

## HIGH PERFORMANCE TRIAC

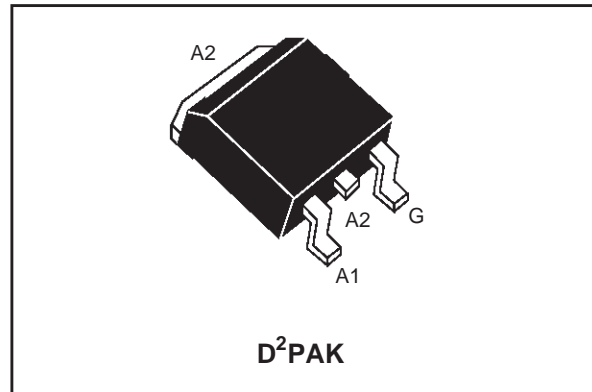
### FEATURES

- HIGH COMMUTATION  $(di/dt)_c > 6.5 \text{ A/ms}$  without snubber
- HIGH STATIC  $dV/dt > 500 \text{ V}/\mu\text{s}$

### 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	$T_j = 125^\circ\text{C}$ 600	V	
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 105^\circ\text{C}$ 12	A	
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)	$t_p = 8.3\text{ms}$	126	A
		$t_p = 10 \text{ ms}$	120	
$I^2t$	$I^2t$ Value (half-cycle, 50 Hz)	$t_p = 10 \text{ ms}$ 72	$\text{A}^2\text{s}$	
$di/dt$	Critical rate of rise of on-state current $I_G = 500 \text{ mA}$ $dI_G/dt = 1 \text{ A}/\mu\text{s}$ .	Repetitive $F = 50 \text{ Hz}$	20	$\text{A}/\mu\text{s}$
		Non Repetitive	100	
$T_{stg}$ $T_j$	Storage temperature range Operating junction temperature range	- 40, + 150 - 40, + 125	$^\circ\text{C}$	
TI	Maximum temperature for soldering during 10s	260	$^\circ\text{C}$	

## T1235-600G

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient (S=1cm <sup>2</sup> )	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)

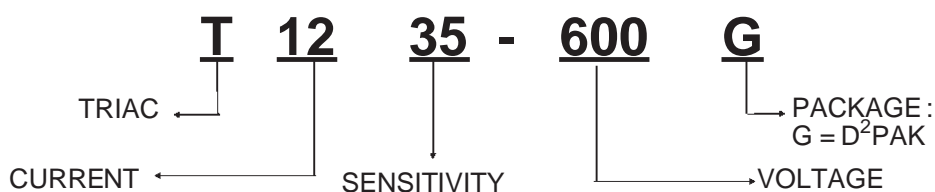
$P_{G(AV)} = 1 \text{ W}$   $P_{GM} = 10 \text{ W}$  ( $t_p = 20 \mu\text{s}$ )  $I_{GM} = 4 \text{ A}$  ( $t_p = 20 \mu\text{s}$ )

### ELECTRICAL CHARACTERISTICS

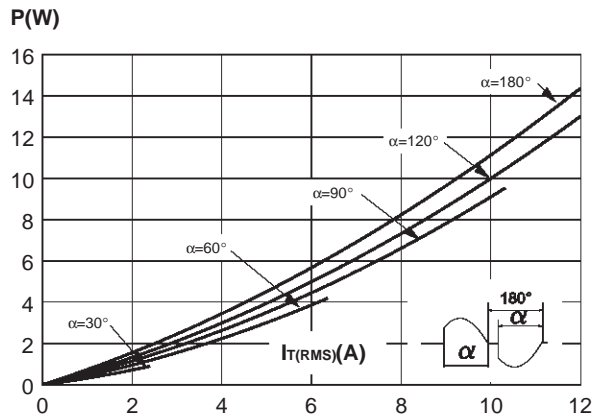
Symbol	Test Conditions		Quadrant		Sensitivity	Unit
$I_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III	MIN	2	mA
				MAX	35	
$V_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III	MAX	1.3	V
$V_{GD}$	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$	$T_j = 125^\circ\text{C}$	I-II-III	MIN	0.2	V
$I_H^*$	$I_T = 100\text{mA}$ Gate open	$T_j = 25^\circ\text{C}$		MAX	35	mA
$I_L$	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	I-III	MAX	50	mA
			II	MAX	80	
$V_{TM}^*$	$I_{TM} = 17\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$		MAX	1.5	V
$I_{DRM}$	$V_D = V_{DRM}$	$T_j = 25^\circ\text{C}$		MAX	5	$\mu\text{A}$
$I_{RRM}$	$V_R = V_{RRM}$	$T_j = 125^\circ\text{C}$		MAX	2	mA
$dV/dt^*$	Linear slope up to $V_D = 67\% V_{DRM}$ Gate open	$T_j = 125^\circ\text{C}$		MIN	500	$\text{V}/\mu\text{s}$
$(di/dt)_c^*$	Without snubber	$T_j = 125^\circ\text{C}$		MIN	6.5	A/ms

