BTA16/BTB16 Series 16A TRIACs

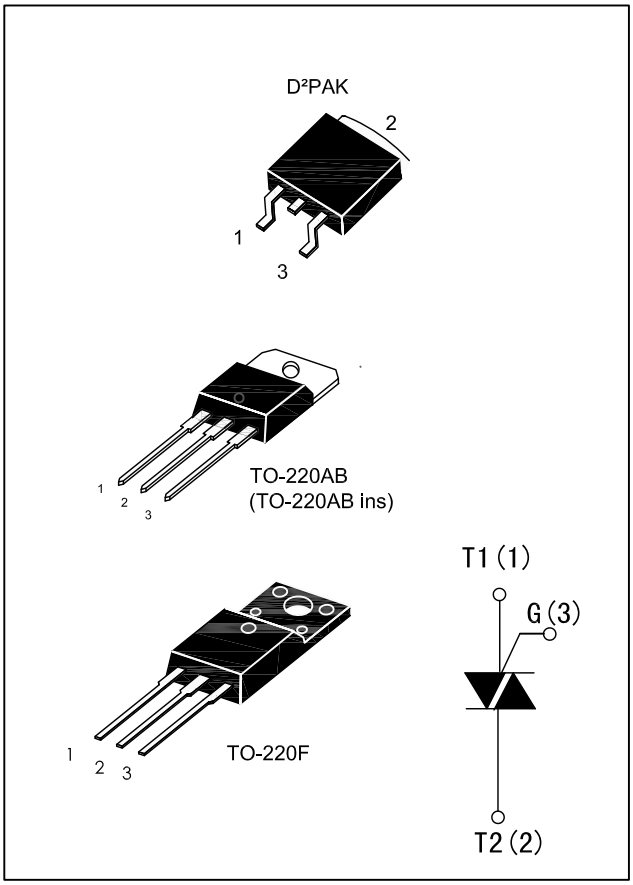
DESCRIPTION:

High current density due to double mesa technology; SIPOS and Glass Passivation.

BTA16/BTB16 series triacs is suitable for general purpose AC switching. They can be used as an ON/OFF Function in applications such as static relays, heating regulation, induction motor stating circuits... or for phase contol operation light dimmers, motorspeed controllers.

BTA16/BTB16-×××SW、-×××CW、-×××BW are 3 Quadrants triacs, They are specially recommended for use on inductive loads.

TO-220ABins and TO-220F are isolated internally, they provides a 2500V RMS isolation voltage from all three terminals to extemal heetsink.



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
V_{DRM}/V_{RRM}	600 and 800	V
V_{TM}	≤1.55	V

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		Tstg	-40 to +150	℃
Operrating junction temperature range		Tj	-40 to +125	℃
Repetitive Peak Off-state Voltage	Tj=25℃	V_{DRM}	600and800	V
Repetitive Peak Reverse Voltage	Tj=25℃	V_{RRM}	600and800	
Non repetitive Surge Peak Off-state Voltage	tp=10ms,Tj=25℃	V_{DSM}	700and900	V
Non repetitive Peak Reverse Voltage		V_{RSM}	700and900	
RMS on-state current (full sine wave)	D²PAK/TO-220AB Tc=100℃	$I_{T(RMS)}$	16	A
	TO-220F Tc=78℃			
	TO-220AB Ins Tc=85℃			
Non repetitive surge peak on-state current (full cycle,Tj=25℃)	f = 60 Hz t=16.7ms	I_{TSM}	168	A
	f = 50 Hz t=20ms		160	
I^2t Value for fusing	tp=10ms	I^2t	144	A^2s
Critical rate of rise of on-state current $I_G=2\times I_{GT}$, tr≤100 ns, f=120Hz, Tj=125℃		dI /dt	50	A/μs
Peak gate current	tp=20us,Tj=125℃	I_{GM}	4	A
Average gate power dissipation	Tj=125℃	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS(Tj=25℃ unless otherwise specified)

