

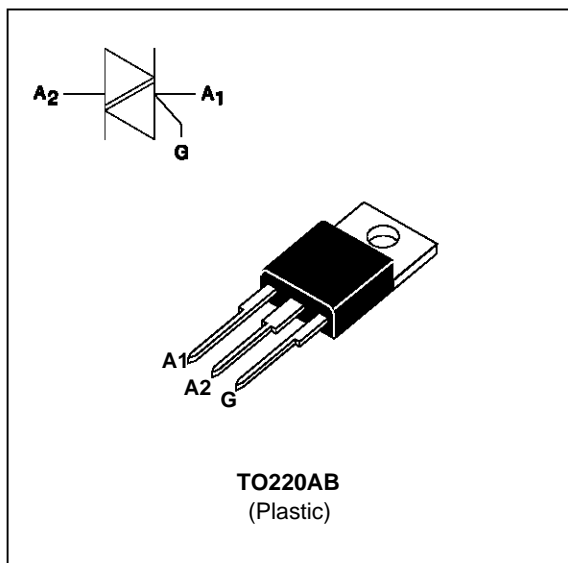
LOGIC LEVEL TRIACS

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

Symbol	Parameter	BTA / BTB12-			Unit
		400 SW	600 SW	700 SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 110\text{ °C}$	400	600	700	V

BTA12 SW / BTB12 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	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		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	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III	MAX	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
tgt	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	15	mA
			II		25	
I _H *	I _T = 100mA gate open	T _j =25°C		MAX	25	mA
V _{TM} *	I _{TM} = 17A tp= 380μs	T _j =25°C		MAX	1.75	V
I _{DRM} I _{RDM}	V _{DRM} Rated V _{RDM} 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	50	V/μs
(dI/dt) _c *	dV/dt= 0.1V/μs	T _j =110°C		MIN	5.3	A/ms
	dV/dt= 20V/μs			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=50Hz).
(Curves are cut off by (di/dt)c limitation)

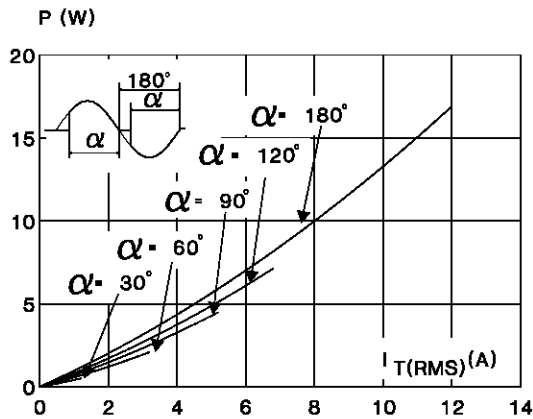


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTA).

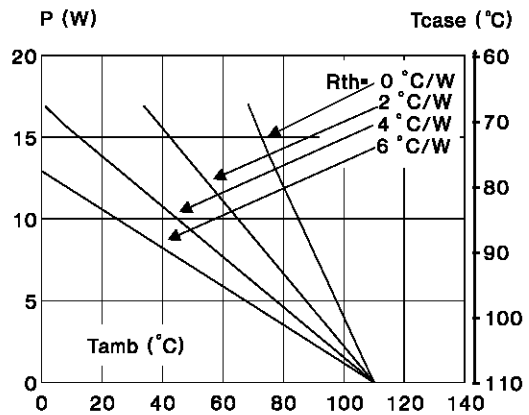


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTB).

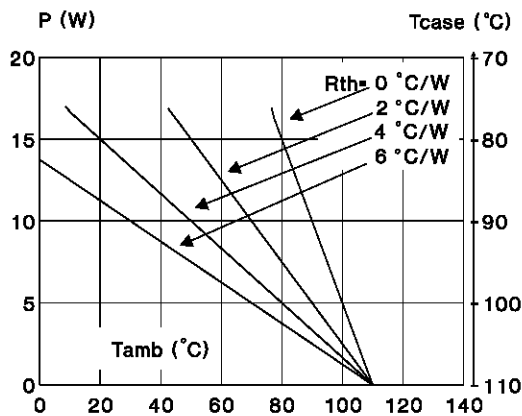


Fig.4 : RMS on-state current versus case temperature.

