

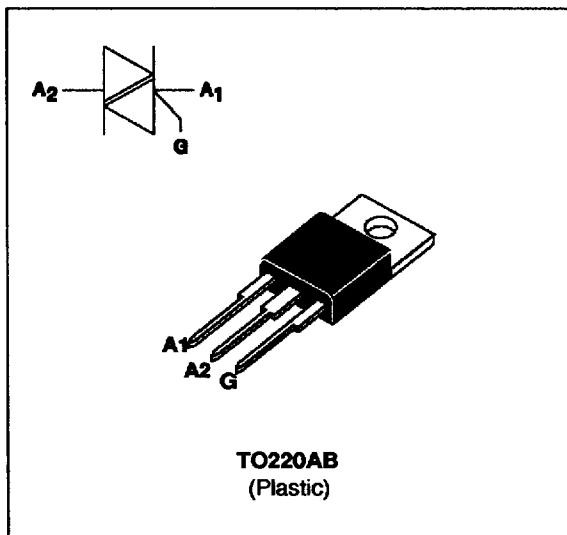
LOGIC LEVEL TRIACS

FEATURES

- LOW $I_{GT} = 10\text{mA max}$
- HIGH EFFICIENCY SWITCHING ON COMMUTATION
- BTA Family :
INSULATING VOLTAGE = 2500V(RMS)
(UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB12 SW Triac family are high performance products glass passivated PNP devices. These parts are suited for low power trigger circuit (integrated circuits, microcontroller, microprocessors).



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
I _T (RMS)	RMS on-state current (360° conduction angle)	BTA	T _c = 70 °C	12	A
		BTB	T _c = 75 °C		
I _{TSM}	Non repetitive surge peak on-state current (T _J initial = 25°C)	t _p = 8.3 ms		126	A
		t _p = 10 ms		120	
I ² _t	I ² _t value	t _p = 10 ms		72	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : I _G = 50mA di _G /dt = 0.1A/μs	Repetitive F = 50 Hz		20	A/μs
		Non Repetitive		100	
T _{stg} T _J	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
T _I	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	°C

Symbol	Parameter	BTA / BTB12-			Unit
		400 SW	600 SW	700 SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 110^\circ\text{C}$	400	600	700	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	

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 10W (t_p = 20 μ s) I_{GM} = 4A (t_p = 20 μ s) V_{GM} = 16V (t_p = 20 μ s).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix	Unit
					SW	
I_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_J=25^\circ C$	I-II-III	MAX	10	mA
V_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_J=25^\circ C$	I-II-III	MAX	1.5	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_J=110^\circ C$	I-II-III	MIN	0.2	V
t_{gt}	$V_D=V_{DRM}$ $I_G = 40mA$ $di_G/dt = 0.5A/\mu s$	$T_J=25^\circ C$	I-II-III	TYP	2	μs
I_L	$I_G=1.2 I_{GT}$	$T_J=25^\circ C$	I-III	TYP	15	mA
			II		25	
I_H *	$I_T=100mA$ gate open	$T_J=25^\circ C$		MAX	25	mA
V_{TM} *	$I_{TM}=17A$ $t_p=380\mu s$	$T_J=25^\circ C$		MAX	1.75	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_J=25^\circ C$		MAX	0.01	mA
		$T_J=110^\circ C$		MAX	1	
dV/dt *	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_J=110^\circ C$		MIN	50	V/ μs
$(di/dt)_c$ *	$dV/dt=0.1V/\mu s$	$T_J=110^\circ C$		MIN	5.3	A/ms
	$dV/dt=20V/\mu s$			MIN	3.5	

* 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 ($F=50\text{Hz}$).
(Curves are cut off by $(di/dt)_c$ limitation)

