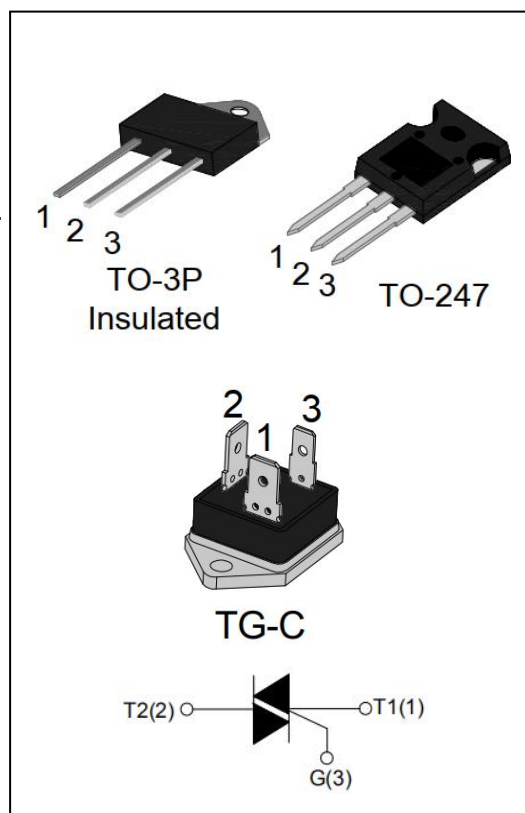




## BTA41 Series 40A Triacs

### DESCRIPTION:

with high ability to withstand the shock loading of large current, BTA41 series triacs provide high dv/dt rate with strong resistance to electromagnetic interference. With high commutation performances, 3 quadrants products especially recommended for use on inductive load. BTA41 provides insulation voltage rated at 2500V RMS from all three terminals to external heatsink complying with UL standards.



### MAIN FEATURES

symbol	value	unit
$I_{T(RMS)}$	40.0	A
$V_{DRM}/V_{RRM}$	600/800/1200/1600	V

### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40~150	°C
Operating junction temperature range	$T_j$	-40~125	°C
Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )	$V_{DRM}$	600/800/1200/1600	V
Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )	$V_{RRM}$	600/800/1200/1600	V
RMS on-state current	$I_{T(RMS)}$	40	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	$I_{TSM}$	400	A
$I^2t$ value for fusing ( $t_p=10ms$ )	$I^2t$	880	A <sup>2</sup> s
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )	di/dt	50	A/ $\mu$ s
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W



**ELECTRICAL CHARACTERISTICS** ( $T_j=25^{\circ}\text{C}$  unless otherwise specified)

**3 Quadrants:**

Symbol	Test Condition	Quadrant		Value	Unit
$I_{GT}$	$V_D=12\text{V}, R_L=33\Omega$	I - II -III	MAX	50	mA
$V_{GT}$				1.3	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^{\circ}\text{C}$	I - II -III	MIN	0.2	V
$I_H$	$I_T=100\text{mA}$		MAX	60	mA
$I_L$	$I_G=1.2I_{GT}$	I -III	MAX	80	mA
		II		100	
dV/dt	$V_D=2/3V_{DRM} T_j=125^{\circ}\text{C}$ Gate open		MIN	1000	V/ $\mu\text{s}$

**4 Quadrants:**

Symbol	Test Condition	Quadrant		Value	Unit
$I_{GT}$	$V_D=12\text{V}, R_L=33\Omega$	I - II -III	MAX	50	mA
		IV		100	mA
$V_{GT}$		ALL		1.3	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^{\circ}\text{C}$	ALL	MIN	0.2	V
$I_H$	$I_T=100\text{mA}$		MAX	60	mA
$I_L$	$I_G=1.2I_{GT}$	I -III-IV	MAX	80	mA
		II		100	
dV/dt	$V_D=2/3V_{DRM} T_j=125^{\circ}\text{C}$ Gate open		MIN	1000	V/ $\mu\text{s}$



