



TS1220-600B

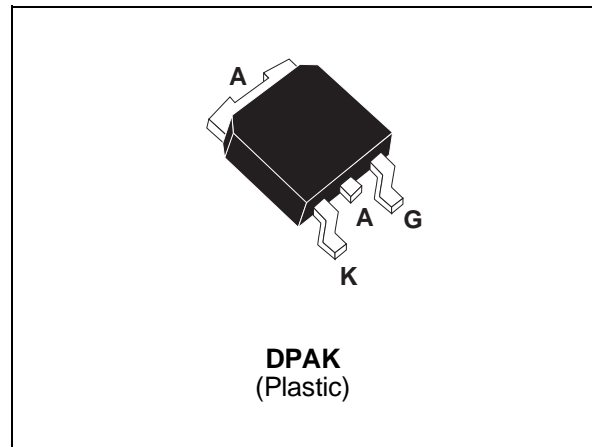
SENSITIVE SCR

FEATURES

- $I_{T(RMS)} = 12A$
- $V_{DRM}/V_{RRM} = 600V$
- $I_{GT} < 200\mu A$
- HIGH $I_{TSM} = 110A$ ($t_p = 10ms$)

DESCRIPTION

The TS1220-600B is using a high performance TOPGLASS PNP technology and is intended for applications requiring high surge capability (like power tools, crowbar protection, capacitive discharge ignition...).



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$ $R_{GK} = 220 \Omega$	600	V	
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 105^\circ C$ 12	A	
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 105^\circ C$ 8	A	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^\circ C$)	$t_p = 10$ ms	110	A
		$t_p = 8.3$ ms	115	
I^2t	I^2t Value for fusing	$t_p = 10$ ms	40	A^2s
di/dt	Critical rate of rise of on-state current $I_G = 10$ mA $di_G/dt = 0.1$ A/ μs .	50		A/ μs
T_{stg} T_j	Storage junction temperature range Operating junction temperature range	- 40 to + 150 - 40 to + 125		$^\circ C$
T	Maximum temperature for soldering during 10s	260		$^\circ C$

TS1220-600B

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-c)	Junction to case for D.C	1.5	°C/W
Rth(j-a)	Junction to ambient (S = 0.5 cm ²)	70	°C/W

GATE CHARACTERISTICS (maximum values)

P_{G (AV)} = 0.2W

P_{GM} = 3 W (tp = 20 μs)

I_{GM} = 1.2 A (tp = 20 μs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Type	Value	Unit
I _{GT}	V _D =12V R _L =140Ω	T _j = 25°C	MAX	200	μA
V _{GT}	V _D =12V R _L =140Ω	T _j = 25°C	MAX	0.8	V
V _{GD}	V _D =12V(DC) R _L =33Ω	T _j = 25°C	MAX	0.1	V
V _{RG}	I _{RG} = 10μA	T _j = 25°C	MIN	8	V
I _H	I _T =50mA I _G =5mA R _{GK} = 1kΩ	T _j = 25°C	MAX	5	mA
V _{TM}	I _{TM} = 24A tp= 380μs	T _j = 25°C	MAX	1.6	V
I _{DRM}	V _D = V _{DRM} R _{GK} = 220Ω	T _j = 25°C	MAX	10	μA
I _{RRM}	V _R = V _{RRM} R _{GK} = 220Ω	T _j = 125°C	MAX	2	mA
dV/dt	V _D =67%V _{DRM} R _{GK} = 220Ω	T _j = 125°C	MIN	5	V/μs

