

BTF08-800XW

THREE-QUADRANT TRIAC



VOLTAGE: 800 Volts

CURRENT: 8 Amperes

Package: TO-220F

Marking and Polarity

FEATURES

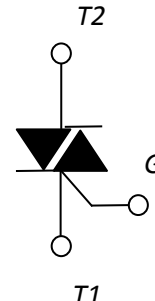
- Highly di/dt For High Reliability
- Low On-State Voltage For Low Power Consumption
- Ceramic Pad For Internal Insulation
- RoHS Compliant

TYPICAL APPLICATIONS

- Phase Control Operation Of Light Dimmers And Motor Speed Controllers
- ON/OFF Control Operation Of Heating Regulation And Induction Motor
- Weight: App. 2.048 Grams (0.07224 Ounce)

PRODUCT SUMMARY

Item	TW	SW	CW	BW	Unit
$I_{T(RMS)}$	8				A
V_{DRM}/V_{RRM} Min.	800				V
$I_{GT(I-II-III)}$ Max.	5	10	35	50	mA



Remark:

- ①. NH=Nihang Trademark
- ②. FF=Product Line Code, According To Actual Changes
YWW=Date Code, According To Actual Changes
LLWWF=Internal Code, According To Actual Changes
- ③. BTF08-800XW=Model, XW=TW, SW, CW, BW

Absolute Maximum Ratings (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	BTF08-800XW	Unit
Repetitive Peak Off-State Voltage		V_{DRM}	800	V
Repetitive Peak Reverse Voltage		V_{RRM}	800	V
RMS On-State Current	$T_c \leq 80^\circ C$	$I_{T(RMS)}$	8	A
Non Repetitive Surge Peak On-State Current	$F = 50 \text{ Hz}, T_p = 20 \text{ ms}$	I_{TSM}	80	A
I^2T Value For Fusing	$T_p = 10 \text{ ms}$	I^2t	32	A
Critical Rate Of Rise Of On-State Current	$I_G = 2 \cdot I_{GT}, tr \leq 10 \text{ ns}$ $F = 100 \text{ Hz}, T_j = 125^\circ C$	di/dt	100	A/ μs
Peak Gate Current	$T_p = 20 \mu s, T_j = 125^\circ C$	I_{GM}	4.0	A
Average Gate Power Dissipation	$T_j = 125^\circ C$	$P_{G(AV)}$	0.5	W
Maximum Mounting Torque	M3 screw	T_{MM}	1.1	N.m

Thermal Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Symbol	BTF08-800XW	Unit
Operating Junction Temperature Range	T_J	-40 to 125	$^\circ C$
Storage Temperature Range	T_{STD}	-40 to 150	
Typical Thermal Resistance	$R_{\theta JA}$	60.0	$^\circ C/W$
	$R_{\theta JC}$	2.8	

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Electrical Characteristics (Ta=25°C Unless otherwise specified)

Parameter	Test Conditions	Symbol	Quadrants	Value				Unit
				TW	SW	CW	BW	
Gate Trigger Current	VD=12V,IT=0.1A	I_{GT}	I - II -III	≤5	≤10	≤35	≤50	mA
Gate Trigger Voltage	VD=12V,IT=0.1A	V_{GT}	I - II -III	≤ 1				V
Holding Current	IT=100mA	I_H		≤10	≤15	≤35	≤50	mA
Latching Current	IG=1.2*IGT	I_L	I -III	≤10	≤25	≤50	≤50	mA
			II	≤15	≤30	≤60	≤90	
Rise Of Off- State Voltage	VD=2/3*VDRM, Gate open, Tj =150°C	dv/dt		≥100	≥400	≥800	≥1200	V/us
Peak On-State Voltage	IT= 8 A, Tj =25°C	V_{TM}		≤ 1.5				V
Peak Repetitive Forward Blocking Current	$V_D=V_{DRM}$, Tj =25°C	I_{DRM}		≤ 5				uA
	$V_D=V_{DRM}$, Tj =125°C			≤ 0.35				mA
Peak Repetitive Reverse Blocking Current	$V_R=V_{RRM}$, Tj =25°C	I_{RRM}		≤ 5				uA
	$V_R=V_{RRM}$, Tj =125°C			≤ 0.35				mA

Model and identification instructions

BT	0	8	F	-	800	xW
Product Type BT=TRIAC						
Insulation Spec.: A=Insulation B=No insulation						
IT(RMS) Spec.: 8 = 8A						
Package Spec.: F= TO-220F						
"- "=Connector constant						
VDRM/VRRM Spec. 800 = 800V						
IGT Spec. TW:IGT I -III≤5mA SW:IGT I -III≤10mA CW:IGT I -III≤35mA BW:IGT I -III≤50mA						

