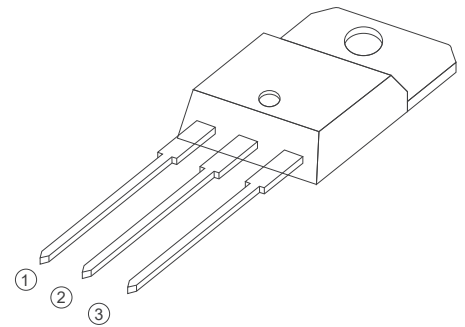
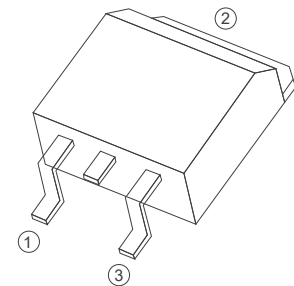


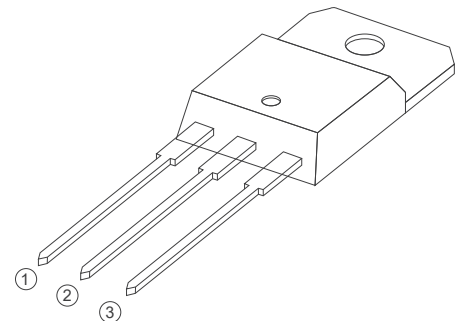
IT(RMS)		12A
VDRM/VRRM	BCR12PM-12	600V
	BCR12PM-14	800V
VTM		1.5V



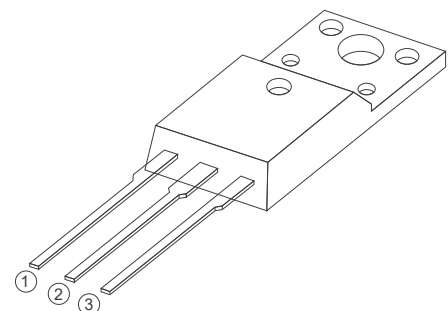
TO-220B Non-Insulated



TO-263



TO-220A Insulated



TO-220F Insulated

FEATURES

IT(RMS): 12A

VGT: 1.5V

VDRM VRRM: 600~800V

APPLICATIONS

Heater Control

Motor Speed Controller

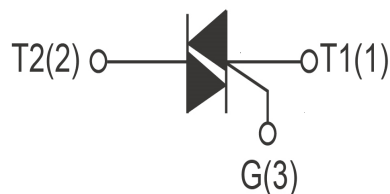
Washing machine

Vacuums

Solid state relay

General purpose motor controls

General purpose switching



Absolute Maximum Ratings (T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
V _{DRM} V _{RRM}	Repetitive Peak Off-State Voltage	12	600	V
		14	800	V
I _{T(RMS)}	R.M.S On-State Current	T _c =85°C	12	A
I _{TSM}	Surge On-State Current	t _p =16.7ms / T _p =10ms	120/128	A
I ² t	I ² t for fusing	T _p =10ms	72	A ² s
P _{G(AV)}	Average Gate Power Dissipation	T _J =150°C	0.5	W
I _{GM}	Peak Gate Current	T _J =150°C	2	A
T _J	Operating Junction Temperature		~40~150	°C
T _{STG}	Storage Temperature		~40~150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Value			Unit
			C1	C2	C3	
I _{DRM}	Repetitive Peak Off-State Current	T _J =150°C	2.0			mA
I _{RRM}	Repetitive Peak Reverse Current	T _J =150°C	3			mA
V _{TM}	Forward "on" voltage	I _T =20A t _p =380us	≤1.5			V
V _{GT}	Gate trigger voltage	V _D =12V ,R _L =30Ω	≤1.5			V
di/dt	Critical rate of rise of on-state current	I,II,III F=120Hz,T _J =125°C I _G =2xI _{GT} ,t _r ≤100ns	≥50			A/us
I _{GT}	Gate trigger current	I,II,III V _D =12V R _L =30Ω	≤10	≤20	≤30	mA
I _H	Holding current	I _T =0.2A	≤30	≤45	≤60	mA
V _{DG}	Gate non-trigger voltage	ALL V _D =V _{DRM} T _J =125°C	≥0.2			V
(dv/dt) _c	Critical-rate of rise of commutation voltage	T _J =150°C V _D =400V (di/dt) _c =-5.0A/mS	5	15	20	V/us
dv/dt	Critical-rate of rise of rise of off-state voltage	V _D =67% V _{DRM} ,gate open,T _J =150°C	≥200	≥500	≥1000	V/us
R _{th(j-c)}	Thermal resistance	Junction to case	2.5			°C/W

