



**THE DATASHEET OF
BTB12-700SWRG**

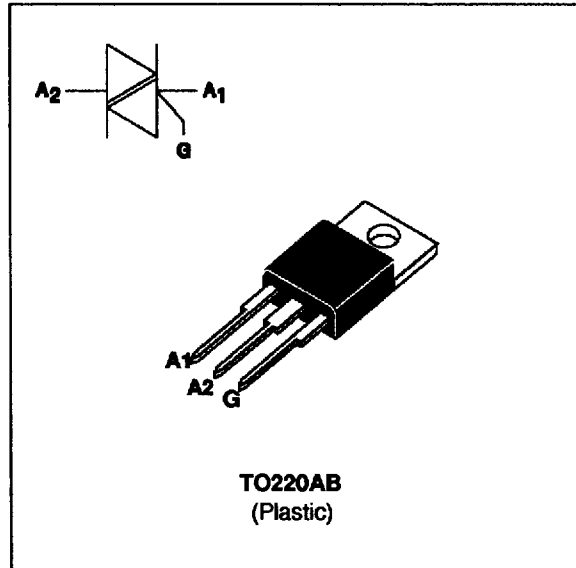


LOGIC LEVEL TRIACS
FEATURES

- LOW $I_{GT} = 10\text{mA max}$
- HIGH EFFICIENCY SWITCHING ON COMMUTATION
- BTA Family :
 INSULATING VOLTAGE = 2500V(RMS)
 (UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB12 SW Triac family are high performance products glass passivated PNP devices. These parts are suited for low power trigger circuit (integrated circuits, microcontroller, microprocessors).


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit	
$I_T(\text{RMS})$	RMS on-state current (360° conduction angle)	BTA	$T_c = 70^\circ\text{C}$	12	A
		BTB	$T_c = 75^\circ\text{C}$		
I_{TSM}	Non repetitive surge peak on-state current (T_J initial = 25°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 ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 50\text{mA}$ $di_G/dt = 0.1\text{A}/\mu\text{s}$	Repetitive F = 50 Hz		20	A/ μs
		Non Repetitive		100	
T_{stg} T_J	Storage and operating junction temperature range		- 40 to + 150		°C
			- 40 to + 110		
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260		°C

Symbol	Parameter	BTA / BTB12-			Unit
		400 SW	600 SW	700 SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 110^\circ\text{C}$	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	3.3
		BTB	2.7
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5
		BTB	2

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	
				SW		
IGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MAX	10	mA
VGT	VD=12V (DC) RL=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
VGD	VD=VDRM RL=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	VD=VDRM IG = 40mA dIG/dt = 0.5A/μs	Tj=25°C	I-II-III	TYP	2	μs
IL	IG=1.2 IGT	Tj=25°C	I-III	TYP	15	mA
			II		25	
IH *	IT= 100mA gate open	Tj=25°C		MAX	25	mA
VTM *	ITM= 17A tp= 380μs	Tj=25°C		MAX	1.75	V
IDRM IRRM	VDRM Rated VRRM Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	1	
dV/dt *	Linear slope up to VD=67%VDRM gate open	Tj=110°C		MIN	50	V/μs
(di/dt)c *	dV/dt= 0.1V/μs dV/dt= 20V/μs	Tj=110°C		MIN	5.3	A/ms
				MIN	3.5	

