BTA12/BTB12 Series 12A TRIACs

DESCRIPTION:

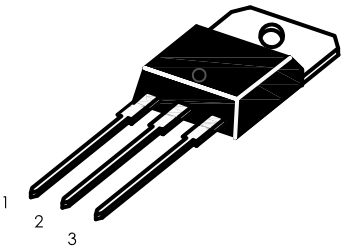
High current density due to double mesa technology; SIPOS and Glass Passivation.

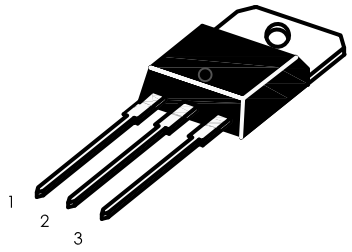
BTA12/BTB12 series triacs is suitable for general purpose AC switching. They can be used as an ON/OFF Function in applications such as static relays, heating regulation, induction motor stating circuits... or for phase contol operation light dimmers, motorspeed controllers.

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

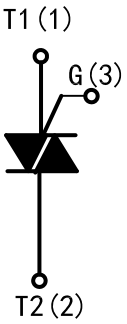
BTA12 are isolated internally, they provides a 2500V RMS isolation voltage from all three terminals to extemal heetsink.

TO-220AB(BTB12)





TO-220AB insulated
(BTA12)



MAIN FEATURES

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

ABSOLUTE MAXIMUM RATINGS

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

ELECTRICAL CHARACTERISTICS(Tj=25℃ 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 Tj=125℃	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 Tj=125℃		MIN.	20	40	500	1000	V/μs
(dI/dt)c	(dV/dt) c=0.1V/μs Tj=125℃		MIN.	3.5	6.5	----	----	A/ms
	(dV/dt) c=10V/μs Tj=125℃			1.0	2.9	----	----	
	Without snubber Tj=125℃			----	----	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 Tj=125℃	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 Tj=125℃		MIN.	200	400	V/μs
(dI/dt)c	(dV/dt) c=0.1V/μs Tj=125℃		MIN.	----	----	
	(dV/dt) c=10V/μs Tj=125℃			----	----	
	Without snubber Tj=125℃			----	----	

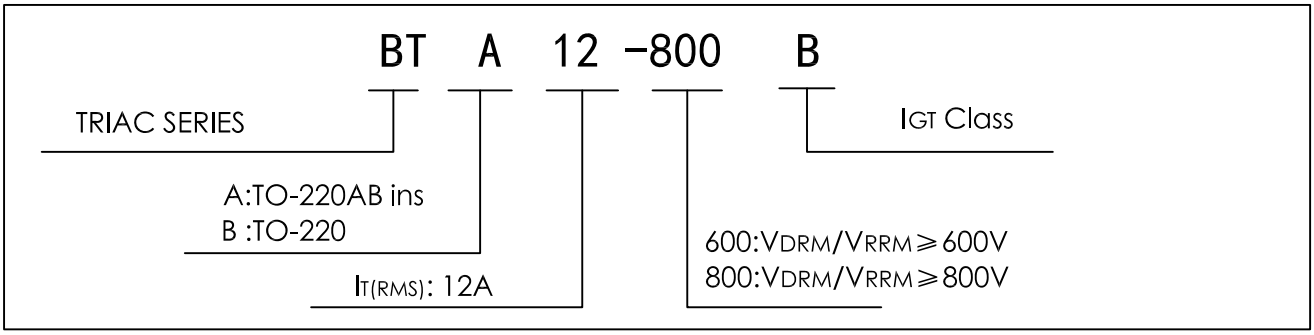
STATIC CHARACTERISTICS

Symbol	Test Conditions		Value (MAX)	Unit
V_{TM}	I_{TM}=17A, tp=380uS	Tj=25℃	1.55	V
I_{DRM}	$V_D=V_{DRM}$	Tj=25℃	5	uA
I_{RRM}	$V_R=V_{RRM}$	Tj=125℃	1	mA

THERMAL RESISTANCES

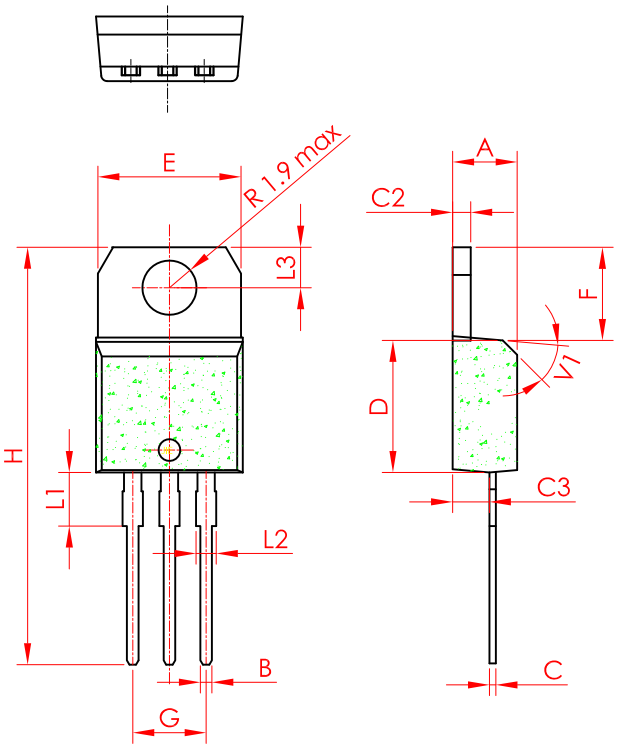
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	TO-220AB	1.4	℃/W
		TO-220AB Insulated	2.3	

