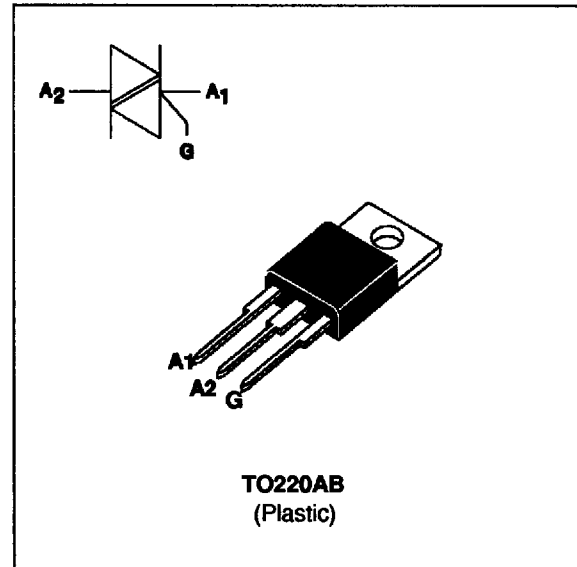


**SNUBBERLESS TRIACS**
**FEATURES**

- HIGH COMMUTATION :  $(di/dt)_c > 18A/ms$  without snubber
- HIGH SURGE CURRENT :  $I_{TSM} = 200A$
- $V_{DRM}$  UP TO 800V
- BTA Family :  
 INSULATING VOLTAGE = 2500V<sub>(RMS)</sub>  
 (UL RECOGNIZED : E81734)

**DESCRIPTION**

The BTA/BTB20 BW/CW triac family are high performance glass passivated chips technology. The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for 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)	BTA	$T_c = 70\text{ °C}$	20	A
		BTB	$T_c = 90\text{ °C}$		
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)		$t_p = 8.3\text{ ms}$	210	A
			$t_p = 10\text{ ms}$	200	
$i^2t$	$i^2t$ value		$t_p = 10\text{ ms}$	200	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 500mA$ $di_G/dt = 1A/\mu s$		Repetitive $F = 50\text{ Hz}$	20	A/ $\mu s$
			Non Repetitive	100	
$T_{stg}$ $T_j$	Storage and operating junction temperature range			- 40 to + 150	°C
				- 40 to + 125	°C
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB20-... BW/CW				Unit
		400	600	700	800	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	700	800	V

# BTA20 BW/CW / BTB20 BW/CW

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	2.8
		BTB	1.7
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.1
		BTB	1.3

## GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1W$     $P_{GM} = 10W$  ( $t_p = 20 \mu s$ )    $I_{GM} = 4A$  ( $t_p = 20 \mu s$ )    $V_{GM} = 16V$  ( $t_p = 20 \mu s$ ).

## ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant		Suffix		Unit	
				BW	CW		
IGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
VGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
VGD	VD=VDRM RL=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	VD=VDRM IG = 500mA dIG/dt = 3A/μs	Tj=25°C	I-II-III	TYP	2		μs
IL	IG=1.2 IGT	Tj=25°C	I-III	TYP	50	-	mA
			II	TYP	90	-	
			I-II-III	MAX	-	80	
IH *	IT= 500mA gate open	Tj=25°C		MAX	75	50	mA
VTM *	ITM= 28A tp= 380μs	Tj=25°C		MAX	1.70		V
IDRM IRRM	VDRM Rated VRRM Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	3		
dV/dt *	Linear slope up to VD=67%VDRM gate open	Tj=125°C		MIN	500	250	V/μs
				TYP	750	500	
(di/dt)c *	Without snubber	Tj=125°C		MIN	18	11	A/ms
				TYP	36	22	

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

ORDERING INFORMATION

Package	$I_T(\text{RMS})$	$V_{\text{DRM}} / V_{\text{RRM}}$	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	20	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).  
(Curves are cut off by (di/dt)c limitation)

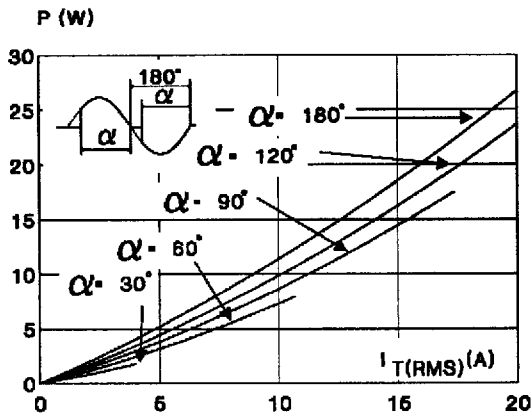


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTB).

