SGS-THOMSON
MICROELECTRONICS

BTB 12 AW

SNUBBERLESS TRIACS

- I_{TRMS} = 12 A at T_c = 95 °C.
- V_{DRM} : 200 V to 800 V.
- I_{GT} = 75 mA (QI-II-III).
- GLASS PASSIVATED CHIP.
- HIGH SURGE CURRENT : I_{TSM} = 120 A.
- HIGH COMMUTATION CAPABILITY :
  (di/dt) $_c$ > 16 A / ms without snubber.
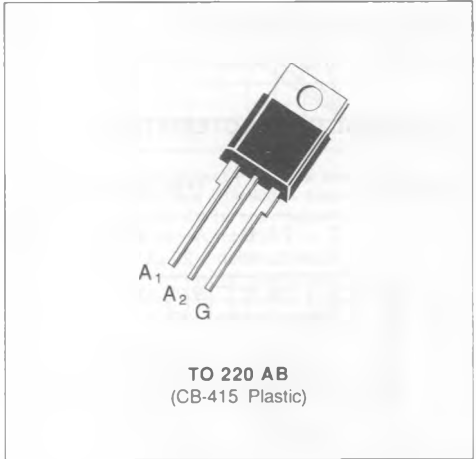
DESCRIPTION
New range suited for applications such as phase control and static switching on inductive or resistive load.

A₁
A₂
G

TO 220 AB
(CB-415 Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{TRMS}	RMS on-state current (360 ° conduction angle)	T_c = 95 °C	12	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25 °C)	t = 8.3 ms	126	A
		t = 10 ms	120	
I^2t	I^2t value	t = 10 ms	72	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, + 150 - 40, + 125	°C °C

Symbol	Parameter	BTB 12-					Unit
		200 AW	400 AW	600 AW	700 AW	800 AW	
V_{DRM}	Repetitive peak off-state voltage (2)	± 200	± 400	± 600	± 700	+ 800	V

(1) Gate supply : 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	2.7	°C/W
$R_{th(j-c)}$AC	Junction to case for 360° conduction angle (F = 50 Hz)	2	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{GM} = 40$ W (t = 10 µs) $P_{G(AV)} = 1$ W $I_{GM} = 4$ A (t = 10 µs) $V_{GM} = 16$ V (t = 10 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	$T_j = 25$ °C $V_D = 12$ V Pulse duration > 20 µs		$R_L = 33$ Ω	I-II-III	2		75	mA
V_{GT}	$T_j = 25$ °C $V_D = 12$ V Pulse duration > 20 µs		$R_L = 33$ Ω	I-II-III			1.5	V
V_{GD}	$T_j = 125$ °C $V_D = V_{DRM}$ Pulse duration > 20 µs		$R_L = 3.3$ kΩ	I-II-III	0.2			V
I_H*	$T_j = 25$ °C $I_T = 100$ mA Gate open $R_L = 140$ Ω						75	mA
I_L	$T_j = 25$ °C $V_D = 12$ V Pulse duration > 20 µs		$I_G = 500$ mA	I-III		75		mA
				II		150		
V_{TM}*	$T_j = 25$ °C $I_{TM} = 17$ A		$t_p = 10$ ms				1.6	V
I_{DRM}*	$T_j = 25$ °C	V_{DRM} rated	Gate open				0.01	mA
	$T_j = 125$ °C						2	
dv/dt*	$T_j = 125$ °C Gate open Linear slope up to 0.67 V_{DRM}				750	1000		V/µs
$(di/dt)_c$*	$T_j = 125$ °C V_{DRM} rated Without snubber				16	32		A/ms
t_{gt}	$T_j = 25$ °C $di_G/dt = 3.5$ A/µs $I_T = 17$ A $V_D = V_{DRM}$		$I_G = 500$ mA	I-II-III		2		µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.
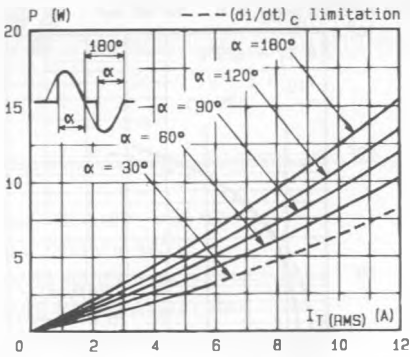
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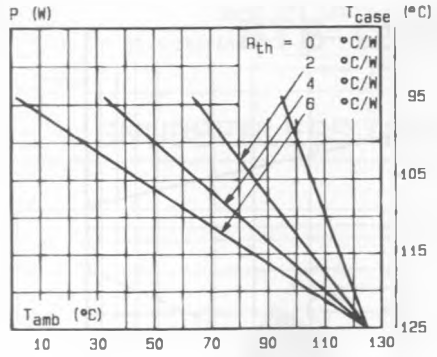Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

