BTA20-600CW

THREE-QUADRANTS TRIAC

Pb-Free RoHS COMPLIANT

VOLTAGE:	600 Volts	CURRENT:	20 Ampers	Package:	TO-220A

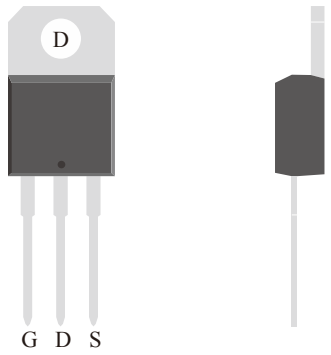
FEATURES

- Highly di/dt For High Reliability
- Low Thermal Resistance Insulation Ceramic For Insulated Package
- Very High Commutation Capability
- Packages Are RoHS (2011/65/EU) Compliant

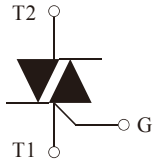
TYPICAL APPLICATIONS

- Phase Control Operation Of Light Dimmers And Motor Speed Controllers
- ON/OFF Control Operation Of Heating Regulation And Induction Motor

Diagram:



Polarity:



PRODUCT SUMMARY

Gear	CW	Unit
$I_{GT(I-II-III)}$ Max.	35	mA
V_{DRM}/V_{RRM} Min.	600	V
$I_{T(RMS)}$	20	A

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

Parameter	Test Conditions	Symbol	Ratings	Unit
Repetitive Peak Off-State Voltage		V_{DRM}	600	V
Repetitive Peak Reverse Voltage		V_{RRM}	600	V
RMS On-State Current	Tc≤ 75 ℃	$I_{T(RMS)}$	20	A
Non Repetitive Surge Peak On-State Current	F= 50 Hz,Tp= 20 ms F= 60 Hz,Tp= 16.6 ms	I_{TSM}	200 220	A
I^2T Value For Fusing	Tp= 10 ms	I^2t	200	A
Critical Rate Of Rise Of On-State Current	IG=2*IGT, tr≤100ns F= 100 Hz,T_j= 125 ℃	di/dt	50	A/μs
Peak Gate Current	Tp= 20 μs,T_j= 125 ℃	I_{GM}	4	A
Average Gate Power Dissipation	Tj= 125 ℃	$P_{G(AV)}$	1	W
Peak Gate Power Dissipation		P_{GM}	5	W
Maximum Mounting Torque	M3 srew	T_{MM}	1.1	N.m

Thermal Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Typ.	Unit
Operating Junction Temperature Range		T_J	-40 to 125	℃
Storage Temperature Range		T_{STD}	-40 to 150	
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	$R_{\theta JA}$	60	℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 75mm x 45mm x 2.5mm Alu. Heat.	$R_{\theta JC}$	1.9	

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Electrical Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	Quadrant	Value		Unit
Gate Trigger Current	V_D=12V,R_L=33Ω	I_{GT}	Ⅰ－Ⅱ－Ⅲ	Max.	35	mA
Max. Gate Trigger Voltage	V_D=12V,R_L=33Ω	V_{GT}	Ⅰ－Ⅱ－Ⅲ	Max.	1.3	V
Min. Gate Trigger Voltage	V_D =V_{DRM},T_j =125℃,R_L=3.3KΩ	V_{GD}	Ⅰ－Ⅱ－Ⅲ	Min.	0.2	V
Holding Current	I_T= 500 mA	I_H		Max.	50	mA
Latching Current	I_G=1.2*I_{GT}	I_L	Ⅰ－Ⅲ Ⅱ	Max. Max.	80 100	mA
Rise Of Off- State Voltage	V_D =V_{DRM},T_j =125℃,Gate Open	dv/dt		Min.	1000	V/us

Static Characteristcs (Ta=25℃ Unless otherwise specified)

