



T1235-600G

## HIGH PERFORMANCE TRIAC

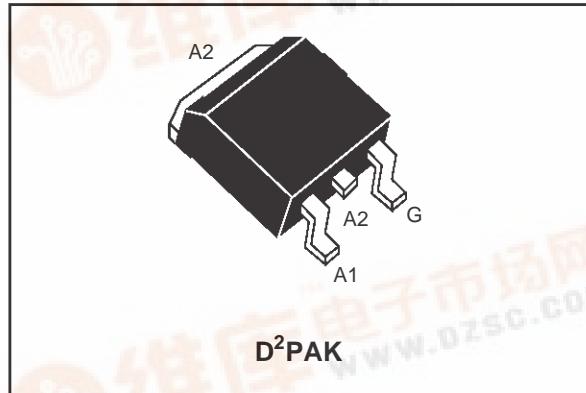
## FEATURES

- HIGH COMMUTATION ( $dl/dt$ )c > 6.5 A/ms without snubber
- HIGH STATIC dV/dt > 500 V/ $\mu$ s

## DESCRIPTION

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

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



## ABSOLUTE RATINGS (limiting values)

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

## T1235-600G

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th(j-a)</sub>	Junction to ambiant ( $S=1\text{cm}^2$ )	45	°C/W
R <sub>th(j-c)</sub>	Junction to case for DC	1.8	°C/W
R <sub>th(j-c)</sub>	Junction to case for AC 360° conduction angle (F=50Hz)	1.4	°C/W

### GATE CHARACTERISTICS (maximum values)

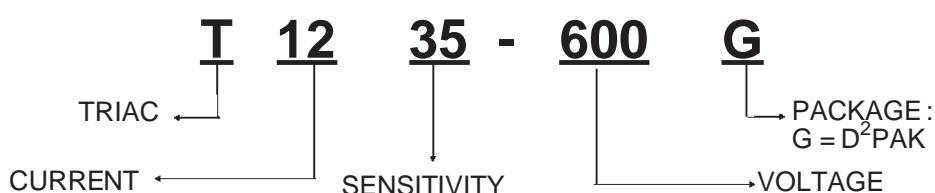
P<sub>G(AV)</sub>= 1 W P<sub>GM</sub> = 10 W (tp = 20 μs) I<sub>GM</sub> = 4 A (tp = 20 μs)

### ELECTRICAL CHARACTERISTICS

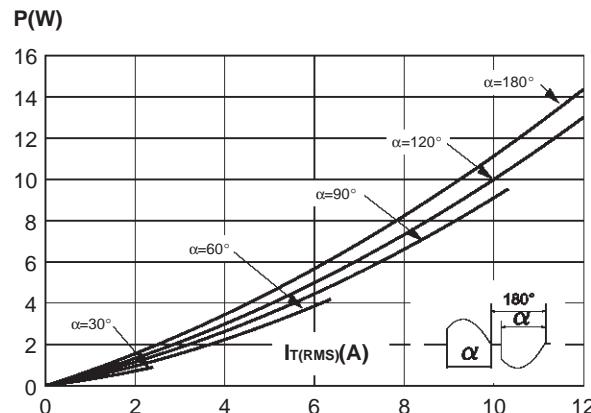
Symbol	Test Conditions		Quadrant		Sensitivity	Unit
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> = 25°C	I-II-III	MIN	2	mA
				MAX	35	
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> = 25°C	I-II-III	MAX	1.3	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>j</sub> = 125°C	I-II-III	MIN	0.2	V
I <sub>H</sub> *	I <sub>T</sub> = 100mA Gate open	T <sub>j</sub> = 25°C		MAX	35	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	T <sub>j</sub> = 25°C	I-III	MAX	50	mA
			II	MAX	80	
V <sub>TM</sub> *	I <sub>TM</sub> = 17A tp= 380μs	T <sub>j</sub> = 25°C		MAX	1.5	V
I <sub>DRM</sub>	V <sub>D</sub> = V <sub>DRM</sub>	T <sub>j</sub> = 25°C		MAX	5	μA
I <sub>RRM</sub>	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 125°C		MAX	2	mA
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> Gate open	T <sub>j</sub> = 125°C		MIN	500	V/μs
(dI/dt)c *	Without snubber	T <sub>j</sub> = 125°C		MIN	6.5	A/ms

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

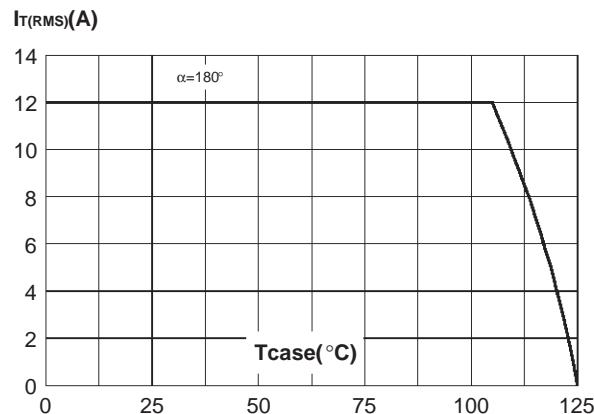
**ORDERING INFORMATION** Add "-TR" suffix for Tape & Reel shipment



