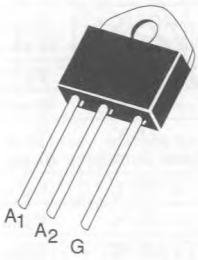
SGS-THOMSON MICROELECTRONICS

BTB 41 B

TRIACS

- GLASS PASSIVATED CHIP
- I_{GT} SPECIFIED IN FOUR QUADRANTS



TOP 3
(Plastic)

DESCRIPTION

This new design of plastic uninsulated power triacs offers maximum efficiency with maximum ease of mounting.

ADVANTAGES

- NO TAPPING REQUIRED FOR FIXING
- EXCELLENT THERMAL IMPEDANCE AND HIGH RELIABILITY CONSTRUCTION

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T_C = 80 °C	45	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	315	A
		t = 10 ms	300	
I^2t	I^2t Value for Fusing	t = 10 ms	450	A^2s
di/dt	Critical Rate of Rise of on-state Current (1)	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
T_{stg} T_j	Storage and Operating Junction Temperature Range		− 40 to 125 − 40 to 125	°C °C

Symbol	Parameter	BTB 41–					Unit
		200B	400B	600B	700B	800B	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1) I_G = 1 A di_G/dt = 1 A/µs
(2) T_j = 125 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to Ambient	50	°C/W
$R_{th\ (c-h)}$	Contact (case-heatsink) with Grease	0.2	°C/W
$R_{th\ (j-c)}$ DC	Junction to Case for DC	0.95	°C/W
$R_{th\ (j-c)}$ AC	Junction to Case for 360 ° Conduction Angle (F = 50 Hz)	0.7	°C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 40 W (t_p = 10 µs) I_{GM} = 10 A (t_p = 10 µs)
$P_{G(AV)}$ = 1 W V_{GM} = 16 V (t_p = 10 µs)

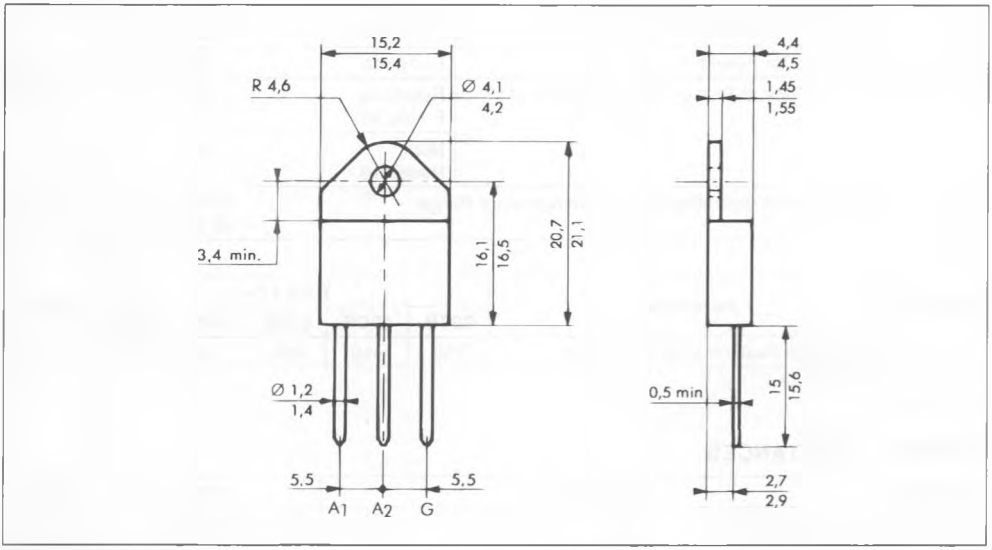
ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	R_L = 33 Ω	I-II-III	1		50	mA
				IV	1		100	
V_{GT}	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	R_L = 33 Ω	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 = 500 mA	Gate Open			30	80	mA
I_L	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	I_G = 200 mA	I-II-III-IV			100	mA
V_{TM}*	T_j = 25 °C	I_{TM} = 60 A	t_p = 10 ms				1.8	V
I_{DRM}*	T_j = 125 °C	V_{DRM} Specified				1.5	6	mA
dv/dt*	T_j = 125 °C Linear Slope up to V_D = 67 % V_{DRM}	Gate Open			250			V/µs
$(dv/dt)_c$*	T_C = 75 °C $(di/dt)_c$ = 20 A/ms	$V_D = V_{DRM}$	I_T = 60 A		5			V/µs
t_{gt}	T_j = 25 °C I_G = 1 A	$V_D = V_{DRM}$ di_G/dt = 10 A/µs	I_T = 60 A	I-II-III-IV		2.5		µs

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

PACKAGE MECHANICAL DATA

TOP 3 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g

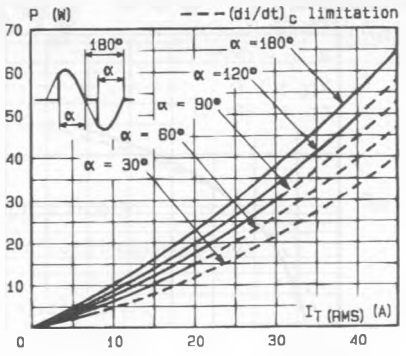


Fig.1 - Maximum mean power dissipation versus RMS on-state current (f = 60 Hz).

