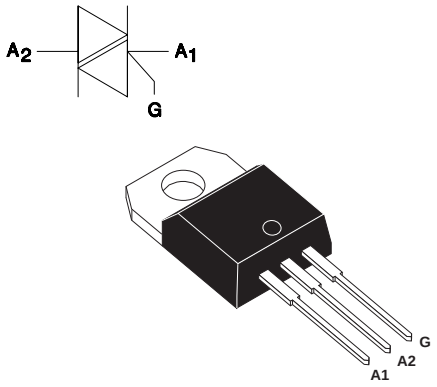
BTA24BW/CW
BTB24BW/CW

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)



TO220AB
(Plastic)

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)	BTA	Tc = 75 °C	25	A
		BTB	Tc = 95 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	260	A
			tp = 10 ms	250	
I^2t	I^2t value		tp = 10 ms	312	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA di_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
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/BTB24-... BW/CW			Unit
		600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	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	2.3	°C/W
		BTB	1.3	°C/W
Rth (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	Tj=25°C	I-II-III	MIN	4	2	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.3		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	MAX	60	50	mA
			II	MAX	120	80	
I_H *	I_T= 250mA gate open	Tj=25°C		MAX	75	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.5		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	5		µA
		Tj=125°C		MAX	3		mA
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	1000	500	V/µs
(dI/dt)c *	Without snubber	Tj=125°C		MIN	22	13	A/ms

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

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{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.

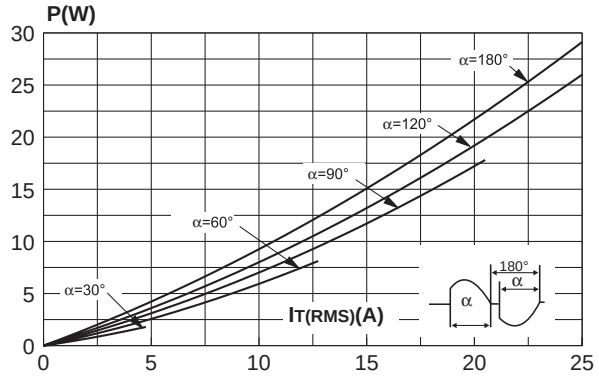


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact. (BTA)

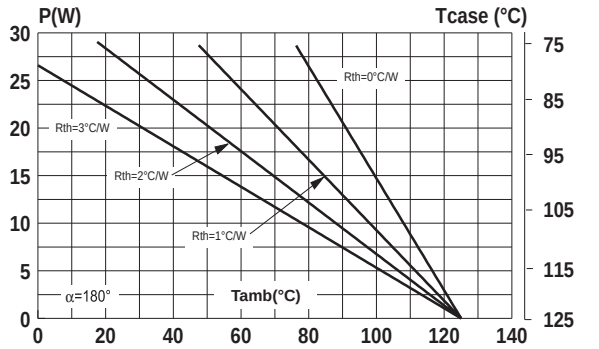


Fig.3 : Correlation between maximum power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.(BTB)

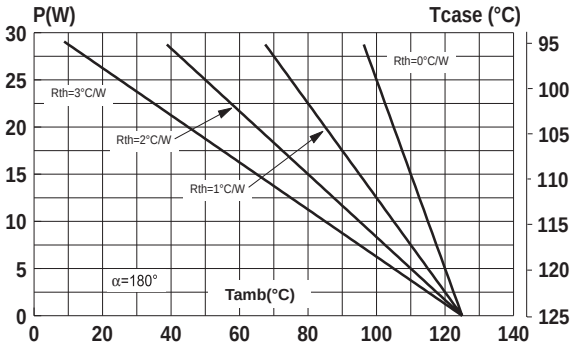


Fig.4 : RMS on-state current versus case temperature.

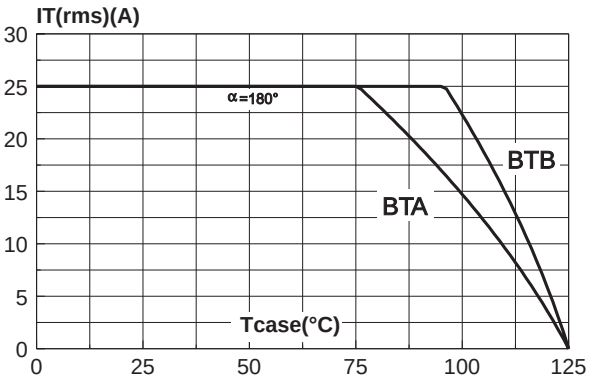


Fig.5 : Relative variation of thermal impedance versus pulse duration.

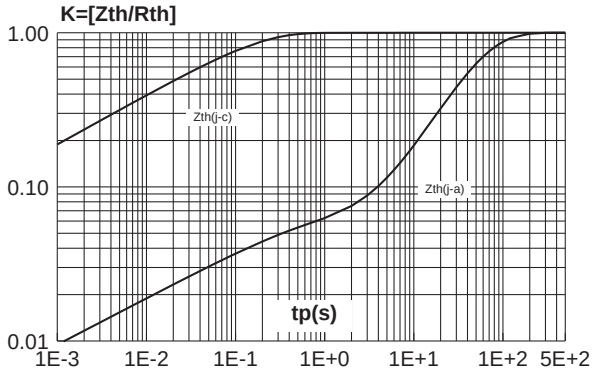


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature (typical values).

