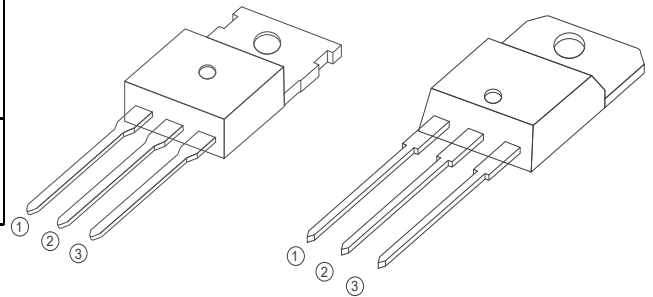


IT(RMS)		12A
VDRM/VRRM		600V
VTM		1.6V



TO-220C

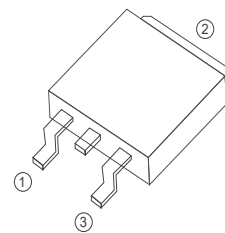
TO-220B Non-Insulated

FEATURES

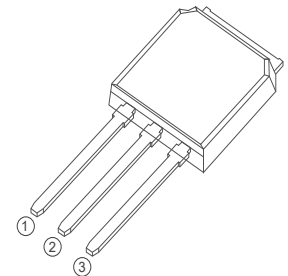
IT(RMS): 12A

VGT: 0.8V

VDRM VRRM:600V



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TO-251

APPLICATIONS

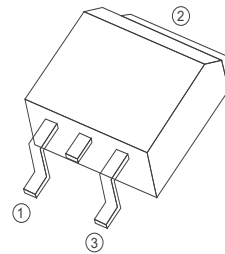
Heater Control

Motor Speed Controller

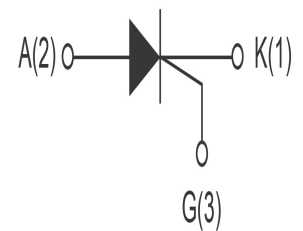
Washing machine

Vacuums

Solid state relay



TO-263



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

Symbol	Parameter	Conditions	Ratings	Unit
V _{DRM} V _{RRM}	Repetitive Peak Off-State Voltage		600	V
I _{T(RMS)}	R.M.S On-State Current		12	A
I _{TSM}	Surge On-State Current	F=50Hz, t _p =10ms	100	A
I ² t	I ² t for fusing	T _p =10ms	50	A ² s
I _{GM}	Peak Gate Current	t _p =20μs, T _j =110°C	4	A
P _{G(AV)}	Average Gate Power Dissipation	T _j =110°C	1	W
P _{GM}	Peak Gate Power Dissipation	t _p =20μs, T _j =110°C	3	W
T _j	Operating Junction Temperature		~-40~125	°C
T _{STG}	Storage Temperature		~-40~150	°C

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

Symbol	Parameter	Test Conditions	Value	Unit
I _{DRM}	Repetitive Peak Off-State Current	T _c =25°C	≤5	μA
		T _c =110°C	≤500	μA
I _{RRM}	Repetitive Peak Reverse Current	T _c =25°C	≤5	μA
		T _c =110°C	≤500	μA
V _{TM}	Forward "on" voltage	I _T =8A t _p =380μs	≤1.6	V
V _{GD}	Gate nontrigger voltage	V _D =V _{DRM} , T _j =110°C, R _{GK} =1KΩ, R _L =3.3KΩ	≥0.2	V
I _L	Latching current	I _G =1.2I _{GT}	≤6	mA
I _H	Holding current	V _D =12V, I _{GT} =0.1A	≤5	mA
V _{GT}	Gate trigger voltage	V _D =12V	≤0.8	V
I _{GT}	Gate trigger current	V _D =12V, I _T =0.1A	≤120	μA
dv/dt	Critical-rate of rise of commutation voltage	V _D =2/3V _{DRM} , T _j =110°C, R _{GK} =1KΩ	≥50	V/μs
R _{th(j-c)}	Thermal resistance	Junction to case	2.3	°C/W

