

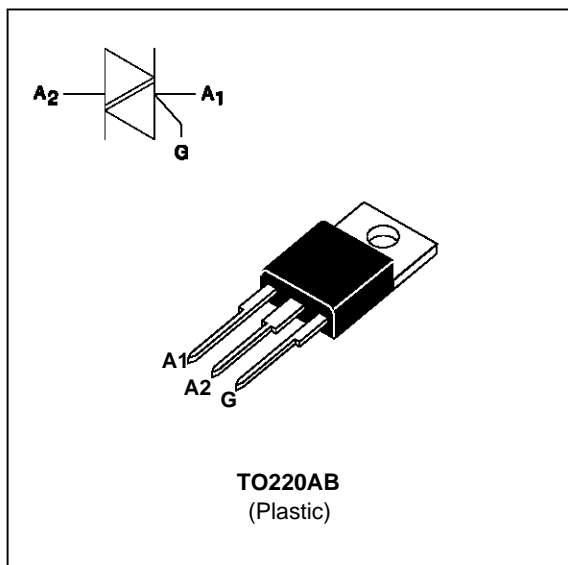
## SNUBBERLESS TRIACS

### 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 <sub>T(RMS)</sub>	RMS on-state current (360° conduction angle)	BTA	T <sub>c</sub> = 70 °C	20	A
		BTB	T <sub>c</sub> = 90 °C		
I <sub>TSM</sub>	Non repetitive surge peak on-state current ( T <sub>j</sub> initial = 25°C )		tp = 8.3 ms	210	A
			tp = 10 ms	200	
i <sup>2</sup> t	i <sup>2</sup> t value		tp = 10 ms	200	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current Gate supply : I <sub>G</sub> = 500mA di <sub>G</sub> /dt = 1A/μs		Repetitive F = 50 Hz	20	A/μs
			Non Repetitive	100	
T <sub>stg</sub> T <sub>j</sub>	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C	
TI	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 <sub>DRM</sub> V <sub>RRM</sub>	Repetitive peak off-state voltage T <sub>j</sub> = 125 °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	°C/W
		BTB	1.7	
Rth (j-c) AC	Junction to case for 360° conduction angle ( F= 50 Hz)	BTA	2.1	°C/W
		BTB	1.3	

### GATE CHARACTERISTICS (maximum values)

PG (AV) = 1W    PGM = 10W (tp = 20 μs)    IGM = 4A (tp = 20 μs)    VGM = 16V (tp = 20 μs).

### ELECTRICAL CHARACTERISTICS

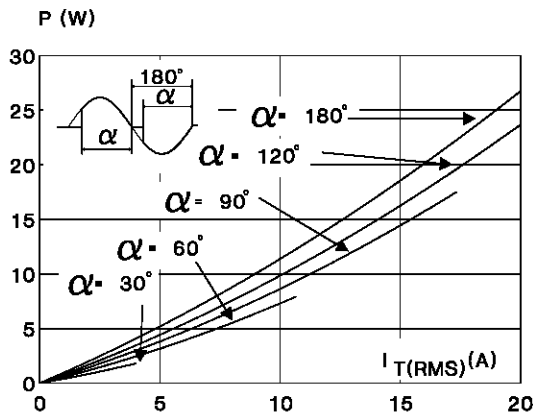
Symbol	Test Conditions	Quadrant		Suffix		Unit	
				BW	CW		
IGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
VGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
VGD	VD=VDRM RL=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	VD=VDRM IG = 500mA dIG/dt = 3A/μs	Tj=25°C	I-II-III	TYP	2		μs
IL	IG=1.2 IGT	Tj=25°C	I-III	TYP	50	-	mA
			II	TYP	90	-	
			I-II-III	MAX	-	80	
I <sub>H</sub> *	I <sub>T</sub> = 500mA gate open	Tj=25°C		MAX	75	50	mA
V <sub>TM</sub> *	I <sub>TM</sub> = 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) <sub>c</sub> *	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.

