

Tables 4: Electrical Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Quadrant		Value	Unit
I_{GT} (1)	$V_D = 12\text{ V}$ $R_L = 33\ \Omega$	I - II - III	MAX.	35	mA
V_{GT}		I - II - III	MAX.	1.3	V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$ $T_j = 150^\circ\text{C}$	I - II - III	MIN.	0.15	V
I_H (2)	$I_T = 100\text{ mA}$		MAX.	35	mA
I_L	$I_G = 1.2\ I_{GT}$	I - III	MAX.	50	mA
		II		80	
dV/dt (2)	$V_D = 67\ \%V_{DRM}$ gate open $T_j = 150^\circ\text{C}$		MIN.	300	V/ μs
$(dI/dt)_c$ (2)	Without snubber $T_j = 150^\circ\text{C}$		MIN.	5.3	A/ms

Table 5: Static Characteristics

Symbol	Test Conditions			Value	Unit
V_T (2)	$I_{TM} = 17\text{ A}$ $t_p = 380\ \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.55	V
V_{to} (2)	Threshold voltage	$T_j = 150^\circ\text{C}$	MAX.	0.80	V
R_d (2)	Dynamic resistance	$T_j = 150^\circ\text{C}$	MAX.	25	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX.	5	μA
		$T_j = 150^\circ\text{C}$		5.5	mA
	$V_{DRM}/V_{RRM} = 400\text{V}$ (at mains peak voltage)	$T_j = 150^\circ\text{C}$		3.5	

Note 1: minimum I_{GT} is guaranteed at 10% of I_{GT} max.**Note 2:** for both polarities of A2 referenced to A1.**Table 6: Thermal resistance**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	D ² PAK	1.2	$^\circ\text{C/W}$
		TO-220AB		
$R_{th(j-a)}$	Junction to ambient	S = 1 cm ² D ² PAK	45	$^\circ\text{C/W}$
		TO-220AB	60	

S = Copper surface under tab.

Figure 1: Maximum power dissipation versus RMS on-state current (full cycle)

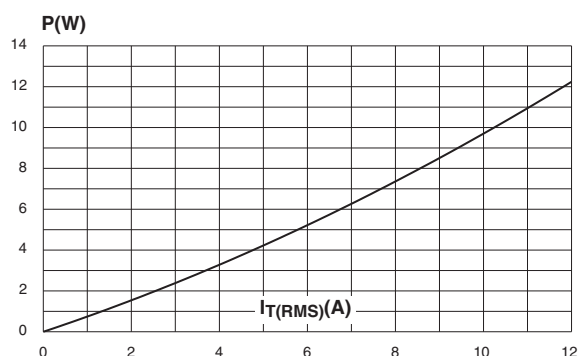


Figure 2: RMS on-state current versus case temperature (full cycle)

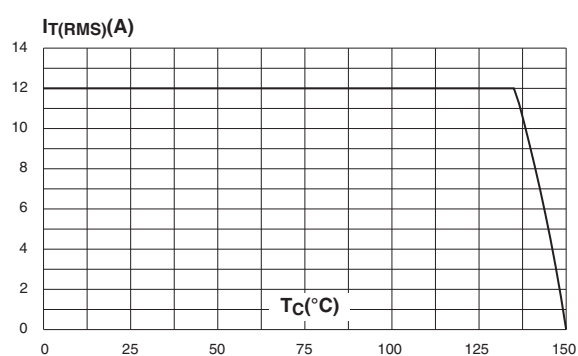


Figure 3: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35μm) (full cycle)

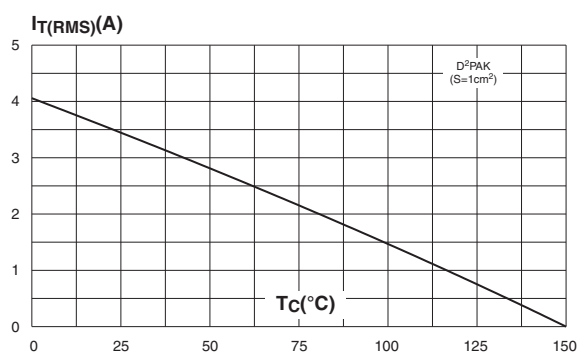


Figure 4: Relative variation of thermal impedance versus pulse duration

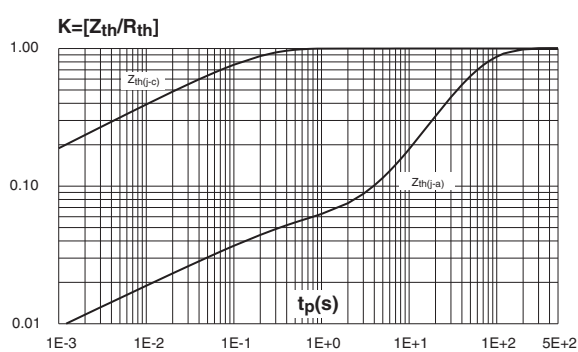


Figure 5: On-state characteristics (maximum values)

