



BTA41T-1600BW

THREE-QUADRANT TRIAC



VOLTAGE: 1600 Volts

CURRENT: 40 Ampers

Package: TO-3P

Marking and Polarity

FEATURES

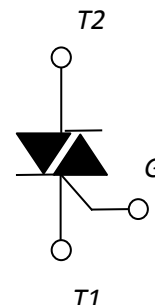
- Highly di/dt For High Reliability
- Low On-State Voltage For Low Power Consumption
- Ceramic Pad For Internal Insulation
- RoHS Compliant

TYPICAL APPLICATIONS

- Phase Control Operation Of Light Dimmers And Motor Speed Controllers
- ON/OFF Control Operation Of Heating Regulation And Induction Motor
- Weight: App. 0.321 Grams (0.01132 Ounce)

PRODUCT SUMMARY

Item	BW	Unit
$I_{T(RMS)}$	40	A
V_{DRM}/V_{RRM} Min.	1600	V
$I_{GT(I-II-III)}$ Max.	50	mA



Remark:

- NH=Niuhang Trademark
- FF=Product Line Code, According To Actual Changes
YWW=Date Code, According To Actual Changes
LLWWF=Internal Code, According To Actual Changes
- BTA41T-1600BW=Model

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

Parameter	Test Conditions	Symbol	BTA41T-1600BW	Unit
Repetitive Peak Off-State Voltage		V_{DRM}	1600	V
Repetitive Peak Reverse Voltage		V_{RRM}	1600	V
RMS On-State Current	$T_c \leq 80^\circ C$	$I_{T(RMS)}$	40	A
Non Repetitive Surge Peak On-State Current	$F = 50 \text{ Hz}, T_p = 20 \text{ ms}$	I_{TSM}	400	A
I^2T Value For Fusing	$T_p = 10 \text{ ms}$	I^2t	800	A
Critical Rate Of Rise Of On-State Current	$I_G = 2 \cdot I_{GT}, tr \leq 10 \text{ ns}$ $F = 100 \text{ Hz}, T_j = 150^\circ C$	di/dt	50	A/ μs
Peak Gate Current	$T_p = 20 \mu s, T_j = 150^\circ C$	I_{GM}	8.0	A
Average Gate Power Dissipation	$T_j = 150^\circ C$	$P_{G(AV)}$	40.0	W
Maximum Mounting Torque	M3 screw	T_{MM}	1.1	N.m

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

Parameter	Symbol	BTA41T-1600BW	Unit
Operating Junction Temperature Range	T_J	-40 to 150	$^\circ C$
Storage Temperature Range	T_{STD}	-40 to 150	
Typical Thermal Resistance	$R_{\theta JA}$	50.0	$^\circ C/W$
	$R_{\theta JC}$	0.9	



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

Parameter	Test Conditions	Symbol	Quadrants	Value	Unit
				BW	
Gate Trigger Current	VD=12V,IT=0.1A	I_{GT}	I - II -III	≤50	mA
Gate Trigger Voltage	VD=12V,IT=0.1A	V_{GT}	I - II -III	≤ 1.3	V
Holding Current	IT=500mA	I_H		≤80	mA
Latching Current	IG=1.2*IGT	I_L	I -III	≤100	mA
			II	≤160	
Rise Of Off- State Voltage	VD=2/3*VDRM, Gate open, Tj =150°C	dv/dt		≥1000	V/us
Peak On-State Voltage	IT= 40 A, Tj =25°C	V_{TM}		≤ 1.50	V
Peak Repetitive Forward Blocking Current	$V_D=V_{DRM}$, Tj =25°C	I_{DRM}		≤ 10.0	uA
	$V_D=V_{DRM}$, Tj =125°C			≤ 4.0	mA
Peak Repetitive Reverse Blocking Current	$V_R=V_{RRM}$, Tj =25°C	I_{RRM}		≤ 10.0	uA
	$V_R=V_{RRM}$, Tj =125°C			≤ 4.0	mA

Model and identification instructions

	BT	A	41	T	-	1600	xW
Product Type BT=TRIAC							
Insulation Spec.: A=Insulation B=No insulation							
IT(RMS) Spec.: 41=40A							
Package Spec.: T=TO-3P							
"-"=Connector constant							
VDRM/VRRM Spec. 1600=1600V							
IGT Spec. BW:IGT I - II -III≤50mA							

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Typical Characteristics Curves