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

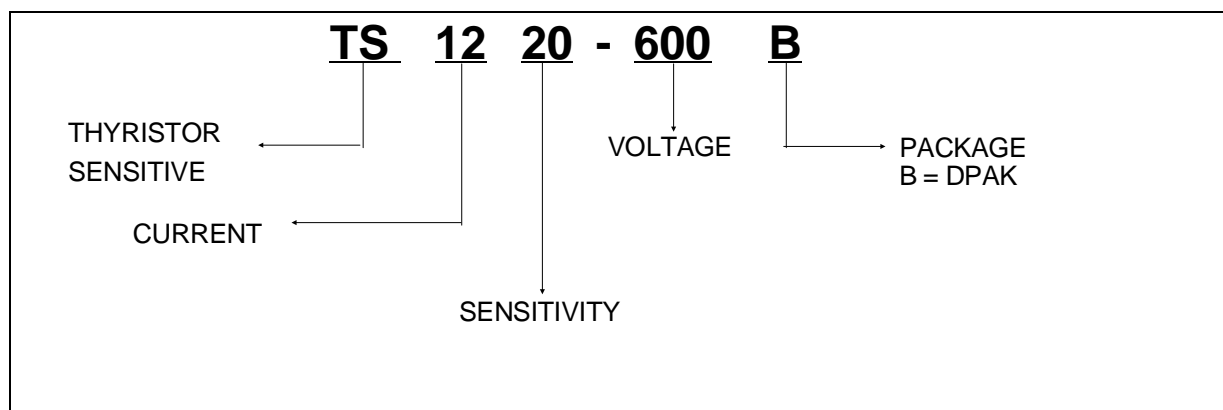


Fig 1: Maximum average power dissipation versus average on-state current.

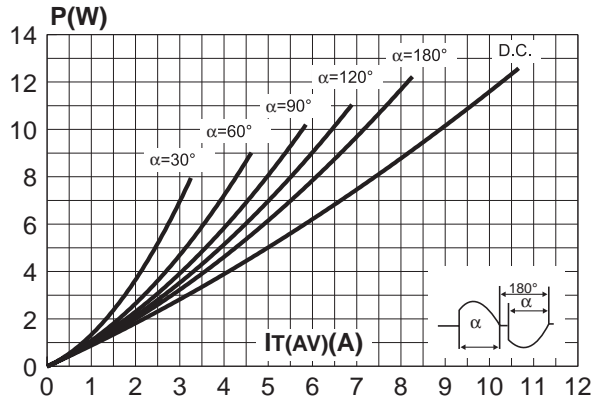


Fig 2: Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}).

Note: $R_{th}=0^{\circ}\text{C}/\text{W}$ is infinite heatsink.

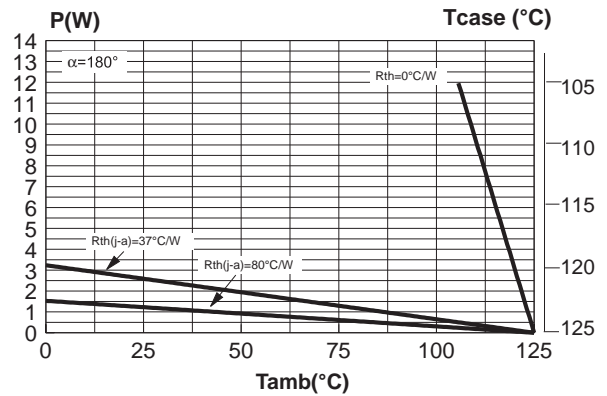


Fig 3-1: Average and D.C. on-state current versus case temperature.

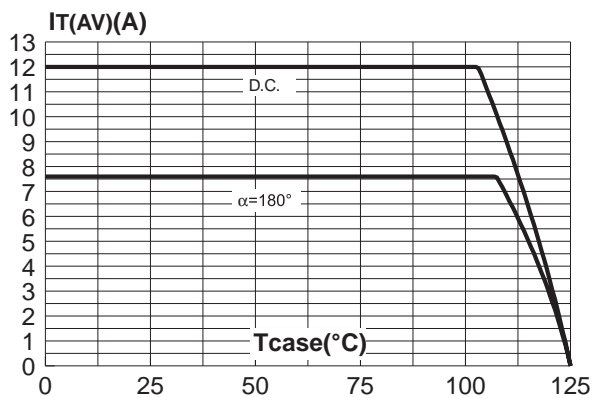


Fig 3-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout).