● 3 Quadrants

Symbol	Test Condition	Quadrant		BTA16/BTB16			Unit
				SW	CW	BW	
I_{GT}	V_D=12V R_L=33Ω	I-II-III	MAX.	10	35	50	mA
V_{GT}		I-II-III	MAX.	1.3			V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ Tj =125℃	I-II-III	MIN.	0.2			V
I_L	I_G=1.2I_{GT}	I-III	MAX.	25	50	70	mA
		II	MAX.	30	60	80	mA
I_H	I_T =500mA		MAX.	15	35	50	mA
dV/dt	V_D=67%V_{DRM} gate open Tj=125℃		MIN.	40	500	1000	V/μs
(dI/dt)c	(dV/dt)c=0.1V/μs Tj=125℃		MIN.	8.5	---	---	A/mS
	(dV/dt)c=10V/μs Tj=125℃			3.0	---	---	
	Without snubber Tj=125℃			----	8.5	14	

● 4 Quadrants

Symbol	Test Condition	Quadrant		BTA16/BTB16		Unit
				C	B	
I_{GT}	V_D=12V R_L=33Ω	I-II-III IV	MAX.	25 50	50 100	mA
V_{GT}		ALL	MAX.	1.3		V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ Tj =125℃	ALL	MIN.	0.2		V
I_L	I_G=1.2I_{GT}	I-III-IV	MAX.	40	60	mA
		II	MAX.	80	120	mA
I_H	I_T =500mA		MAX.	25	50	mA
dV/dt	V_D=67%V_{DRM} gate open Tj=125℃		MIN.	200	400	V/μs
(dV/dt)c	(dI/dt)c=7A/ms Tj=125℃		MIN.	5	10	V/μs

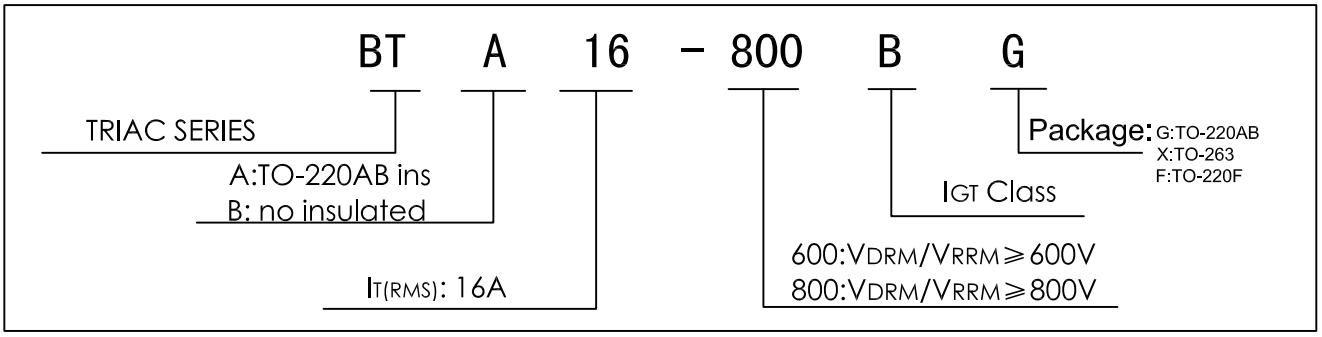
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	I_{TM}=22.5A,tp=380μs	Tj=25℃	1.55	V
I_{DRM} I_{RRM}	V_D=V_{DRM} V_R=V_{RRM}	Tj=25℃	5	μA
		Tj=125℃	2	mA

THERMAL RESISTANCES

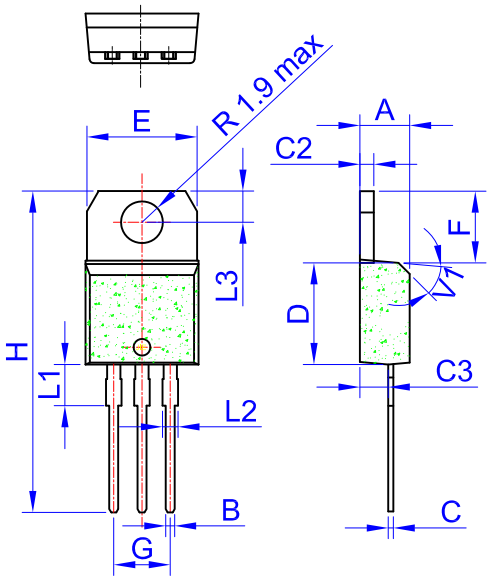
Symbol	Parameter		Value	Unit
$R_{th(J-C)}$	Junction to Case(AC)	D²PAK/TO-220AB	1.2	℃/W
		TO-220AB INS /TO-220F	2.1	

