

## TRIACS

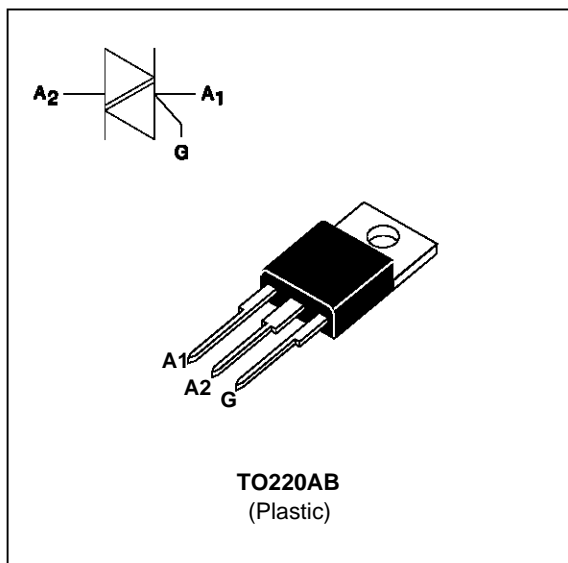
### FEATURES

- LOW  $I_H = 13\text{mA}$  max
- HIGH SURGE CURRENT :  $I_{TSM} = 120\text{A}$
- $I_{GT}$  SPECIFIED IN FOUR QUADRANTS
- INSULATING VOLTAGE =  $2500V_{(RMS)}$   
(UL RECOGNIZED : E81734)

### DESCRIPTION

The BTA10 GP's use high performance, glass passivated chips.

The insulated TO220AB package, the high surge current and low holding current make this family well adapted to LIGHT DIMMER applications.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 90\text{ °C}$	10	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = $25\text{ °C}$ )	$t_p = 8.3\text{ ms}$	126	A
		$t_p = 10\text{ ms}$	120	
$I^2t$	$I^2t$ value	$t_p = 10\text{ ms}$	72	$A^2s$
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 500\text{mA}$ $di_G/dt = 1\text{A}/\mu\text{s}$	Repetitive $F = 50\text{ Hz}$	10	$A/\mu\text{s}$
		Non Repetitive	50	
$T_{stg}$ $T_j$	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	$^{\circ}\text{C}$ $^{\circ}\text{C}$
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260	$^{\circ}\text{C}$

Symbol	Parameter	BTA10-		Unit
		400 GP	600 GP	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	400	600	V

**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	4	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle ( F= 50 Hz)	3	°C/W

**GATE CHARACTERISTICS** (maximum values)

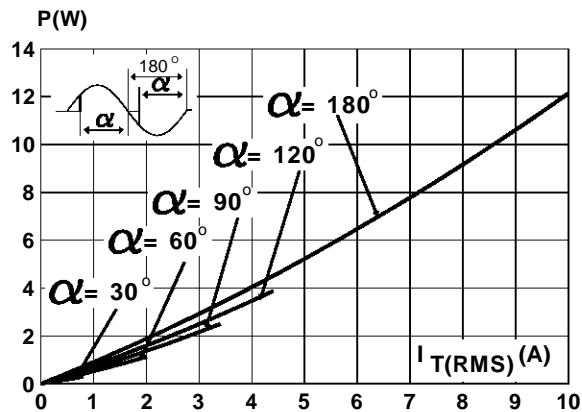
$P_G$  (AV) = 1W     $P_{GM}$  = 10W (tp = 20 μs)     $I_{GM}$  = 4A (tp = 20 μs)     $V_{GM}$  = 16V (tp = 20 μs).

