

# Triacs

## Silicon Bidirectional Triode Thyristors

... designed primarily for industrial and military applications for the control of ac loads in applications such as power supplies, heating controls, motor controls, welding equipment and power switching systems; or wherever full-wave, silicon gate controlled solid-state devices are needed.

- Glass Passivated Junctions and Center Gate Fire
- Press Fit Stud — T6400  
Stud — T6410  
Isolated Stud — T6420
- Gate Triggering Guaranteed in All 4 Quadrants

**T6400  
T6410  
T6420  
Series**

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



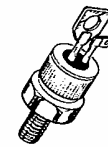
### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ( $T_J = -65$ to $+110^\circ\text{C}$ ) Gate Open	$V_{DRM}$		Volts
T6400B, T6410B, T6420B		200	
T6400D, T6410D, T6420D		400	
T6400M, T6410M, T6420M		600	
T6400N, T6410N, T6420N		800	
On-State Current RMS (Conduction Angle = $360^\circ$ )	$I_T(\text{RMS})$	40	Amps
$T_C$ (Pressfit) = $70^\circ\text{C}$ $T_C$ (Stud) = $65^\circ\text{C}$			
Peak Surge Current (Non-Repetitive) (One Full Cycle, 60 Hz)	$I_{TSM}$	300	Amps
Circuit Fusing ( $T_J = -65$ to $+110^\circ\text{C}$ , $t = 1.25$ to $10$ ms)	$I^2t$	450	$\text{A}^2\text{s}$
Peak Gate Power (Pulse Width = $10 \mu\text{s}$ )	$P_{GM}$	40	Watts
Average Gate Power	$P_{G(AV)}$	0.75	Watt
Peak Gate Current (Pulse Width = $1 \mu\text{s}$ )	$I_{GTM}$	12	Amps
Operating Temperature Range	$T_C$	$-65$ to $+110$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-65$ to $+150$	$^\circ\text{C}$
Stud Torque	—	30	in. lb.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.8	$^\circ\text{C/W}$
Pressfit Stud		0.9	
Isolated Stud		1	

Note 1. Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.



**CASE 263-04  
STYLE 2  
T6410  
STUD**



**CASE 310-02  
STYLE 2  
T6400  
PRESS FIT**



**CASE 311-02  
STYLE 2  
T6420  
ISOLATED STUD**

**T6400 • T6410 • T6420 Series**

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated $V_{DRM}$ or $V_{RRM}$ , gate open) $T_J = 25^\circ\text{C}$ $T_J = 110^\circ\text{C}$	$I_{DRM}$ , $I_{RRM}$	— —	— —	10 4	$\mu\text{A}$ mA
Maximum On-State Voltage (Either Direction) ( $I_T = 100$ A Peak)	$V_{TM}$	—	1.5	2	Volts
Gate Trigger Current (Continuous dc), Note 1 ( $V_D = 12$ Vdc, $R_L = 30$ Ohms) $V_{MT2(+)}$ , $V_{G(+)}$ $V_{MT2(+)}$ , $V_{G(-)}$ $V_{MT2(-)}$ , $V_{G(-)}$ $V_{MT2(-)}$ , $V_{G(+)}$ $V_{MT2(+)}$ , $V_{G(+)}$ , $V_{MT2(-)}$ , $V_{G(-)}$ , $T_C = -65^\circ\text{C}$ $V_{MT2(+)}$ , $V_{G(-)}$ , $V_{MT2(-)}$ , $V_{G(+)}$ , $T_C = -65^\circ\text{C}$	$I_{GT}$	— — — — — —	15 30 20 40 — —	50 80 50 80 125 240	mA
Gate Trigger Voltage (Continuous dc) ( $V_D = 12$ Vdc, $R_L = 30$ Ohms, $T_C = 25^\circ\text{C}$ $T_C = -65^\circ\text{C}$ ( $V_D = \text{Rated } V_{DRM}$ , $R_L = 125$ Ohms, $T_C = 110^\circ\text{C}$ )	$V_{GT}$	— — 0.2	1.35 — —	2.5 3.4 —	Volts
Holding Current (Either Direction) ( $V_D = 12$ Vdc, Gate Open) (Initiating Current = 500 mA) $T_C = 25^\circ\text{C}$ $T_C = -65^\circ\text{C}$	$I_{HO}$	— —	25 —	60 100	mA
Gate Controlled Turn-On Time (Rated $V_{DRM}$ , $I_T = 60$ A, $I_{GT} = 200$ mA, Rise Time = 0.1 $\mu\text{s}$ )	$t_{gt}$	—	1.7	3	$\mu\text{s}$
Critical Rate of Rise of Commutation Voltage, On-State Conditions ( $di/dt = 22$ A/ms, Gate Unenergized, $V_D = \text{Rated } V_{DRM}$ , $I_T(\text{RMS}) = 40$ A, $T_C$ (Pressfit) = $70^\circ\text{C}$ , $T_C$ (Stud) = $65^\circ\text{C}$ )	$dv/dt(c)$	—	5	—	V/ $\mu\text{s}$

Note 1. All voltage polarities referenced to main terminal 1.

