

1、Description

BTA12 series triacs, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interference. With high commutation performances, 3 quadrant products especially recommended for use on inductive load.

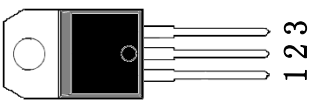
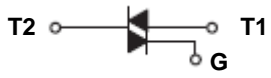
2、Applications

- Motor control
- Industrial and domestic lighting
- Heating
- Static switching

3、Features

- Blocking voltage to 800 V
- On-state RMS current to 12 A
- Ultra low gate trigger current
- Low cost package.

4、Pinning information

PIN	Description	Simplified outline	Symbol
1	main terminal 1(T1)	 TO-220A	
2	main terminal 2(T2)		
3	gate (G)		

5、Quick reference data

SYMBOL	PARAMETER	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages	800	V
$I_{T(RMS)}$	RMS on-state current	12	A
I_{TSM}	Non-repetitive peak on-state current	120	A

6、Thermal characteristics

SYMBOL	PARAMETER	Value	UNIT	
$R_{th(j-c)}$	junction to case(AC)	TO-220A	2.3	°C/W

7、Limiting value

Limiting values in accordance with the Maximum System(IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages		-	800	V
$I_{T(RMS)}$	RMS on-state current	Full Cycle Sine Wave 50 to 60 Hz (TC = 90°C)	-	12	A
I_{TSM}	Non-repetitive peak Surge current	One Full cycle, 60 Hz, $T_J = +110^\circ\text{C}$	-	120	A
I^2t	I^2t for fusing	$t = 8.3\text{ms}$	-	72	A^2s
I_{GM}	Peak gate current	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	4	A
P_{GM}	Peak gate power	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	5	W
$P_{G(AV)}$	Average gate power	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	1	W
T_{stg}	Storage temperature		-40	150	°C
T_J	Operating junction temperature		-40	125	°C

8、Characteristics

$T_J = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	$V_D = 12 \text{ V}$; $I_T = 0.1\text{A}$ T2+ G+ T2+ G- T2- G-	-	-	35	mA mA mA
I_L	Latching current	$V_D = 12 \text{ V}$; $I_{GT} = 0.1\text{A}$ T2+ G+ T2+ G- T2- G-	-	-	50 60 50	mA mA mA
I_H	Holding current	Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current $\leq 1 \text{ Adc}$ $T_J = 25^\circ\text{C}$	-	-	40	mA
V_{TM}	On-state voltage	$I_{TM} = 17\text{A}$, $t_p = 380\mu\text{s}$	-	-	1.65	V
V_{GT}	Gate trigger voltage (Continuous dc)	Main Terminal Voltage = 12 Vdc, $R_L = 100 \text{ Ohms}$, $T_J = -40^\circ\text{C}$ All Quadrants	-	-	1.5	V
V_{GD}	Gate Non-Trigger Voltage	$V_D = V_{DRM}$ $T_J = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$	0.2	-	-	V
Dynamic Characteristics						
dV/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}$; $T_J = 125^\circ\text{C}$; Exponential wave form; $R_{GK} = 1\text{K}\Omega$	200	-	-	V/ μs

