

STANDARD TRIACS

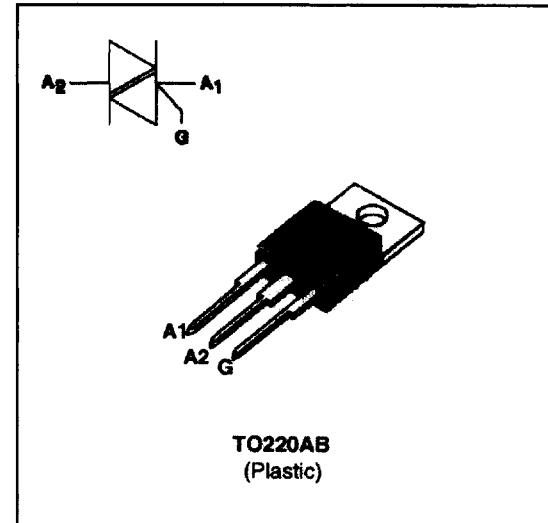
FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : $(dV/dt)_c > 5 \text{ V}/\mu\text{s}$
- BTA Family :
 - INSULATING VOLTAGE = 2500V(RMS)
 - (UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB12 B/C triac family are high performance glass passivated PNPN devices.

These parts are suitable for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit	
IT(RMS)	RMS on-state current (360° conduction angle)	BTA	Tc = 90 °C	12	A	
		BTB	Tc = 95 °C			
ITSM	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	125	A	
			tp = 10 ms	120		
I2t	I2t value	tp = 10 ms		72	A ² s	
di/dt	Critical rate of rise of on-state current Gate supply : Ig = 500mA dg/dt = 1A/μs		Repetitive F = 50 Hz	10	A/μs	
			Non Repetitive	50		
Tstg Tj	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 125		°C °C		
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260		°C		

Symbol	Parameter	BTA / BTB12... B/C				Unit
		400	600	700	800	
VDRM VRMM	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

BTA12 B/C / BTB12 B/C

THERMAL RESISTANCES

Symbol	Parameter	Value		Unit
R _{th} (j-a)	Junction to ambient	60		°C/W
R _{th} (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
R _{th} (j-c) AC	Junction to case for 360° conduction angle (F = 50 Hz)	BTA	2.5	°C/W
		BTB	2.0	

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
				B	C	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III	MAX	50	mA
			IV	MAX	100	
V _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III-IV	MAX	1.5	V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j =110°C	I-II-III-IV	MIN	0.2	V
t _{gt}	V _D =V _{DRM} I _G = 500mA dI _G /dt = 3A/μs	T _j =25°C	I-II-III-IV	TYP	2	μs
I _L	I _G =1.2 I _{GT}	T _j =25°C	I-III-IV	TYP	40	mA
			II		70	
I _H *	I _T = 500mA gate open	T _j =25°C		MAX	50	mA
V _{TM} *	I _{TM} = 17A tp= 380μs	T _j =25°C		MAX	1.5	V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _j =25°C		MAX	0.01	mA
		T _j =110°C		MAX	0.5	
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _j =110°C		MIN	250	100
(dV/dt)c *	(dI/dt)c = 5.3A/ms	T _j =110°C		MIN	10	5
						V/μs

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

ORDERING INFORMATION

Package	$I_T(\text{RMS})$	V _{DRM} / V _{RRM}	Sensitivity Specification	
			B	C
BTA (Insulated)	12	400	X	X
		600	X	X
		700	X	X
		800	X	X
		400	X	X
BTB (Uninsulated)	800	600	X	X
		700	X	X
		800	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)

