



TS820-B/T

SENSITIVE SCR

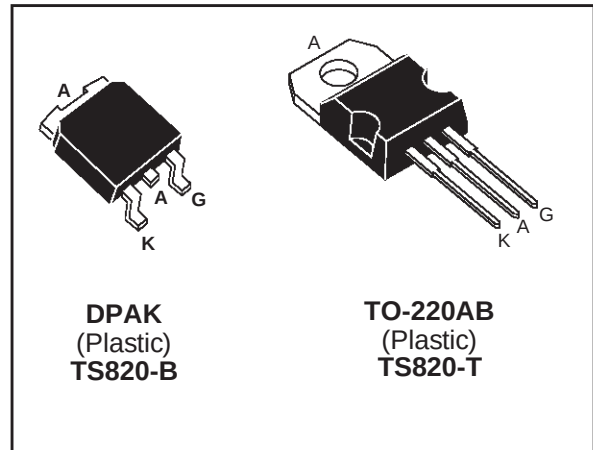
FEATURES

- $I_{T(RMS)} = 8A$
- $V_{DRM}/V_{RRM} = 400, 600V, 700V$
- $I_{GT} < 200\mu A$
- SMD PACKAGE

DESCRIPTION

The TS820-B/T series of SCR use a high performance TOPGLASS PNP technology.

The parts are intended for general purpose applications using surface mount or through hole technology.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	$T_c = 110^{\circ}C$	8	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	$T_c = 110^{\circ}C$	5	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3ms$ $t_p = 10ms$	73 70	A
I^2t	I^2t Value for fusing	$t_p = 10ms$	24	A ² s
di/dt	Critical rate of rise of on-state current $I_G = 10 mA$ $di_G/dt = 0.1 A/\mu s$.		100	A/ μs
T_{stg} T_j	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
TI	Maximum temperature for soldering during 10s		260	°C

Symbol	Parameter	TS820-			Unit
		400B/T	600B/T	700B/T	
V_{DRM}	Repetitive peak off-state voltage	400	600	700	V
V_{RRM}	$T_j = 125^{\circ}C$ $R_{GK} = 220 \Omega$				

TS820-B/T

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth(j-a)	Junction to ambient ($S=0.5\text{cm}^2$)	DPAK	70	°C/W
		TO-220AB	60	
Rth(j-c)	Junction to case for DC	DPAK / TO-220AB	2.0	°C/W

GATE CHARACTERISTICS (maximum values)

P_G (AV)= 0.2 W P_{GM} = 3 W (tp = 20 μ s) I_{GM} = 1.2 A (tp = 20 μ s)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Type	Value	Unit
I_{GT}	$V_D=12\text{V}$ (DC) $R_L=140\Omega$	$T_j=25^\circ\text{C}$	MAX	200	μA
V_{GT}	$V_D=12\text{V}$ (DC) $R_L=140\Omega$	$T_j=25^\circ\text{C}$	MAX	0.8	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3\text{k}\Omega$ $R_{GK}=220\Omega$	$T_j=125^\circ\text{C}$	MIN	0.1	V
V_{RG}	$I_{RG}=10\mu\text{A}$	$T_j=25^\circ\text{C}$	MIN	8	V
I_H	$I_T=50\text{mA}$ $R_{GK}=1\text{K}\Omega$	$T_j=25^\circ\text{C}$	MAX	5	mA
V_{TM}	$I_{TM}=16\text{A}$ tp= 380 μ s	$T_j=25^\circ\text{C}$	MAX	1.6	V
I_{DRM}	$V_D=V_{DRM}$ $R_{GK}=220\Omega$	$T_j=25^\circ\text{C}$	MAX	5	μA
I_{RRM}	$V_R=V_{RRM}$ $R_{GK}=220\Omega$	$T_j=125^\circ\text{C}$	MAX	1	mA
dV/dt	$V_D=67\%V_{DRM}$ $R_{GK}=220\Omega$	$T_j=125^\circ\text{C}$	MIN	5	V/ μ s

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

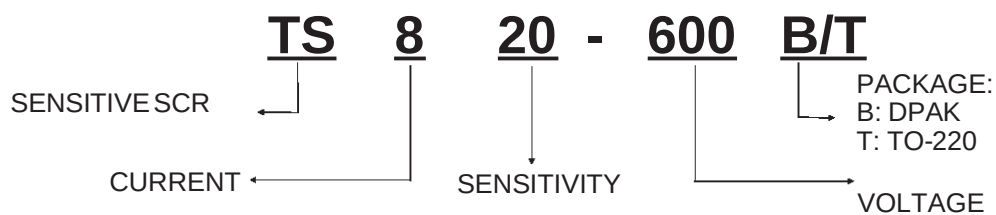


Fig. 1: Maximum average power dissipation versus average on-state current.