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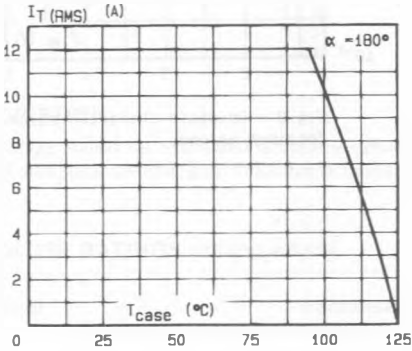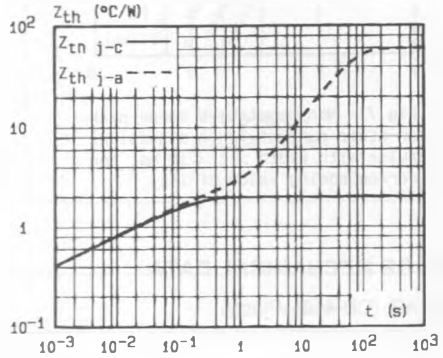

Fig.3 - RMS on-state current versus case temperature.

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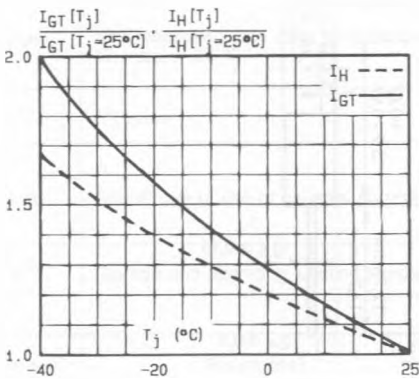

Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.
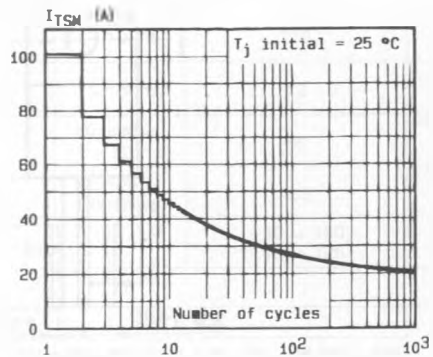

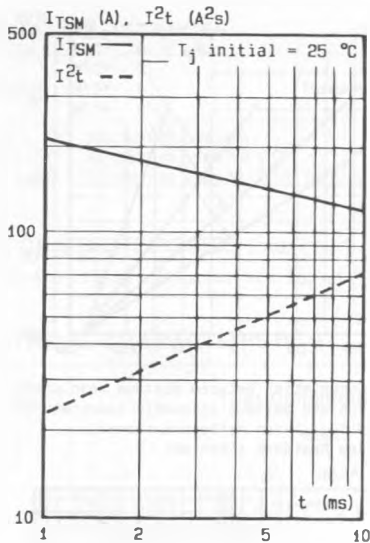Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

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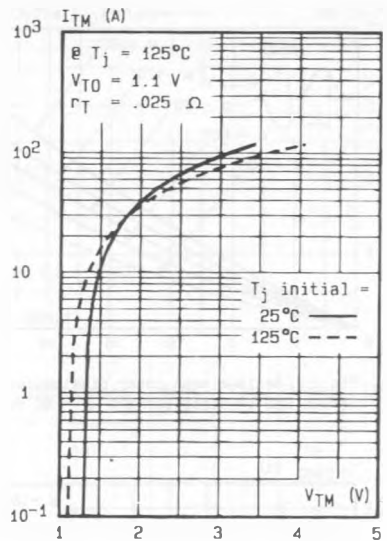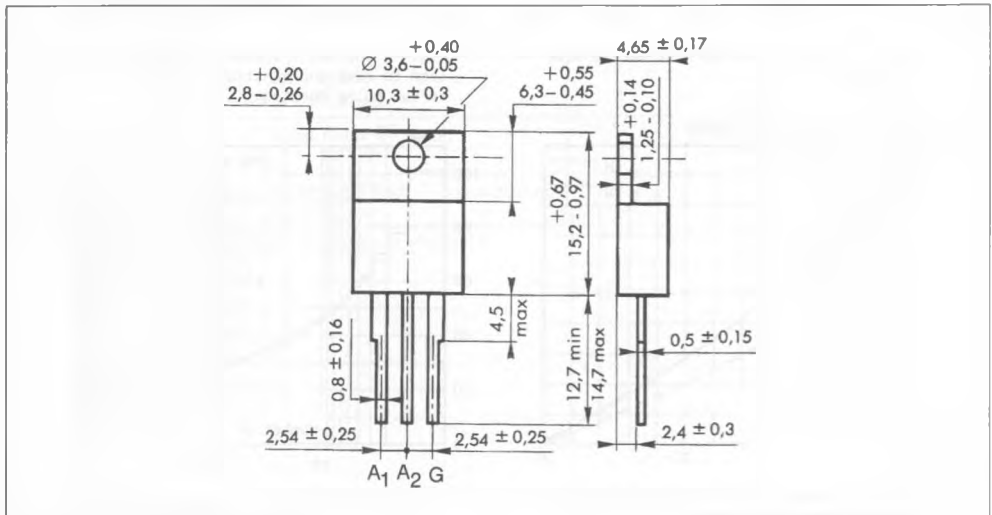

Fig.8 – On-state characteristics (maximum values).

PACKAGE MECHANICAL DATA

TO 220 AB (CB-415) Plastic

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

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