9. Electrical Characteristics Curve

FIG.1 Maximum power dissipation versus RMS on-state current

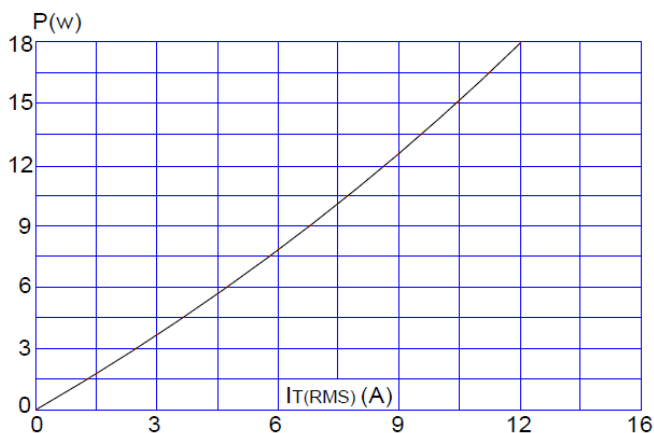


FIG.2: RMS on-state current versus case temperature

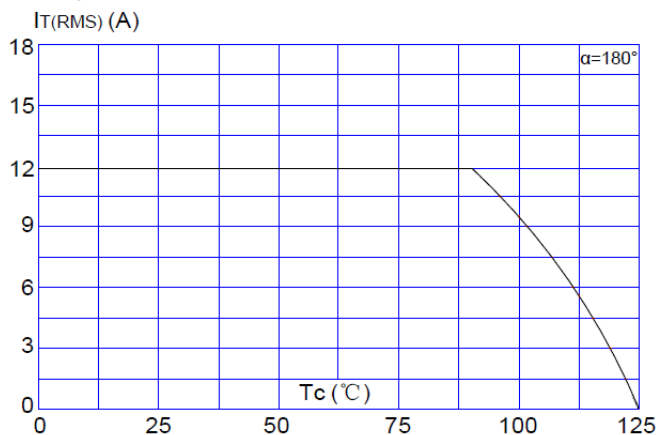


FIG.3: Surge peak on-state current versus number of cycles

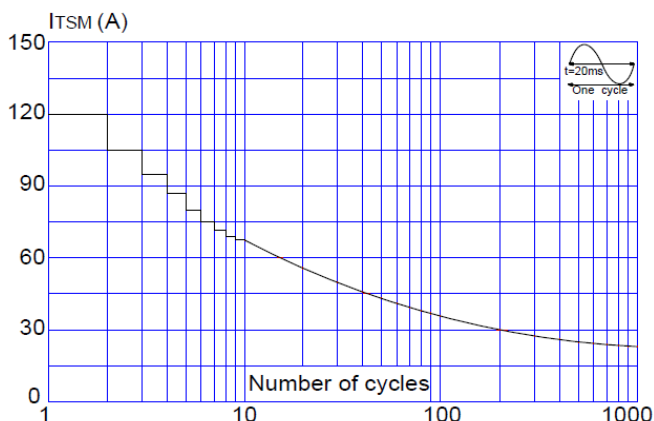


FIG.4: On-state characteristics (maximum values)

