

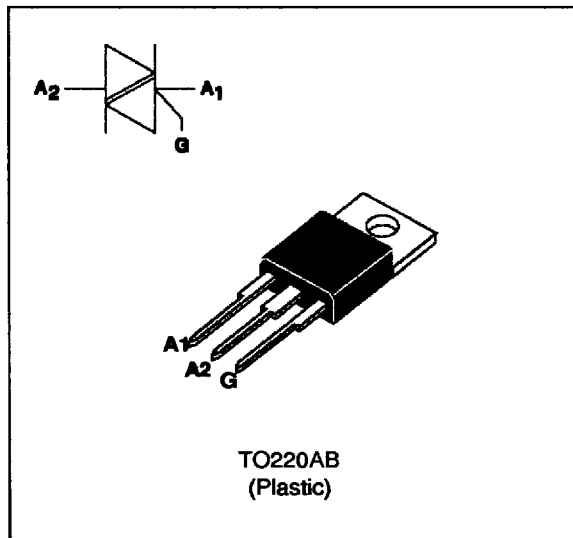
LOGIC LEVEL TRIACS

FEATURES

- LOW $I_{GT} = 5\text{mA max}$
- LOW $I_H = 15\text{mA max}$
- HIGH EFFICIENCY SWITCHING
- BTA Family :
 INSULATING VOLTAGE = $2500V_{(RMS)}$
 (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
I _T (RMS)	RMS on-state current (360° conduction angle)	BTA	T _c = 80 °C	6	A
		BTB	T _c = 90 °C		
I _{TSM}	Non repetitive surge peak on-state current (T _J initial = 25°C)	t _p = 8.3 ms		63	A
		t _p = 10 ms		60	
I ² t	I ² t value	t _p = 10 ms		18	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : I _G = 50mA di _G /dt = 0.1A/μs	Repetitive F = 50 Hz		20	A/μs
		Non Repetitive		100	
T _{stg} T _J	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
T _l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB06-			Unit
		400 TW/SW	600 TW/SW	700 TW/SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 110\text{ °C}$	400	600	700	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	BTA	4.4	°C/W
		BTB	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F = 50 Hz)	BTA	3.3	°C/W
		BTB	2.5	

GATE CHARACTERISTICS (maximum values)

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

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					TW	SW	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _J =25°C	I-II-III	MAX	5	10	mA
V _{GT}	V _D =12V (DC) R _L =33Ω	T _J =25°C	I-II-III	MAX	1.5		V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _J =110°C	I-II-III	MIN	0.2		V
t _{gt}	V _D =V _{DRM} I _G = 40mA di _G /dt = 0.5A/μs	T _J =25°C	I-II-III	TYP	2		μs
I _L	I _G =1.2 I _{GT}	T _J =25°C	I-III	TYP	8	15	mA
			II		15	25	
I _H *	I _T = 100mA gate open	T _J =25°C		MAX	15	25	mA
V _{TM} *	I _{TM} = 8.5A tp= 380μs	T _J =25°C		MAX	1.75		V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _J =25°C		MAX	0.01		mA
		T _J =110°C		MAX	1		
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _J =110°C		MIN	20	50	V/μs
(di/dt) _c *	dV/dt= 0.1V/μs	T _J =110°C		MIN	2.7	3.5	A/ms
	dV/dt= 20V/μs			MIN	1.3	2.7	

* For either polarity of electrode A_2 voltage with reference to electrode A_1 .

ORDERING INFORMATION

Package	$I_T(\text{RMS})$	$V_{\text{DRM}} / V_{\text{RRM}}$	Sensitivity Specification	
	A	V	TW	SW
BTA (Insulated)	6	400	X	X
		600	X	X
		700	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	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)

