

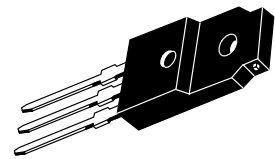
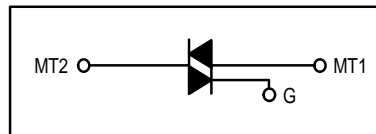
# Silicon Bidirectional Triode Thyristors

## T2500FP Series

... designed primarily for full-wave ac control applications, such as solid-state relays, 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, Isolated Construction for Low Thermal Resistance, High Heat Dissipation and Durability

**ISOLATED TRIACS  
THYRISTORS  
6 AMPERES RMS  
200 thru 800 VOLTS**



**CASE 221C-02  
STYLE 3**

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

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage <sup>(1)</sup> ( $T_J = -40$ to $+100^\circ\text{C}$ , Gate Open)	$V_{\text{DRM}}$	200 400 600 800	Volts
On-State RMS Current ( $T_C = +80^\circ\text{C}$ ) <sup>(2)</sup> (Full Cycle Sine Wave 50 to 60 Hz)	$I_{\text{T(RMS)}}$	6	Amps
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, $T_C = +80^\circ\text{C}$ )	$I_{\text{TSM}}$	60	Amps
Circuit Fusing Considerations ( $t = 8.3$ ms)	$I^2t$	40	$\text{A}^2\text{s}$
Peak Gate Power ( $T_C = +80^\circ\text{C}$ , Pulse Width = 1 $\mu\text{s}$ )	$P_{\text{GM}}$	1	Watt
Average Gate Power ( $T_C = +80^\circ\text{C}$ , $t = 8.3$ ms)	$P_{\text{G(AV)}}$	0.2	Watt
Peak Gate Trigger Current (Pulse Width = 10 $\mu\text{s}$ )	$I_{\text{GTM}}$	4	Amps
RMS Isolation Voltage ( $T_A = 25^\circ\text{C}$ , Relative Humidity $\leq 20\%$ )	$V_{\text{ISO}}$	1500	Volts
Operating Junction Temperature Range	$T_J$	-40 to +100	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	-40 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case <sup>(2)</sup>	$R_{\theta\text{JC}}$	2.7	$^\circ\text{C}/\text{W}$
Case to Sink	$R_{\theta\text{CS}}$	2.2 (typ)	
Junction to Ambient	$R_{\theta\text{JA}}$	60	

1.  $V_{\text{DRM}}$  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.
2. The case temperature reference point for all  $T_C$  measurements is a point on the center lead of the package as close as possible to the plastic body.

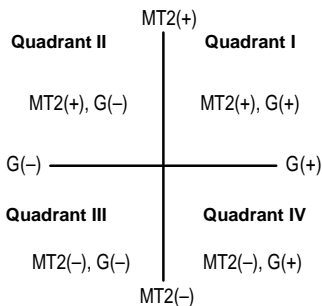
## T2500FP Series

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Off-State Current (Either Direction) (V <sub>D</sub> = Rated V <sub>DRM</sub> , T <sub>J</sub> = 100°C, Gate Open)	I <sub>DRM</sub>	—	—	2	mA
Maximum On-State Voltage (Either Direction)* (I <sub>T</sub> = 30 A Peak)	V <sub>TM</sub>	—	—	2	Volts
Gate Trigger Current (Continuous dc) (V <sub>D</sub> = 12 Vdc, R <sub>L</sub> = 12 Ohms)	I <sub>GT</sub>				mA
MT2(+), G(+)		—	10	25	
MT2(+), G(-)		—	20	60	
MT2(-), G(-)		—	15	25	
MT2(-), G(+)		—	30	60	
Gate Trigger Voltage (Continuous dc) (All Quadrants) (V <sub>D</sub> = 12 Vdc, R <sub>L</sub> = 12 Ohms) (V <sub>D</sub> = V <sub>DROM</sub> , R <sub>L</sub> = 125 Ohms, T <sub>C</sub> = 100°C, All Trigger Models)	V <sub>GT</sub>	— 0.2	1.25 —	2.5 —	Volts
Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = 150 mA, T <sub>C</sub> = 25°C)	I <sub>H</sub>	—	15	30	mA
Gate Controlled Turn-On Time (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>T</sub> = 10 A, I <sub>GT</sub> = 160 mA, Rise Time ≤ 0.1 μs)	t <sub>gt</sub>	—	1.6	—	μs
Critical Rate-of-Rise of Commutation Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , I <sub>T(RMS)</sub> = 6 A, Commutating di/dt = 3.2 A/ms, Gate Unenergized, T <sub>C</sub> = 80°C)	dv/dt(c)	—	10	—	V/μs
Critical Rate-of-Rise of Off-State Voltage (V <sub>D</sub> = Rated V <sub>DRM</sub> , Exponential Voltage Rise, Gate Open, T <sub>C</sub> = 100°C)	dv/dt	—	100	—	V/μs

\*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

#### Quadrant Definitions



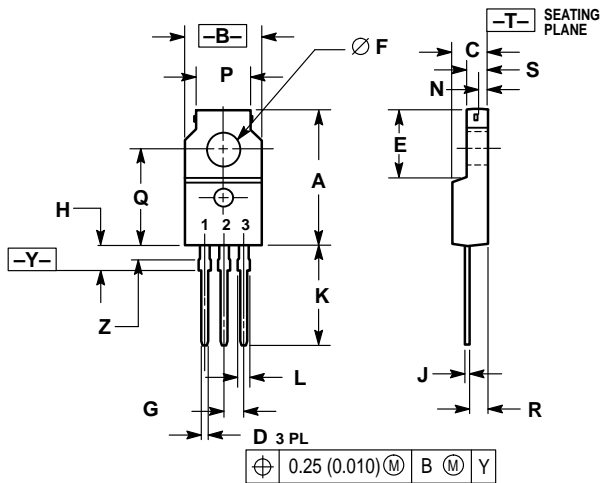
Trigger devices are recommended for gating on Triacs. They provide:

1. Consistent predictable turn-on points.
2. Simplified circuitry.
3. Fast turn-on time for cooler, more efficient and reliable operation.

#### Electrical Characteristics of Recommended Bidirectional Switches

Usage	General		
	Part Number	MBS4991	MBS4992
V <sub>S</sub>		6 – 10 V	7.5 – 9 V
I <sub>S</sub>		350 μA Max	120 μA Max
V <sub>S1</sub> – V <sub>S2</sub>		0.5 V Max	0.2 V Max
Temperature Coefficient		0.02%/°C Typ	

PACKAGE DIMENSIONS




STYLE 3:  
 PIN 1. MT 1  
 2. MT 2  
 3. GATE

- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.  
 3. LEAD DIMENSIONS UNCONTROLLED WITHIN DIMENSION Z.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.680	0.700	17.28	17.78
B	0.388	0.408	9.86	10.36
C	0.175	0.195	4.45	4.95
D	0.025	0.040	0.64	1.01
E	0.340	0.355	8.64	9.01
F	0.140	0.150	3.56	3.81
G	0.100 BSC		2.54 BSC	
H	0.110	0.155	2.80	3.93
J	0.018	0.028	0.46	0.71
K	0.500	0.550	12.70	13.97
L	0.045	0.070	1.15	1.77
N	0.049	—	1.25	—
P	0.270	0.290	6.86	7.36
Q	0.480	0.500	12.20	12.70
R	0.090	0.120	2.29	3.04
S	0.105	0.115	2.67	2.92
Z	0.070	0.090	1.78	2.28

CASE 221C-02

## T2500FP Series

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T2500FP/D

