

# BTA40 and BTA/BTB41 Series

## DESCRIPTION

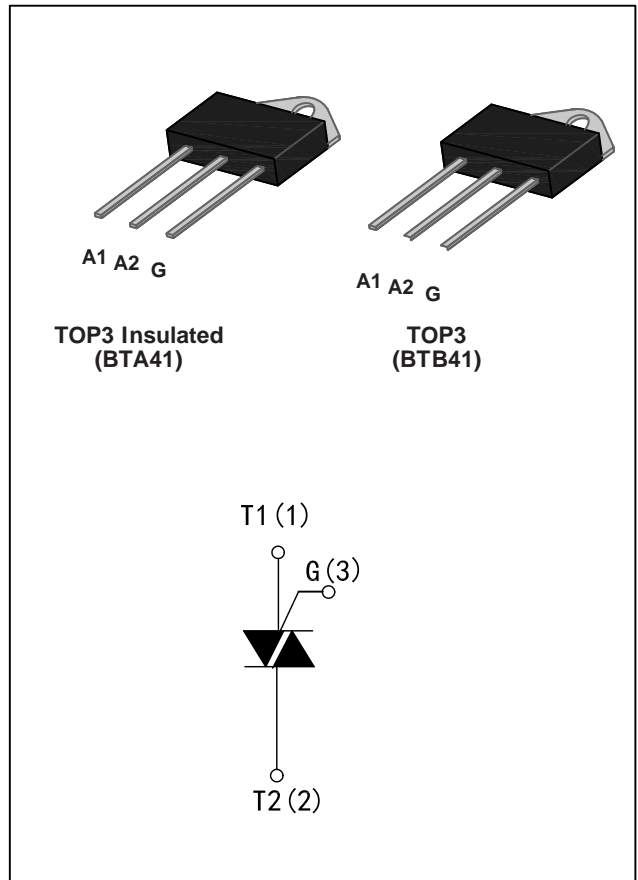
Available in high power packages, the BTA/BTB40-41 series is suitable for general purpose AC power switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, water heaters, induction motor starting circuits, welding equipment... or for phase control operation in high power motor speed controllers, soft start circuits...

Thanks to their clip assembly technique, they provide a superior performance in surge current handling capabilities.

By using an internal ceramic pad, the BTA series provides voltage insulated tab (rated at 2500 V RMS)

## MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	40	A
$V_{DRM}/V_{RRM}$	600 / 800 / 1200	V
$V_{TM}$	1.55	V



## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40 to +150	°C
Operating junction temperature range	$T_j$	-40 to +125	°C
Repetitive Peak Off-state Voltage	$T_j=25^\circ\text{C}$	$V_{DRM}$	600 / 800 / 1200
Repetitive Peak Reverse Voltage	$T_j=25^\circ\text{C}$	$V_{RRM}$	600 / 800 / 1200
Non repetitive Surge Peak Off-state Voltage	$tp=10\text{ms}, T_j=25^\circ\text{C}$	$V_{DSM}$	$V_{DRM}+100$
Non repetitive Peak Reverse Voltage		$V_{RSM}$	$V_{RRM}+100$
RMS on-state current (full sine wave)	$TO-P3 T_c=80^\circ\text{C}$	$I_{T(RMS)}$	40
	$TG-C T_c=90^\circ\text{C}$		
Non repetitive surge peak on-state current (full cycle, $T_j=25^\circ\text{C}$ )	$f = 60\text{ Hz}$ $t = 16.7\text{ms}$	$I_{TSM}$	420
	$f = 50\text{ Hz}$ $t = 20\text{ms}$		
$I^2t$ Value for fusing	$tp=10\text{ms}$	$I^2t$	880
Critical rate of rise of on-state current $I_G=2 \times I_{GT}$ , $tr \leq 100\text{ ns}$ , $f=120\text{Hz}$ , $T_j=125^\circ\text{C}$	$di/dt$	50	$A/\mu\text{s}$
Peak gate current $tp=20\mu\text{s}, T_j=125^\circ\text{C}$	$I_{GM}$	4	A
Peak Gate Power Dissipation $tp=20\mu\text{s}, T_j=125^\circ\text{C}$	$P_{GM}$	10	W
Average gate power dissipation $T_j=125^\circ\text{C}$	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS (Tj=25°C unless otherwise specified)

