

BTA41-800XW

THREE-QUADRANT TRIAC



VOLTAGE: 800 Volts

CURRENT: 40 Ampers

Package: TO-3P

Marking and Polarity

FEATURES

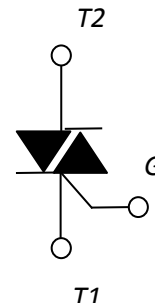
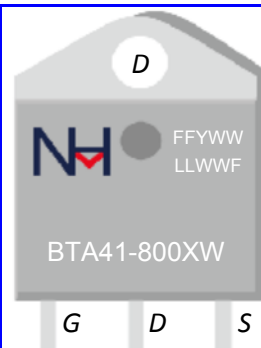
- Highly di/dt For High Reliability
- Low On-State Voltage For Low Power Consumption
- Ceramic Pad For Internal Insulation
- RoHS Compliant

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	TW	CW	BW	GW	Unit
$I_{T(RMS)}$	40				A
V_{DRM}/V_{RRM} Min.	800				V
$I_{GT(I-II-III)}$ Max.	5	35	50	70	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. BTA41-800XW=Model, XW=TW, CW, BW, GW

Absolute Maximum Ratings (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	BTA41-800XW	Unit
Repetitive Peak Off-State Voltage		V_{DRM}	800	V
Repetitive Peak Reverse Voltage		V_{RRM}	800	V
RMS On-State Current	$T_c \leq 80^\circ C$	$I_{T(RMS)}$	40	A
Non Repetitive Surge Peak On-State Current	$F = 50 \text{ Hz}, T_p = 20 \text{ ms}$	I_{TSM}	420	A
I^2T Value For Fusing	$T_p = 10 \text{ ms}$	I^2t	882	A
Critical Rate Of Rise Of On-State Current	$I_G = 2 \cdot I_{GT}, t_r \leq 10 \text{ ns}$ $F = 100 \text{ Hz}, T_j = 125^\circ C$	di/dt	1000	A/ μs
Peak Gate Current	$T_p = 20 \mu s, T_j = 125^\circ C$	I_{GM}	8.0	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℃ Unless otherwise specified)

Parameter	Symbol	BTA41-800XW	Unit
Operating Junction Temperature Range	T_J	-40 to 125	℃
Storage Temperature Range	T_{STD}	-40 to 150	
Typical Thermal Resistance	$R_{\theta JA}$	50.0	℃/W
	$R_{\theta JC}$	0.85	

BTA41-800XW

THREE-QUADRANT TRIAC



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

Parameter	Test Conditions	Symbol	Quadrants	Value				Unit
				TW	CW	BW	GW	
Gate Trigger Current	VD=12V,IT=0.1A	I_{GT}	I - II -III	≤5	≤35	≤50	≤70	mA
Gate Trigger Voltage	VD=12V,IT=0.1A	V_{GT}	I - II -III	≤ 1.3				V
Holding Current	IT=100mA	I_H		≤15	≤80	≤100	≤140	mA
Latching Current	IG=1.2*IGT	I_L	I -III	≤20	≤80	≤80	≤100	mA
			II	≤35	≤150	≤200	≤280	
Rise Of Off- State Voltage	VD=2/3*VDRM, Gate open, Tj =150°C	dv/dt		≥150	≥1200	≥2000	≥2500	V/us
Peak On-State Voltage	IT= 40 A, Tj =25°C	V_{TM}		≤ 1.65				V
Peak Repetitive Forward Blocking Current	$V_D=V_{DRM}$, Tj =25°C	I_{DRM}		≤ 5.0				uA
	$V_D=V_{DRM}$, Tj =125°C			≤ 5.0				mA
Peak Repetitive Reverse Blocking Current	$V_R=V_{RRM}$, Tj =25°C	I_{RRM}		≤ 5.0				uA
	$V_R=V_{RRM}$, Tj =125°C			≤ 5.0				mA

Model and identification instructions

BT	4	40	T	-	800	xW
Product Type BT=TRIAC						
Insulation Spec.: A=Insulation B=No insulation						
IT(RMS) Spec.: 40 = 40A						
Package Spec.: T= TO-3P						
"-"=Connector constant						
VDRM/VRRM Spec. 800 = 800V						
IGT Spec. TW:IGT I -III≤5mA CW:IGT I -III≤35mA BW:IGT I -III≤50mA GW:IGT I -III≤70mA						

