

## TO-3PK Plastic-Encapsulate Thyristors

### BTA41 3Q TRIACs

#### MAIN CHARACTERISTICS

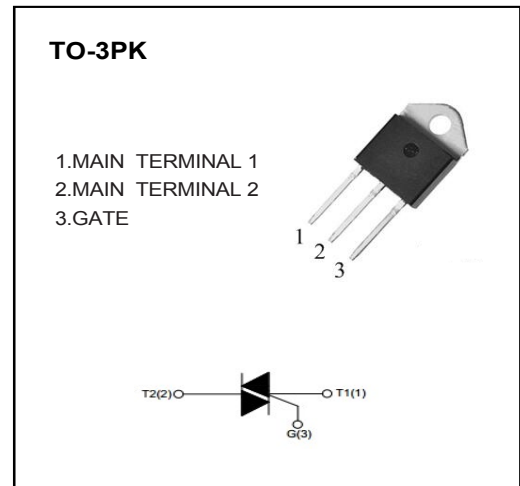
$I_{T(RMS)}$		<b>40A</b>
$V_{DRM}/V_{RRM}$	<b>BTA41-600(C/B)W</b>	<b>600V</b>
	<b>BTA41-800(C/B)W</b>	<b>800V</b>
$V_{TM}$		<b>1.55V</b>

#### FEATURES

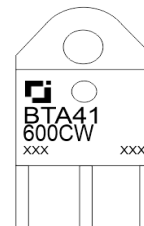
- NPNPN 5-layer Structure TRIACs
- Mesa Glass Passivated Technology
- Multi Layers Metal Electrodes
- High Junction Temperature
- Good Commutation Performance
- High  $dV/dt$  and  $dI/dt$
- Insulating Voltage=2500V<sub>(RMS)</sub>

#### APPLICATIONS

- Heater Control
- Motor Speed Controller
- Mixer



#### MARKING



BTA41:Series Code  
600CW:Depends on  $V_{DRM}$   
and  $I_{GT}$   
XXX:Internal Code

#### ABSOLUTE RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted )

Symbol	Parameter	Test condition	Value	Unit	
$V_{DRM}/V_{RRM}$	Repetitive peak off-state voltage	$T_j=25^\circ\text{C}$	BTA41-600(C/B)W	600	V
			BTA41-800(C/B)W	800	V
$I_{T(RMS)}$	RMS on-state current	TO-3PK( $T_c \leq 80^\circ\text{C}$ ), Fig. 1,2	40	A	
$I_{TSM}$	Non repetitive surge peak on-state current	Full sine wave , $T_j(\text{init})=25^\circ\text{C}$ , $t_p=20\text{ms}$ ; Fig. 3,5	400	A	
$I^2t$	$I^2t$ value	$t_p=10\text{ms}$	1000	A <sup>2</sup> s	
$dI_T/dt$	Critical rate of rise of on-state current	$I_G=2 \cdot I_{GT}$ , $t_r \leq 10\text{ns}$ , $F=120\text{Hz}$ , $T_j=125^\circ\text{C}$	I - II -III	50	A/ $\mu\text{s}$
$I_{GM}$	Peak gate current	$t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$	8	A	
$P_{G(AV)}$	Average gate power	$T_j=125^\circ\text{C}$	1	W	
$T_{STG}$	Storage temperature		-40~+150	°C	
$T_j$	Operating junction temperature		-40~+125		

