LITE-ON SEMICONDUCTOR

T1M5F-A SERIES

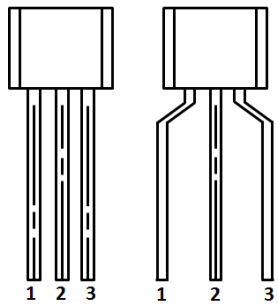
SENSITIVE GATE TRIACS
SILLICON BIDIRECTIONAL THYRISTORS

TRIACS
1.0 AMPERES RMS
400 thru 600 VOLTS

FEATURES

- One-piece, injection-molded package
- Blocking voltage to 600volts.
- 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°C)
- High surge current of 10 amps
- Pb-Free package

TO-92 (TO-226AA)



PIN ASSIGNMENT	
1	Main terminal 1
2	Gate
3	Main terminal 2

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

PARAMETER	SYMBOL	VALUE	UNIT
Peak repetitive off-state voltage T1M5F400A / T1M5F600A T_J = -40°C to 110°C, sine wave, 50 to 60 H_Z, gate open (Note 1)	V_{DRM} V_{RRM}	400 600	V
On-state RMS current full cycle sine wave 50 to 60 H_Z @ T_C = 50°C	$I_{T(RMS)}$	1.0	A
Peak non-repetitive surge current full cycle sine wave 60H_Z @ T_J = 25°C	I_{TSM}	10.0	A
Circuit fusing consideration @ T= 8.3 ms	I^2t	0.40	A^2S
Peak gate power, t ≦ 2.0us @ T_C = 80°C	P_{GM}	5.0	W
Average gate power, t ≦ 8.3ms @ T_C = 80°C	P_{GAV}	0.1	W
Peak gate current, t ≦ 2.0us @ T_C = 80°C	I_{GM}	1.0	A
Peak gate voltage, t ≦ 2.0us @ T_C = 80°C	V_{GM}	5.0	V
Operating junction temperature range	T_J	-40 to +110	°C
Storage temperature range	T_{STG}	-40 to +150	°C

Notes:
1. V_{DRM} and V_{RRM} 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.

RATING AND CHARACTERISTIC CURVES
T1M5F-A SERIES

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance junction to lead	R_{thJL}	60	°C/W
Thermal resistance junction to case	R_{thJC}	75	°C/W
Thermal resistance junction to ambient	R_{thJA}	150	°C/W
Maximum lead temperature for soldering purposes 1/8 for case for 10 seconds	T_L	260	°C

OFF CHARACTERISTICS

PARAMETER		SYMBOL	MIN	TYP.	MAX	UNIT
Peak repetitive forward or reverse blocking current V_D = rated V_{DRM} and V_{RRM}, gate open	@ T_J = 25°C @ T_J = 110°C	I_{DRM} I_{RRM}	---	---	10 100	uA

ON CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Peak forward on-state voltage (I_{TM} = ± 1A peak @ $T_P \leqq$ 2.0 ms, duty cycle ≦ 2%)	V_{TM}	---	---	1.9	V
Gate trigger current (V_D = 12 V_{dc}, R_L = 100 ohms)	I_{GT1} I_{GT2} I_{GT3} I_{GT4}	---	---	5.0 5.0 5.0 7.0	mA
Holding current (V_D = 12 V, initiating current = ± 200 mA)	I_H	---	1.5	10	mA
Turn-on time (V_D = rated V_{DRM}, I_{TM} = 1.0A pk, I_G = 25 mA)	tgt	---	2	---	us
Gate trigger voltage (V_D = 12 V_{dc}, R_L = 100 ohms)	V_{GT1} V_{GT2} V_{GT3} V_{GT4}	---	0.66 0.77 0.84 0.88	2.0 2.0 2.0 2.5	V
Latching current (V_D = 12 V, I_G = 10 mA)	I_{L1} I_{L2} I_{L3} I_{L4}	---	1.6 10.5 1.5 2.5	15 20 15 15	mA
Gate non-trigger voltage (V_D= 12 V, R_L=100 ohms, T_J = 110°C)	V_{GD}	1.0	---	---	V

DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Critical rate of rise of off-state voltage (V_D = rated V_{DRM}, exponential waveform, gate open, T_J = 110°C)	dv/dt	20	60	---	V/us

