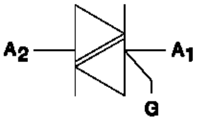
SGS-THOMSON
MICROELECTRONICS

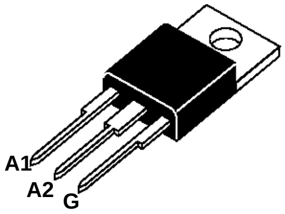
BTA16 B
BTB16 B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO220AB
(Plastic)

DESCRIPTION

The BTA/BTB16 B triac family are high performance glass passivated PNPN devices.
These parts are suitables 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
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 80 °C	16	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	170	A
			tp = 10 ms	160	
I^2t	I^2t value		tp = 10 ms	128	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	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 / BTB16-... B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °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	2.9	°C/W
		BTB	2.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.2	°C/W
		BTB	1.75	

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	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	mA
			II		70	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	mA
V_{TM} *	I_{TM}= 22.5A tp= 380µs	Tj=25°C		MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=125°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 7A/ms	Tj=125°C		MIN	10	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

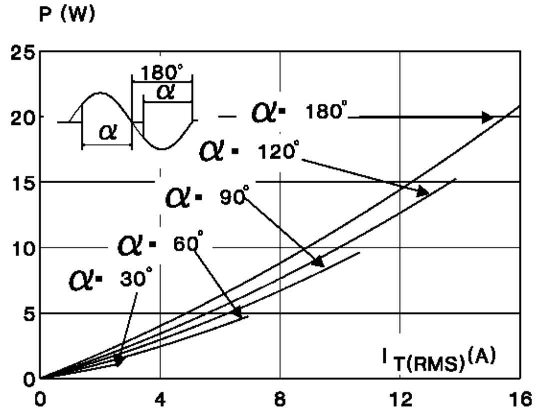


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

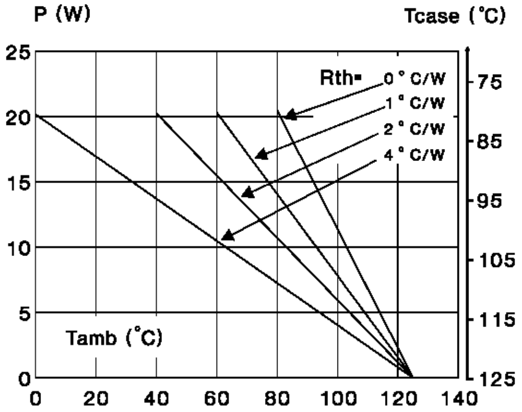


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

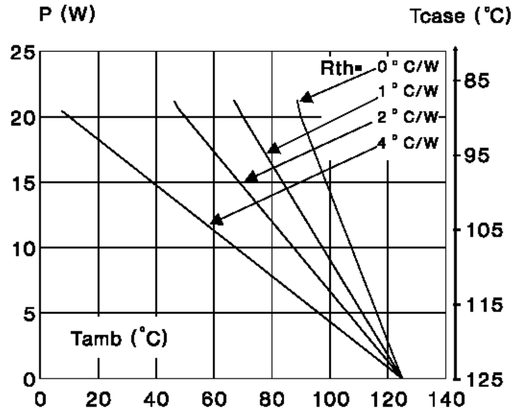


Fig.4 : RMS on-state current versus case temperature.

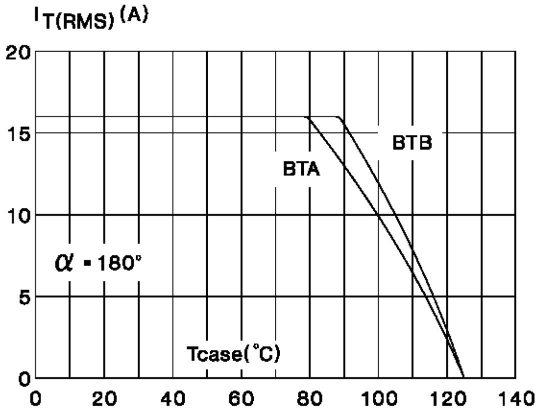


Fig.5 : Relative variation of thermal impedance versus pulse duration.