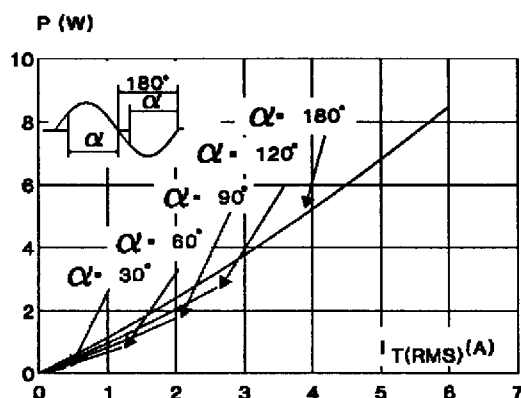


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

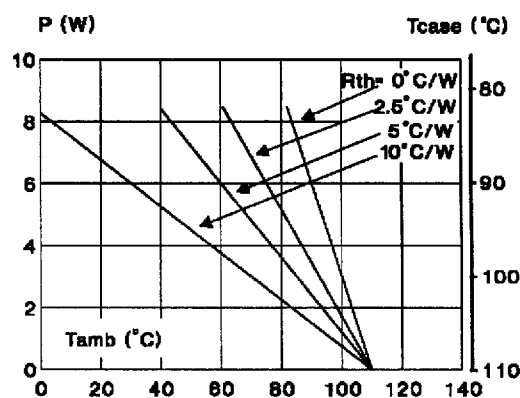


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

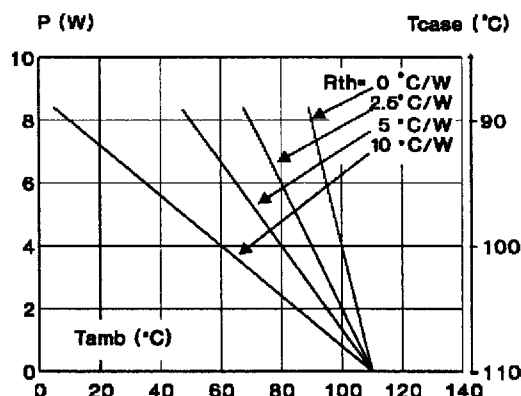


Fig.4 : RMS on-state current versus case temperature.

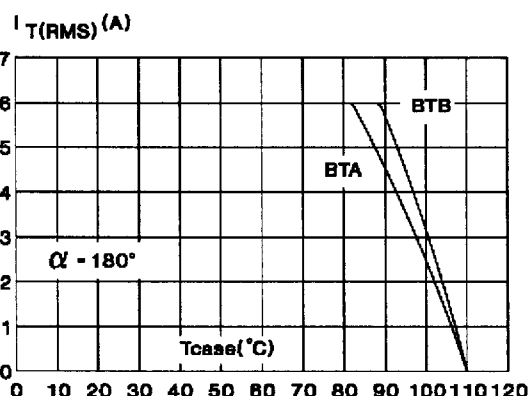


Fig.5 : Relative variation of thermal transient impedance versus pulse duration.

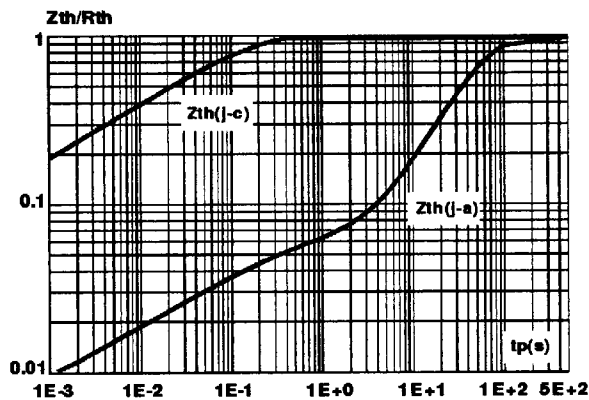


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

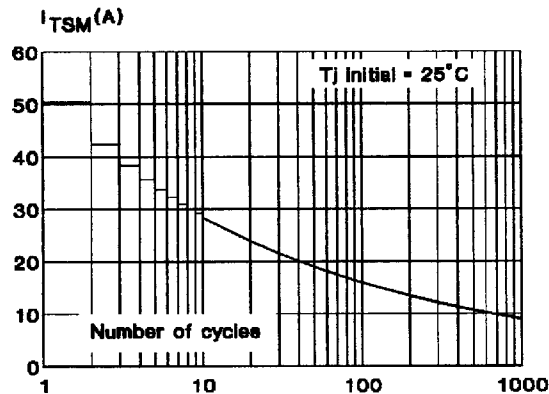


Fig.9 : On-state characteristics (maximum values).

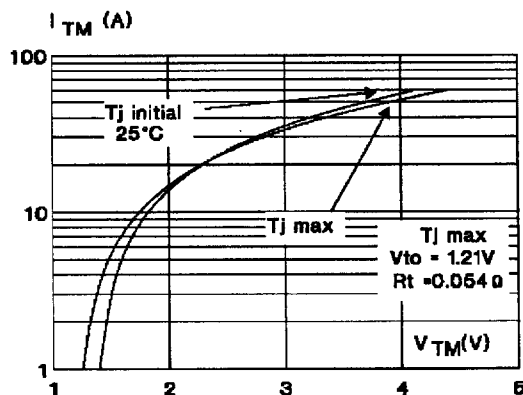


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

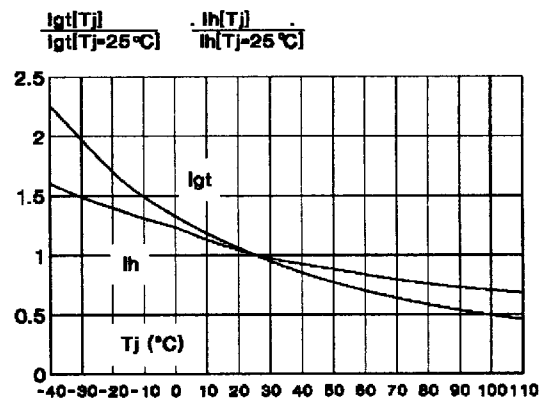


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10ms$, and corresponding value of I^2t .