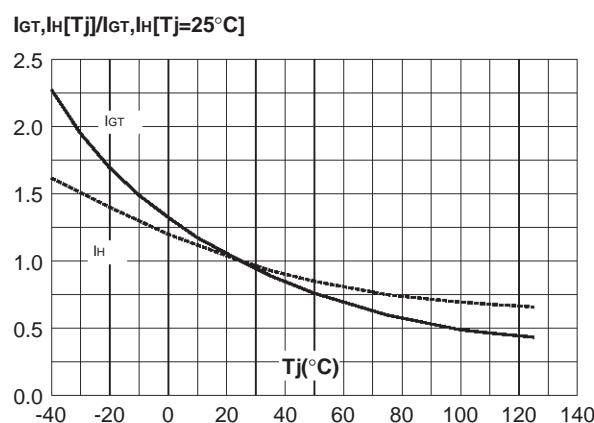
**Fig. 1:** Maximum power dissipation versus RMS on-state current.



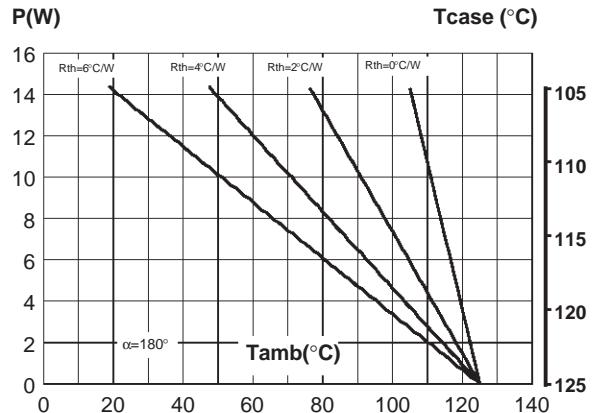
**Fig. 3:** RMS on-state current versus case temperature.



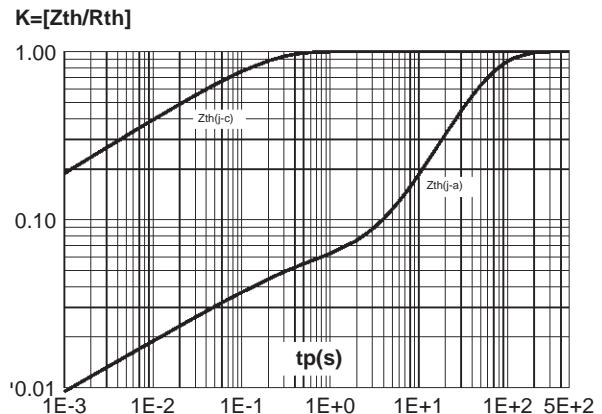
**Fig. 5:** Relative variation of gate trigger current and holding current versus junction temperature (typical values).



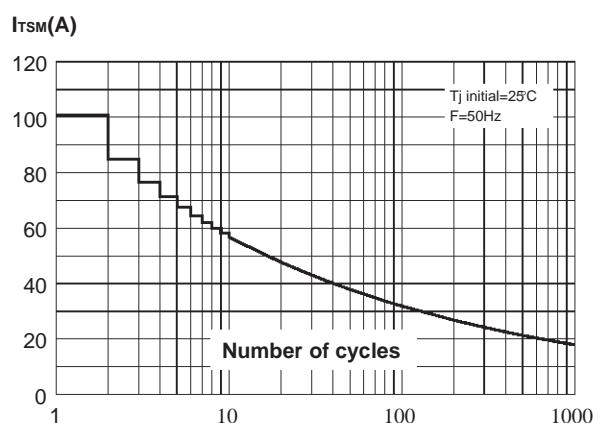
**Fig. 2:** Correlation between maximum power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink+contact.



