

THOMSON SEMICONDUCTORS

BTA/BTB 40, A
TRIACS

T-25-17

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

FEATURES :

- Glass passivated chip. Fast-on connexions.
- IGT specified in four quadrants.
- Available in insulated version → **BTA series** (insulating voltage 2500 Vrms) or in uninsulated version → **BTB series**.

ADVANTAGES :

- No tapping required for fixing.
- Excellent thermal impedance and high reliability construction.

Cette nouvelle conception de triacs de puissance isolés offre un maximum d'efficacité avec un maximum de facilité d'implantation.

CARACTERISTIQUES :

- Pastille glassivée. Connexions fast-on.
- IGT défini dans les quatre quadrants.
- Livrable en version isolée → **série BTA** (tension d'isolement 2500 Veff) ou en version non isolée → **série BTB**.

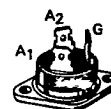
AVANTAGES :

- Fixation sans taraudage.
- Excellente impédance thermique assurant une bonne fiabilité.

$$I_{TRMS} = 40 \text{ A} / T_c = 60^\circ\text{C}$$

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

Case : RD 91 (CB - 332)
Boîtier :



ABSOLUTE RATINGS (LIMITING VALUES) VALEURS LIMITES ABSOLUES D'UTILISATION		Symbols	BTA/BTB 40, A	Units
RMS on-state current (360° conduction angle) Courant efficace à l'état passant (angle de conduction 360°)	$T_c = 60^\circ\text{C}$	I_{TRMS}	40	A
Non repetitive surge peak on-state current (on full cycle) et $25^\circ\text{C} < T_j \text{ initial} < 110^\circ\text{C}$ Courant non répétitif de surcharge crête accidentelle à l'état passant (1 cycle complet) à $25^\circ\text{C} < T_j \text{ initial} < 110^\circ\text{C}$	$F = 60 \text{ Hz}$	I_{TSM}	420	A
	$F = 50 \text{ Hz}$		400	
i_{2t} value Valeur de la constante i_{2t}	$t = 10 \text{ ms}$	i_{2t}	800	A^2s
Critical rate of rise of on-state current** Vitesse critique de croissance du courant à l'état passant	Repetitive $F = 60 \text{ Hz}$	di/dt	10	$\text{A}/\mu\text{s}$
	Non Repetitive		50	
Storage and operating junction temperature range Températures extrêmes de stockage et de jonction en fonctionnement		T_{stg} T_j	- 40 → + 125 - 40 → + 110	$^\circ\text{C}$

ABSOLUTE RATING (LIMITING VALUE) VALEUR LIMITE ABSOLUE D'UTILISATION		BTA/BTB				Unit
Symbol		40-200, A	40-400, A	40-600, A	40-700, A	
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

June 1983 - 1/4

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THOMSON
COMPONENTS

BTA/BTB 40, A

T-25-17

78C 07908

D

Thermal resistance <i>Résistance thermique</i>	Symbols	BTA/BTB 40, A	Units
— Contact (with grease) <i>Contact (avec graisse)</i>	$R_{th\ c-h}$	0,15	°C/W
— Junction to case for DC <i>Jonction - boîtier en continu</i>	$R_{th\ j-c\ DC}$	1,33	°C/W
— Junction to case for 360° conduction angle (F = 50 Hz) <i>Jonction - boîtier pour angle de conduction 360° (F = 50 Hz)</i>	$R_{th\ j-c\ AC}$	1	°C/W

GATE CHARACTERISTICS (MAXIMUM VALUES)**CARACTERISTIQUES DE GACHETTE (VALEURS MAXIMALES)** $P_{GM}^* = 40\ W$ ($t = 10\ \mu s$) $P_G(AV) = 1\ W$ $I_{GM}^* = 10\ A$ ($t = 10\ \mu s$) $V_{GM}^* = 16\ V$ ($t = 10\ \mu s$)**ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ C$ unless otherwise specified)****CARACTERISTIQUES ELECTRIQUES ($T_j = 25^\circ C$ sauf spécification contraire)**