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Typical Characteristics Curves

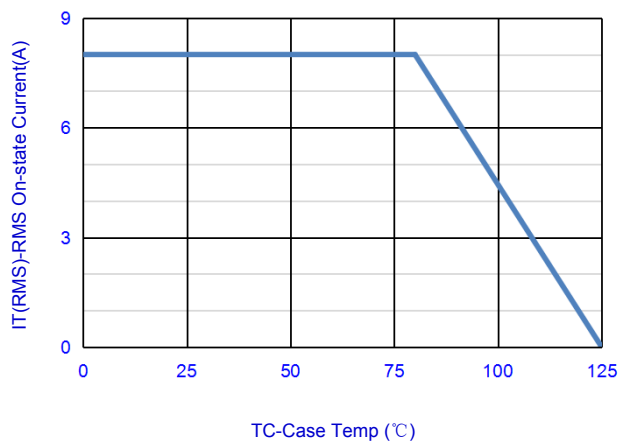


Fig.1-RMS on-state current vs. case temperature

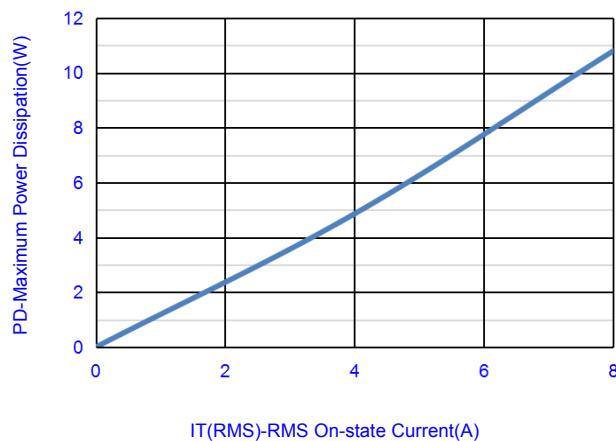


Fig.2- Maximum Power Dissipation Vs. on-state current

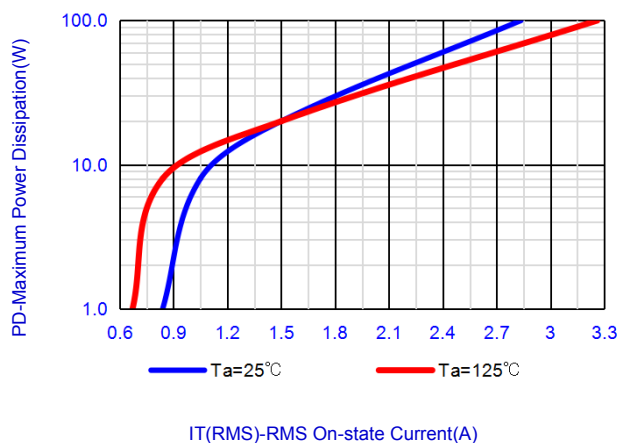


Fig.3- Maximum Power Dissipation Vs. on-state current

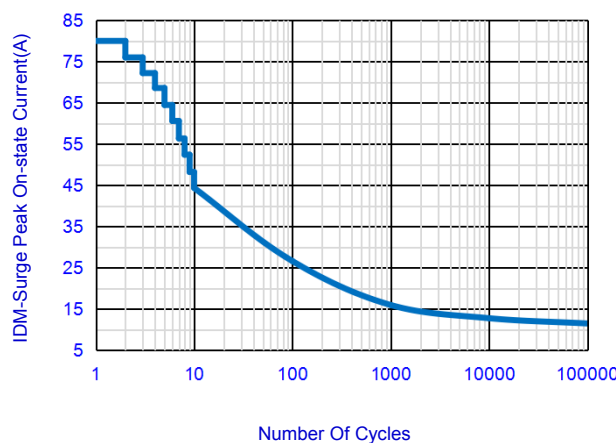


Fig.4- Surge Peak On-state Current Vs. Number Cycles

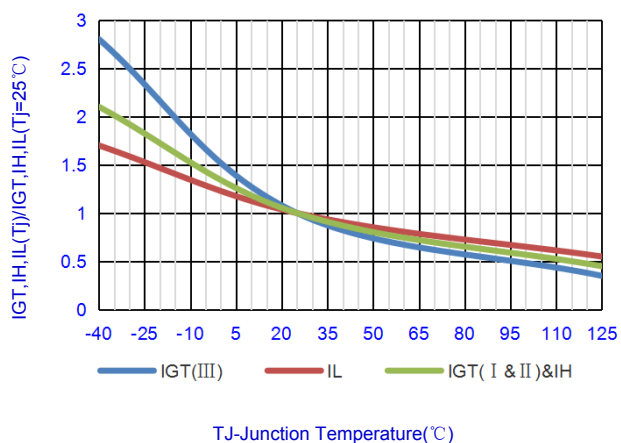


Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

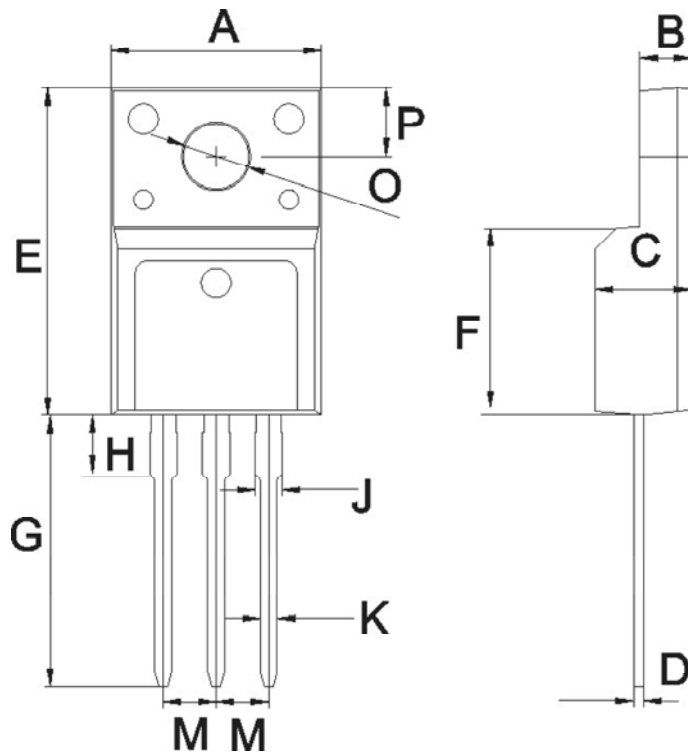
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OUTLINE DRAWINGS

TO-220F



OUTLINE DIMENSIONS

Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.25	-	10.75	0.36	-	0.42
B	2.30	-	2.90	0.09	-	0.11
C	4.20	-	5.20	0.17	-	0.20
D	0.35	-	0.75	0.01	-	0.03
E	14.80	-	16.80	0.58	-	0.66
F	8.25	-	9.75	0.32	-	0.38
