

TRIAC series

1 Description

BTB04 series triacs with low holding and latching current are especially recommended for use on middle and small resistance type power load.

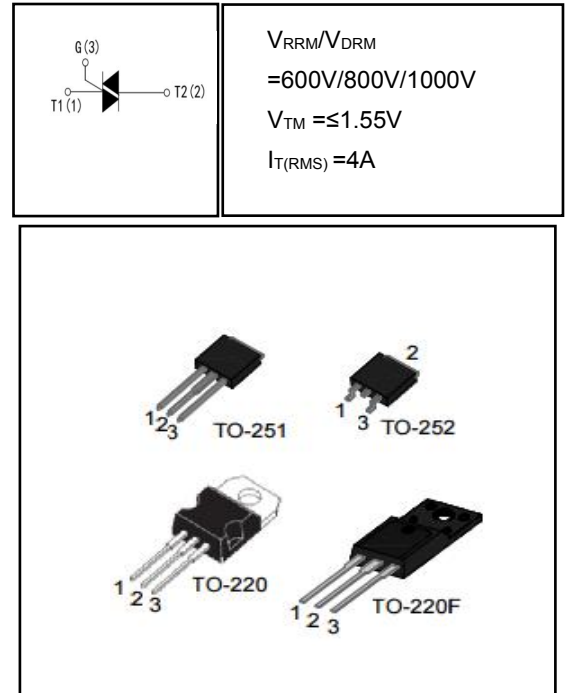
TO-220F provides insulation voltage rated at 2000V RMS from all three terminals to external heatsink. TO-220F series comply with UL standards (File ref: E252906).

2 Features

- High current output up to 4A
- 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_{DRM}	600/800/1000	V	
Repetitive peak reverse voltage (Tj=25°C)	V_{RRM}	600/800/1000	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	$I_{T(RMS)}$	TO-220/TO-251/ 251(Tc=110°C)	4	A
		TO-220F (Tc=105°C)		
Non repetitive surge peak on-state current	I_{TSM}	tp=8.3ms	42	A
		tp=10ms	40	
I ² t value for fusing (tp=10ms)	I ² t	8	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_{GM}	2	A	
Peak gate power	P_{GM}	5	W	
Average gate power dissipation	$P_{G(AV)}$	1	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
		TO-220	TO-220F	TO-252/251	
Thermal Resistance, Junction to Case-sink	R_{thJC}	2.8	4.0	3.7	°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	-	7.0	10	mA
			IV	-	-	-	
V _{GT}	Triggering gate voltage	ALL	-	0.77	1.3	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	-	-	20	mA
			II	-	-	35	
I _H	Holding Current	I _T =100mA	-	-	20	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} =10A tp=380us	-	1.31	1.55	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	-	-	1	mA

