



BTA12/BTB12 Series 12A TRIACs

DESCRIPTION:

High current density due to double mesa technology; SIPOS and Glass Passivation.

BTA12/BTB12 series triacs is suitable for general purpose AC switching. They can be used as an ON/OFF Function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation light dimmers, motorspeed controllers.

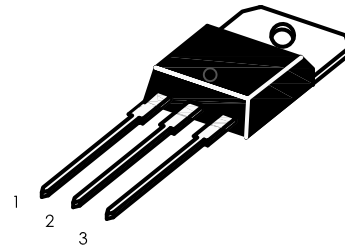
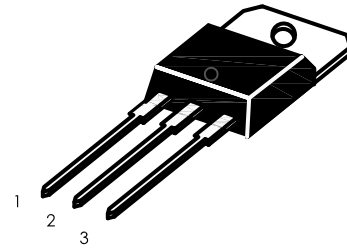
BTA12/BTB12- $\times\times\times$ TW、 $-\times\times\times$ SW、 $-\times\times\times$ CW、 $-\times\times\times$ BW are 3 Quadrants triacs, They are specially recommended for use on inductive loads.

BTA12 are isolated internally, they provides a 2500V RMS isolation voltage from all three terminals to external heatsink.

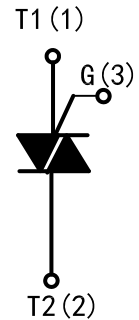
MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600and800	V
V_{TM}	≤ 1.55	V

TO-220AB(BTB12)



TO-220AB insulated (BTA12)



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40 to +150	$^{\circ}C$
Operating junction temperature range	T_j	-40 to +125	$^{\circ}C$
Repetitive Peak Off-state Voltage Repetitive Peak Reverse Voltage	V_{DRM} V_{RRM}	600and800 600and800	V
Non repetitive Surge Peak Off-state Voltage Non repetitive Peak Reverse Voltage	V_{DSM} V_{RSM}	700and900 700and900	V
RMS on-state current (full sine wave)	$I_{T(RMS)}$	12	A
		TO-220AB $T_c=105^{\circ}C$ TO-220AB Ins $T_c=90^{\circ}C$	
Non repetitive surge peak on-state current (full cycle, $T_j=25^{\circ}C$)	I_{TSM}	120 126	A
		$f = 50\text{ Hz}$ $t = 20\text{ms}$ $f = 60\text{ Hz}$ $t = 16.7\text{ms}$	
I^2t Value for fusing $t_p=10\text{ms}$	I^2t	78	A^2s
Critical rate of rise of on-state current $I_G=2 \times I_{GT}$, $t_r \leq 100\text{ ns}$, $f=120\text{Hz}$, $T_j=125^{\circ}C$	di/dt	50	A/us
Peak gate current $t_p=20\mu\text{s}$, $T_j=125^{\circ}C$	I_{GM}	4	A
Average gate power dissipation $T_j=125^{\circ}C$	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS (T_j=25°C unless otherwise specified)
 3 Quadrants

Symbol	Test Condition	Quadrant		BTA12/BTB12				Unit
				TW	SW	CW	BW	
I _{GT}	V _D =12V R _L =30Ω	I - II - III	MAX.	5	10	35	50	mA
V _{GT}		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 =1.2I _{GT}	I - III	MAX.	10	25	50	70	mA
		II		15	30	60	80	
I _H	I _T =100mA		MAX.	10	15	35	50	mA
dV/dt	V _D =67%V _{DRM} gate open T _j =125°C		MIN.	20	40	500	1000	V/μs
(dI/dt) _c	(dV/dt) c=0.1V/μs T _j =125°C		MIN.	3.5	6.5	----	----	A/ms
	(dV/dt) c=10V/μs T _j =125°C			1.0	2.9	----	----	
	Without snubber T _j =125°C			----	----	6.5	12	

 4 Quadrants

Symbol	Test Condition	Quadrant		BTA12/BTB12		Unit
				C	B	
I _{GT}	V _D =12V R _L =30Ω	I - II - III IV	MAX.	25 50	50 100	mA
V _{GT}		ALL	MAX.	1.3		V
V _{GD}	V _D =V _{DRM} R _L =3.3KΩ T _j =125°C	ALL	MIN.	0.2		V
I _L	I _G =1.2I _{GT}	I - III - IV	MAX.	40	50	mA
		II		80	100	
I _H	I _T =100mA		MAX.	25	50	mA
dV/dt	V _D =67%V _{DRM} gate open T _j =125°C		MIN.	200	400	V/μs
(dI/dt) _c	(dV/dt) c=0.1V/μs T _j =125°C		MIN.	----	----	
	(dV/dt) c=10V/μs T _j =125°C			----	----	
	Without snubber T _j =125°C			----	----	

