

BTA12/BTB12 Series

- Description:**

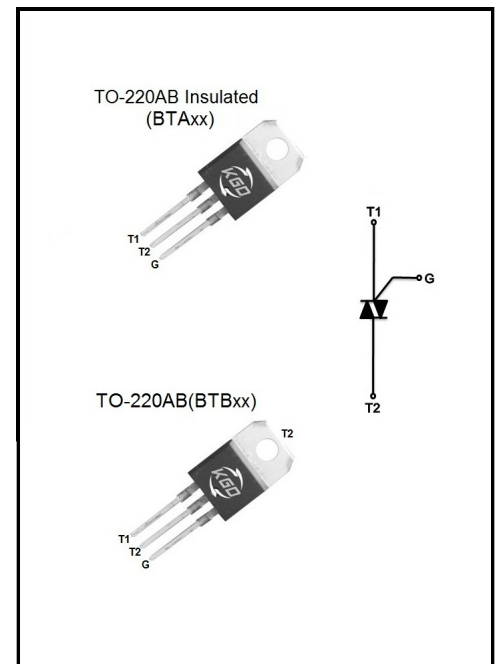
High current density due to double mesa technology;
SIPOS and Glass Passivation.

- Applications:**

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, motor speed controllers.

- Features:**

BTA12/BTB12-XXXTW/SW/CW/BW are 3 Quadrants TRIACS, They are specially recommended for use on inductive loads. BTA12 are isolated internally, they provide a 2500V RMS isolation voltage from all three terminals to external heatsink. Blocking voltage to 600/800V
On-state RMS current to 12A
Non-repetitive peak on-state current to 120A



- Absolute Maximum Ratings**

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DRM}	Repetitive peak off-state voltage	$T_J=25^\circ\text{C}$	600	800	V
V_{RRM}	Repetitive peak Reverse voltage	$T_J=25^\circ\text{C}$	600	800	V
$I_{T(RMS)}$	RMS on-state current (full sine wave)	TO-220AB $T_c=105^\circ\text{C}$	-	12	A
		TO-220AB Ins $T_c=90^\circ\text{C}$	-		
I_{TSM}	Non-repetitive peak On-state current (full cycle, $T_J=25^\circ\text{C}$)	$F=50\text{Hz}$, $t=20\text{ms}$	-	120	A
		$F=60\text{Hz}$, $t=16.7\text{ms}$	-	126	A
I^2t	I^2t Value for fusing	$T_p=10\text{ms}$	-	72	A^2S
di/dt	Rate of rise of on-state current	$I_G=2 \times I_{GT}$, $t_r \leq 100\text{ns}$, $T_J=125^\circ\text{C}$	-	50	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current	$t_p=20\mu\text{s}$, $T_J=125^\circ\text{C}$	-	4	A
$P_{G(AV)}$	Average gate power		-	1	W
T_{STG}	Storage temperature		-40	150	$^\circ\text{C}$
T_J	Junction temperature		-40	125	$^\circ\text{C}$

BTA12/BTB12 Series
● Electrical Characteristics
■ 3 Quadrants

Symbol	Conditions	Quadrant		BTA12/BTB12				Unit
				TW	SW	CW	BW	
I_{GT}	$V_D=12V, R_L=33\Omega$	I-II-III	MAX	5	10	35	50	mA
V_{GT}		I-II-III	MAX		1.3			V
V_{GD}	$V_D=V_{DRM}, R_L=3.3K\Omega, T_j=125^\circ C$	I-II-III	MIN		0.2			V
I_L	$I_T=1.2I_{GT}$	I-III	MAX	15	20	50	70	mA
		II	MAX	25	35	60	80	mA
I_H	$I_T=100mA$		MAX	10	15	40	60	mA
dv/dt	$V_{DM}=67\%V_{DRM}, \text{gate open}, T_j=125^\circ C$		MIN	20	40	400	1000	$V/\mu s$
	$(dv/dt)_c=0.1 V/\mu s, T_j=125^\circ C$			3.5	6.5	/	/	
$(di/dt)_c$	$(dv/dt)_c=10 V/\mu s, T_j=125^\circ C$		MIN	1.0	2.9	/	/	A/ms
	Without snubber, $T_j=125^\circ C$			/	/	6.5	12	

