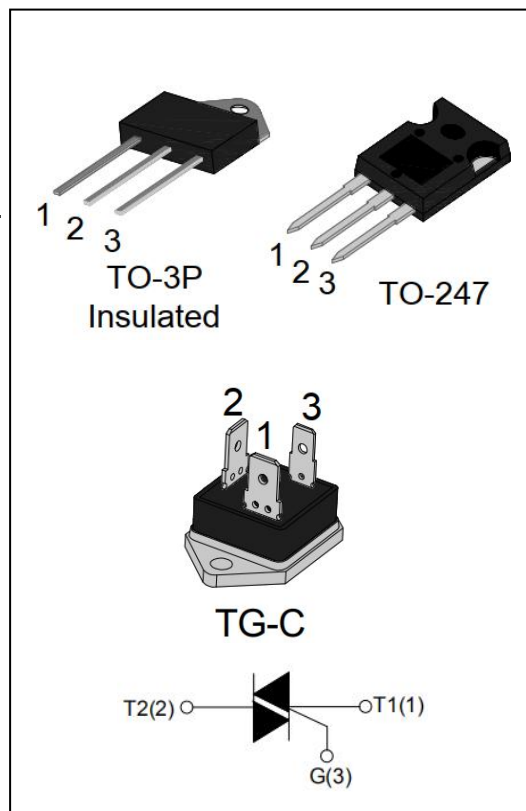




BTA41 Series 40A Triacs

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 quadrant 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 ($T_j=25^\circ\text{C}$)	V_{DRM}	600/800/1200/1600	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	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 ($t_p=10\text{ms}$)	I^2t	880	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$)	di/dt	50	$\text{A}/\mu\text{s}$
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/ μs

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		70	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/ μs



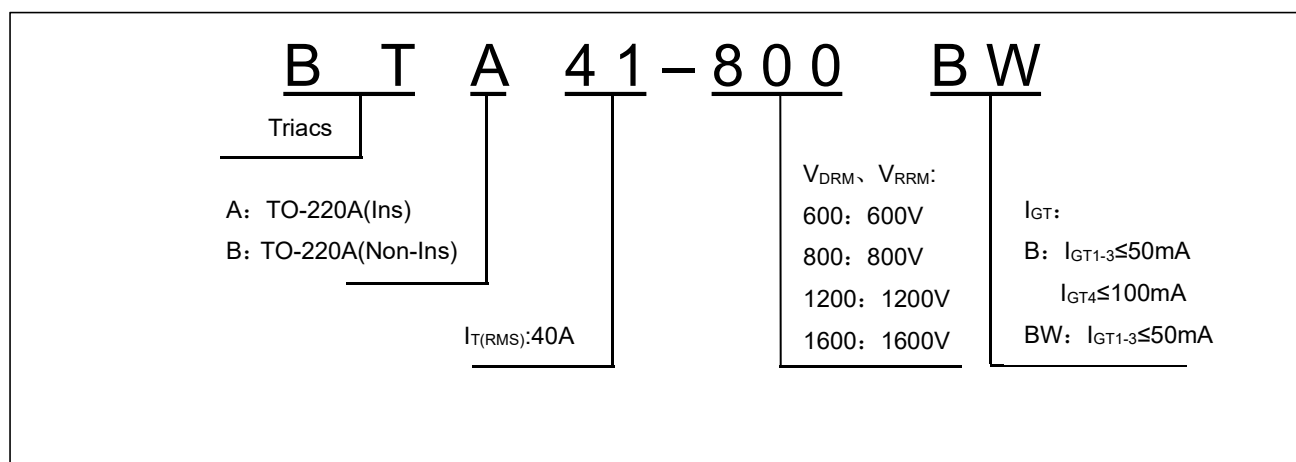
STATIC CHARACTERISTICS

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	μA
		$T_j=125^\circ C$		5	mA

THERMAL RESISTANCES

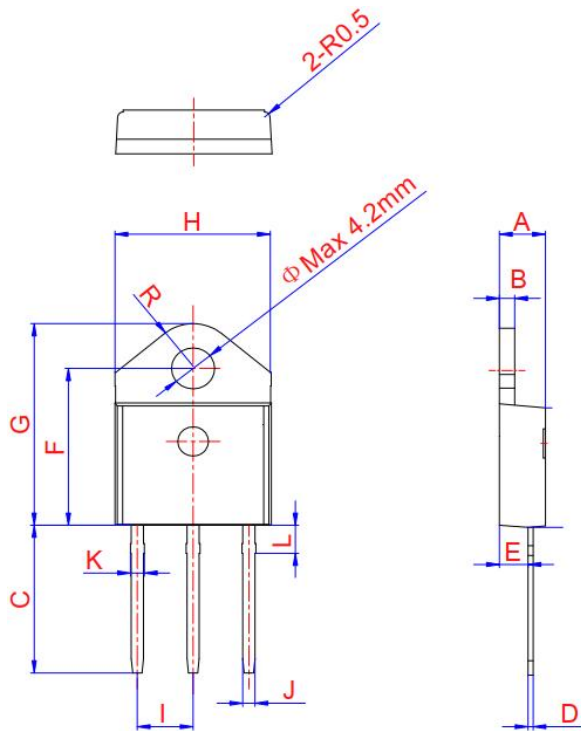
Symbol	Test Condition		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-3P(Ins)	1.1	$^\circ C/W$
		TO-247(Non-Ins)	0.91	
		TG-C	0.80	

