

SNUBBERLESS TRIACS

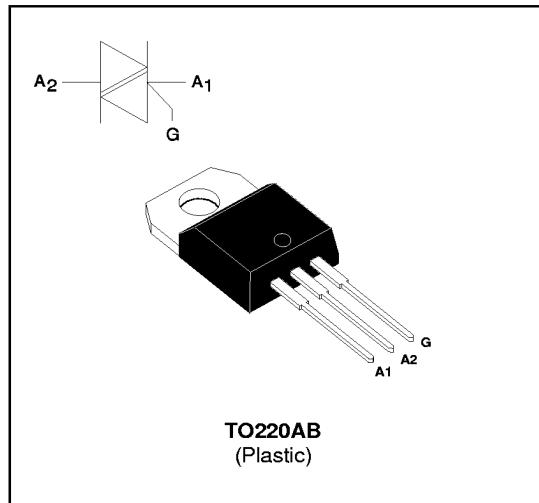
FEATURES

- HIGH COMMUTATION : $(dI/dt)_c > 22A/ms$ without snubber
- HIGH SURGE CURRENT : $I_{TSM} = 250A$
- V_{DRM} UP TO 800V
- BTA family:
Insulated voltage = 2500V_(RMS)
(UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB24 BW/CW triac family are high performance glass passivated chips technology.

The SNUBBERLESS™ concept offers 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)	25	A
	BTB $T_c = 95^\circ C$	25	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3$ ms	A
		$t_p = 10$ ms	260
I_{2t}	I_{2t} value	$t_p = 10$ ms	A^2s
dl/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500mA$ $dI_G/dt = 1A/\mu s$	Repetitive $F = 50$ Hz	$A/\mu s$
		Non Repetitive	100
T_{stg} T_j	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 125	$^\circ C$
T_I	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260	$^\circ C$

Symbol	Parameter	BTA/BTB24... BW/CW			Unit
		600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$	600	700	800	V

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	2.3	°C/W
		BTB	1.3	°C/W
R _{th} (j-c) AC	Junction to case for 360° conduction angle (F = 50 Hz)	BTA	1.7	°C/W
		BTB	1.0	°C/W

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 10W (tp = 20 μs) I_{GM} = 4A (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	4	mA
				MAX	50	35
V _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	I-II-III	MAX	1.3	V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j =125°C	I-II-III	MIN	0.2	V
I _L	I _G =1.2 I _{GT}	T _j =25°C	I-III	MAX	60	mA
			II	MAX	120	80
I _H *	I _T = 250mA gate open	T _j =25°C		MAX	75	50 mA
V _{TM} *	I _{TM} = 35A tp= 380μs	T _j =25°C		MAX	1.5	V
I _{DRM} I _{IRRM}	V _{DRM} Rated V _{RRM} Rated	T _j =25°C		MAX	5	μA
		T _j =125°C		MAX	3	mA
dV/dt *	Linear slope up to V _D =67%V _{DRM} gate open	T _j =125°C		MIN	1000	V/μs
(dI/dt)c *	Without snubber	T _j =125°C		MIN	22	A/ms

* 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)	25	600	X		X	
		700	X		X	
		800	X		X	
BTB (Uninsulated)	25	600	X		X	
		700	X		X	
		800	X		X	

Fig.1 : Maximum RMS power dissipation versus RMS on-state current.

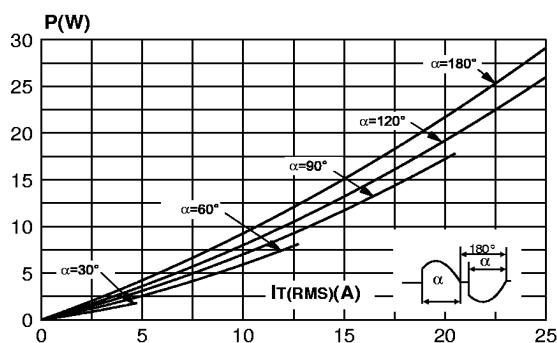


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact. (BTA)

