



Features

- ◇ The LGE BTA41/BTB41, 40A III & IV quadrants series triacs, which can be operated in III & IV quadrants. As silicon bidirectional device, with NPNPN five-layer structure; singlesided trenching technology, mesa glass passivation process;
- ◇ multi-layer metallized electrode on the back side;
- ◇ High blocking voltage and high temperature stability.

Applications

The LGE BTA41/BTB41 is suitable for inductive load switching operations, also can be used in ON/OFF function applications such as washing machine, induction motor starting circuits, vacuum cleaners, power tools and other motors such as speed control maker; heating regulation, solid state relay; phases control circuit; AC motor speed regulation, and so on.

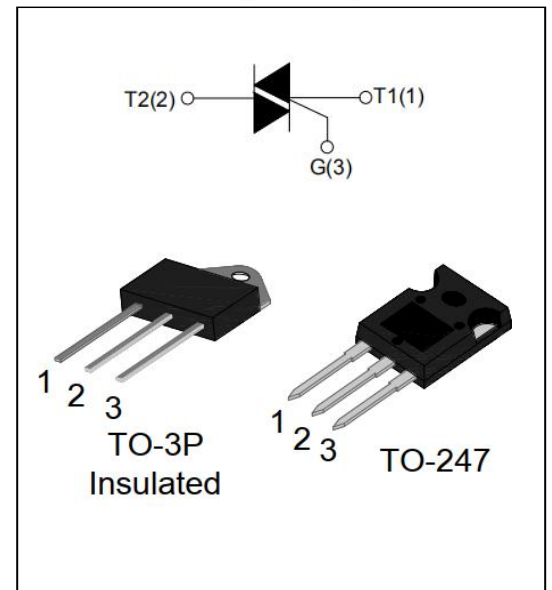
Mechanical Data

- ◇ Moisture Sensitivity: MSL Level 1, per J-STD-020
- ◇ Terminals: Matte Tin Finish.
Solderable per MIL-STD-202 Method 208
- ◇ Case Material: Molded Plastic;
- ◇ Molding compound meet UL Flammability
Classification Rating 94V-0
- ◇ Case: JEDEC TO-3P, TO-247

MAXIMUM RATING

Ratings at 25°C ambient temperature unless otherwise specified.

PARAMETER			SYMBOL	VALUE	UNITS
R.M.S. On-State Current	BTA BTB	Tc=80℃ Tc=90℃	IT(RMS)	40	A
Non-Repetitive Surge Peak On-State Current(fFull Cycle,Tj initial=25℃)	F=50HZ	T=20ms	ITSM	400	A
	F=60HZ	T=16.7ms		420	
I²t Value for Fusing	tp=10ms		I²t	1000	A²s
Critical Rate of Rise of On-State Current IG=2×IGT, tr≤100ns	F=120HZ	Tj=125℃	di/dt	50	A/ μ s
Repetitive peak Off-State voltage		Tj=25℃	VDRM/VRRM	1600	V
Non repetitive surge peak off-state voltage	tp=10ms	Tj=25℃	VDSM/VRSM	VDRM/VRRM+100	V
Peak Gate Current	tp=20μs	Tj=125℃	IGM	8	A
Average Gate Power Dissipation		Tj=125℃	PG(AV)	1	W
Typical Thermal Resistance (Junction to Ambient)	TO-247/TO-247 Ins		RθJA	60	℃/W
	TO-3P/TO-3P Ins			50	
Typical Thermal Resistance(Junction to Case (AC))	TO-247/TO-3P		RθJC	0.6	℃/W
	TO-247 Ins,TO-3P Ins			0.9	
Maximum Operating Junction temperature			TJ	-40~+125	℃
Storage temperature range			TSTG	-40~+150	℃



ELECTRICAL CHARACTERISTICS(III QUADRANTS)

