LITE-ON SEMICONDUCTOR

T1M5F600AL

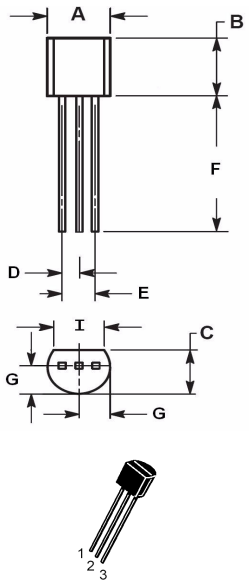
Sensitive Gate Triacs
Sillicon Bidirectional Thyristors

TRIACs
1.0 AMPERES RMS
600 VOLTS

FEATURES

- One-Piece, Injection-Molded Package
- Blocking Voltage to 600 Volts
- Sensitive Gate Triggering in Four Trigger Modes (Quadrants) for all possible Combinations of Trigger Sources, and especially for Circuits that Source Gate Drives
- All Diffused and Glassivated Junctions for Maximum Uniformity of Parameters and Reliability
- Improved Noise Immunity (dv/dt Minimum of 20 V/msec at 110℃)
- High Surge Current of 12 Amps
- Pb-Free Package

TO-92 (TO-226AA)



TO-92		
DIM.	MIN.	MAX.
A	4.45	4.70
B	4.32	5.33
C	3.18	4.19
D	1.15	1.39
E	2.42	2.66
F	12.7	------
G	2.04	2.66
I	3.43	-----
All Dimensions in millimeter		

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

MAXIMUM RATINGS (Tj= 25℃ unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak Repetitive Off– State Voltage (TJ= -40 to 125℃, Sine Wave, 50 to 60 Hz; Gate Open)	VDRM, VRRM	600	Volts
On-State RMS Current Full Cycle Sine Wave 50 to 60 Hz (Tc = 50℃)	IT(RMS)	1.0	Amp
Peak Non-Repetitive Surge Current Full Cycle Sine Wave 60 Hz (Tj =25℃)	ITSM	12.0	Amps
Circuit Fusing Consideration (t = 8.3 ms)	I^2t	0.60	A^2s
Peak Gate Power (t ≦2.0us ,Tc = 80℃)	PGM	5.0	Watt
Average Gate Power (Tc = 80℃, t ≦8.3 ms)	PG(AV)	0.1	Watt
Peak Gate Current (t ≦2.0us ,Tc = 80℃)	IGM	1.0	Amp
Peak Gate Voltage (t ≦2.0us ,Tc = 80℃)	VGM	5.0	Volts
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 Lead - Junction to Case - Junction to Ambient	RthJL RthJC RthJA	60 75 150	℃/W
Maximum Lead Temperature for Soldering Purposes 1/8 from Case for 10 Seconds	TL	260	℃

ELECTRICAL CHARACTERISTICS (T_C=25℃ unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Peak Reptitive Forward or Reverse Blocking Current T_j =25℃ (VD=Rated VDRM and VRRM; Gate OPen) T_j =110℃	IDRM IRRM	---- ----	---- ----	10 100	uA uA
ON CHARACTERISTICS					
Peak Forward On-State Voltage (I_{TM}=± 1A Peak @Tp ≦2.0 ms, Duty Cycle ≦ 2%)	VTM	----	----	1.9	Volts
Gate Trigger Current (V_D = 12 Vdc; R_L = 100 Ohms)	IGT1 IGT2 IGT3 IGT4	---- ---- ---- ----	---- ---- ---- ----	5.0 5.0 5.0 7.0	mA
Holding Current (V_D = 12 V, Initiating Current = ± 200 mA, Gate Open)	IH	----	1.5	10	mA
Turn-On Time (V_D = Rated VDRM , I_{TM} = 1.0 A pk, I_G = 25 mA)	tgt	----	2	----	us
Gate Trigger Voltage (V_D = 12 Vdc; R_L =100 Ohms)	VGT1 VGT2 VGT3 VGT4	---- ---- ---- ----	0.66 0.77 0.84 0.88	2.0 2.0 2.0 2.5	Volts
Latching Current (V_D=12V,I_G= 10 mA)	IL1 IL2 IL3 IL4	---- ---- ---- ----	1.6 10.5 1.5 2.5	15 20 15 15	mA
Gate Non-Trigger Voltage (V_D= 12V, R_L= 100 Ohms , T_J=110 ℃)	VGD	0.1	----	----	Volts
DYNAMIC CHARACTERISTICS					
Critical Rate of Rise of Off-State Voltage (V_D=Rated V_{DRM},Exponential Waveform, Gate Open, T_J=110℃)	dv/dt	20	210	----	V/us