RATING AND CHARACTERISTIC CURVES
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FIG.1- RMS current derating versus ambient temperature

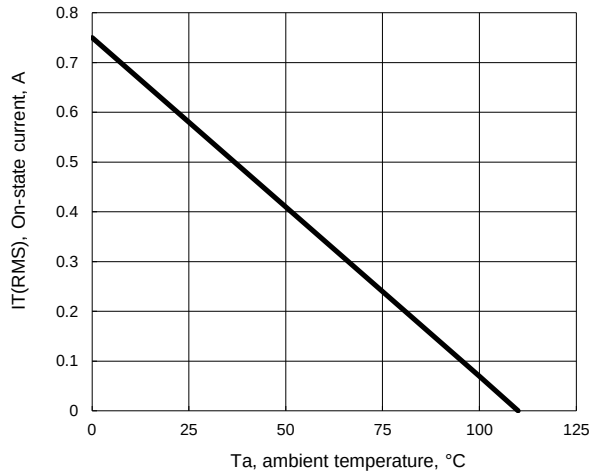


FIG.2- RMS current derating versus case temperature

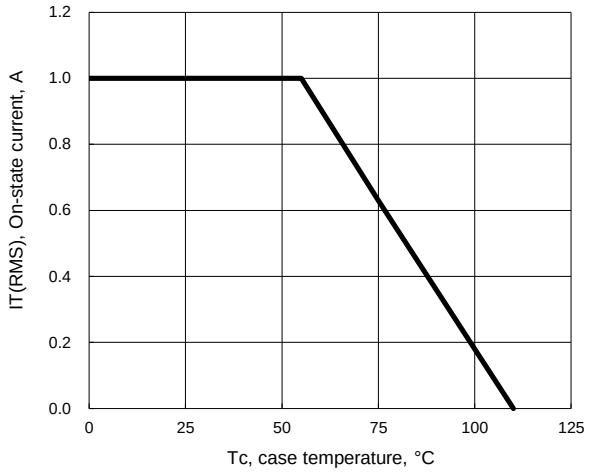


FIG.3- Power dissipation

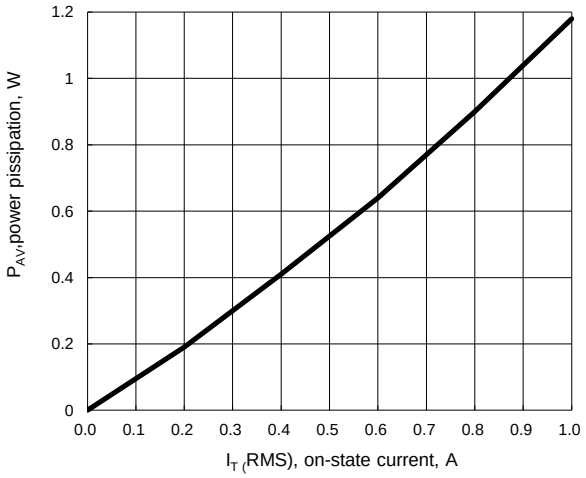


FIG.4- On-state characteristics

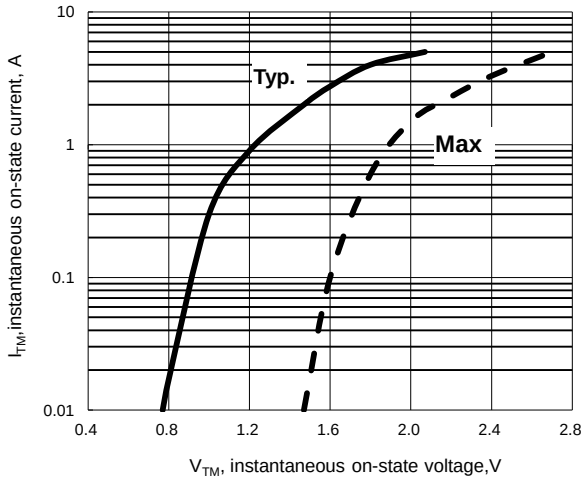


FIG.5- Transient thermal respponse

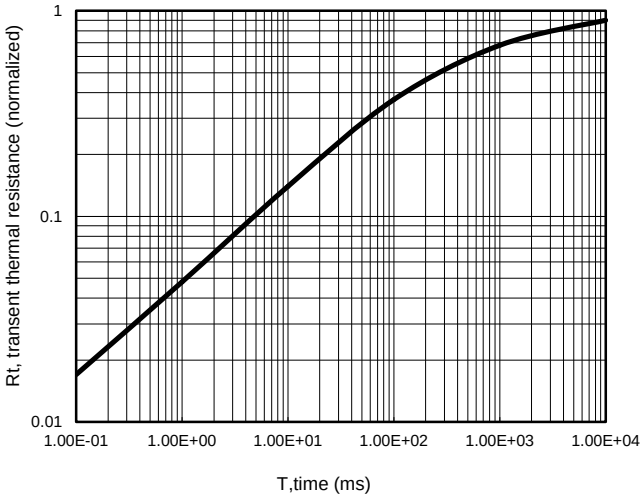
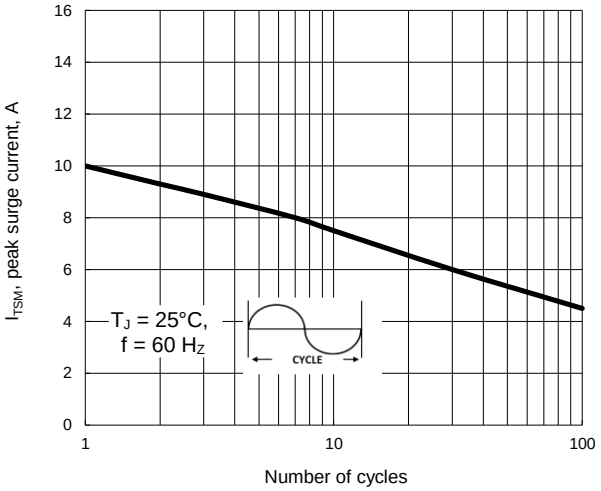


FIG.6- Maximum allowable surge current



RATING AND CHARACTERISTIC CURVES
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FIG.7- Typical gate trigger current versus junction temperature

