LITE-ON SEMICONDUCTOR

T12M50T600B

Triacs
Sillicon Bidirectional Thyristors

TRIACS
12 AMPERES RMS
600 VOLTS

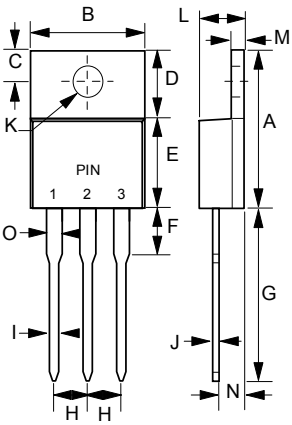
FEATURES

- Blocking Voltage to 600 Volts
- On-state Current Rating of 12 Amperes RMS at 90℃
- Uniform Gate Trigger Currents in Three Quadrants
- High Immunity to dv/dt — 600 V/us Min. at 125℃
- Minimizes Snubber Networks for Protection
- High Commutating di/dt - 15 A/ms minimum at 125℃
- Pb Free Package

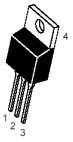
MECHANICAL DATA

- 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 125℃, Sine Wave, 50 to 60 Hz; Gate Open)	VDRM, VRRM	600	Volts
On-State RMS Current (TC = +90℃) Full Cycle Sine Wave 50 to 60 Hz	IT(RMS)	12	Amp
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, TJ= +25℃)	ITSM	100	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I^2t	41	A^2s
Peak Gate Power (TC = +80℃, Tp≦ 1.0 us)	PGM	16	Watt
Average Gate Power (TC = +80℃, t=8.3 ms)	PG(AV)	0.35	Watt
Operating Junction Temperature Range	TJ	-40 to +125	℃
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.

