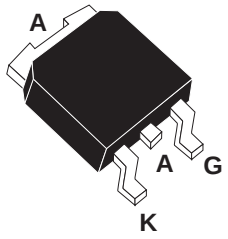
TS1220-600B

SENSITIVE SCR

FEATURES

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



DPAK
(Plastic)

DESCRIPTION

The TS1220-600B is using a high performance TOPGLASS PNPN 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°C R_{GK} = 220 Ω		600	V
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc= 105°C	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)	Tc= 105°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 10 ms	110	A
		tp = 8.3 ms	115	
I^2t	I^2t Value for fusing	tp = 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	°C
T	Maximum temperature for soldering during 10s		260	°C

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	Tj= 25°C	MAX	200	µA
V_{GT}	V_D=12V R_L=140Ω	Tj= 25°C	MAX	0.8	V
V_{GD}	V_D=12V(DC) R_L=33Ω	Tj= 25°C	MAX	0.1	V
V_{RG}	I_{RG} = 10µA	Tj= 25°C	MIN	8	V
I_H	I_T=50mA I_G=5mA R_{GK} = 1kΩ	Tj= 25°C	MAX	5	mA
V_{TM}	I_{TM}= 24A tp= 380µs	Tj= 25°C	MAX	1.6	V
I_{DRM}	VD= V_{DRM} R_{GK} = 220Ω	Tj= 25°C	MAX	10	µA
I_{RRM}	V_R= V_{RRM} R_{GK} = 220Ω	Tj= 125°C	MAX	2	mA
dV/dt	V_D=67%V_{DRM} R_{GK} = 220Ω	Tj= 125°C	MIN	5	V/µs

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

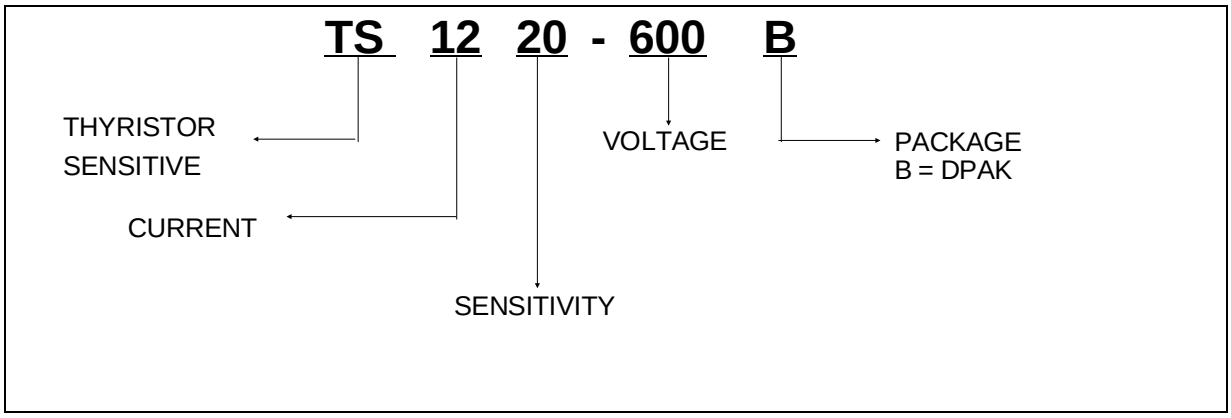


Fig 1: Maximum average power dissipation versus average on-state current.

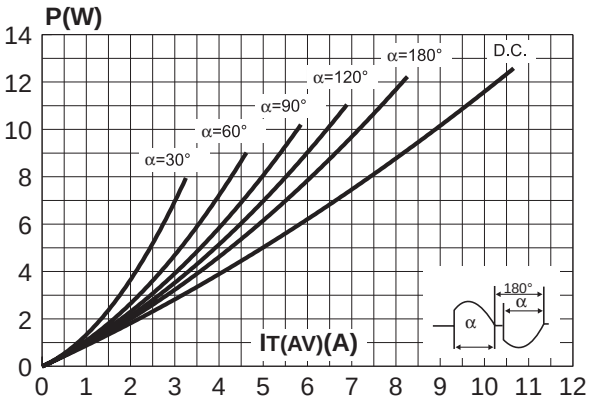


Fig 2: Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tcase).

