

Sensitive Gate Triacs

Silicon Bidirectional Triode Thyristors

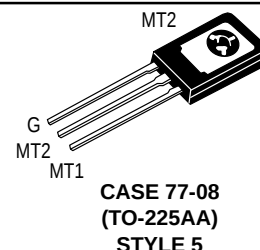
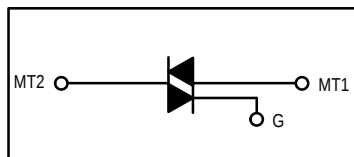
... designed primarily for ac power switching. The gate sensitivity of these triacs permits the use of economical transistorized or integrated circuit control circuits, and it enhances their use in low-power phase control and load-switching applications.

- 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

T2322
T2323
Series*

*Motorola preferred devices

SENSITIVE GATE TRIACS
2.5 AMPERES RMS
200 thru 600 VOLTS



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

Rating	Suffix	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ⁽¹⁾ ($T_J = 25$ to 100°C , Gate Open) T2322, T2323	B D M	V_{DRM}	200 400 600	Volts
RMS On-State Current ($T_C = 70^\circ\text{C}$) (Full-Cycle Sine Wave 50 to 60 Hz)		$I_{\text{T(RMS)}}$	2.5	Amps
Peak Non-repetitive Surge Current (One Full Cycle, 60 Hz)		I_{TSM}	25	Amps
Circuit Fusing ($t = 8.3$ ms)		I^2t	2.6	A^2s
Peak Gate Power (1 μs)		P_{GM}	10	Watts
Average Gate Power ($T_C = 60^\circ\text{C} + 38.3$ ms)		$P_{\text{G(AV)}}$	0.15	Watt
Peak Gate Current (1 μs)		I_{GM}	0.5	Amp
Operating Junction Temperature Range		T_J	-40 to $+110$	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-40 to $+150$	$^\circ\text{C}$
Mounting Torque (6-32 Screw) ⁽²⁾		—	8	in. lb.

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. 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 soldering purposes (either terminal connection or device mounting), soldering temperatures shall not exceed $+200^\circ\text{C}$, for 10 seconds. Consult factory for lead bending options.

Preferred devices are Motorola recommended choices for future use and best overall value.

T2322 T2323 Series

THERMAL CHARACTERISTICS

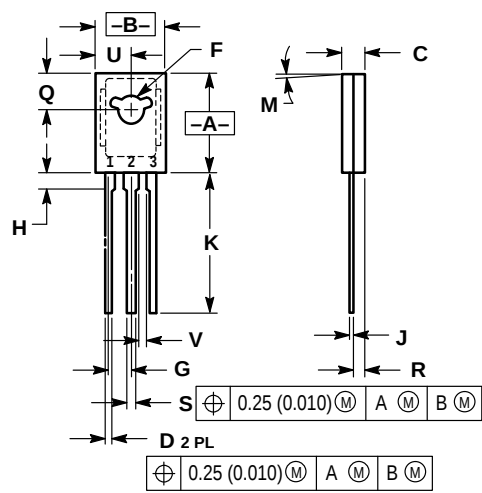
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.5	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$ and either polarity of MT2 to MT1 voltage unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Blocking Current ($V_D = \text{Rated } V_{DRM}$, Gate Open) $T_J = 25^{\circ}\text{C}$ $T_J = 100^{\circ}\text{C}$	I_{DRM}	— —	— 0.2	10 0.75	μA mA
Peak On-State Voltage* ($I_{TM} = 10\text{ A}$) T2323 Series T2322 Series	V_{TM}	— —	1.7 1.7	2.6 2.2	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12\text{ V}$, $R_L = 30\ \Omega$) All Modes MT2(+), G(+); MT2(-), G(-) MT2(+), G(-); MT2(-), I G(+)	I_{GT}	— — —	— — —	10 25 40	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 30\ \Omega$, $T_C = 25^{\circ}\text{C}$) ($V_D = V_{DRM}$, $R_L = 125\ \Omega$, $T_C = 100^{\circ}\text{C}$)	V_{GT}	— 0.15	1 —	2.2 —	Volts
Holding Current ($V_D = 12\text{ V}$, $I_{TM} = 150\text{ mA}$, Gate Open)	I_H	—	15	30	mA
Gate Controlled Turn-On Time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 10\text{ A pk}$, $I_G = 60\text{ mA}$)	t_{gt}	—	1.8	2.5	μs
Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}$, Exponential Waveform, $T_C = 100^{\circ}\text{C}$)	dv/dt	10	100	—	$\text{V}/\mu\text{s}$
Critical Rate-of-Rise of Commutation Voltage ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 3.5\text{ A pk}$, Commutating $di/dt = 1.26\text{ A/ms}$, Gate Unenergized, $T_C = 90^{\circ}\text{C}$)	$dv/dt(c)$	1	4	—	$\text{V}/\mu\text{s}$

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

PACKAGE DIMENSIONS



STYLE 5:
PIN 1. MT 1
2. MT 2
3. GATE

- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.

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	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

CASE 77-08
(TO-225AA)

T2322 T2323 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.



T2322/D

