LITE-ON SEMICONDUCTOR

T12M5T-B SERIES

Sensitive Gate Triacs
Sillicon Bidirectional Thyristors

TRIACS
12 AMPERES RMS
600 VOLTS

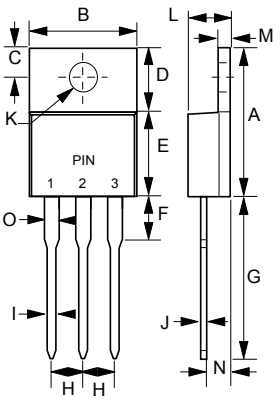
FEATURES

- Sensitive Gate Allows Triggering by Microcontrollers and other
- Blocking Voltage to 600 Volts
- High Surge Current Capability - 90 Amperes
- Glass Passivated Junctions for Reliability and Uniformity
- Maximum Values of IGT, VGT and IH Specified for Ease of Design
- Operational in Three Quadrants: Q1, Q2, and Q3
- Pb Free Package

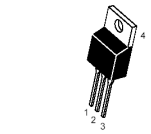
MECHANICAL DATA

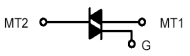
- Case: Molded plastic
- Weight: 0.07 ounces, 2.0 grams

TO-220AB



TO-220AB		
DIM.	MIN.	MAX.
A	14.22	15.88
B	9.65	10.67
C	2.54	3.43
D	5.84	6.86
E	8.26	9.28
F	-	6.35
G	12.70	14.73
H	2.29	2.79
I	0.51	1.14
J	0.40	0.67
K	3.53⌀	4.09⌀
L	3.56	4.83
M	1.14	1.40
N	2.03	2.92
O	1.17	1.37
All Dimensions in millimeter		





PIN ASSIGNMENT	
1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	Main Terminal 2

MAXIMUM RATINGS (Tj= 25℃ unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak Repetitive Off– State Voltage (1) (TJ= -40 to 110℃, Sine Wave, 50 to 60 Hz; Gate Open) T12M5T600B	VDRM, VRRM	600	Volts
On-State RMS Current (Full Cycle Sine Wave 50 to 60 Hz, TC =70℃)	IT(RMS)	12	Amp
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, TJ= 25℃)	ITSM	90	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I^2t	33	A^2s
Peak Gate Power (TC = 70℃, Tp≦ 1.0 us)	PGM	16	Watt
Average Gate Power (TC = 70℃, t = 8.3 ms)	PG(AV)	0.35	Watt
Operating Junction Temperature Range	TJ	-40 to +110	℃
Storage Temperature Range	Tstg	-40 to +150	℃

Notice: (1) VDRM and VRRM 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.

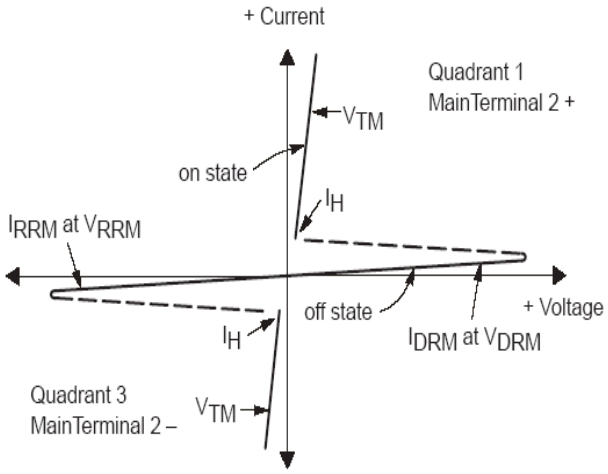
THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Case - Junction to Ambient	RthJC RthJA	2.2 62.5	℃/W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T_L	260	℃