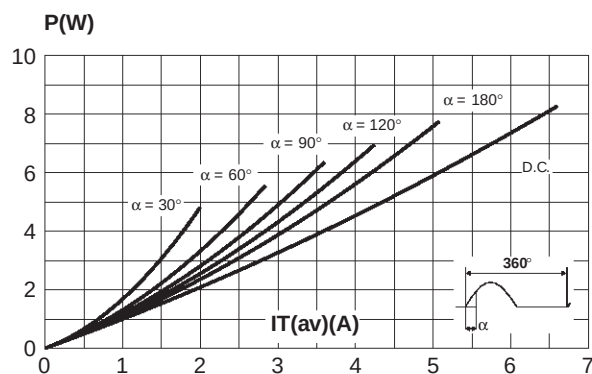


Fig. 2: Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

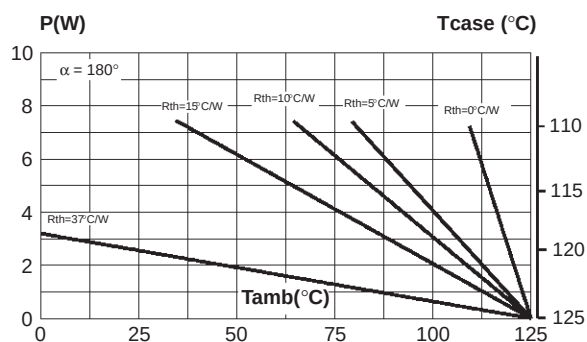


Fig. 3-1: Average and D.C. on-state current versus case temperature (TO-220AB).

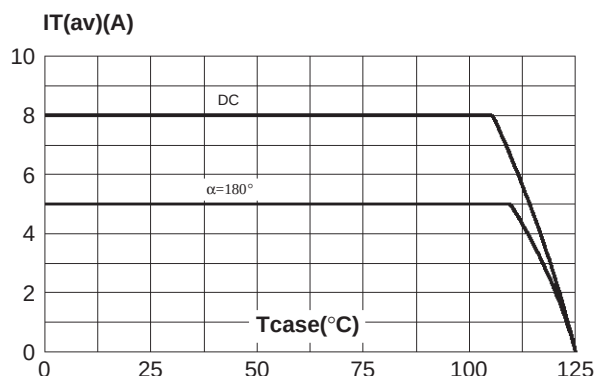


Fig. 4-1: Relative variation of thermal impedance junction to case versus pulse duration.

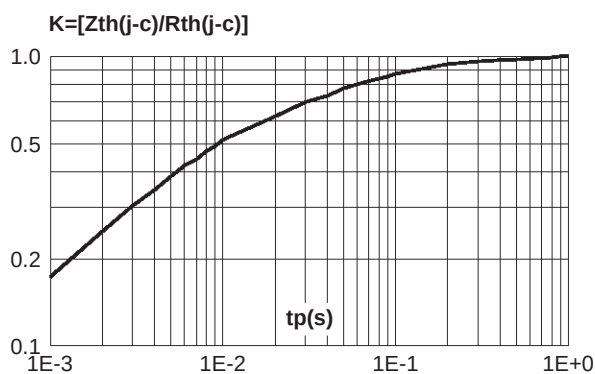


Fig. 3-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout) (DPAK).

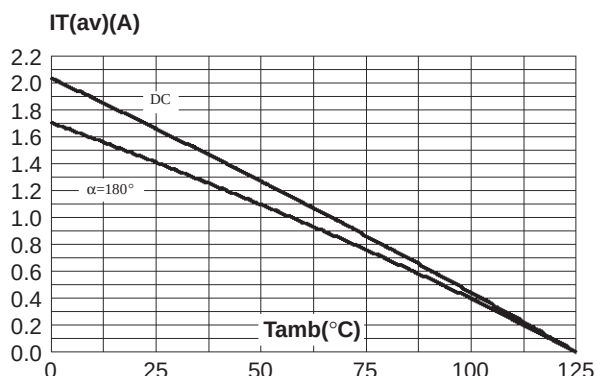


Fig. 4-5: Relative variation of thermal impedance junction to ambient versus pulse duration (recommended pad layout, FR4 PC board) (DPAK).

