SGS-THOMSON MICROELECTRONICS

T1235-600G

HIGH PERFORMANCE TRIAC

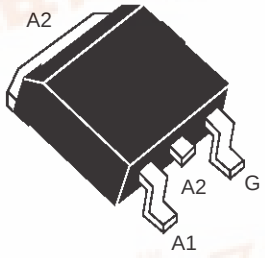
FEATURES

- HIGH COMMUTATION (dI/dt)c > 6.5 A/ms without snubber
- HIGH STATIC dV/dt > 500 V/µs

DESCRIPTION

The T1235-600G triac uses a high performance SNUBBERLESS™ technology.

The part is intended for general purpose applications using surface mount technology.



D^2PAK

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{DRM} V_{RRM}	Repetitive peak off-state voltage	Tj = 125°C	600	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc= 105°C	12	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3ms	126	A
		tp = 10 ms	120	
I^2t	I^2t Value (half-cycle, 50 Hz)	tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 500 mA dI_G/dt = 1 A/µs.	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40, + 150 - 40, + 125	°C
Tl	Maximum temperature for soldering during 10s		260	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambiant (S=1cm^2)	45	°C/W
Rth(j-c)	Junction to case for DC	1.8	°C/W
Rth(j-c)	Junction to case for AC 360° conduction angle (F=50Hz)	1.4	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$= 1 W P_{GM} = 10 W (tp = 20 µs) I_{GM} = 4 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Sensitivity	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III	MIN	2	mA
				MAX	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III	MAX	1.3	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	I-II-III	MIN	0.2	V
I_H *	I_T= 100mA Gate open	Tj= 25°C		MAX	35	mA
I_L	I_G = 1.2 I_{GT}	Tj = 25°C	I-III	MAX	50	mA
			II	MAX	80	
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj= 25°C		MAX	1.5	V
I_{DRM}	V_D = V_{DRM}	Tj= 25°C		MAX	5	µA
I_{RRM}	V_R = V_{RRM}	Tj= 125°C		MAX	2	mA
dV/dt *	Linear slope up to V_D=67%V_{DRM} Gate open	Tj= 125°C		MIN	500	V/µs
(dI/dt)c *	Without snubber	Tj= 125°C		MIN	6.5	A/ms

* For either polarity of electrode A2 voltage with reference to electrode A1.

ORDERING INFORMATION Add "-TR" suffix for Tape & Reel shipment

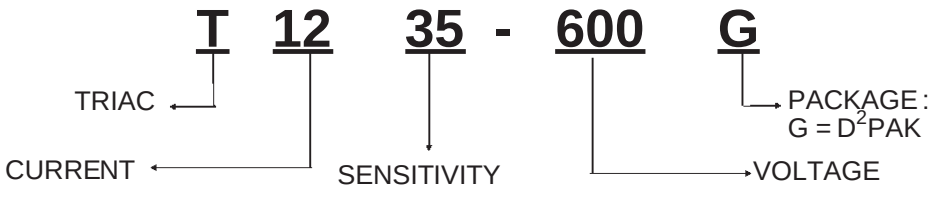


Fig. 1: Maximum power dissipation versus RMS on-state current.

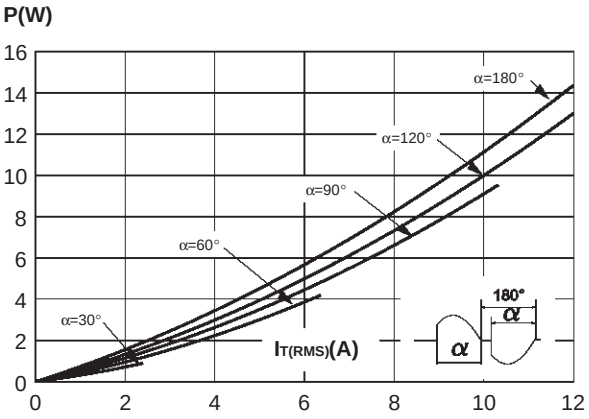


Fig. 2: Correlation between maximum power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink+contact.

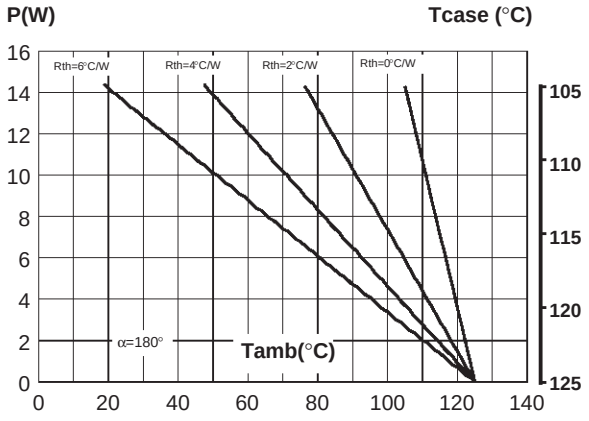


Fig. 3: RMS on-state current versus case temperature.

