

Triacs

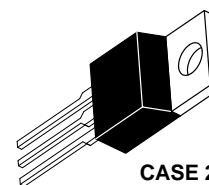
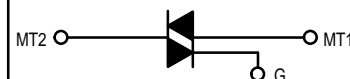
Silicon Bidirectional Thyristors

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

- Blocking Voltage 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

**T2500
Series**

**TRIACs
6 AMPERES RMS
200 thru 800 VOLTS**



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

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

Rating	Symbol	Value	Unit
Repetitive Peak Off-State Voltage ⁽¹⁾ ($T_J = -40$ to $+100^\circ\text{C}$, Gate Open)	V_{DRM}		Volts
T2500 B		200	
D		400	
M		600	
N		800	
On-State Current RMS (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_{TSM}	60	Amps
Circuit Fusing Considerations ($t = 8.3$ ms)	I^2t	15	A^2s
Peak Gate Power ($T_C = +80^\circ\text{C}$, Pulse Width = $1 \mu\text{s}$)	P_{GM}	16	Watts
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_{GTM}	4	Amps
Operating Junction Temperature Range	T_J	-40 to $+100$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to $+150$	$^\circ\text{C}$

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.

T2500 Series

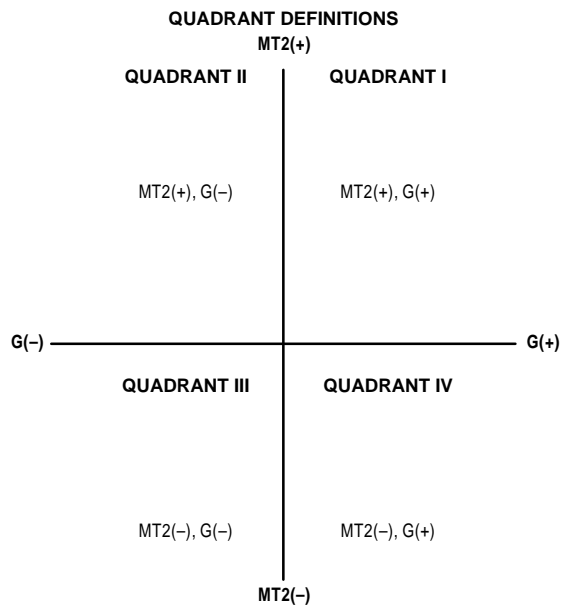
THERMAL CHARACTERISTICS

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current (Rated V_{DRM} , Gate Open, $T_J = 100^{\circ}C$)	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) 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 Quadrants) ($V_D = 12$ Vdc, $R_L = 12$ Ohms) ($V_D = V_{DROM}$, $R_L = 125$ Ohms, $T_C = 100^{\circ}C$)	V_{GT}	— 0.2	1.25 —	2.5 —	Volts
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, $T_C = 80^{\circ}C$)	$dv/dt(c)$	—	10	—	V/ μs
Critical Rate-of-Rise of Off-State Voltage (Rated V_{DRM} , Exponential Voltage Rise, Gate Open, $T_C = 100^{\circ}C$)	dv/dt	— —	100 75	— —	V/ μs
			T2500B		
			T2500D,M,N		

*Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.

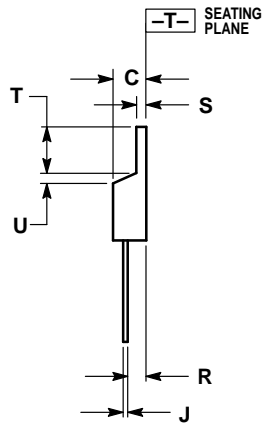
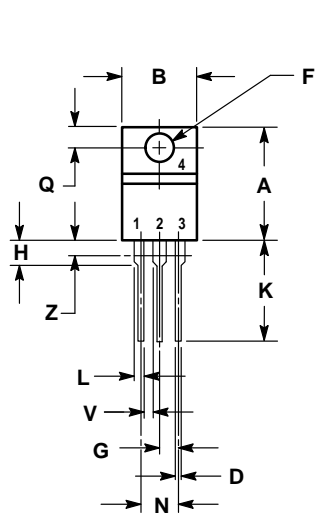


ELECTRICAL CHARACTERISTICS of RECOMMENDED BIDIRECTIONAL SWITCHES

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%/ $^{\circ}C$ 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.

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	0.055	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)

T2500 Series

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and [®] are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Literature Distribution Centers:

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

EUROPE: Motorola Ltd.; European Literature Centre; 88 Tanners Drive, Blakelands, Milton Keynes, MK14 5BP, England.

JAPAN: Nippon Motorola Ltd.; 4-32-1, Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan.

ASIA PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Center, No. 2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.



T2500/D

