

## TRIAC series

### 1 Description

12A series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load.

(TO-220A Ins) series provide insulation voltage rated at 2500V RMS from all three terminals to external heatsink complying with UL standards (File ref: E252906).

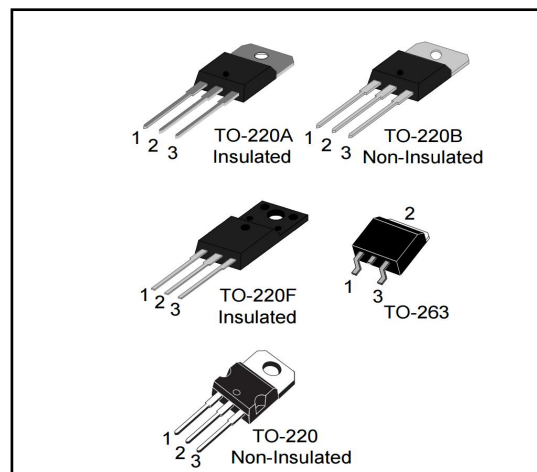
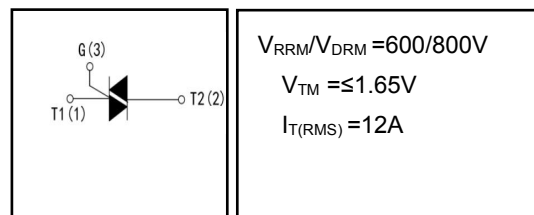
(TO-220F Ins) provides a rated insulation voltage of 2000VRMS, complying with UL standards (File ref: E252906).

### 2 Features

- High current output up to 12A
- Low Peak on-state voltage drop
- High voltage
- High reliability

### 3 Applications

- jet pumps of dishwashers
- fans of air-conditioner
- power charger
- AC Motor control



## 4 Electrical Characteristics

### 4.1 Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (Tj=25°C)	V <sub>DRM</sub>	600/800	V
Repetitive peak reverse voltage (Tj=25°C)	V <sub>RRM</sub>	600/800	V
Non repetitive surge peak Off-state voltage	V <sub>DSM</sub>	+ 100	V
Non repetitive peak reverse voltage	V <sub>RSM</sub>	+ 100	V
RMS on-state current	TO-220(Ins)/TO-220F/ TO-263(Tc=85°C)	12	A
	TO-220(Non)/(Tc=110°C)		
Non repetitive surge peak on-state current	I <sub>TSM</sub>	120	A
		110	
I <sup>2</sup> t value for fusing (tp=10ms)	I <sup>2</sup> t	72	A
Repetitive rate of rise of on-state current (ITM=20A IG=50mA dIG/dt 50mA/ms)	dIT/dt	50	A/us
Peak gate current	I <sub>GM</sub>	2	A
Peak gate power	P <sub>GM</sub>	5	W
Average gate power dissipation	P <sub>G(AV)</sub>	0.5	W
Operating junction temperature range	T <sub>J</sub>	- 40 ~ 125	°C
Storage junction temperature range	T <sub>STG</sub>	- 40 ~ 150	°C

### 4.2 Thermal Characteristics

PARAMETER	SYMBOL	VALUE			UNIT
		TO-220(Non)	To-220(Ins)	TO-220F/263	
Thermal Resistance, Junction to Case-sink	R <sub>thJC</sub>	3.0	4.0	4.5	°C/W

4.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

SYMBOL	PARAMETER	Test Conditions	Min	Typ	Max	Unit	
I <sub>GT</sub>	Triggering gate current	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	I - II - III	-	-	35	mA
			IV	-	-	-	
V <sub>GT</sub>	Triggering gate voltage				1.5	V	
V <sub>GD</sub>	Non-triggering gate voltage	V <sub>D</sub> =V <sub>DRM</sub> T <sub>J</sub> =125°C R <sub>L</sub> =3.3KΩ	0.2	-	-	V	
I <sub>L</sub>	Latching Current	I <sub>G</sub> =1.2I <sub>GT</sub>	I - III	-	-	50	mA
			II	-	-	60	
I <sub>H</sub>	Holding Current	I <sub>T</sub> =100mA	-	-	40	mA	
dV/dt	Critical Rate of Rise of Off-state Voltage	V <sub>D</sub> =2/3V <sub>DRM</sub> Gate Open T <sub>J</sub> =125°C	400	-	-	V/us	
V <sub>TM</sub>	Peak Forward On-State Voltage	I <sub>TM</sub> =17A tp=380us	-	-	1.65	V	
I <sub>DRM</sub>	Maximum forward or reverse leakage current	V <sub>D</sub> =V <sub>DRM</sub> V <sub>R</sub> =V <sub>RRM</sub>	T <sub>J</sub> =25°C	-	-	10	uA
I <sub>RRM</sub>			T <sub>J</sub> =125°C	-	-	1	mA