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

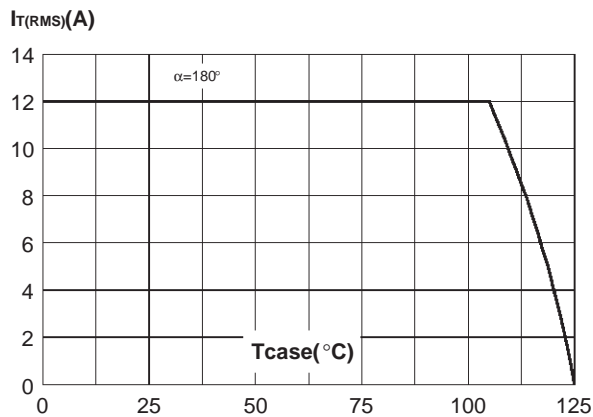
### ORDERING INFORMATION Add "-TR" suffix for Tape & Reel shipment



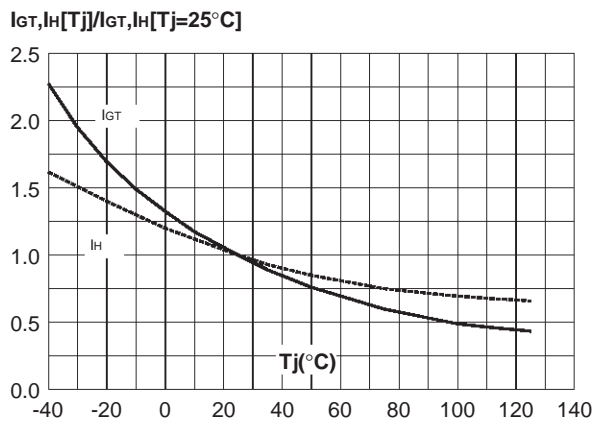
**Fig. 1:** Maximum power dissipation versus RMS on-state current.



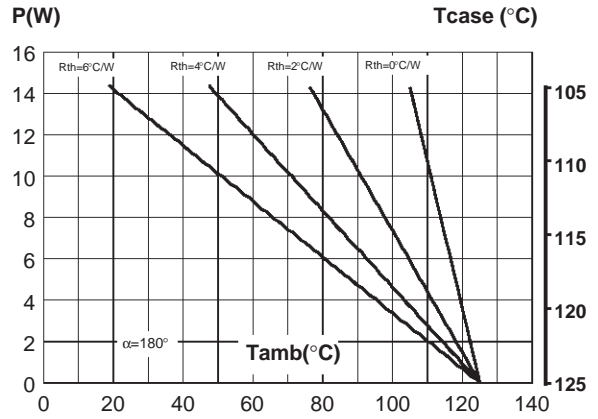
**Fig. 3:** RMS on-state current versus case temperature.



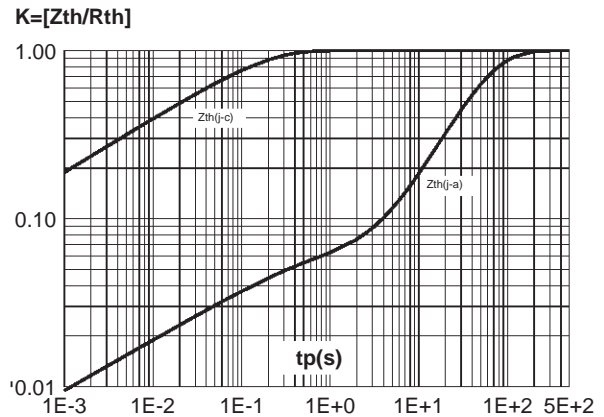
**Fig. 5:** Relative variation of gate trigger current and holding current versus junction temperature (typical values).