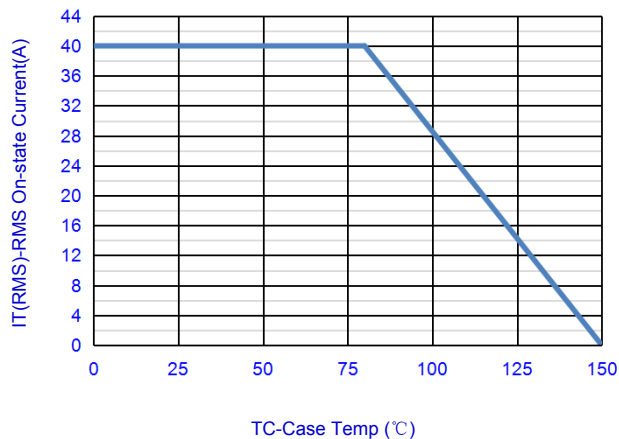


Fig.1-RMS on-state current vs. case temperature

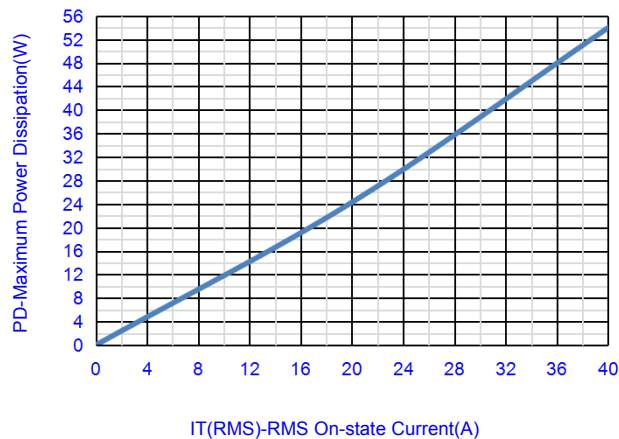


Fig.2- Maximum Power Dissipation Vs. on-state current

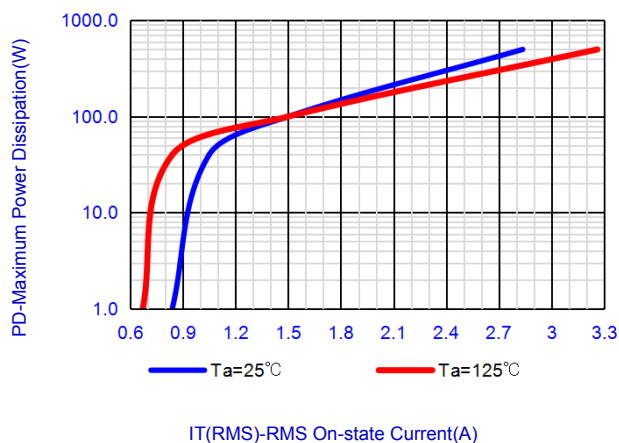


Fig.3- Maximum Power Dissipation Vs. on-state current

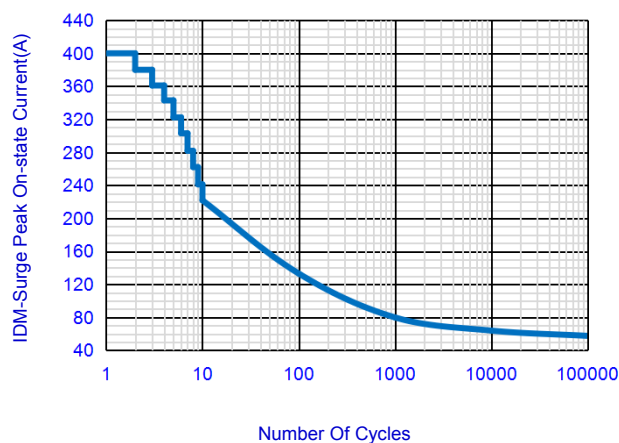


Fig.4- Surge Peak On-state Current Vs. Number Cycles

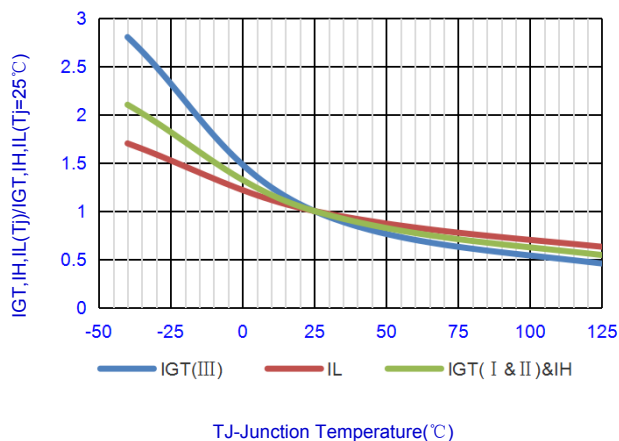


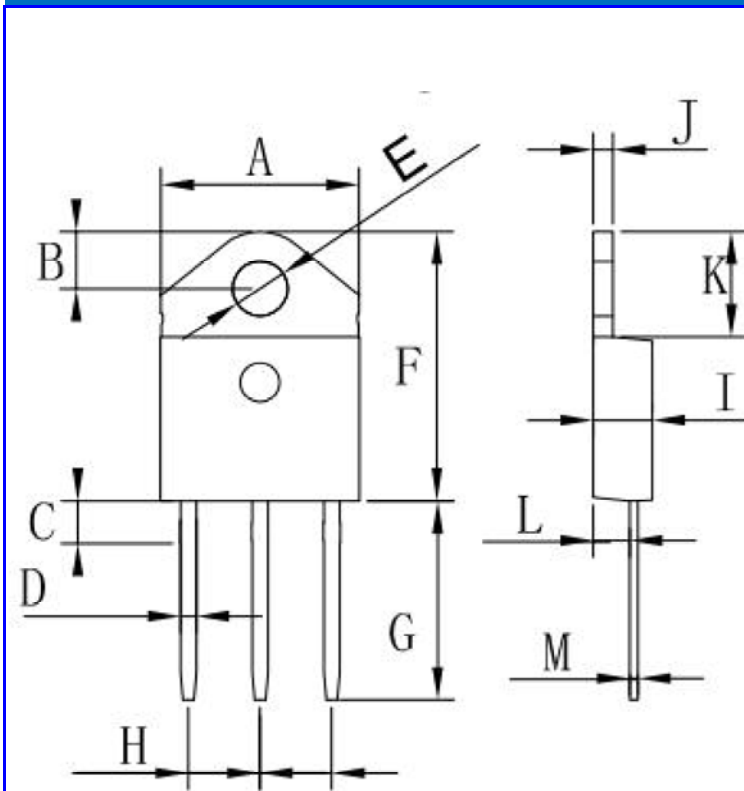
Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

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OUTLINE DRAWINGS



TO-3P

OUTLINE DIMENSIONS

Dim.	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	14.900	-	15.500	0.587	-	0.610
B	4.100	-	4.700	0.161	-	0.185
C	2.500	-	3.200	0.098	-	0.126