5 Typical characteristics diagrams

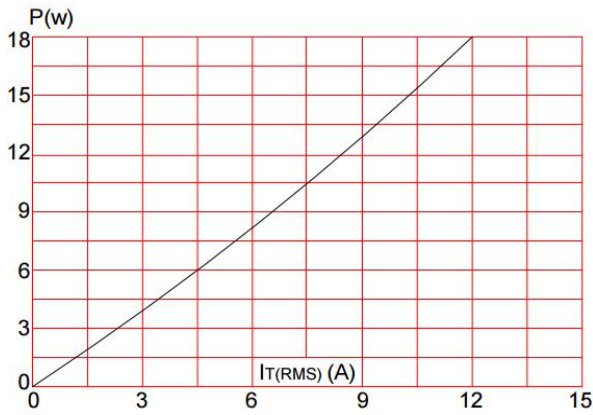


FIG.1: Maximum power dissipation versus RMS on-state current

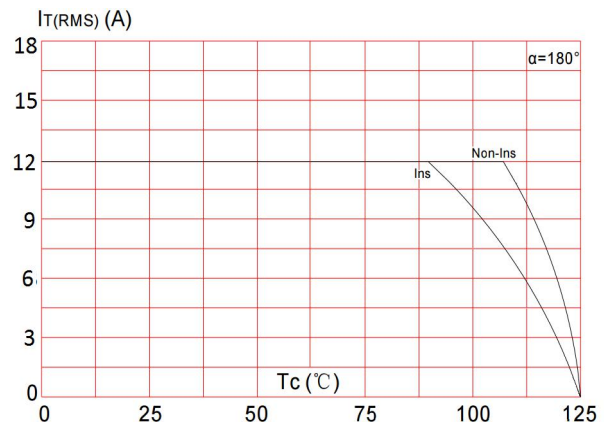


FIG.2: RMS on-state current versus case temperature

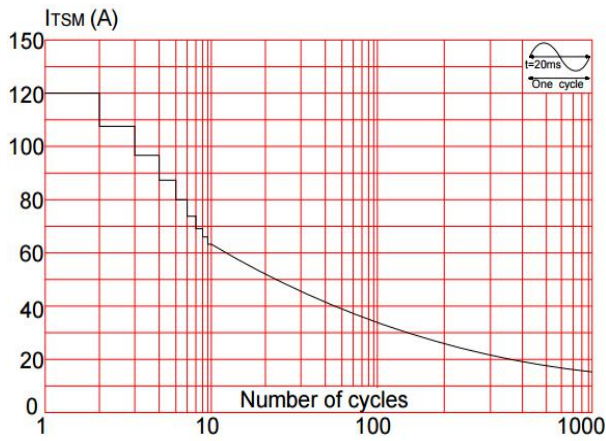


FIG.3: Surge peak on-state current versus number of cycles

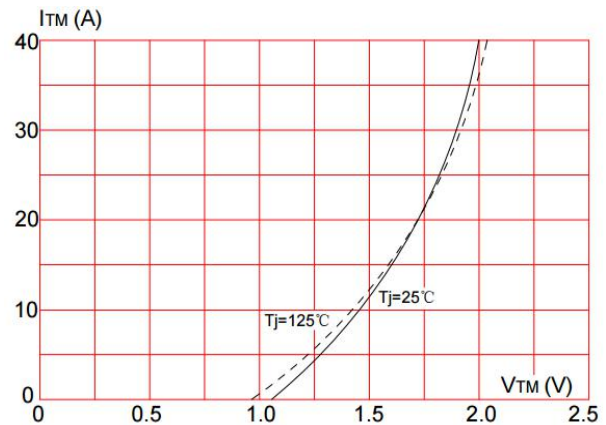


FIG.4: On-state characteristics (maximum values)