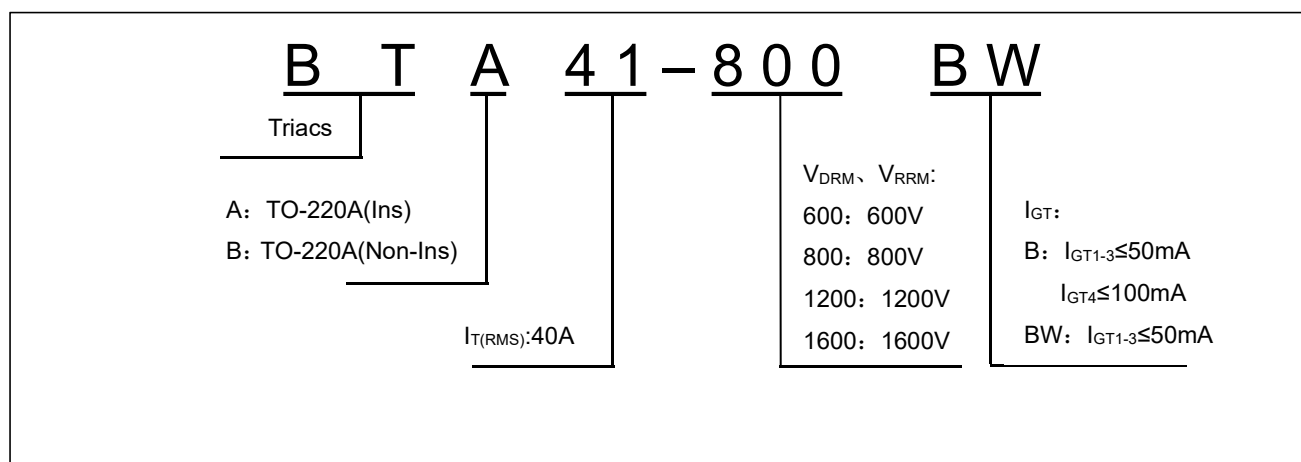
**STATIC CHARACTERISTICS**

Symbol	Test Condition			Value	Unit
$V_{TM}$	$I_{TM}=60A$ $t_p=380\mu s$	$T_j=25^\circ C$	MAX	1.55	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}=V_{RRM}$	$T_j=25^\circ C$	MAX	10	$\mu A$
		$T_j=125^\circ C$		5	mA

**THERMAL RESISTANCES**

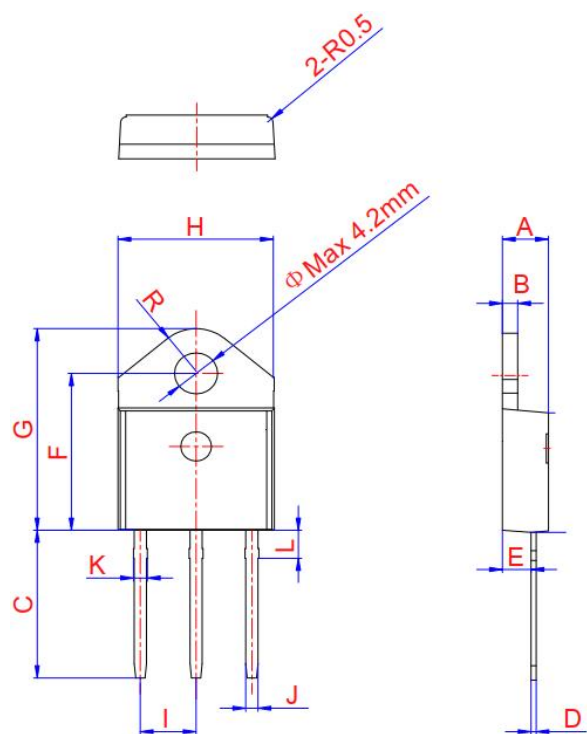
Symbol	Test Condition		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-3P(Ins)	1.1	$^\circ C/W$
		TO-247(Non-Ins)	0.91	
		TG-C	0.80	

**ORDERING INFORMATION**



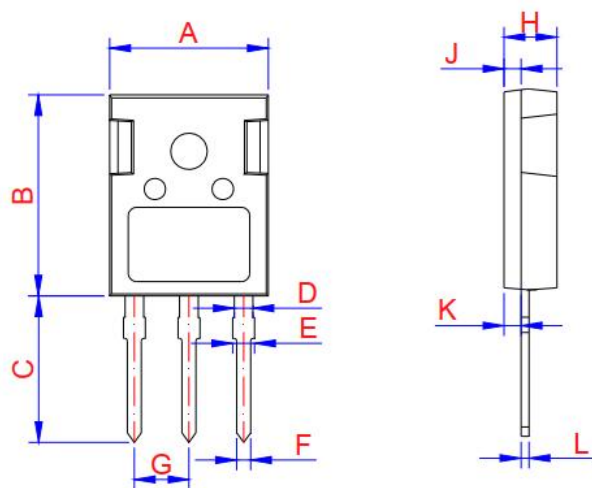


**PACKAGE MECHANICAL DATA**



TO-3P Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.35		1.50	0.053		0.059
P	2.80		3.00	0.110		0.118
R		4.35			0.171	