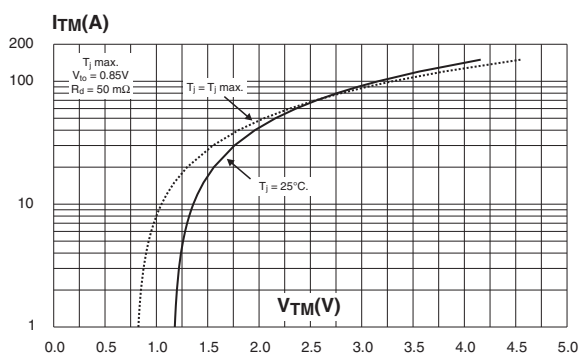


Figure 6: Surge peak on-state current versus number of cycles

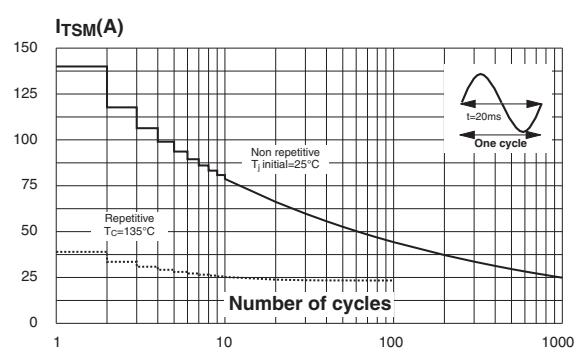


Figure 7: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms and corresponding value of I^2t

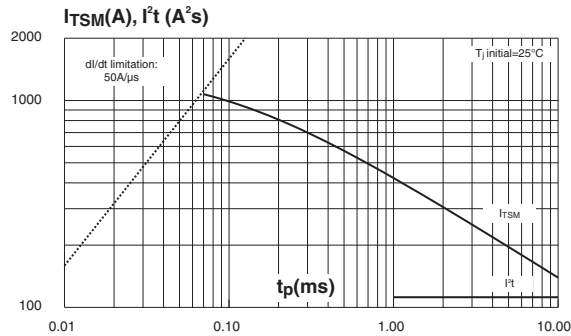


Figure 9: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values)

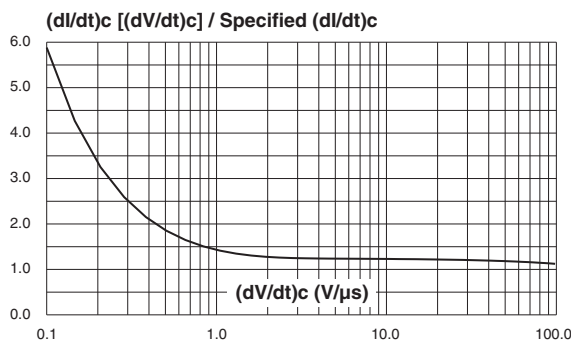


Figure 11: Leakage current versus junction temperature for different values of blocking voltage (typical values)

