



TS1220-600B

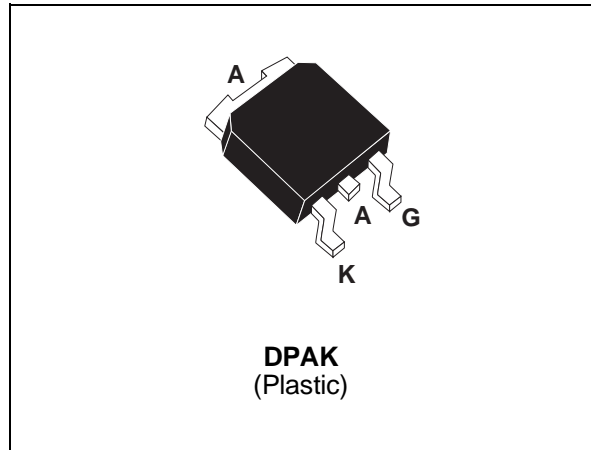
SENSITIVE SCR

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 $I_G = 10 mA$ $di_G/dt = 0.1 A/\mu s$.	50	$A/\mu s$	
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	$^\circ C$	

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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)

$P_{G(AV)} = 0.2W$

$P_{GM} = 3W$ (tp = 20 μs)

$I_{GM} = 1.2A$ (tp = 20 μs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Type	Value	Unit
I_{GT}	$V_D = 12V$ $R_L = 140\Omega$	$T_j = 25^\circ C$	MAX	200	μA
V_{GT}	$V_D = 12V$ $R_L = 140\Omega$	$T_j = 25^\circ C$	MAX	0.8	V
V_{GD}	$V_D = 12V(DC)$ $R_L = 33\Omega$	$T_j = 25^\circ C$	MAX	0.1	V
V_{RG}	$I_{RG} = 10\mu A$	$T_j = 25^\circ C$	MIN	8	V
I_H	$I_T = 50mA$ $I_G = 5mA$ $R_{GK} = 1k\Omega$	$T_j = 25^\circ C$	MAX	5	mA
V_{TM}	$I_{TM} = 24A$ tp = 380μs	$T_j = 25^\circ C$	MAX	1.6	V
I_{DRM}	$V_D = V_{DRM}$ $R_{GK} = 220\Omega$	$T_j = 25^\circ C$	MAX	10	μA
I_{RRM}	$V_R = V_{RRM}$ $R_{GK} = 220\Omega$	$T_j = 125^\circ C$	MAX	2	mA
dV/dt	$V_D = 67\%V_{DRM}$ $R_{GK} = 220\Omega$	$T_j = 125^\circ C$	MIN	5	V/μs

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

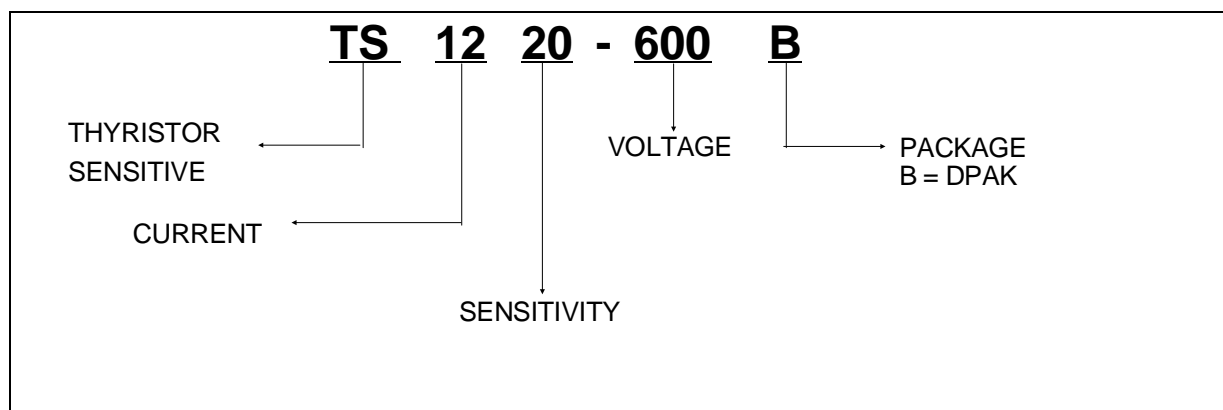


Fig 1: Maximum average power dissipation versus average on-state current.

