

IT(RMS)		12A
VDRM/VRRM	BTB12-800	800V
	BTB12-1000	1000V
VTM		1.55V

FEATURES

IT(RMS): 12A

VGT: 1.3V

VDRM VRRM:800V-1000V

Low thermal resistance with clip bonding

Medium current Triac

APPLICATIONS

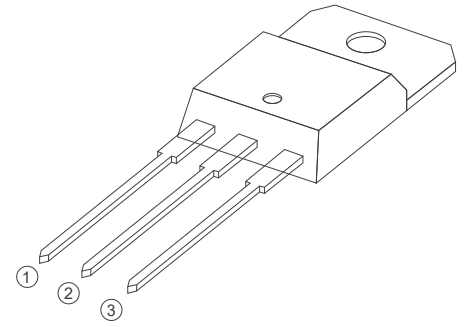
Heater Control

Motor Speed Controller

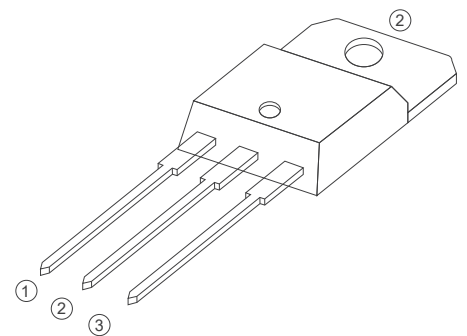
Washing machine

Vacuums

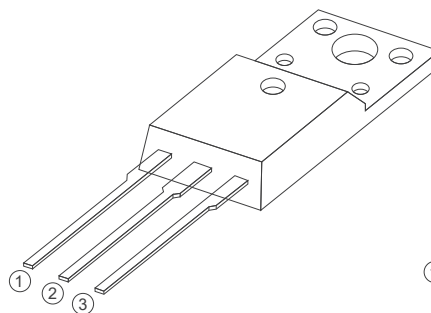
Solid state relay



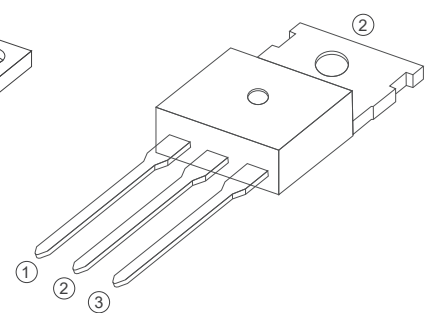
TO-220A Insulated



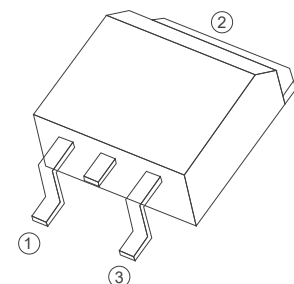
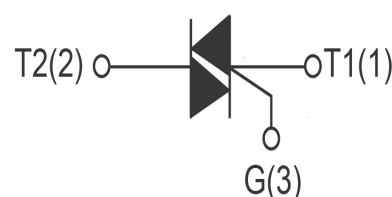
TO-220B Non-Insulated