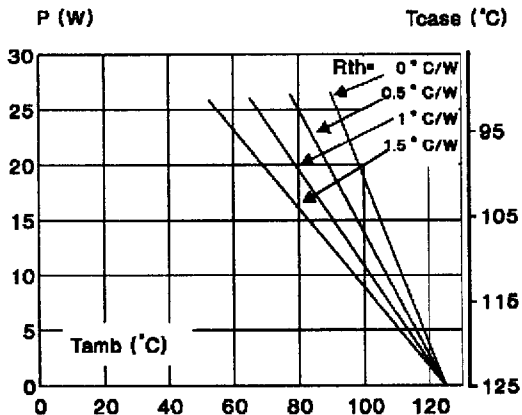


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTA).

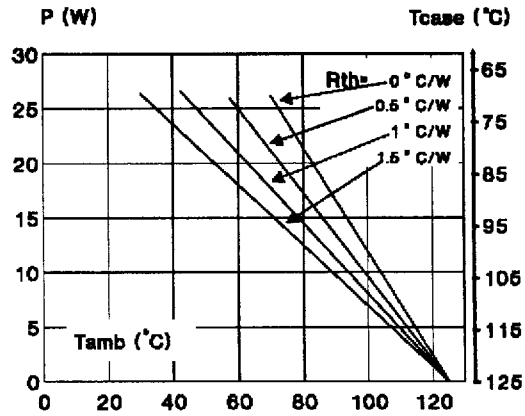
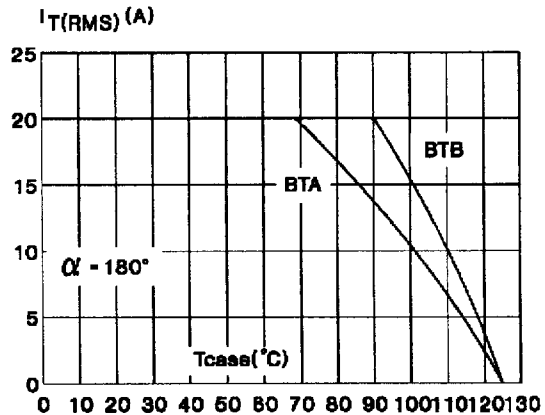
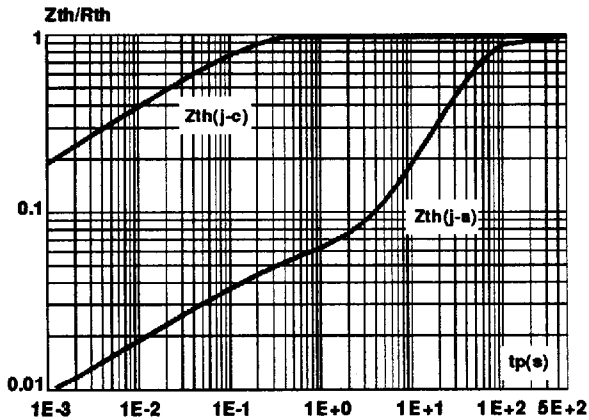


Fig.4 : RMS on-state current versus case temperature.

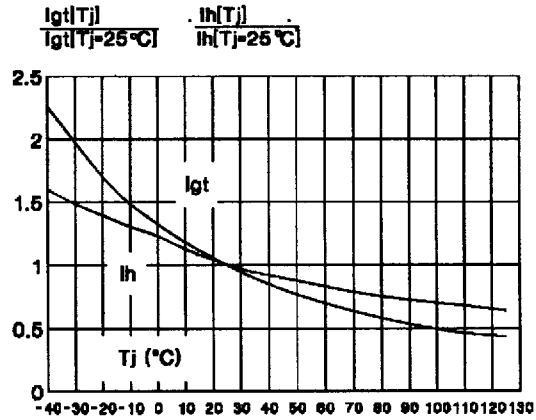


**BTA20 BW/CW / BTB20 BW/CW**

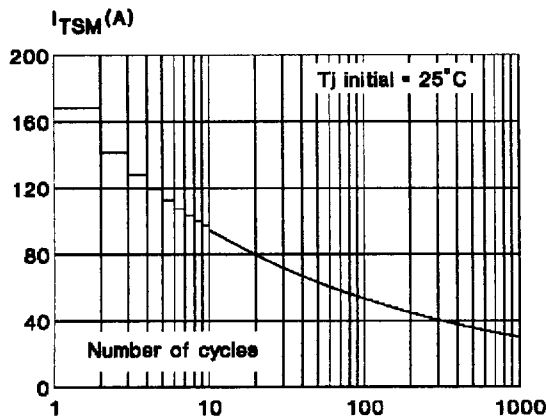
**Fig.5 :** Relative variation of thermal impedance versus pulse duration.