5 Typical characteristics diagrams

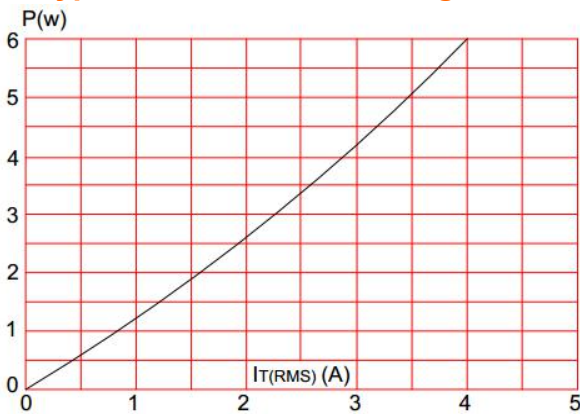


FIG.1: Maximum power dissipation versus RMS on-state current

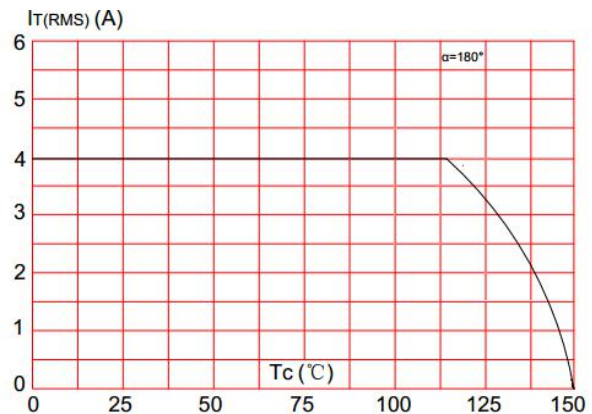


FIG.2: RMS on-state current versus case temperature

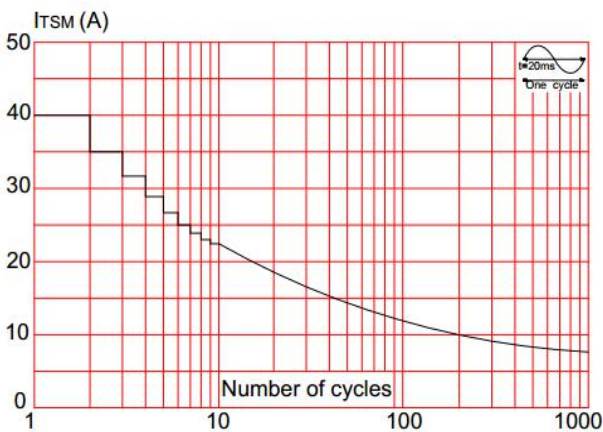


FIG.3: Surge peak on-state current versus number of cycles

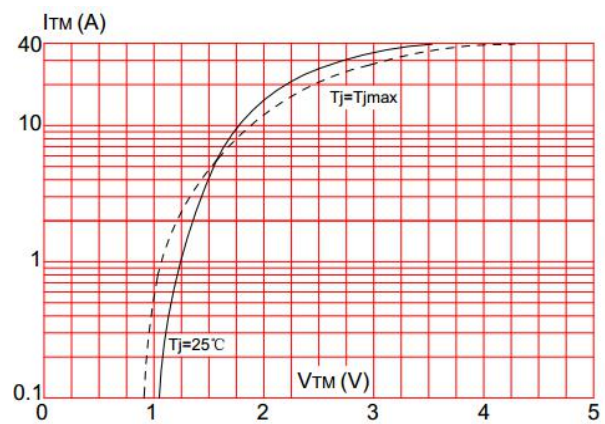


FIG.4: On-state characteristics (maximum values)

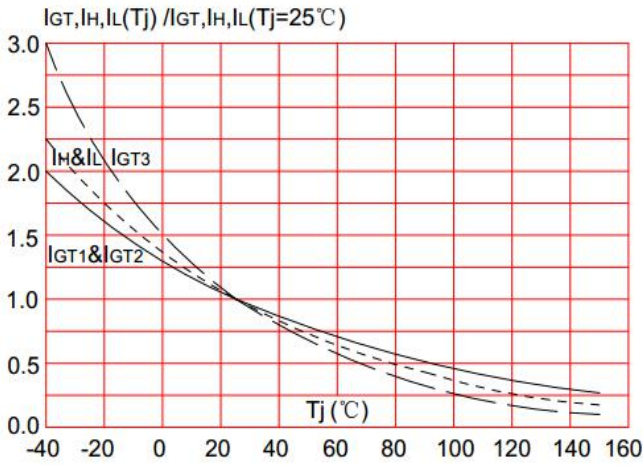


FIG.5: Relative variations of gate trigger current, holding current and latching current versus junction temperature

6 Product Names Rules

T 04 10

TRIAC series

Rated Current Code
With 2 Digital,
For Example:
04 on behalf of $I_T(RSM)=4A$

Rated Trigger current Code
With 2 Digital, For Example:
10 on behalf of $IGT3 \leq 10mA$,
20 on behalf of $IGT3 \leq 20mA$,
30 on behalf of $IGT3 \leq 30mA$,

