

# 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

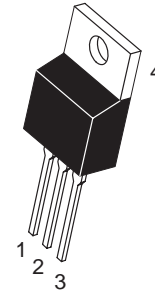
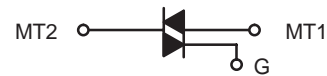
#### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage <sup>(1)</sup> (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	$\text{A}^2\text{s}$
Peak Gate Power ( $T_C = +80^\circ\text{C}$ , Pulse Width = 10 $\mu\text{sec}$ )	$P_{GM}$	16	Watts
Average Gate Power ( $T_C = +80^\circ\text{C}$ , $t = 8.3$ ms)	$P_G(\text{AV})$	0.2	Watt
Peak Gate Current (Pulse Width = 10 $\mu\text{sec}$ )	$I_{GM}$	4.0	A
Operating Junction Temperature Range	$T_J$	-40 to $+125$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to $+150$	$^\circ\text{C}$



[www.kersemi.com](http://www.kersemi.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

## THERMAL 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
----------------	--------	-----	-----	-----	------

## OFF CHARACTERISTICS

Peak Repetitive Blocking Current (Rated $V_{DRM}$ , $V_{RRM}$ ; Gate Open)	$T_J = 25^{\circ}C$ $T_J = 100^{\circ}C$	$I_{DRM}$ , $I_{RRM}$	—	—	10 2.0	$\mu A$ mA
---	---	--------------------------	---	---	-----------	---------------

## ON CHARACTERISTICS

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

## DYNAMIC CHARACTERISTICS

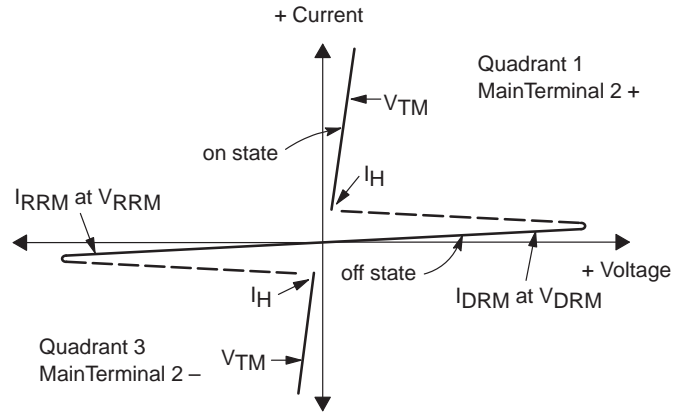
Critical Rate-of-Rise of Commutation Voltage (Rated $V_{DRM}$ , $I_{T(RMS)} = 6 A$ , Commutating $di/dt = 3.2 A/ms$ , Gate Unenergized, $T_C = 80^{\circ}C$ )		$dv/dt(c)$	—	10	—	$V/\mu s$
Critical Rate-of-Rise of Off-State Voltage (Rated $V_{DRM}$ , Exponential Voltage Rise, Gate Open, $T_C = 100^{\circ}C$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

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

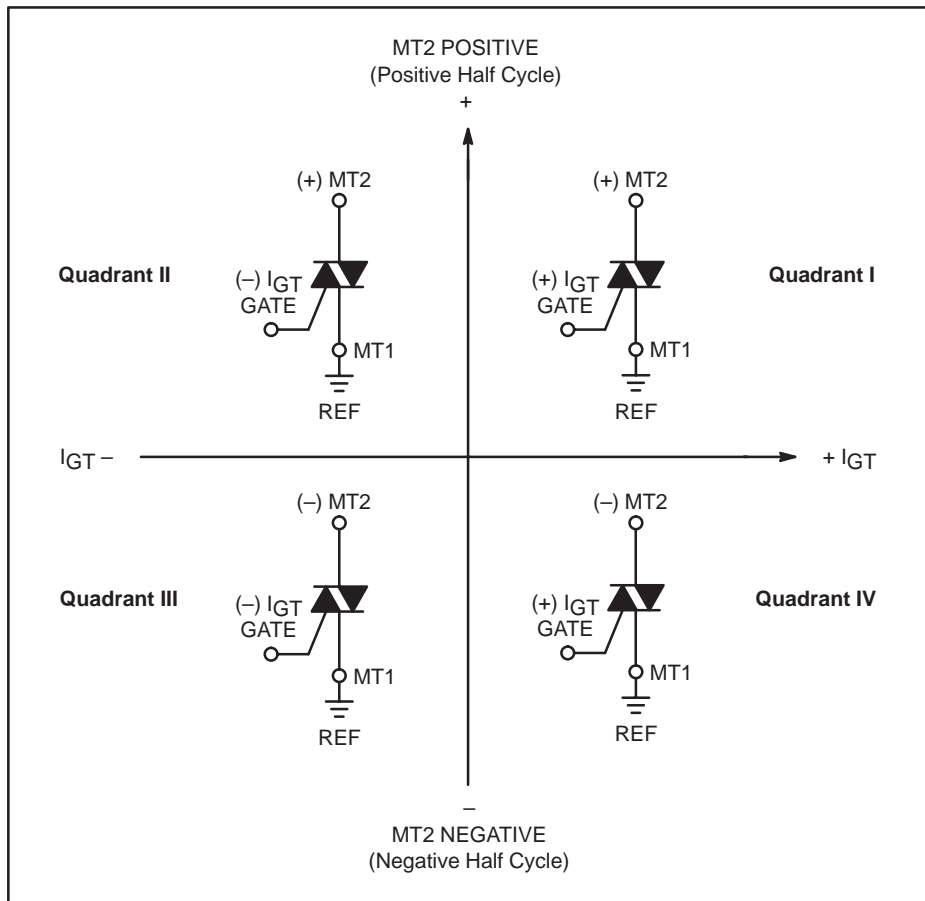
# T2500D

## 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

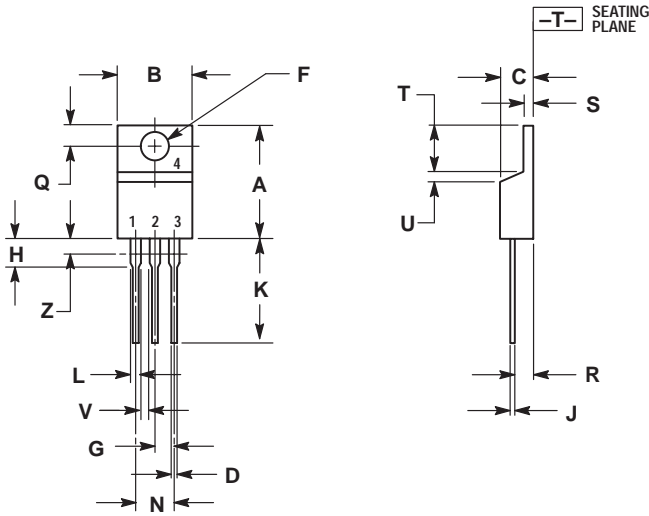


All polarities are referenced to MT1.  
 With in-phase signals (using standard AC lines) quadrants I and III are used.

# 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
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