Note: Rth=0°C/W is infinite heatsink.

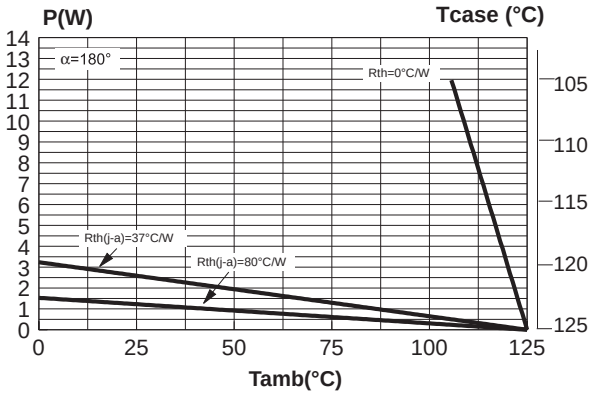


Fig 3-1: Average and D.C. on-state current versus case temperature.

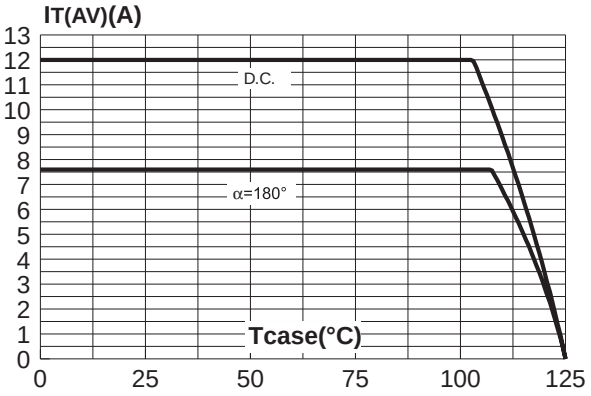


Fig 3-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout).

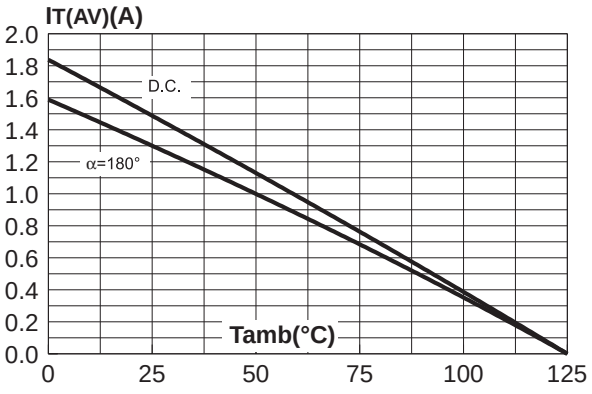


Fig 4: Relative variation of thermal impedance junction to case versus pulse duration.

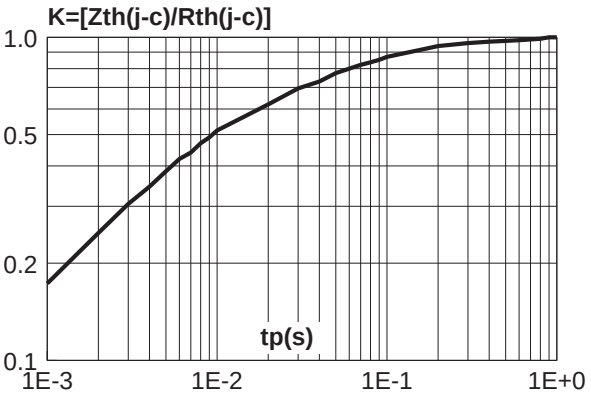


Fig 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (recomended pad layout).

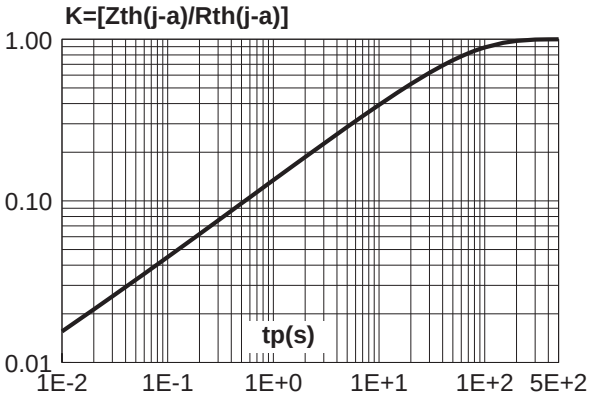


Fig 5: Relative variation of gate trigger current and holding current versus junction temperature.

