New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

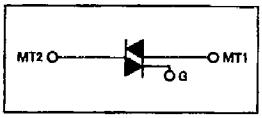
Triacs
Silicon Bidirectional Triode Thyristors

T6400
T6410
T6420
Series

TRIACs
40 AMPERES RMS
200 thru 800 VOLTS

...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



MAXIMUM RATINGS

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

T6410
STUD

T8400
PRESS FIT

T6420
ISOLATED STUD

THERMAL CHARACTERISTICS

Characteristic		Symbol	Max	Unit
Thermal Resistance, Junction to Case	Pressfit Stud Isolated Stud	$R_{\theta JC}$	0.8 0.9 1	°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.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

ELECTRICAL CHARACTERISTICS (T_C = 25°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°C	I_{DRM}, I_{RRM}	—	—	10	μA
T_J = 110°C		—	—	4	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	I_{GT}				mA
$V_{MT2(+)}$, $V_{G(+)}$		—	15	50	
$V_{MT2(+)}$, $V_{G(-)}$		—	30	80	
$V_{MT2(-)}$, $V_{G(-)}$		—	20	50	
$V_{MT2(-)}$, $V_{G(+)}$		—	40	80	
$V_{MT2(+)}$, $V_{G(+)}$, $V_{MT2(-)}$, $V_{G(-)}$, T_C = −65°C		—	—	125	
$V_{MT2(+)}$, $V_{G(-)}$, $V_{MT2(-)}$, $V_{G(+)}$, T_C = −65°C		—	—	240	
Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc, R_L = 30 Ohms, T_C = 25°C	V_{GT}	—	1.35	2.5	Volts
T_C = −65°C		—	—	3.4	
(V_D = Rated V_{DRM}, R_L = 125 Ohms, T_C = 110°C)		0.2	—	—	
Holding Current (Either Direction) (V_D = 12 Vdc, Gate Open) (Initiating Current = 500 mA) T_C = 25°C	I_{HO}	—	25	60	mA
T_C = −65°C		—	—	100	
Gate Controlled Turn-On Time (Rated V_{DRM}, I_T = 60 A, I_{GT} = 200 mA, Rise Time = 0.1 μs)	t_{gt}	—	1.7	3	μs
Critical Rate of Rise of Commutation Voltage, On-State Conditions (di/dt = 22 A/ms, Gate Unenergized, V_D = Rated V_{DROM}, $I_{T(RMS)}$ = 40 A, T_C (Pressfit) = 70°C T_C (Stud) = 65°C	dv/dt(c)	—	5	—	V/μs

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

FIGURE 1 – ON-STATE POWER DISSIPATION

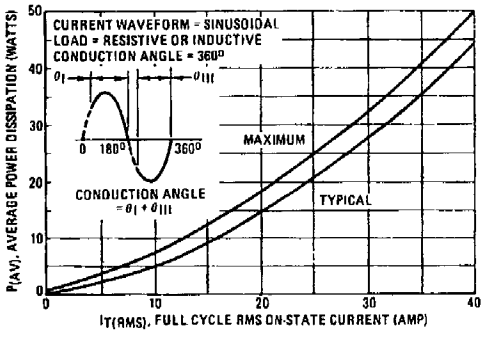
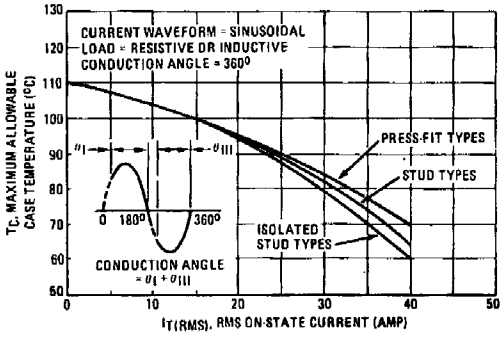



FIGURE 2 – RMS CURRENT DERATING