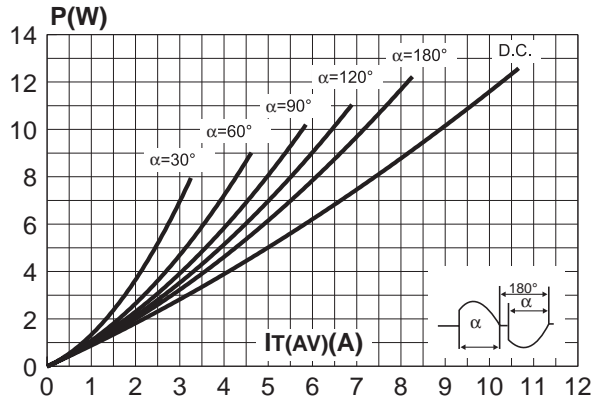


Fig 2: Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}).

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

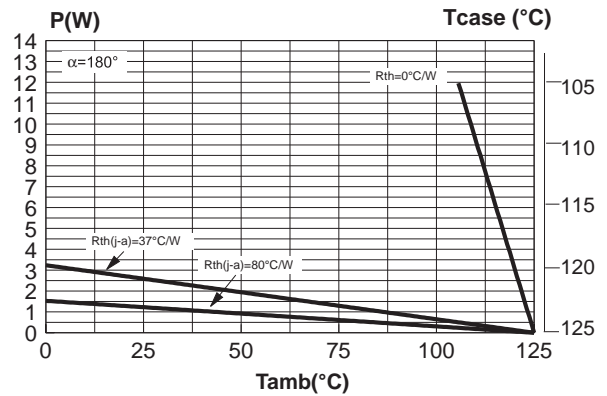


Fig 3-1: Average and D.C. on-state current versus case temperature.

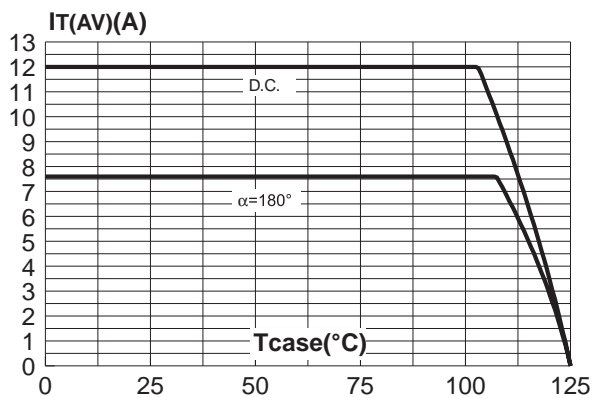


Fig 3-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout).

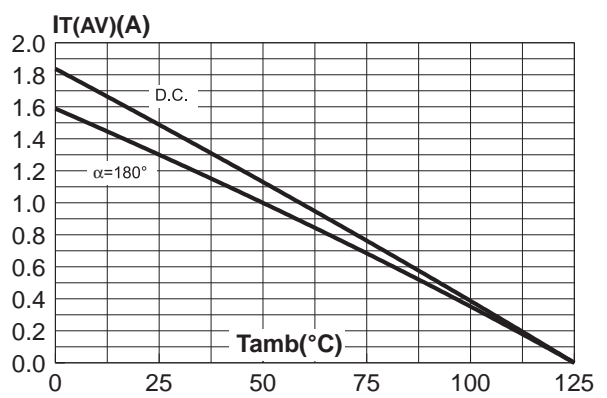


Fig 4: Relative variation of thermal impedance junction to case versus pulse duration.

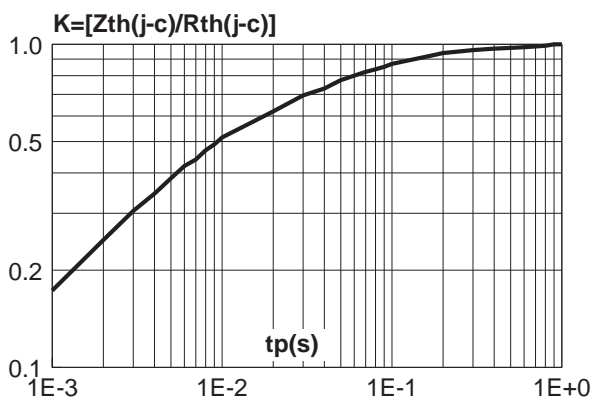


Fig 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (re-comended pad layout).

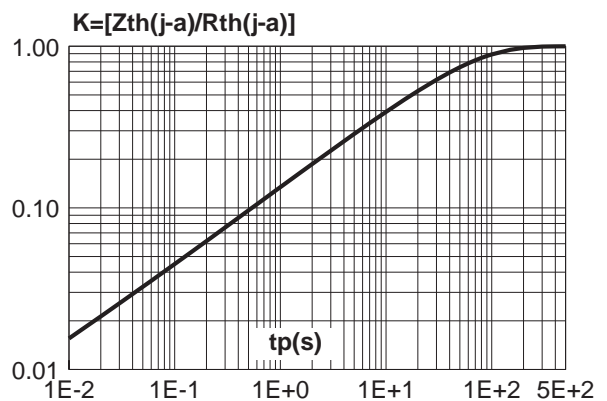


Fig 5: Relative variation of gate trigger current and holding current versus junction temperature.