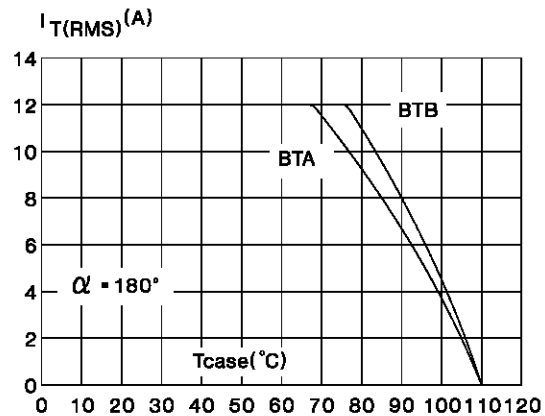


Fig.5 : Relative variation of thermal impedance versus pulse duration.

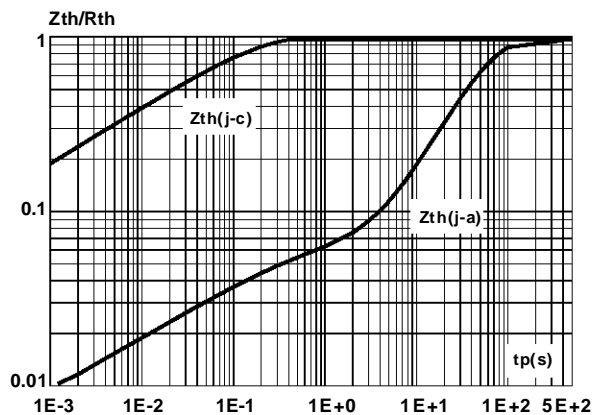
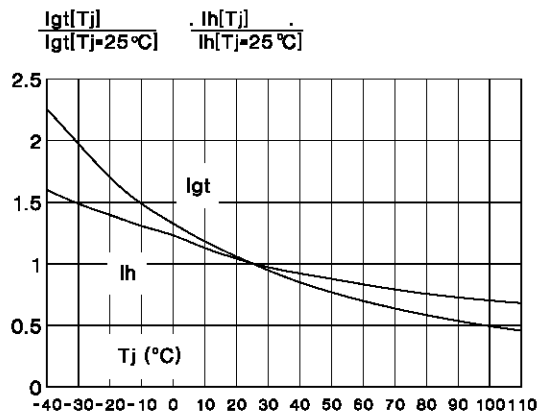


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.



BTA12 SW / BTB12 SW

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

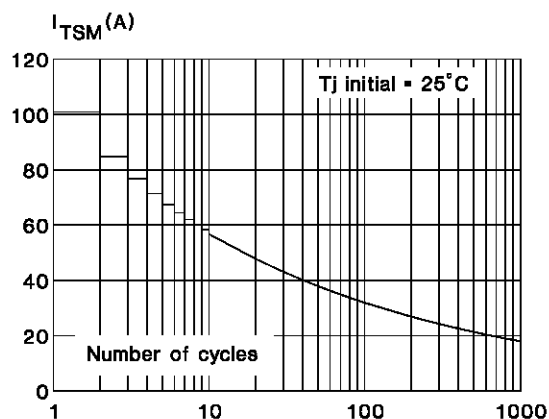


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

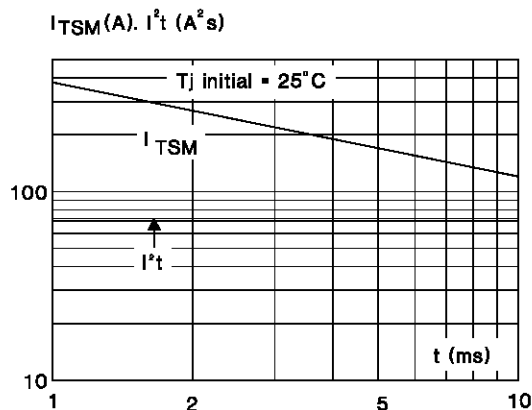


Fig.9 : On-state characteristics (maximum values).

