BTA12 BTB12

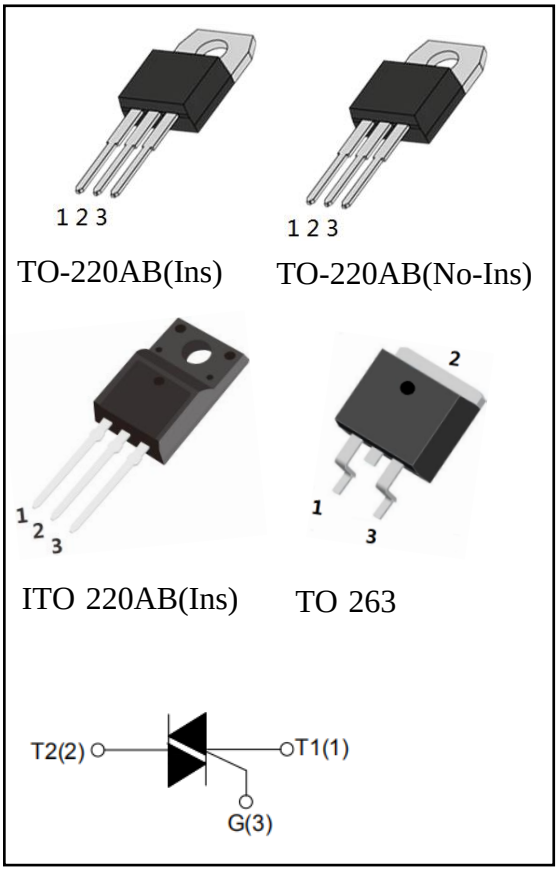
12A Ⅲ&Ⅳ QUADRANTS SERIES TRIACS

Features

◇The LGE BTA12/BTB12, 12A Ⅲ&Ⅳquadrants series triacs ,which can be operated in Ⅲ &Ⅳquadrants.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.



TO-220AB(Ins) TO-220AB(No-Ins)

ITO 220AB(Ins) TO 263

Applications

The LGE BTA12/BTB12 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
  ClassificationRating 94V-0
- ◇ Case:JEDEC TO-220AB,ITO-220AB,TO-263

MAXIMUM RATING

Ratings at 25℃ ambient tepmerature unless otherwise specified.

PARAMETER			SYMBOL	VALUE	UNITS
R.M.S. On-State Current(full sine wave)	BTA BTB	Tc=80℃ Tc=90℃	$I_{T(RMS)}$	12	A
Non-Repetitive Surge Peak On-State Current(fFull Cycle,Tj initial=25℃)	F=50HZ	T=20ms	I_{TSM}	120	A
	F=60HZ	T=16.7ms		126	
I^2t Value for Fusing	tp=10ms		I^2t	78	A^2s
Critical Rate of Rise of On-State Current I_G=2×I_{GT}，tr≤100ns	F=120HZ	Tj=125℃	di/dt	50	A/μs
Repetitive peak Off-State voltage		Tj=25℃	V_{DRM}/V_{RRM}	600/800	V
Non repetitive surge peak off-state voltage	tp=10ms	Tj=25℃	V_{DSM}/V_{RSM}	V_{DRM}/V_{RRM}+100	V
Peak Gate Current	tp=20μs	Tj=125℃	I_{GM}	4	A
Average Gate Power Dissipation		Tj=125℃	$P_{G(AV)}$	1	W
Typical Thermal Resistance(Junction to Ambient)		TO-220AB(ins)	$R_{\Theta JA}$	50	℃/W
		TO-220AB(non-ins)			
		TO-263		45	
Typical Thermal Resistance(Junction to Case (AC))		TO-220AB(ins)	$R_{\Theta JC}$	3.4	℃/W
		TO-220AB(non-ins)		2.2	

	ITO-220AB(ins)		3.2	
	TO-263		2.2	
Maximum Operating Junction temperature		T_J	-40~+125	℃
Storage temperature range		T_{STG}	-40~+150	℃

ELECTRICAL CHARACTERISTICS(Ⅲ QUADRANTS)

PARAMETER	TEST CONDITIONS	SYMBOL		VALUES				UNITS
				TW	SW	CW	BW	
Gate Trigger Current	VD=12V,RL=100Ω	I_{GT}	MAX	5	10	35	50	mA
Gate Trigger Voltage	(Ⅰ Ⅱ Ⅲquadrant)	V_{GT}	MAX	1.5				V
Gate Non-Trigger Voltage	Tj=125℃(Ⅰ Ⅱ Ⅲquadrant)	V_{GD}	MIN	0.2				V
Holding Current I_T=0.5A		I_H	MAX	10	15	35	50	mA
Latching Current I_G=1.2I_{GT}	Ⅰ Ⅲ quadrant	I_L	MAX	10	25	50	70	mA
	Ⅱ quadrant		MAX	15	30	60	80	
Critical Rate of Rise of Off-State Voltage V_D=2/3V_{DRM},Tj=125℃		dv/dt	MIN	20	40	500	1000	V/μs
Critical Rate of Change of Off-State Voltage at Commutation, Tj=125℃		(dv/dt)c	MIN	8	8	8	8	V/μs