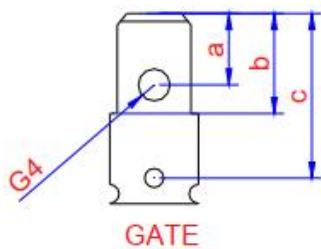
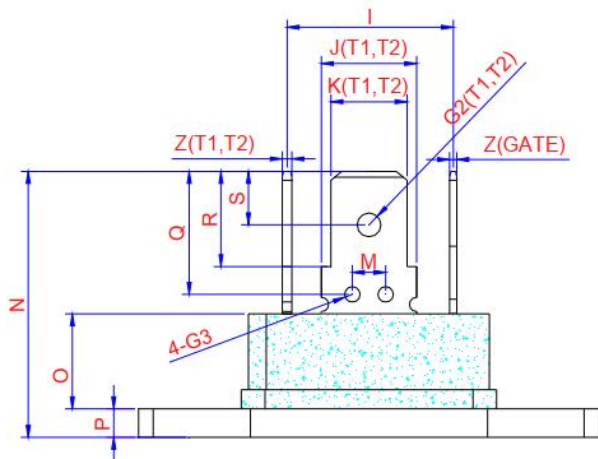
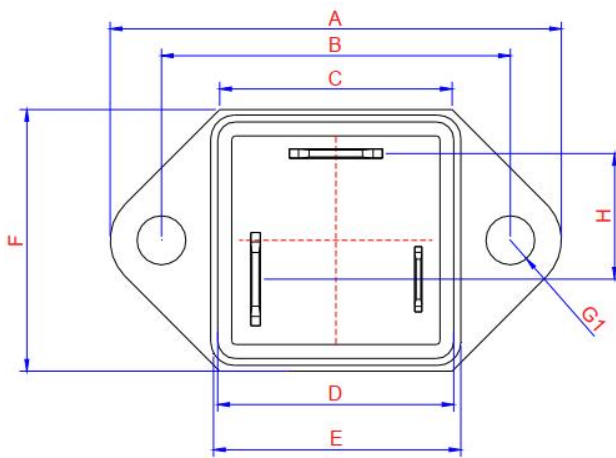
TO-247J

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	22.20	0.819	0.828	0.874
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G		5.44			0.214	
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031



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## BTA41 Series 40A Triacs



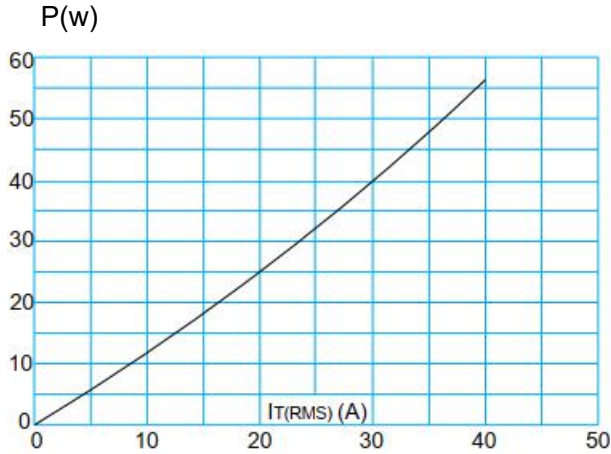
TG-C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			39.2			1.543
B	29.8	30	30.2	1.173	1.181	1.189
C			20.2			0.795
D			20.5			0.807
E			21.6			0.85
F			23			0.905
G1	Φ4.1	Φ4.2	Φ4.3	Φ0.161	Φ0.165	Φ0.169
H		10.3			0.406	
I		13.9			0.547	
J(T1,T2)		8			0.315	
K(T1,T2)		6.4			0.252	
M	2.7	3	3.3	0.106	0.118	0.13
N			22.8			0.898
O		8.2			0.323	
P		2.5			0.098	
Q	9.45	9.75	10.1	0.374	0.383	0.398
R	7.8	7.95	8.1	0.307	0.313	0.319
S	4.3	4.5	4.7	0.169	0.177	0.185
Z(T1,T2)	0.78	0.8	0.85	0.0307	0.0315	0.0335
G2(T1,T2)		Φ2	Φ2.2		Φ0.079	Φ0.087
G3	Φ1.1	Φ1.3	Φ1.5	Φ0.043	Φ0.051	Φ0.059
G4		Φ1.55	Φ1.75		Φ0.061	Φ0.069
a	2.95	3.15	3.35	0.116	0.124	0.132
b	6.2	6.35	6.5	0.244	0.25	0.256
c	9.35	9.75	10	0.368	0.384	0.393
Z(GATE)	0.58	0.6	0.65	0.0228	0.0236	0.0256
J(GATE)		5.6			0.221	
K(GATE)		4.65			0.183	