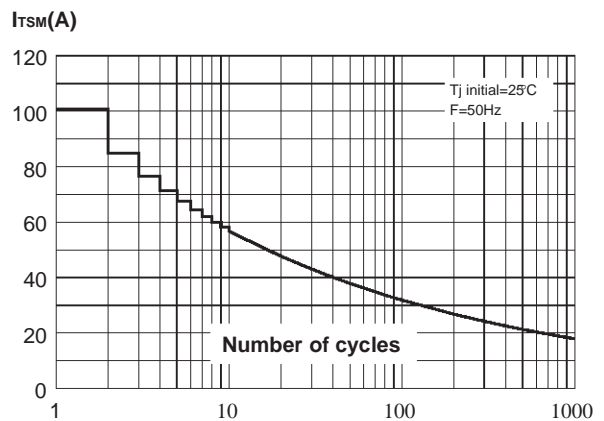
**Fig. 2:** Correlation between maximum power dissipation and maximum allowable temperatures (T\_amb and T\_case) for different thermal resistances heatsink+contact.



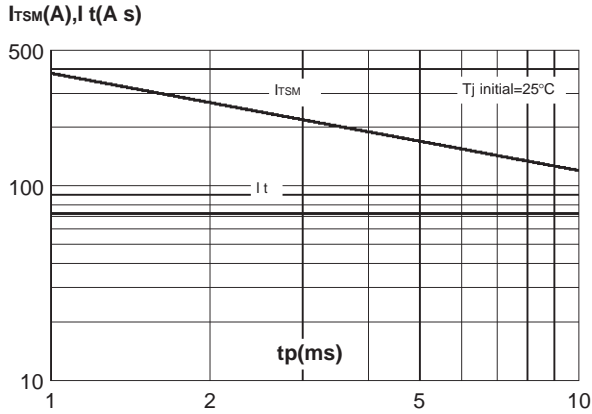
**Fig. 4:** Relative variation of thermal impedance versus pulse duration.



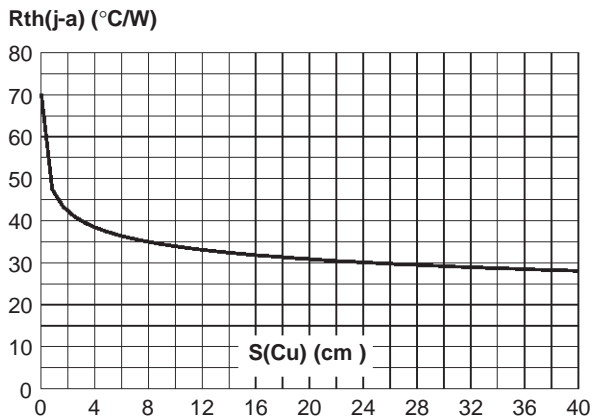
**Fig. 6:** Non repetitive surge peak on-state current versus number of cycles.



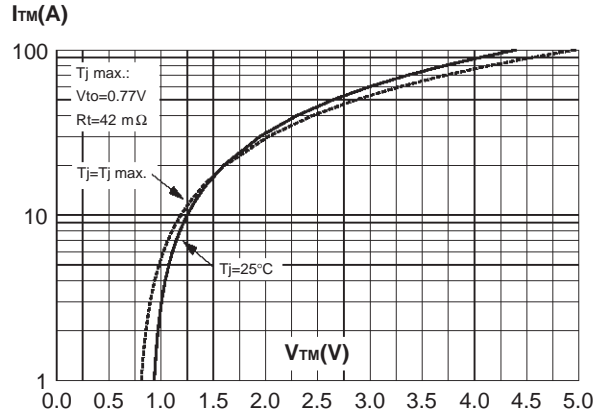
**Fig. 7:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



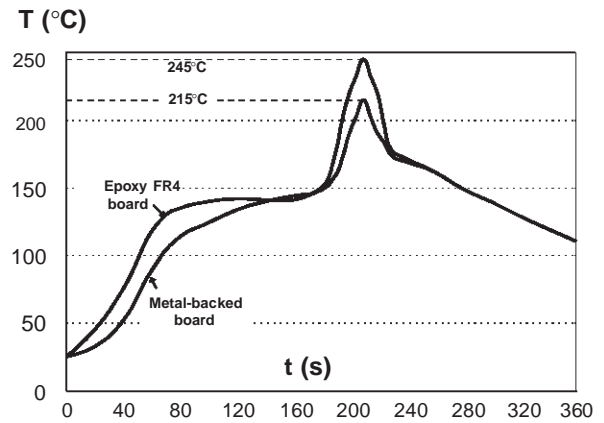
**Fig. 9:** Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness:  $35\mu\text{m}$ ).