BTB 04 600

TRIAC series

Rated Current Code
With 3 Digital,
For Example:
04 on behalf of IT(RSM)=4A

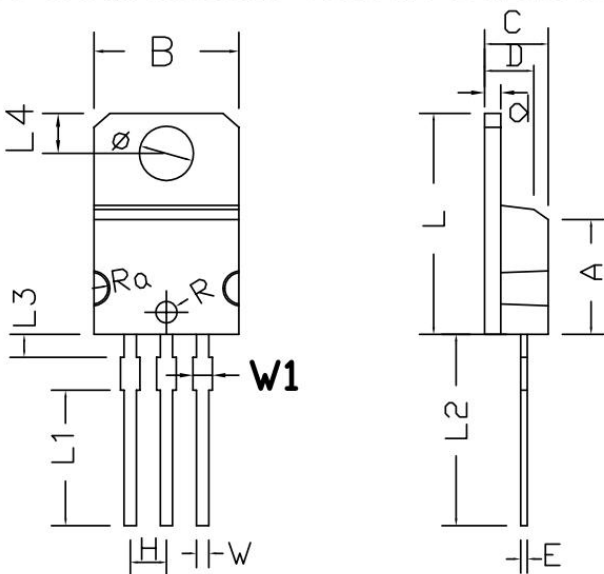
Rated Voltage Code
With 3-4 Digital, For Example:
600on behalf of 600V,
800on behalf of 800V,
1000on behalf of 1000V,

7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
BTB04	TO-220	BTB04	Pb-free	Tube	1000//box
BTB04	TO-252	T0410	Pb-free	Braid	3000//disc
BTB04	TO-220F	BTB04X	Pb-free	Tube	1000//box

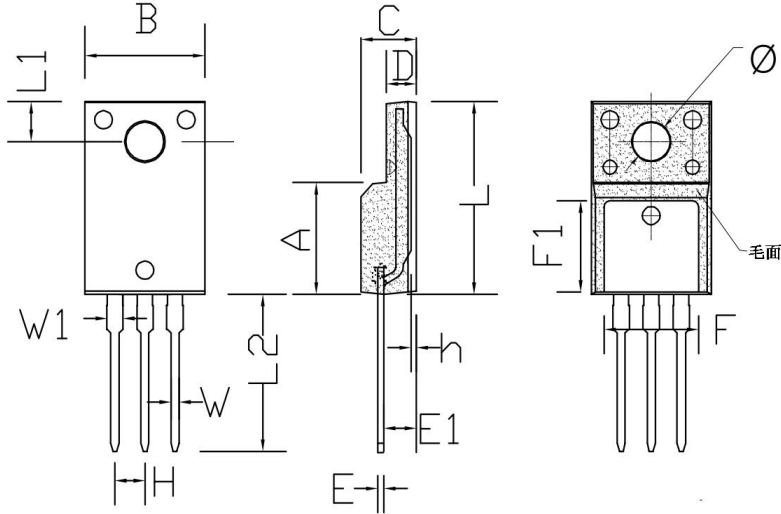
8 Dimensions

TO-220M PACKAGE OUTLINE DIMENSIONS



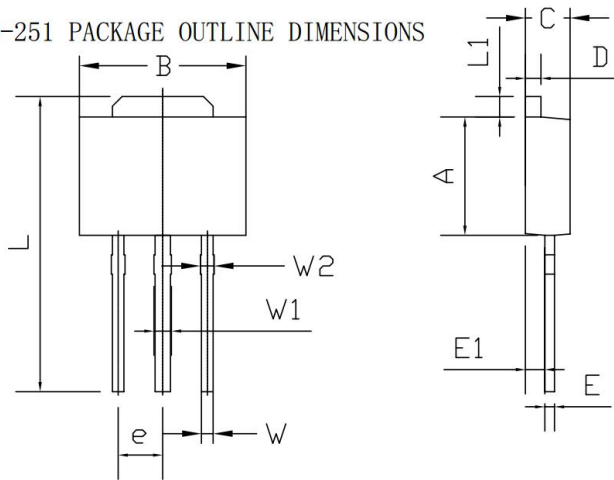
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
	MIN	MAX	MIN	MAX
A	8.03	8.05	0.316	0.317
B	10.13	10.23	0.399	0.403
C	4.42	4.52	0.174	0.178
D	3.42	3.52	0.135	0.139
E	0.44	0.46	0.017	0.018
L	15.25	15.45	0.601	0.609
H	2.52	2.56	0.099	0.101
W	0.85	0.87	0.033	0.034
Φ	3.78	3.82	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