ORDERING INFORMATION



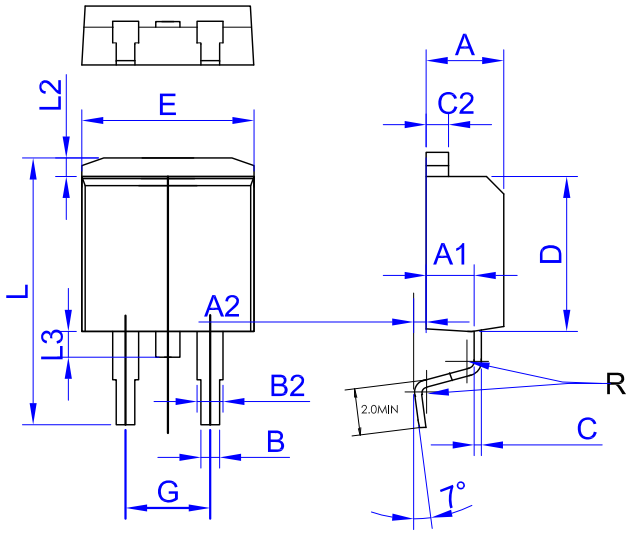
PACKAGE MECHANICAL DATA

TO-220AB



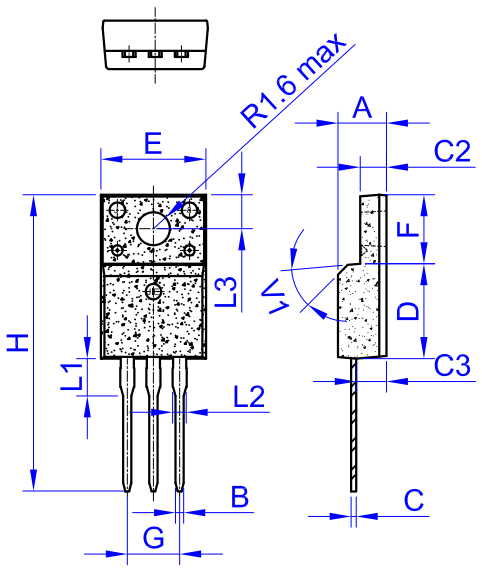
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.61		0.88	0.024		0.034
C	0.46		0.70	0.018		0.027
C2	1.23		1.32	0.048		0.051
C3	2.4		2.72	0.094		0.107
D	8.6		9.7	0.338		0.382
E	9.8		10.4	0.386		0.409
F	6.2		6.6	0.244		0.259
G	4.8		5.4	0.189		0.213
H	28.0		29.8	11.0		11.7
L1		3.75			0.147	
L2	1.14		1.7	0.044		0.066
L3	2.65		2.95	0.104		0.116
V1		40°			40°	

D^2PAK



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.048	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.0		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.0		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	

TO-220F



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.8	0.173		0.189
B	0.74	0.8	0.83	0.029	0.031	0.033
C	0.5		0.75	0.020		0.030
C2	2.4		2.7	0.094		0.106
C3	2.6		3.0	0.102		0.118
D	8.8		9.3	0.346		0.367
E	9.7		10.3	0.382		0.406
F	6.4		6.8	0.252		0.268
G	5.0		5.2	0.197		0.205
H	28.0		29.8	11.0		11.7
L1		3.63			0.143	
L2	1.14		1.7	0.044		0.067
L3		3.3			0.130	
V1		40°			40°	