**ELECTRICAL CHARACTERISTICS**

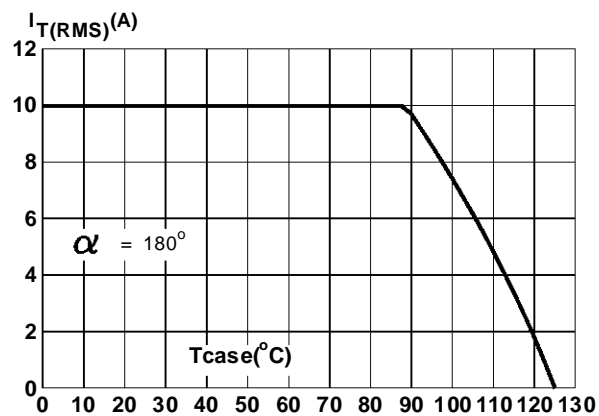
Symbol	Test Conditions		Quadrant		Suffix	Unit
					GP	
IGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	75	
VGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
VGD	VD=VDRM RL=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	VD=VDRM IG = 500mA dIG/dt = 3A/μs	Tj=25°C	I-II-III-IV	TYP	2	μs
IL	IG=1.2 IGT	Tj=25°C	I-III-IV	TYP	20	mA
			II		40	
IH *	IT= 100mA gate open	Tj=25°C		MAX	13	mA
VTM *	ITM= 14A tp= 380μs	Tj=25°C		MAX	1.5	V
IDRM IRRM	VDRM Rated VRRM Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	0.5	
dV/dt *	Linear slope up to VD=67%VDRM gate open	Tj=110°C		MIN	30	V/μs
				TYP	100	
(dV/dt)c *	(dI/dt)c= 2.2A/ms	Tj=110°C		MIN	1	V/μs
				TYP	10	

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

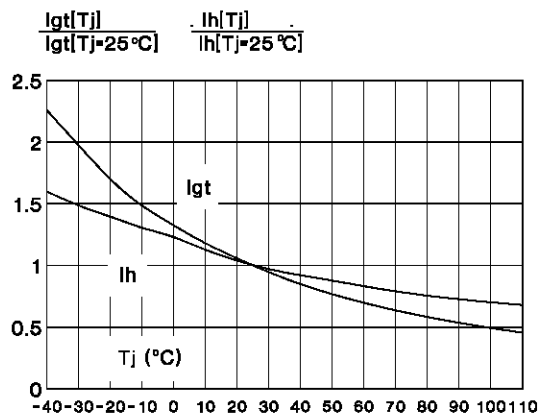
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).  
(curves are cut off by (di/dt)c limitation)



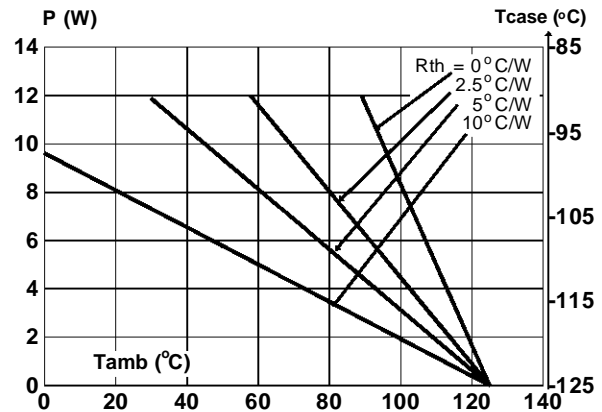
**Fig.3** : RMS on-state current versus case temperature.



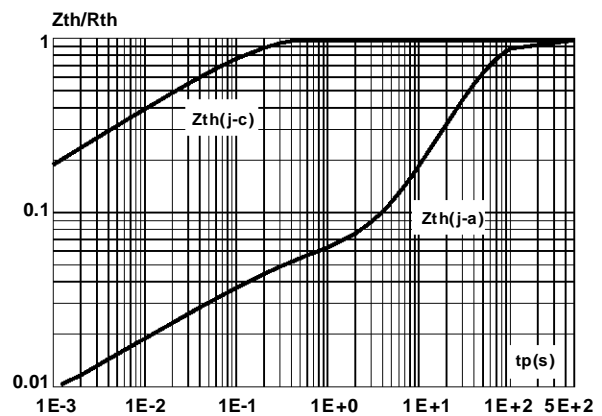
**Fig.5** : Relative variation of gate trigger current and holding current versus junction temperature.



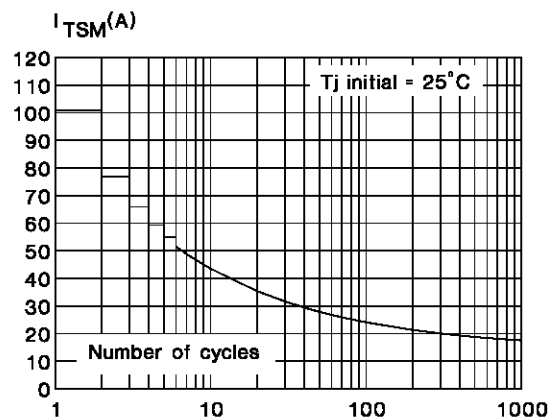
**Fig.2** : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.



