

THOMSON SEMICONDUCTORS

BTB 19 B

UNINSULATED TRIACS
TRIACS NON ISOLÉS

T-25-15

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

- Glass passivated chip.
- I_{GT} specified in four quadrants.

Nouvelle gamme adaptée à tous les types de fonctionnement : de la commutation statique au contrôle de phase.

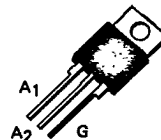
- Pastille glassivée.
- I_{GT} défini dans les quatre quadrants.

$$I_{TRMS} = 20 \text{ A} / T_c = 75^\circ\text{C}$$

$$V_{DRM} : 200 \text{ V} \rightarrow 700 \text{ V}^*$$

$$I_{GT} = \begin{matrix} 50 \text{ mA (Q I-II-III)} \\ 100 \text{ mA (Q IV)} \end{matrix}$$

Case : TO 220 AB plastic (CB-415)
Boîtier :



ABSOLUTE RATINGS (LIMITING VALUES) VALEURS LIMITES ABSOLUES D'UTILISATION		Symbols	BTB 19 B	Units
RMS on-state current (360° conduction angle) Courant efficace à l'état passant (angle de conduction 360°)	$T_c = 75^\circ\text{C}$	I_{TRMS}	20	A
Non repetitive surge peak on-state current (on full cycle) at $25^\circ\text{C} < T_j \text{ initial} < 125^\circ\text{C}$ Courant non répétitif de surcharge crête accidentelle à l'état passant (1 cycle complet) à $25^\circ\text{C} < T_j \text{ initial} < 125^\circ\text{C}$	F = 60 Hz	I_{TSM}	188	A
	F = 50 Hz		180	
I_{2t} value Valeur de la constante I_{2t}	t = 10 ms	I_{2t}	162	A ^{2s}
Critical rate of rise of on-state current** Vitesse critique de croissance du courant à l'état passant	Repetitive F = 50 Hz	di/dt	10	A/ μs
	Non Repetitive		50	
Storage and operating junction temperature range Températures extrêmes de stockage et de jonction en fonctionnement		T_{stg} T_j	$-40 \rightarrow +150$ $-40 \rightarrow +125$	$^\circ\text{C}$

ABSOLUTE RATING (LIMITING VALUE) VALEUR LIMITE ABSOLUE D'UTILISATION	Symbol	BTB19-200B	BTB19-400B	BTB19-600B	BTB19-700B	Unit
Repetitive peak off-state voltage Tension de crête répétitive à l'état bloqué	V_{DRM}	± 200	± 400	± 600	± 700	V

*800 V on request
800 V sur demande

**Gate supply
Générateur de gâchette : 20 V/20 Ω - $t_r < 0,1 \mu\text{s}$ -

Half sine wave 6,3 μs
Demi-sinusoïde de 6,3 μs - V_{DRM} specified
spécifié

April 1984 - 1/4

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Thermal resistance <i>Résistance thermique</i> — Junction to ambient <i>Jonction - ambiante</i> — Junction to case for DC <i>Jonction - boîtier en continu</i> — Junction to case for 360° conduction angle (F = 50 Hz) <i>Jonction - boîtier pour angle de conduction 360° (F = 50 Hz)</i>	Symbols	BTB 19 B	Units
	$R_{th j-a}$	60	°C/W
	$R_{th j-c DC}$	2,66	°C/W
	$R_{th j-c AC}$	2	°C/W

GATE CHARACTERISTICS (MAXIMUM VALUES)**CARACTERISTIQUES DE GACHETTE (VALEURS MAXIMALES)**

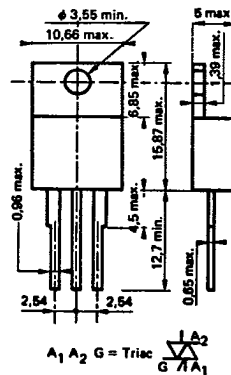
$P_{GM}^* = 40 \text{ W}$ ($t = 10 \mu\text{s}$) $P_{G(AV)} = 1 \text{ W}$ $I_{GM}^* = 4 \text{ A}$ ($t = 10 \mu\text{s}$) $V_{GM}^* = 16 \text{ V}$ ($t = 10 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified)**CARACTERISTIQUES ELECTRIQUES ($T_J = 25^\circ\text{C}$ sauf spécification contraire)**

Symbols	Quadrants	Values			Units	Test conditions
		min.	typ.	max.		
I_{GT}	I-II-III IV			50 100	mA	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$ Pulse duration $> 20 \mu\text{s}$
V_{GT}^*				2,5	V	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$ Pulse duration $> 20 \mu\text{s}$
V_{GD}^*		0,2			V	$T_J = 125^\circ\text{C}$ $V_D = V_{DRM}$ $R_L = 3 \text{ k}\Omega$ Pulse duration $> 20 \mu\text{s}$
I_H^{**}				50	mA	$V_D = 12 \text{ V}$ Gate open
I_L	I-III-IV II		50 100		mA	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$ Pulse duration $> 20 \mu\text{s}$
V_{TM}^{**}				1,7	V	$I_{TM} = 28 \text{ A}$ $t_p = 10 \text{ ms}$
I_{DRM}^{**}				0,1 1	mA	$T_J = 25^\circ\text{C}$ V_{DRM} rated Gate open $T_J = 125^\circ\text{C}$
dv/dt^{**}		100	500		V/ μs	$T_J = 125^\circ\text{C}$ Gate open Linear slope up to 0,67 V_{DRM}
$(dv/dt)_C^{**}$			10		V/ μs	$T_C = 75^\circ\text{C}$ $(di/dt)_C = 8,9 \text{ A/ms}$ I_{TRMS} and V_{DRM} rated
t_{gt}^*			2		μs	$di/dt = 3,5 \text{ A}/\mu\text{s}$ $I_G = 500 \text{ mA}$ I_{TRMS} and V_{DRM} rated

