T-25-13

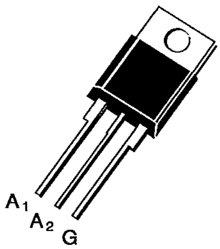
SGS-THOMSON
MICROELECTRONICS

BTA/BTB 04 D

S G S-THOMSON

SENSITIVE GATE TRIACS

- GLASS PASSIVATED CHIP
- I_{GT} SPECIFIED IN FOUR QUADRANTS
- AVAILABLE IN INSULATED VERSION → BTA SERIES (INSULATING VOLTAGE 2500 V_{RMS}) OR IN UNINSULATED VERSION → BTB SERIES
- UL RECOGNIZED FOR BTA SERIES (E81734)



TO 220 AB
(Plastic)

DESCRIPTION

New range suited for applications such as phase control and static switching.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T_C = 75 °C	4	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	52	A
		t = 10 ms	50	
I^2t	I^2t Value for Fusing	t = 10 ms	12.5	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 150 – 40 to 110	°C °C

Symbol	Parameter	BTA/BTB 04–					Unit
		200D	400D	600D	700D	800D	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1) I_G = 100 mA dI_G/dt = 1 A/µs
(2) T_j = 110 °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	8.7	°C/W
$R_{th\ (j-c)}$ AC	Junction to Case for 360 ° Conduction Angle (F = 50 Hz)	6.5	°C/W

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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)

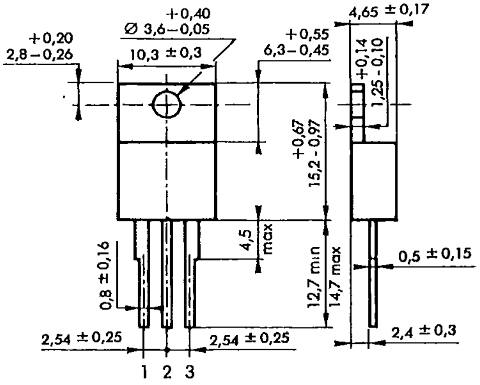
ELECTRICAL CHARACTERISTICS

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			5	mA
		IV			10	
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}	$T_j = 110$ °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				15	mA
I_L	$T_j = 25$ °C $V_D = 12$ V $I_G = 20$ mA Pulse Duration > 20 µs	I-III-IV		15		mA
		II		30		
V_{TM}*	$T_j = 25$ °C $I_{TM} = 5.5$ A $t_p = 10$ ms				1.65	V
I_{DRM}*	V_{DRM} Specified $T_j = 25$ °C				0.01	mA
	$T_j = 110$ °C				0.75	
dv/dt*	$T_j = 110$ °C Gate Open Linear Slope up to $V_D = 67$ % V_{DRM}			10		V/µs
(dv/dt)$_c$*	$T_C = 75$ °C $V_D = V_{DRM}$ $I_T = 5.5$ A $(di/dt)_c = 1.8$ A/ms			1		V/µs
t_{gt}	$T_j = 25$ °C $V_D = V_{DRM}$ $I_T = 5.5$ A $I_G = 20$ mA $di_G/dt = 0.25$ 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.

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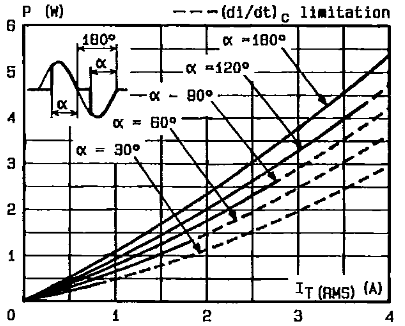