ELECTRICAL CHARACTERISTICS(Ⅳ QUADRANTS)

PARAMETER	TEST CONDITIONS		SYMBOL		VALUE		UNITS
					C	B	
Gate Trigger Current	VD=12V,RL=100Ω (Ⅰ Ⅱ Ⅲ Ⅳ quadrant)	Ⅰ Ⅱ Ⅲ	I_{GT}	MAX	25	50	mA
		Ⅳ		MAX	50	100	
Gate Trigger Voltage		All	V_{GT}	MAX	1.3		V
Gate Non-Trigger Voltage	Tj=125℃(Ⅰ Ⅱ Ⅲ Ⅳ quadrant)		V_{GD}	MIN	0.2		V
Holding Current I_T=0.5A			I_H	MAX	25	50	mA
Latching Current =1.2I_{GT}	Ⅰ Ⅲ Ⅳ quadrant		I_L	MAX	40	50	mA
	Ⅱ quadrant			MAX	80	100	
Critical Rate of Rise of Off-State Voltage V_D=2/3V_{DRM},Tj=125℃			dv/dt	MIN	200	400	V/μs
Critical Rate of Rise of Off-State Voltage at Commutation, Tj=125℃			(dv/dt)c	MIN	5	10	V/μs

STATIC CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SYMBOL		VALUE	UNITS
Peak On-State Voltage	I_{TM}=17A,Tj=25℃	V_{TM}	MAX	1.50	V
Threshold Voltage	Tj=125℃	V_{TO}	MAX	0.86	V
Dynamic Resistance	Tj=125℃	Rd	MAX	36.6	mΩ
Repetitive Peak Off-Statte Curren V_{DRM}=V_{RRM}	Tj=25℃	I_{DRM}	MAX	5	μA
	Tj=125℃	I_{RRM}	MAX	1	mA

Ratings and Charactieristics Curve(TA=25℃ unless otherwise noted)

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

P(w)

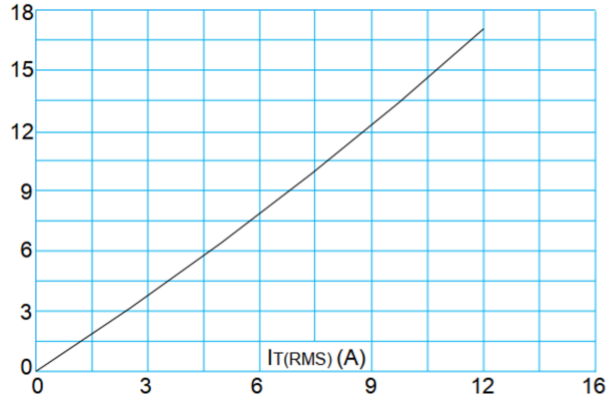


FIG.2: RMS on-state current versus case temperature

$I_{T(RMS)}$(A)

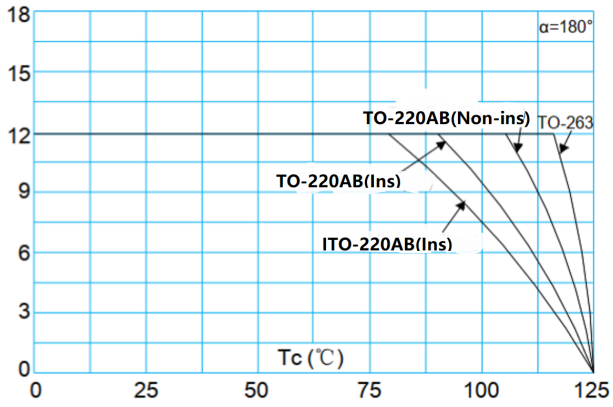


FIG.3: Surge peak on-state current versus number of cycles

$I_{TSM(A)}$

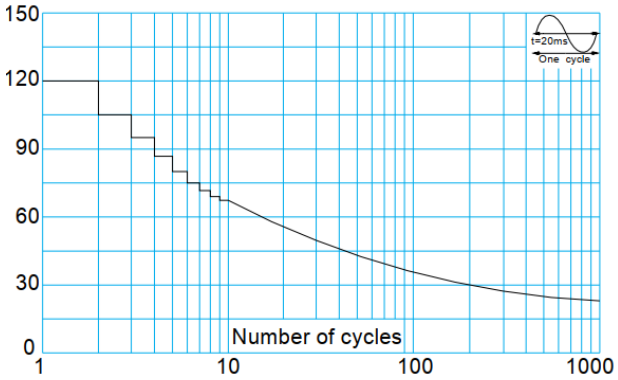


FIG.4:On-state characteristics (maximum values)