Parameter	Test Conditions	Symbol	T_j	Value		Unit
Peak On-State Voltage	IT= 28 A	V_{TM}	25°C	Max.	1.50	V
Threshold Voltage		V_{TO}	125°C	Max.	0.75	V
Dynamic resistance		R_D	125°C	Max.	40	mΩ
Peak Repetitive Forward Blocking Current	V_D=V_{DRM} V_D=V_{DRM}	I_{DRM}	25°C 125°C	Max.	10 3	uA mA
Peak Repetitive Reverse Blocking Current	V_R=V_{RRM} V_R=V_{RRM}	I_{RRM}	25°C 125°C	Max.	10 30	uA mA

Model and identification instructions

BT A 20 - 600 CW

Productor Type
BT=TRIAC

Insulation Spec.:
A=Ins.=Insulation
Empty=No Ins.=No Insulation

$I_{T(RMS)}$ Spec.:
20 =20A

Package Spec.:
=TO-220A

"-"=Connection Symbol
Constant And Unchanging

V_{DRM}/V_{RRM} Spec.
600≧600V

I_{GT} Spec.
CW:IGT Ⅰ-Ⅱ-Ⅲ≦35mA

Temperature Spec.:
Empty=Standard Temperature
H=high temperature

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Typical Characteristics Curves