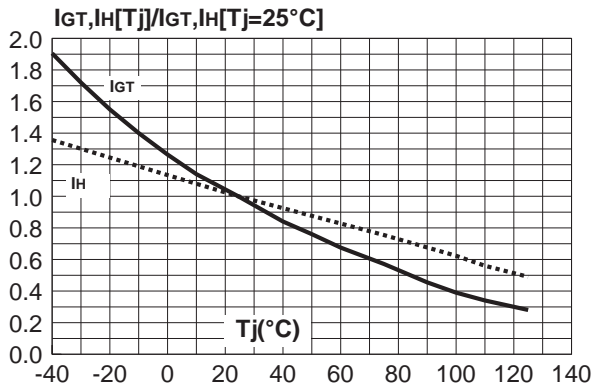


Fig 6: Relative variation of holding current versus gate-cathode resistance (typical values).

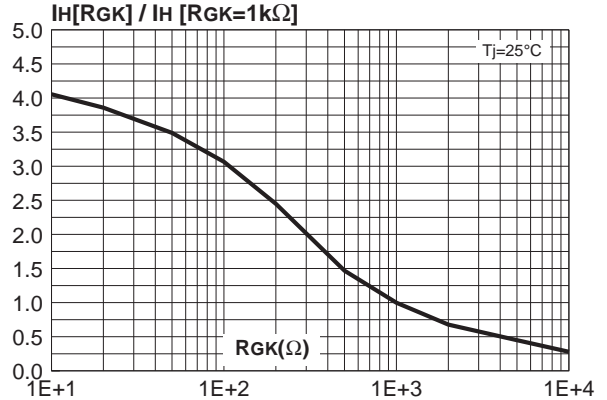


Fig 7: Non repetitive surge peak on-state current versus number of cycles.

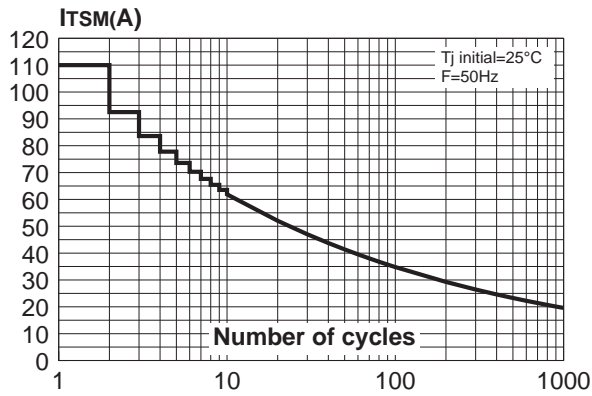


Fig 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t .

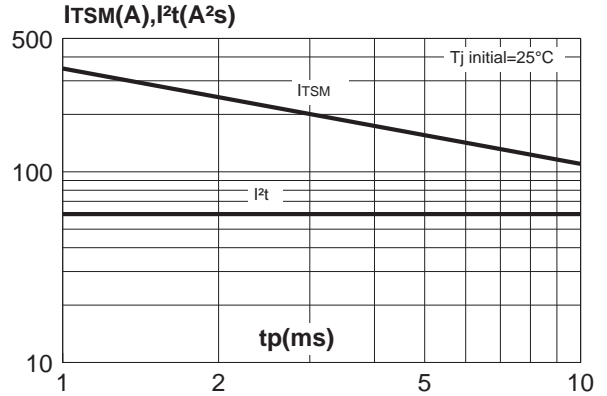


Fig 9: On-state characteristics (maximum values).