$I_{TM(A)}$

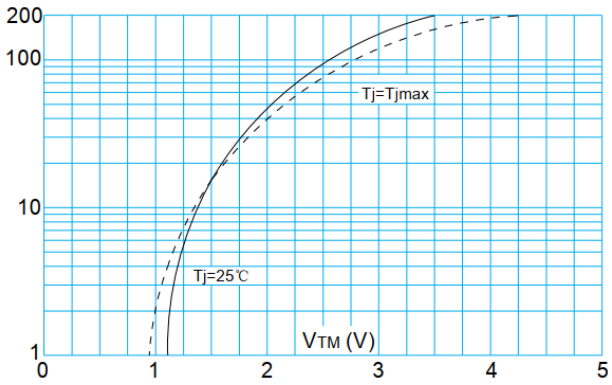
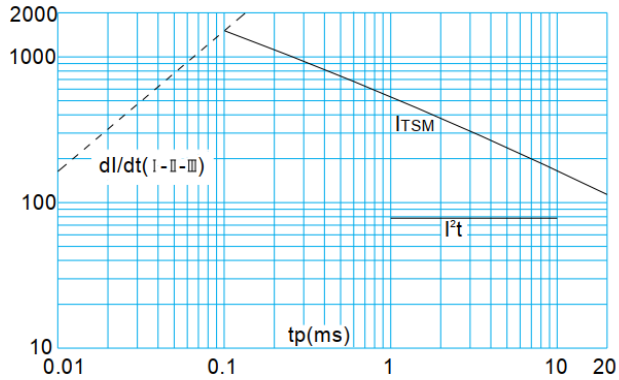


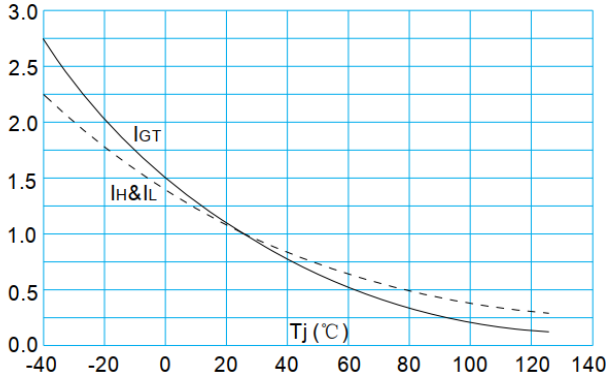
FIG.5: Non-repetitive surge peak on-state current for a

FIG.6: Relative variations of gate trigger current, holding

$I_{TSM}(A), I^2t$（A^2s）

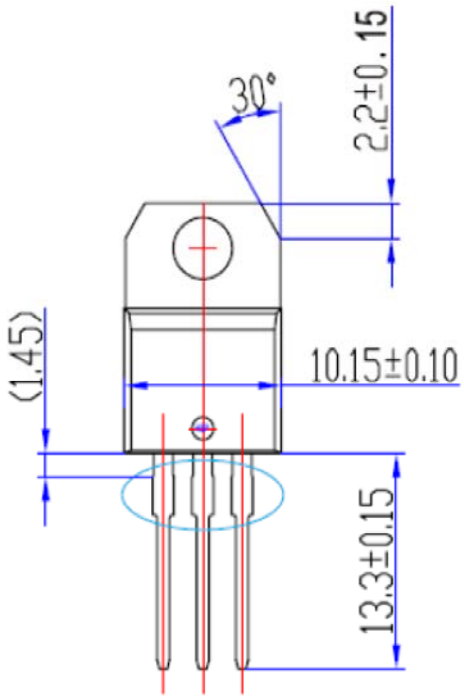


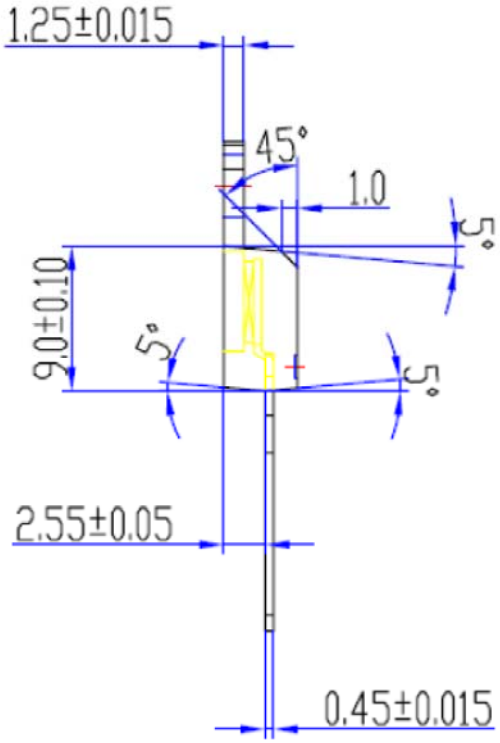
$I_{GT}, I_H, I_L(Tj)/I_{GT}, I_H, I_L(Tj=25℃)$



