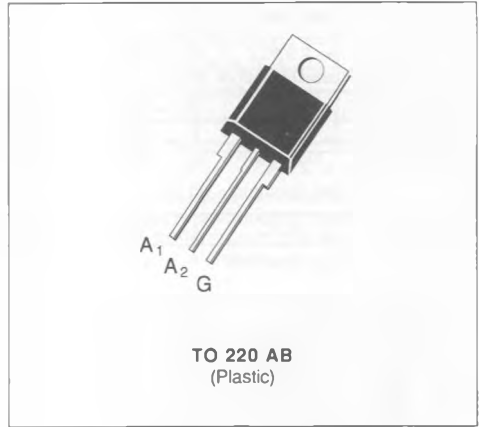# SGS-THOMSON
MICROELECTRONICS

BTA/BTB 10 C

TRIACS

- GLASS PASSIVATED CHIP
- EXCELLENT $(dv/dt)_c > 5$ V/µs
- 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)

A_1
A_2
G

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	10	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	105	A
		t = 10 ms	100	
I^2t	I^2t Value for Fusing	t = 10 ms	50	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 10−					Unit
		200C	400C	600C	700C	800C	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1) $I_G = 500$ 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	3.9	°C/W
$R_{th (j-c)}$ AC	Junction to Case for 360° Conduction Angle (F = 50 Hz)	2.9	°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			25	mA
				IV			50	
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						25	mA
I_L	$T_j = 25$ °C $V_D = 12$ V $I_G = 100$ mA Pulse Duration > 20 μs			I-III-IV		50		mA
				II		100		
$V_{TM}{}^*$	$T_j = 25$ °C $I_{TM} = 14$ A $t_p = 10$ ms						1.5	V
$I_{DRM}{}^*$	V_{DRM} Specified		$T_j = 25$ °C				0.01	mA
			$T_j = 110$ °C				0.5	
dv/dt*	$T_j = 110$ °C Gate Open Linear Slope up to $V_D = 67$ % V_{DRM}				100	200		V/μs
$(dv/dt)_c{}^*$	$T_C = 75$ °C $V_D = V_{DRM}$ $I_T = 14$ A $(di/dt)_c = 4.4$ A/ms				5			V/μs
t_{gt}	$T_j = 25$ °C $V_D = V_{DRM}$ $I_T = 14$ A $I_G = 80$ mA $di_G/dt = 1$ A/μs			I-II-III-IV		2		μs

* For either polarity of electrode A₂ voltage with reference to electrode A₁.

PACKAGE MECHANICAL DATA

TO 220 AB Plastic

Triac : 1 2 3 = A₁ A₂ G
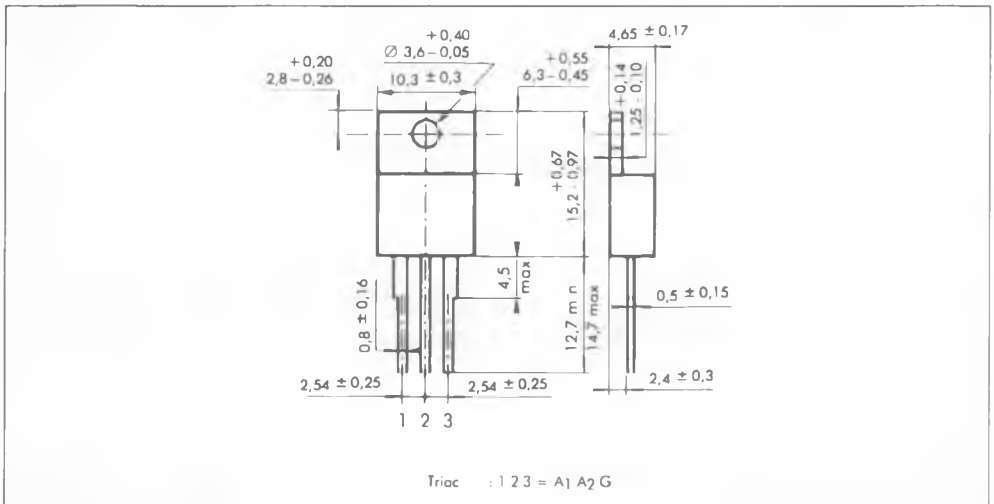
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g.