D	1.100	-	1.400	0.043	-	0.055
E	4.100	-	4.400	0.161	-	0.173
F	20.200	-	20.800	0.795	-	0.819
G	15.000	-	15.600	0.591	-	0.614
H	5.300	-	5.700	0.209	-	0.224
I	4.300	-	4.700	0.169	-	0.185
J	1.400	-	1.700	0.055	-	0.067
K	7.800	-	8.300	0.307	-	0.327
L	2.700	-	3.000	0.106	-	0.118
M	0.500	-	0.700	0.020	-	0.028

PACKING INFORMATION

Package Code	Package Method	Box Size L×W×H (mm)	Quantity (pcs/box)	Carton Size L×W×H (mm)	Quantity (pcs/carton)
TO-3P	T/P	540x165x55	600	550×190x240	2400

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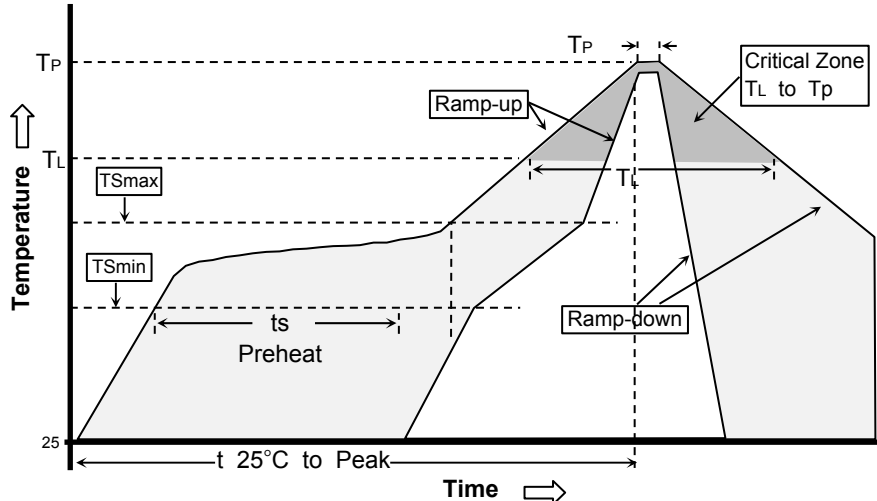
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Recommended wave soldering condition

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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