FIG1

Maximum power dissipation versus RMS on-state current

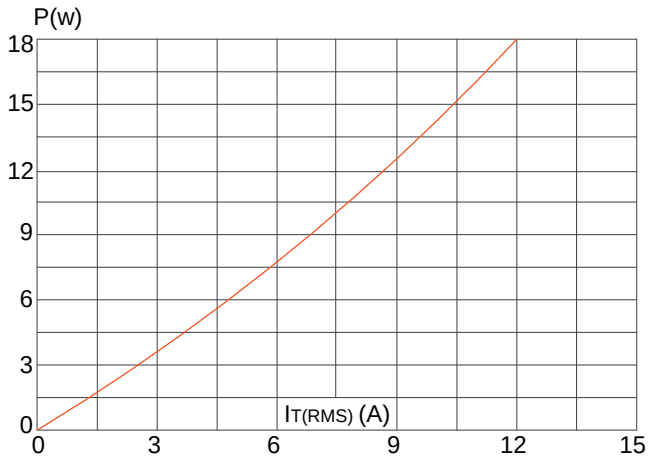


FIG2

RMS on-state current versus case temperature

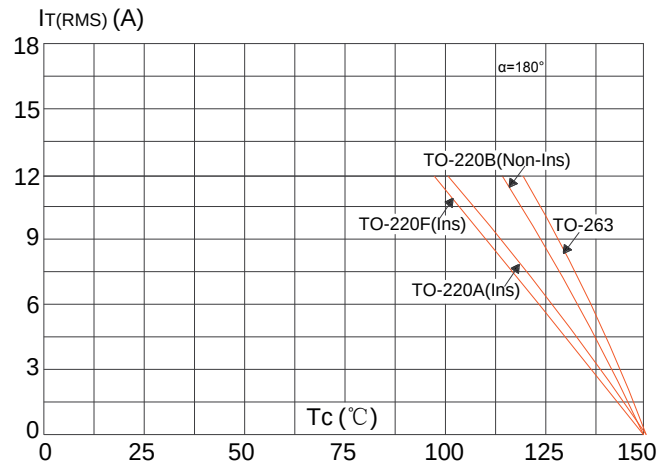


FIG3

Surge peak on-state current versus number of cycles

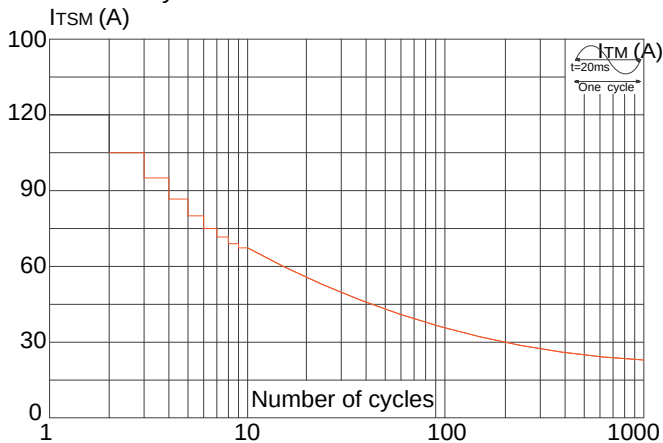


FIG4

On-state characteristics (maximum values)