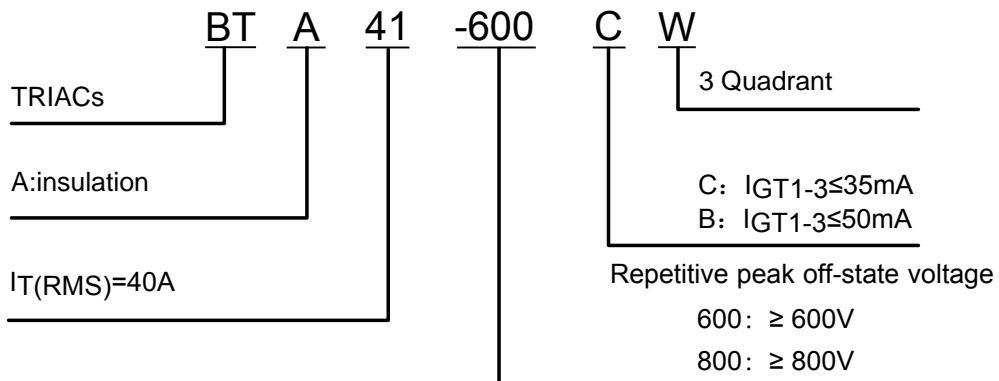
## ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test condition	Value		Unit
			CW	BW	
I <sub>GT</sub>	Gate trigger current	V <sub>D</sub> =12V, R <sub>L</sub> =33Ω, I - II - III	≤35	≤50	mA
V <sub>GT</sub>	Gate trigger voltage	T <sub>j</sub> =25°C, Fig. 6 I - II - III	≤1.3		V
V <sub>GD</sub>	Non-triggering gate voltage	V <sub>D</sub> =V <sub>DRM</sub> , T <sub>j</sub> =125°C	≥0.2		V
I <sub>H</sub>	Holding current	I <sub>T</sub> =500mA, Fig. 6	≤50	≤75	mA
I <sub>L</sub>	Latching current	I <sub>G</sub> =1.2I <sub>GT</sub> , Fig. 6 I - III	≤60	≤80	mA
			II	≤80	≤100
dV <sub>D</sub> /dt	Critical rate of rise of off-state	V <sub>D</sub> =67%V <sub>DRM</sub> , Gate Open T <sub>j</sub> =125°C	≥500	≥1000	V/μs
V <sub>TM</sub>	On-state Voltage	I <sub>TM</sub> =60A, t <sub>p</sub> =380μs, Fig. 4	≤1.55		V
I <sub>DRM</sub> / I <sub>RRM</sub>	Repetitive peak off-state current	V <sub>D</sub> =V <sub>DRM</sub> /V <sub>RRM</sub> , T <sub>j</sub> =25°C	≤5	≤5	μA
		V <sub>D</sub> =V <sub>DRM</sub> /V <sub>RRM</sub> , T <sub>j</sub> =125°C	≤4.0	≤4.0	mA

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th</sub> (j-c)	Junction to case (AC)	TO-3PK	0.9 °C/W
R <sub>th</sub> (j-a)	Junction to ambient	TO-3PK	50 °C/W

## PART NUMBER



# CHARACTERISTICS CURVES

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

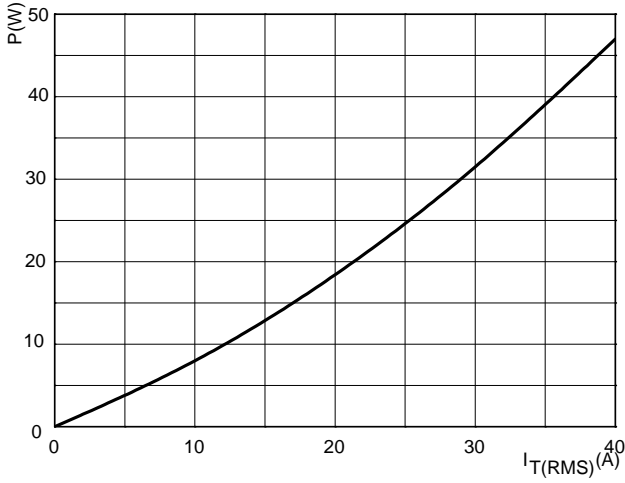


FIG.2: RMS on-state current versus case temperature (full cycle)

