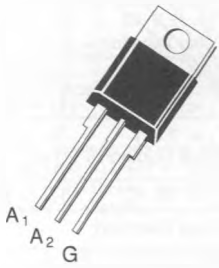
SGS-THOMSON MICROELECTRONICS

BTB 13 B

TRIACS

- GLASS PASSIVATED CHIP
- HIGH CAPACITOR DISCHARGE CURRENT



TO 220 AB
(Plastic)

DESCRIPTION

Design primarly for applications such as phase control, static switching, power supply

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T_C = 100 °C	12	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	157	A
		t = 10 ms	150	
I^2t	I^2t Value for Fusing	t = 10 ms	112.5	A^2s
di/dt	Critical Rate of Rise of on-state Current (1)	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 40 to 150 – 40 to 125	°C °C

Symbol	Parameter	BTB 13–					Unit
		200B	400B	600B	700B	800B	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1) I_G = 750 mA dI_G/dt = 1 A/µs
(2) T_j = 125 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to Ambient	60	°C/W
$R_{th\ (j-c)}$ DC	Junction to Case for DC	2.4	°C/W
$R_{th\ (j-c)}$ AC	Junction to Case for 360° Conduction Angle (F = 50 Hz)	1.8	°C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 40 W (t_p = 10 µs) I_{GM} = 4 A (t_p = 10 µs)

$P_{G(AV)}$ = 1 W V_{GM} = 16 V (t_p = 10 µs)

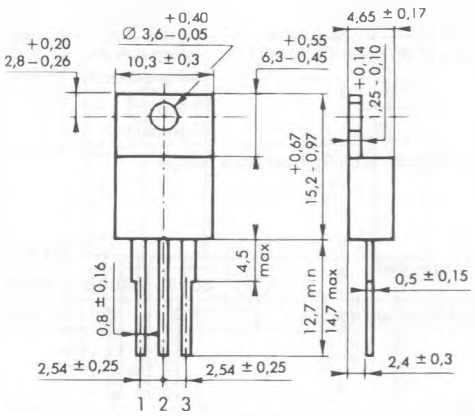
ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	T_j = 25 °C V_D = 12 V R_L = 33 Ω Pulse Duration > 20 µs			I-II-III			50	mA
				IV			75	
V_{GT}	T_j = 25 °C V_D = 12 V R_L = 33 Ω Pulse Duration > 20 µs			I-II-III-IV			1.5	V
V_{GD}	T_j = 125 °C V_D = V_{DRM} R_L = 3.3 kΩ			I-II-III-IV	0.2			V
I_H*	T_j = 25 °C I_T = 100 mA Gate Open						50	mA
I_L	T_j = 25 °C V_D = 12 V I_G = 150 mA Pulse Duration > 20 µs			I-III-IV		50		mA
				II		100		
V_{TM}*	T_j = 25 °C I_{TM} = 17 A		t_p = 10 ms				1.4	V
I_{DRM}*	V_{DRM} Specified		T_j = 25 °C				0.01	mA
			T_j = 125 °C				2	
dv/dt*	T_j = 125 °C Gate Open Linear Slope up to V_D = 67 % V_{DRM}				500			V/µs
$(dv/dt)_c$*	T_c = 100 °C V_D = V_{DRM} I_T = 17 A $(di/dt)_c$ = 5.3 A/ms				10			V/µs
t_{gt}	T_j = 25 °C V_D = V_{DRM} I_T = 17 A I_G = 500 mA di_G/dt = 3.5 A/µs			I-II-III-IV		2		µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

PACKAGE MECHANICAL DATA

TO 220 AB Plastic



Triac : 1 2 3 = A_1 A_2 G

Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g.