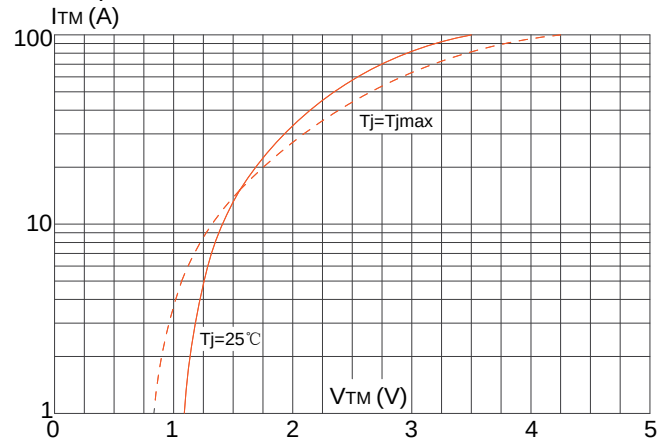


FIG5

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

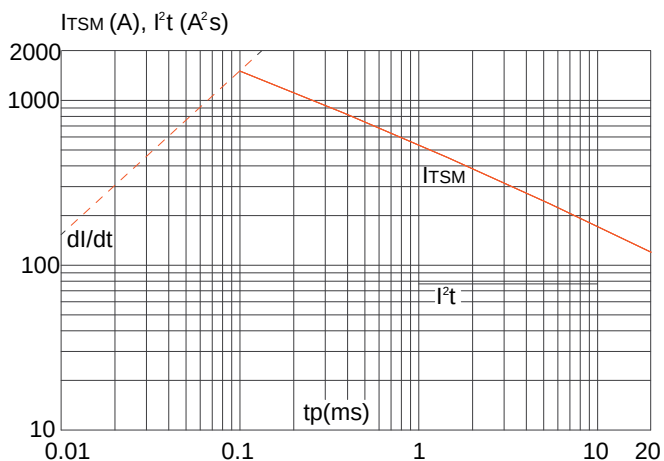
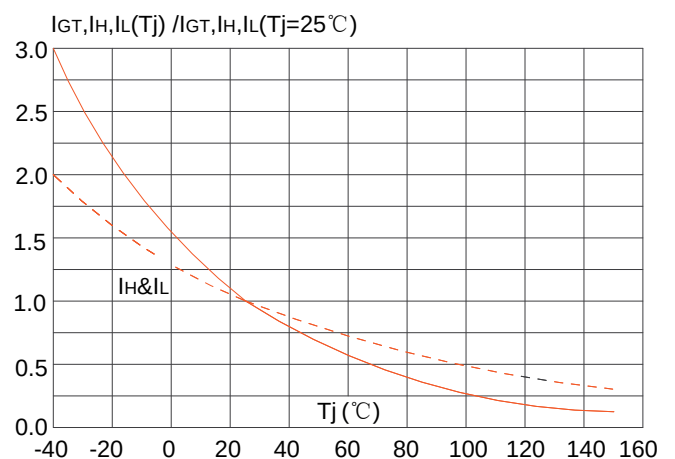
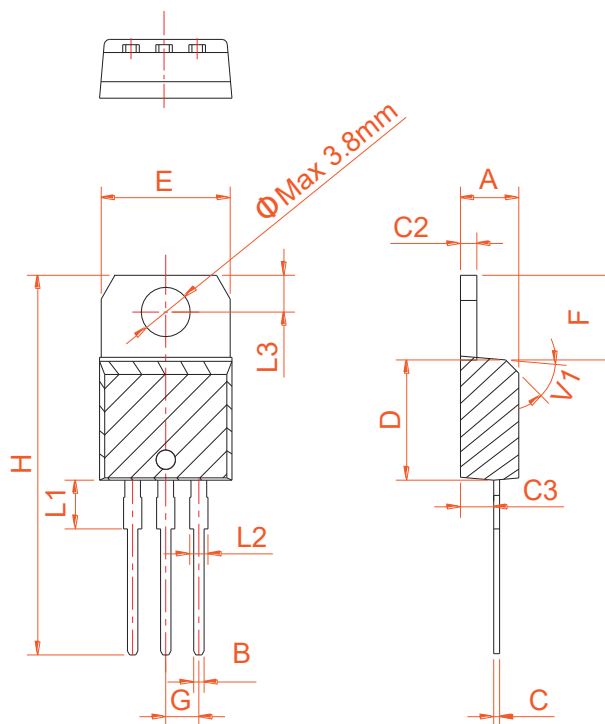