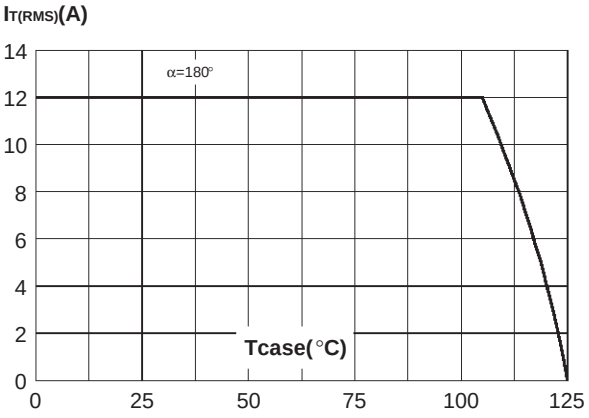


Fig. 4: Relative variation of thermal impedance versus pulse duration.

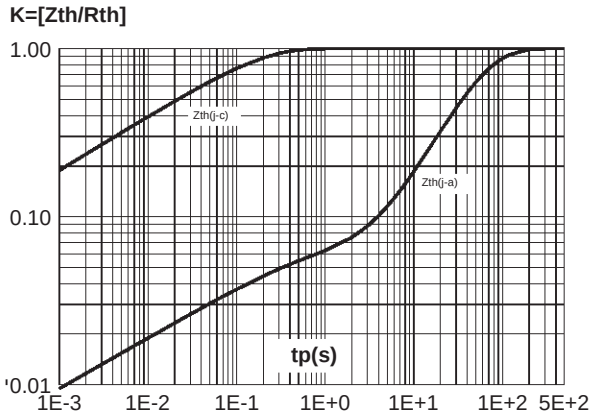


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature (typical values).

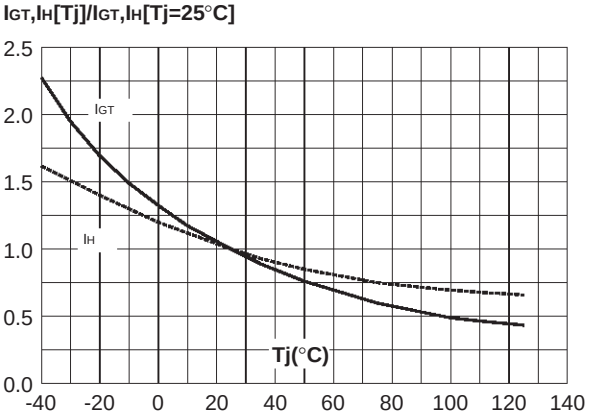


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.

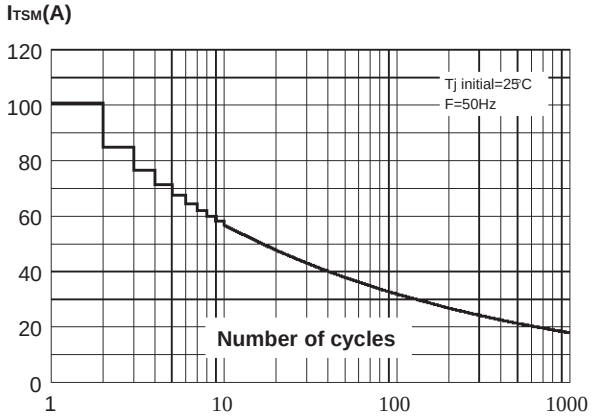


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I^2t.

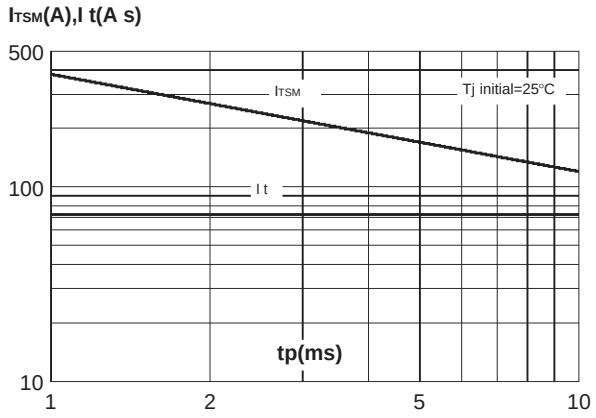


Fig. 8: On-state characteristics (maximum values).