PARAMETER	TEST CONDITIONS	Symbol	VALUES		Units
				BW	
Gate Trigger Current	VD=12V,RL=100 Ω (I II IIIquadrant)	IGT	MAX	50	mA
Gate Trigger Voltage		VGT	MAX	1.5	V
Gate Non-Trigger Voltage	Tj=125°C (I II IIIquadrant)	VGD	MIN	0.2	V
Holding Current IT=0.5A		IH	MAX	60	mA
Latching Current IG=1.2IGT	I III quadrant	IL	MAX	60	mA
	II quadrant		MAX	100	
Critical Rate of Rise of Off-State Voltage VD=2/3VDRM,Tj=125°C		dv/dt	MIN	550	V/ μ s
Critical Rate of Rise of Off-State Voltage at Commutation, Tj=125°C		(dv/dt)c	MIN	10	V/ μ s

ELECTRICAL CHARACTERISTICS(IV QUADRANTS)

PARAMETER	TEST CONDITIONS		SYMBOL	VALUE		UNITS
					B	
Gate Trigger Current	VD=12V,RL=100 Ω (I II IIIIV quadrant)	I II III	IGT	MAX	50	mA
		IV		MAX	120	
Gate Trigger Voltage		All	VGT	MAX	1.5	V
Gate Non-Trigger Voltage	Tj=125°C (I II IIIquadrant)		VGD	MIN	0.2	V
Holding Current IT=0.5A			IH	MAX	80	mA
Latching Current =1.2IGT	I III IVquadrant	IL		MAX	80	mA
	II quadrant			MAX	160	
Critical Rate of Rise of Off-State Voltage VD=2/3VDRM,Tj=125°C		dv/dt	MIN	550		V/ μ s
Critical Rate of Rise of Off-State Voltage at Commutation, Tj=125°C		(dv/dt)c	MIN	10		V/ μ s

STATIC CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SYMBOL		VALUE	UNITS
Peak On-State Voltage	ITM=60A,tp=380 μ s,Tj=25°C	VTM	MAX	1.55	V
Threshold Voltage	Tj=125°C	VTO	MAX	0.86	V
Dynamic Resistance	Tj=125°C	Rd	MAX	6.4	m Ω
Repetitive Peak Off-Statte Curren VDRM=VRRM	Tj=25°C	IDRM/ IRRM	MAX	10	μ A
	Tj=125°C	IDRM/ IRRM	MAX	5	mA

RATING AND CHARACTERISTICS CURVES

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

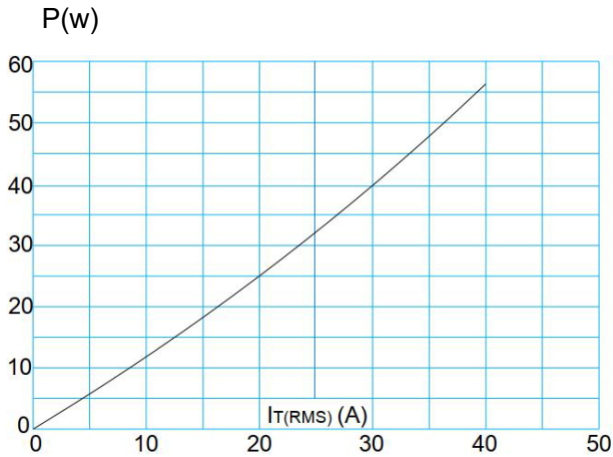


FIG.3: Surge peak on-state current versus number of cycles

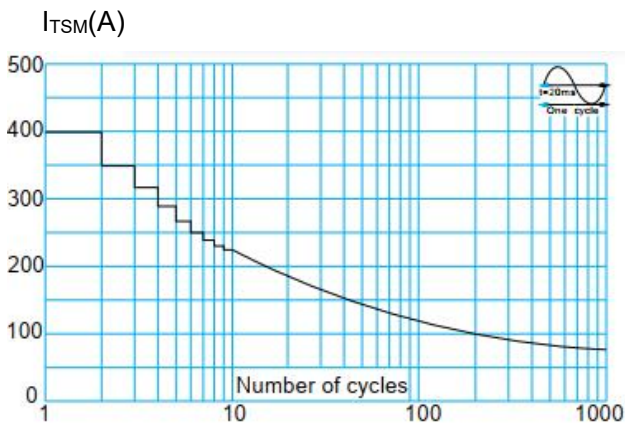


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t (I - II - III: $di/dt < 50\text{A}/\mu\text{s}$; IV: $di/dt < 10\text{A}/\mu\text{s}$)