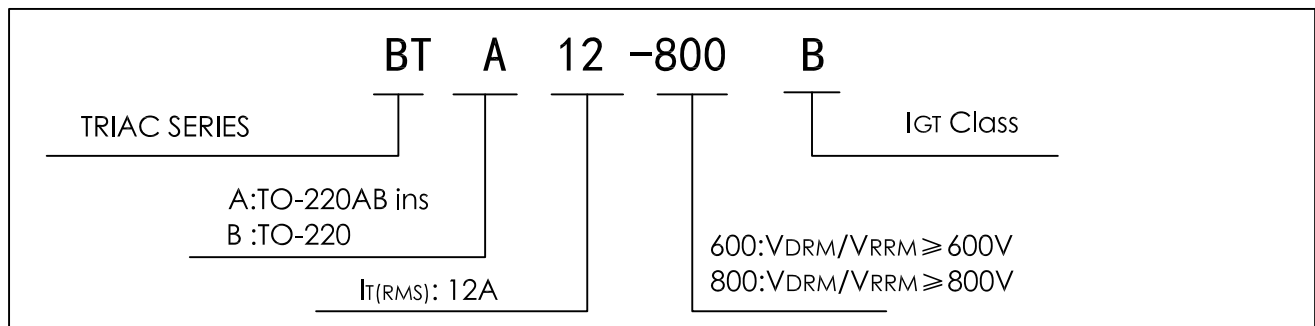
STATIC CHARACTERISTICS

Symbol	Test Conditions		Value (MAX)	Unit
V_{TM}	$I_{TM}=17A$, $t_p=380\mu s$	$T_j=25^\circ C$	1.55	V
I_{DRM}	$V_D=V_{DRM}$	$T_j=25^\circ C$	5	μA
I_{RRM}	$V_R=V_{RRM}$	$T_j=125^\circ C$	1	mA

THERMAL RESISTANCES

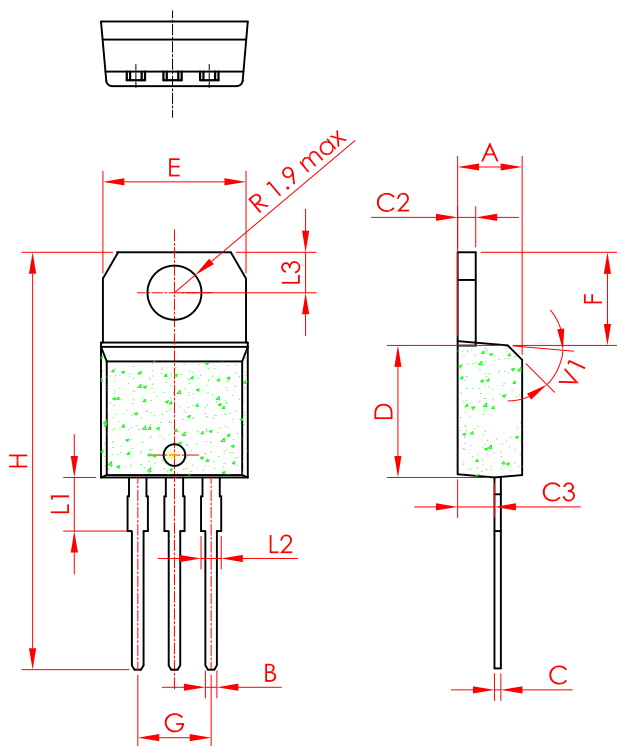
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	TO-220AB	1.4	$^\circ C/W$
		TO-220AB Insulated	2.3	

ORDERING INFORMATION



PACKAGE MECHANICAL DATA

TO-220AB



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.61		0.88	0.024		0.034
C	0.49		0.70	0.019		0.027
C2	1.23		1.32	0.048		0.051
C3	2.4		2.72	0.094		0.107
D	8.6		9.7	0.338		0.382
E	10		10.4	0.393		0.409
F	6.2		6.6	0.244		0.259
G	4.8		5.4	0.189		0.213
H	28.0		29.8	11.0		11.7
L1		3.75			0.147	
L2	1.14		1.7	0.044		0.066
L3	2.65		2.95	0.104		0.116
V1		40°			40°	