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

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

CASE DESCRIPTION**DESCRIPTION DU BOITIER**

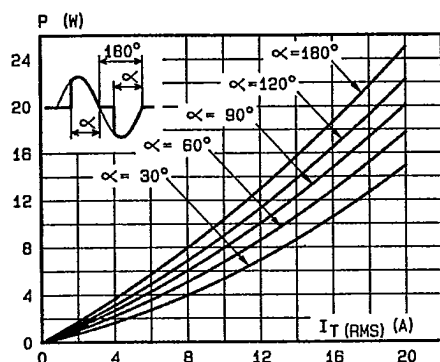


Fig.1 - Maximum mean power dissipation versus RMS on-state current.

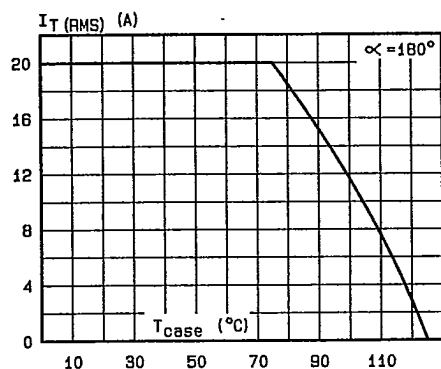


Fig.3 - RMS on-state current versus case temperature.

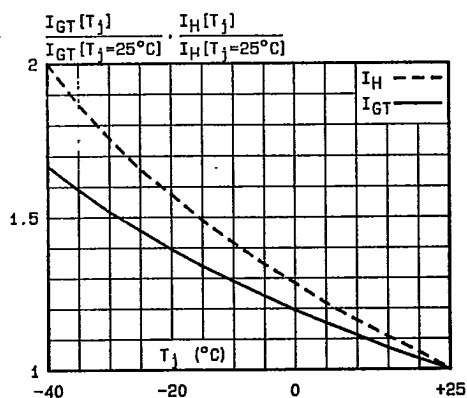


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

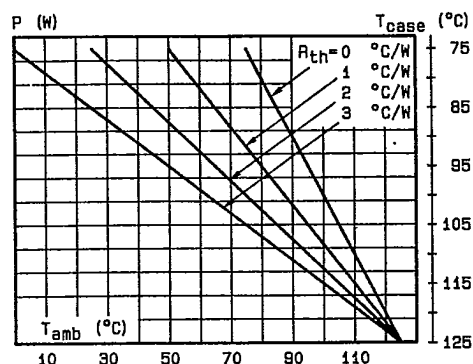


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

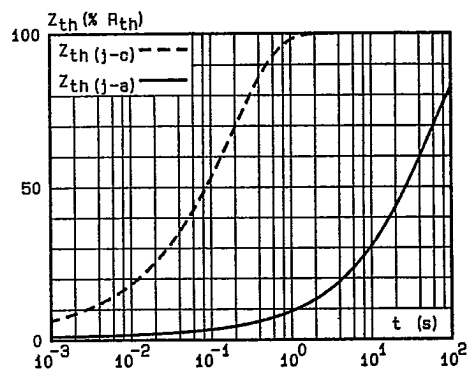


Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

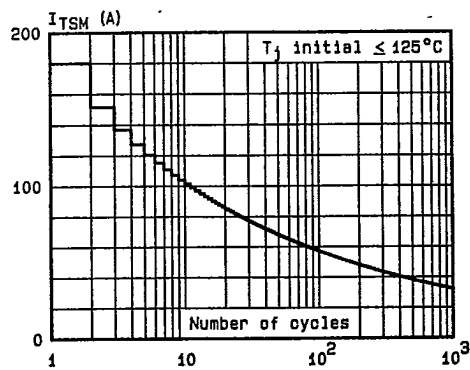


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

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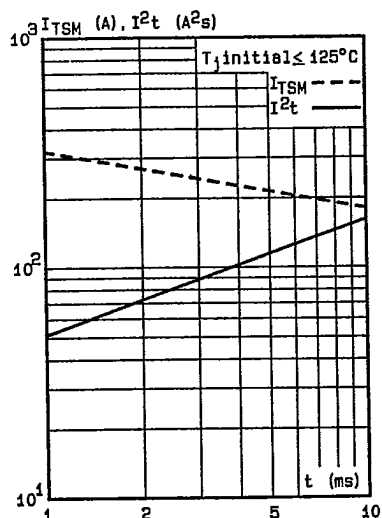


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \leq 10ms$, and corresponding value of I^2t .

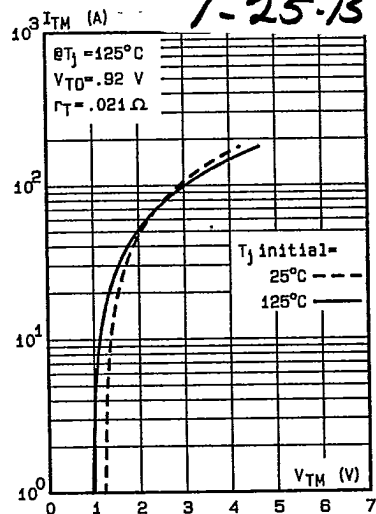


Fig.8 - On-state characteristic (maximum values).