

# BTA06 BW/CW BTB06 BW/CW

# **SNUBBERLESS TRIACS**

#### **FEATURES**

■ HIGH COMMUTATION : (dl/dt)c > 5A/ms without snubber

■ HIGH SURGE CURRENT : I<sub>TSM</sub> = 60A

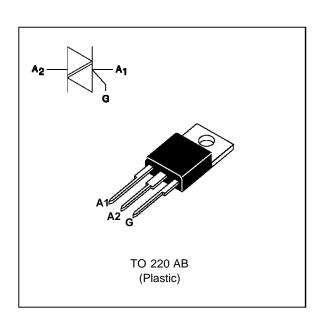
■ V<sub>DRM</sub> UP TO 800V

■ BTA Family:

INSULATING VOLTAGE = 2500V<sub>(RMS)</sub> (UL RECOGNIZED : E81734)

#### **DESCRIPTION**

The BTA/BTB06 BW/CW triac family are high performance glass passivated chips technology. The SNUBBERLESS<sup>TM</sup> 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		
IT(RMS)			Tc = 100 °C	6	А
	(360° conduction angle)	втв	Tc = 105 °C		
ITSM			tp = 8.3 ms	63	Α
	( Tj initial = 25°C )			60	
ı2t	I <sup>2</sup> t value	tp = 10 ms	18	A <sup>2</sup> s	
dl/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	
Tstg Tj	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 / BTB0	6 BW/CW		Unit
		400	600	700	800	
V <sub>DRM</sub> V <sub>RRM</sub>	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

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# THERMAL RESISTANCES

Symbol	Parameter	Value	Unit	
Rth (j-a)	Junction to ambient	60	°C/W	
Rth (j-c) DC	Junction to case for DC	вта	4.4	°C/W
		втв	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle	вта	3.3	°C/W
	( F= 50 Hz)	втв	2.5	

# **GATE CHARACTERISTICS** (maximum values)

 $PG~(AV) = 1W~~PGM = 10W~(tp = 20~\mu s)~~I_{GM} = 4A~(tp = 20~\mu s)~~V_{GM} = 16V~(tp = 20~\mu s).$ 

# **ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	cw	
IGT	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	Tj=25°C	1-11-111	MIN	2	1	mA
				MAX	50	35	
VGT	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	Tj=25°C	1-11-111	MAX	1.	.5	V
VGD	VD=VDRM RL=3.3kΩ	Tj=125°C	1-11-111	MIN	0.	.2	V
tgt	$VD=VDRM$ $IG = 500mA$ $dI_G/dt = 3A/\mu s$	Tj=25°C	1-11-111	TYP	2	2	μs
IL	I <sub>G</sub> =1.2 I <sub>GT</sub>	Tj=25°C	1-111	TYP	40	-	mA
			П	TYP	80	-	
			1-111	MAX	-	50	
			П	MAX	-	80	
I <sub>H</sub> *	I <sub>T</sub> = 500mA gate open	Tj=25°C		MAX	50	35	mA
V <sub>TM</sub> *	I <sub>TM</sub> = 8.5A tp= 380μs	Tj=25°C		MAX	1.	75	V
IDRM	V <sub>DRM</sub> Rated	Tj=25°C		MAX	0.0	01	mA
IRRM	V <sub>RRM</sub> Rated	Tj=125°C		MAX	2	2	
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub>	Tj=125°C		MIN	500	250	V/μs
	gate open			TYP	750	500	
(dl/dt)c *	Without snubber	Tj=125°C		MIN	5	3.5	A/ms
				TYP	10	7	

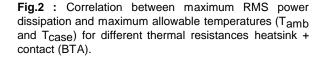
<sup>\*</sup> For either polarity of electrode A2 voltage with reference to electrode A1.

