

# T2322B

## Sensitive Gate Triacs

### Silicon Bidirectional Thyristors

Designed primarily for ac power switching. The gate sensitivity of these triacs permits the use of economical transistorized or integrated circuit control circuits, and it enhances their use in low-power phase control and load-switching applications.

#### Features

- Very High Gate Sensitivity
- Low On-State Voltage at High Current Levels
- Glass-Passivated Chip for Stability
- Small, Rugged Thermopad Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Pb-Free Package is Available\*

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

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Note 1) ( $T_J = 25$ to $110^\circ\text{C}$ , Gate Open)	$V_{\text{DRM}}$ , $V_{\text{RRM}}$	200	V
On-State RMS Current ( $T_C = 70^\circ\text{C}$ ) (Full Cycle Sine Wave 50 to 60 Hz)	$I_{\text{T(RMS)}}$	2.5	A
Peak Non-Repetitive Surge Current (One Full Cycle, Sine Wave 60 Hz, $T_C = 70^\circ\text{C}$ )	$I_{\text{TSM}}$	25	A
Circuit Fusing Consideration ( $t = 8.3$ ms)	$I^2t$	2.6	$\text{A}^2\text{s}$
Peak Gate Power (Pulse Width $\leq 10$ $\mu\text{s}$ , $T_C = 70^\circ\text{C}$ )	$P_{\text{GM}}$	10	W
Average Gate Power ( $t = 8.3$ ms, $T_C = 70^\circ\text{C}$ )	$P_{\text{G(AV)}}$	0.5	W
Peak Gate Current (Pulse Width = 10 $\mu\text{s}$ , $T_C = 70^\circ\text{C}$ )	$I_{\text{GM}}$	0.5	A
Operating Junction Temperature Range	$T_J$	-40 to +110	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{stg}}$	-40 to +150	$^\circ\text{C}$
Mounting Torque (6-32 Screw) (Note 2)	-	8.0	in. lb.

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1.  $V_{\text{DRM}}$  and  $V_{\text{RRM}}$  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. Torque rating applies with use of torque washer (Shakeproof WD19523 or equivalent). Mounting Torque in excess of 6 in. lb. does not appreciably lower case-to-sink thermal resistance. Main terminal 2 and heat-sink contact pad are common.

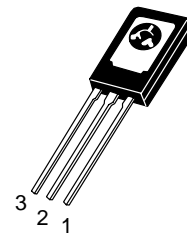
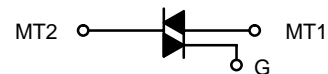
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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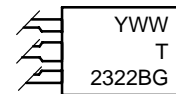
<http://onsemi.com>

**TRIACS**  
**2.5 AMPERES RMS**  
**200 VOLTS**



TO-225AA  
(formerly TO-126)  
CASE 077  
STYLE 5

#### MARKING DIAGRAM



Y = Year  
WW = Work Week  
T2322B = Device Code  
G = Pb-Free Package

#### PIN ASSIGNMENT

Pin	Assignment
1	Main Terminal 1
2	Main Terminal 2
3	Gate

#### ORDERING INFORMATION

Device	Package	Shipping
T2322B	TO225AA	500 Units/Box
T2322BG	TO225AA (Pb-Free)	500 Units/Box

# T2322B

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.5	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	$^{\circ}C/W$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Sec	$T_L$	260	$^{\circ}C$

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}C$ unless otherwise noted; Electricals apply in both directions)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Peak Repetitive Blocking Current ( $V_D = \text{Rated } V_{DRM}, V_{RRM}, \text{ Gate Open}$ )	$I_{DRM}, I_{RRM}$	-	-	10	$\mu A$
		-	0.2	0.75	mA

### ON CHARACTERISTICS

Peak On-State Voltage (Note 3) ( $I_{TM} = \pm 10 A$ )	$V_{TM}$	-	1.7	2.2	V
Gate Trigger Current (Continuous dc) ( $V_D = 12 V, R_L = 100 \Omega$ ) All Quadrants	$I_{GT}$	-	-	10	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12 V_{dc}, R_L = 100 \Omega, T_C = 25^{\circ}C$ )	$V_{GT}$	-	1.0	2.2	V
Gate Non-Trigger Voltage ( $V_D = 12 V, R_L = 100 \Omega, T_C = 110^{\circ}C$ )	$V_{GD}$	0.15	-	-	V
Holding Current ( $V_D = 12 V, I_T \text{ (Initiating Current)} = \pm 200 mA, \text{ Gate Open}$ )	$I_H$	-	15	30	mA
Gate Controlled Turn-On Time ( $V_D = \text{Rated } V_{DRM}, I_{TM} = 10 A \text{ pk}, I_G = 60 mA, t_r = 0.1 \mu\text{sec}$ )	$t_{gt}$	-	1.8	2.5	$\mu s$