Fig.1 – Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

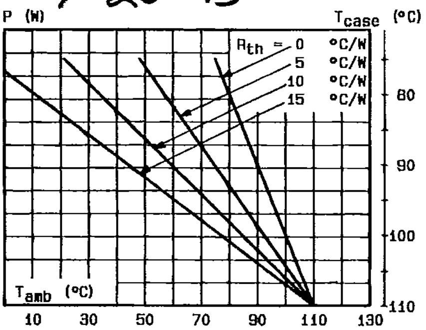

Fig.2 – Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

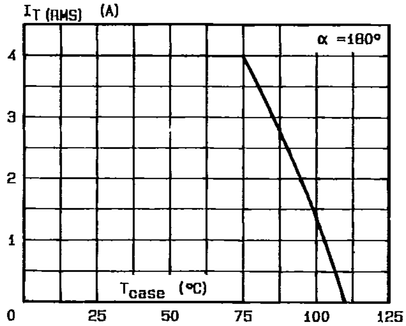

Fig.3 – RMS on-state current versus case temperature.

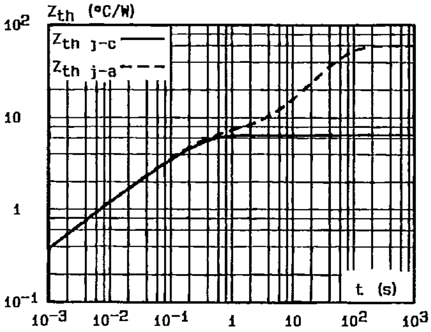

Fig.4 – Thermal transient impedance junction to case and junction to ambient versus pulse duration.

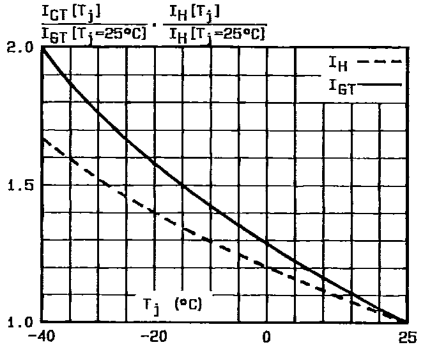

Fig.5 – Relative variation of gate trigger current and holding current versus junction temperature.

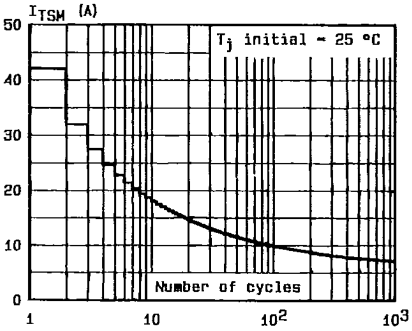

Fig.6 – Non repetitive surge peak on-state current versus number of cycles.

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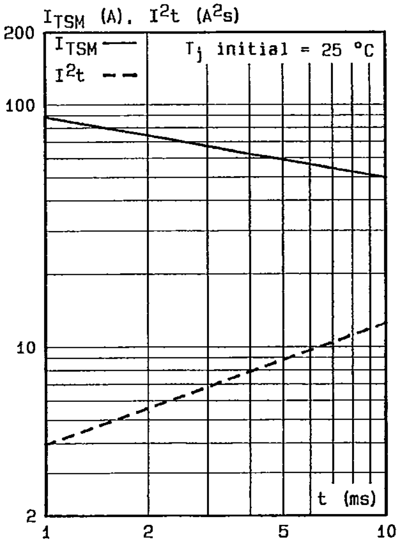

Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ⩽ 10 ms, and corresponding value of I^2t.

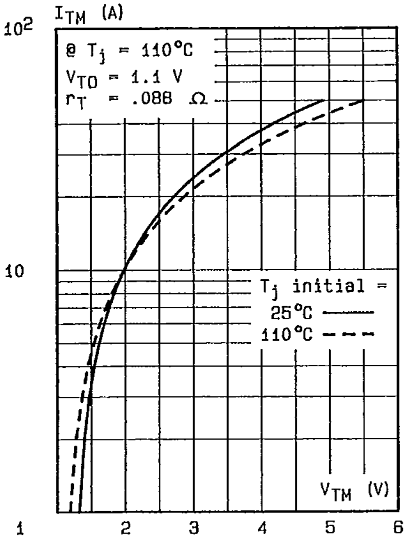

Fig.8 - On-state characteristics (maximum values).