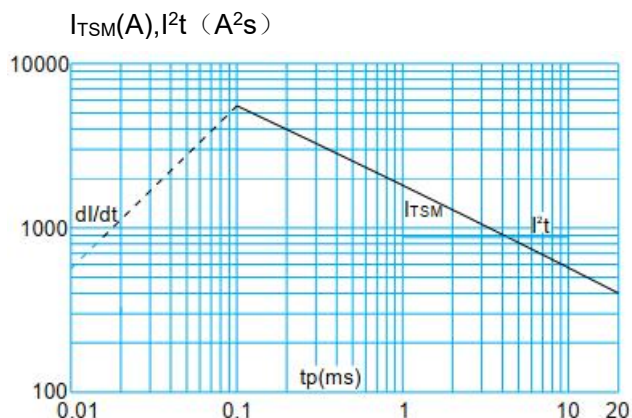


FIG.2: RMS on-state current versus case temperature

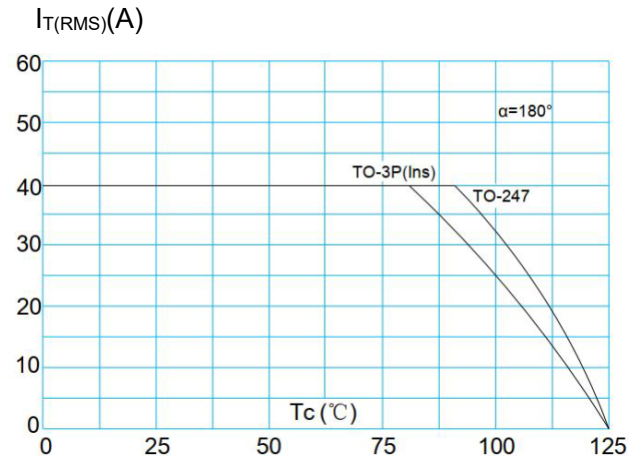


FIG.4: On-state characteristics (maximum values)

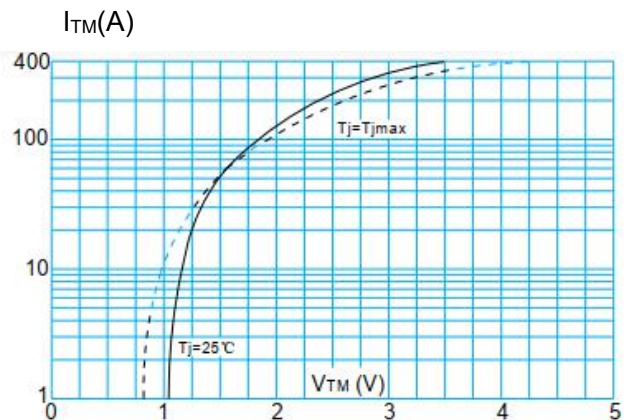
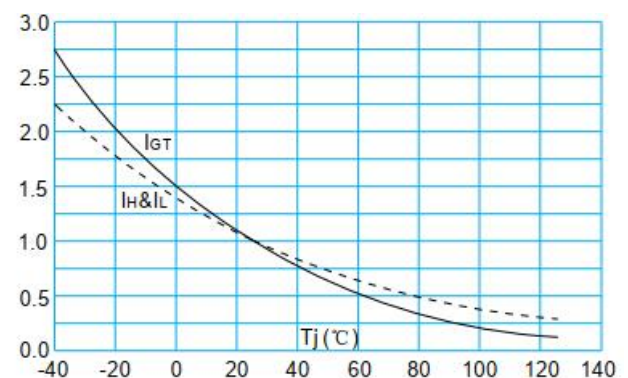