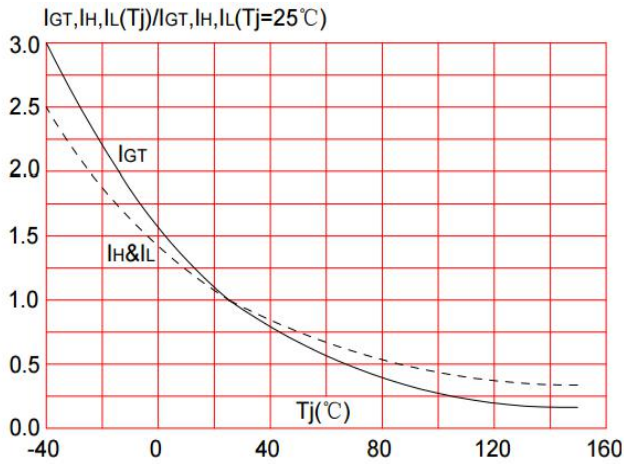
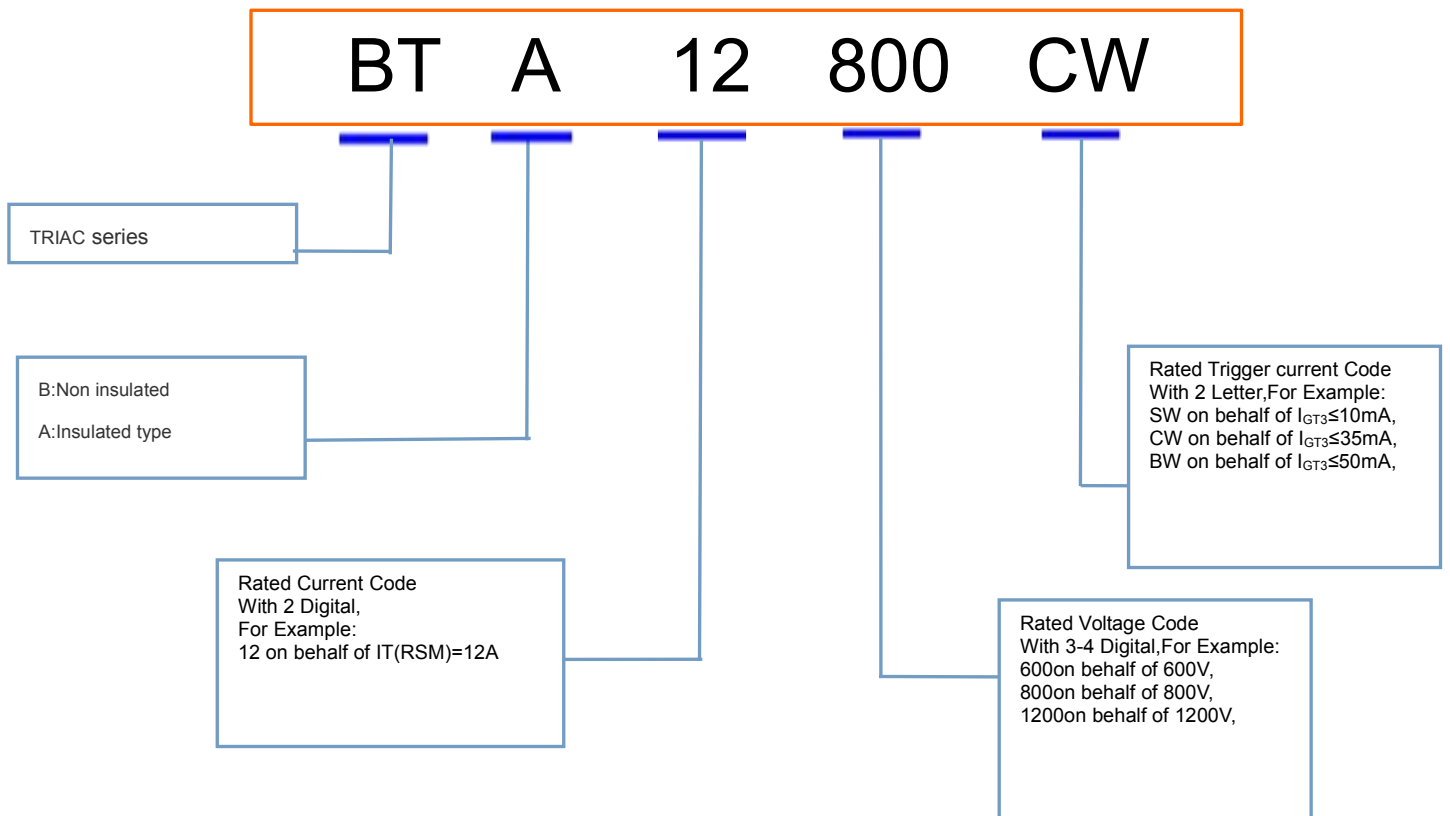


FIG.5: Relative variations of gate trigger current, holding current and latching current versus junction temperature