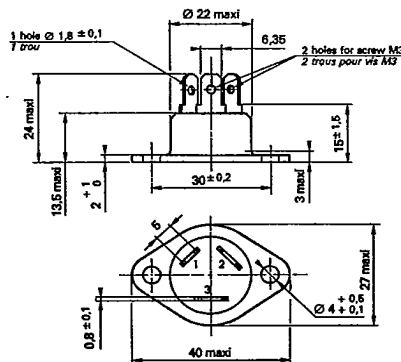
Symbols	Suffix	Quadrants	Values			Units	Test conditions
			min.	typ.	max.		
I_{GT}^*	A	I-II-III	1		50	mA	$V_D = 12\ V$ $R_L = 33\ \Omega$ Pulse duration $> 20\ \mu s$
		IV	1		80		
		I-II-III	1		100		
		IV	1		150		
V_{GT}^*					2,5	V	$V_D = 12\ V$ $R_L = 33\ \Omega$ Pulse duration $> 20\ \mu s$
V_{GD}^*			0,2			V	$T_j = 110^\circ C$ $V_D = V_{DRM}$ $R_L = 3\ k\Omega$ Pulse duration $> 20\ \mu s$
I_H^{**}	A			30	80	mA	$V_D = 12\ V$ $I_T = 1\ A$ Gate open
				30	100		
I_L^{**}					150	mA	$V_D = 12\ V$ Gate pulse duration $> 100\ \mu s$ $t_p = 1\ ms$
V_{TM}^{**}					1,6	V	$I_{TM} = 60\ A$ $t_p = 10\ ms$
I_{DRM}^{**}				0,75	4	mA	$T_j = 110^\circ C$ $V_D = V_{DRM}$ Gate open
dv/dt^{**}			50	150		V/ μs	$T_j = 110^\circ C$ Gate open Linear slope up to 0,67 V_{DRM}
$(dv/dt)_c^{**}$	A			5		V/ μs	$T_c = 60^\circ C$ $(di/dt)_c = 18\ A/ms$ I_{TRMS} and V_{DRM} rated
				5			
t_{gt}^*				2,5		μs	$di/dt = 10\ A/\mu s$ $I_G = 1\ A$ I_{TRMS} and V_{DRM} rated

* For either polarity of gate voltage with reference to electrode A₁.** For either polarity of electrode A₂ voltage with reference to electrode A₁.**CASE DESCRIPTION****DESCRIPTION DU BOITIER**

Cooling method : by conduction (method C)

Marking : type number

Weight : 15 g

1 2 3 = G A₁ A₂

RD 91 (CB-332)

2/4

THOMSON SEMICONDUCTORS

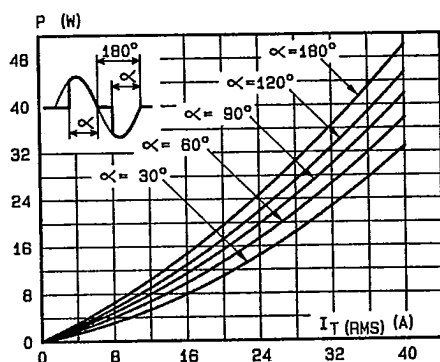


Fig.1 - Maximum mean power dissipation versus RMS on-state current.

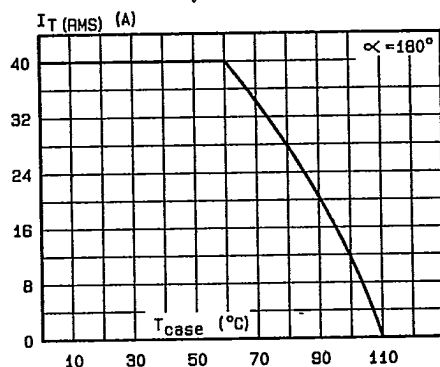


Fig.3 - RMS on-state current versus case temperature.