### DYNAMIC CHARACTERISTICS

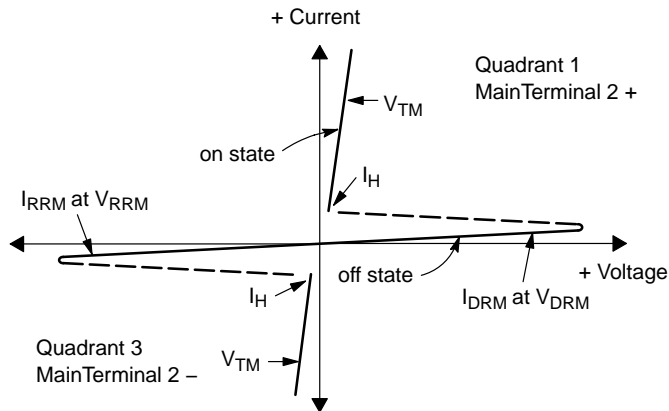
Critical Rate-of-Rise of Off-State Voltage ( $V_D = \text{Rated } V_{DRM}, \text{ Exponential Waveform}, T_C = 100^{\circ}C$ )	$dv/dt$	10	100	-	$V/\mu s$
Critical Rate-of-Rise of Commutation Voltage ( $V_D = \text{Rated } V_{DRM}, I_{TM} = 3.5 A \text{ pk}, \text{ Commutating } di/dt = 1.26 A/ms, \text{ Gate Unenergized}, T_C = 90^{\circ}C$ )	$dv/dt(c)$	1.0	4.0	-	$V/\mu s$

3. Pulse Test: Pulse Width  $\leq 1.0 ms$ , Duty Cycle  $\leq 2\%$ .

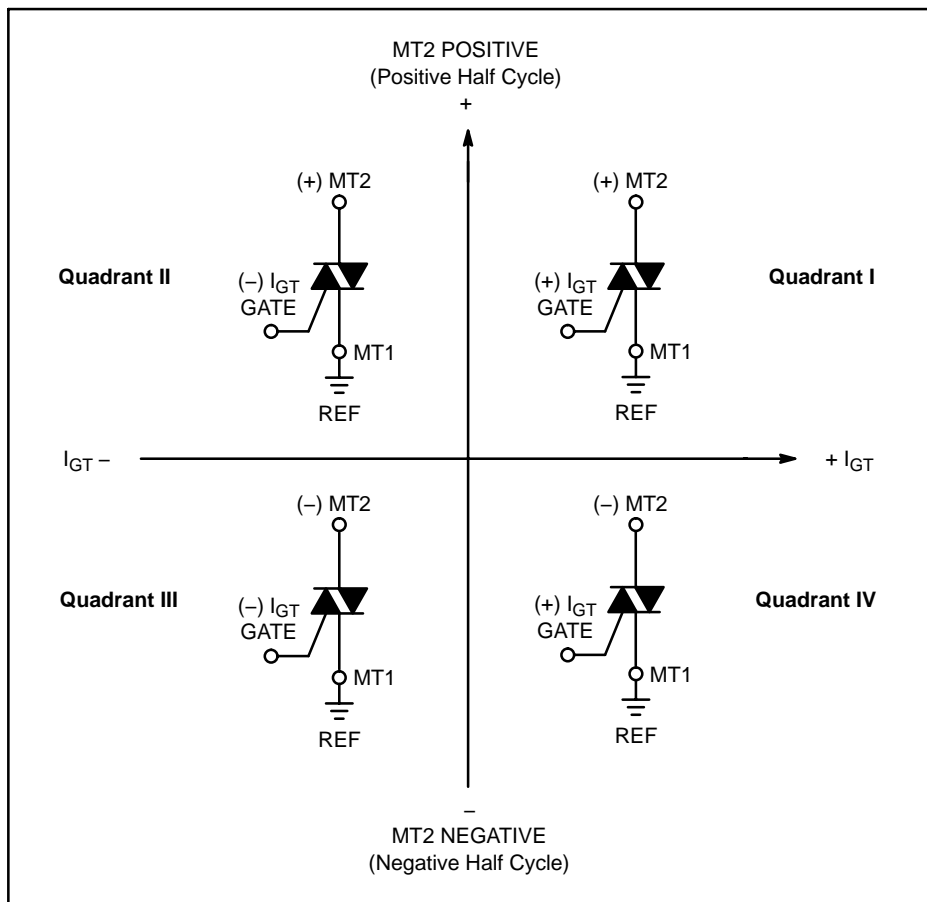
# T2322B

## 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

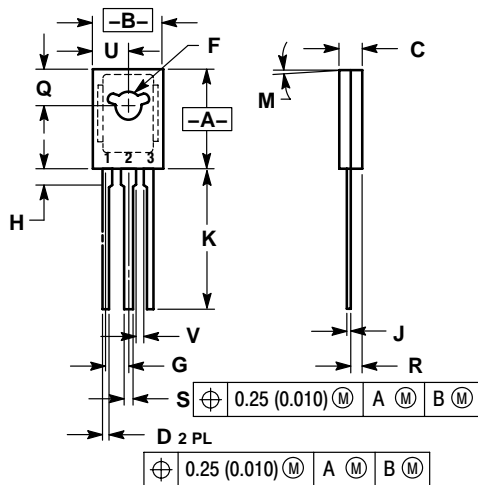


All polarities are referenced to MT1.  
 With in-phase signals (using standard AC lines) quadrants I and III are used.

# T2322B

## PACKAGE DIMENSIONS

### TO-225 CASE 77-09 ISSUE Z



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077-01 THRU -08 OBSOLETE, NEW STANDARD 077-09.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	---	1.02	---

#### STYLE 5:

1. MT 1
2. MT 2
3. GATE

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