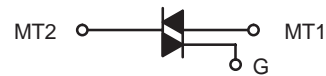
(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.



ON Semiconductor

<http://onsemi.com>

TRIACS
8 AMPERES RMS
400 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
T2800D	TO220AB	500/Box

T2800D

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}C$ unless otherwise noted; Electricals apply in both directions)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Peak Repetitive Blocking Current ($V_D = \text{Rated } V_{DRM}, V_{RRM}; \text{ Gate Open}$)	I_{DRM}, I_{RRM}	$T_C = 25^{\circ}C$	—	—	10	μA
		$T_C = 100^{\circ}C$	—	—	2.0	mA

ON CHARACTERISTICS

Peak On-State Voltage ⁽¹⁾ ($I_T = \pm 30 \text{ A Peak}$)	V_{TM}	—	1.7	2.0	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ Vdc}, R_L = 100 \text{ Ohms}$) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+)	I_{GT}	—	10	25	mA
		—	20	60	
		—	15	25	
		—	30	60	
Gate Trigger Voltage (Continuous dc) (All Quadrants) ($V_D = 12 \text{ Vdc}, R_L = 100 \text{ Ohms}$)	V_{GT}	—	1.25	2.5	Volts
Gate Non-Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \text{ Ohms}, T_C = 100^{\circ}C$)	V_{GD}	0.2	—	—	Volts
Holding Current ($V_D = 12 \text{ Vdc}, \text{ Initiating Current} = \pm 200 \text{ mA}, \text{ Gate Open}$)	I_H	—	15	30	mA
Gate Controlled Turn-On Time ($V_D = \text{Rated } V_{DRM}, I_T = 10 \text{ A}, I_{GT} = 80 \text{ mA}, \text{ Rise Time} = 0.1 \mu s$)	t_{gt}	—	1.6	—	μs

DYNAMIC CHARACTERISTICS

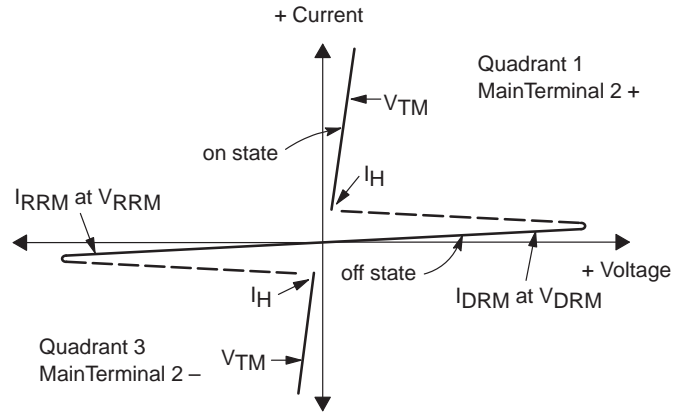
Critical Rate-of-Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}, I_T(\text{RMS}) = 8 \text{ A}, \text{ Commutating } di/dt = 4.1 \text{ A/ms}, \text{ Gate Unenergized}, T_C = 80^{\circ}C$)	$dv/dt(c)$	—	10	—	$V/\mu s$
Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}, \text{ Exponential Voltage Rise}, \text{ Gate Open}, T_C = 100^{\circ}C$)	dv/dt	60	—	—	$V/\mu s$

(1) Pulse Test: Pulse Width $\leq 2.0 \text{ ms}$, Duty Cycle $\leq 2\%$.