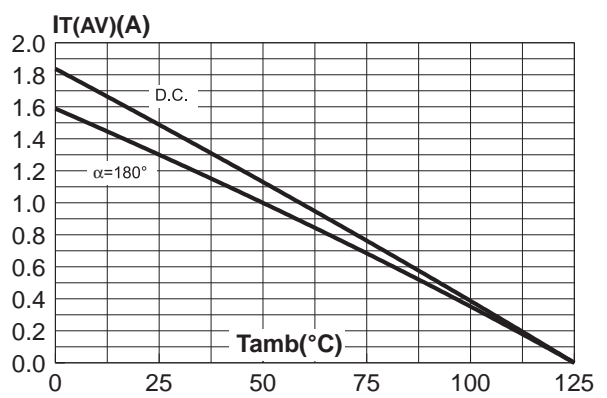


Fig 4: Relative variation of thermal impedance junction to case versus pulse duration.

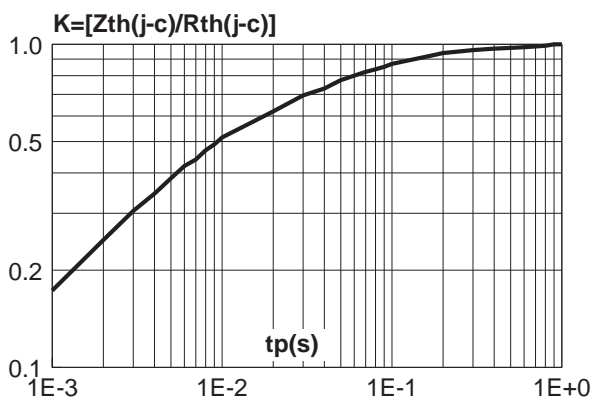


Fig 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (recomended pad layout).

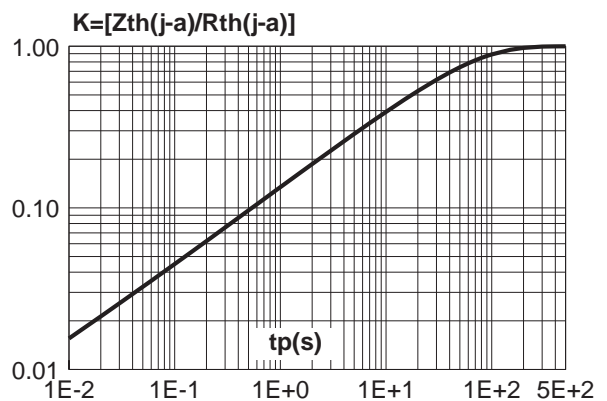


Fig 5: Relative variation of gate trigger current and holding current versus junction temperature.

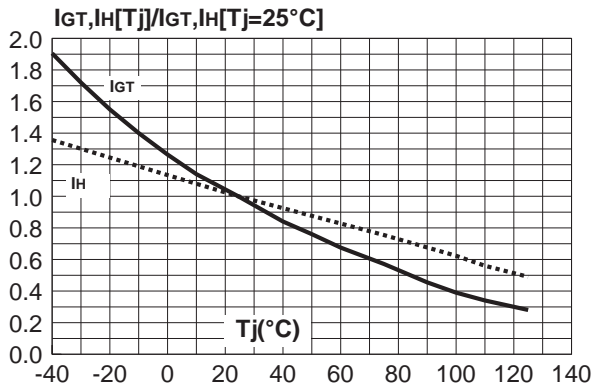


Fig 6: Relative variation of holding current versus gate-cathode resistance (typical values).

