

T2500D

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 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
- High Surge Current Capability 60 Amps Peak at $T_C = 80^\circ\text{C}$
- Device Marking: Logo, Device Type, e.g., T2500D, Date Code

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

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ⁽¹⁾ (Sine Wave 50 to 60 Hz, $T_J = -40$ to $+100^\circ\text{C}$, Gate Open)	V_{DRM} , V_{RRM}	400	Volts
On-State RMS Current ($T_C = +80^\circ\text{C}$) (Full Cycle Sine Wave 50 to 60 Hz)	$I_T(\text{RMS})$	6.0	A
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$)	I_{TSM}	60	A
Circuit Fusing Considerations ($t = 8.3$ ms)	I^2t	15	A ² s
Peak Gate Power ($T_C = +80^\circ\text{C}$, Pulse Width = 10 μsec)	P_{GM}	16	Watts
Average Gate Power ($T_C = +80^\circ\text{C}$, $t = 8.3$ ms)	$P_{G(AV)}$	0.2	Watt
Peak Gate Current (Pulse Width = 10 μsec)	I_{GM}	4.0	A
Operating Junction Temperature Range	T_J	-40 to $+125$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to $+150$	$^\circ\text{C}$

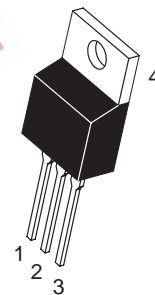
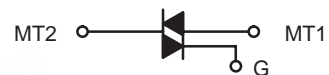
(1) V_{DRM} , V_{RRM} for all types can be applied on a continuous basis. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.



ON Semiconductor

<http://onsemi.com>

TRIACS
6 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
T2500D	TO220AB	500/Box

T2500D

THEMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance — Junction to Case	$R_{\theta JC}$	2.7	$^{\circ}C/W$
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 (Rated V_{DRM} , V_{RRM} ; Gate Open)	I_{DRM} , I_{RRM}	$T_J = 25^{\circ}C$ $T_J = 100^{\circ}C$	—	—	10 2.0	μA mA
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ON CHARACTERISTICS

Peak On-State Voltage* ($I_{TM} = \pm 30 A$ Peak)	V_{TM}	—	—	2.0	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12 V_{dc}$, $R_L = 100 Ohms$) MT2(+), G(+) MT2(+), G(-) MT2(-), G(-) MT2(-), G(+)	I_{GT}	—	10 20 15 30	25 60 25 60	mA
Gate Trigger Voltage (Continuous dc) (All Four Quadrants) ($V_D = 12 V_{dc}$, $R_L = 100 Ohms$)	V_{GT}	—	1.25	2.5	Volts
Gate Non-Trigger Voltage ($V_D = 12 V$, $R_L = 100 Ohms$, $T_C = 100^{\circ}C$)	V_{GD}	0.2	—	—	Volts
Holding Current (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = $\pm 200 mA$)	I_H	—	15	30	mA
Gate Controlled Turn-On Time (Rated V_{DRM} , $I_T = 10 A$, $I_{GT} = 160 mA$, Rise Time = 0.1 μs)	t_{gt}	—	1.6	—	μs

DYNAMIC CHARACTERISTICS

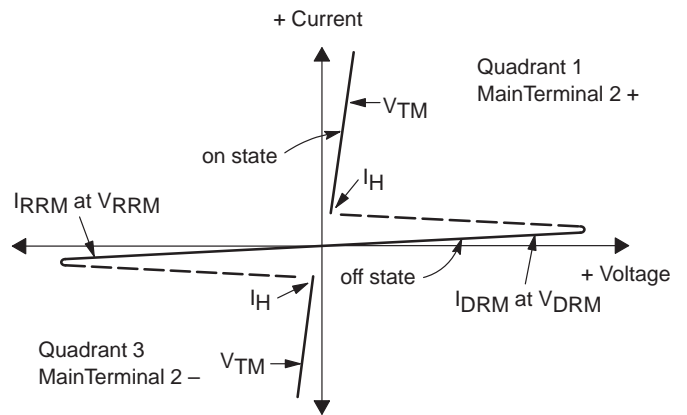
Critical Rate-of-Rise of Commutation Voltage (Rated V_{DRM} , $I_T(RMS) = 6 A$, Commutating $di/dt = 3.2 A/ms$, Gate Unenergized, $T_C = 80^{\circ}C$)	$dv/dt(c)$	—	10	—	$V/\mu s$
Critical Rate-of-Rise of Off-State Voltage (Rated V_{DRM} , Exponential Voltage Rise, Gate Open, $T_C = 100^{\circ}C$)	dv/dt	—	75	—	$V/\mu s$

* Pulse Test: Pulse Width $\leq 2.0 ms$, Duty Cycle $\leq 2\%$.