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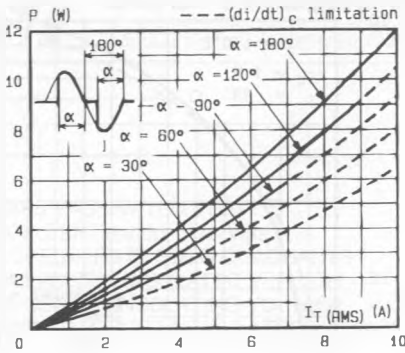
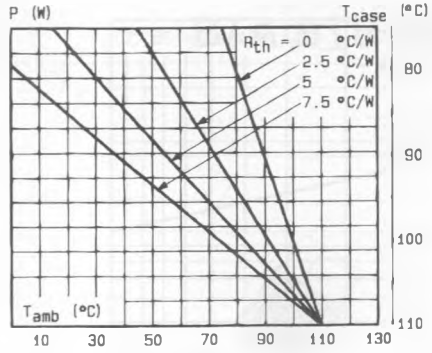Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

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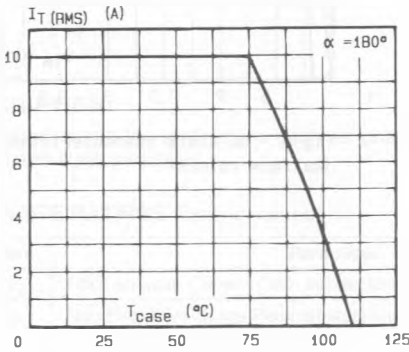

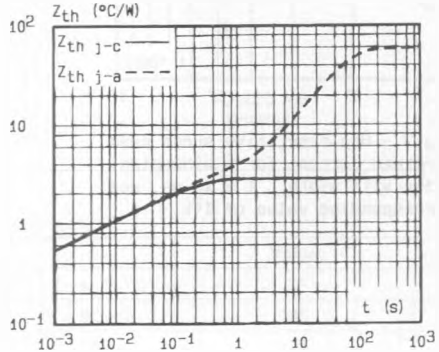
Fig.3 - RMS on-state current versus case temperature.

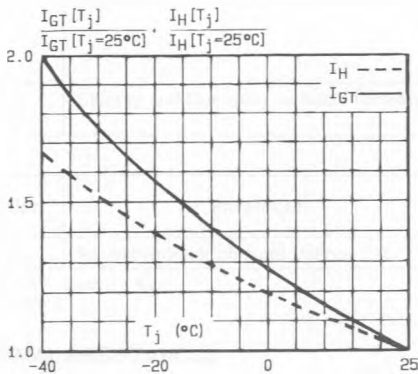Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

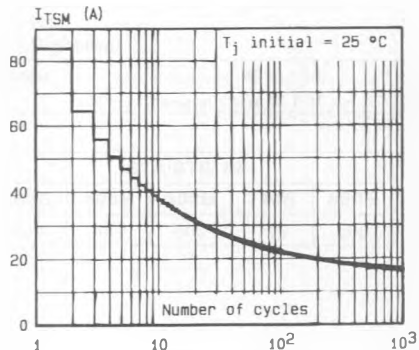Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

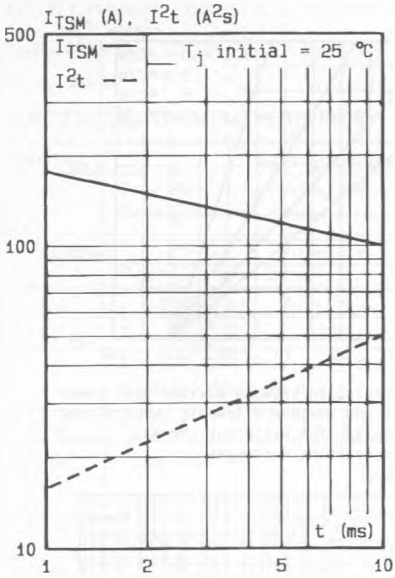Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

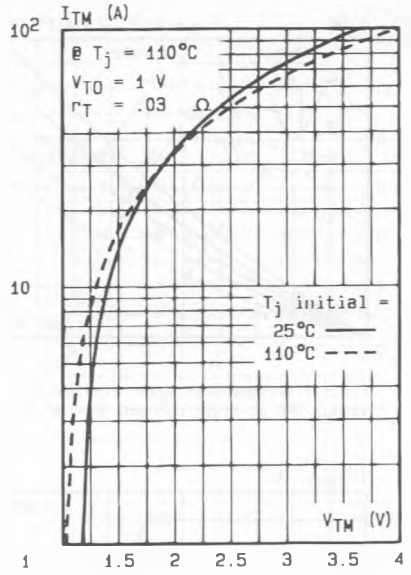Fig./ – Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms. and corresponding value of I^2t.

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

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