

HIGH PERFORMANCE TRIAC

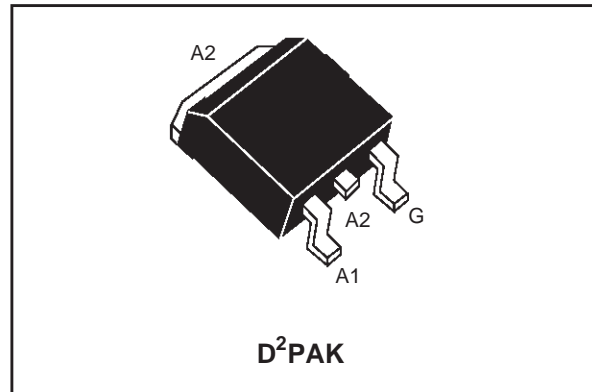
FEATURES

- 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	A^2s	
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 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)

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

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}	$V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$	$T_j = 125^\circ\text{C}$	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	μA
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

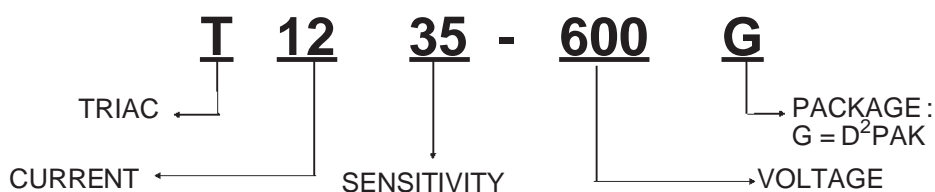


Fig. 1: Maximum power dissipation versus RMS on-state current.

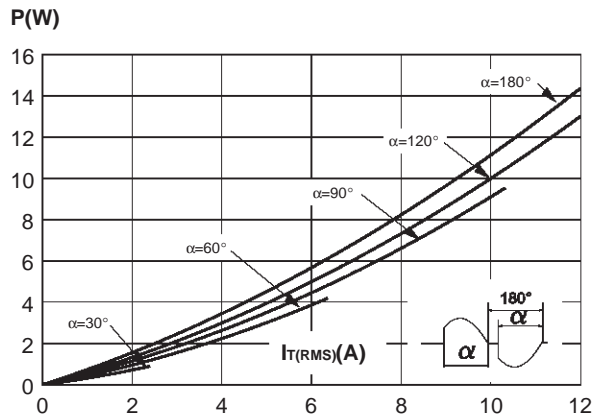


Fig. 2: Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink+contact.

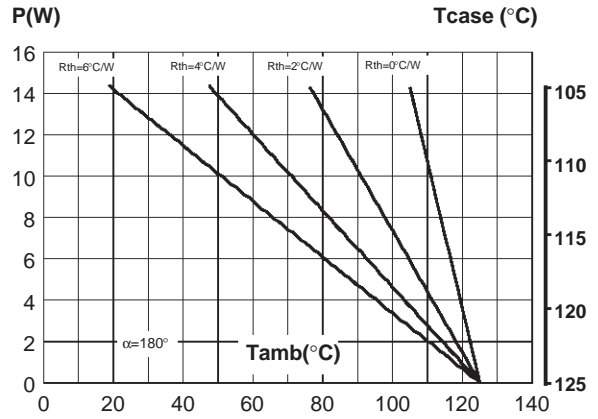


Fig. 3: RMS on-state current versus case temperature.

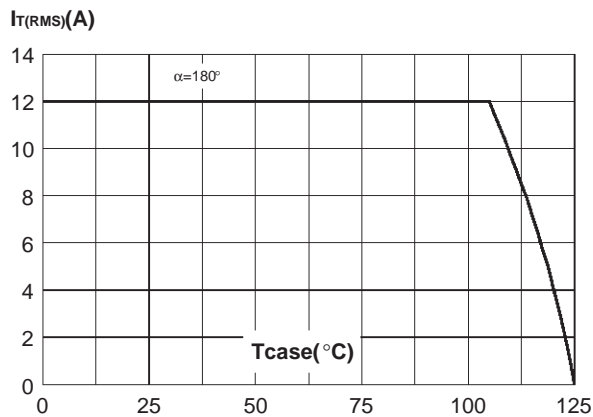


Fig. 4: Relative variation of thermal impedance versus pulse duration.

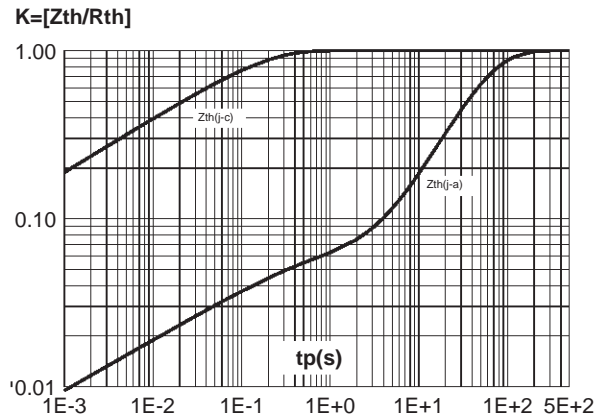


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature (typical values).