TO-220F Insulated



TO-220C



TO-263

Absolute Maximum Ratings ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
VDRM VRRM	Repetitive Peak Off-State Voltage	BTA12/BTB12-800	800	V
		BTA12/BTB12-1000	1000	V
IT(RMS)	R.M.S On-State Current	$T_c=110^{\circ}\text{C}$	12	A
ITSM	Surge On-State Current	$t_p=16.7\text{ms}/t_p=10\text{ms}$	120/126	A
I^2t	I^2t for fusing	$T_p=10\text{ms}$	78	A^2s
PG(AV)	Average Gate Power Dissipation	$T_J=125^{\circ}\text{C}$	1	W
IGM	Peak Gate Current	$t_p=20\mu\text{s}$ $T_J=125^{\circ}\text{C}$	4	A
T_J	Operating Junction Temperature		$\sim 40\sim 125$	$^{\circ}\text{C}$
TSTG	Storage Temperature		$\sim 40\sim 150$	$^{\circ}\text{C}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Value						Unit
			TW	SW	CW	BW	C	B	
IDRM	Repetitive Peak Off-State Current	$T_J=25^{\circ}\text{C}$	≤ 5						μA
		$T_J=125^{\circ}\text{C}$	≤ 1						mA
IRRM	Repetitive Peak Reverse Current	$T_J=25^{\circ}\text{C}$	≤ 5						μA
		$T_J=125^{\circ}\text{C}$	≤ 1						mA
VTM	Forward "on" voltage	$I_T=17\text{A}$ $t_p=380\mu\text{s}$	1.55						V
VGT	Gate trigger voltage	$V_D=12\text{V}$ $R_L=30\Omega$	≤ 1.3						V
di/dt	Critical rate of rise of on-state current	I,II,III $F=100\text{Hz}$, $I_G=2\times I_{GT}$, $t_r\leq 100\text{ns}$	≥ 50						A/ μs
		IV	≥ 10						A/ μs
IGT	Gate trigger current	I,II,III $V_D=12\text{V}$ $R_L=30\Omega$	≤ 5	≤ 10	≤ 25	≤ 50	≤ 25	≤ 50	mA
		IV	/	/	/	/	≤ 50	≤ 100	mA
IH	Holding current	$I_T=0.2\text{A}$	≤ 20	≤ 25	≤ 35	≤ 50	≤ 25	≤ 50	mA
VGD	Gate non-trigger voltage	ALL $V_D=V_{DRM}$ $T_J=125^{\circ}\text{C}$, $R_L=3.3\text{K}\Omega$	≥ 0.2						V
dv/dt	Critical-rate of rise of commutation voltage	$T_J=125^{\circ}\text{C}$ $V_D=2/3V_{DRM}$ Gate	≥ 40	≥ 100	≥ 400	≥ 1000	≥ 200	≥ 400	V/ μs
Rth(j-c)	Thermal resistance	Junction to case	3.3						$^{\circ}\text{C}/\text{W}$
Rth(j-a)	Thermal resistance	Junction to ambient	60						$^{\circ}\text{C}/\text{W}$

FIG1

Maximum power dissipation versus RMS on-state current

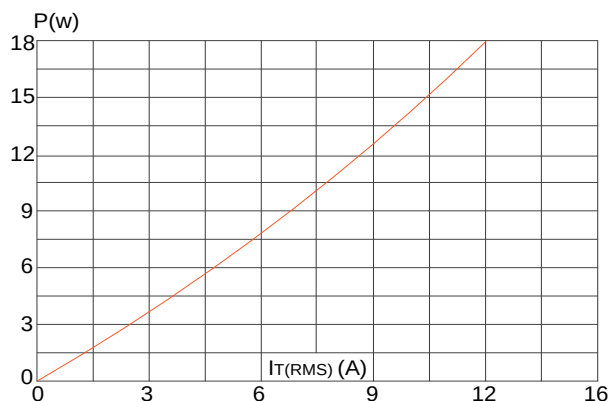


FIG2

RMS on-state current versus case temperature

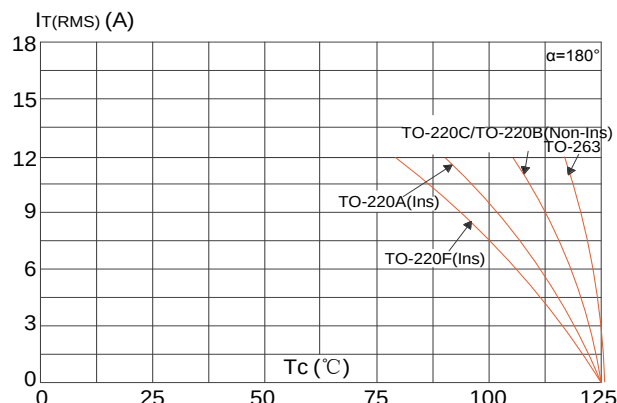


FIG3

Surge peak on-state current versus number of cycles

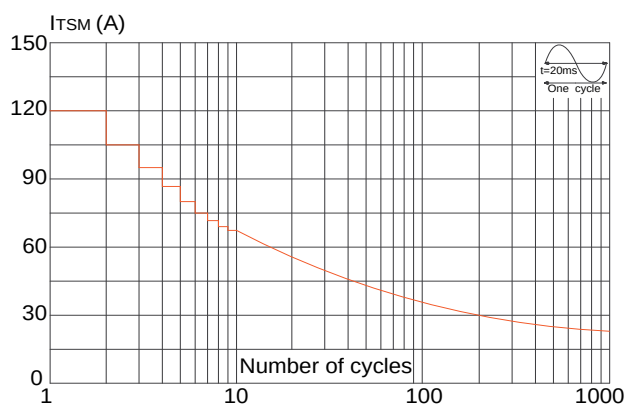


FIG4

On-state characteristics (maximum values)