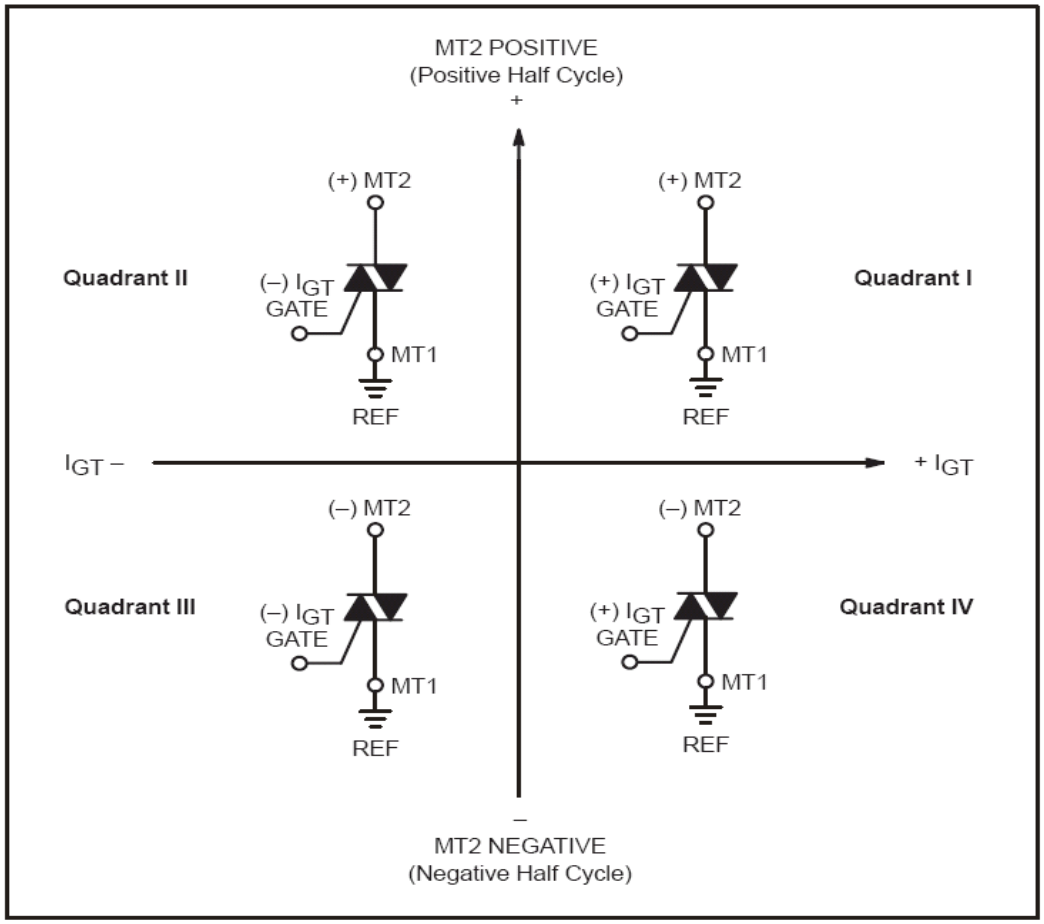
ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise noted; Electrical apply in both directions)

Characteristics	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Peak Reptitive Forward or Reverse Blocking Current (T_J=25℃ (V_D=Rated V_{DRM}, V_{RRM}; Gate Open) T_J=110℃	I_{DRM} I_{RRM}	---- ----	---- ----	10 2.0	uA mA
ON CHARACTERISTICS					
Peak On-State Voltage (I_{TM}=± 17A Peak @Tp ≦2.0 ms, Duty Cycle ≦ 2%)	V_{TM}	----	----	1.85	Volts
Gate Trigger Current (V_D = 12V; R_L = 100 Ohms)	I_{GT1} I_{GT2} I_{GT3}	---- ---- ----	1.5 2.5 2.7	5.0 5.0 5.0	mA
Gate Trigger Voltage (V_D = 12 V; R_L =100 Ohms)	V_{GT1} V_{GT2} V_{GT3}	0.45 0.45 0.45	0.68 0.62 0.67	1.5 1.5 1.5	Volts
Holding Current (V_D = 12 V, Initiating Current = ± 200 mA, Gate Open)	I_H	----	2.5	10	mA
Latching Current (V_D = 12 V, IG = 5 mA)	I_{L1} I_{L2} I_{L3}	---- ---- ----	3.0 5.0 3.0	15 20 15	mA
DYNAMIC CHARACTERISTICS					
Rate of Change of Commutating Current (V_D = 400 V, I_{TM} = 3.5A, Commutating dv/dt = 10 V/us, Gate Open, T_J = 110℃, f = 500 Hz, Cs = 0.01 uF, R_S = 15 Ohms)	di/dt(c)	8.0	10	----	A/ms
Critical Rate of Rise of Off-State Voltage (V_D = 67% Rated V_{DRM}, Exponential Waveform, R_{GK}=1K Ohms, T_J=110℃)	dv/dt	15	40	----	V/us
Repetitive Critical Reat of Rise of On-State Current (IPK = 50A; PW = 40 usec; diG/dt = 1A/usec;Igt = 100mA; f= 60Hz)	di/dt	----	----	10	A/us