■ 4 Quadrants

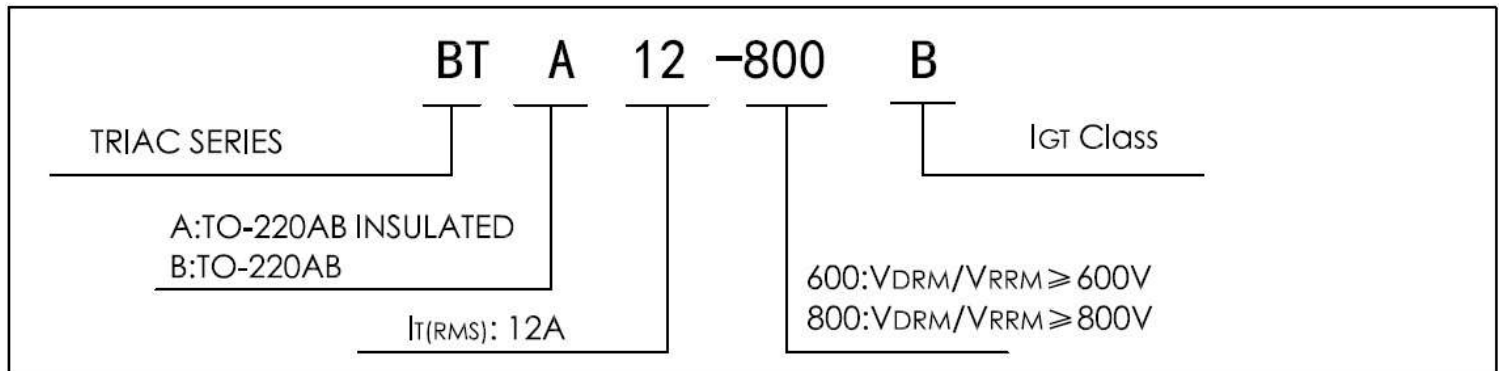
Symbol	Conditions	Quadrant		BTA12/BTB12		Unit
				C	B	
I_{GT}	$V_D=12V, R_L=30\Omega$	I-II-III	MAX	25	50	mA
		IV		50	100	
V_{GT}		ALL	MAX		1.3	V
V_{GD}	$V_D=V_{DRM}, R_L=3.3K\Omega, T_j=125^\circ C$	ALL	MIN		0.2	V
I_L	$I_T=1.2I_{GT}$	I-III-IV	MAX	40	50	mA
		II	MAX	80	100	mA
I_H	$I_T=100mA$		MAX	25	50	mA
dv/dt	$V_{DM}=67\%V_{DRM}, \text{gate open}, T_j=125^\circ C$		MIN	200	400	$V/\mu s$

BTA12/BTB12 Series
● Static Characteristics

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

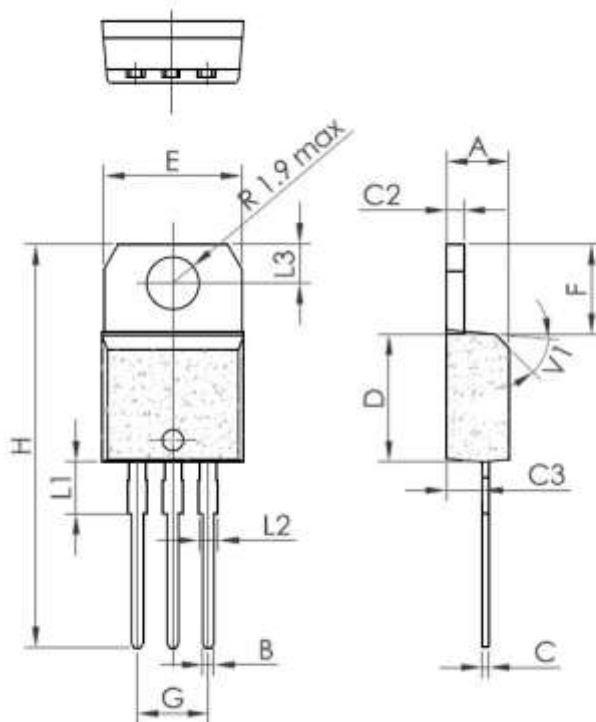
● Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{th(j-mb)}$	Junction to Case(AC)	TO-220AB	1.4
		TO-220AB Insulated	2.3
$R_{th(j-a)}$	Junction to ambient	TO-220AB	60
		TO-220AB Insulated	