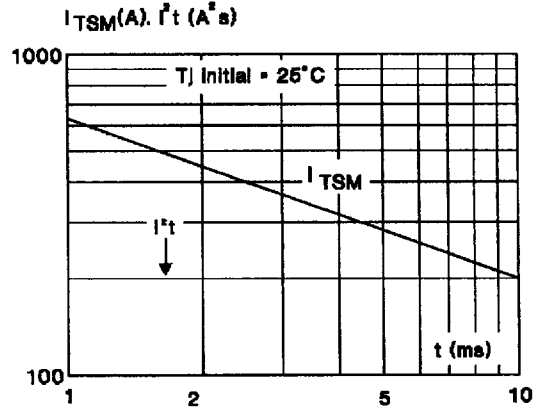
**Fig.6 :** Relative variation of gate trigger current and holding current versus junction temperature.



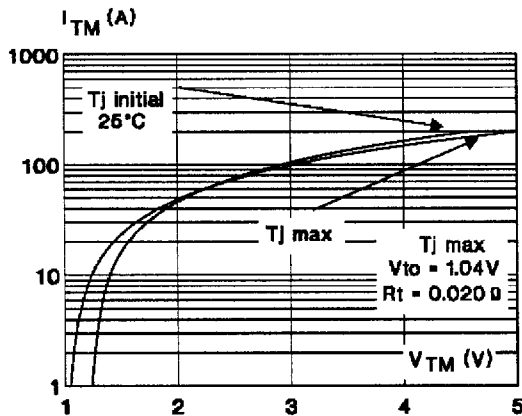
**Fig.7 :** Non Repetitive surge peak on-state current versus number of cycles.



**Fig.8 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10ms$ , and corresponding value of  $I^2t$ .

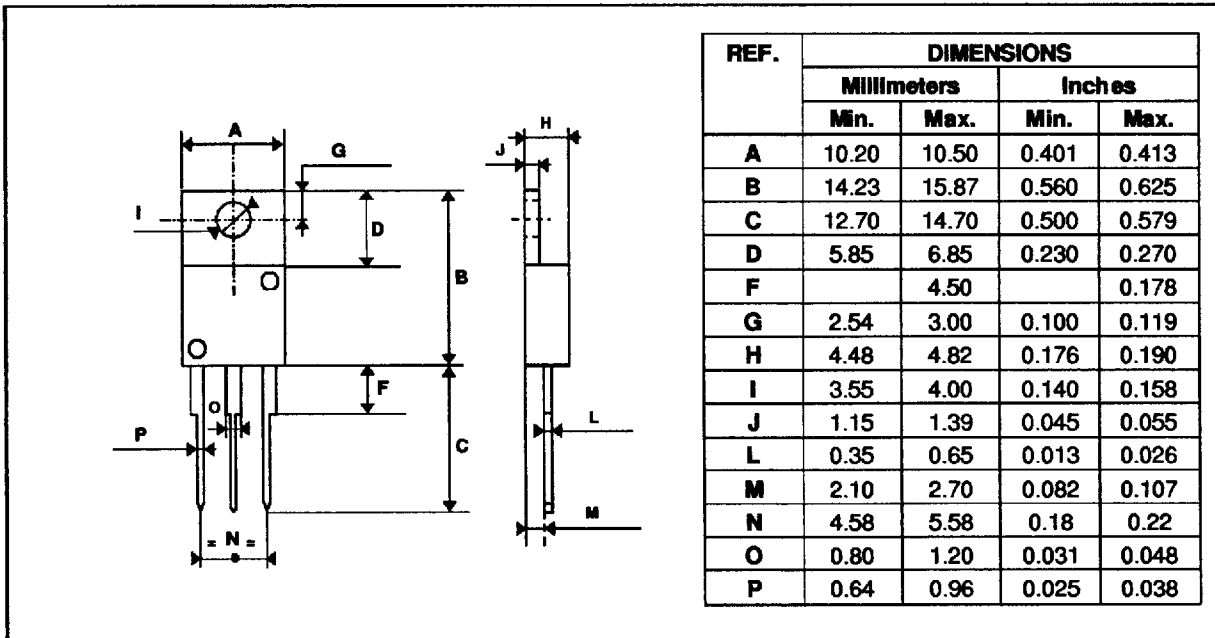


**Fig.9 :** On-state characteristics (maximum values).



**PACKAGE MECHANICAL DATA**

TO220AB Plastic



Cooling method : C  
 Marking : type number  
 Weight : 2.3 g  
 Recommended torque value : 0.8 m.N.  
 Maximum torque value : 1 m.N.

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