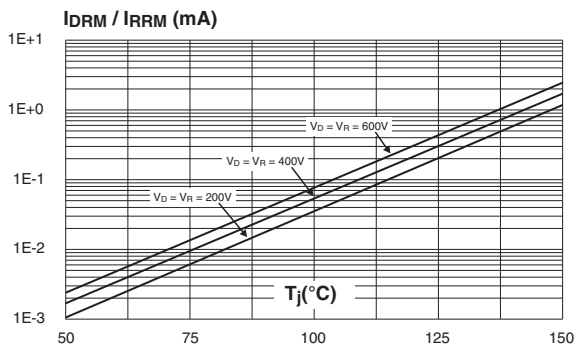


Figure 8: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

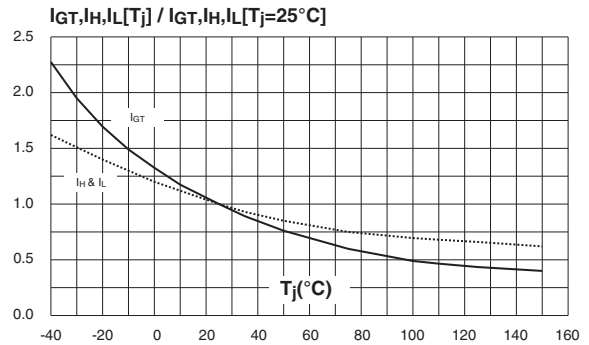


Figure 10: Relative variation of critical rate of decrease of main current versus junction temperature

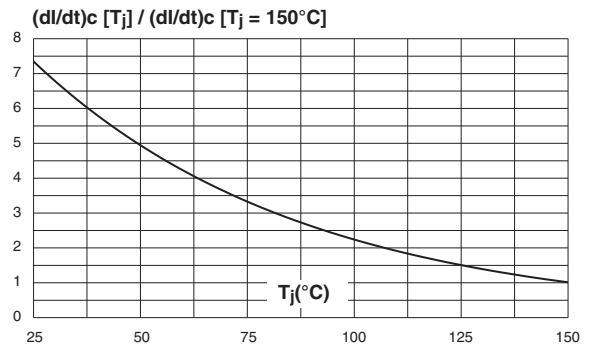


Figure 12: Acceptable repetitive peak off-state voltage versus case-ambient thermal resistance

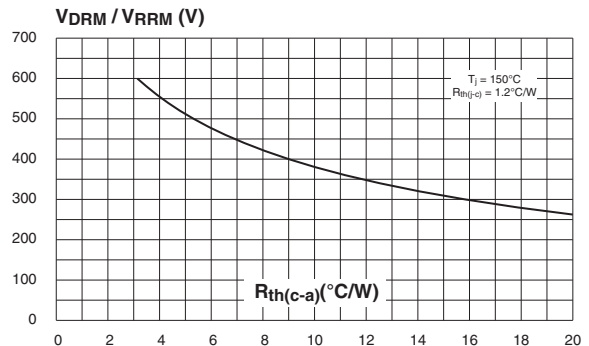


Figure 13: D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 μ m)