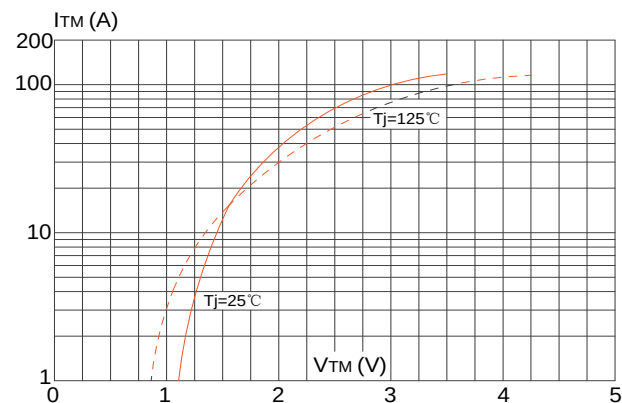


FIG5

Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($dI/dt < 100A/\mu s$)

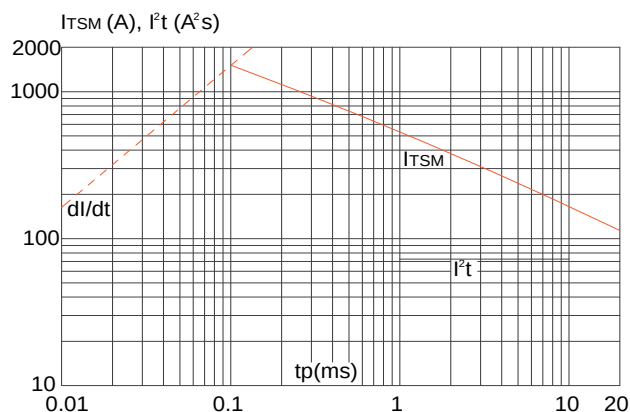
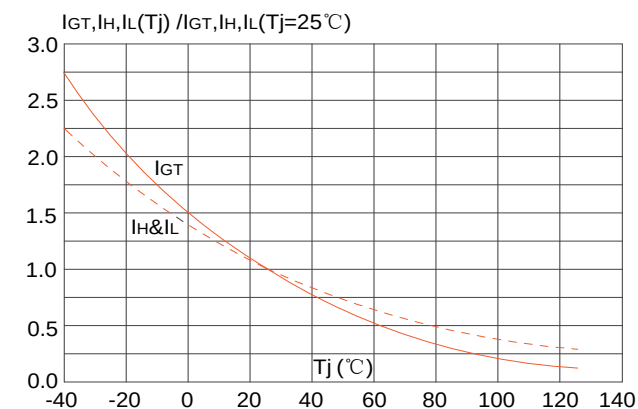
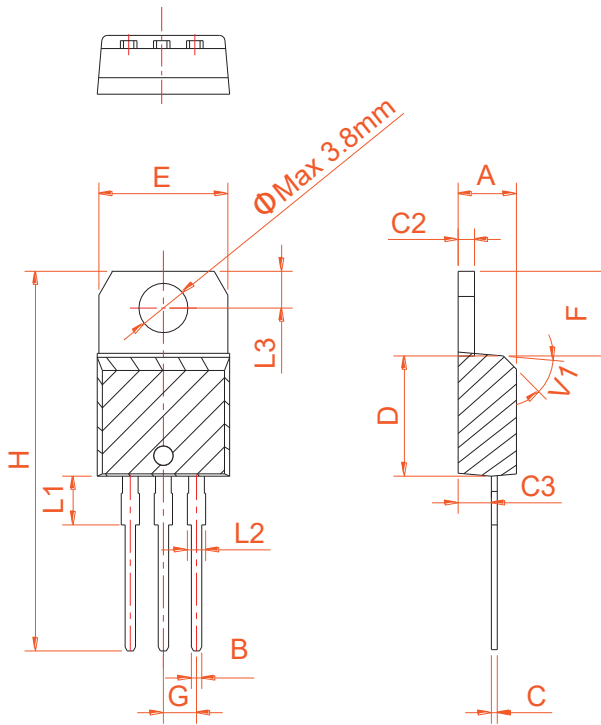