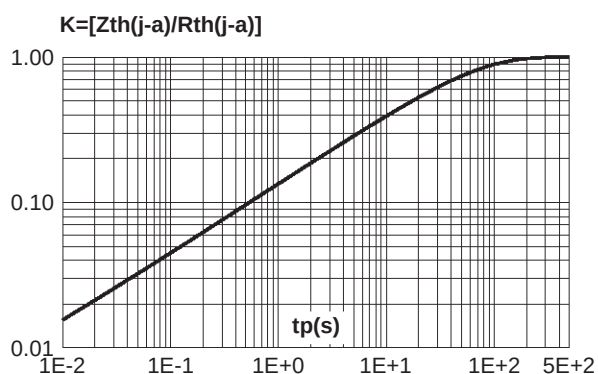


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature.

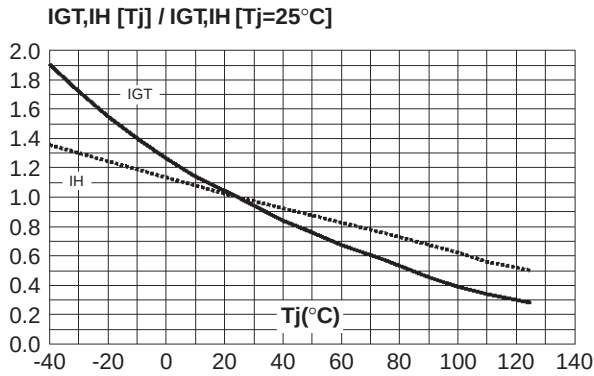


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

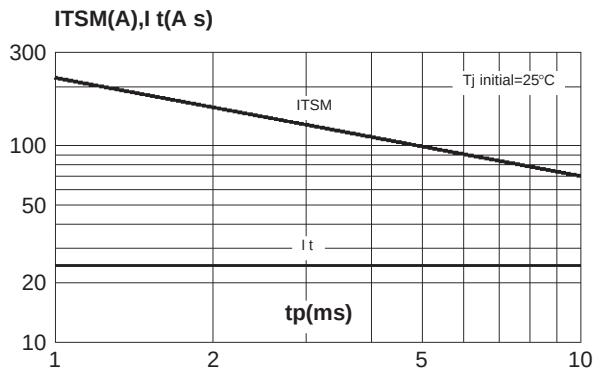


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$) (DPAK).

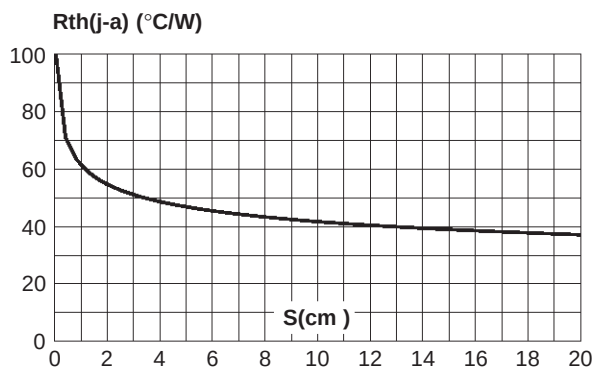


Fig. 6: Non repetitive surge peak on-state current versus number of cycles.

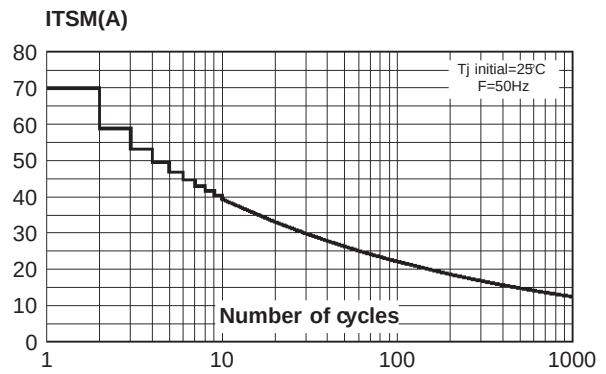


Fig. 8: On-state characteristics (maximum values).