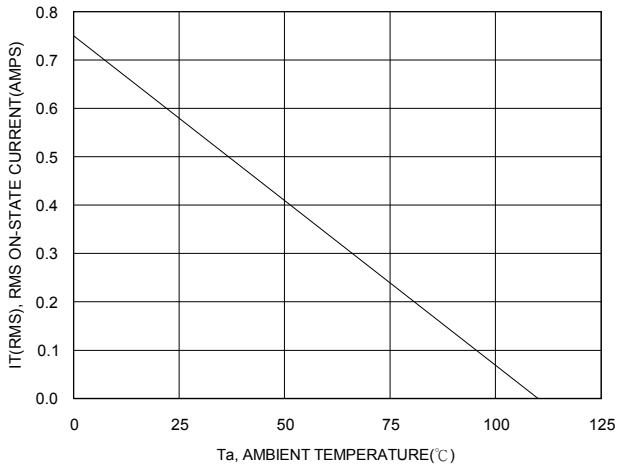


Figure 1. RMS Current Deratiing Versus Ambient Temperature

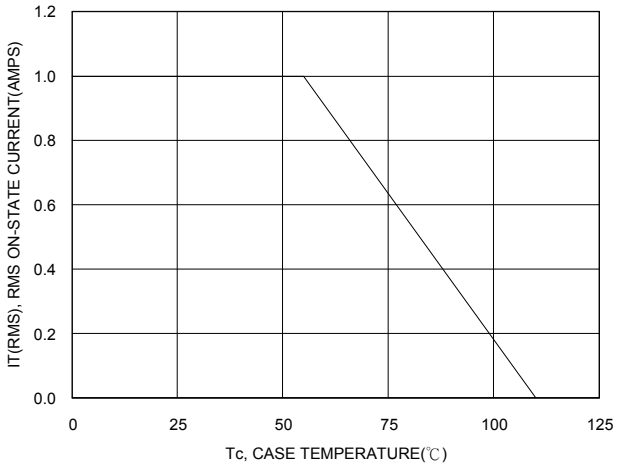


Figure 2. RMS Current Deratiing Versus Case Temperature

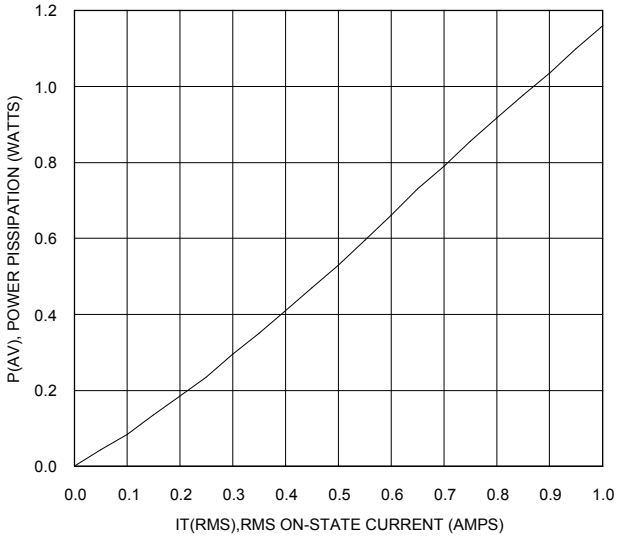


Figure 3. Power Dissipation

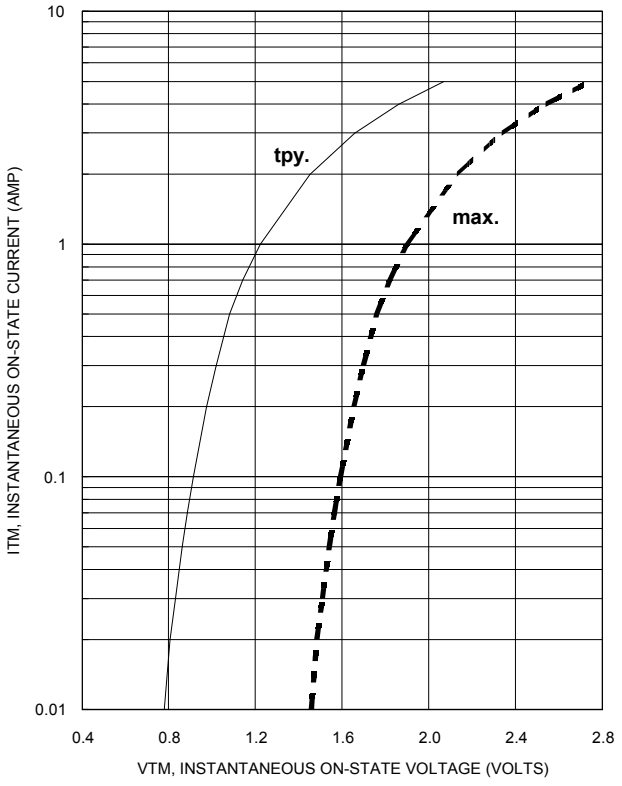


Figure 4. On-State Characteristics

