

# BTA06 TW/SW BTB06 TW/SW

# LOGIC LEVEL TRIACS

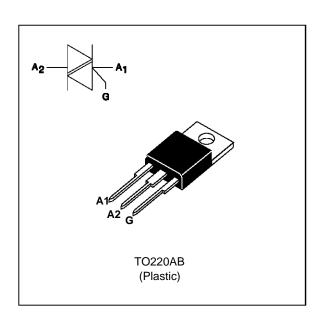
### **FEATURES**

- LOW I<sub>GT</sub> = 5mA max
- LOW I<sub>H</sub> = 15mA max
- HIGH EFFICIENCY SWITCHING
- BTA Family: INSULATING VOLTAGE = 2500V<sub>(RMS)</sub> (UL RECOGNIZED: E81734)

#### **DESCRIPTION**

The BTA/BTB06 TW/SW use high performance products glass passivated chips.

The low  $I_{GT}$  /  $I_{H}$  level coupled with the high efficiency circuit make this family will adapted for low power trigger circuits (microcontrollers, microprocessors, integrated circuits ...)



# **ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter			Value	Unit
IT(RMS)			Tc = 80 °C	6	Α
	(360° conduction angle)	втв	Tc = 90 °C		
ITSM	ITSM Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	63	Α
			tp = 10 ms	60	
l <sup>2</sup> t	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> = 50mA di <sub>G</sub> /dt = 0.1A/μs		Repetitive F = 50 Hz	20	A/μs
		100			
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
TI	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB06-				
		400 TW/SW	600 TW/SW	700 TW/SW		
VDRM VRRM	Repetitive peak off-state voltage Tj = 110 °C	400	600	700	V	

March 1995

## BTA06 TW/SW / BTB06 TW/SW

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit	
Rth (j-a)	Junction to ambient	60	°C/W	
Rth (j-c) DC	Junction to case for DC	o case for DC BTA		°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**

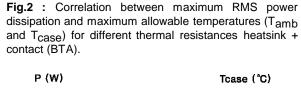
Symbol	Test Conditions		Quadrant	Suffix		ffix	Unit
					TW	sw	
lGT	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	Tj=25°C	1-11-111	MAX	5	10	mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	Tj=25°C	1-11-111	MAX	1.	.5	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	Tj=110°C	1-11-111	MIN	0.	.2	V
tgt	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 40mA dI <sub>G</sub> /dt = 0.5A/μs	Tj=25°C	1-11-111	TYP	2		μs
IL	IG=1.2 IGT	Tj=25°C	1-111	TYP	8	15	mA
			II		15	25	
IH *	IT= 100mA gate open	Tj=25°C		MAX	15	25	mA
VTM *	I <sub>TM</sub> = 8.5A tp= 380μs	Tj=25°C		MAX	1.75		V
!DRM	VDRM Rated	Tj=25°C		MAX	0.0	01	mA
<sup>I</sup> RRM	V <sub>RRM</sub> Rated	Tj=110°C		MAX	1		
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	Tj=110°C		MIN	20	50	V/μs
(dl/dt)c *	dV/dt= 0.1V/μs	Tj=110°C		MIN	2.7	3.5	A/ms
	dV/dt= 20V/μs			MIN	1.3	2.7	

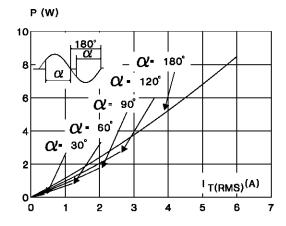
 $<sup>^{\</sup>star}$  For either polarity of electrode  $A_2$  voltage with reference to electrode  $A_1.$ 

### **ORDERING INFORMATION**

Package	IT(RMS)	V <sub>DRM</sub> / V <sub>RRM</sub>	Sensitivity S	Specification
	Α	V	тw	sw
ВТА	6	400	X	X
(Insulated)		600	X	X
		700	Х	Х
ВТВ		400	X	Х
(Uninsulated)		600	Х	Х
		700	Х	Х

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

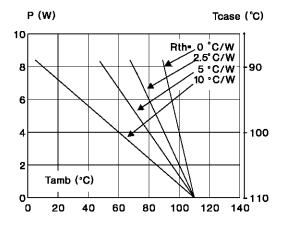


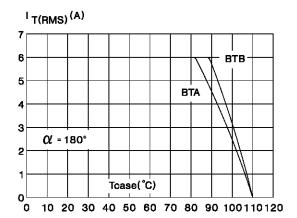


10 Rth- 0°C/W .2.5°C/W 8 5°C/W 10°C/W 90 6 100 Tamb (°C) 110 o 20 60 80 100 120 40 140

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 transient impedance versus pulse duration.

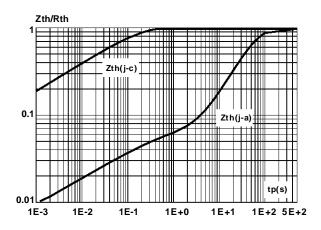


Fig.7: Non Repetitive surge peak on-state current versus number of cycles.

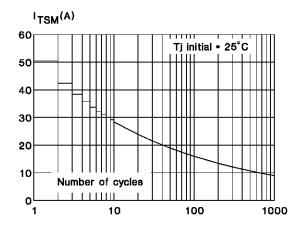


Fig.9: On-state characteristics (maximum values).

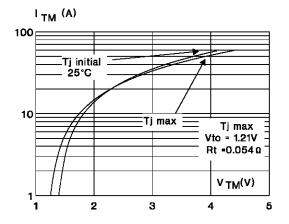
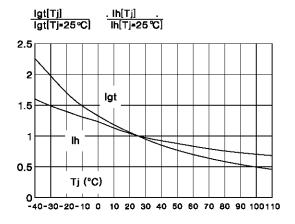
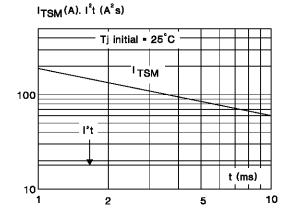


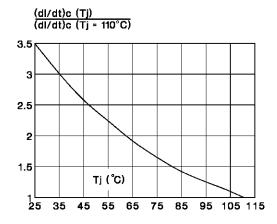
Fig.6: Relative variation of gate trigger current and holding current versus junction temperature.



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

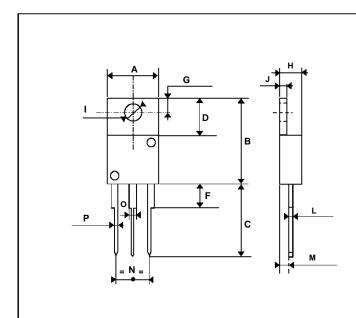


**Fig.10**: Relative variation of (dl/dt)c versus junction temperature.



### **PACKAGE MECHANICAL DATA**

TO220AB Plastic



REF.	DIMENSIONS				
	Millimeters		Incl	hes	
	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	<b>G</b> 2.54		0.100	0.119	
Н	4.48 4.82		0.176	0.190	
ı	3.55	4.00	0.140	0.158	
J	1.15	1.39	0.045	0.055	
١	0.35	0.65	0.013	0.026	
М	2.10 2.70		0.082	0.107	
N	4.58 5.58		0.18	0.22	
0	0.80	1.20 0.031		0.048	
P	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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsability for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

### SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

