

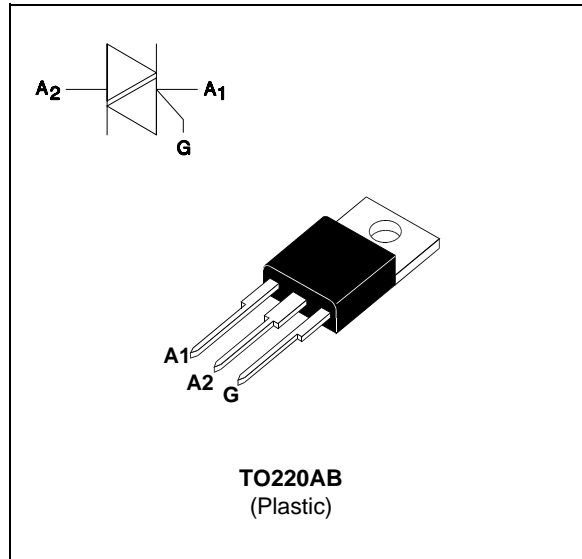
## STANDARD TRIACS

### FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION :  $(dV/dt)_c > 10V/\mu s$

### DESCRIPTION

The BTB24 B triac family are high performance glass passivated PNP devices. These parts are suitable for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 90\text{ °C}$	25	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)	$t_p = 8.3\text{ ms}$	260	A
		$t_p = 10\text{ ms}$	250	
$I^2t$	$I^2t$ value	$t_p = 10\text{ ms}$	312	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 2 \cdot I_{GT}$ $t_r \leq 100\text{ ns}$	Repetitive $F = 100\text{ Hz}$	50	A/ $\mu s$
$T_{stg}$ $T_j$	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260	°C

Symbol	Parameter	BTB24-... B				Unit
		400	600	700	800	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	700	800	V

## BTB24 B

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle ( F = 50 Hz)	1.1	°C/W

### GATE CHARACTERISTICS (maximum values)

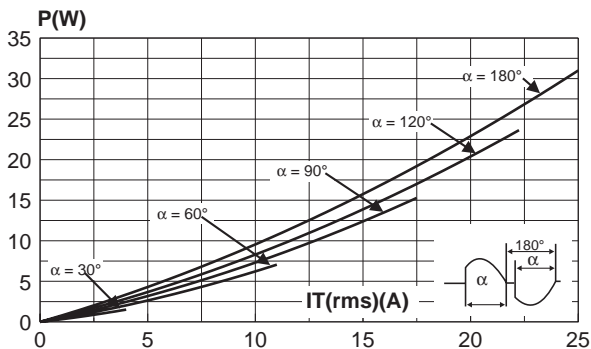
$P_G (AV) = 1W$     $P_{GM} = 10W$  (tp = 20 μs)    $I_{GM} = 4A$  (tp = 20 μs)    $V_{GM} = 16V$  (tp = 20 μs).

### ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant	Suffix	Unit		
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III-IV	MIN	5	mA
			I-II-III	MAX	50	
			IV	MAX	100	
$V_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III-IV	MAX	1.3	V
$V_{GD}$	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=125^\circ C$	I-II-III-IV	MIN	0.2	V
$I_L$	$I_G=1.2 I_{GT}$	$T_j=25^\circ C$	I-III-IV	MAX	70	mA
			II		150	
$I_H^*$	$I_T=500mA$ gate open	$T_j=25^\circ C$		MAX	50	mA
$V_{TM}^*$	$I_{TM}=35A$ tp= 380μs	$T_j=25^\circ C$		MAX	1.6	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated	$T_j=25^\circ C$		MAX	5	μA
		$T_j=125^\circ C$		MAX	2	mA
dV/dt *	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ C$		MIN	750	V/μs
(dV/dt)c *	(dI/dt)c = 11.1A/ms	$T_j=125^\circ C$		MIN	10	V/μs

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

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



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

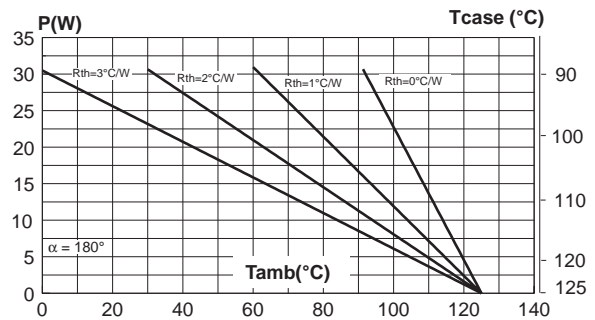


Fig. 3: RMS on-state current versus case temperature.