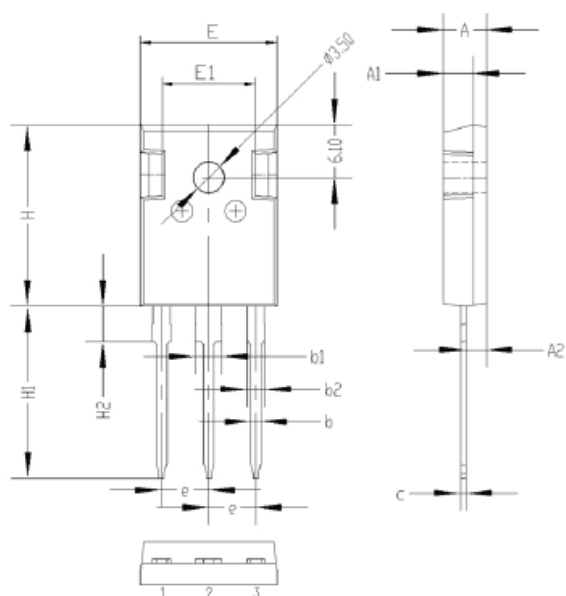
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

$$I_{GT}, I_H, I_L(T_j) / I_{GT}, I_H, I_L(T_j = 25^\circ\text{C})$$



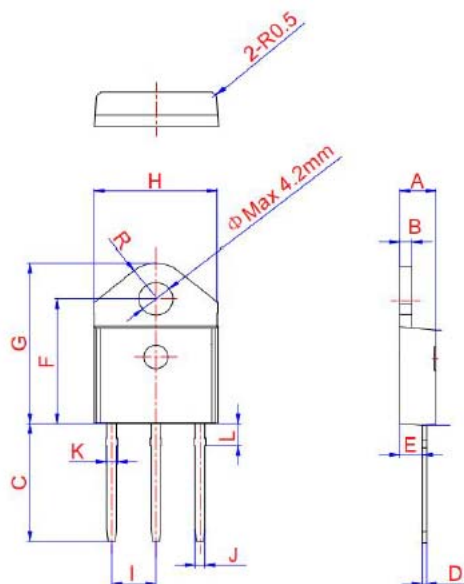
PACKAGE OUTLINE DIMENSIONS

TO-247



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.80	5.20
A1	3.30	3.70
A2	2.10	2.50
b	1.00	1.40
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.6	16.0
E1	10.6	11.00
H	20.8	21.2
H1	19.4	20.4
H2	3.90	4.30
G	5.90	6.30
ΦP	3.30	3.70

TO-3P



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40	4.50	4.60	0.173	0.177	0.181
B	1.45	1.50	1.55	0.057	0.059	0.061
C	14.35		15.60	0.565		0.614
D	0.50	0.60	0.70	0.02	0.024	0.028
E	2.70	2.80	2.90	0.106	0.110	0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10	15.30	15.50	0.594	0.602	0.610
I	5.40		5.65	0.213		0.222
J	1.10		1.40	0.043		0.055
K	1.35		1.50	0.053		0.059
L	2.80	2.90	3.00	0.110	0.114	0.118
R		4.35			0.171	

**ORDERING INFORMATION**

	<u>BT</u>	<u>A</u>	<u>41-</u>	<u>1600</u>	<u>B</u>
<u>Triac</u>					
<u>Insulation</u> A=Insulated B=Non-insulated					
<u>Current</u> 41=40A					
<u>Voltage</u> 1600=1600V					
<u>Sensitivity and Type</u> B=50mA BW=50mA					