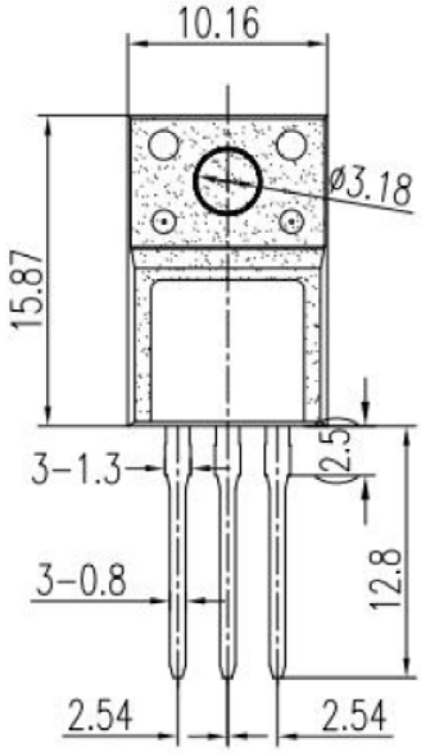
PACKAGE OUTLINE DIMENSIONS

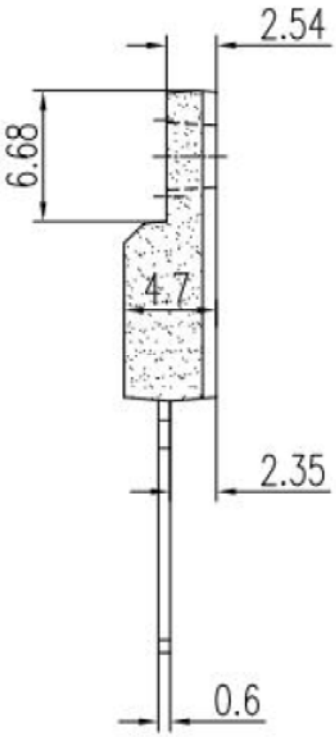
TO-220AB units:mm





ITO-220AB units:mm(±0.10)



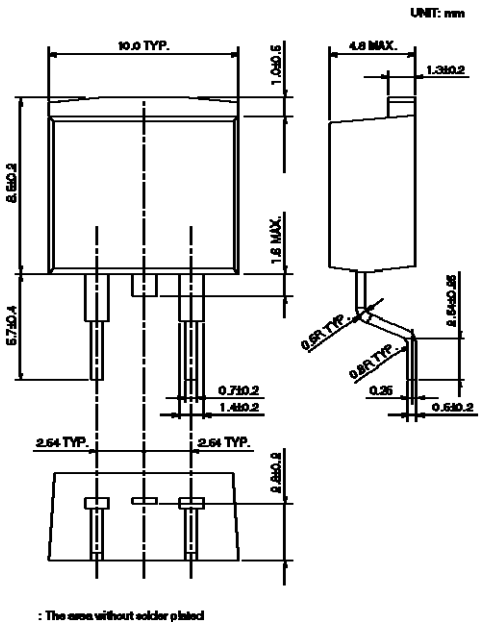


BTA12 BTB12

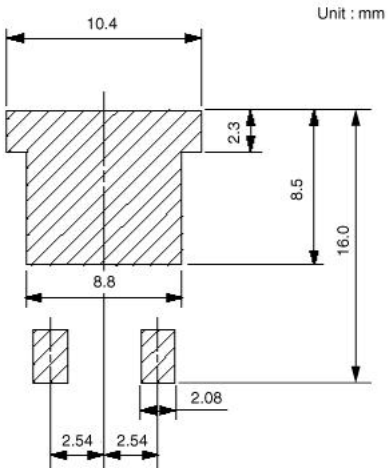
12A Ⅲ&Ⅳ QUADRANTS SERIES TRIACS

PACKAGE OUTLINE DIMENSIONS

TO-263 units:mm(±0.10)



Suggested Pad Layout



ORDERING INFORMATION

BT A 12 - 600 - CW

Triac

Insulation
A=Insulated
B=Non-insulated

Current
12=12A

Voltage
600=600V
800=800V

Sensitivity and Type

B=50mA	Standard	BW=50mA	Snubberless
C=25mA	Standard	CW=35mA	Snubberless
SW=10mA	logic level	TW= 5mA	logic level