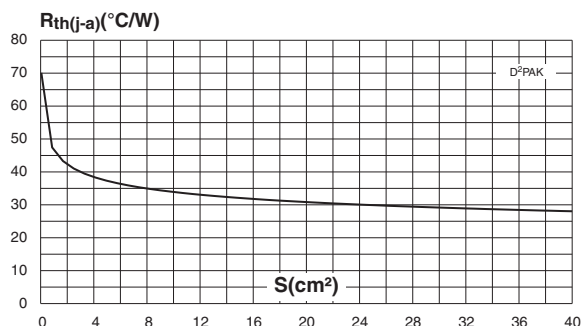


Figure 14: Ordering Information Scheme

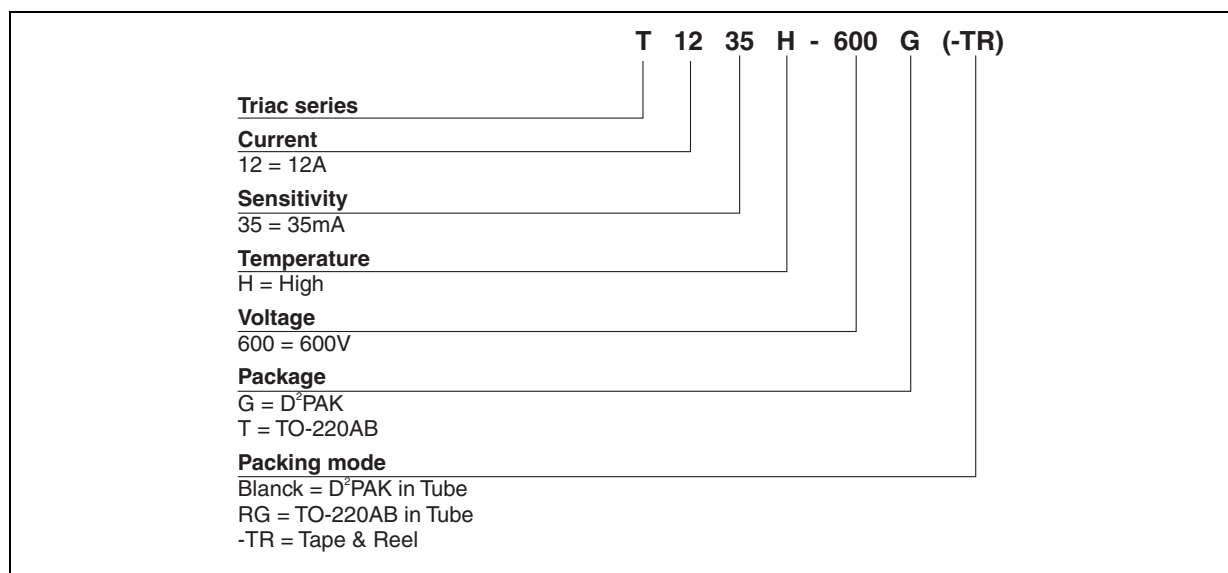


Table 7: Product Selector

Part Numbers	Voltage	Sensitivity	Type	Package
T1235H-600G	600 V	35 mA	Snubberless	D ² PAK
T1235H-600T	600 V	35 mA	Snubberless	TO-220AB

Figure 15: D²PAK Package Mechanical Data

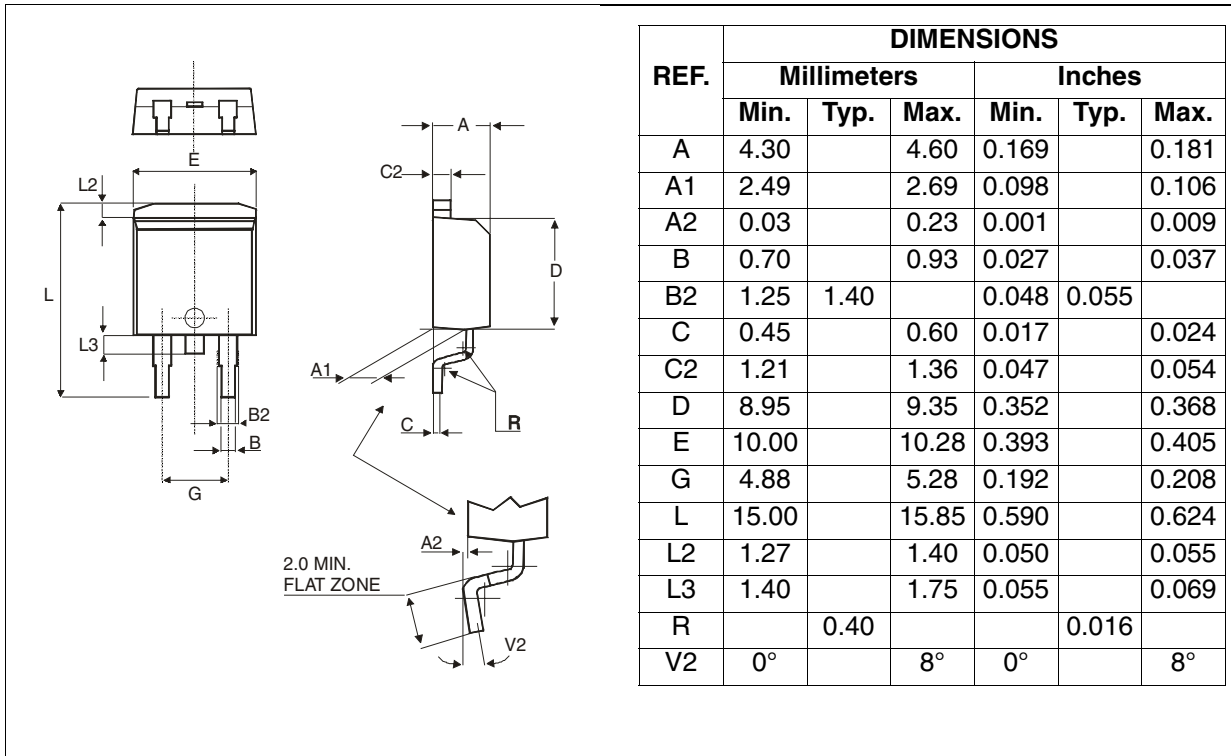


Figure 16: D²PAK Foot Print Dimensions
(in millimeters)