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



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

Figure 1. Typical Gate Trigger Current versus Junction Temperature

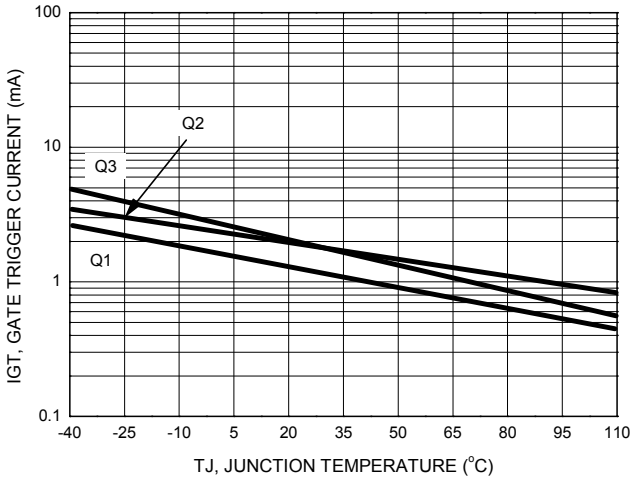


Figure 2.Typical Gate Trigger Voltage versus Junction Temperature

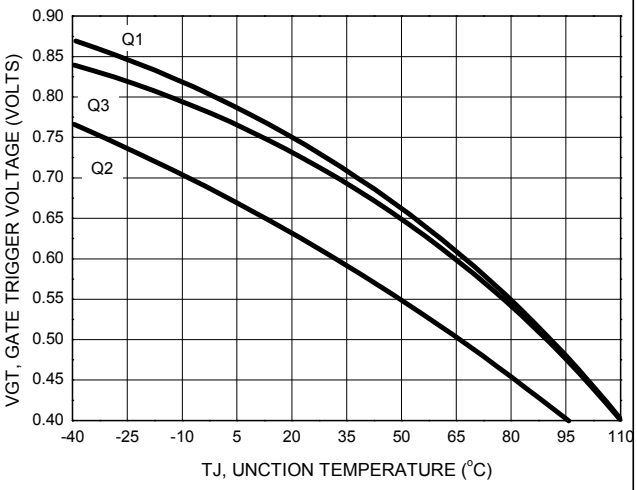


Figure 3. Typical Latching Current versus Junction Temperature