Fig. 1: Maximum power dissipation versus RMS on-state current(full cycle)

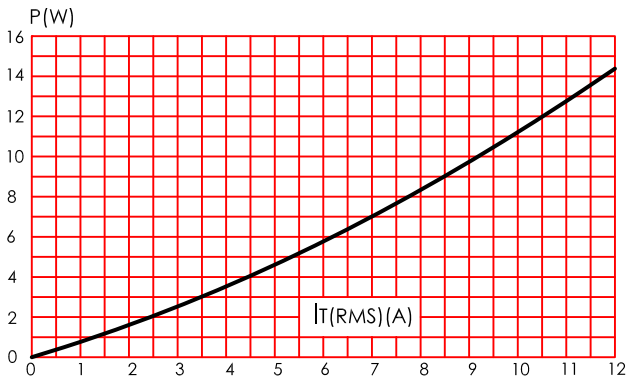


Fig. 2: RMS on-state current versus case temperature(full cycle)

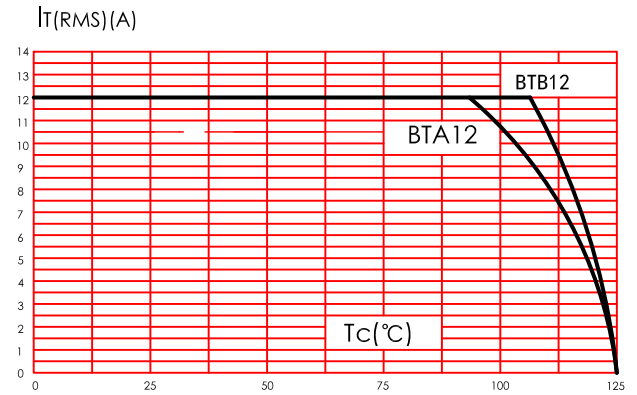


Fig. 3: on-state characteristics (maximum values)

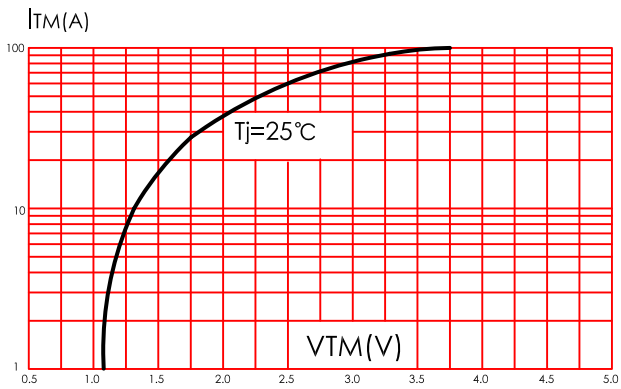


Fig. 4: Surge peak on-state current versus number of cycles

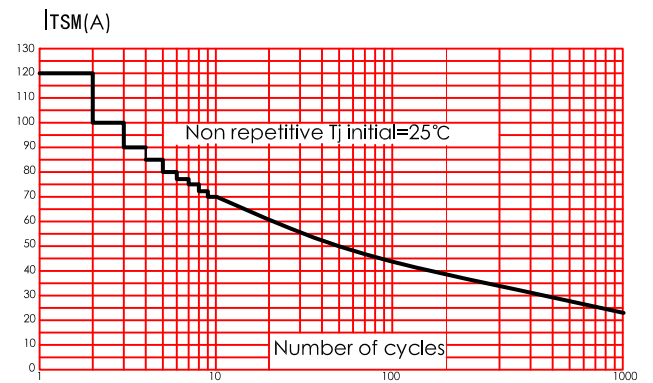


Fig. 5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$

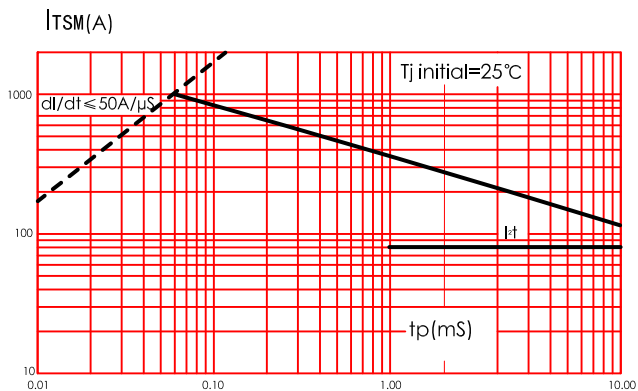


Fig. 6: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