FIG6

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

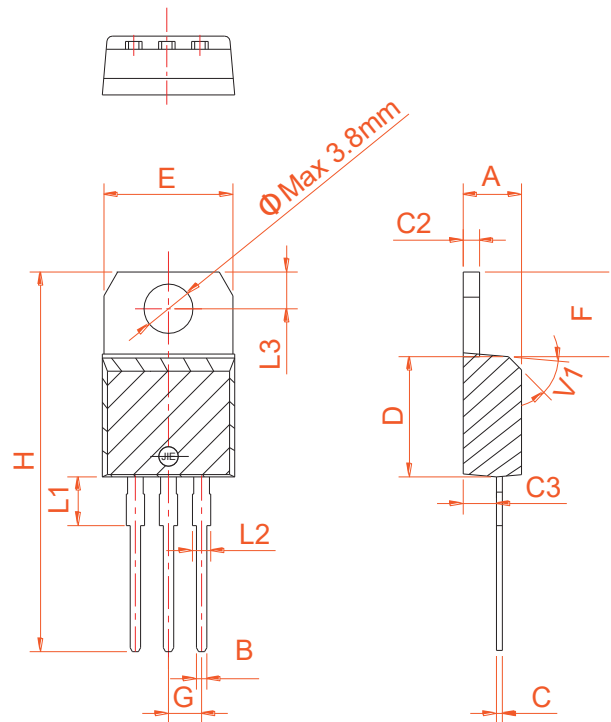


PACKAGE MECHANICAL DATA


TO-220A Ins

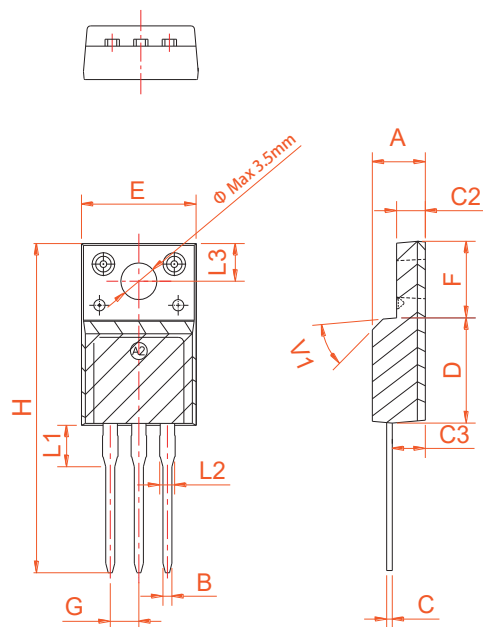
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	



TO-220B Non-Ins

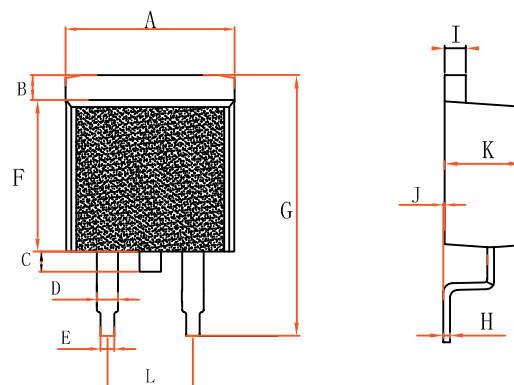
PACKAGE MECHANICAL DATA



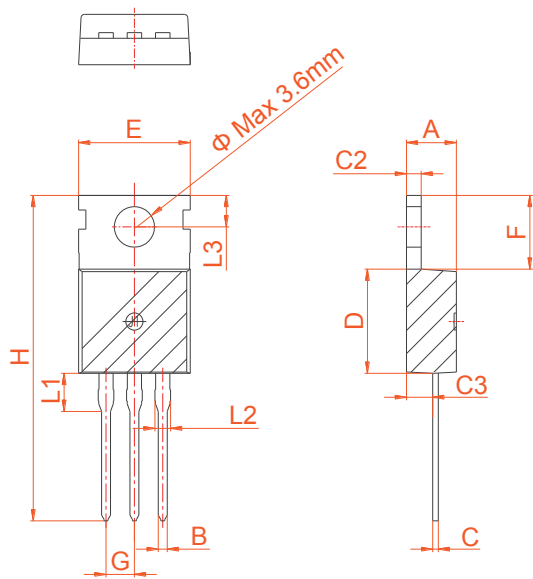
TO-220F Ins

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.7		10.4	0.381		0.409
B	1.31		1.62	0.051		0.063
C	0.65		1.22	0.025		0.048
D	1.15		1.36	0.045		0.053
E	0.62		0.95	0.024		0.037
F	8.75		9.32	0.344		0.366
G	14.75		15.8	0.58		0.622
H	0.32		0.48	0.012		0.018
I	1.18		1.36	0.046		0.053
J	0		0.15	0		0.005
K	4.38		4.86	0.172		0.191
L	4.85		5.23	0.19		0.205



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TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	