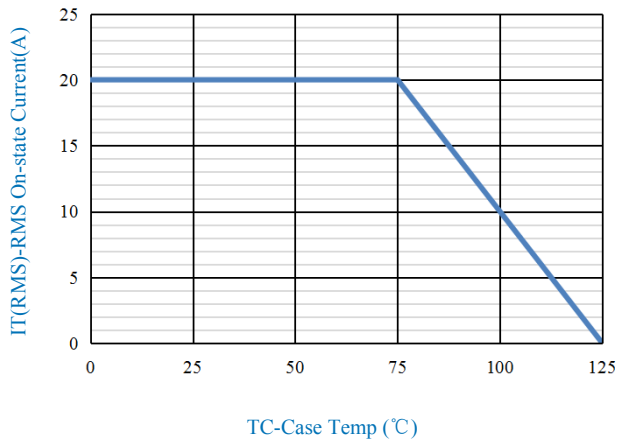

Fig.1-RMS on-state current vs. case temperature

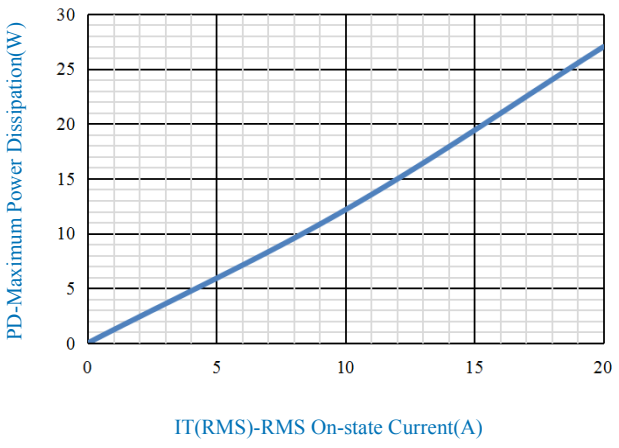

Fig.2- Maximum Power Dissipation Vs. on-state current

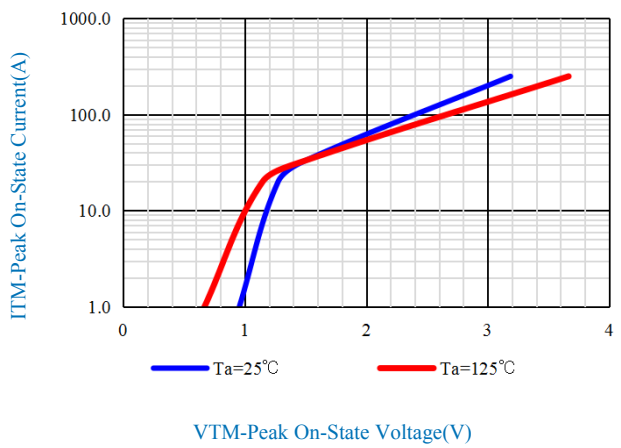

Fig.3-On-State Characteristics

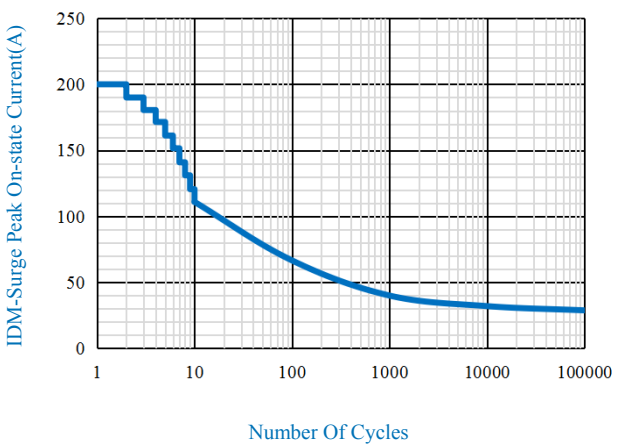

Fig.4- Surge Peak On-state Current Vs. Number Cycles

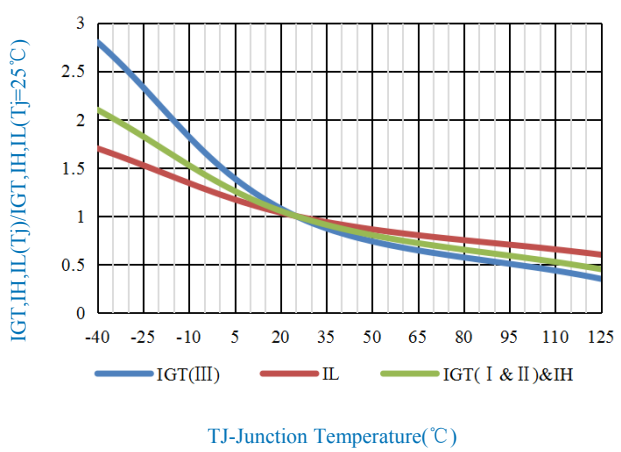

Fig.5- Relative Variation Of Gate Trigger Current , Holding Current And Latching Current Versus Junction Temperature (Typical Value)

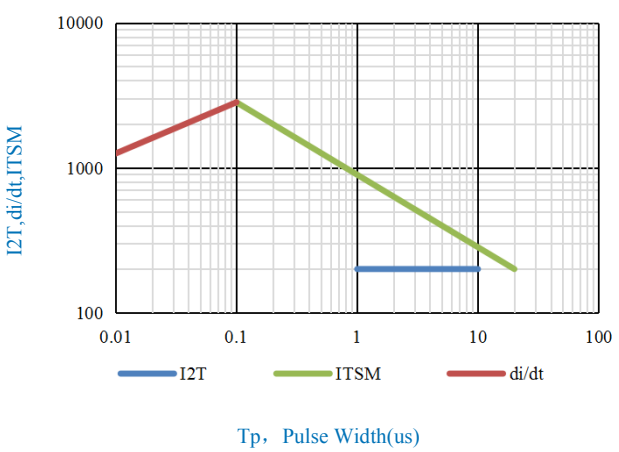

Fig.6- Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponding value of I2t (dI/dt<50A/μs)