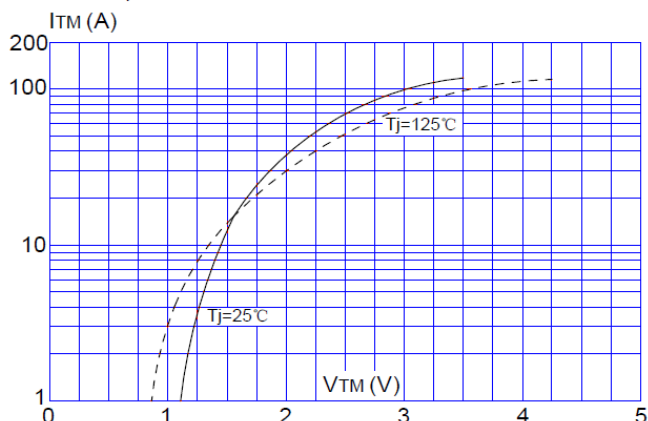


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

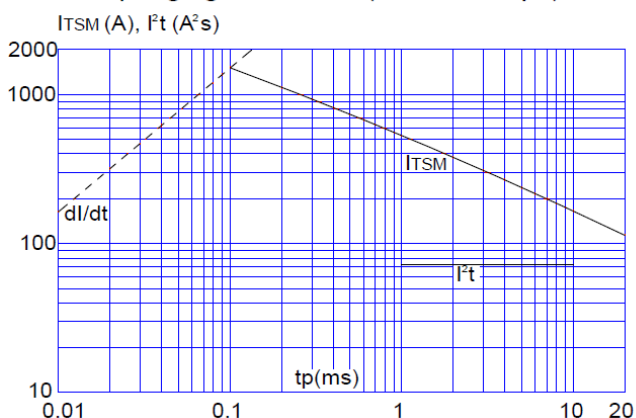
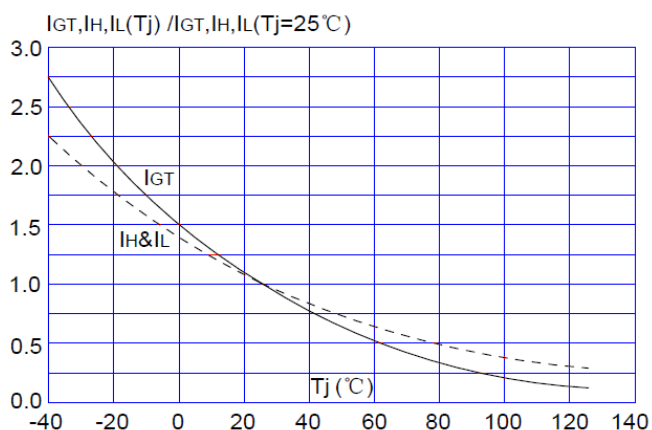
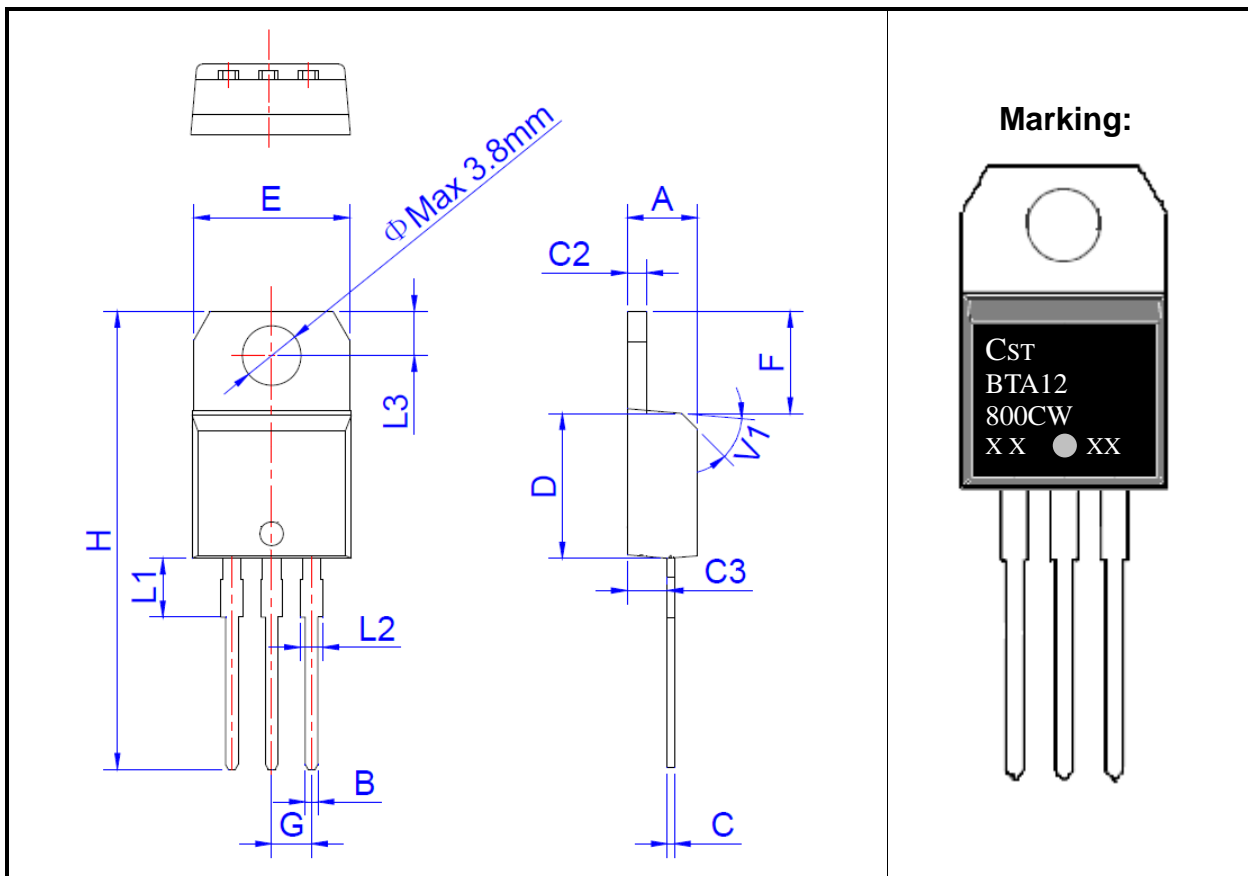


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



10、 Package outline (TO-220A Ins)



DIM	Milimeters			Inches		
	Min	Type	Max	Min	Type	Max
A	4.40	-	4.60	0.173	-	0.181
B	0.71	-	0.91	0.028	-	0.036
C	0.40	-	0.65	0.016	-	0.026
C2	1.25	-	1.35	0.049	-	0.053
C3	2.40	-	2.72	0.094	-	0.107
D	8.60	-	9.70	0.339	-	0.382
E	9.80	-	10.4	0.386	-	0.409
F	6.35	-	6.75	0.250	-	0.266
G		2.54			0.1	
H	28.0	-	29.8	1.102	-	1.173
L1		3.75			0.148	
L2	1.14	-	1.70	0.045	-	0.067
L3	2.65	-	2.95	0.104	-	0.116
V1		45°			45°	