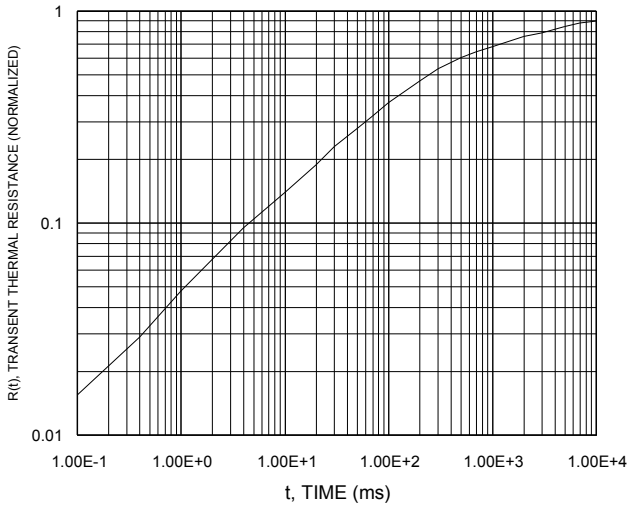


Figure 5. Transient Thermal Response

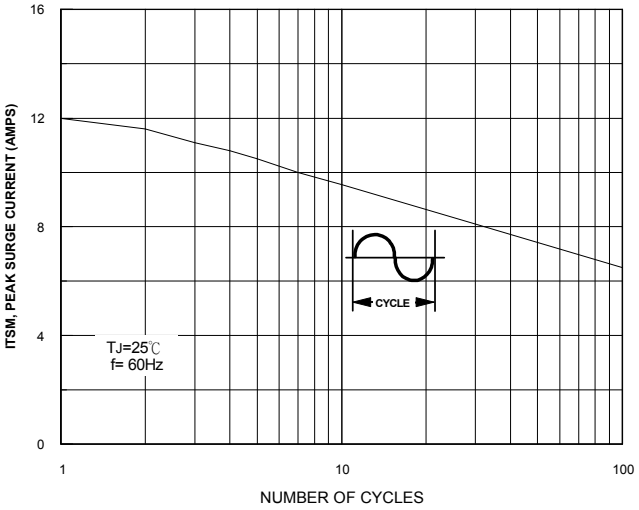


Figure 6. Maximum Allowable Surge Current

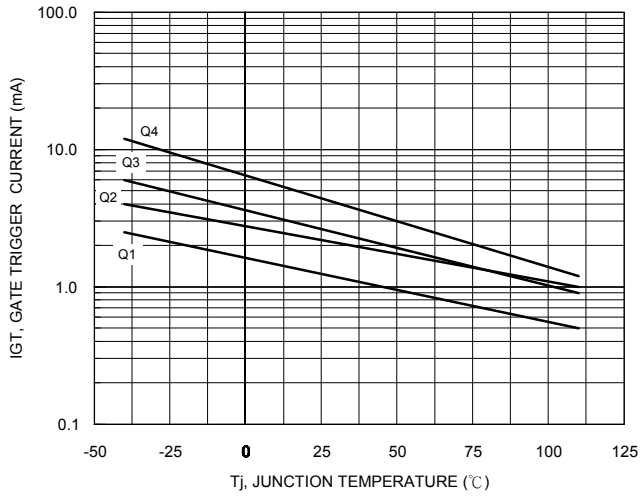


Figure 7. Typical Gate Trigger Current Versus Junction Temperature

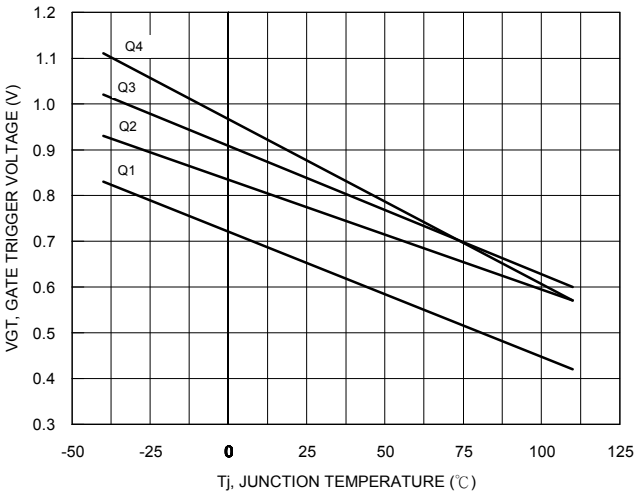