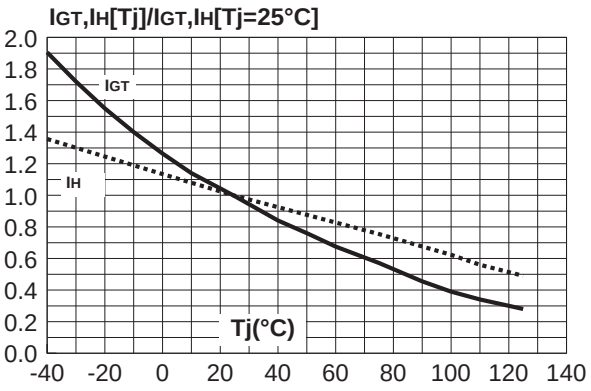


Fig 6: Relative variation of holding current versus gate-cathode resistance (typical values).

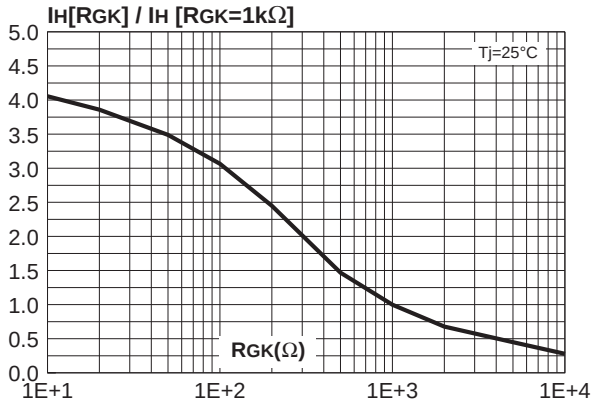


Fig 7: Non repetitive surge peak on-state current versus number of cycles.

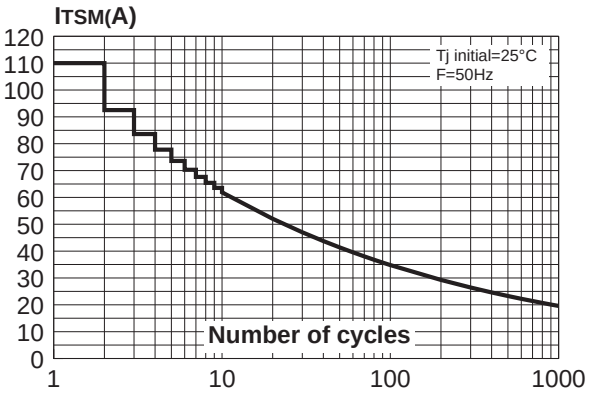


Fig 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I^2t.

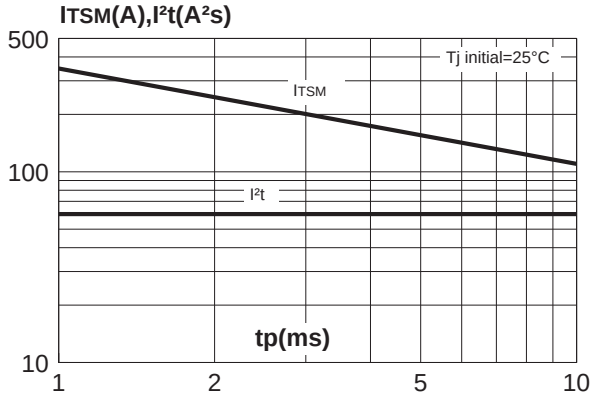


Fig 9: On-state characteristics (maximum values).

