

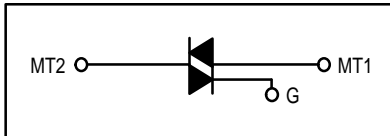
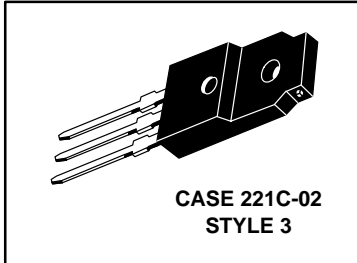
Silicon Bidirectional Triode Thyristors

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.

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

- 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



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

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage ⁽¹⁾ (T _J = -40 to +100°C, Gate Open)	V _{DRM}		Volts
T2500BFP		200	
T2500DFP		400	
T2500MFP		600	
T2500NFP		800	
On-State RMS Current (T _C = +80°C) ⁽²⁾ (Full Cycle Sine Wave 50 to 60 Hz)	I _{T(RMS)}	6	Amps
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz, T _C = +80°C)	I _{TSM}	60	Amps
Circuit Fusing Considerations (t = 8.3 ms)	I ² t	40	A ² s
Peak Gate Power (T _C = +80°C, Pulse Width = 1 μs)	P _{GM}	1	Watt
Average Gate Power (T _C = +80°C, t = 8.3 ms)	P _{G(AV)}	0.2	Watt
Peak Gate Trigger Current (Pulse Width = 10 μs)	I _{GTM}	4	Amps
RMS Isolation Voltage (T _A = 25°C, Relative Humidity ≤ 20%)	V _{ISO}	1500	Volts
Operating Junction Temperature Range	T _J	-40 to +100	°C
Storage Temperature Range	T _{stg}	-40 to +150	°C

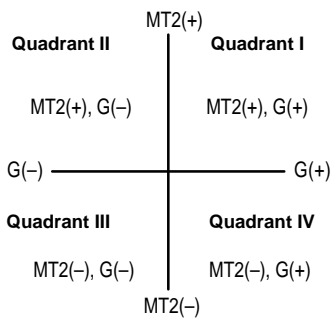
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case ⁽²⁾	R _{θJC}	2.7	°C/W
Case to Sink	R _{θCS}	2.2(typ)	
Junction to Ambient	R _{θJA}	60	

1. V_{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.

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Off-State Current (Either Direction) ($V_D = \text{Rated } V_{DRM}$, $T_J = 100^\circ\text{C}$, Gate Open)	I_{DRM}	—	—	2	mA
Maximum On-State Voltage (Either Direction)* ($I_T = 30 \text{ A Peak}$)	V_{TM}	—	—	2	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ Vdc}$, $R_L = 12 \text{ Ohms}$)	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 Quadrants) ($V_D = 12 \text{ Vdc}$, $R_L = 12 \text{ Ohms}$) ($V_D = V_{DROM}$, $R_L = 125 \text{ Ohms}$, $T_C = 100^\circ\text{C}$, All Trigger Models)	V_{GT}	— 0.2	1.25 —	2.5 —	Volts
Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = 150 mA, $T_C = 25^\circ\text{C}$)	I_H	—	15	30	mA
Gate Controlled Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_T = 10 \text{ A}$, $I_{GT} = 160 \text{ mA}$, Rise Time $\leq 0.1 \mu\text{s}$)	t_{gt}	—	1.6	—	μs
Critical Rate-of-Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_T(\text{RMS}) = 6 \text{ A}$, Commutating $di/dt = 3.2 \text{ A/ms}$, Gate Unenergized, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	—	10	—	$\text{V}/\mu\text{s}$
Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Voltage Rise, Gate Open, $T_C = 100^\circ\text{C}$)	dv/dt	—	100	—	$\text{V}/\mu\text{s}$

*Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.**Quadrant Definitions**

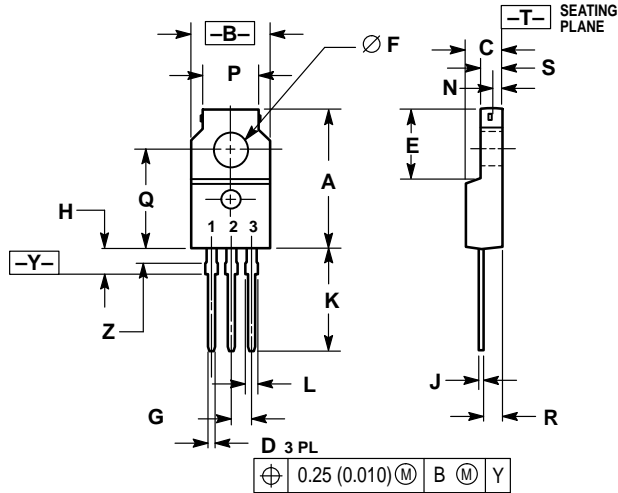
Trigger devices are recommended for gating on Triacs. They provide:

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	
	MBS4991	MBS4992
Part Number	MBS4991	MBS4992
V_S	6 – 10 V	7.5 – 9 V
I_S	350 $\mu\text{A Max}$	120 $\mu\text{A Max}$
$V_{S1} - V_{S2}$	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

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