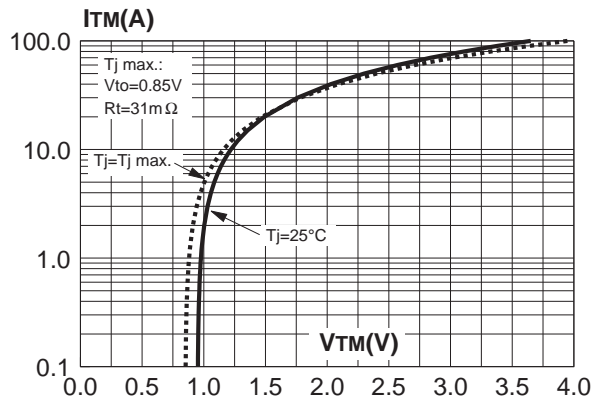
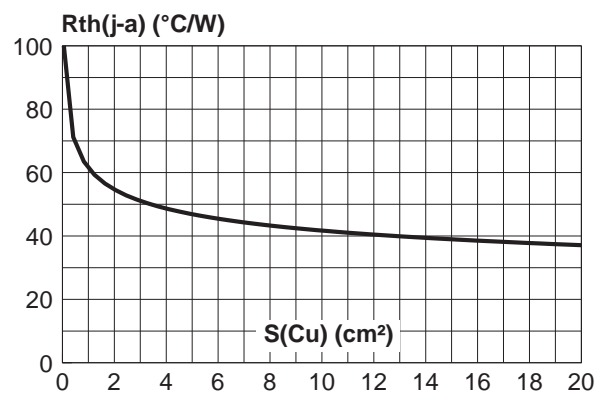
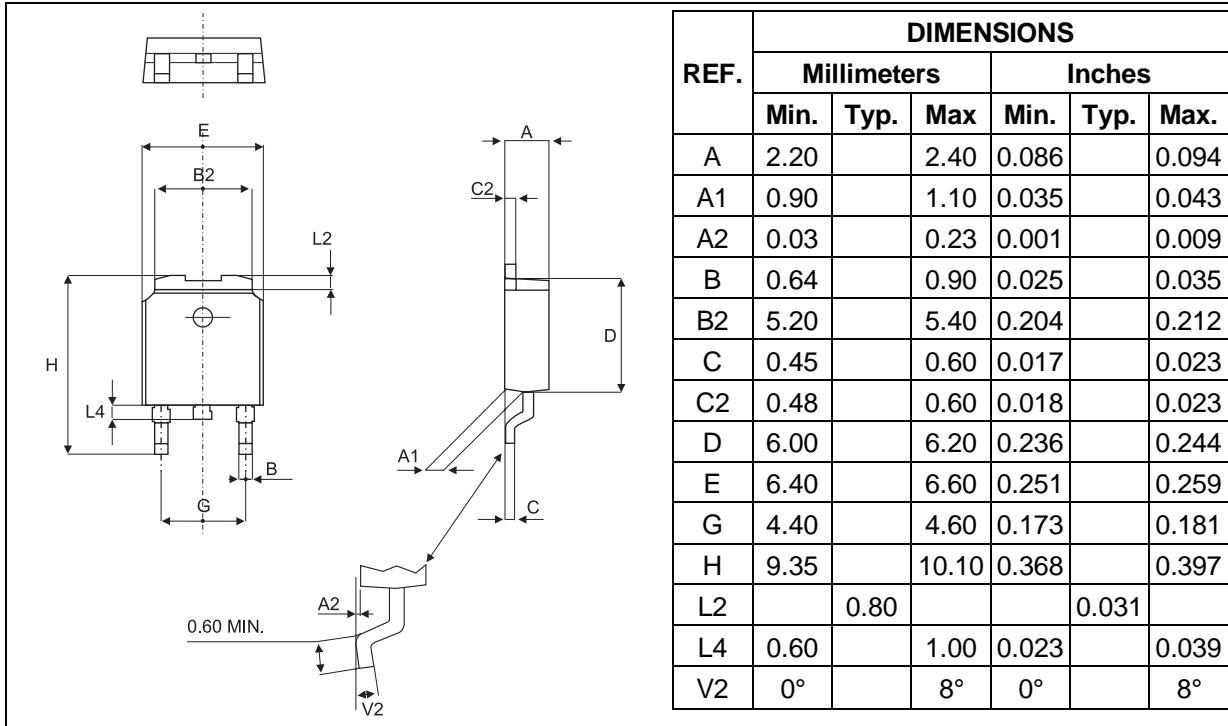


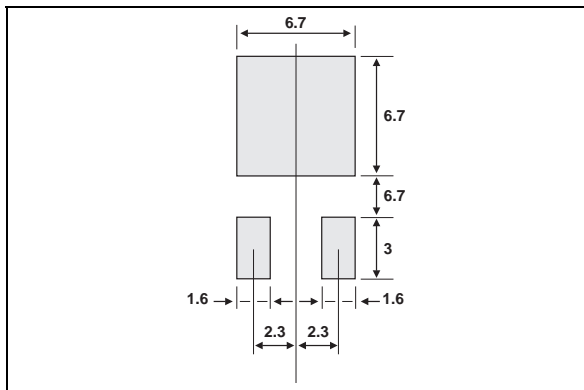
Fig 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μm).



PACKAGE MECHANICAL DATA
DPAK (Plastic)



FOOT PRINT DIMENSIONS (in millimeters)



MARKING

TYPE	MARKING
TS1220-600B	TS 1220 6

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