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

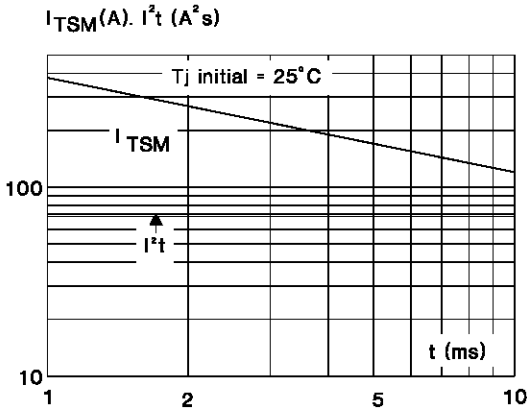


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

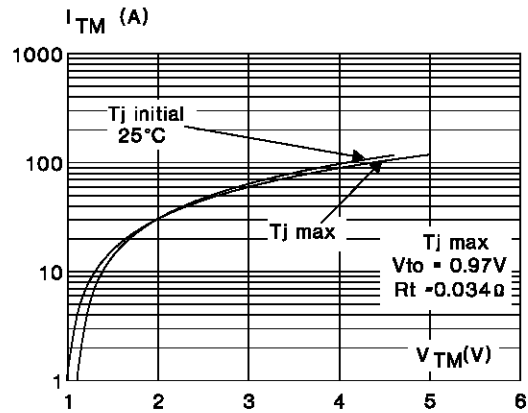


# BTA10 GP

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

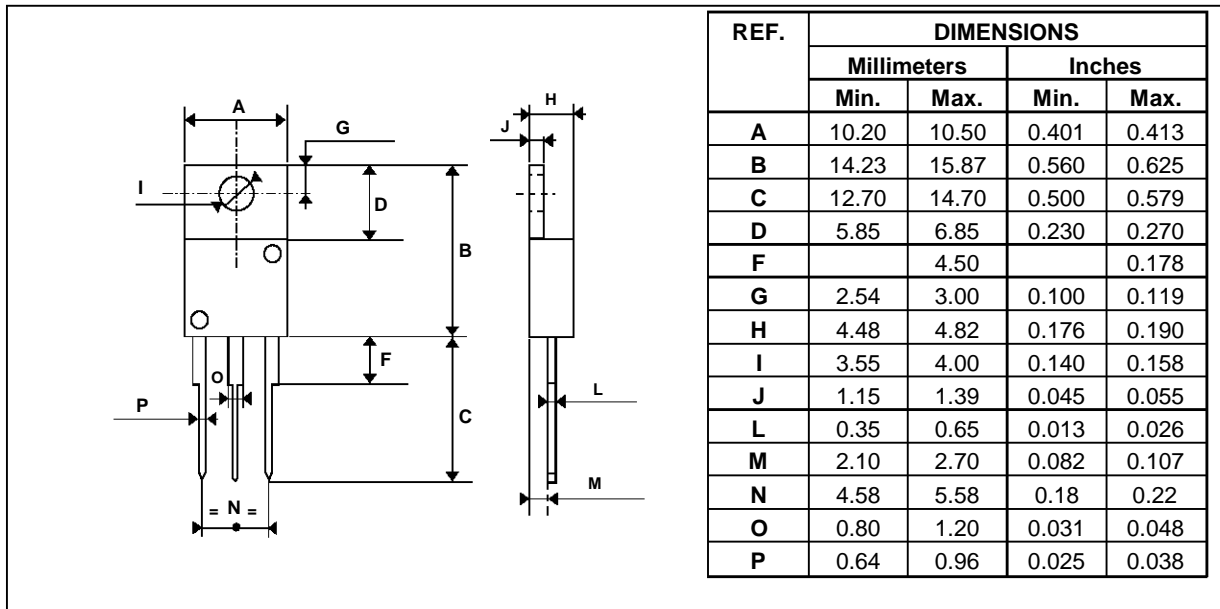


**Fig.8 :** On-state characteristics (maximum values).



## 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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility 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.