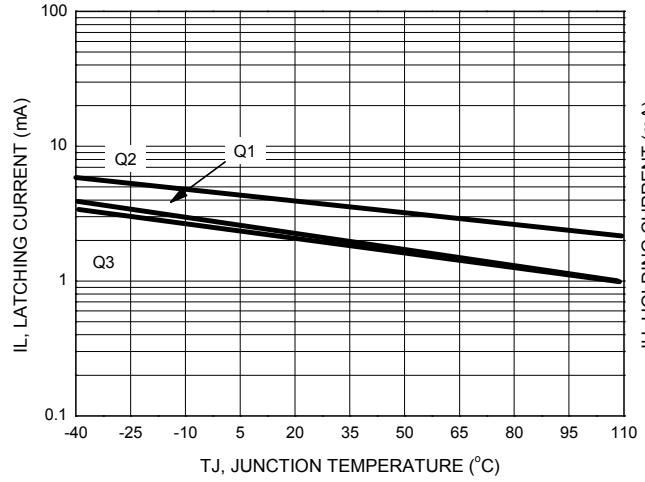


Figure 4. Typical Holding Current versus Junction Temperature

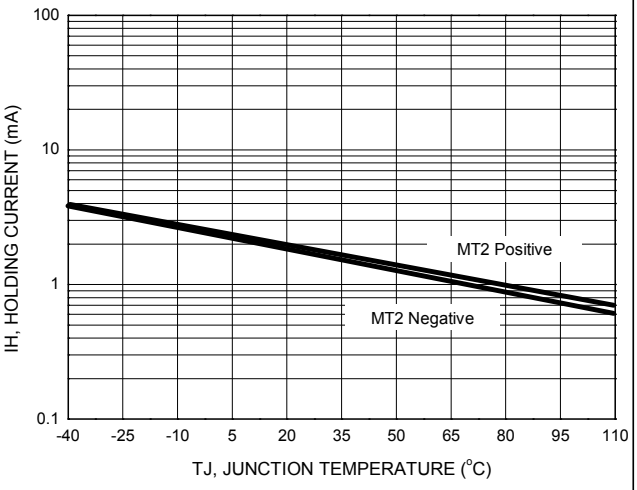


Figure 5. Typical RMS Current Derating

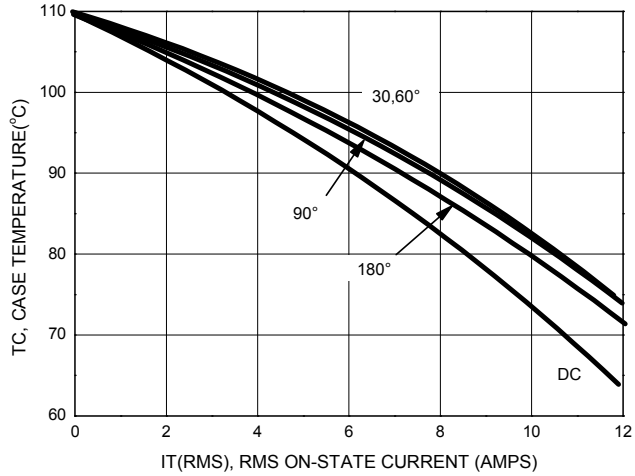


Figure 6. On-State Power Dissipation

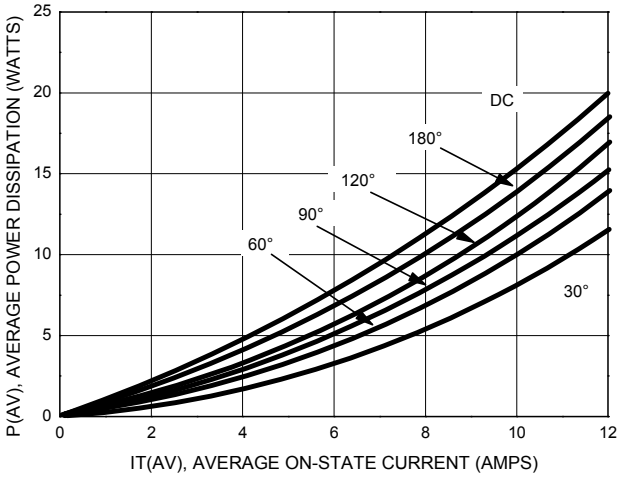


Figure 7. Typical On-State Characteristics

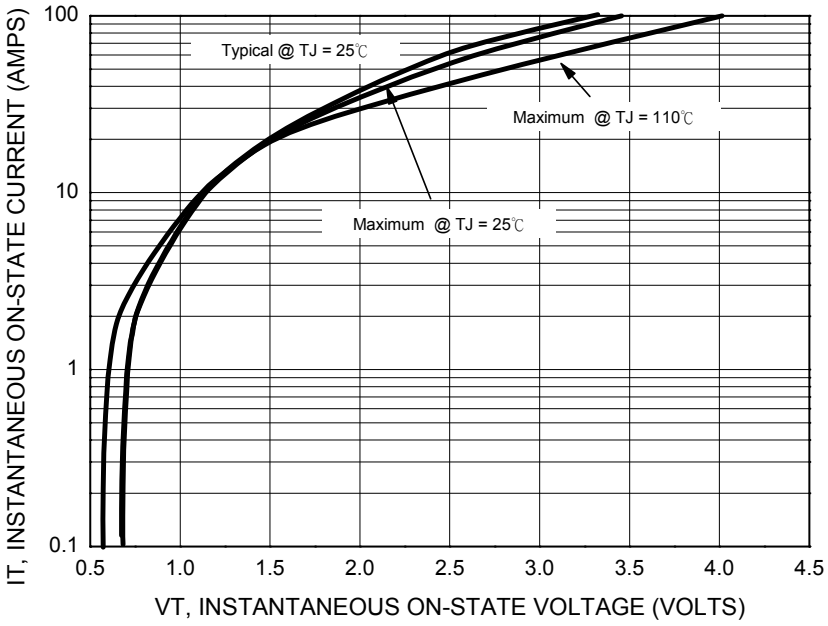


Figure 8. Typical Thermal Response