

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : $(di/dt)_c > 9A/ms$ without snubber
- HIGH SURGE CURRENT : $I_{TSM} = 100A$
- V_{DRM} UP TO 800V
- BTA Family :
INSULATING VOLTAGE = 2500V_(RMS)
(UL RECOGNIZED : E81734)

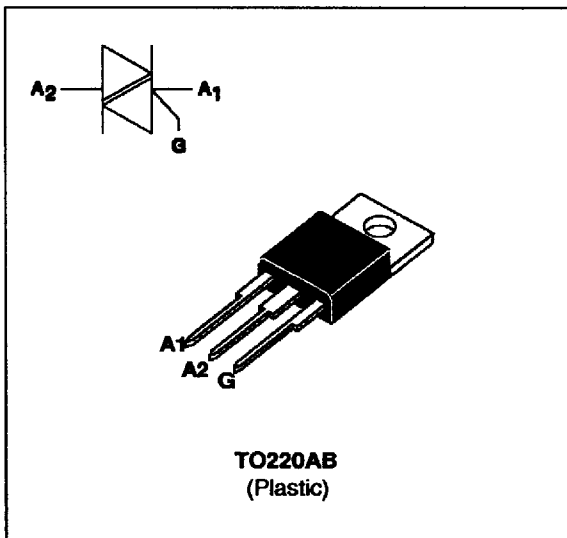
DESCRIPTION

The BTA/BTB10 BW/CW triac family are high performance glass passivated chips technology. The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_T(RMS)$	RMS on-state current (360° conduction angle)	BTA	$T_c = 90\text{ }^{\circ}\text{C}$	10	A
		BTB	$T_c = 100\text{ }^{\circ}\text{C}$		
I_{TSM}	Non repetitive surge peak on-state current (T_J initial = 25°C)		$t_p = 8.3\text{ ms}$	105	A
			$t_p = 10\text{ ms}$	100	
I_2t	I_2t value		$t_p = 10\text{ ms}$	50	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500mA$ $di_G/dt = 1A/\mu s$		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 + 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	BTA / BTB10-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125\text{ }^\circ\text{C}$	400	600	700	800	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	°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	2.0	

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
					BW	CW	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _J =25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
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 =125°C	I-II-III	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	TYP	2		μs
I _L	I _G =1.2 I _{GT}	T _J =25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I _H *	I _T = 500mA gate open	T _J =25°C		MAX	50	35	mA
V _{TM} *	I _{TM} = 14A tp= 380μs	T _J =25°C		MAX	1.65		V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _J =25°C		MAX	0.01		mA
		T _J =125°C		MAX	2		
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _J =125°C		MIN	500	250	V/μs
				TYP	750	500	
(dI/dt) _c *	Without snubber	T _J =125°C		MIN	9	5.5	A/ms
				TYP	18	11	

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

ORDERING INFORMATION

Package	$I_T(\text{RMS})$	$V_{\text{DRM}} / V_{\text{RRM}}$	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	10	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		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)

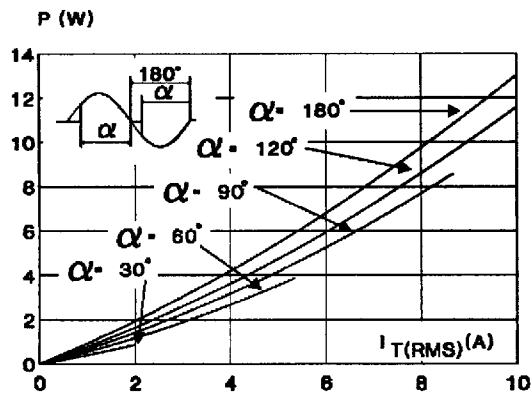


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

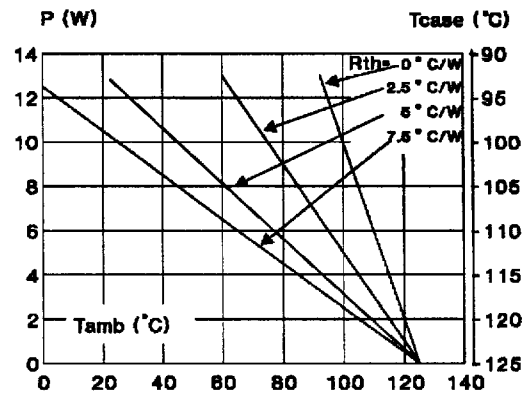


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

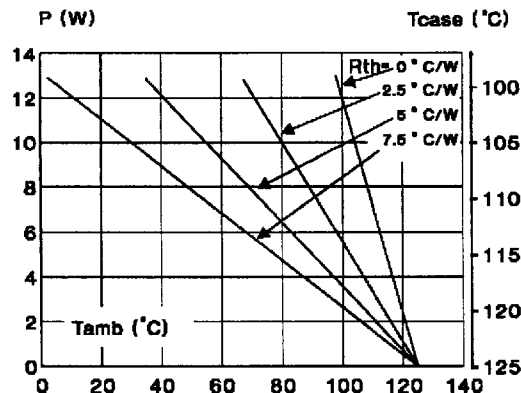


Fig.4 : RMS on-state current versus case temperature.