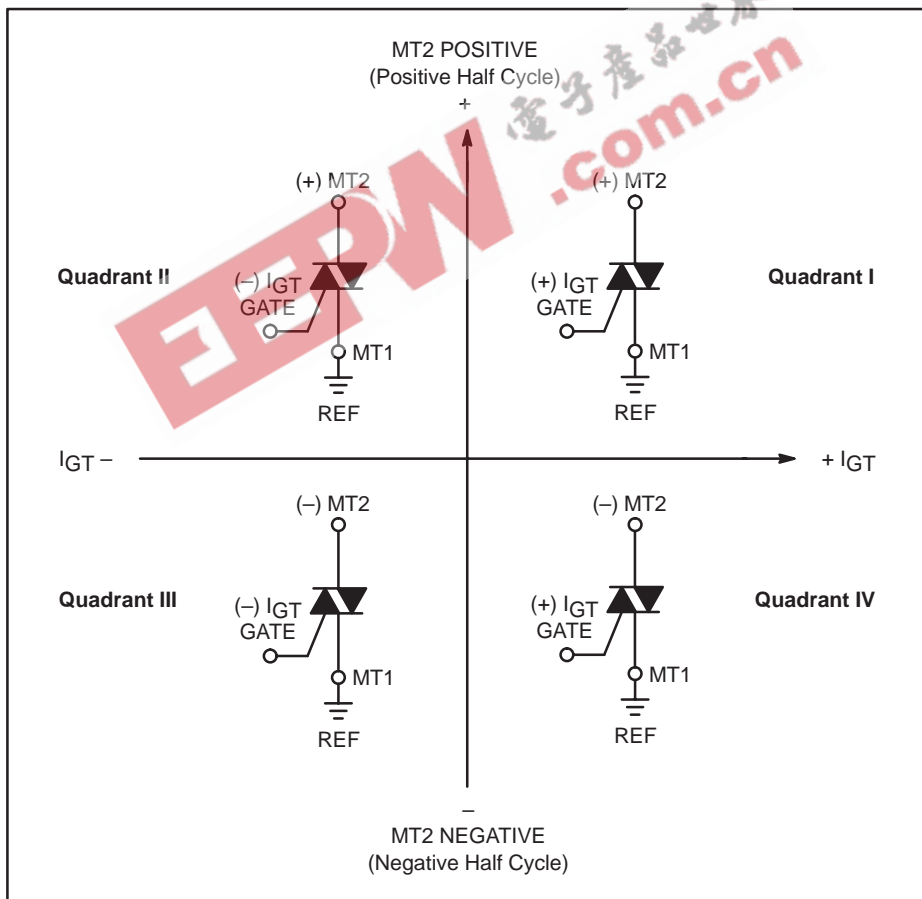
T2500D

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



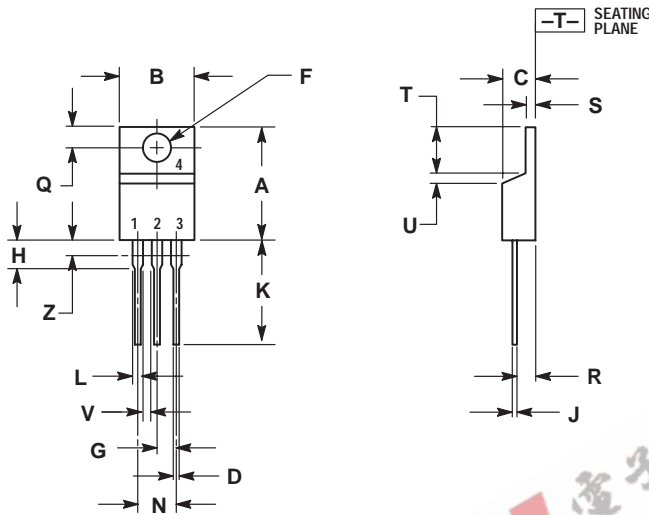
All polarities are referenced to MT1.

With in-phase signals (using standard AC lines) quadrants I and III are used.

T2500D

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
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:

1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

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