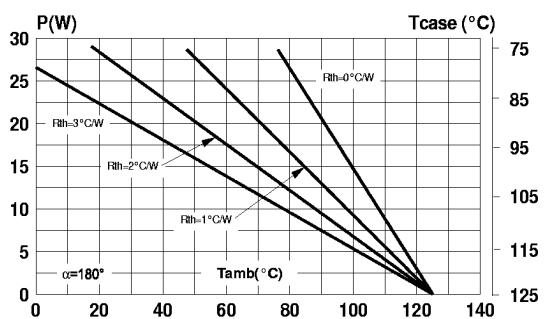
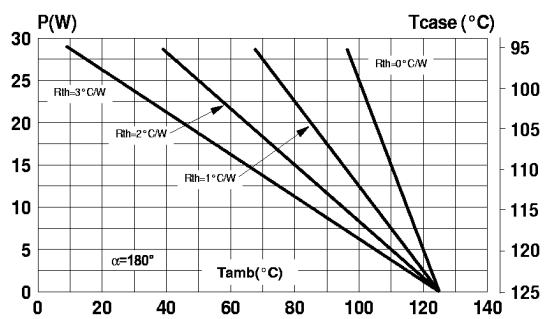


Fig.3 : Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.(BTB)



BTA/BTB24 BW/CW

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

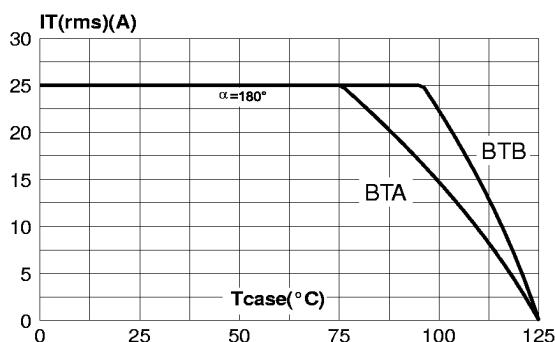


Fig.5 : Relative variation of thermal impedance versus pulse duration.

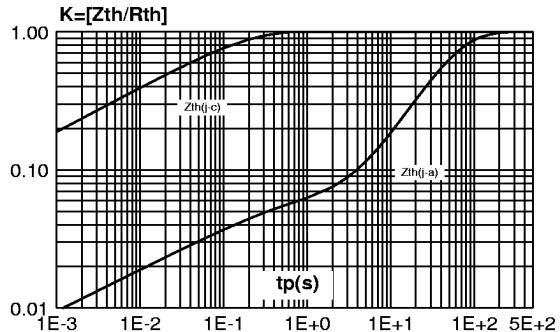


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature (typical values).

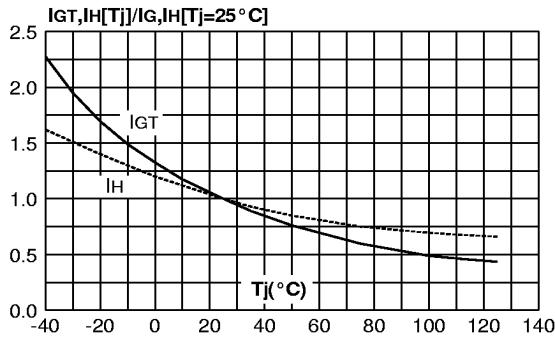


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

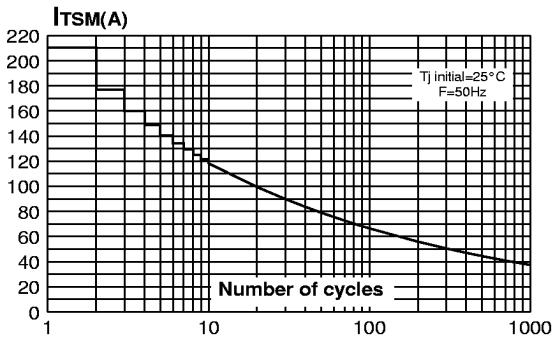


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $tp \leq 10\text{ms}$, and corresponding value of I^2t .