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

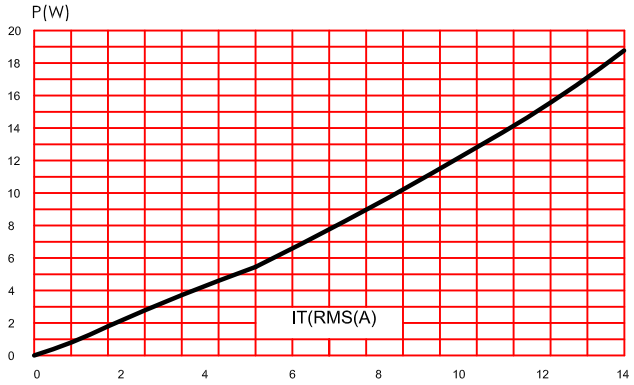


FIG.2: RMS on-state current versus case temperature(full cycle)

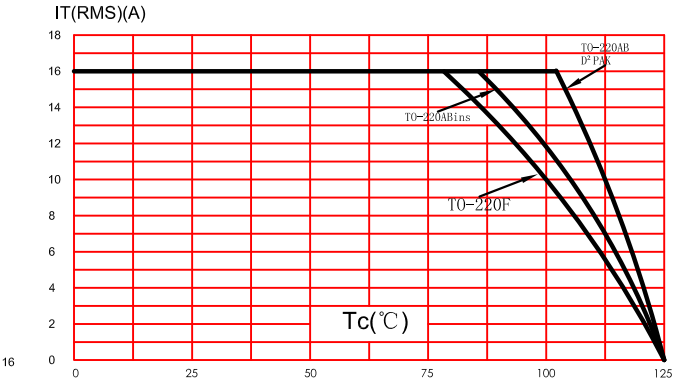


FIG.3: On-state characteristics (maximum values)

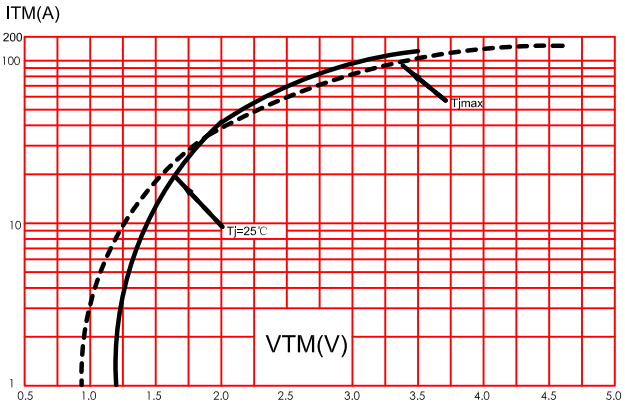


FIG.4: Surge peak on-state current versus number of cycles.

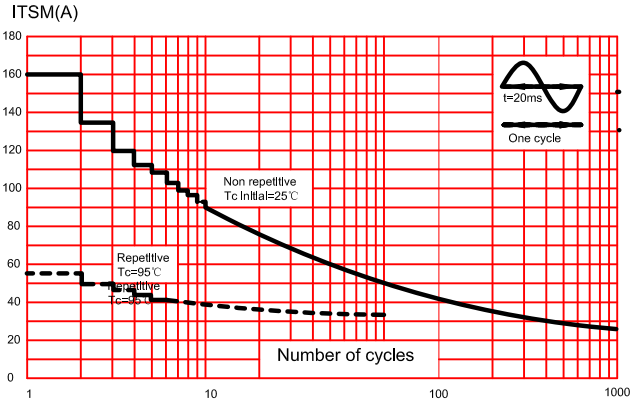


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I^2t

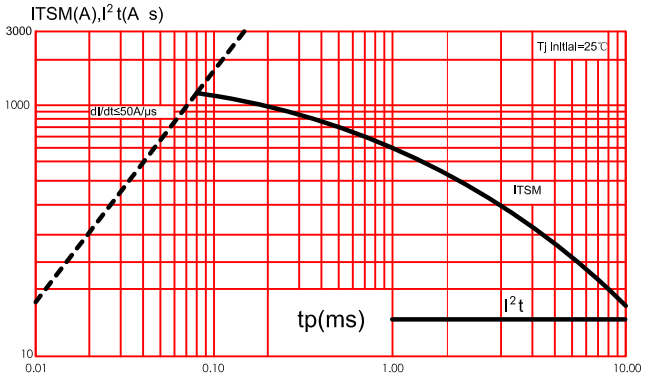


FIG.6: Relative variation of gate trigger current,holding current and latching current versus junction temperature(typical values).