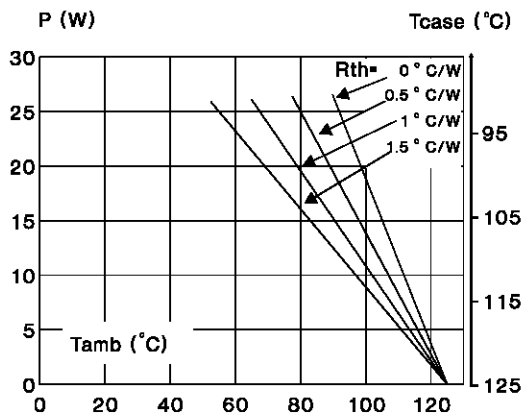
ORDERING INFORMATION

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)	20	400	X	X
		600	X	X
		700	X	X
		800	X	X

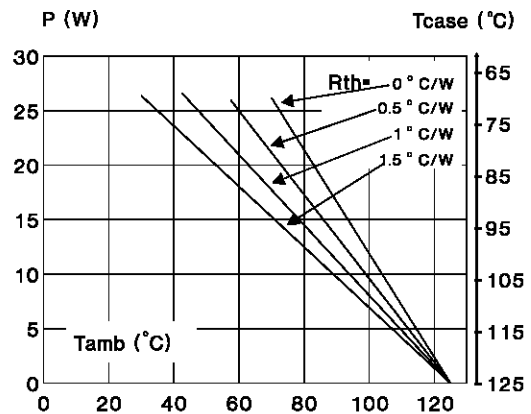
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current ( $F=50\text{Hz}$ ).  
(Curves are cut off by  $(di/dt)_c$  limitation)



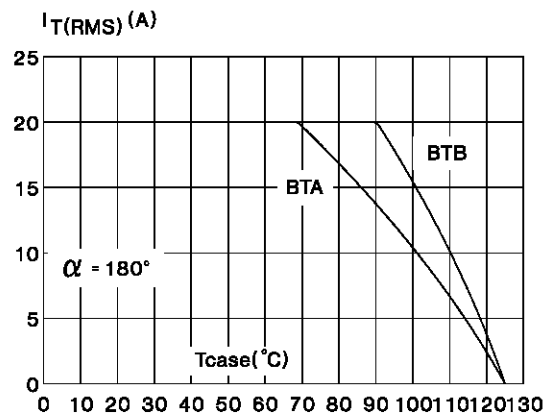
**Fig.3** : Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTB).



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



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

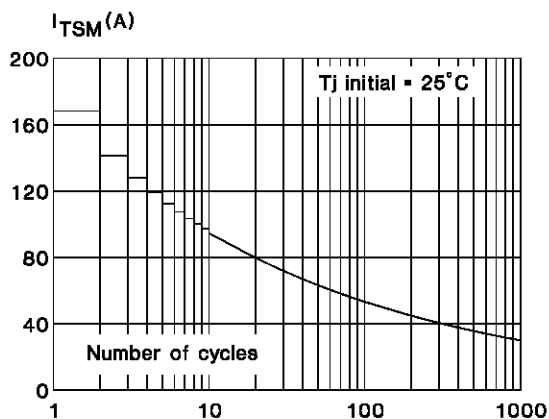


# BTA20 BW/CW / BTB20 BW/CW

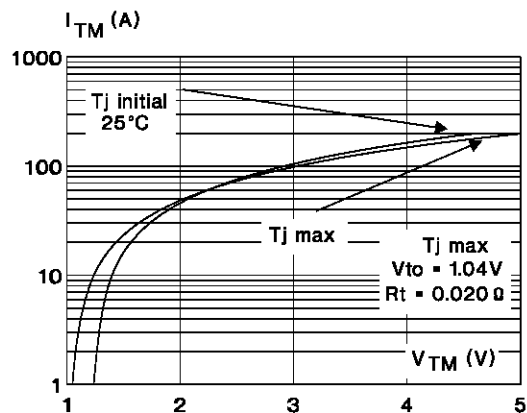
**Fig.5 :** Relative variation of thermal impedance versus pulse duration.