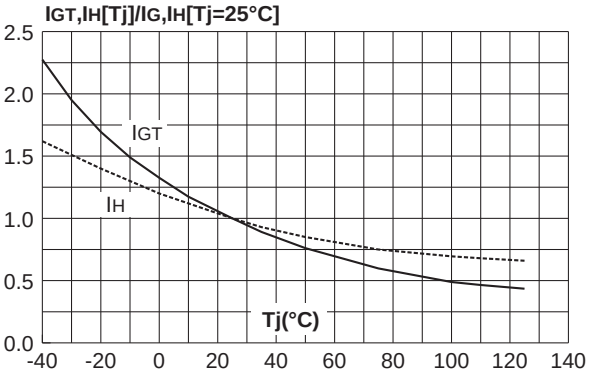


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

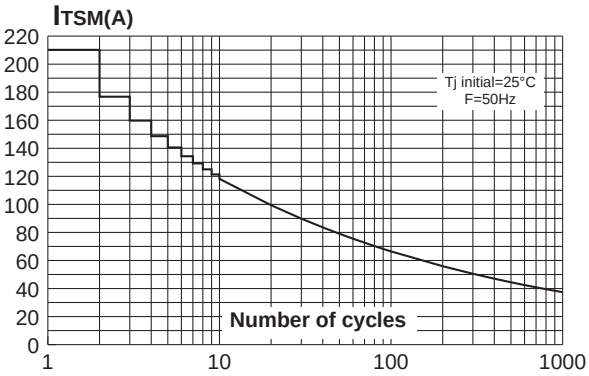


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

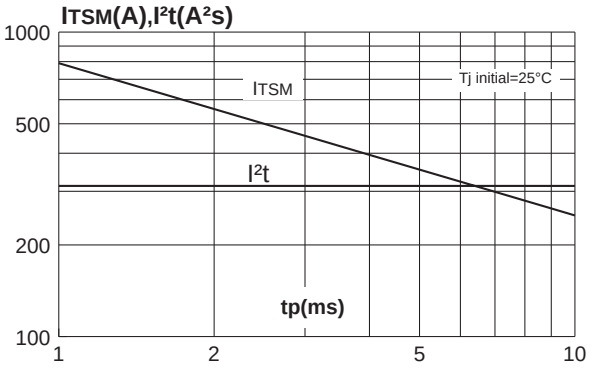
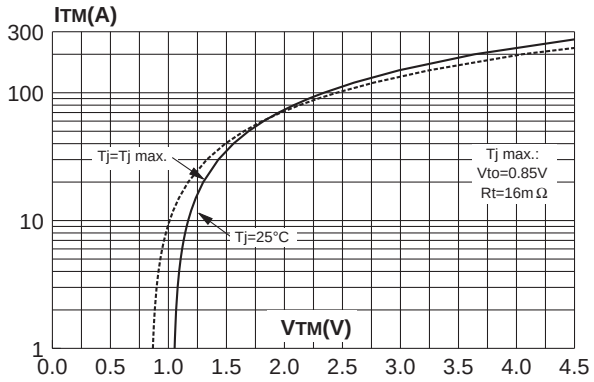
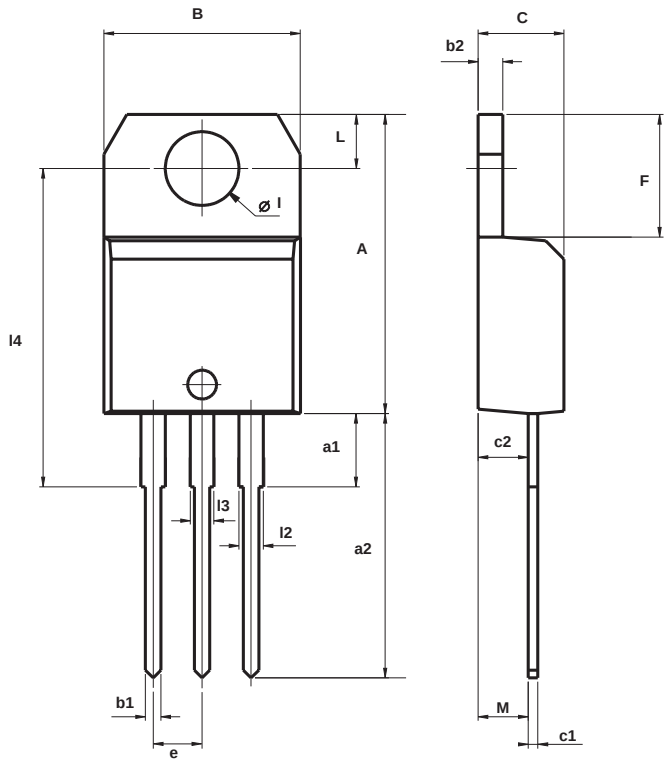


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	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
l4	16.40 Typ.		0.646 Typ.	
L	2.65	2.95	0.104	0.116
l2	1.14	1.70	0.044	0.066
l3	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.