

TRIAC series

1 Description

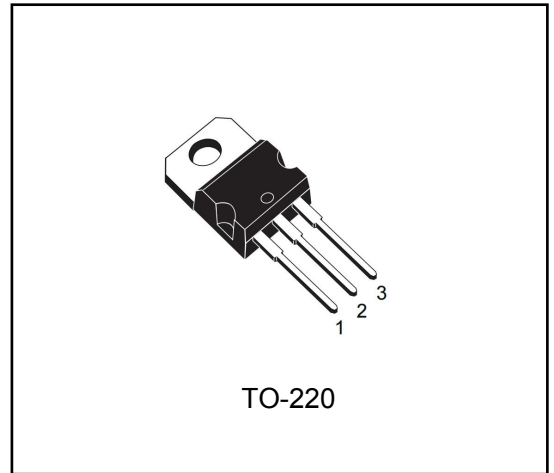
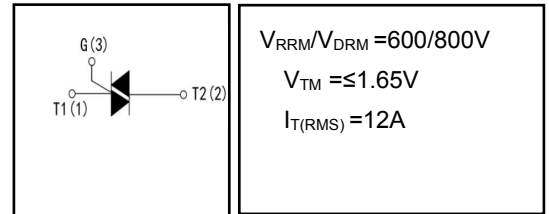
BT138 series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load.

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 (T_c=25°C, unless otherwise noted)

PARAMETER		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (T _j =25°C)		V _{DRM}	600/800	V
Repetitive peak reverse voltage (T _j =25°C)		V _{RRM}	600/800	V
Non repetitive surge peak Off-state voltage		V _{DSM}	+ 100	V
Non repetitive peak reverse voltage		V _{RSM}	+ 100	V
RMS on-state current		I _{T(RMS)}	12	A
Non repetitive surge peak on-state current	tp=8.3ms	I _{TSM}	120	A
	tp=10ms		110	
I ² t value for fusing (tp=10ms)		I ² t	72	A
Repetitive rate of rise of on-state current (I _{TM} =20A I _G =50mA dI _G /dt 50mA/ms)		dI _T /dt	50	A/us
Peak gate current		I _{GM}	4	A
Peak gate power		P _{GM}	5	W
Average gate power dissipation		P _{G(AV)}	0.5	W
Operating junction temperature range		T _J	- 40 ~ 125	°C
Storage junction temperature range		T _{STG}	- 40 ~ 150	°C

4.2 Thermal Characteristics

PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance, Junction to Case-sink	R _{thJC}	3.0	°C/W

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

SYMBOL	PARAMETER	Test Conditions	Min	Typ	Max	Unit	
I _{GT}	Triggering gate current	V _D =12V R _L =33Ω	I - II - III	-	-	10	mA
			IV	-	-	25	
			ALL	-	-	1.5	
V _{GT}	Triggering gate voltage		-	-	1.5	V	
V _{GD}	Non-triggering gate voltage	V _D =V _{DRM} T _J =125°C R _L =3.3KΩ	0.2	-	-	V	
I _L	Latching Current	I _G =1.2I _{GT}	I - III	-	-	30	mA
			II - IV	-	-	40	
I _H	Holding Current	I _T =100mA	-	-	30	mA	
dV/dt	Critical Rate of Rise of Off-state Voltage	V _D =2/3V _{DRM} Gate Open T _J =125°C	20	-	-	V/us	
V _{TM}	Peak Forward On-State Voltage	I _{TM} =15A tp=380us	-	-	1.65	V	
I _{DRM}	Maximum forward or reverse leakage current	V _D =V _{DRM} V _R =V _{RRM}	T _J =25°C	-	-	10	uA
I _{RRM}	Maximum reverse leakage current		T _J =125°C	-	-	500	uA