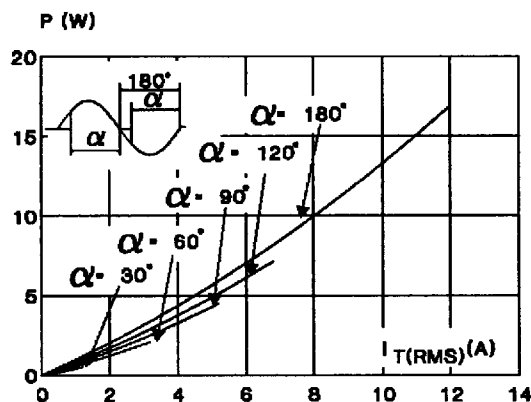


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

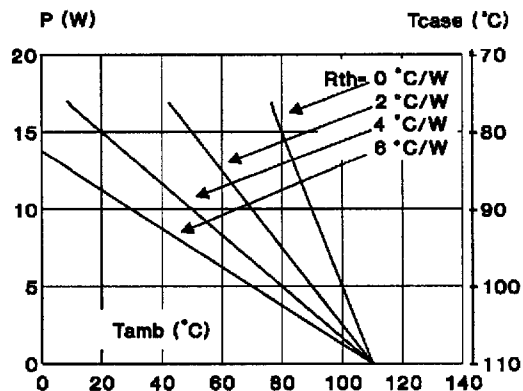


Fig.5 : Relative variation of thermal impedance versus pulse duration.

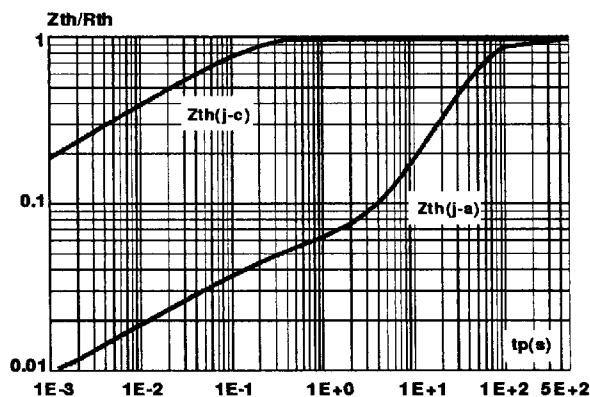


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

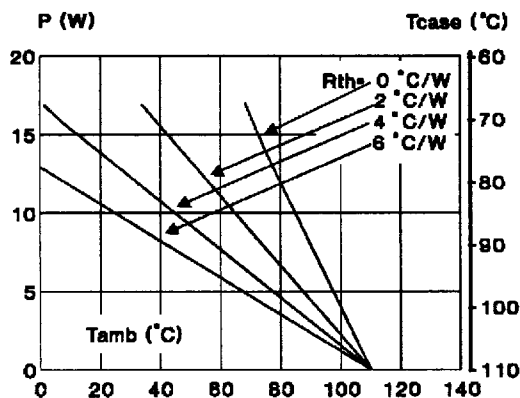


Fig.4 : RMS on-state current versus case temperature.