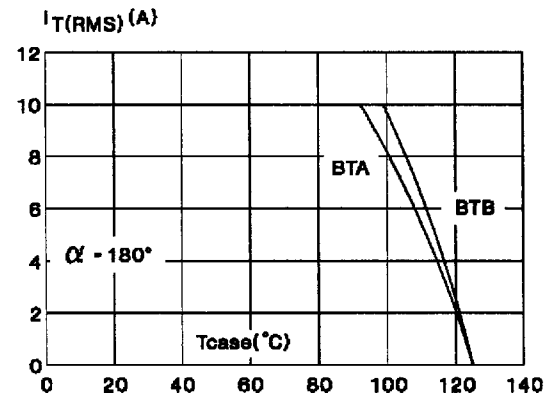


Fig.5 : Relative variation of thermal impedance versus pulse duration.

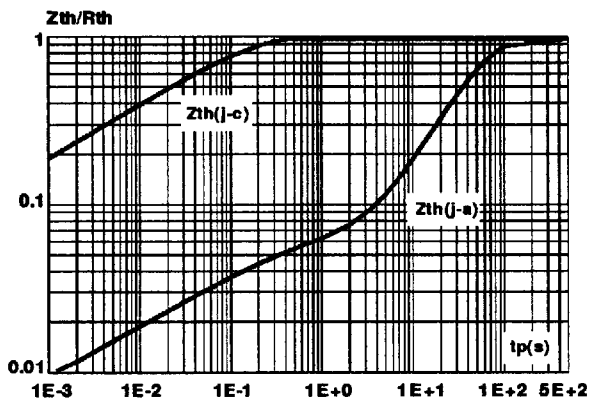


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

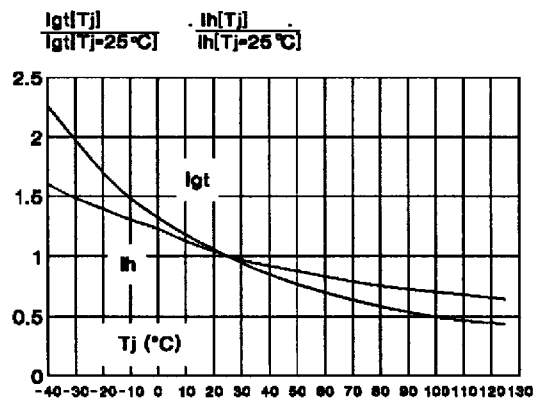


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

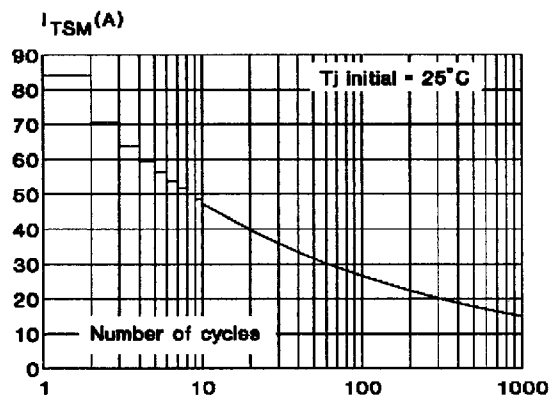


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10ms$, and corresponding value of I^2t .

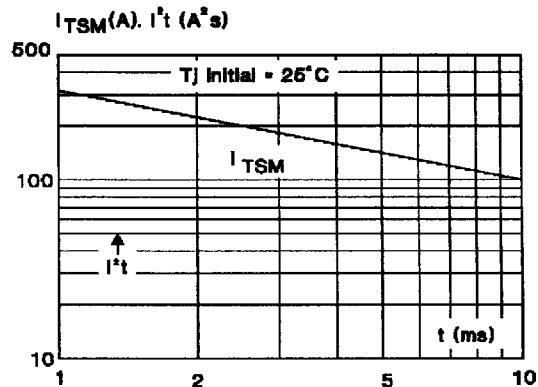
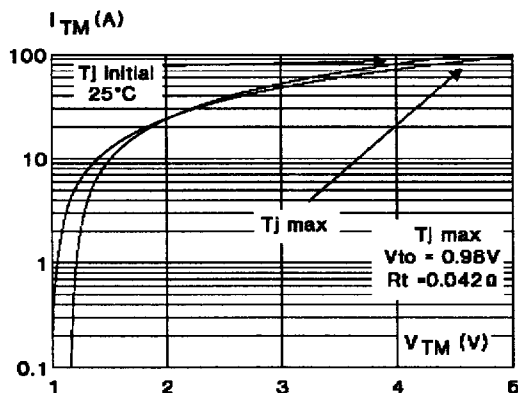
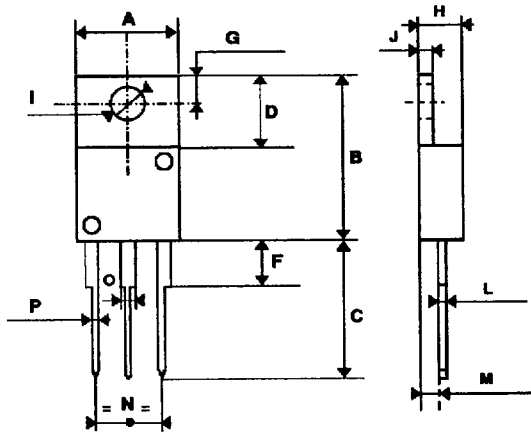


Fig.9 : On-state characteristics (maximum values).



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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