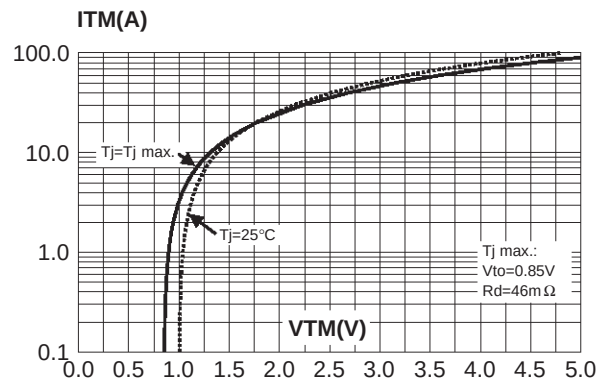
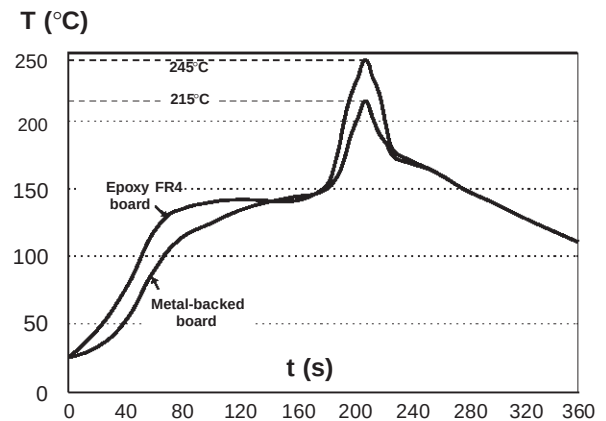
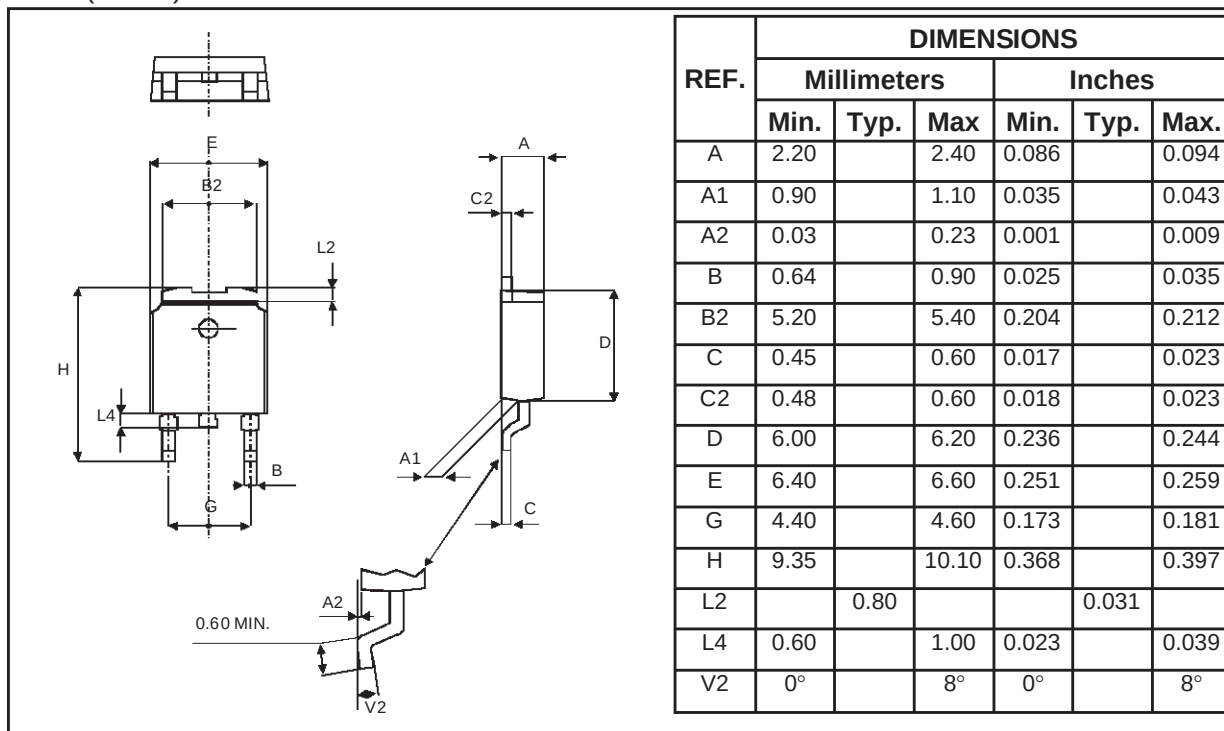
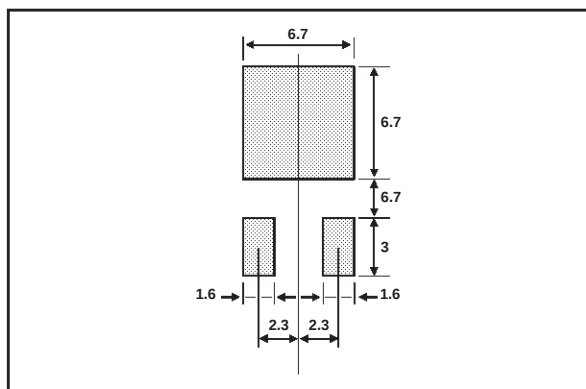


Fig. 10: Typical reflow soldering heat profile, either for mounting on FR4 or metal-backed boards.