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

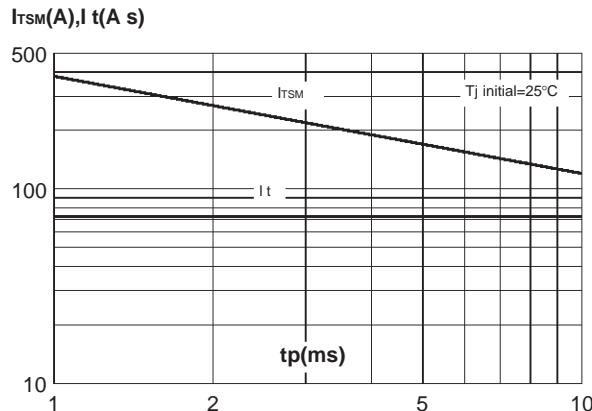


**Fig. 6:** Non repetitive surge peak on-state current versus number of cycles.

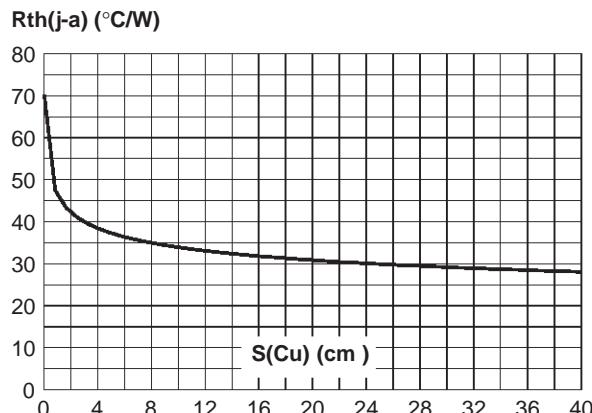


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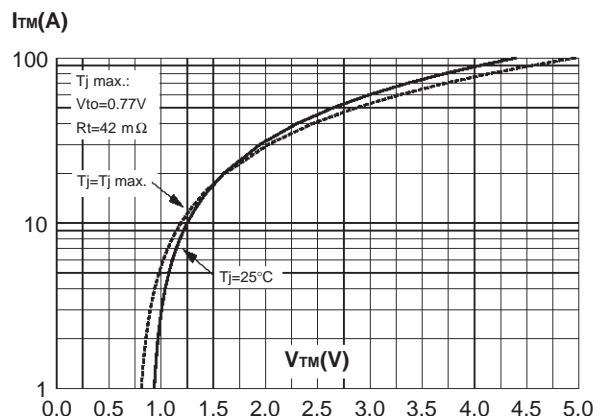
**Fig. 7:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



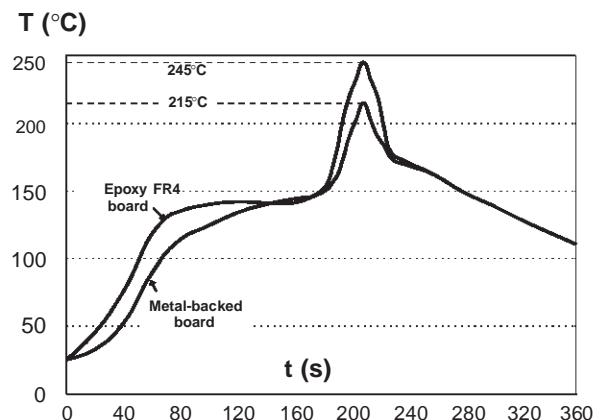
**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ).

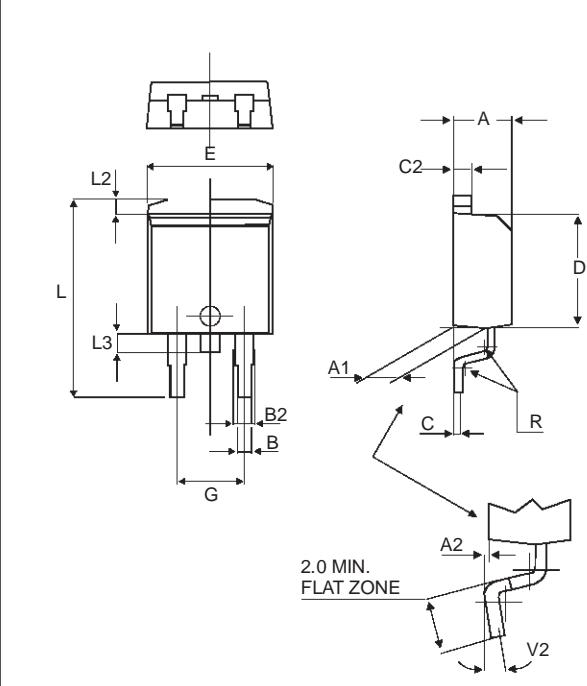


**Fig. 8:** On-state characteristics (maximum values).



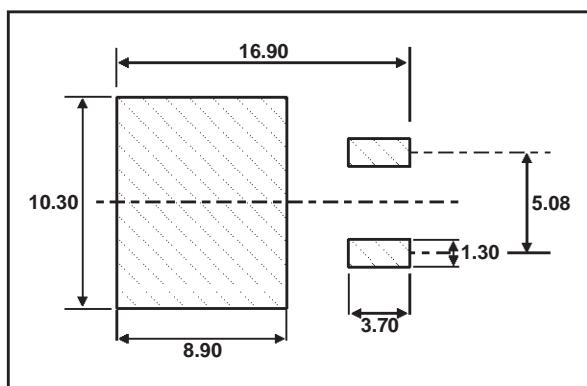
**Fig. 10:** Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



**PACKAGE MECHANICAL DATA**  
**D<sup>2</sup>PAK**


**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

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