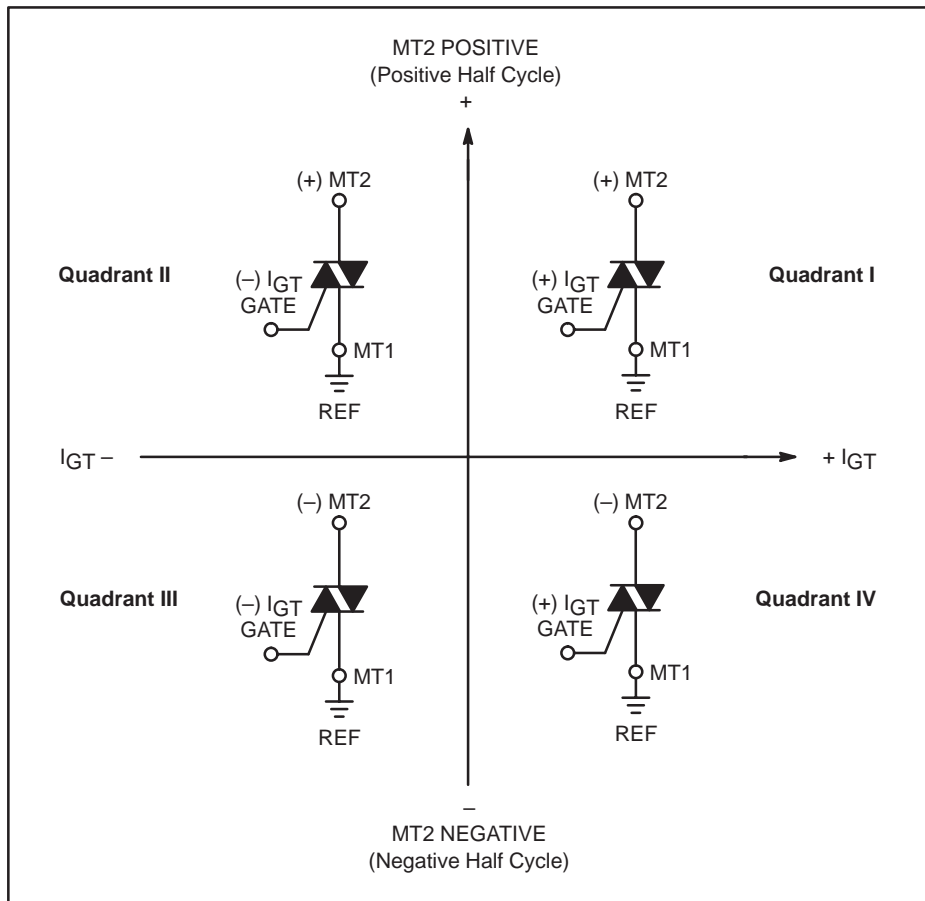
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Voltage Current Characteristic of Triacs (Bidirectional Device)

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.

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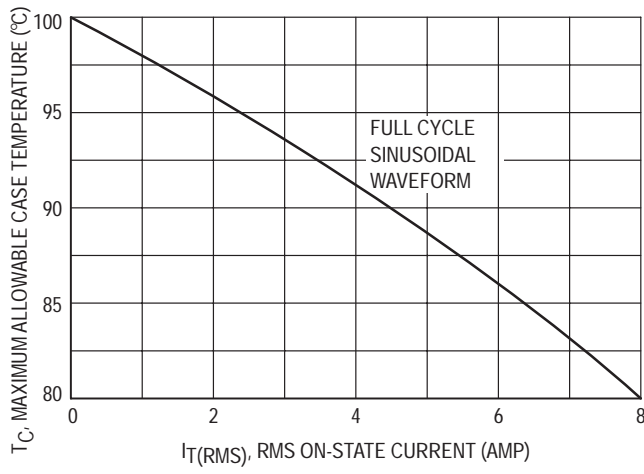


Figure 1. Current Derating

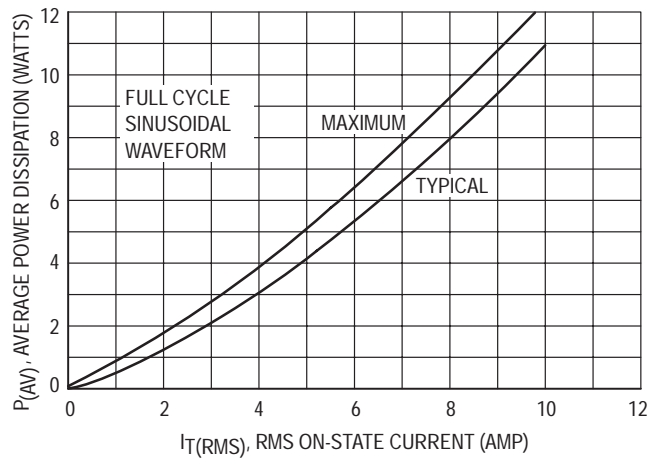
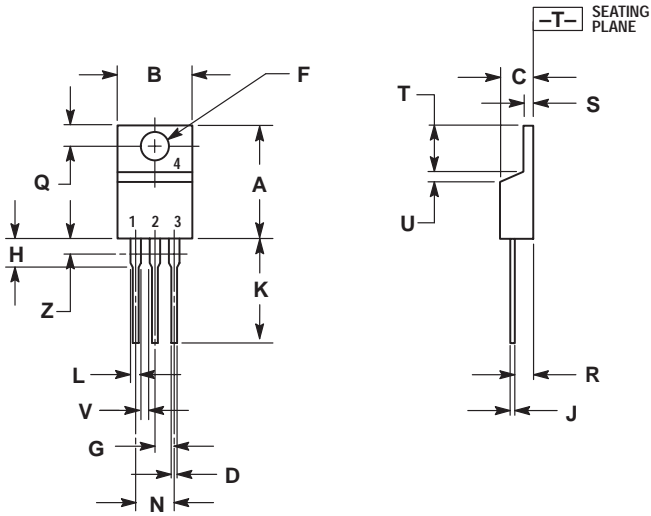


Figure 2. Power Dissipation

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PACKAGE DIMENSIONS

TO-220AB CASE 221A-07 ISSUE Z



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
O	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

Notes

Notes

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