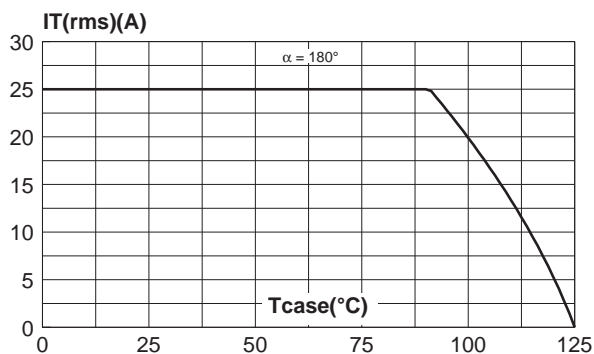


Fig. 4: Relative variation of thermal impedance versus pulse duration.

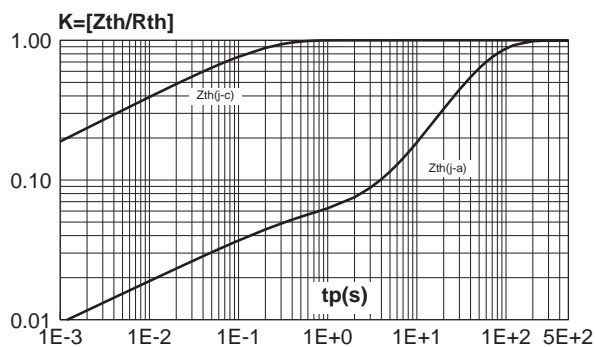


Fig. 5: Relative variation of gate trigger current and holding current versus junction temperature (typical values).

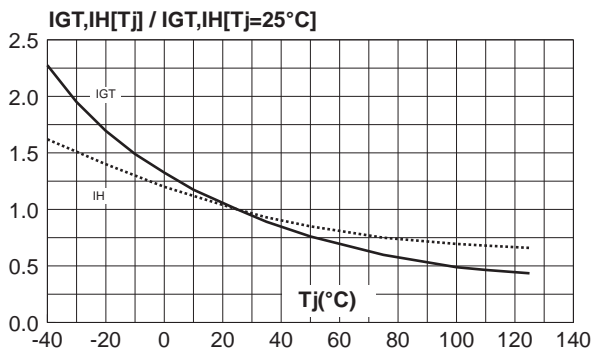


Fig. 6: Non Repetitive surge peak on-state current versus number of cycles.

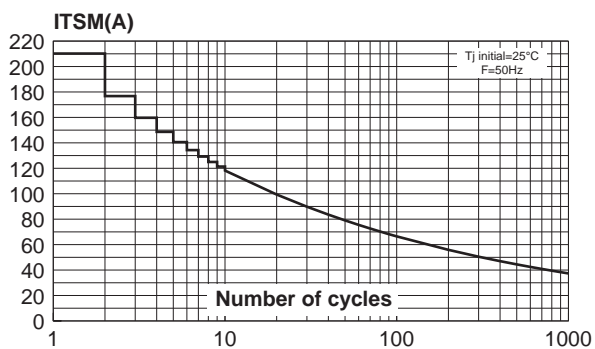


Fig. 7: Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .

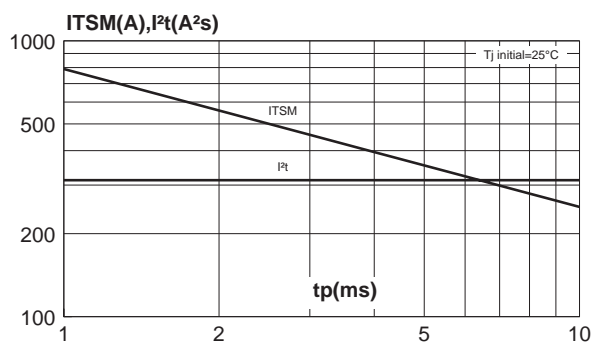
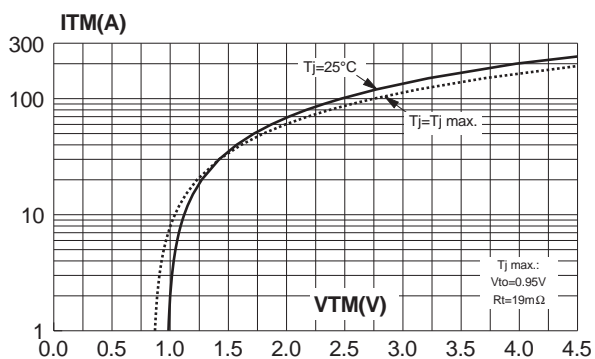


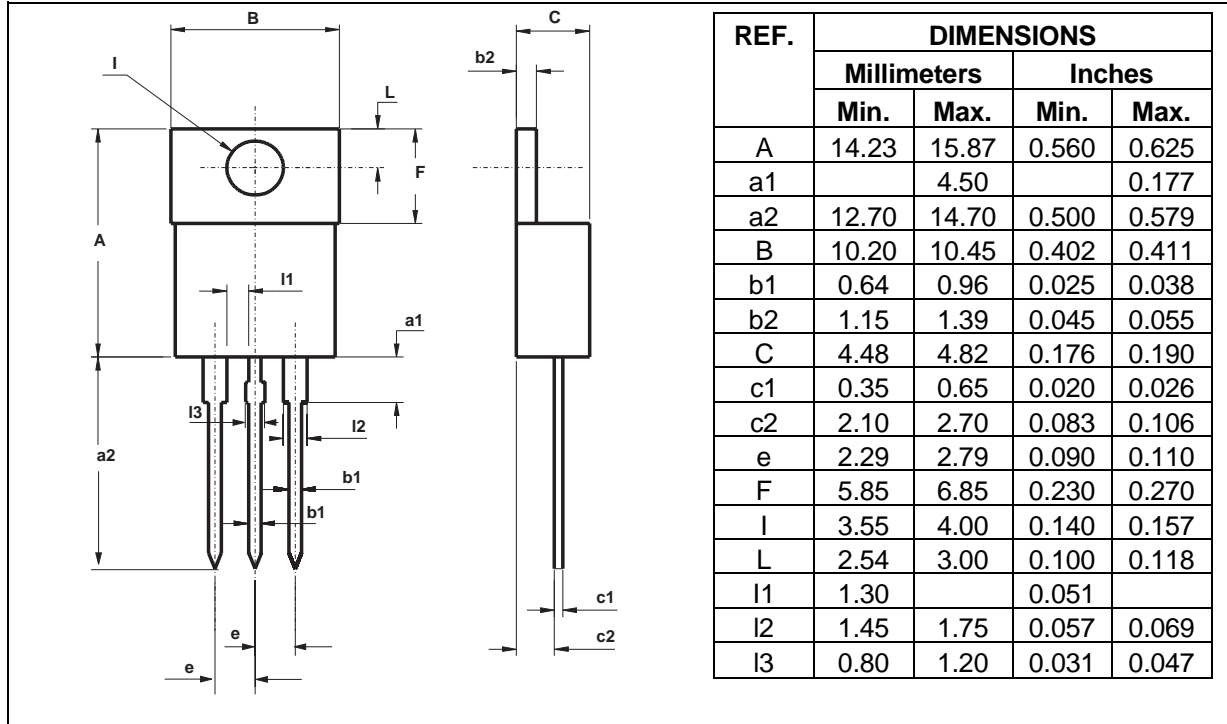
Fig. 8: On-state characteristics (maximum values).



# BTB24 B

## PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : C

Marking : type number

Weight : 2.25 g

Recommended torque value : 0.8 m.N.

Maximum torque value : 1 m.N.

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