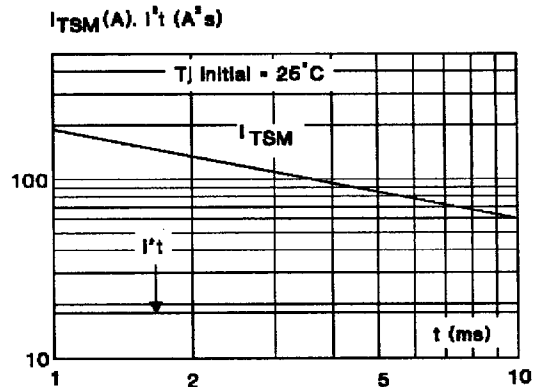
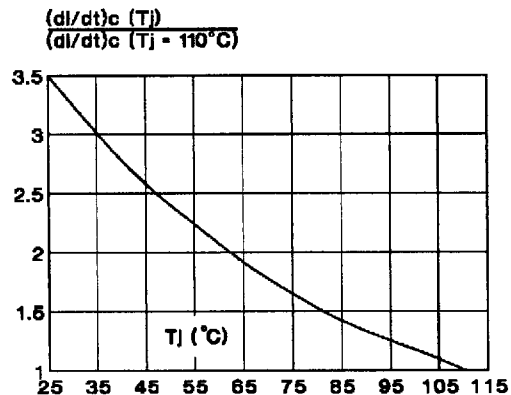
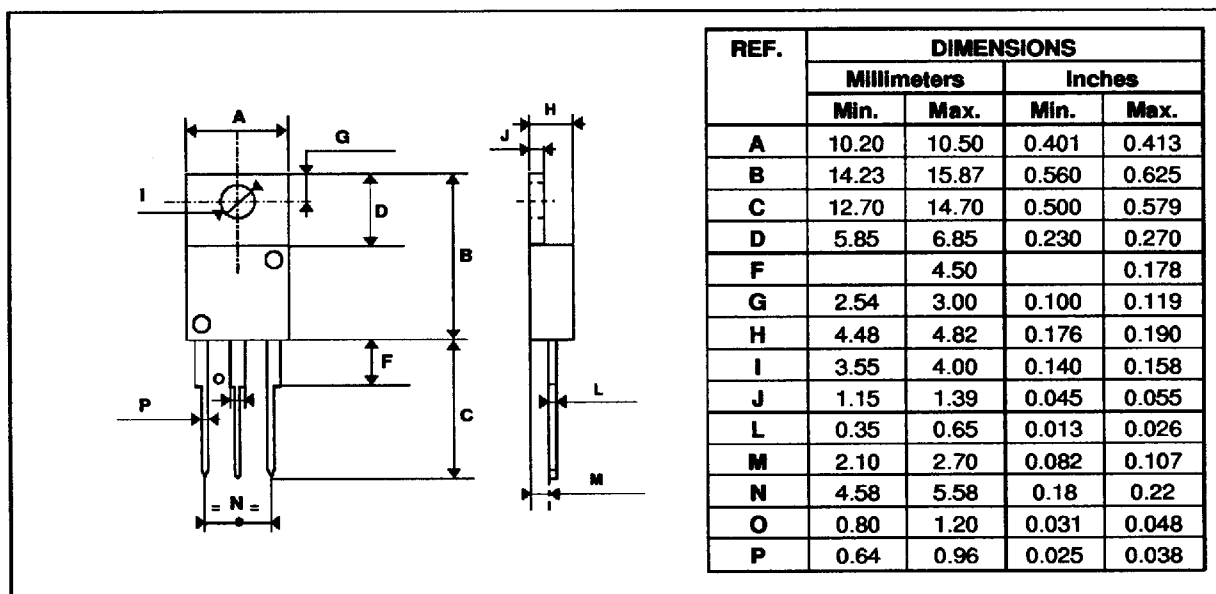


Fig.10 : Relative variation of $(di/dt)_c$ versus junction temperature.



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.