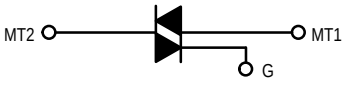
Triacs
Silicon Bidirectional Thyristors

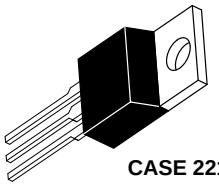
T2500 Series

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

- Blocking Voltage to 800 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

TRIACs
6 AMPERES RMS
200 thru 800 VOLTS





CASE 221A-04
(TO-220AB)
STYLE 4

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
T2500 B		200	
D		400	
M		600	
N		800	
On-State Current RMS (T_C = +80°C) (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^2t	15	A^2s
Peak Gate Power (T_C = +80°C, Pulse Width = 1 μs)	P_{GM}	16	Watts
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
Operating Junction Temperature Range	T_J	–40 to +100	°C
Storage Temperature Range	T_{stg}	–40 to +150	°C

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.

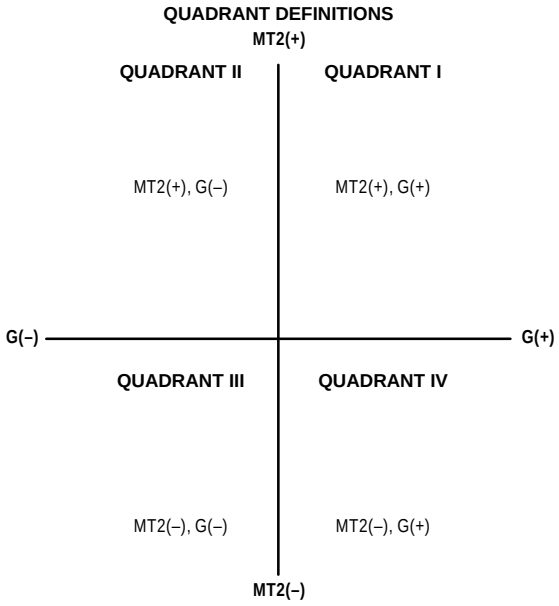
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.7	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (Rated V_{DRM}, Gate Open, T_J = 100°C)	I_{DRM}	—	—	2	mA
Maximum On-State Voltage (Either Direction)* (I_T = 30 A Peak)	V_{TM}	—	—	2	Volts
Gate Trigger Current (Continuous dc) (V_D = 12 Vdc, R_L = 12 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_{GT}				Volts
(V_D = 12 Vdc, R_L = 12 Ohms)		—	1.25	2.5	
(V_D = V_{DROM}, R_L = 125 Ohms, T_C = 100°C)		0.2	—	—	
Holding Current (Either Direction) (Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current = 150 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
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°C)	dv/dt(c)	—	10	—	V/µs
Critical Rate-of-Rise of Off-State Voltage (Rated V_{DRM}, Exponential Voltage Rise, Gate Open, T_C = 100°C)	dv/dt				V/µs
T2500B		—	100	—	
T2500D,M,N		—	75	—	

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

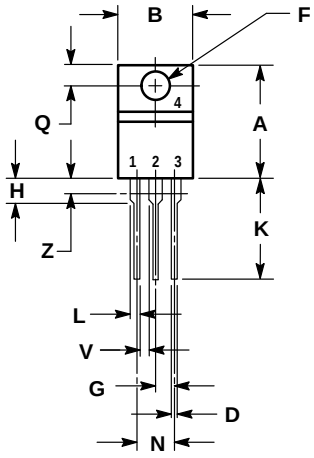


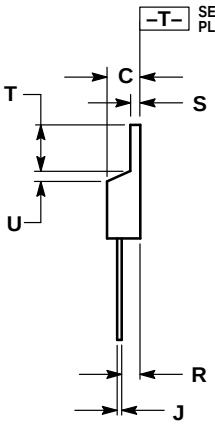
ELECTRICAL CHARACTERISTICS of RECOMMENDED BIDIRECTIONAL SWITCHES

USAGE	General	
PART NUMBER	MBS4991	MBS4992
V_S	6.0 – 10 V	7.5 – 9.0 V
I_S	350 µA Max	120 µA Max
$V_{S1} - V_{S2}$	0.5 V Max	0.2 V Max
Temperature Coefficient	0.02%/°C Typ	

See AN-526 for Theory and Characteristics of Silicon Bidirectional Switches.

PACKAGE DIMENSIONS





STYLE 4:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

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.

	INCHES		MILLIMETERS	
DIM	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	0.055	1.15	1.39
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

CASE 221A-04
(TO–220AB)

Literature Distribution Centers:
USA: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036.
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