TO-220F PACKAGE OUTLINE DIMENSIONS



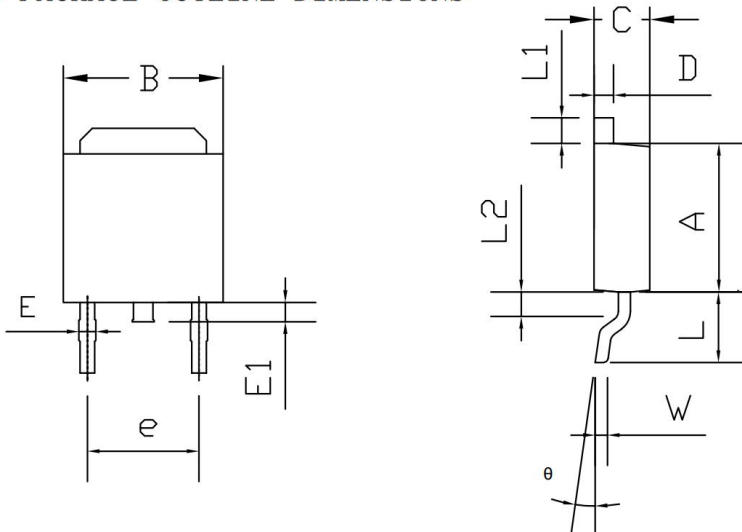
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	8.80	9.30	0.346	0.366
B	10.00	10.50	0.394	0.413
C	4.30	4.90	0.169	0.193
D	2.30	2.70	0.091	0.106
L	15.55	16.15	0.612	0.636
h	0.40	0.60	0.016	0.024
L1	3.15	3.55	0.124	0.140
L2	12.65	13.35	0.498	0.526
W	0.70	0.90	0.028	0.035
W1	1.15	1.55	0.045	0.061
H	2.54 TYP		0.100 TYP	
E	0.48	0.53	0.019	0.021
φ	2.90	3.40	0.114	0.134
E1	2.40	2.90	0.094	0.114
F	7.75	8.25	0.305	0.325
F1	7.35	7.85	0.289	0.309

TO-251 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	6.00	6.20	0.236	0.244
B	2.25	2.35	0.089	0.093
C	2.45	2.65	0.097	0.104
D	0.75	0.85	0.030	0.033
E	8.48	8.52	0.3341	0.3357
E1	5.10	5.46	0.201	0.215
e	2.29	2.31	0.0902	0.0910
L	15.00	15.40	0.5910	0.6068
L1	1.00	1.10	0.0394	0.0433
W	0.55	0.65	0.0217	0.0256
W1	0.85	0.95	0.0335	0.0374
W2	0.65	0.75	0.0256	0.0296

TO-252 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
A	6.00	6.20	0.236	0.244
B	6.49	6.69	0.256	0.263
C	2.20	2.40	0.087	0.094
D	0.75	0.85	0.030	0.033
E	0.65	0.75	0.0256	0.0296
E1	0.70	0.90	0.028	0.035
e	4.58	4.62	0.1805	0.1820
L	2.85	2.95	0.112	0.116
L1	1.00	1.10	0.0394	0.0433
L2	0.70	0.90	0.0276	0.0355
W	0.48	0.52	0.019	0.020
θ	0	8	0	8

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
2017.08.14	1.0	Original	