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

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

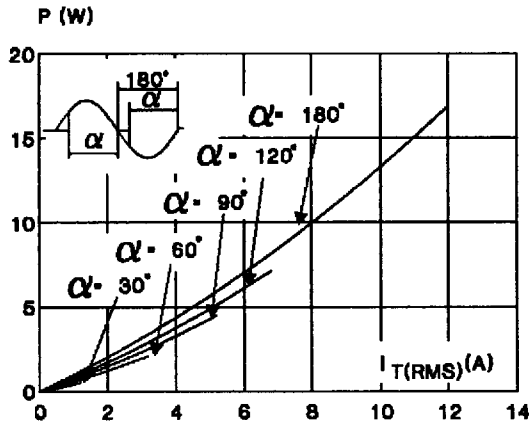


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

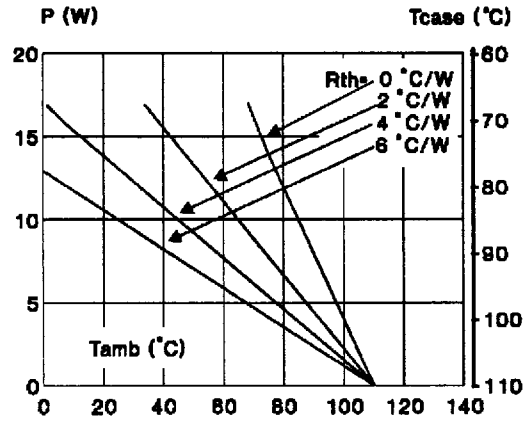


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

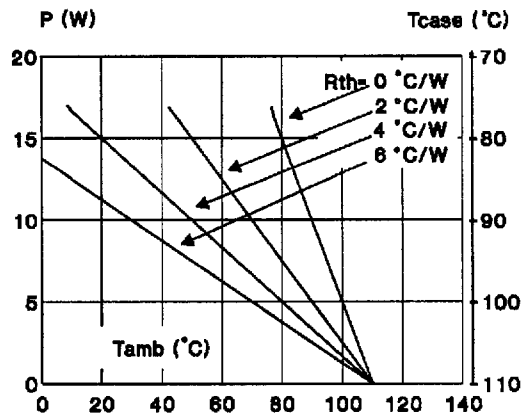


Fig.4 : RMS on-state current versus case temperature.

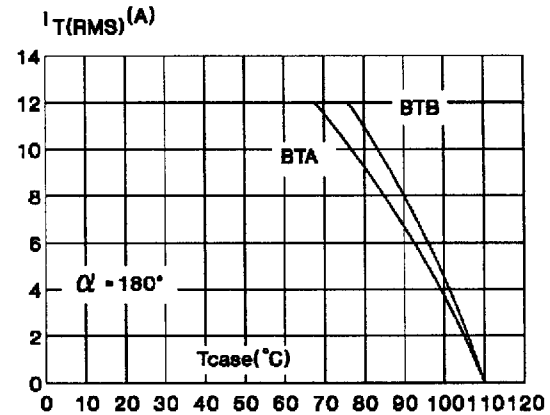


Fig.5 : Relative variation of thermal impedance versus pulse duration.

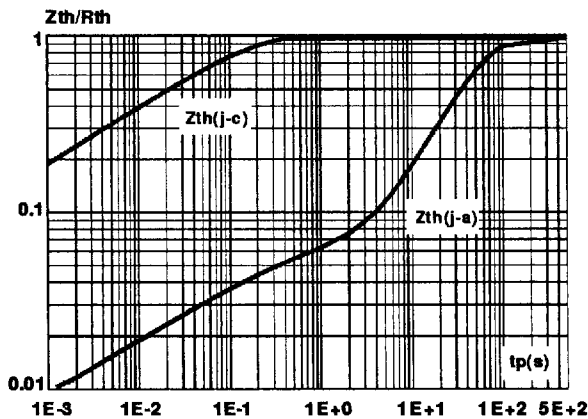


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

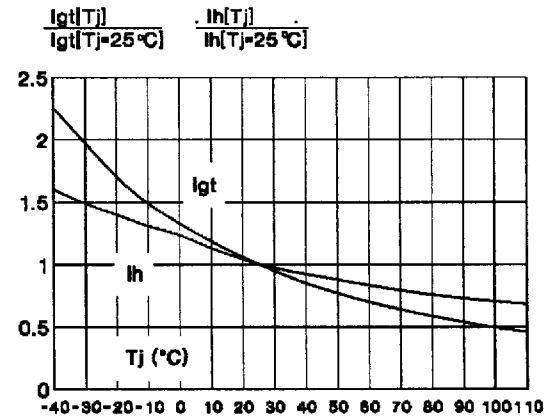


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

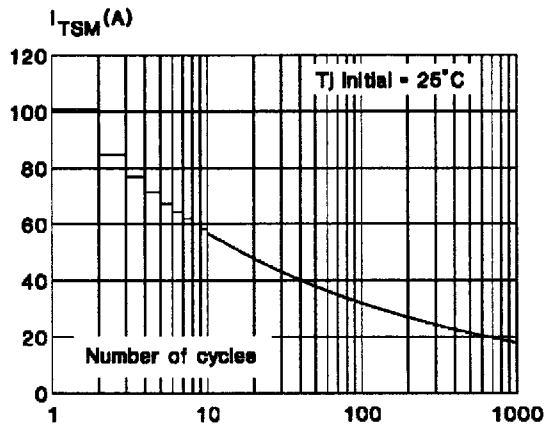


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

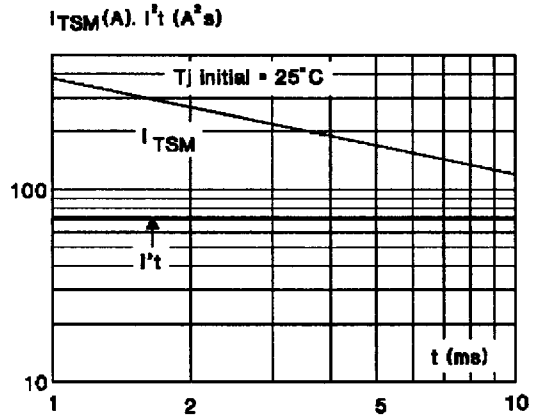


Fig.9 : On-state characteristics (maximum values).