PACKAGE MECHANICAL DATA

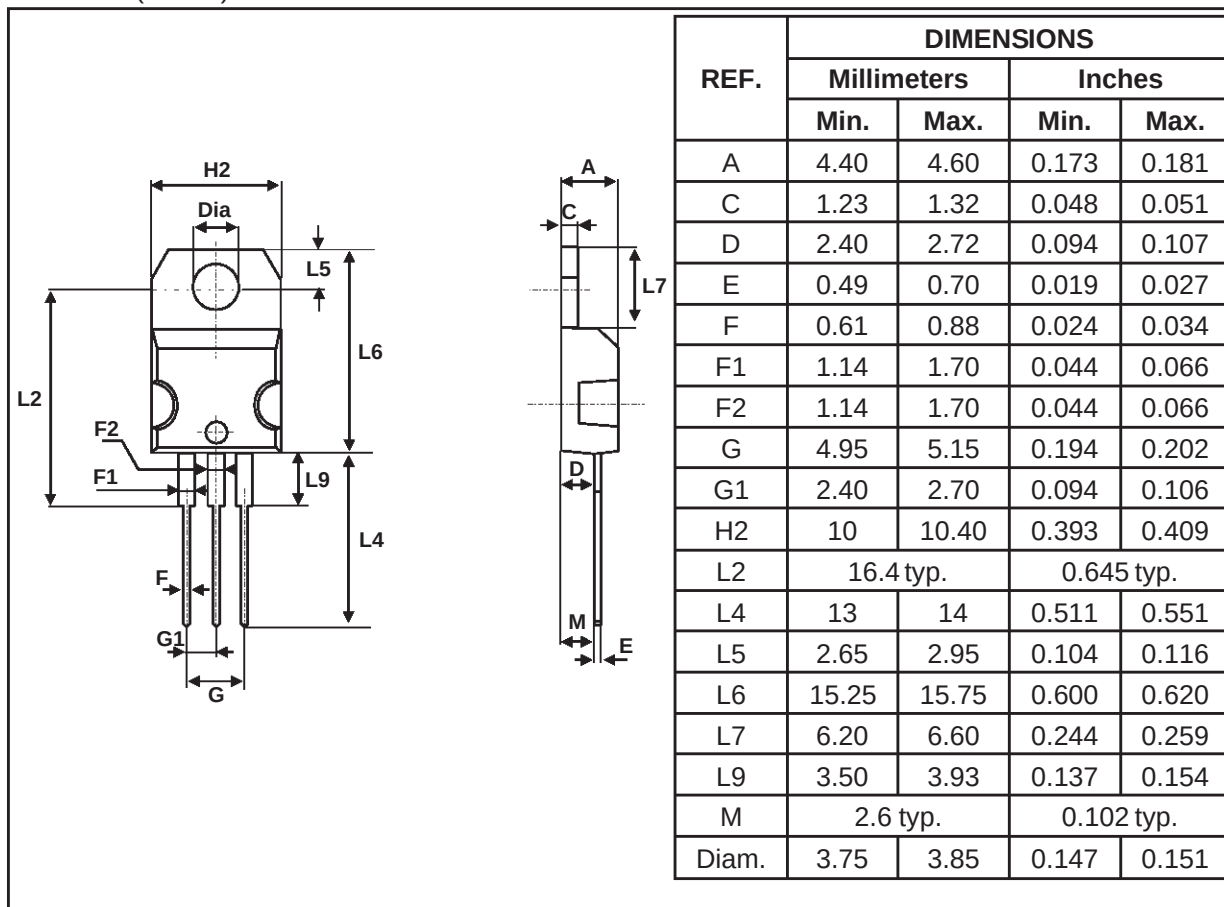
DPAK (Plastic)

**FOOT PRINT DIMENSIONS (in millimeters)**

TS820-B/T

PACKAGE MECHANICAL DATA

TO-220AB(Plastic)



Type	Marking	Package	Weight	Base qty	Delivery mode
TS820-B	TS820x00B	DPAK	0.3 g.	75	Tube
				2500	Tape and Reel
TS820-T	TS820x00T	TO-220AB	2 g.	50	Tube

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