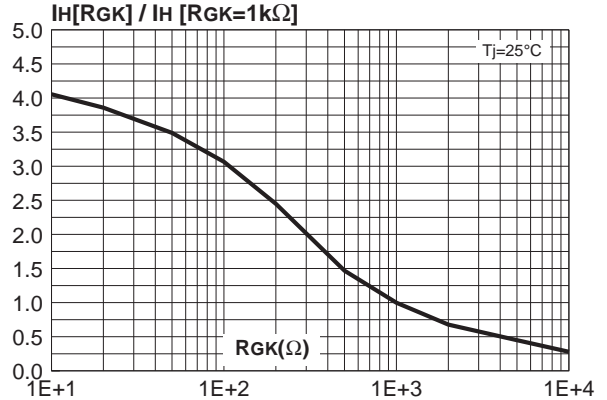


Fig 7: Non repetitive surge peak on-state current versus number of cycles.

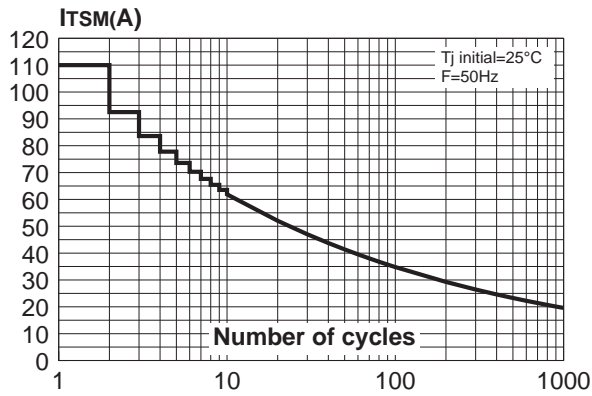


Fig 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I^2 t$.

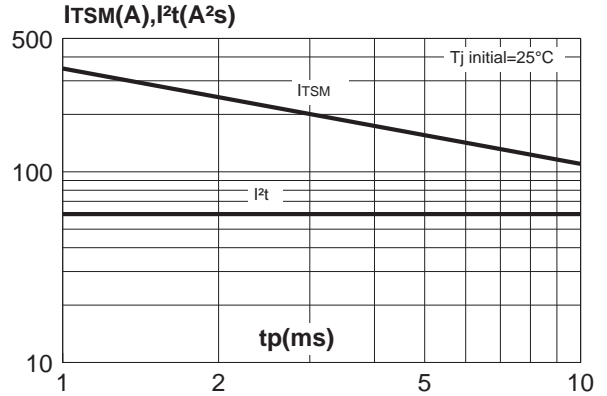


Fig 9: On-state characteristics (maximum values).