● Ordering Information


BTA12/BTB12 Series

● Package Outline Dimensions

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°	

● Marking

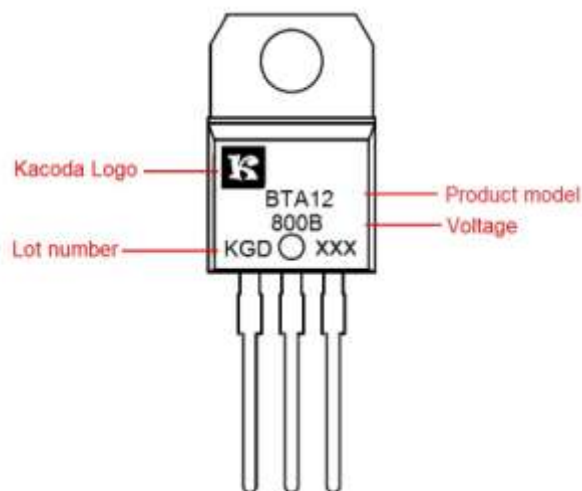


FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

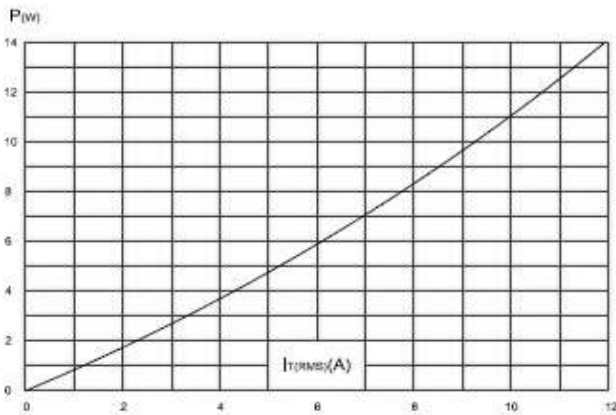


FIG.2:RMS on-state current versus case temperature(full cycle)

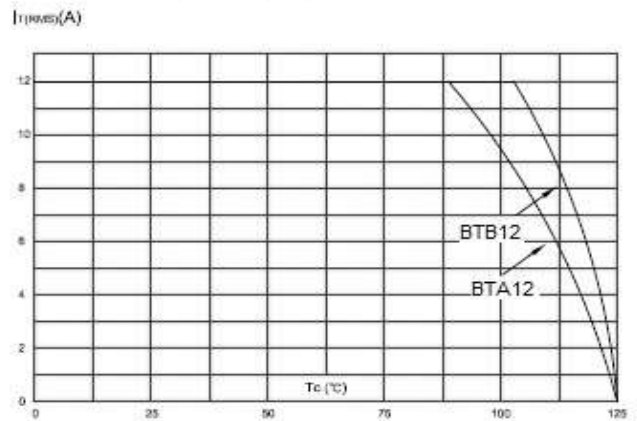


FIG.3:On-state characteristics (maximum values),

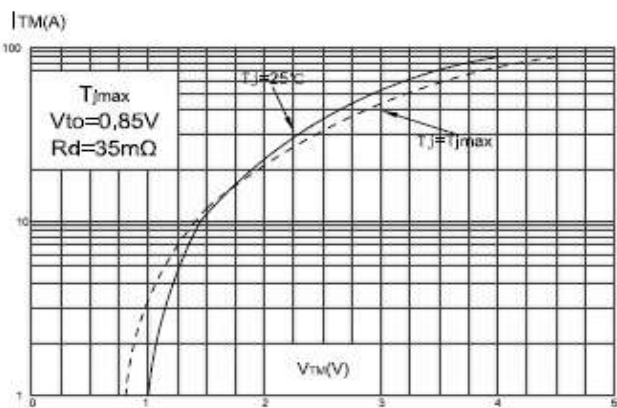


FIG.4:Surge peak on-state current versus number of cycles.

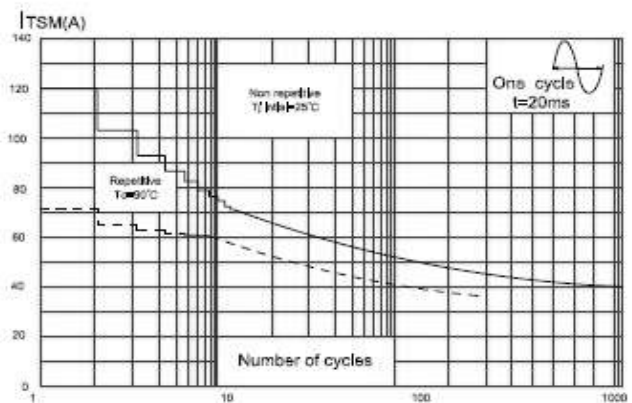


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

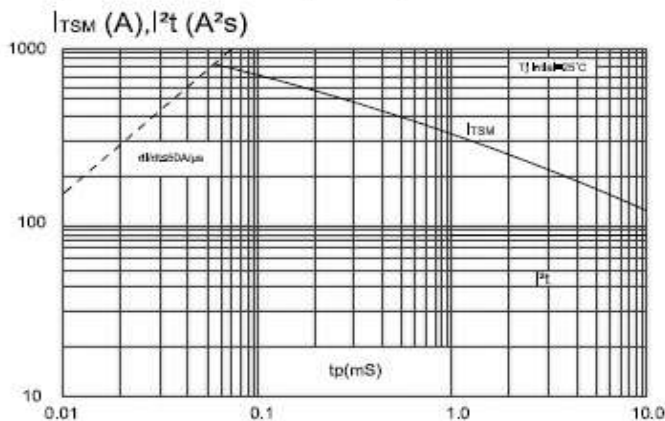


FIG.6:Relative variations of gate trigger current, holding current and latching current versus junction temperature(typical values)