Figure 8. Typical Gate Trigger Voltage Versus Junction Temperature

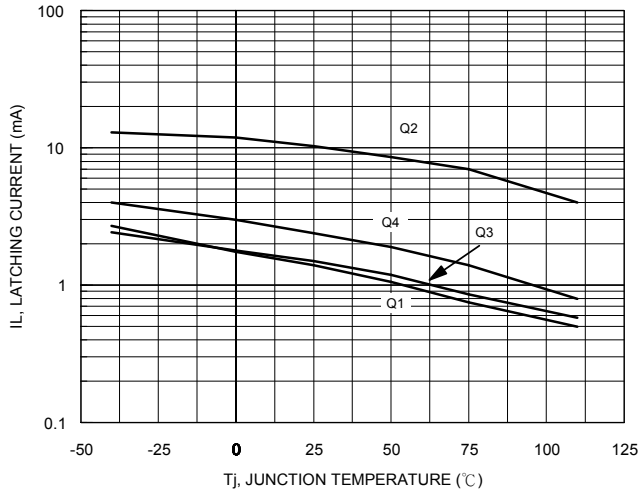


Figure 9. Typical Latching Current Versus Junction Temperature

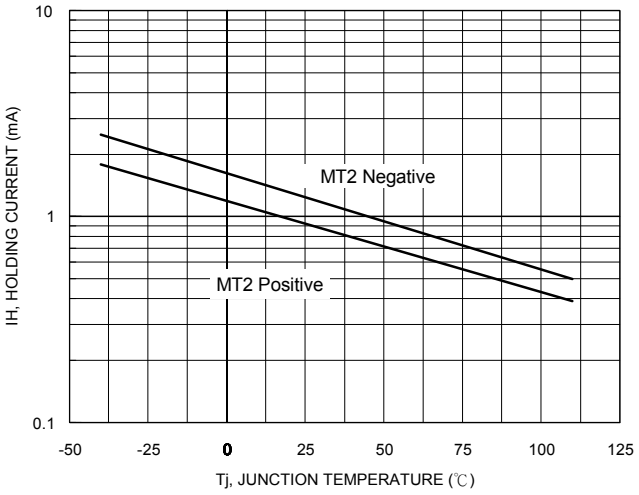


Figure 10. Typical Holding Current Versus Junction Temperature

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