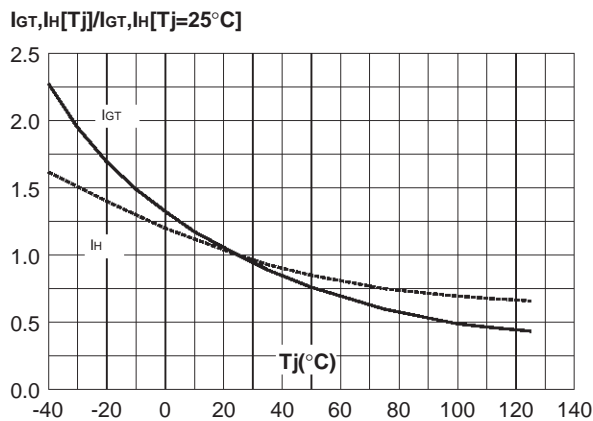


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.

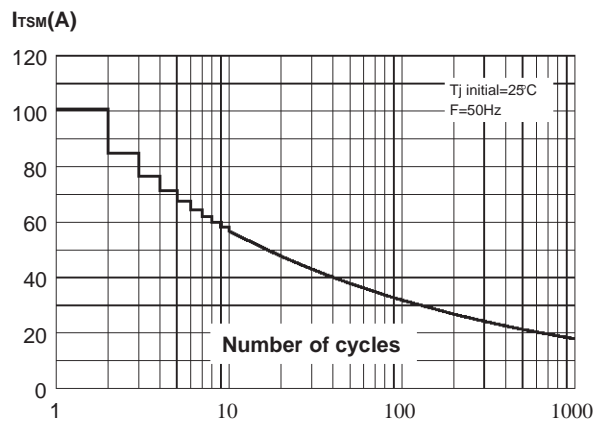


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

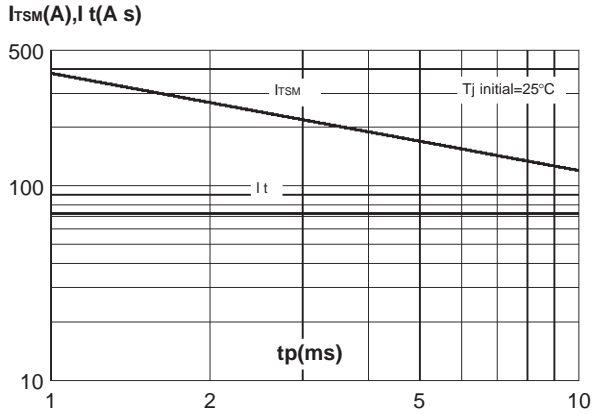


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$).

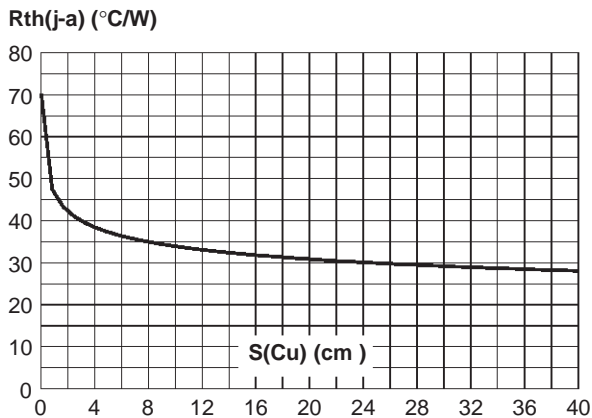


Fig. 8: On-state characteristics (maximum values).