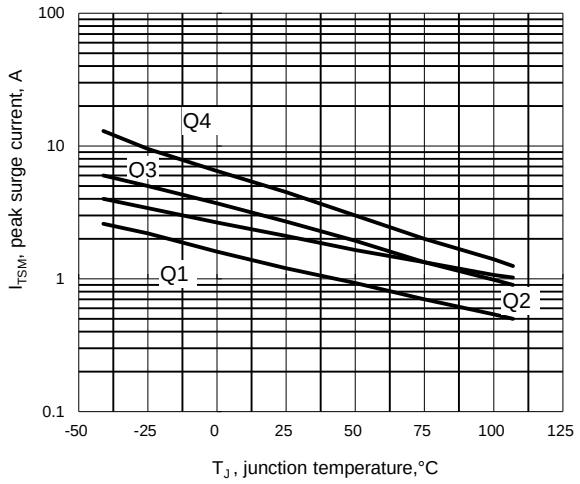


FIG.8- Typical gate trigger current versus junction temperature

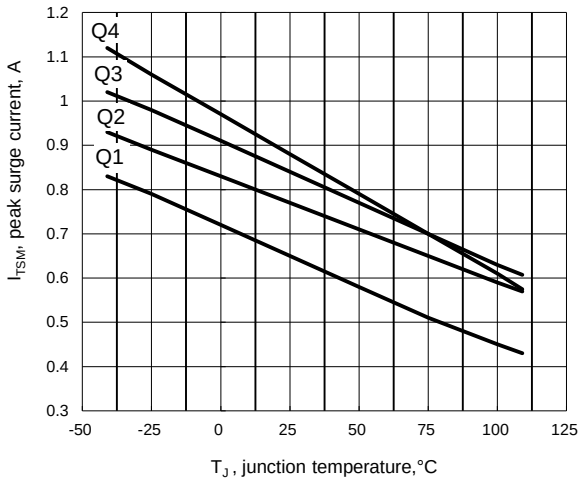


FIG.9- Typical latching current versus junction temperature

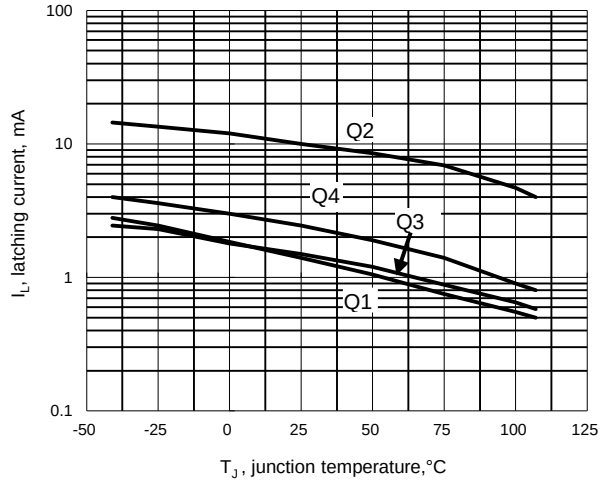
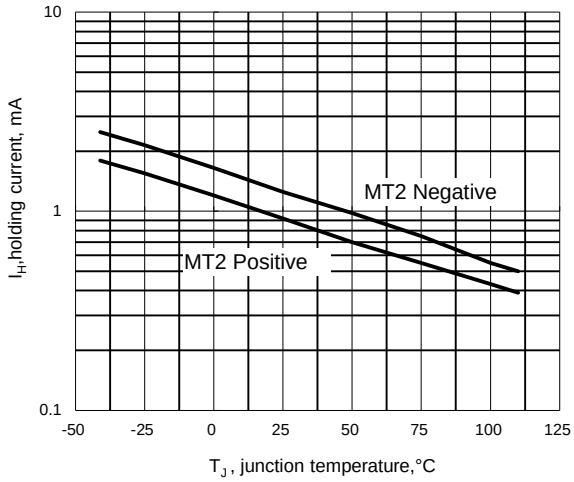
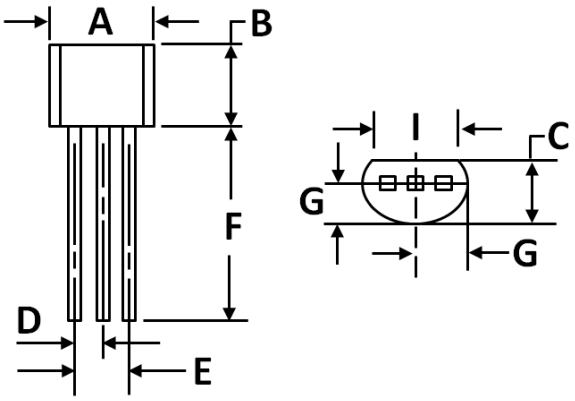


FIG.10- Typical holding current versus junction temperature



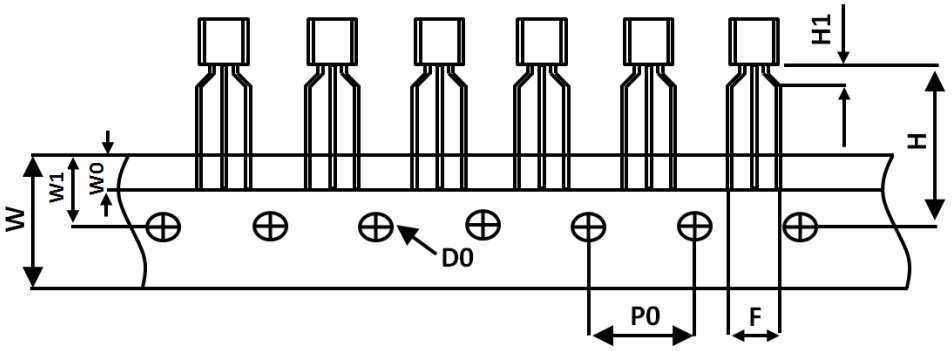
PACKAGEING INFORMATION
T1M5F-A SERIES

Bulk Packaging :



DIM.	MIN.	MAX
A	4.45	5.20
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		

Reel Packaging :



DIM.	INCHES		MILLIMETERS	
	MIN.	MAX	MIN.	MAX
P0	0.488	0.512	12.4	13.0
H	0.728	0.768	18.5	19.5
H1	0.079	0.118	2.0	3.0
F	0.188	0.212	4.78	5.38
D0	Ø0.150	Ø0.165	Ø3.8	Ø4.2
W	0.701	0.717	17.8	18.2
W0	0.228	0.244	5.8	6.2
W1	0.346	0.362	8.8	9.2

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