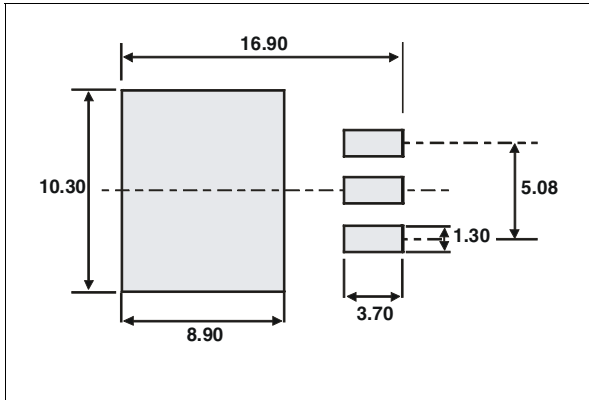
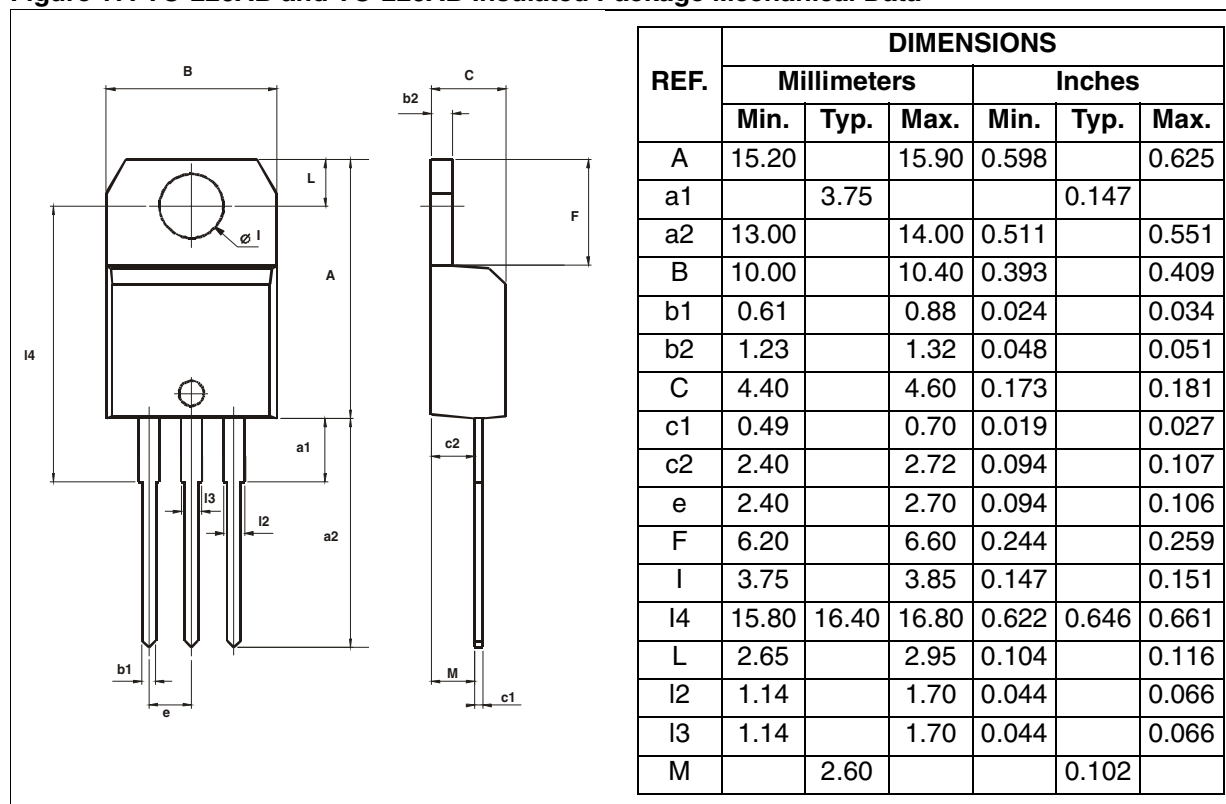


Figure 17: TO-220AB and TO-220AB Insulated Package Mechanical Data



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 8: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
T1235H-600TRG	T1235H600T	TO-220AB	2.3 g	50	Tube
T1235H-600G	T1235H600G	D ² PAK	1.5 g	50	Tube
T1235H-600G-TR	T1235H600G			1000	Tape & reel

Table 9: Revision History

Date	Revision	Description of Changes
Apr-2002	5A	Last update.
13-Feb-2006	6	TO-220AB delivery mode changed from bulk to tube. ECOPACK statement added.

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