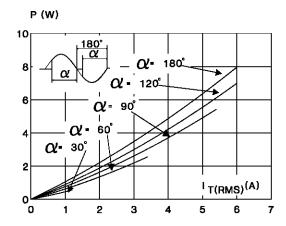


### **ORDERING INFORMATION**

Package	IT(RMS)	V <sub>DRM</sub> / V <sub>RRM</sub>	Sensitivity S	Specification
	A	v	BW	CW
ВТА	6	400	Χ	X
(Insulated)		600	Χ	X
		700	X	X
		800	Χ	X
втв		400	X	X
(Uninsulated)		600	X	X
		700	Х	X
		800	Х	Х

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

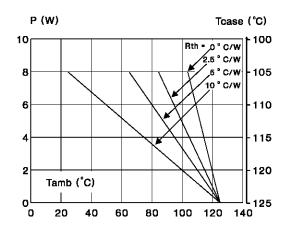




P (W) Tcase (°C) 10 Rth=\_0 ° C/W 2.5 ° C/W 5 ° C/W 8 10 ° C/W 105 6 115 Tamb (°C) 125 o 20 40 60 80 140 100 120

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

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



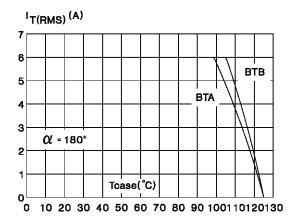


Fig.5: Relative variation of thermal impedance versus pulse duration.

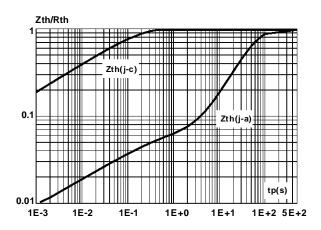


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

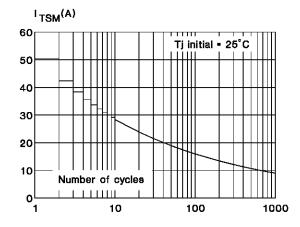
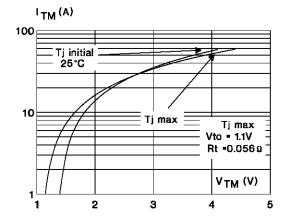


Fig.9: On-state characteristics (maximum values).



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

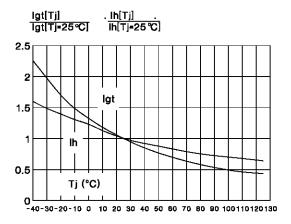
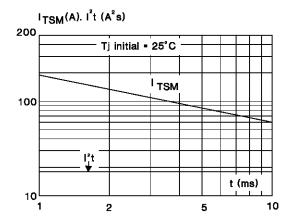
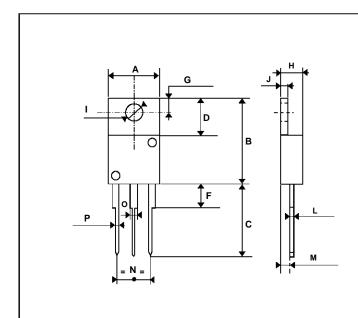


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10 ms,$  and corresponding value of  $I^2t.$ 



### **PACKAGE MECHANICAL DATA**

TO220AB Plastic



REF.	DIMENSIONS				
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
Α	10.20	10.50	0.401	0.413	
В	14.23	15.87	0.560	0.625	
С	12.70	14.70	0.500	0.579	
D	5.85	6.85	0.230	0.270	
F		4.50		0.178	
G	2.54	3.00	0.100	0.119	
Н	4.48	4.82	0.176	0.190	
I	3.55	4.00	0.140	0.158	
J	1.15	1.39	0.045	0.055	
L	0.35	0.65	0.013	0.026	
М	2.10	2.70	0.082	0.107	
Ν	4.58	5.58	0.18	0.22	
0	0.80	1.20	0.031	0.048	
Р	0.64	0.96	0.025	0.038	

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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