

# Triacs

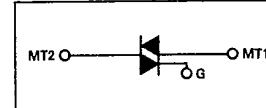
## Silicon Bidirectional Triode Thyristors

... 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**



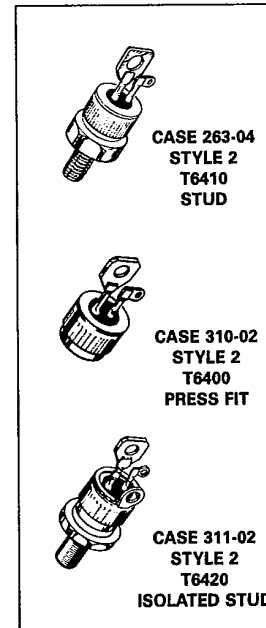
### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ( $T_J = -65$ to $+110^\circ\text{C}$ ) Gate Open T6400B, T6410B, T6420B T6400D, T6410D, T6420D T6400M, T6410M, T6420M T6400N, T6410N, T6420N	VDRM	200 400 600 800	Volts
On-State Current RMS (Conduction Angle = $360^\circ$ ) $T_C$ (Pressfit) = $70^\circ\text{C}$ $T_C$ (Stud) = $65^\circ\text{C}$	I(T(RMS)	40	Amps
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(GAV)	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 Pressfit Stud Isolated Stud	$R_{\theta JC}$	0.8 0.9 1	$^\circ\text{C/W}$

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.



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**T6400 • T6410 • T6420 Series**

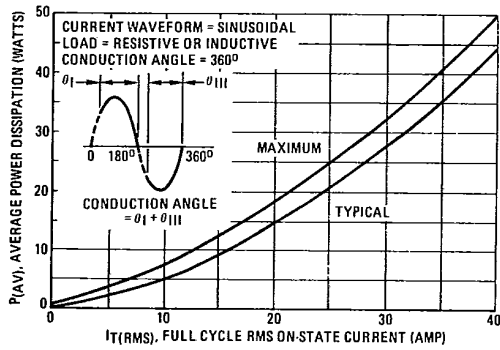
**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted.)

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) $V_{MT2(+), VG(+)}$ $V_{MT2(+), VG(-)}$ $V_{MT2(-), VG(-)}$ $V_{MT2(-), VG(+)}$ $V_{MT2(+), VG(+), V_{MT2(-), VG(-)}, T_C = -65^\circ\text{C}$ $V_{MT2(+), VG(-), V_{MT2(-), VG(+)}, T_C = -65^\circ\text{C}$	$I_{GT}$	— — — — —	15 30 20 40	50 80 50 80	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/ $\mu\text{s}$

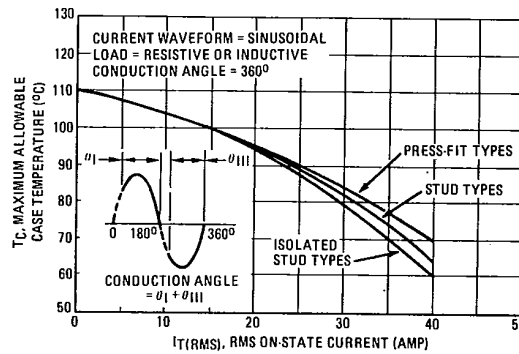
Note 1. All voltage polarities referenced to main terminal 1.



**FIGURE 1 – ON-STATE POWER DISSIPATION**



**FIGURE 2 – RMS CURRENT DERATING**



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