Symbol	Test Condition	Quadrant		Limits	Unit
				BW(B)	
IGT	VD=12V RL=33Ω	I-II-III	MAX.	50	mA
VGT		I-II-III	MAX.	1.3	V
VGD	VD=VDRM RL=3.3KΩ Tj =125°C	I-II-III	MIN.	0.2	V
IL	IG=1.2IGT	I-III	MAX.	80	mA
		II	MAX.	100	mA
IH	IT =100mA		MAX.	60	mA
dV/dt	VD=67%VDRM gate open Tj=125°C		MIN.	1000	V/μs
(di/dt)c	Without snubber Tj=125°C		MIN.	20	A/ms

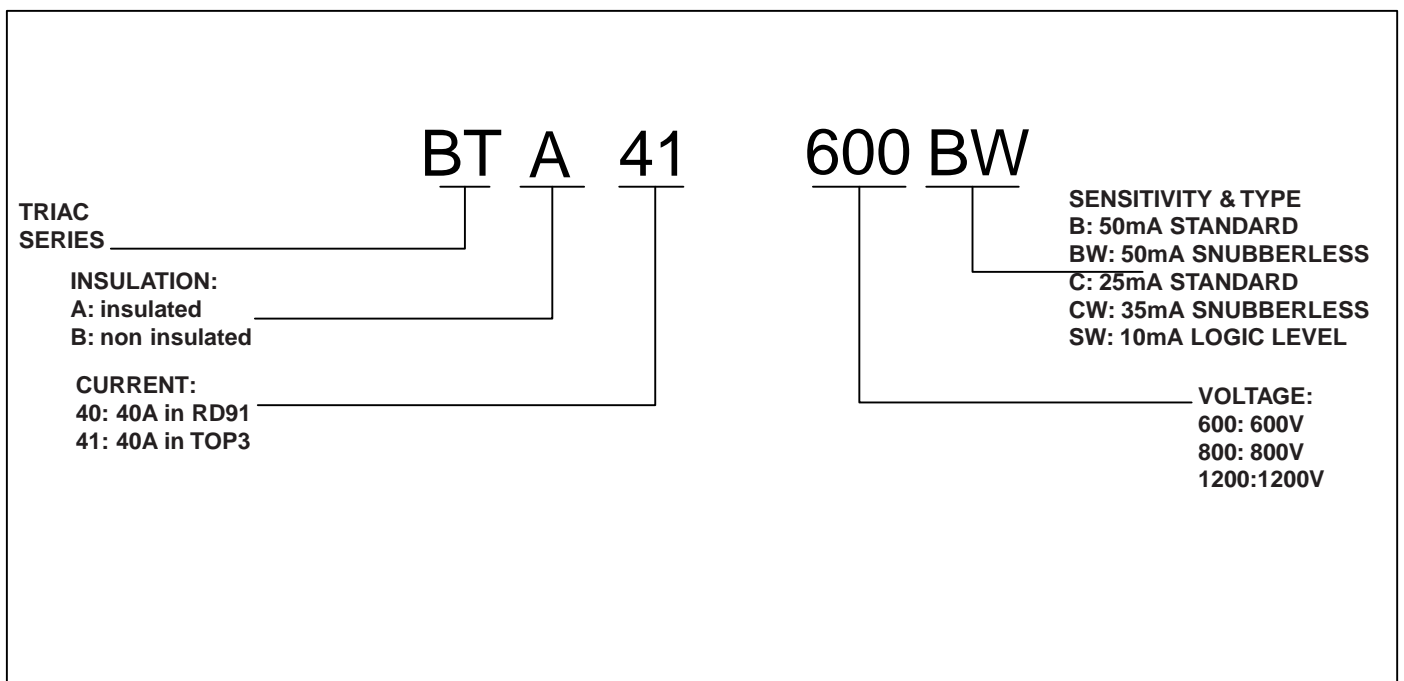
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
VTM	ITM=60A, tp=380μs	Tj=25°C	1.55	V
IDRM	VD=VDRM VR=VRRM	Tj=25°C	10	μA
I <sub>RRM</sub>		Tj=125°C	5	mA