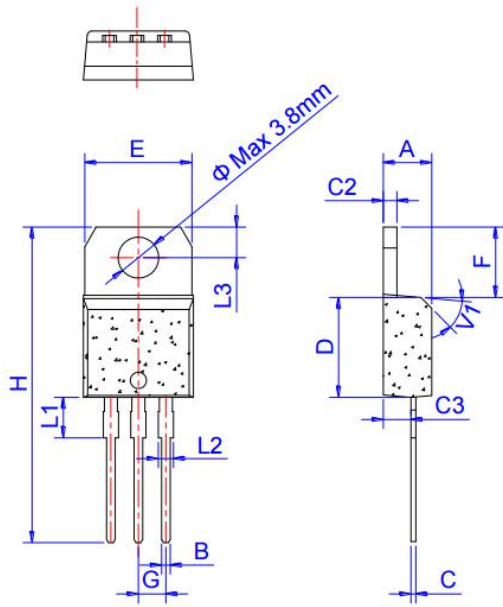
## 6 Product Names Rules



## 7 Product Specifications and Packaging Models

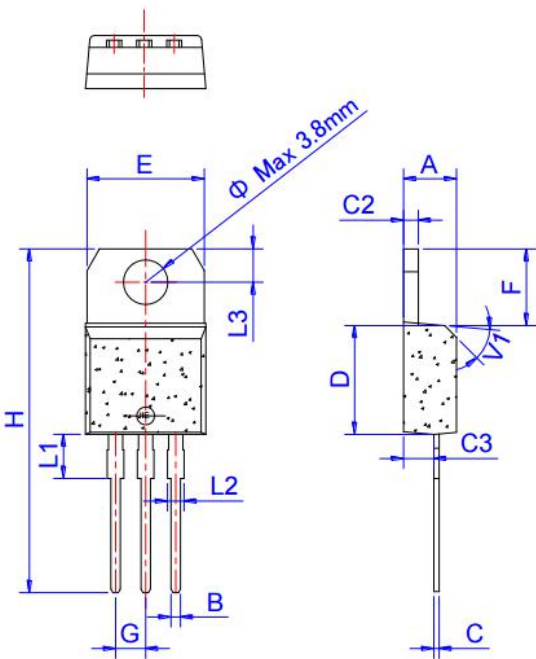
Product Model	Package Type	Mark Name	RoHS	Package	Quantity
BTA12	TO-220	BTA12	Pb-free	Tube	1000//box

8 Dimensions



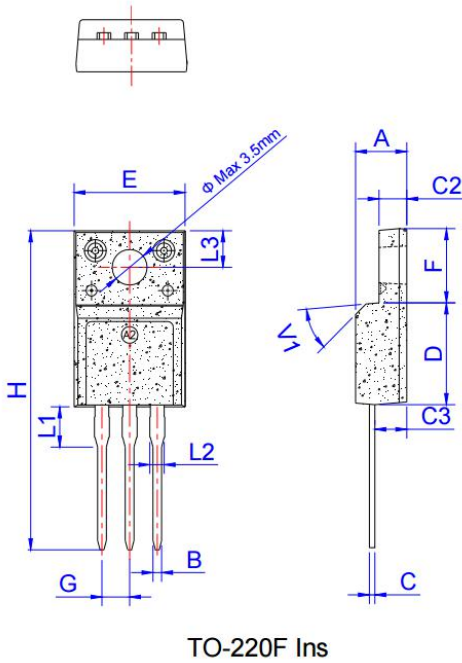
TO-220A Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
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	6.55		6.95	0.258		0.274
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°	



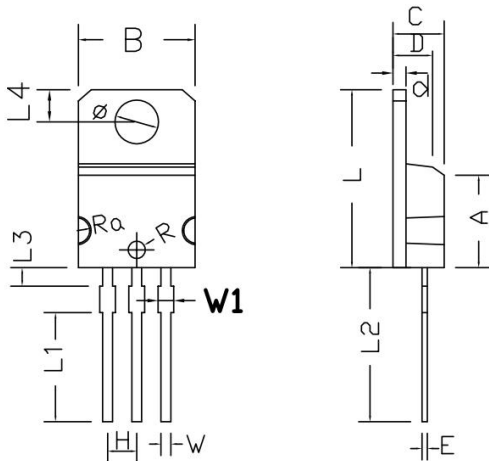
TO-220B Non-Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
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°	



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

TO-220M PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
	MIN	MAX	MIN	MAX
A	7.55	8.05	0.297	0.317
B	9.85	10.25	0.388	0.404
C	4.20	4.80	0.165	0.189
D	3.20	3.60	0.126	0.142
E	0.42	0.47	0.017	0.019
L	15.20	15.60	0.598	0.614
H	2.52	2.56	0.099	0.101
W	0.78	0.88	0.031	0.035
Φ	3.60	3.90	0.142	0.154
R	0.72	0.78	0.028	0.031
Ra	9.00	10.5	0.354	0.413
d	1.10	1.40	0.043	0.055
L1	9.3	9.7	0.366	0.382
L2	13.00	13.60	0.512	0.535
L3	1.20	1.70	0.047	0.067
L4	2.60	3.0	0.102	0.118
W1	1.10	1.50	0.043	0.059

## 9 Attentions

- Jiangsu Donghai Semiconductor Technology Co., Ltd. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of WXDH products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

## 10 Appendix

Revision history:

Date	REV.	Description	Page
2017.09.8	1.0	Original	