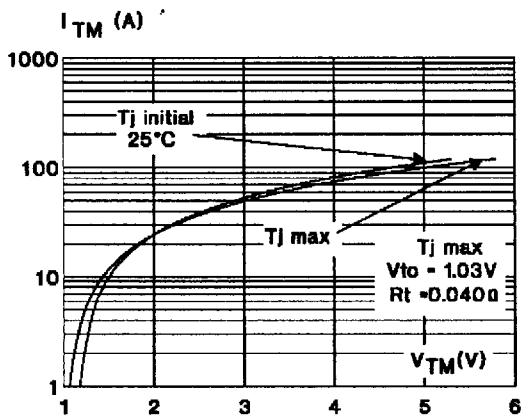
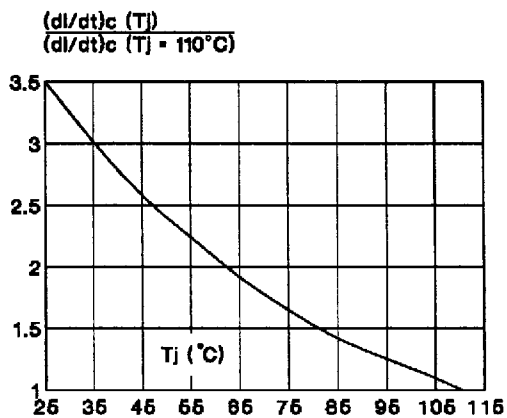
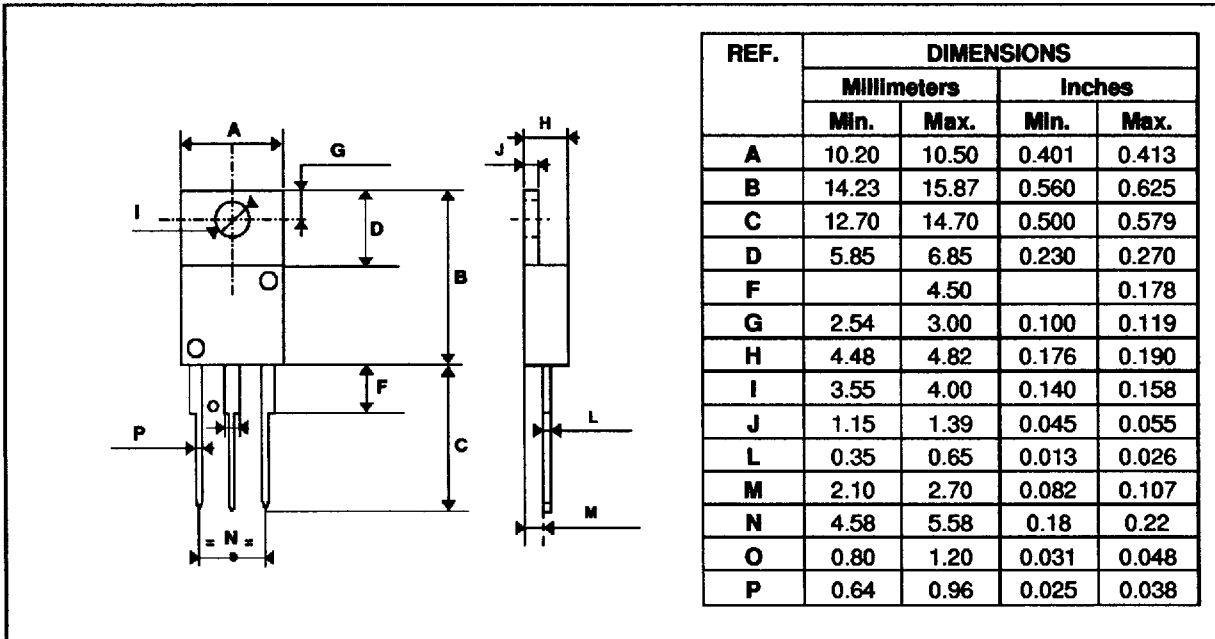


Fig.10 : Relative variation of $(di/dt)_c$ versus junction temperature.



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.

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