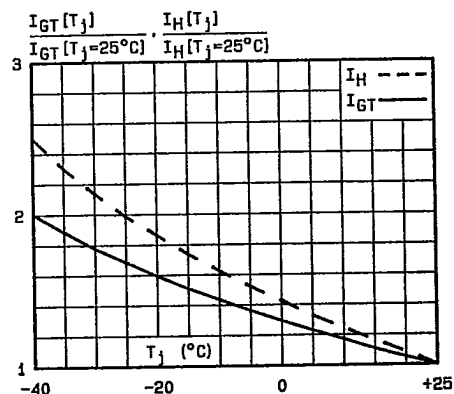


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

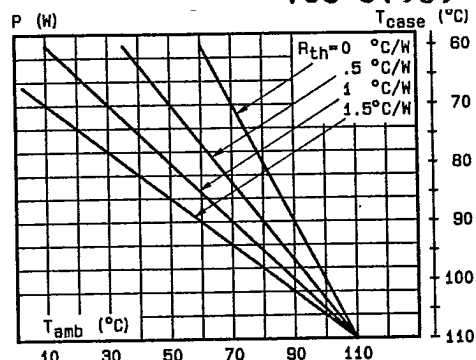


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

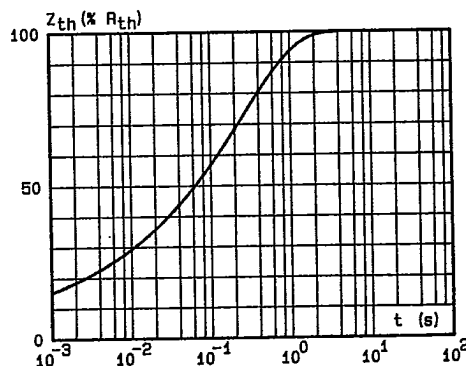


Fig.4 - Thermal transient impedance junction to case versus pulse duration.

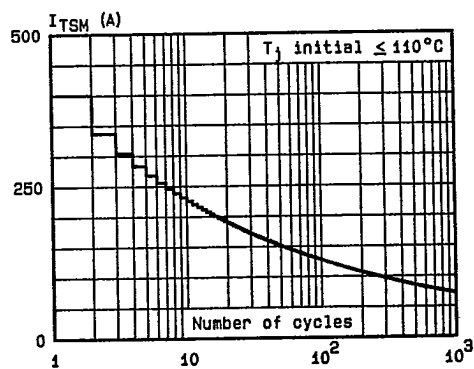


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

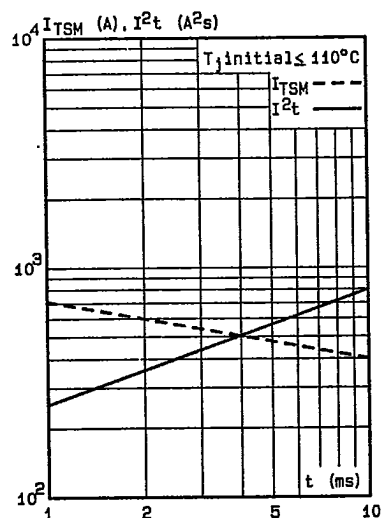


Fig. 7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \leq 10$ ms, and corresponding value of I^2t .

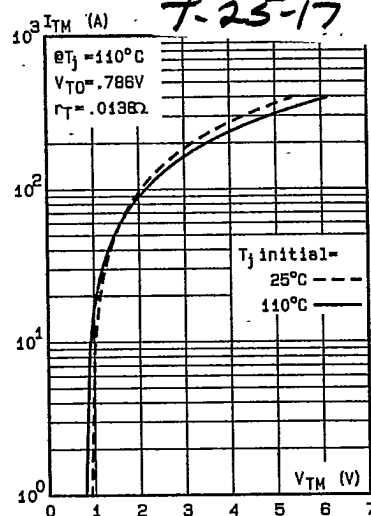


Fig. 8 - On-state characteristic (maximum values).