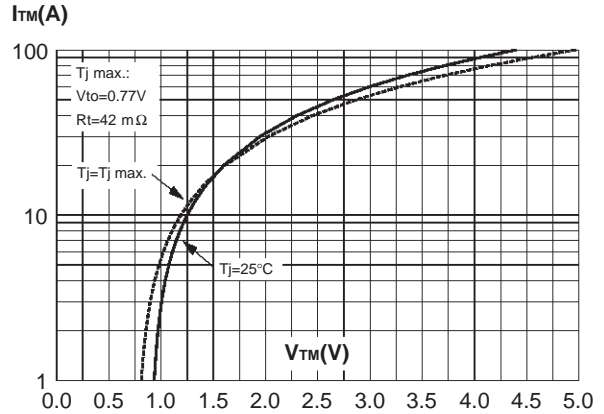
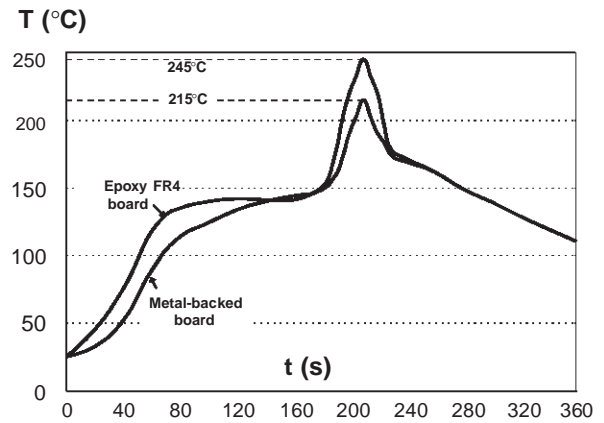
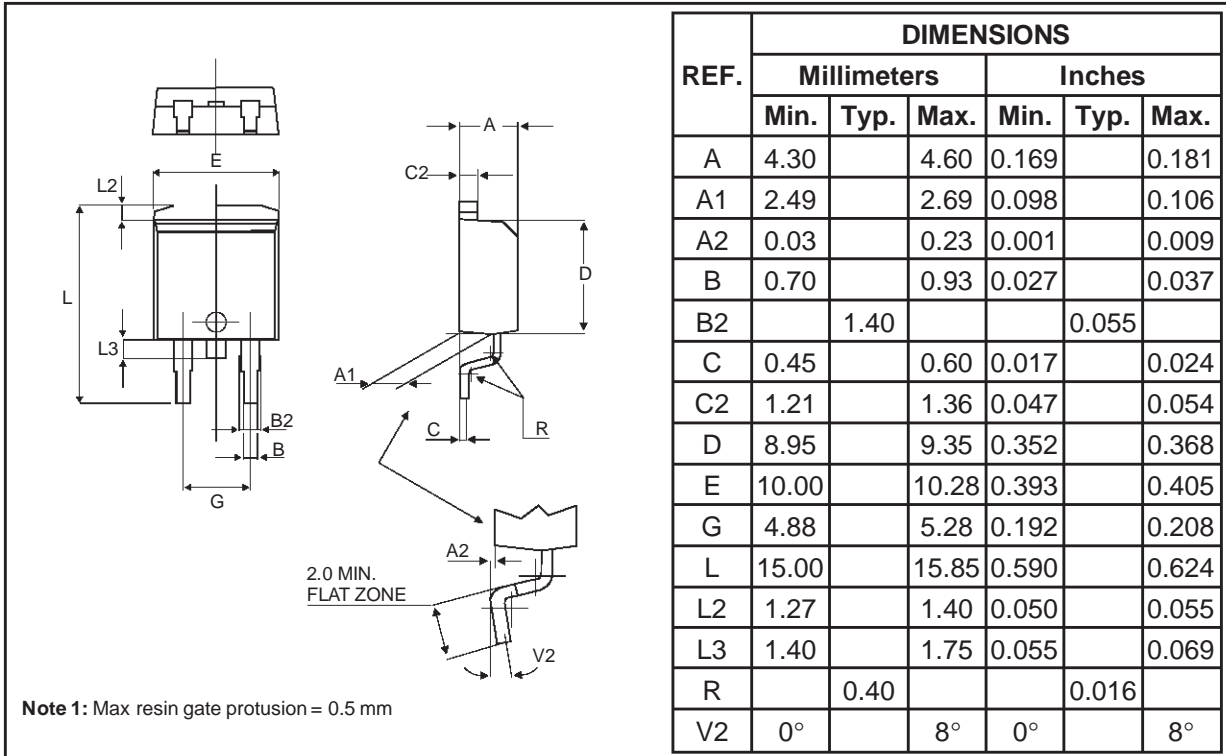


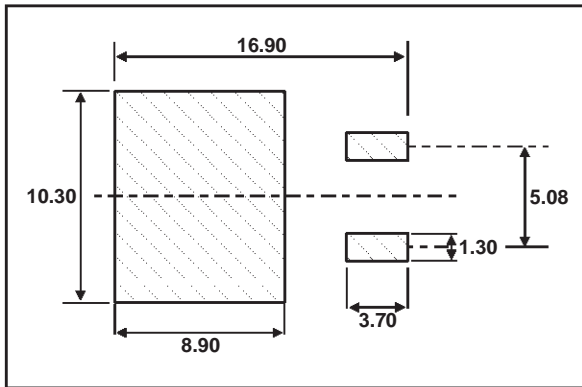
Fig. 10: Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT DIMENSIONS (in millimeters)



MARKING : T1235
600G

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