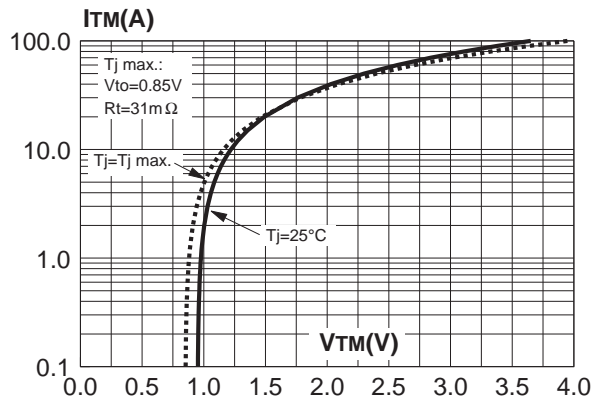
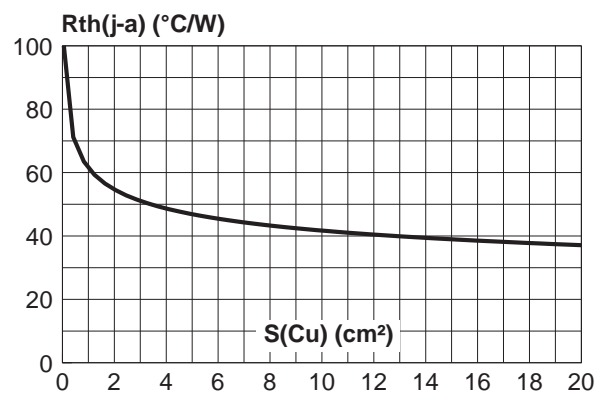
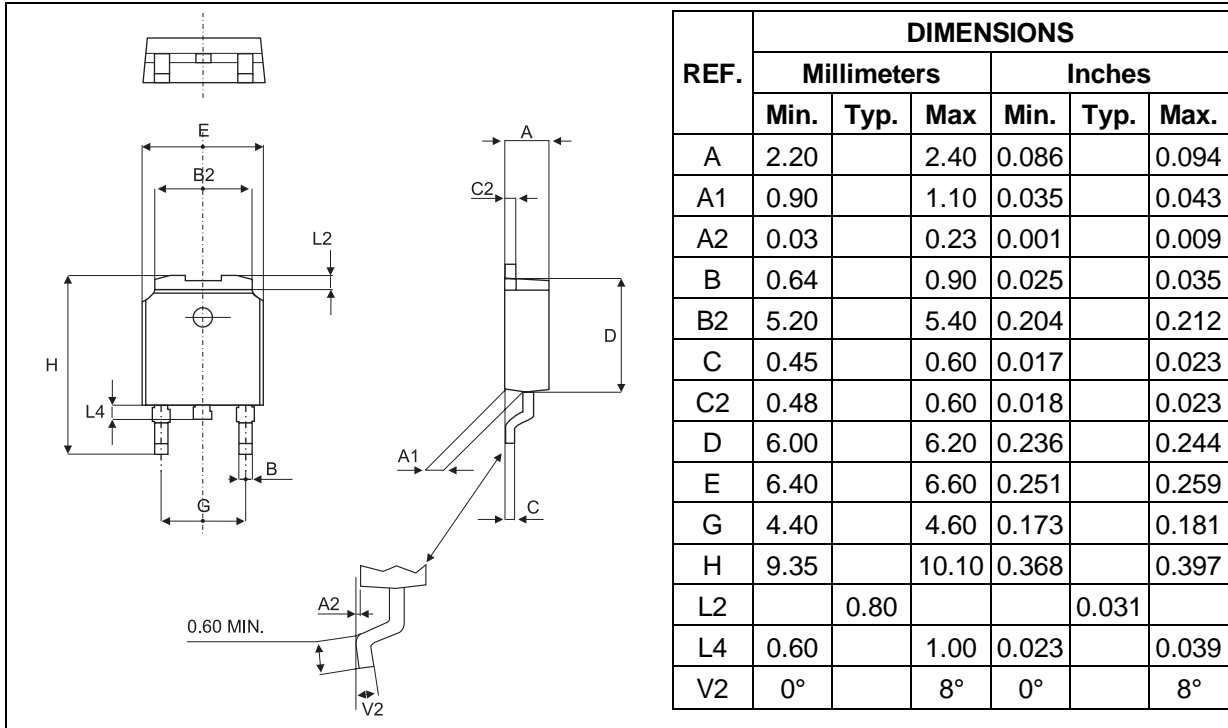


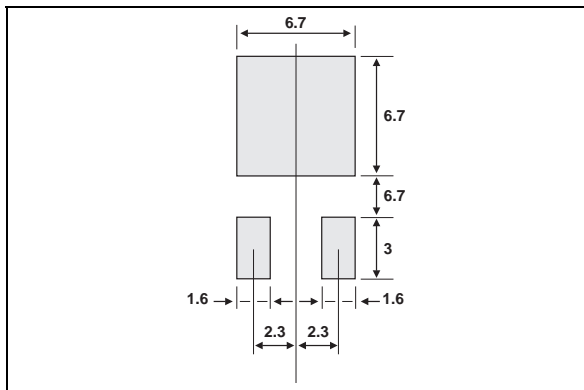
Fig 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μm).



PACKAGE MECHANICAL DATA
DPAK (Plastic)



FOOT PRINT DIMENSIONS (in millimeters)



MARKING

TYPE	MARKING
TS1220-600B	TS 1220 6

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 1998 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