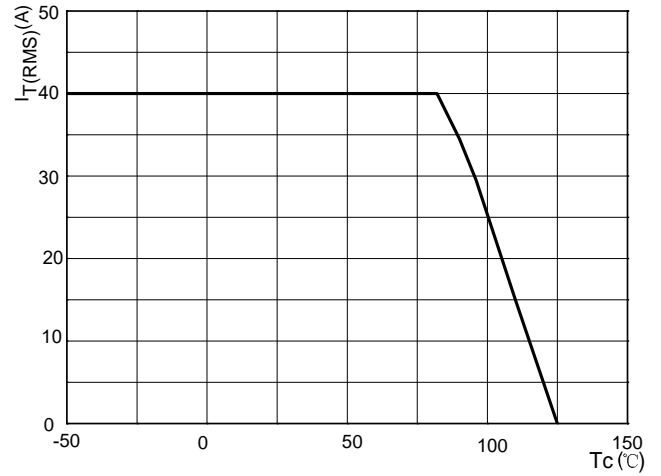


FIG.3: Surge peak on-state current versus number of cycles

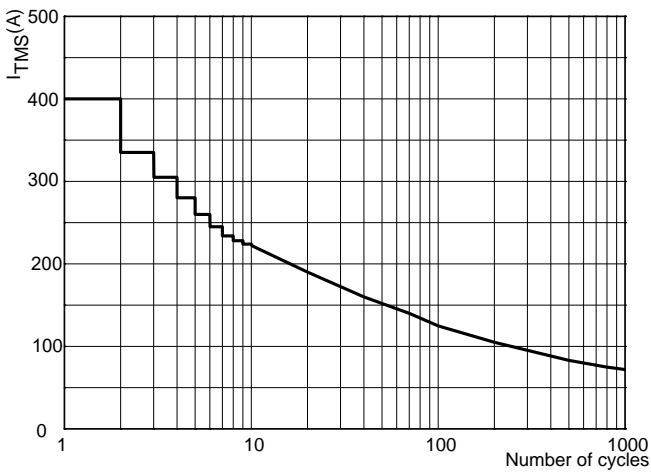


FIG.4: On-state characteristics (maximum values)