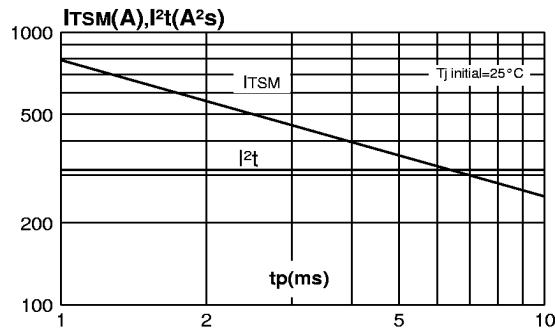
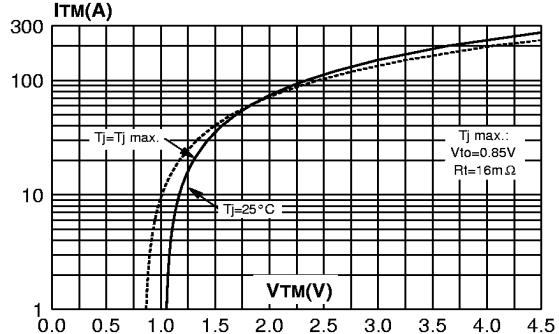
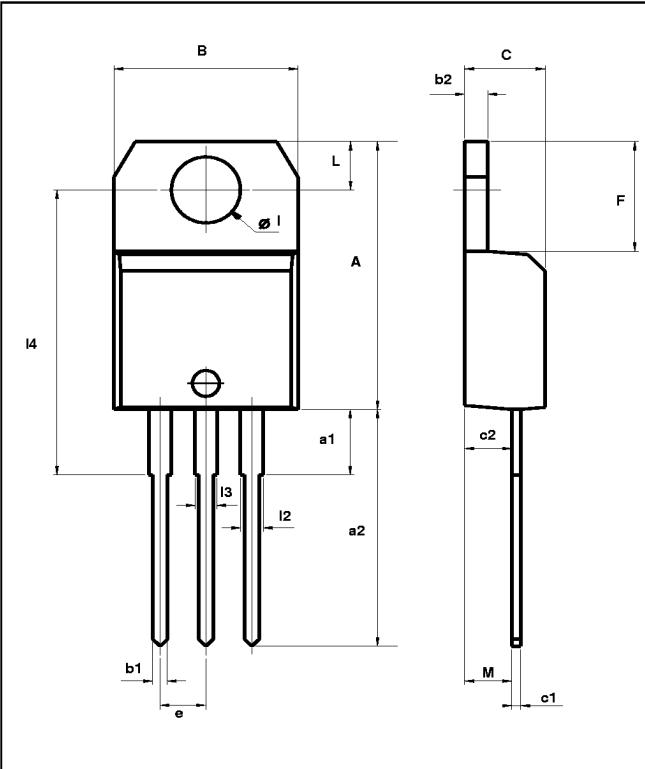


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.20	15.90	0.598	0.625
a1	3.50	4.20	0.137	0.165
a2	13.00	14.00	0.511	0.551
B	10.00	10.40	0.393	0.409
b1	0.61	0.88	0.024	0.034
b2	1.23	1.32	0.048	0.051
C	4.40	4.60	0.173	0.181
c1	0.49	0.70	0.019	0.027
c2	2.40	2.72	0.094	0.107
e	2.40	2.70	0.094	0.106
F	6.20	6.60	0.244	0.259
I	3.75	3.85	0.147	0.151
I4	16.40 Typ.		0.646 Typ.	
L	2.65	2.95	0.104	0.116
I2	1.14	1.70	0.044	0.066
I3	1.14	1.70	0.044	0.066
M	2.60 Typ.		0.102 Typ.	

Cooling method : C

Marking : type number

Weight : 2.1 g

Recommended torque value : 0.8 m.N.

Maximum torque value : 1 m.N.

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