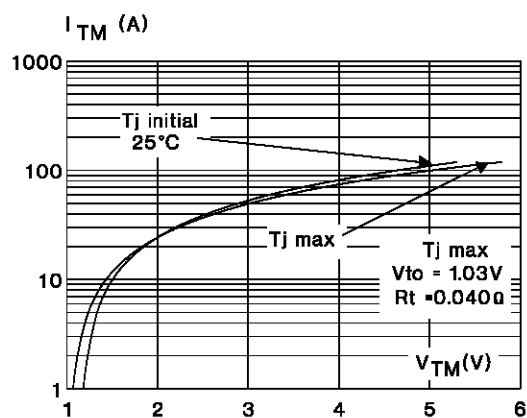
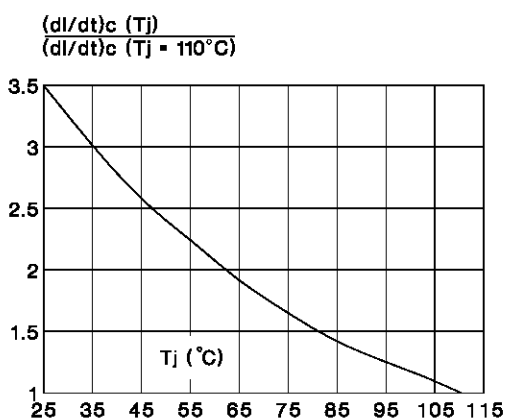
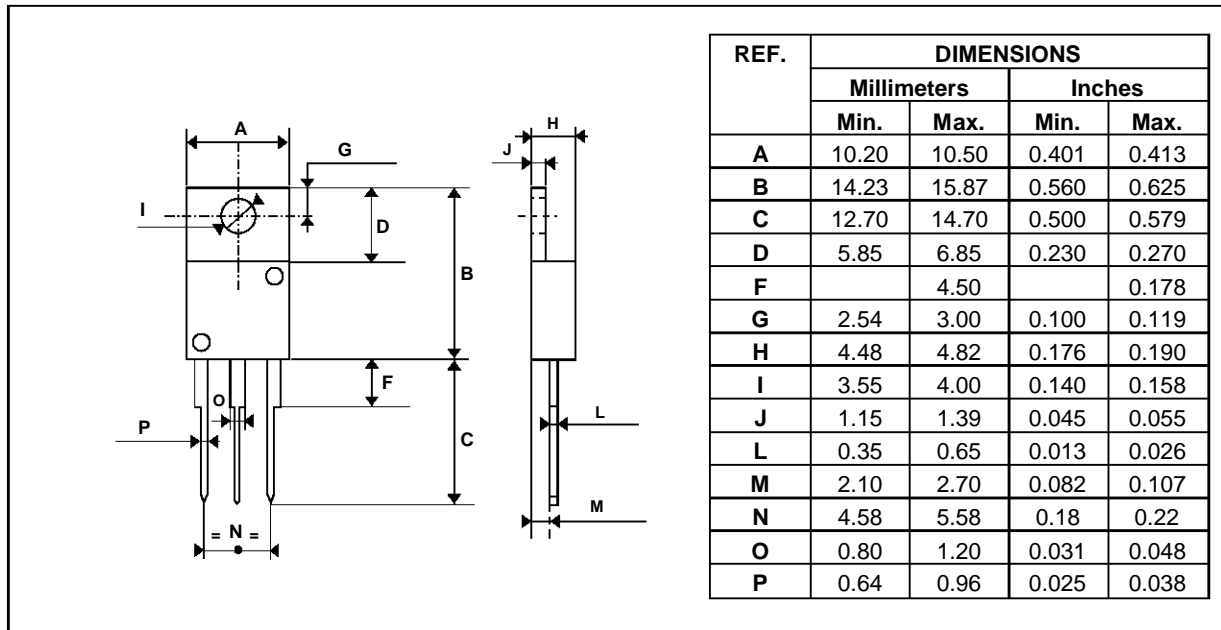


Fig.10 : Relative variation of $(di/dt)c$ versus junction temperature.



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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