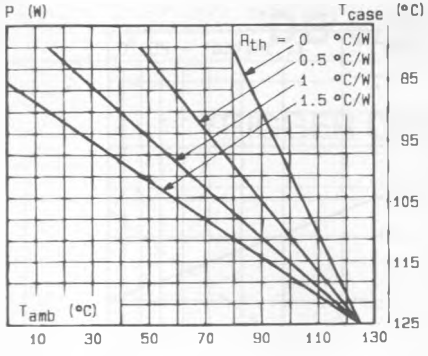


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

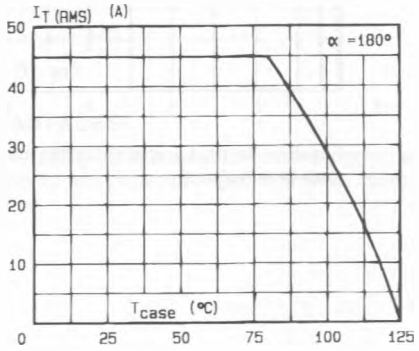


Fig.3 - RMS on-state current versus case temperature.

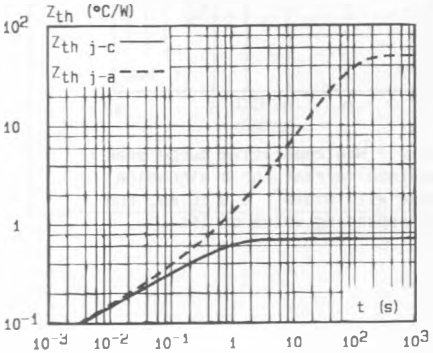


Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

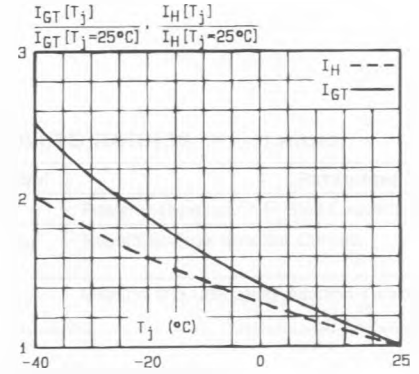


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

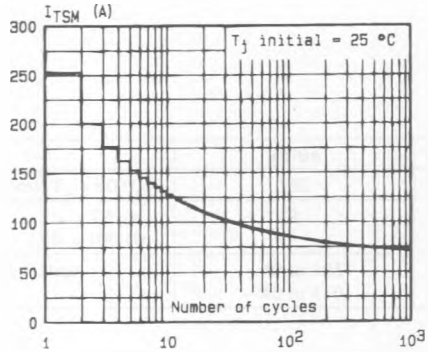


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

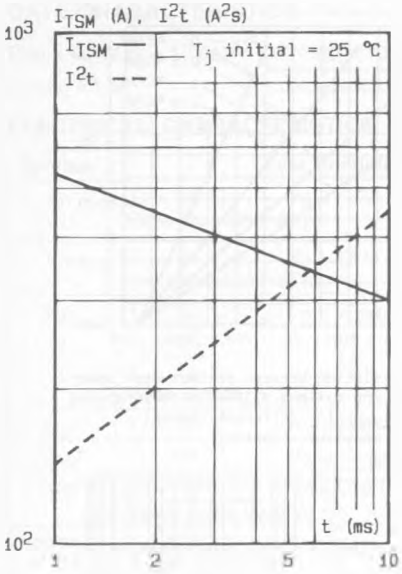


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

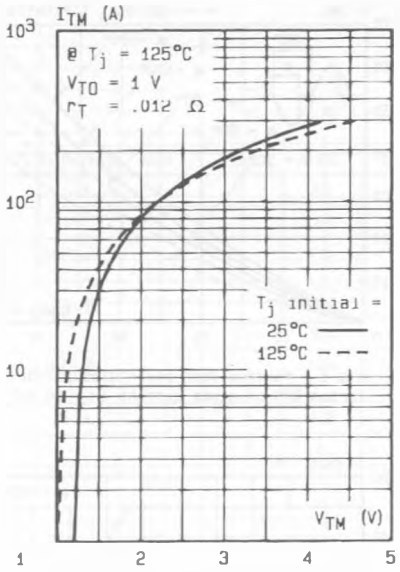


Fig.8 - On-state characteristics (maximum values).