ORDERING INFORMATION



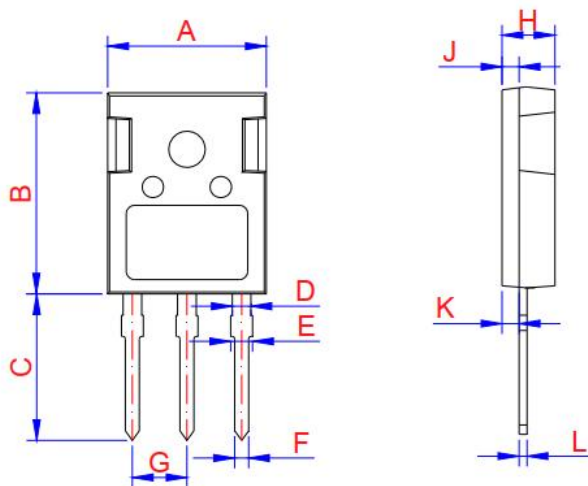


PACKAGE MECHANICAL DATA



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	



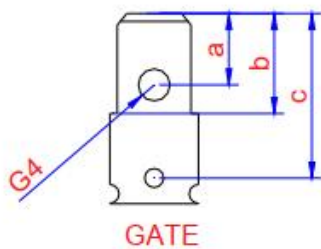
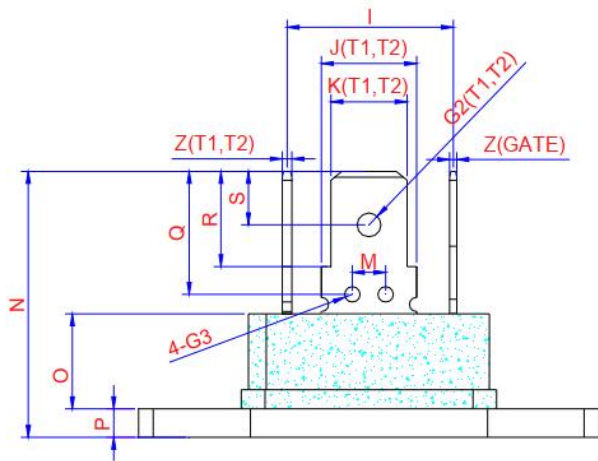
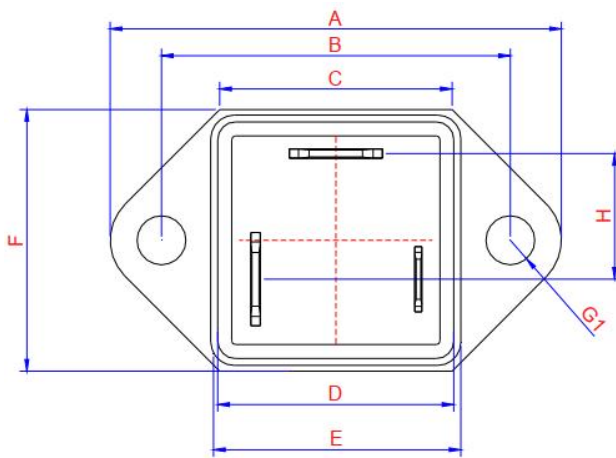
TO-247J