5 Typical characteristics diagrams

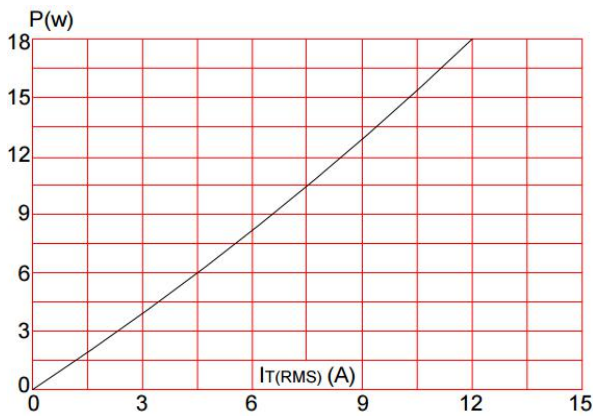


FIG.1: Maximum power dissipation versus RMS on-state current

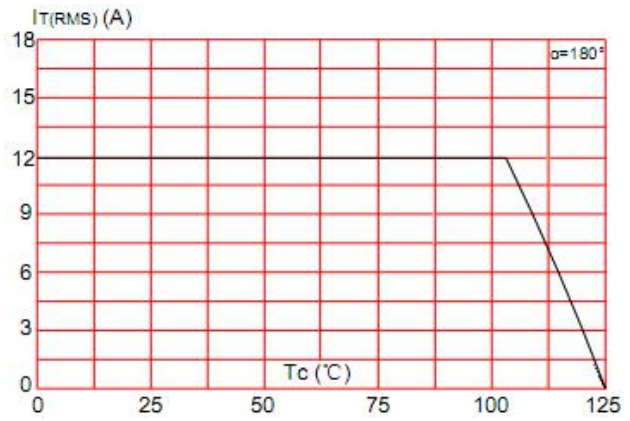


FIG.2: RMS on-state current versus case temperature

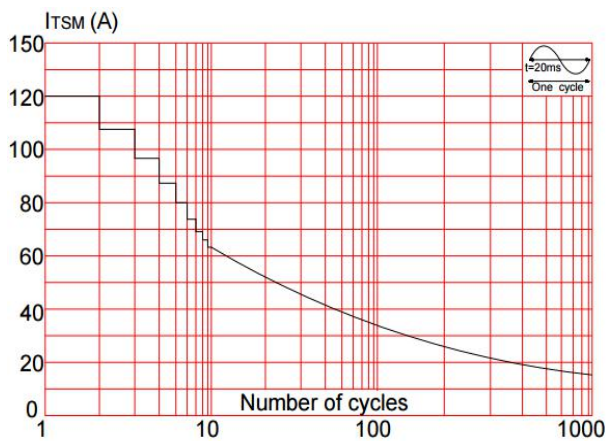


FIG.3: Surge peak on-state current versus number of cycles

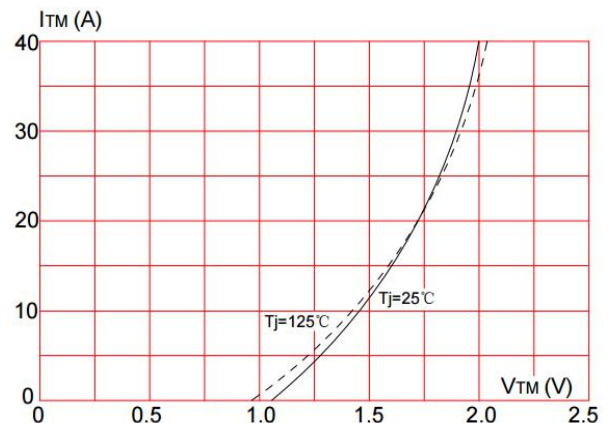


FIG.4: On-state characteristics (maximum values)