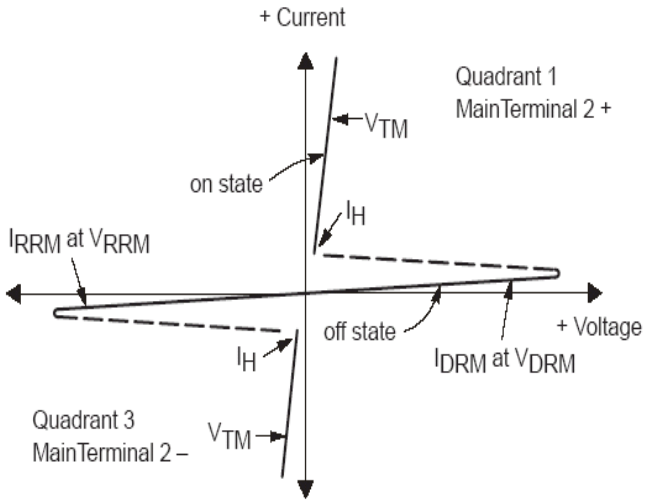
THERMAL CHARACTERISTICS

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

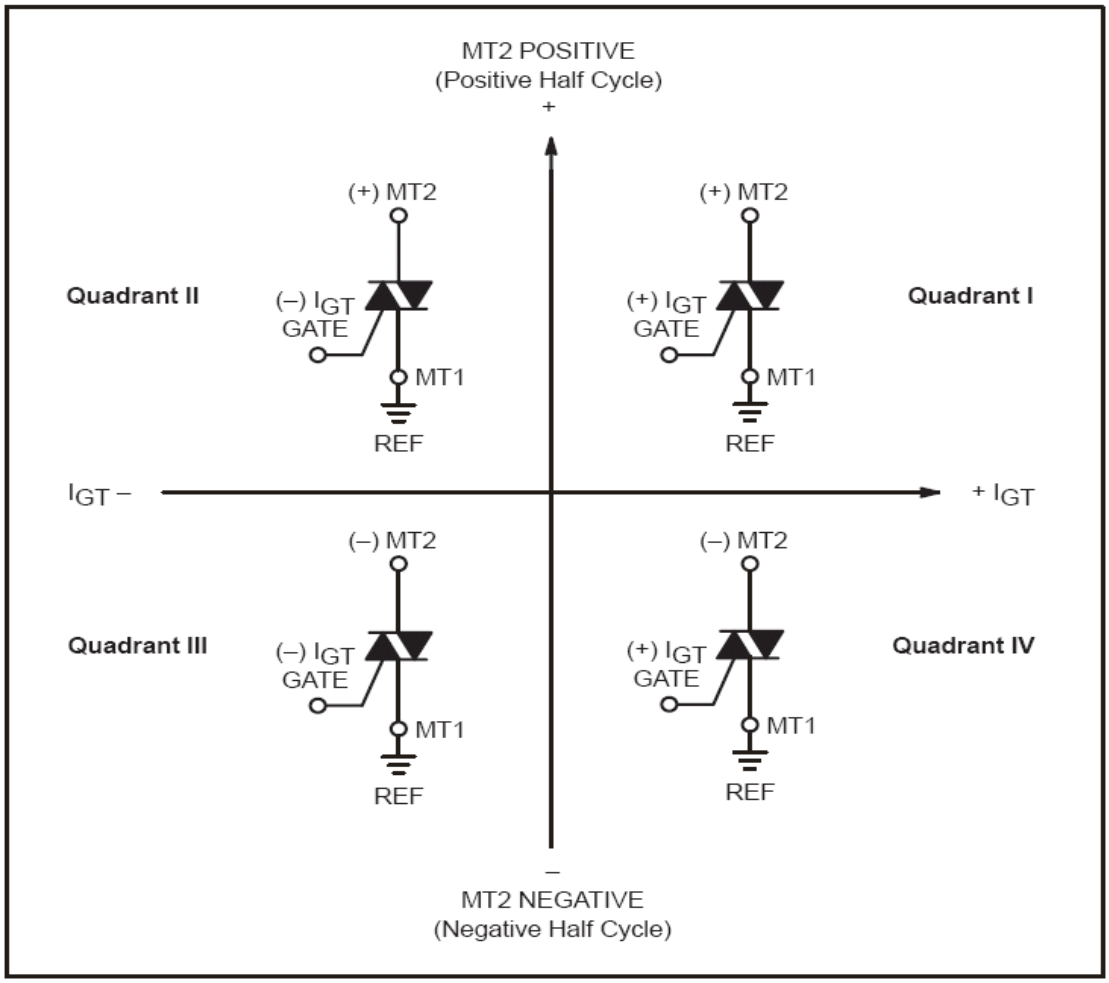
ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise noted, Electrical apply in both directions)

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=125℃	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}	10 10 10	---- ---- ----	50 50 50	mA
Gate Trigger Voltage (V_D = 12 V ; R_L =100 Ohms)	V_{GT1} V_{GT2} V_{GT3}	0.5 0.5 0.5	---- ---- ----	1.5 1.5 1.5	Volts
Holding Current (V_D = 12 V, Initiating Current = ± 150 mA, Gate Open)	I_H	----	----	60	mA
Latching Current (V_D = 24 V, I_G = 50 mA)	I_{L1} I_{L2} I_{L3}	---- ---- ----	---- ---- ----	60 80 60	mA
DYNAMIC CHARACTERISTICS					
Critical Rate of Change of Commutation Current (V_D =400V , I_{TM} = 4.4 A, Commutating dv/dt = 18 V/ms, Gate Open, T_J = 125℃,f = 250 Hz,C_L=10uf,L_L=40mH,with Snubber)	di/dt(c)	15	----	----	A/ms
Critical Rate of Rise of Off-State Voltage (V_D = Rated V_{DRM} , Exponential Waveform,Gate Open, T_J= 125℃)	dv/dt	600	----	----	V/us
Repetitive Critical Rate of Rise of On-State Current IPK = 50 A; PW = 40 usec; diG/dt = 200 mA/usec; f = 60 Hz	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