FIG6

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

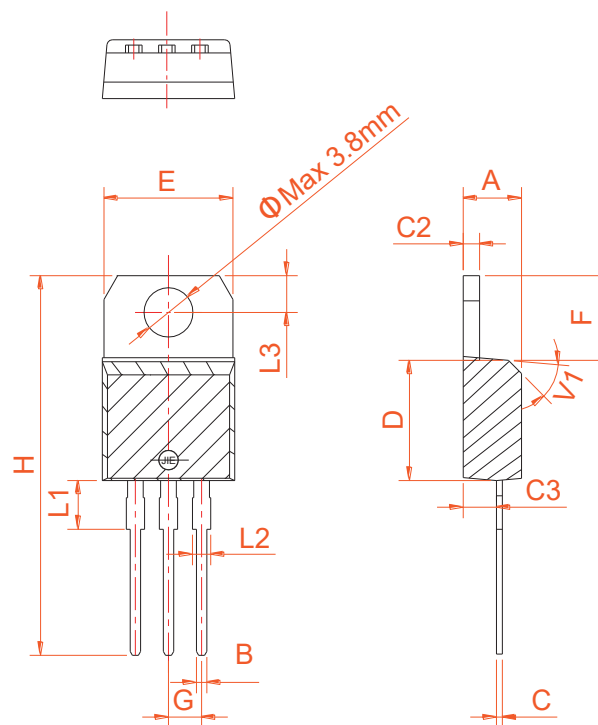


PACKAGE MECHANICAL DATA


TO-220A Ins

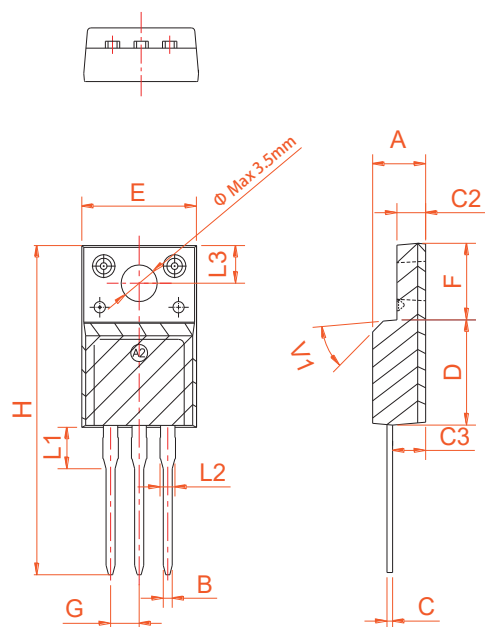
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
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

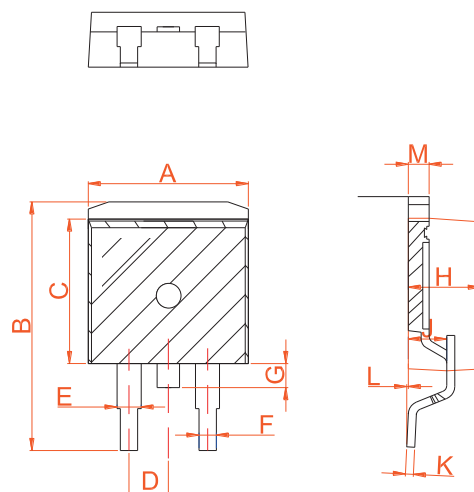
PACKAGE MECHANICAL DATA



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	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053



TO-263