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

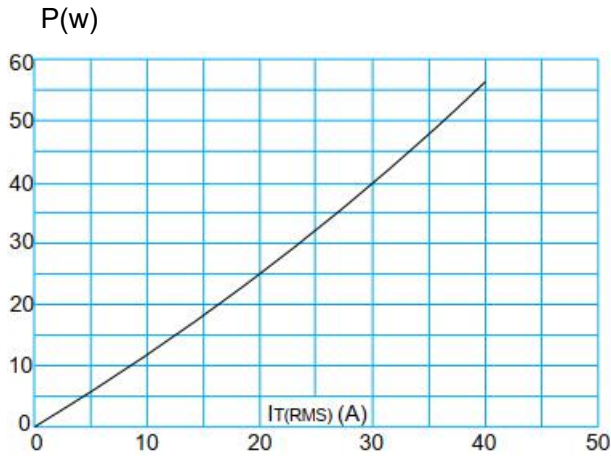


FIG.3: Surge peak on-state current versus number of cycles

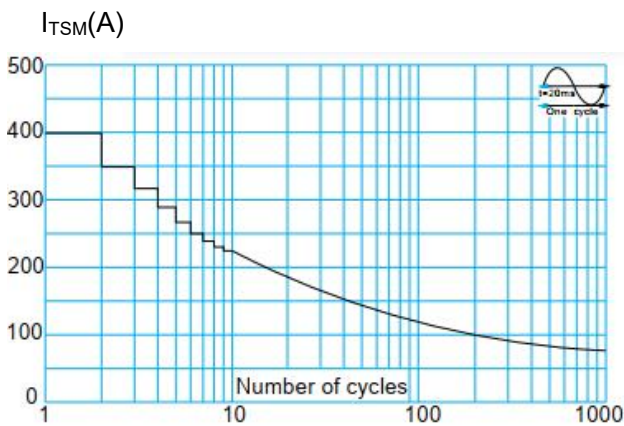


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($I - II - III: di/dt < 50A/\mu s; IV: di/dt < 10A/\mu s$)

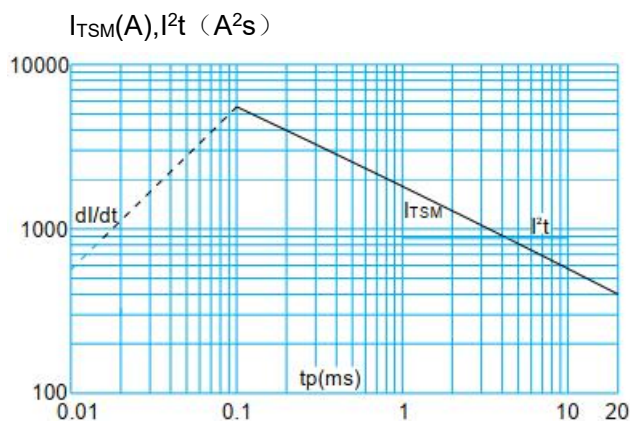


FIG.2: RMS on-state current versus case temperature

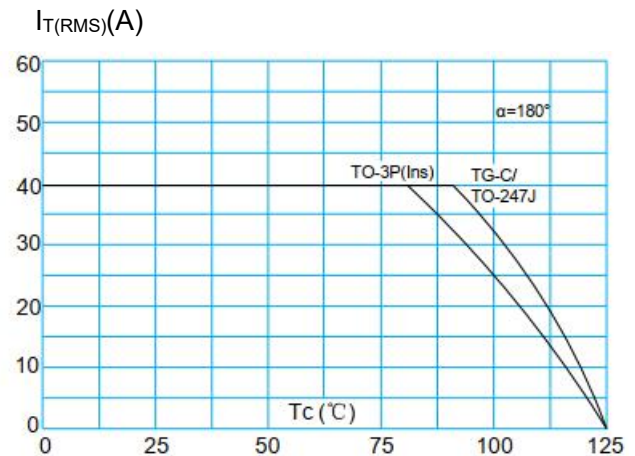


FIG.4: On-state characteristics (maximum values)

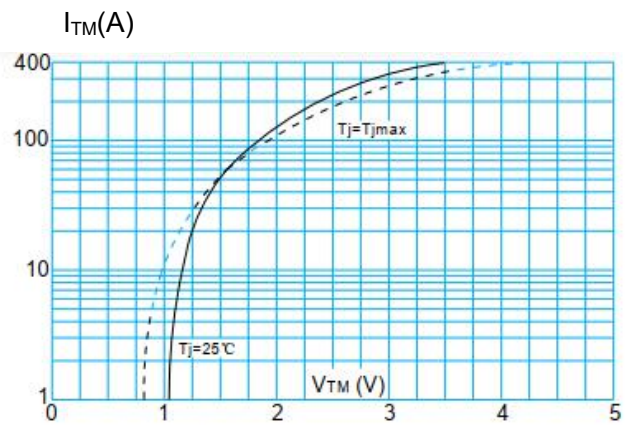
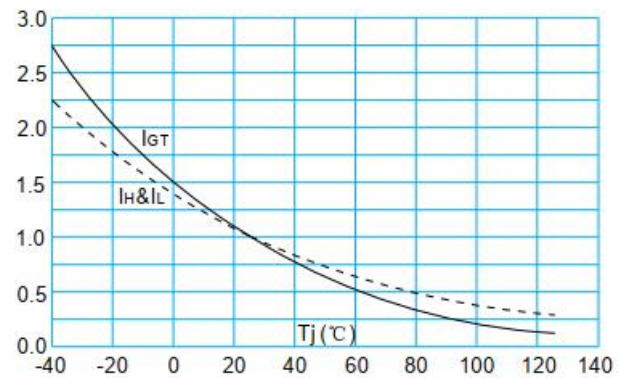


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

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





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BTA41 Series 40A Triacs

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