G	12.15	-	14.15	0.48	-	0.56
H	2.40	-	3.00	0.09	-	0.12
J	1.10	-	1.50	0.04	-	0.06
K	0.60	-	1.00	0.02	-	0.04
M	2.20	-	3.00	0.09	-	0.12
O	2.70	-	3.50	0.11	-	0.14
P	2.25	-	2.85	0.09	-	0.11

PACKING INFORMATION

Package Code	Package Method	Inner Box Size L×W×H(mm)	Quantity (Pcs/Inner Box)	Outer Carton Size L×W×H(mm)	Quantity (Pcs/Carton)
TO-220F	Tube Packaging	560x155x55	1000	570×284×185	5000

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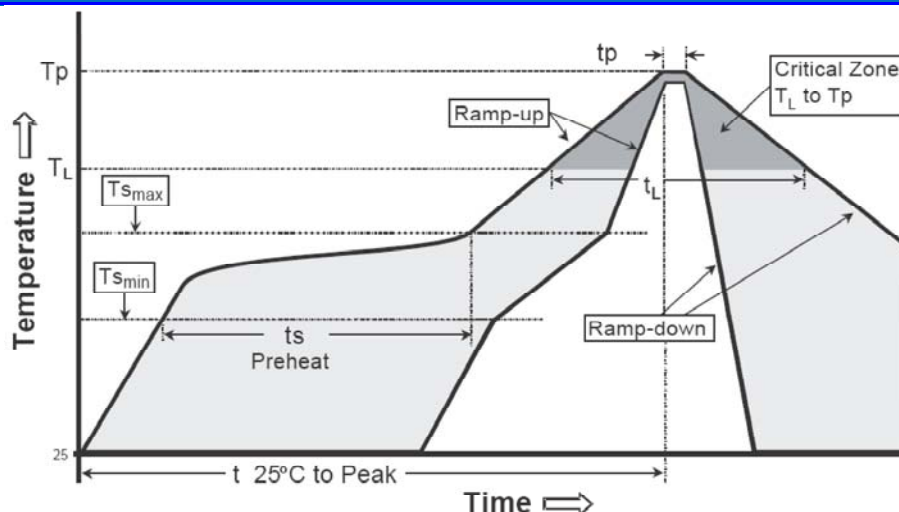
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T_{smax} to T_p)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(t_{smin} to t_{smax})	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T_L) - Time (t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T_p)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(t_p)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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