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)

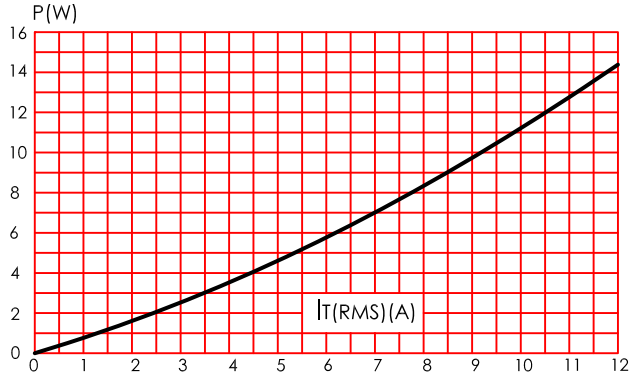


Fig. 2: RMS on-state current versus case temperrature(full cycle)

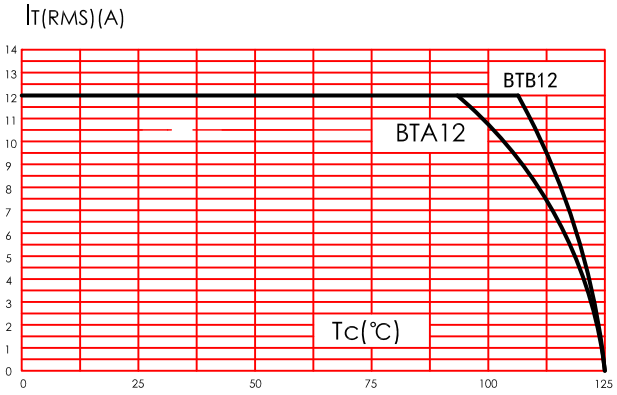


Fig. 3: on-state characteristics (maximum values)

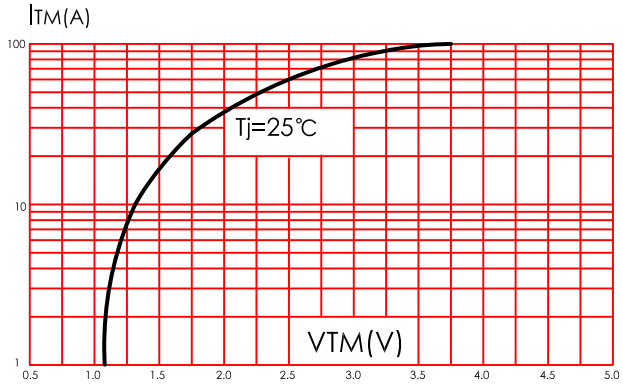


Fig. 4: Surge peak on-state current versus number of cycyles

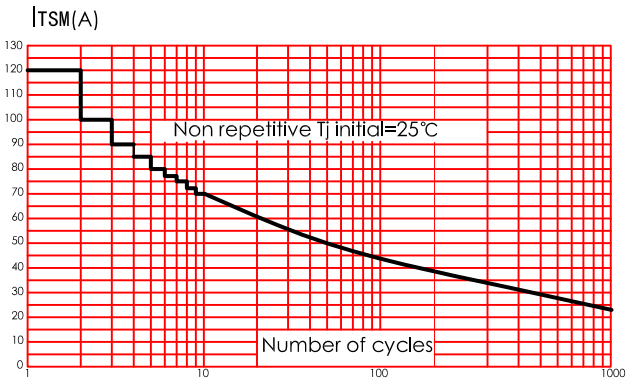


Fig. 5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10mS

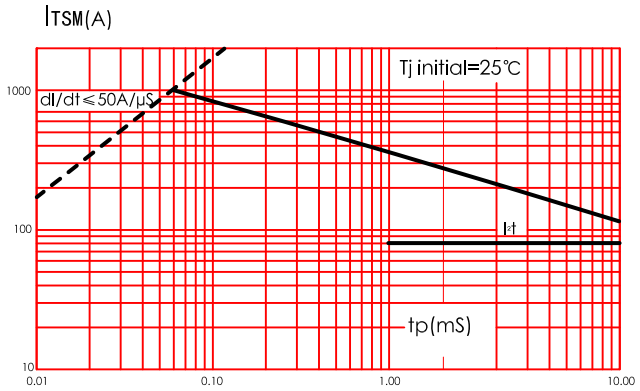


Fig. 6: **Relative variation** of gate trigger currunt, holding current and latching current versus junction temperature(typical values)