THERMAL RESISTANCES

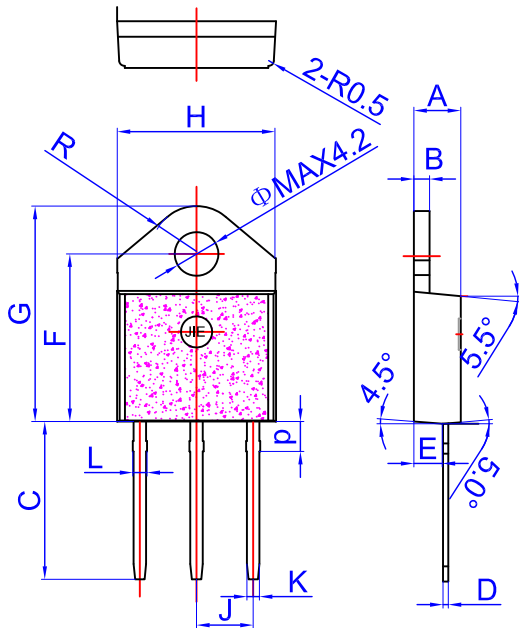
Symbol	Parameter		Value	Unit
Rth( J -C)	Junction to Case(AC)	TO-P3	0.9	°C/W
		TG-C	0.8	

ORDERING INFORMATION



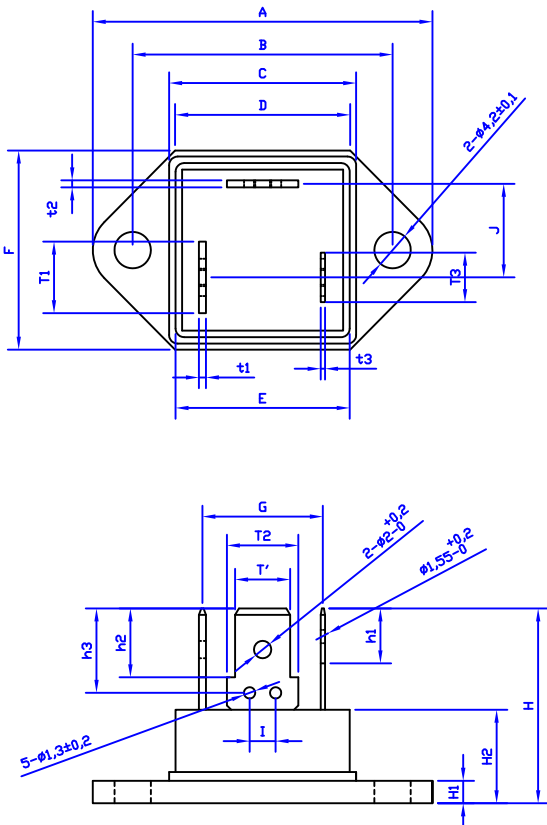
PACKAGE MECHANICAL DATA

TO-P3 insulated Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.6	0.565		0.614
D	0.5		0.7	0.020		0.028
E	2.7		2.9	0.106		0.114
F	15.8		16.5	0.622		0.650
G	20.4		21.1	0.815		0.831
H	15.1		15.5	0.594		0.610
J	5.4		5.65	0.213		0.222
K	1.2		1.4	0.047		0.055
L	1.35		1.50	0.053		0.059
P	2.8		3.0	0.110		0.118
R		4.6			0.181	

TG-C Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			39.2			1.543
B	29.8	30.0	30.2	1.173	1.181	1.189
C			21.6			0.85
D			20.2			0.795
E			20.1			0.791
F			23			0.906
T1、T2		8.25			0.325	
T3		5.7			0.224	
T'		6.35			0.25	
t1、t2		0.8			0.031	
t3		0.5			0.020	
G		13.9			0.547	
H1		2.6			0.102	
H2		10.8			0.425	
H			22.5			0.886
h1	6.2	6.35	6.5	0.244	0.25	0.256
h2	7.8	7.95	8.1	0.307	0.313	0.319
h3	9.45	9.75	10.05	0.372	0.384	0.396
I	2.7	3.0	3.3	0.106	0.118	0.130
J		10.8			0.425	

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

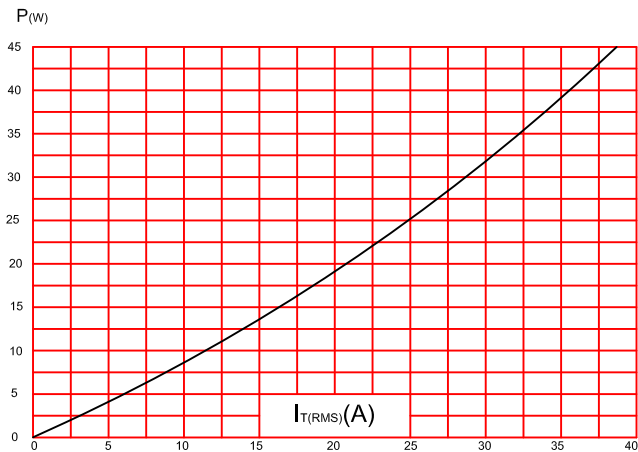


FIG.2:RMS on-state current versus case temperature(full cycle)