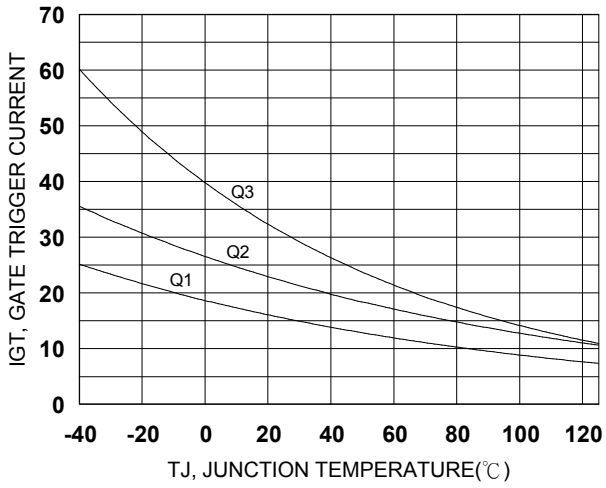


Figure 1. Typical IGT versus TJ

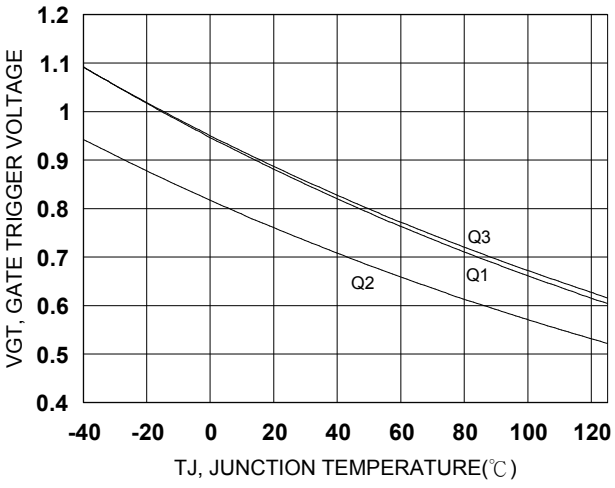


Figure 2. Typical VGT versus TJ

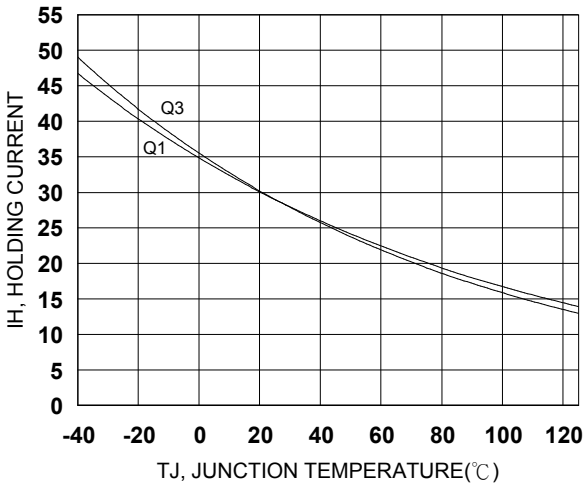


Figure 3. Typical IH versus TJ

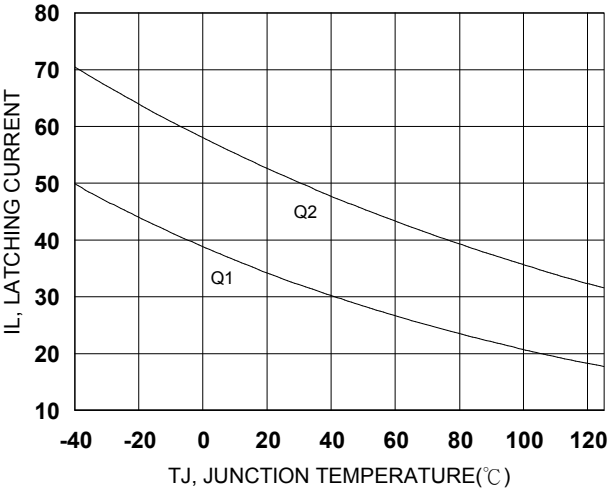


Figure 4. Typical IL versus TJ

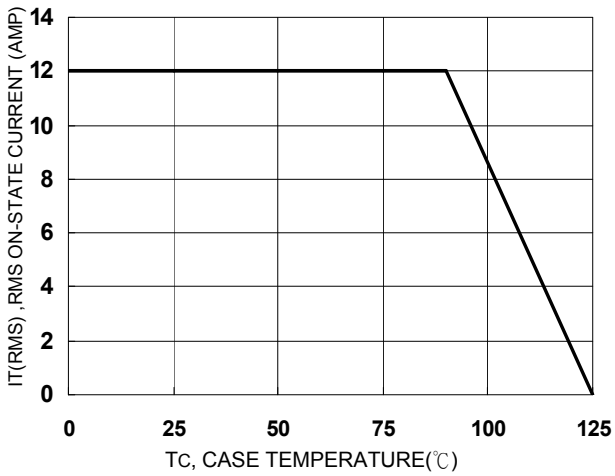


Figure 5. On-State Current Derating Curve

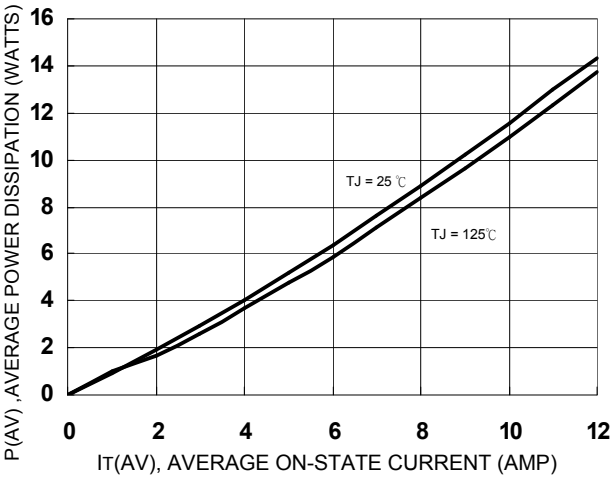


Figure 6. Power Dissipation versus IT

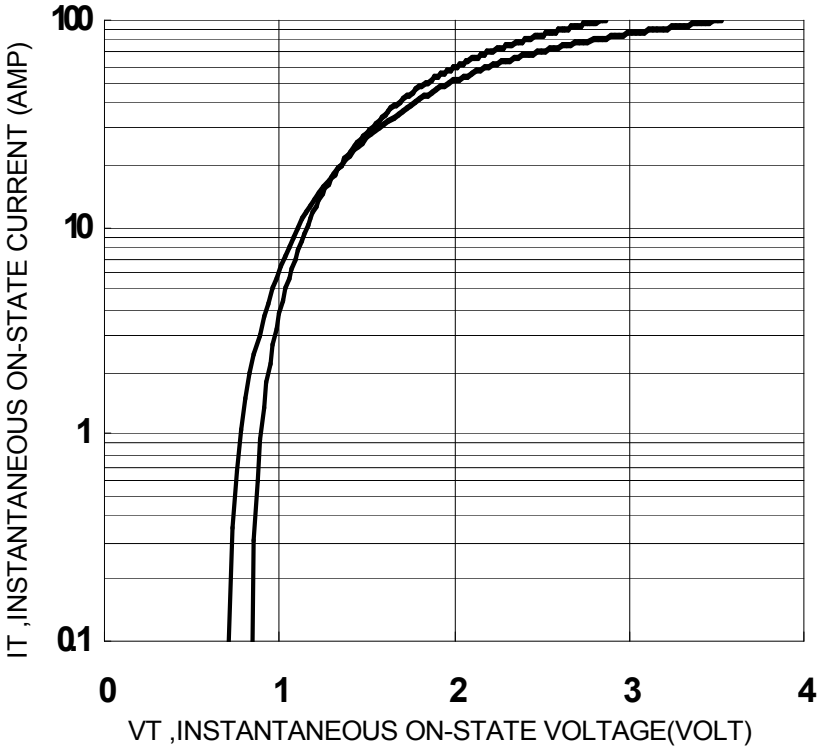


Figure 7. On-State Characteristics

Important Notice and Disclaimer

LSC reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

LSC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does LSC assume any liability for application assistance or customer product design. LSC does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of LSC.

LSC products are not authorized for use as critical components in life support devices or systems without express written approval of LSC.