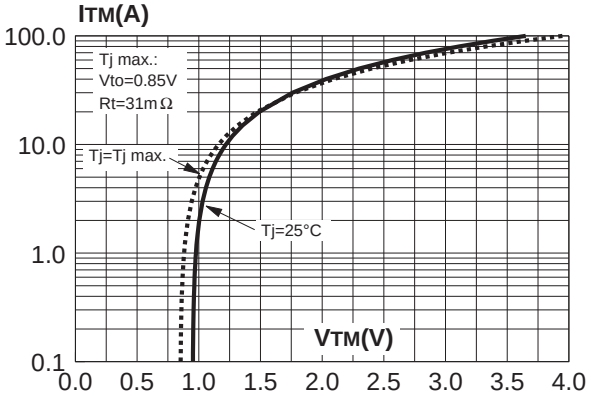
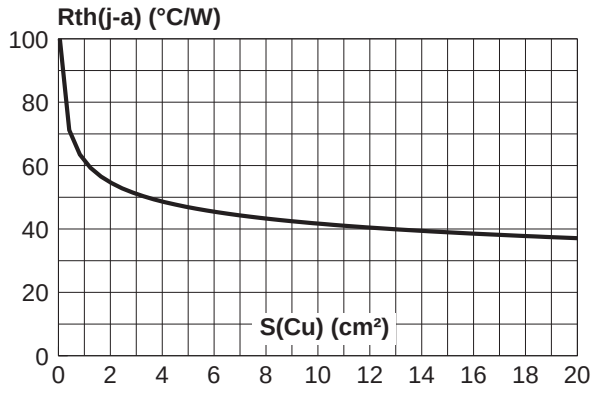
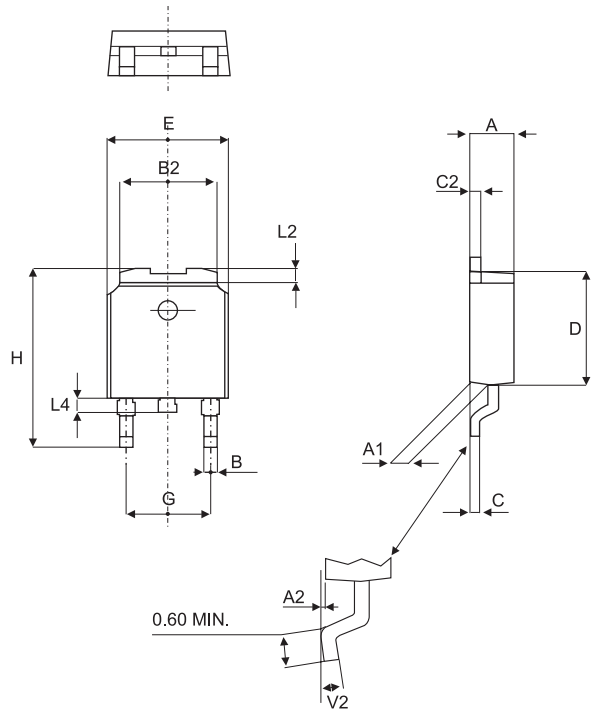


Fig 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm).



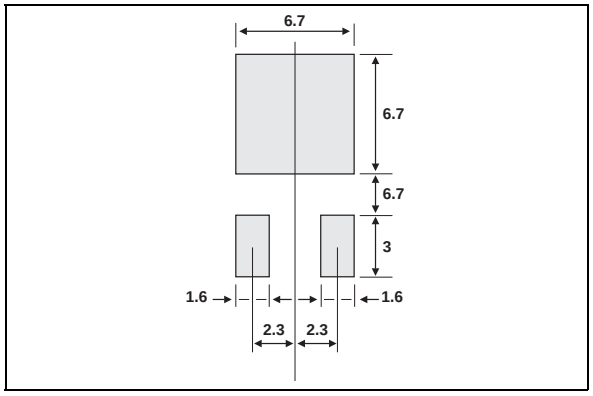
PACKAGE MECHANICAL DATA

DPAK (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.212
C	0.45		0.60	0.017		0.023
C2	0.48		0.60	0.018		0.023
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.251		0.259
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.397
L2		0.80			0.031	
L4	0.60		1.00	0.023		0.039
V2	0°		8°	0°		8°

FOOT PRINT DIMENSIONS (in millimeters)



MARKING

TYPE	MARKING
TS1220-600B	**TS 1220 6**