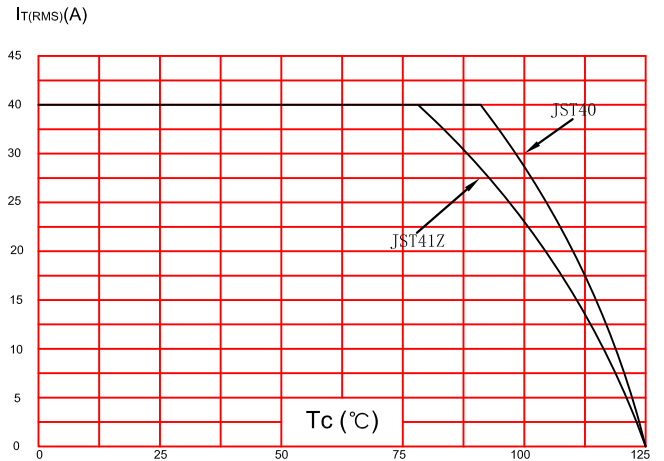


FIG.3:On-state characteristics (maximum values).

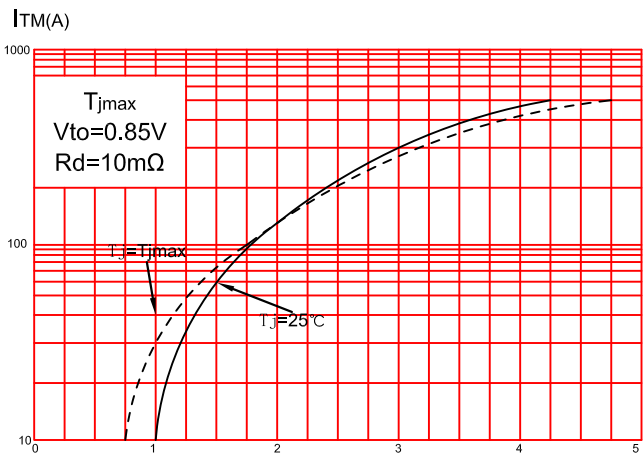


FIG.4:Surge peak on-state current versus number of cycles.

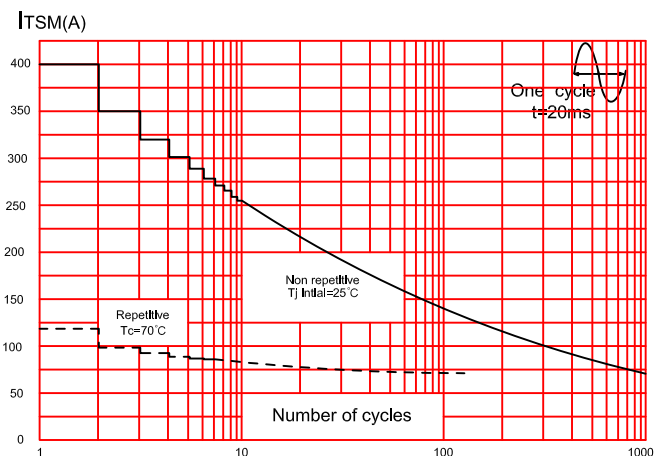


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$ , and corresponding value of  $I^2t$ .

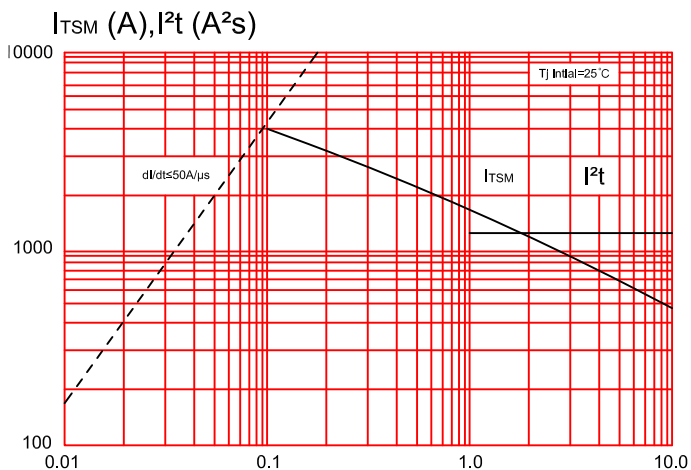


FIG.6:Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)