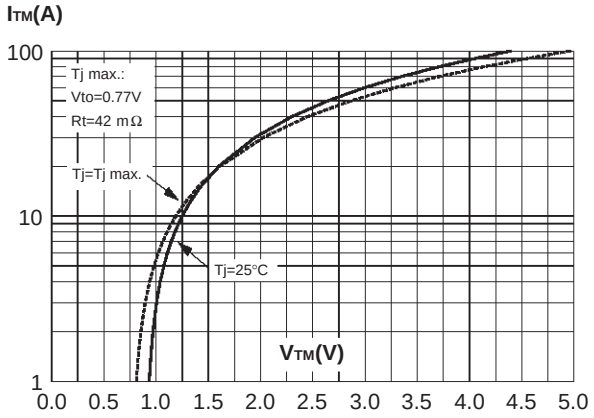


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm).

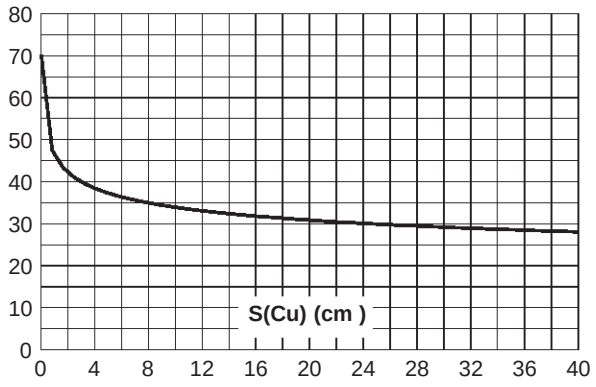
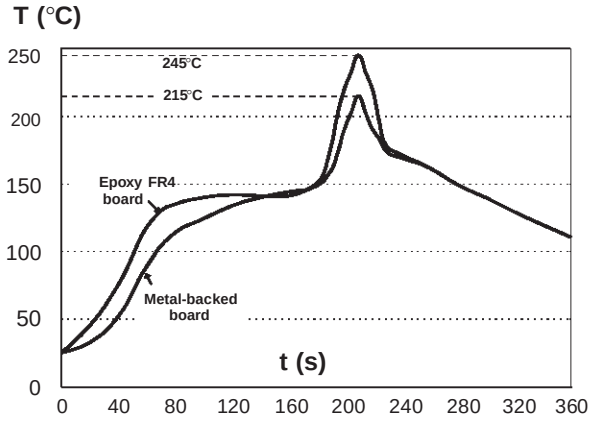
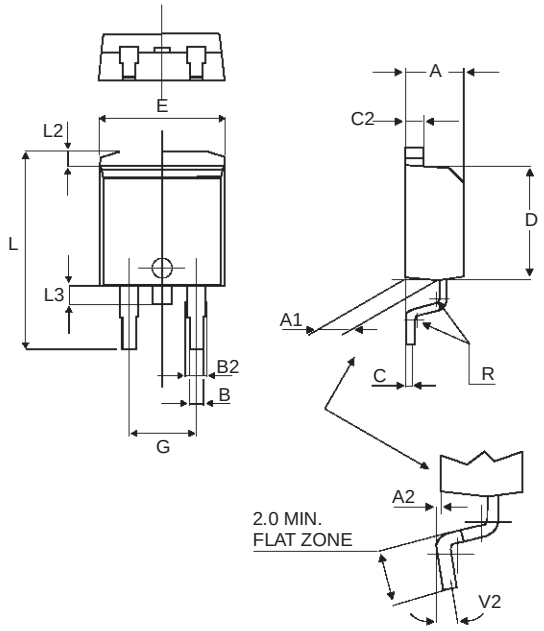


Fig. 10: Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



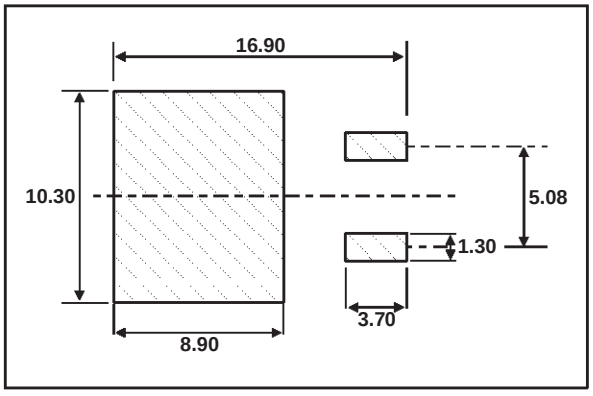
PACKAGE MECHANICAL DATA
D^2PAK



Note 1: Max resin gate protusion = 0.5 mm

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2		1.40			0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

FOOT PRINT DIMENSIONS (in millimeters)



MARKING : T1235
600G