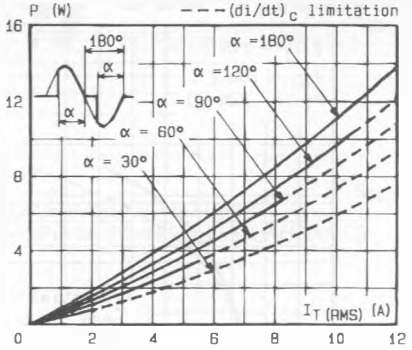


Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

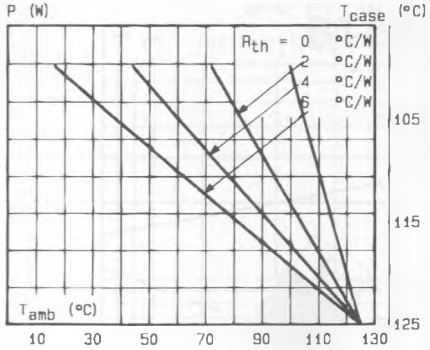


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

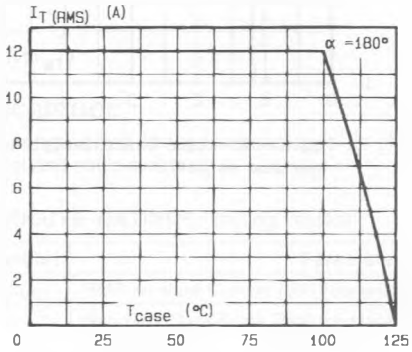


Fig.3 - RMS on-state current versus case temperature.

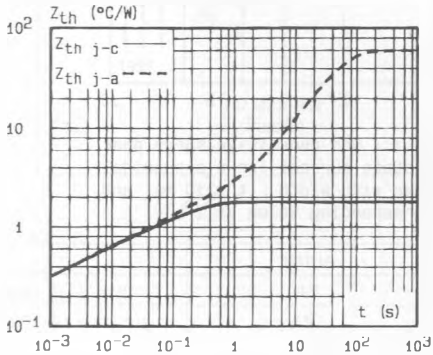


Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

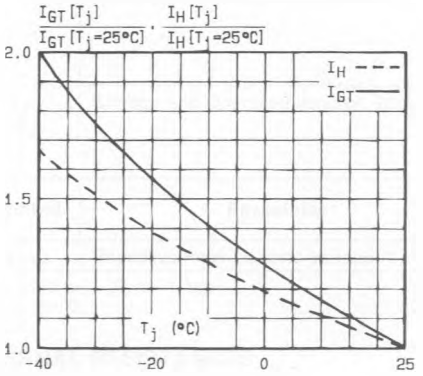


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

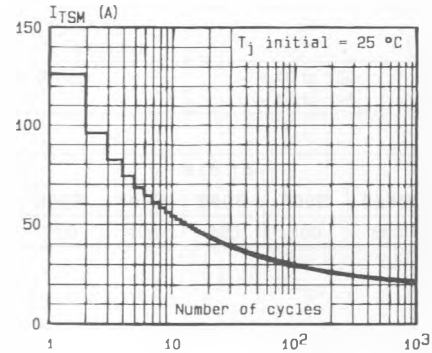


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

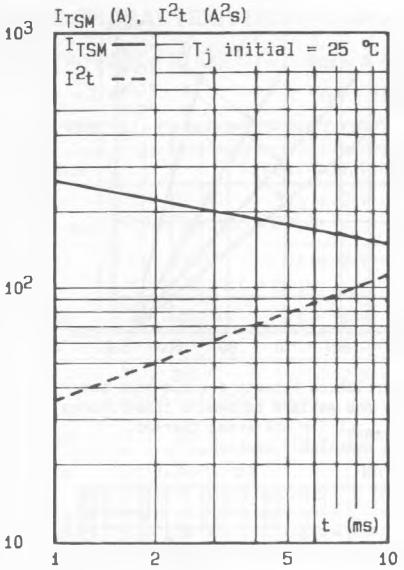


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t.

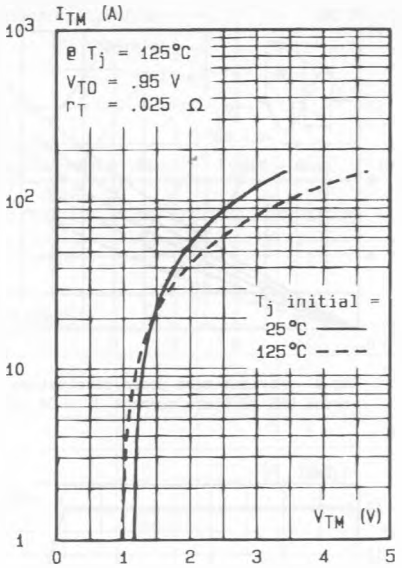


Fig.8 - On-state characteristics (maximum values).