BTA41-800XW

THREE-QUADRANT TRIAC



Typical Characteristics Curves

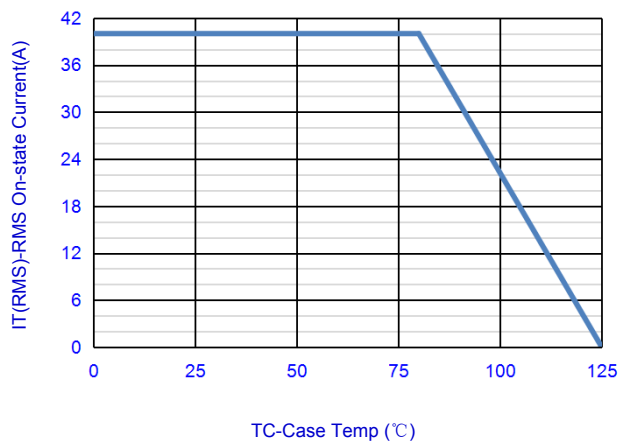


Fig.1-RMS on-state current vs. case temperature

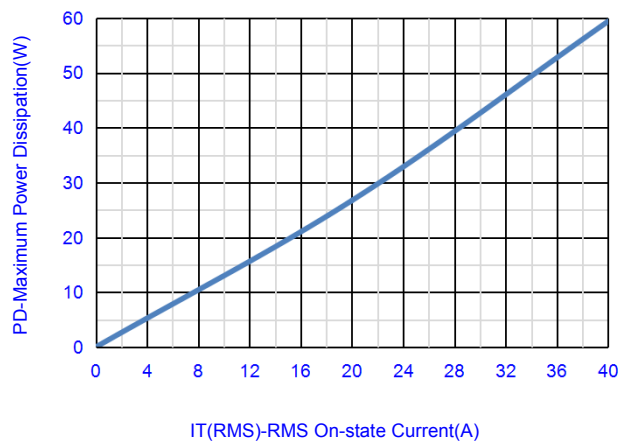


Fig.2- Maximum Power Dissipation Vs. on-state current

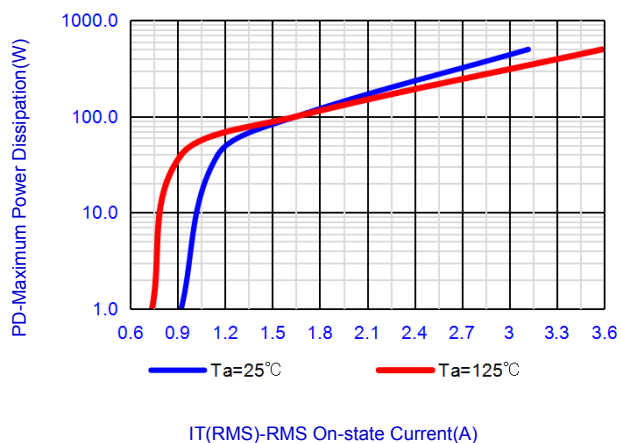


Fig.3- Maximum Power Dissipation Vs. on-state current

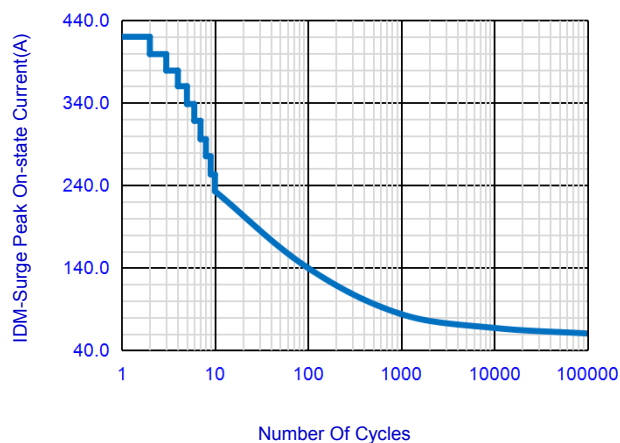


Fig.4- Surge Peak On-state Current Vs. Number Cycles

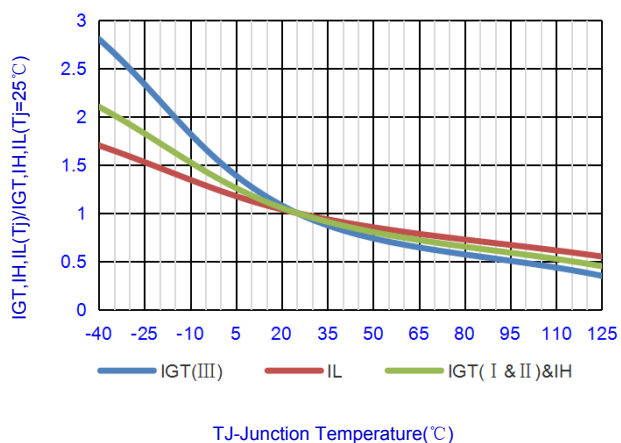


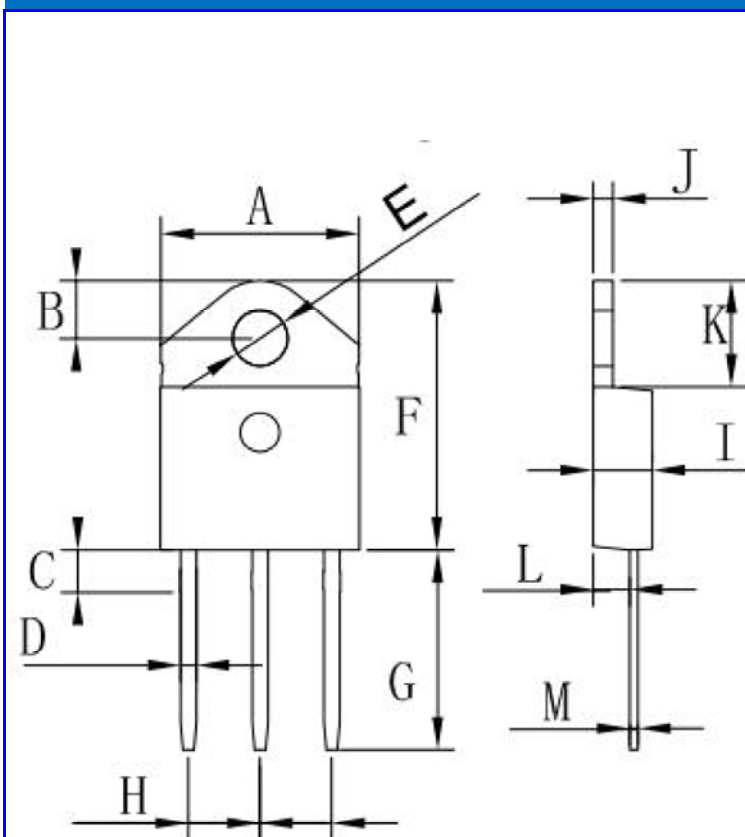
Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

BTA41-800XW

THREE-QUADRANT TRIAC



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	Tube Packaging	540x165x55	600	550×190x240	2400

BTA41-800XW

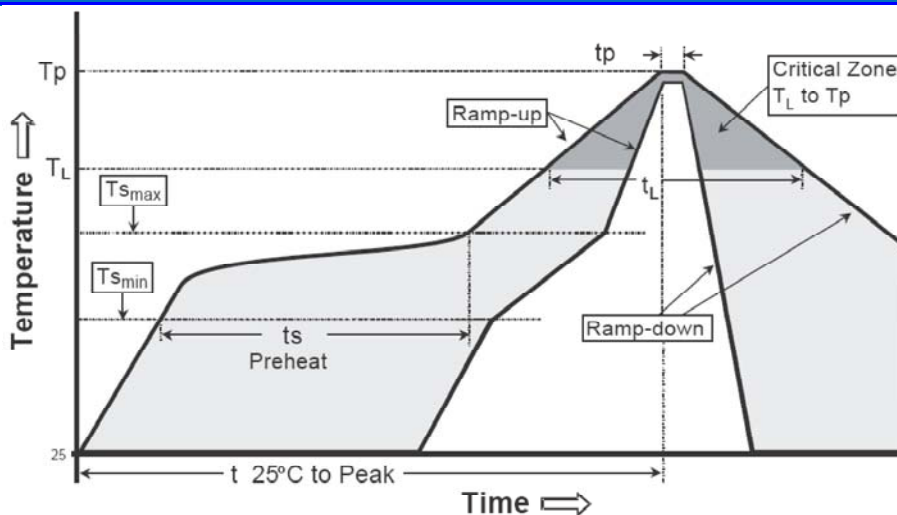
THREE-QUADRANT TRIAC



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 _s min) -Temperature Max(T _s max) -Time(t _s min to t _s max)	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(tp)	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.

BTA41-800XW

THREE-QUADRANT TRIAC



Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from niuhang Electronics co., LTD
- Nihang Electronics co., LTD. reserves the rights to make changes of the content herein the document anytime without notification.
- Nihang Electronics co., LTD. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Nihang Electronics co., LTD. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Nihang Electronics co., LTD. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Nihang Electronics co., LTD. for any damages resulting from such improper use or sale.
- When the appearance of the product and chip size does not change, in order to product the customer. quality, change the internal structure and the production process Nihang can not notify