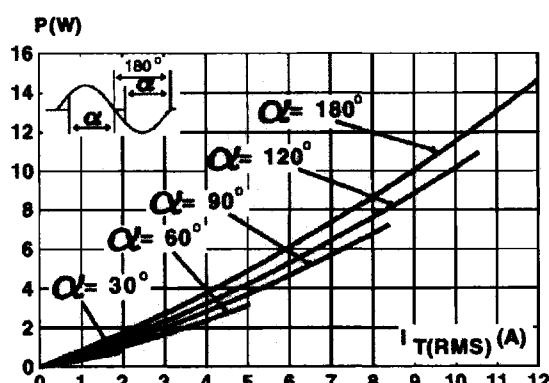


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

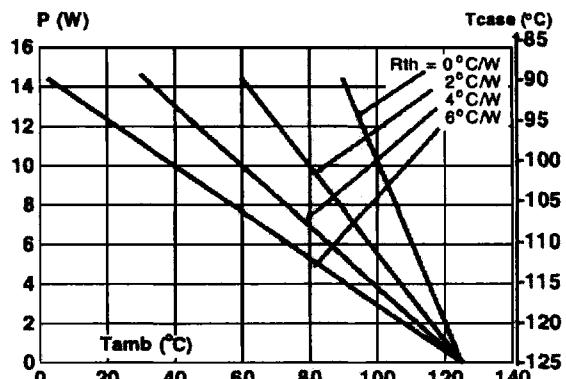


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

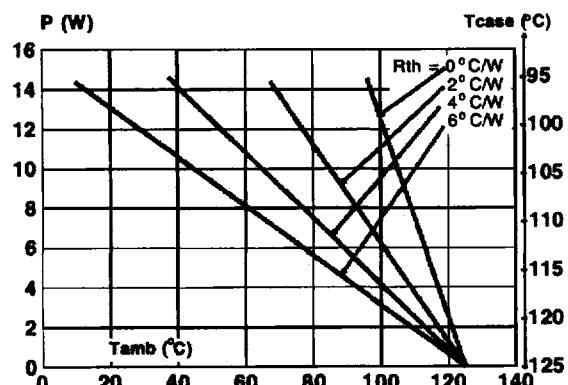
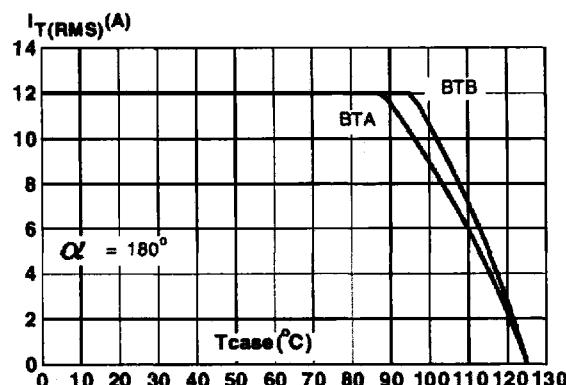


Fig.4 : RMS on-state current versus case temperature.



BTA12 B/C / BTB12 B/C

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

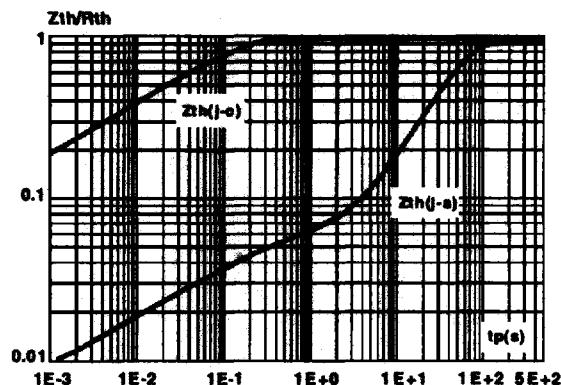


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

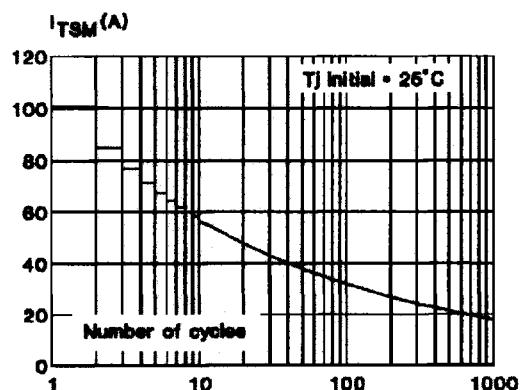


Fig.9 : On-state characteristics (maximum values).

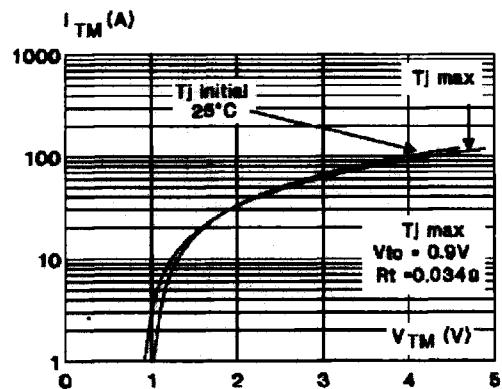


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

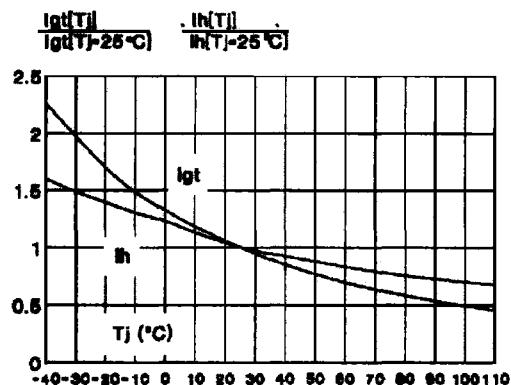
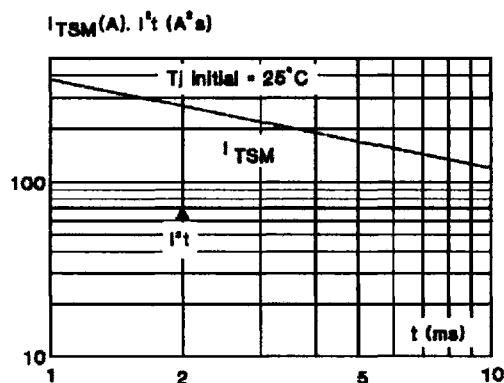


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .



PACKAGE MECHANICAL DATA

TO220AB Plastic

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
B	14.23	15.87	0.560	0.625
C	12.70	14.70	0.500	0.579
D	5.85	6.85	0.230	0.270
F			4.50	0.178
G	2.54	3.00	0.100	0.119
H	4.48	4.82	0.176	0.190
I	3.55	4.00	0.140	0.158
J	1.15	1.39	0.045	0.055
L	0.35	0.65	0.013	0.026
M	2.10	2.70	0.082	0.107
N	4.58	5.58	0.18	0.22
O	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.

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