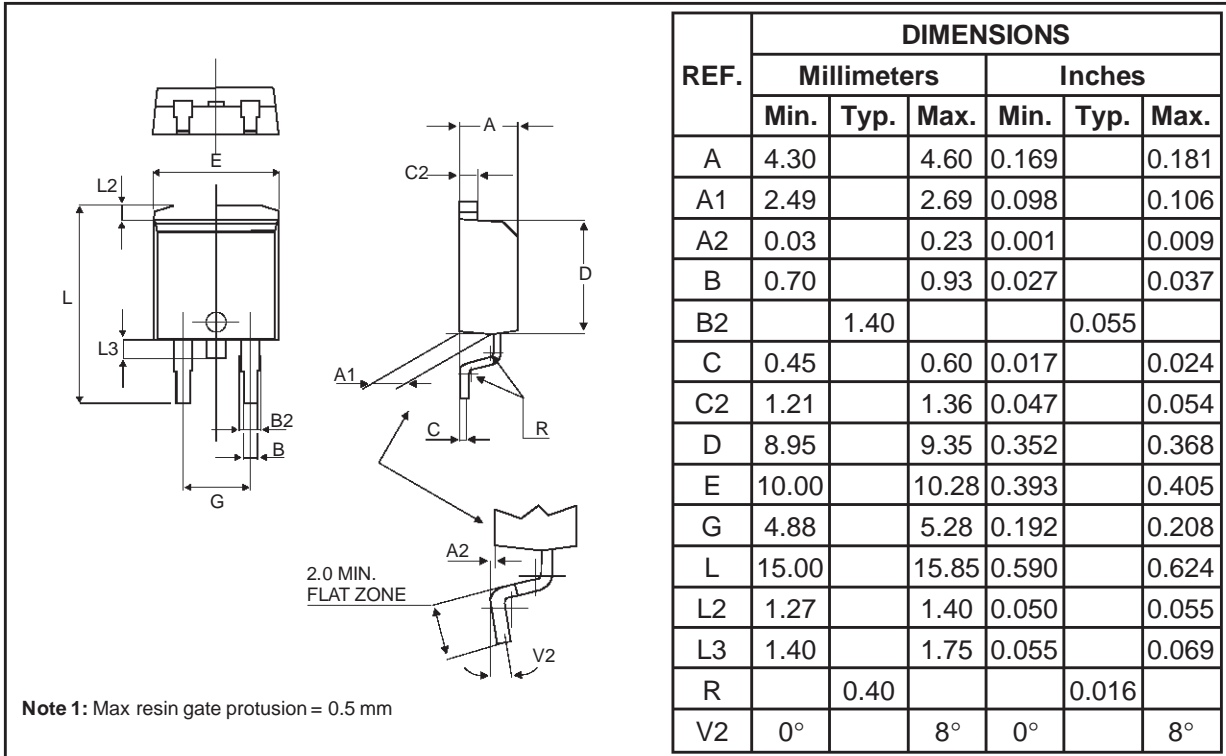
**Fig. 8:** On-state characteristics (maximum values).



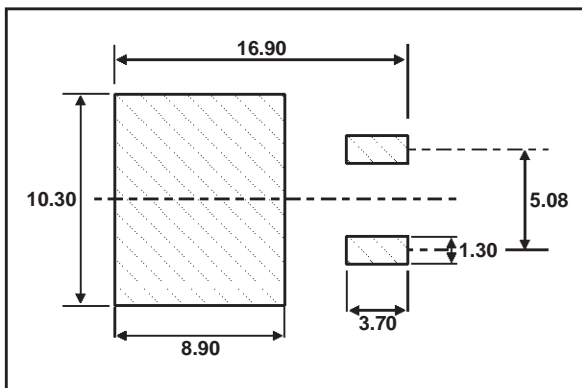
**Fig. 10:** Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



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



**FOOT PRINT DIMENSIONS (in millimeters)**



**MARKING :** T1235  
600G

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