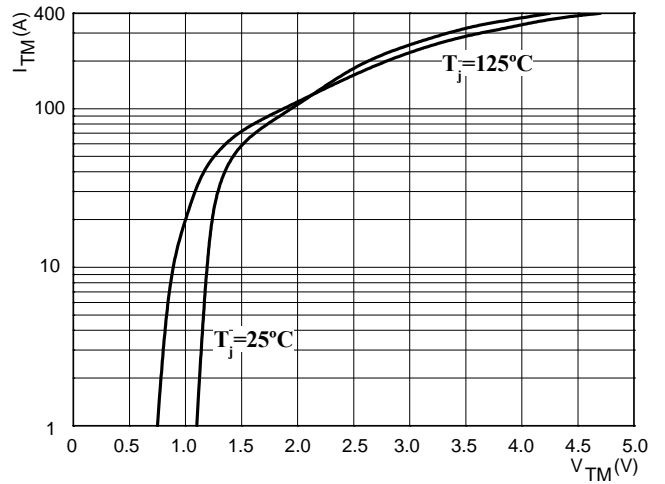


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$

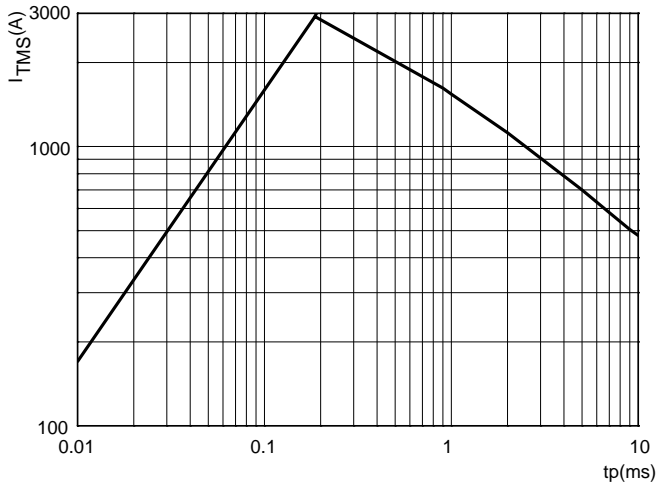
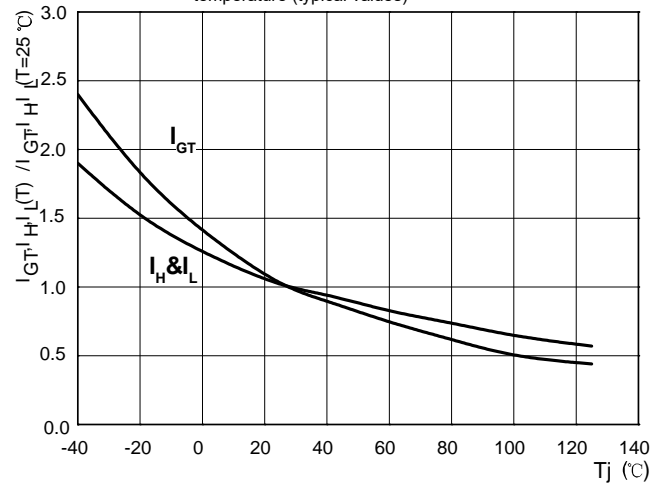
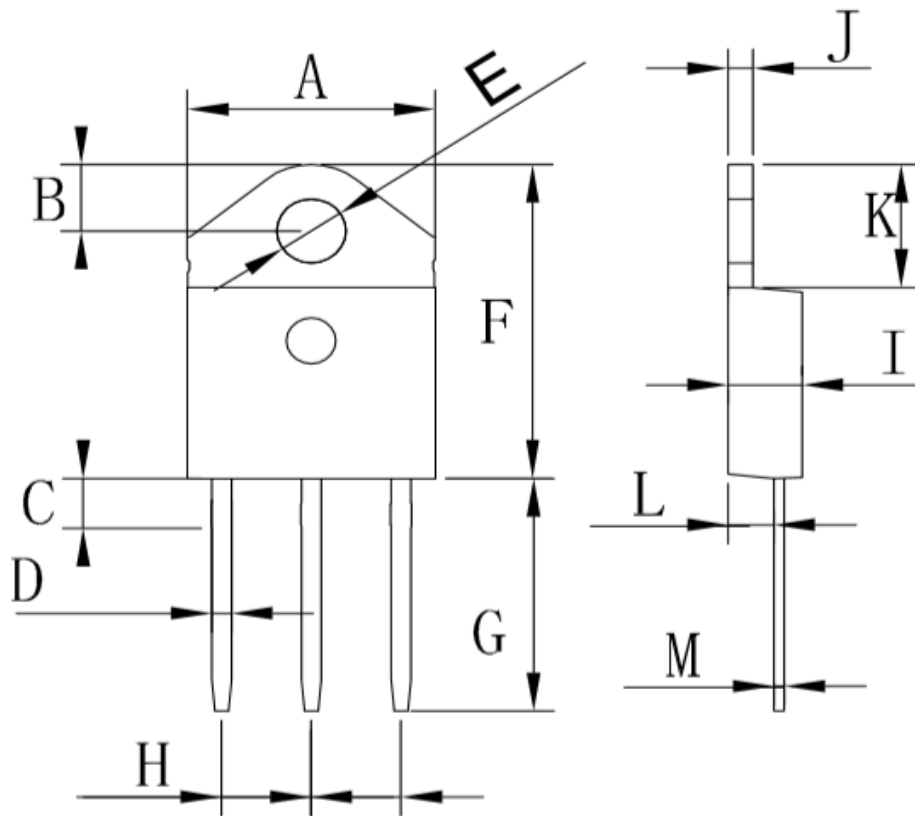


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



## TO-3PK PACKAGE OUTLINE DIMENSIONS



DIM.	Unit(mm)		Unit(inch)	
	Min	Max	Min	Max
A	14.9	15.35	0.586	0.604
B	4.1	4.65	0.161	0.183
C	2.5	3.2	0.098	0.125
D	1.12	1.32	0.044	0.051
E	4.12	4.31	0.162	0.169
F	20.21	20.75	0.795	0.816
G	15.02	15.55	0.591	0.612
H	5.35	5.62	0.210	0.221
I	4.38	4.65	0.172	0.183
J	1.42	1.62	0.055	0.063
K	7.85	8.22	0.309	0.323
L	2.71	2.92	0.106	0.114
M	0.52	0.68	0.020	0.026