

STANDARD TRIACS

FEATURES

■ HIGH SURGE CURRENT CAPABILITY

■ COMMUTATION: (dV/dt)c>10V/µs

■ BTA Family :

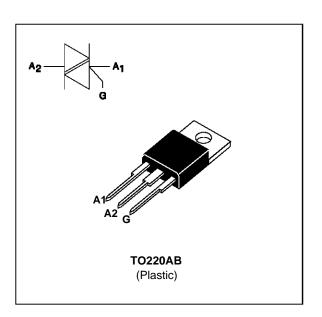
INSULATING VOLTAGE = 2500V_(RMS)

(UL RECOGNIZED: E81734)

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
IT(RMS)	RMS on-state current	ВТА	Tc = 80 °C	16	А
	(360° conduction angle)	втв	Tc = 90 °C		
ITSM	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	170	Α
			tp = 10 ms	160	
ı2t	I ² t value	value		128	A ² s
dl/dt	Critical rate of rise of on-state current Gate supply: IG = 500mA dig/dt = 1A/µ			10	A/μs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperatu	and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
TI	Maximum lead temperature for soldering during 10 s at 4.5 mr from case		0 s at 4.5 mm	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

March 1995 1/5

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W	
Rth (j-c) DC	Junction to case for DC	вта	2.9	°C/W
		втв	2.3	
Rth (j-c) AC	Junction to case for 360° conduction angle	ВТА	2.2	°C/W
	(F= 50 Hz)	втв	1.75	

GATE CHARACTERISTICS (maximum values)

 $PG~(AV) = 1W~~PGM = 10W~(tp = 20~\mu s)~~I_{GM} = 4A~(tp = 20~\mu s)~~V_{GM} = 16V~(tp = 20~\mu s).$

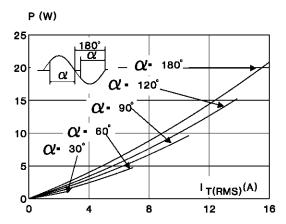
ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix	Unit
					В	
IGT	V _D =12V (DC) R _L =33Ω	Tj=25°C	1-11-111	MAX	50	mA
			IV	MAX	100	
VGT	V _D =12V (DC) R _L =33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
VGD	VD=VDRM RL=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	$V_D=V_DRM$ $I_G=500mA$ $dI_G/dt=3A/\mu s$	Tj=25°C	I-II-III-IV	TYP	2	μs
ΙL	I _G =1.2 I _G T	Tj=25°C	I-III-IV	TYP	40	mA
			Ш		70	
IH *	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
IDRM	V _{DRM} Rated	Tj=25°C		MAX	0.01	mA
IRRM	VRRM Rated	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 *	(dl/dt)c = 7A/ms	Tj=125°C		MIN	10	V/μs

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

 $\label{eq:Fig.1} \textbf{Fig.1:} \ \, \text{Maximum RMS power dissipation versus RMS} \\ \text{on-state current (F=50Hz)}.$

(Curves are cut off by (dl/dt)c limitation)



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

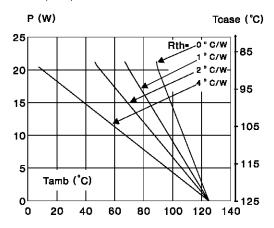


Fig.5: Relative variation of thermal impedance versus pulse duration.

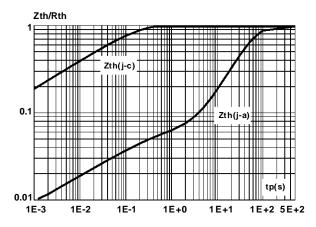


Fig.2: Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

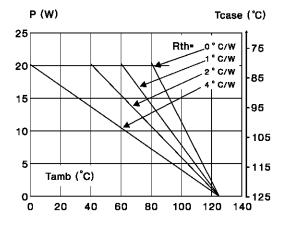


Fig.4: RMS on-state current versus case temperature.

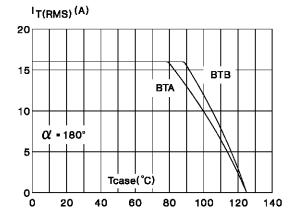


Fig.6: Relative variation of gate trigger current and holding current versus junction temperature.

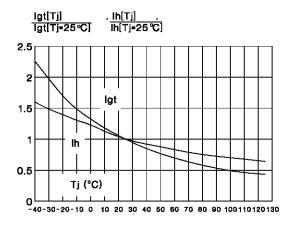


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

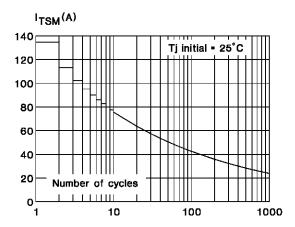


Fig.9: On-state characteristics (maximum values).

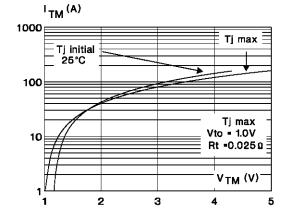
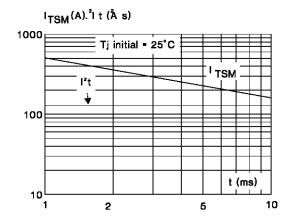
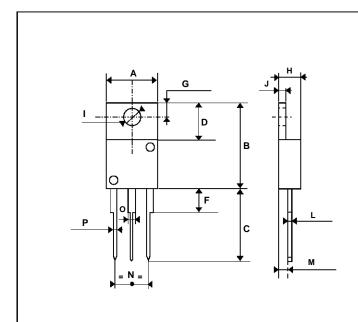


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \le 10ms$, and corresponding value of l^2t .



PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS				
	Millimeters		Inc	hes	
	Min.	Max.	Min.	Max.	
Α	10.20	10.50	0.401	0.413	
В	14.23	15.87	0.560	0.625	
С	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	
Н	4.48	4.82	0.176	0.190	
ı	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	
М	2.10	2.70	0.082	0.107	
N	4.58	5.58	0.18	0.22	
0	0.80	1.20	0.031	0.048	
Р	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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsability for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