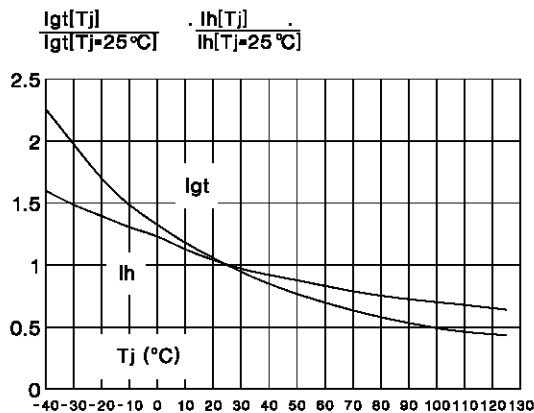
**Fig.7 :** Non Repetitive surge peak on-state current versus number of cycles.



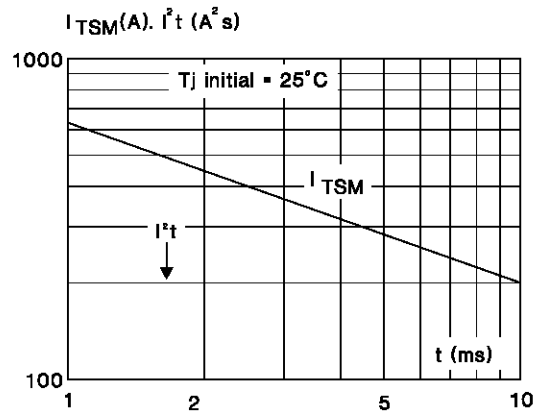
**Fig.9 :** On-state characteristics (maximum values).



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

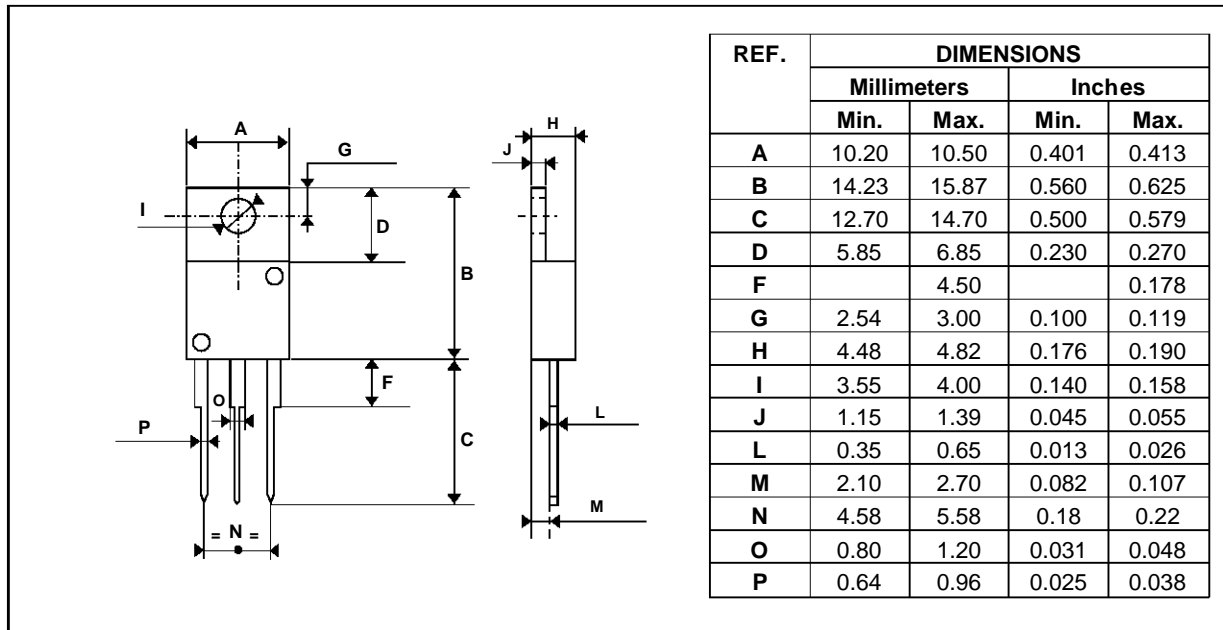


**Fig.8 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$ ms, and corresponding value of  $I^2t$ .



**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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