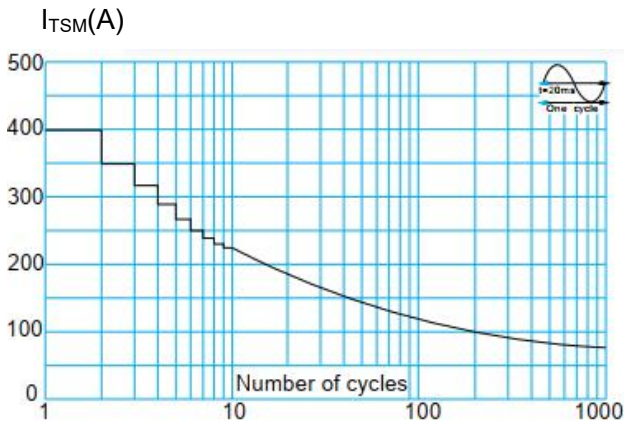


**BTA41 Series 40A Triacs**

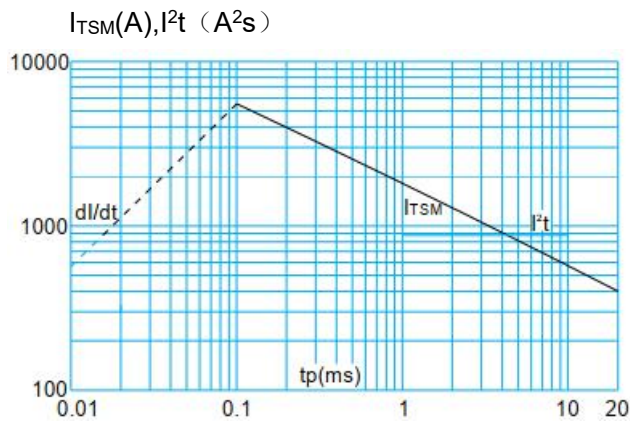
**FIG.1:** Maximum power dissipation versus RMS on-state current



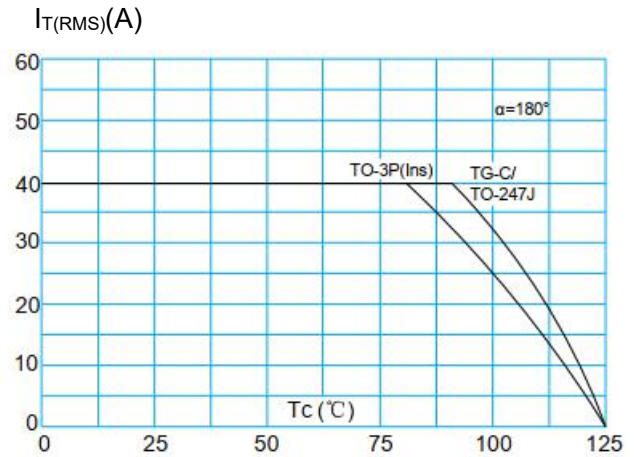
**FIG.3:** Surge peak on-state current versus number of cycles



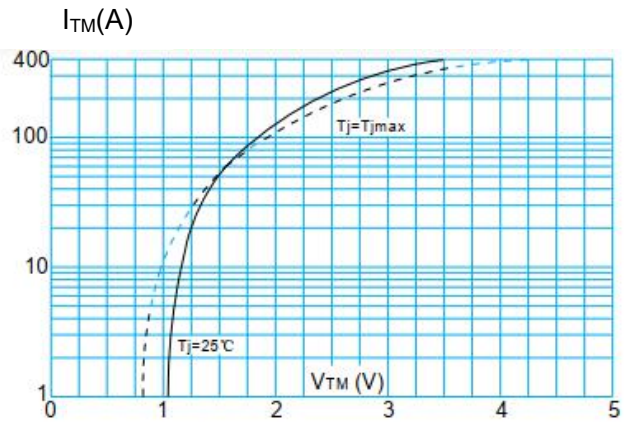
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20ms$ , and corresponding value of  $I^2t$  ( $I - II - III: di/dt < 50A/\mu s; IV: di/dt < 10A/\mu s$ )



**FIG.2:** RMS on-state current versus case temperature

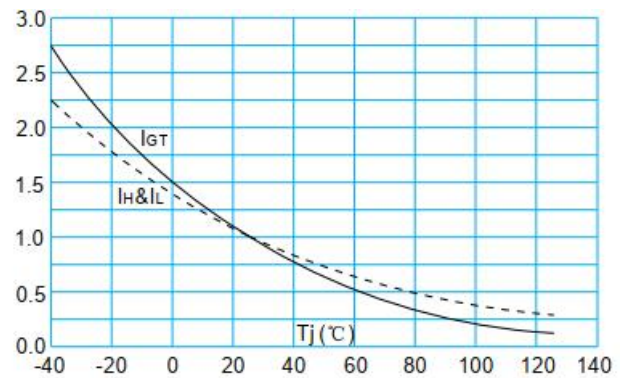


**FIG.4:** On-state characteristics (maximum values)



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

$$I_{GT, IH, IL}(T_j) / I_{GT, IH, IL}(T_j = 25^\circ C)$$





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**BTA41 Series 40A Triacs**

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