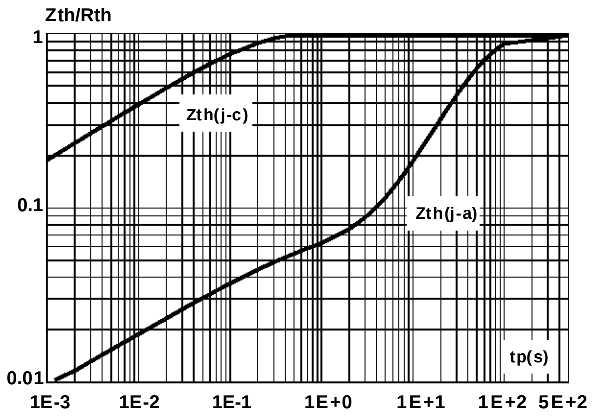


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

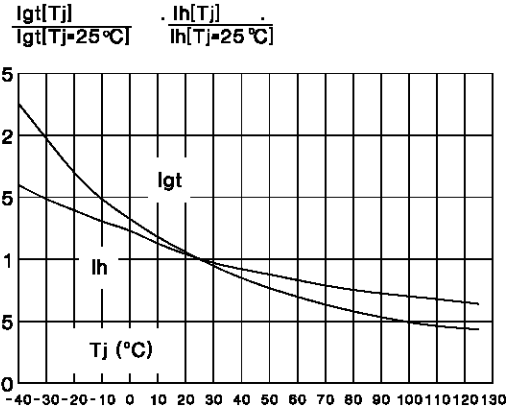


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

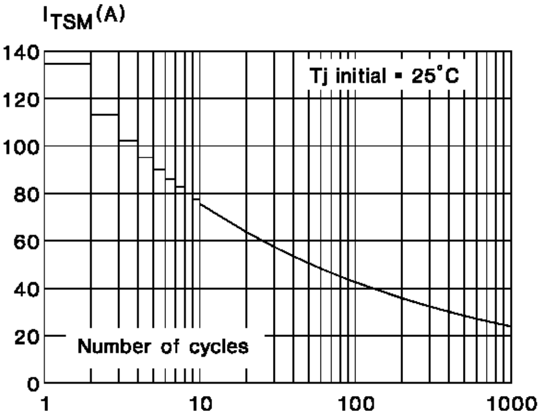


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

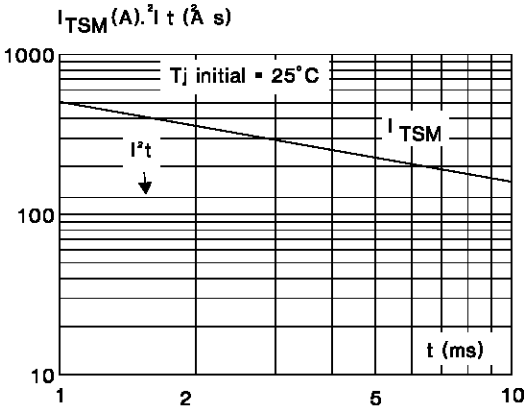
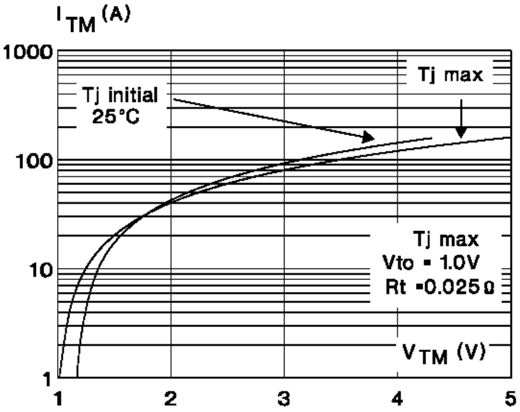
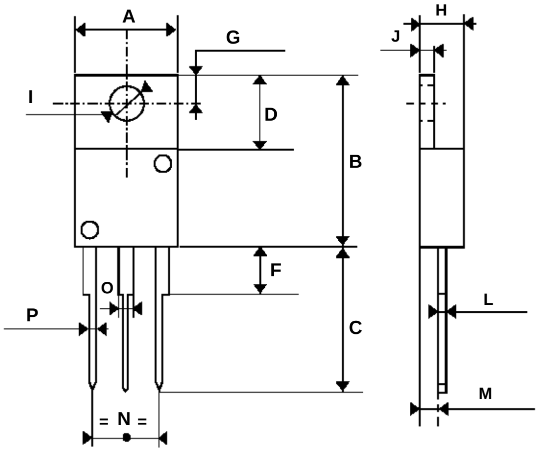


Fig.9 : On-state characteristics (maximum values).



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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