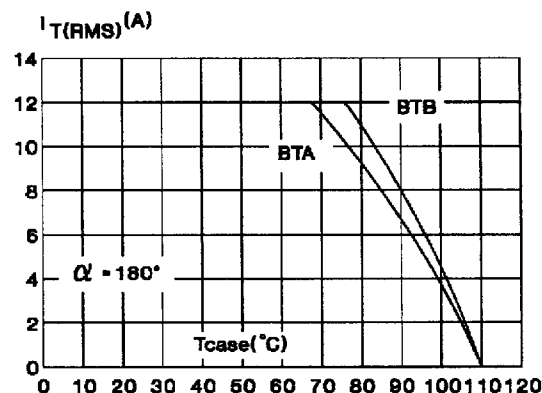


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

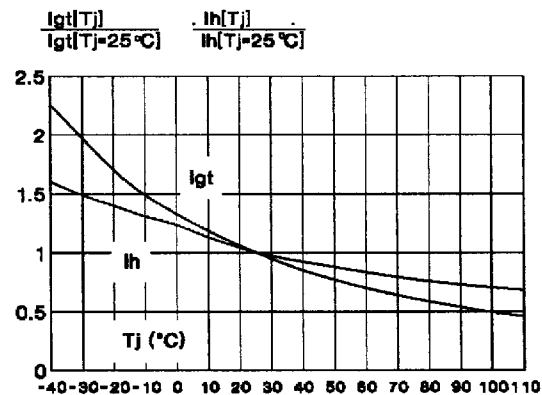


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

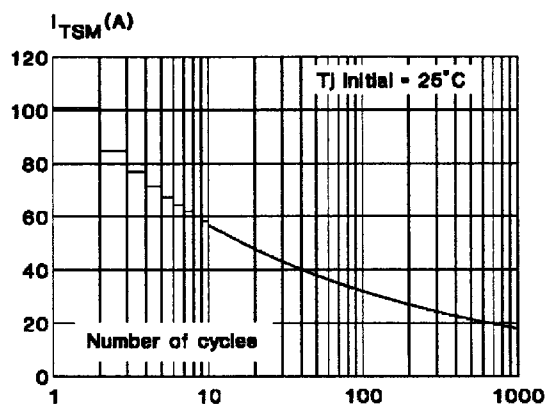


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

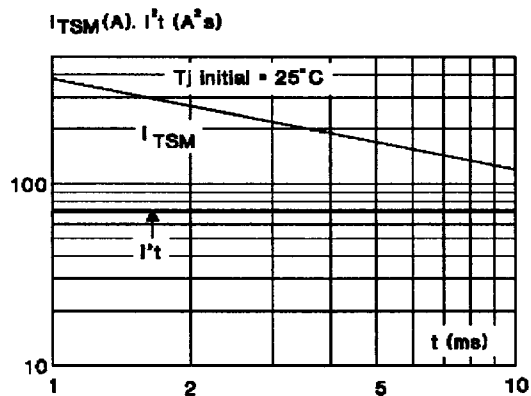


Fig.9 : On-state characteristics (maximum values).

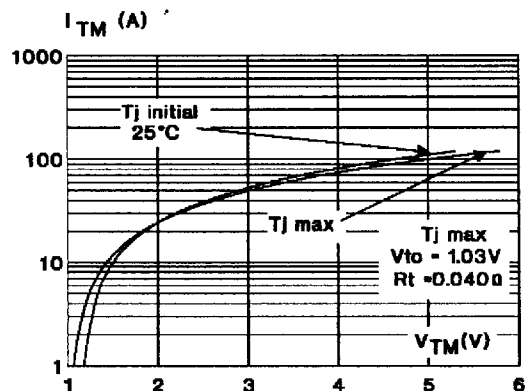
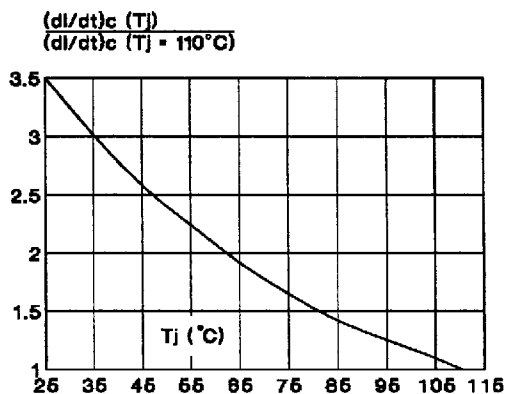
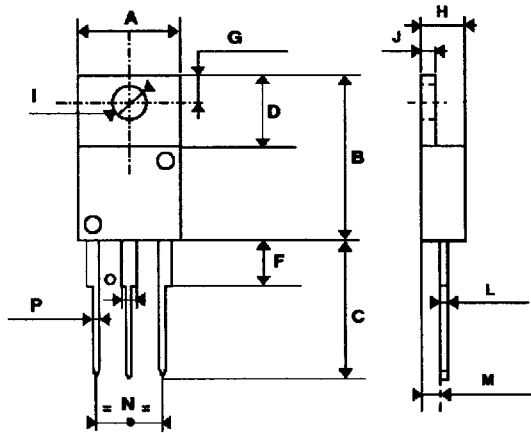


Fig.10 : Relative variation of $(di/dt)_c$ versus junction temperature.



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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