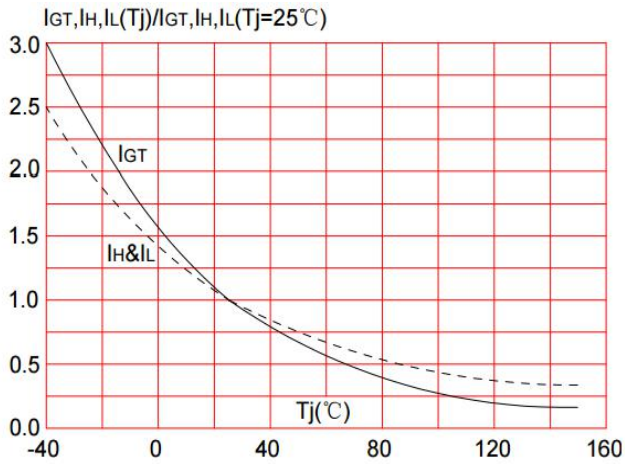
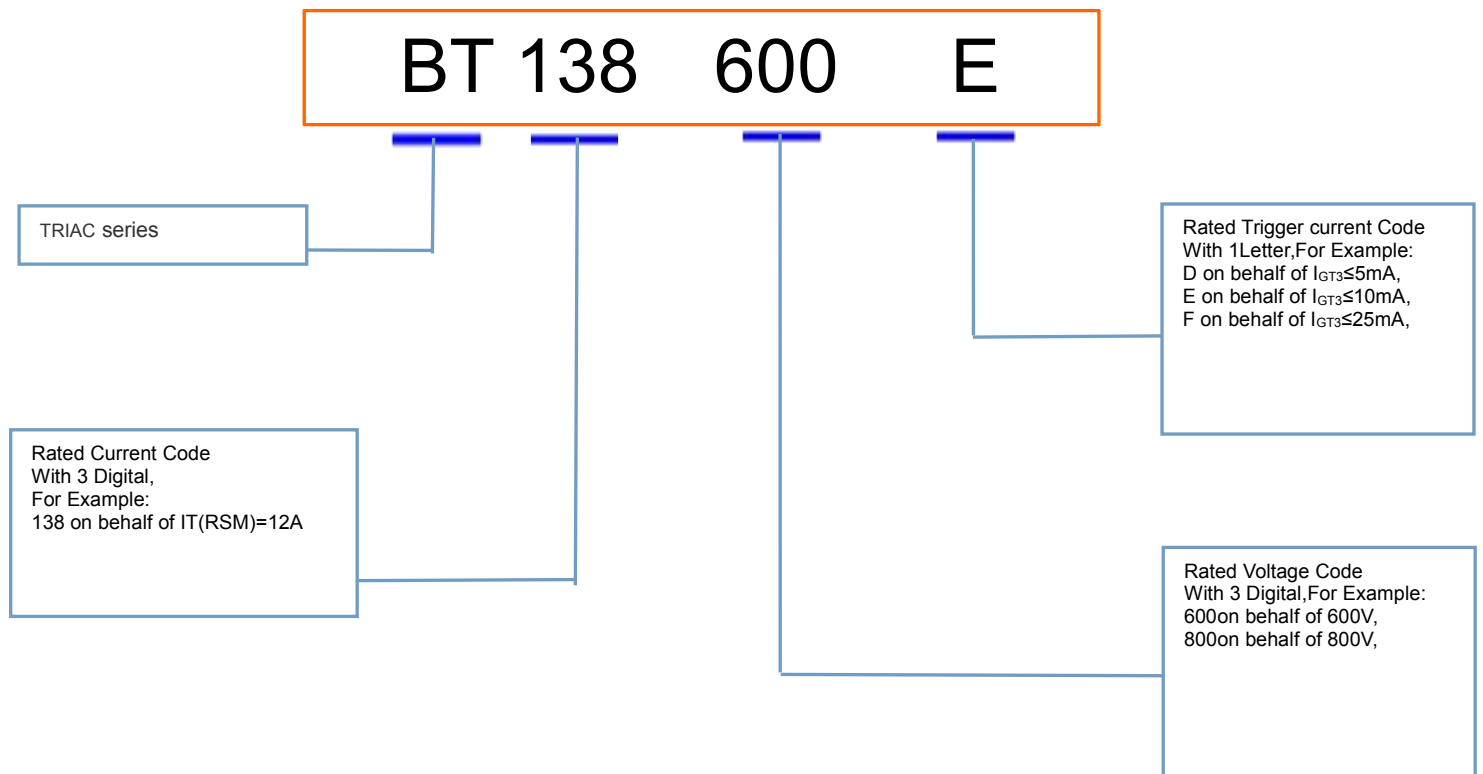


FIG.5: Relative variations of gate trigger current, holding current and latching current versus junction temperature

6 Product Names Rules

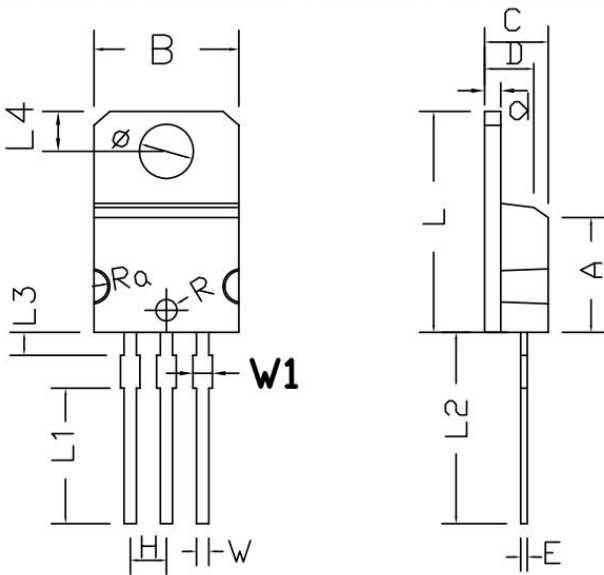


7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
BT138	TO-220	BT138	Pb-free	Tube	1000//box

8 Dimensions

TO-220M PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
	MIN	MAX	MIN	MAX
A	8.03	8.05	0.316	0.317
B	10.13	10.23	0.399	0.403
C	4.42	4.52	0.174	0.178
D	3.42	3.52	0.135	0.139
E	0.44	0.46	0.017	0.018
L	15.25	15.45	0.601	0.609
H	2.52	2.56	0.099	0.101
W	0.85	0.87	0.033	0.034
Φ	3.78	3.82	0.149	0.151
R	0.74	0.76	0.029	0.030
Ra	9.44	9.48	0.372	0.374
d	1.28	1.32	0.050	0.052
L1	9.4	9.6	0.370	0.378
L2	13.22	13.62	0.521	0.537
L3	1.52	1.72	0.060	0.068
L4	2.7	2.9	0.106	0.114
W1	1.32	1.42	0.052	0.056

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	