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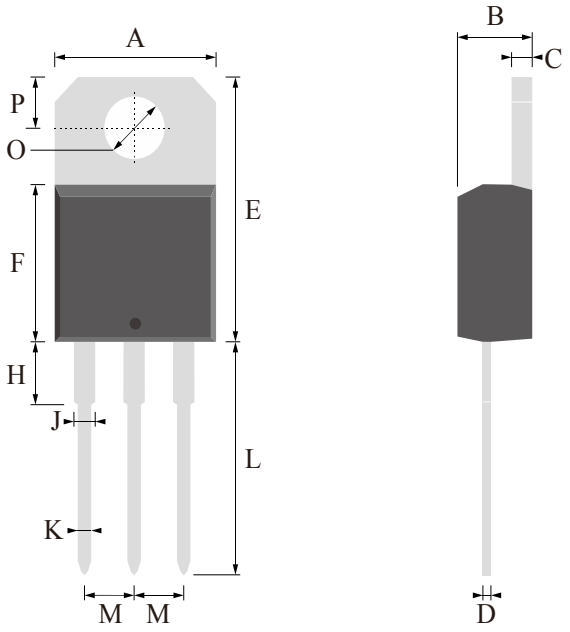
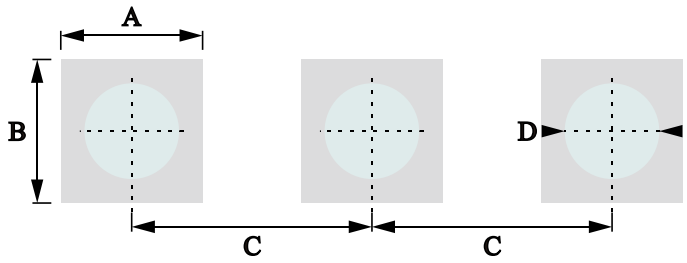
OUTLINE DRAWINGS



TO-220A

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.25	-	10.75	0.3642	-	0.4232
B	4.20	-	4.70	0.1654	-	0.1850
C	1.15	-	1.45	0.0453	-	0.0571
D	0.45	-	0.65	0.0177	-	0.0256
E	14.70	-	16.70	0.5787	-	0.6575
F	8.55	-	10.05	0.3366	-	0.3957
L	12.50	-	14.50	0.4921	-	0.5709
H	3.00	-	4.00	0.1181	-	0.1575
J	1.20	-	1.40	0.0472	-	0.0551
K	0.70	-	1.00	0.0276	-	0.0394
M	2.20	-	3.00	0.0866	-	0.1181
O	3.45	-	4.15	0.1358	-	0.1634
P	2.40	-	3.40	0.0945	-	0.1339

RECOMMEDNED LAYOUT DRAWINGS



TO-220A

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	1.60	-	-	0.0630	-
B	-	1.60	-	-	0.0630	-
C	-	2.54	-	-	0.1000	-
D	-	1.00	-	-	0.0394	-

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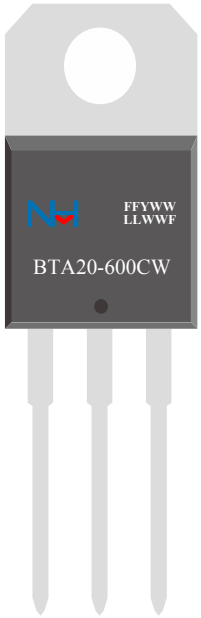
MARKING INFORMATION



MARKING INSTRUCTIONS

NH=Niuhang Trademark

FF=Product Line Code,According To Actual Changes

YWW=Date Code,According To Actual Changes

LLWWF=Inernal Code,According To Actual Changes

BTA20-600CW=Model

PACKING INFORMATION

Package Type	Package Code	Productor Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
TO-220A	P1	2.057	Tube	50	1000	5000

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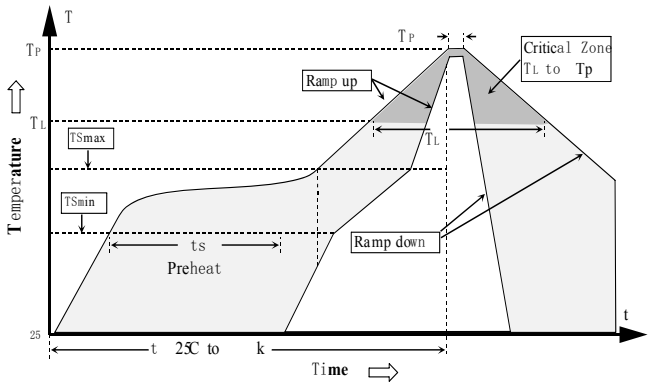
Recommended wave soldering condition

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 (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat−Temperature Min (TS min) −Temperature Max (TS max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	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.

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Specification Revision History

Rev.	Date	Changed Items	Pre-Changed Content	Changed Content
A/1	2014-10-20	First Issue		

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