FIG1

Maximum power dissipation versus RMS on-state current

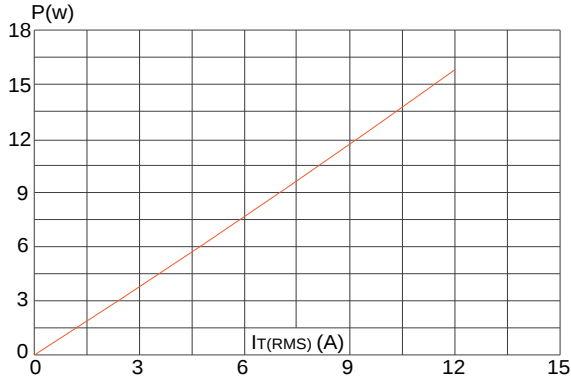


FIG2

RMS on-state current versus case temperature

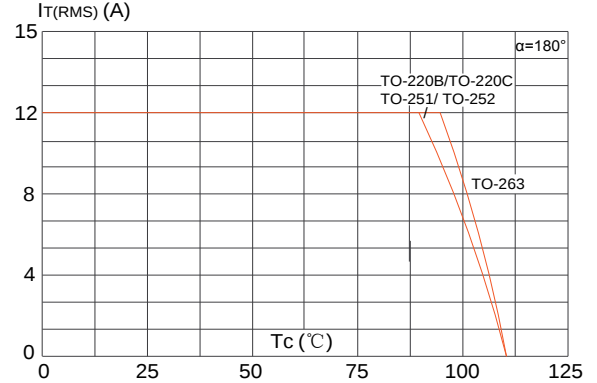


FIG3

Surge peak on-state current versus number of cycles

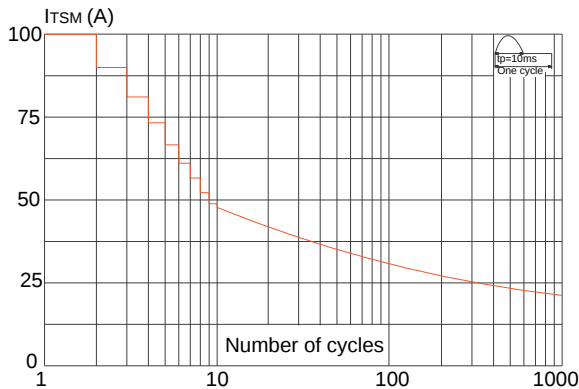


FIG4

On-state characteristics (maximum values)

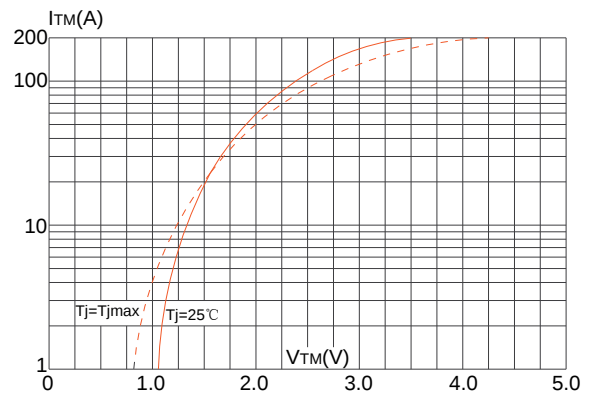


FIG5

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

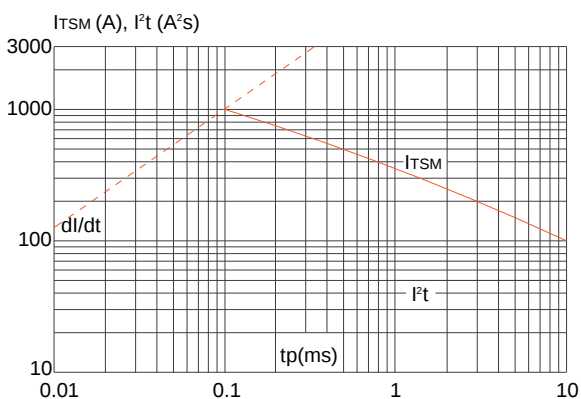
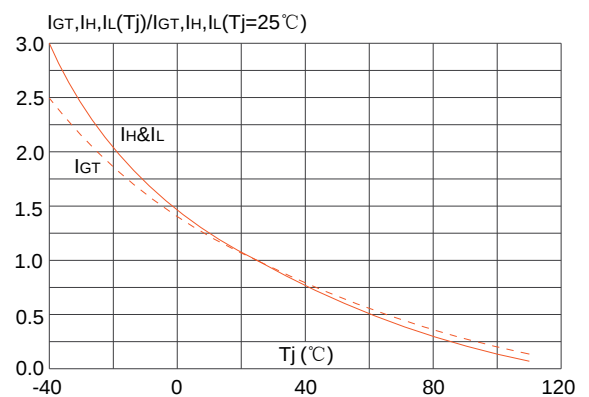
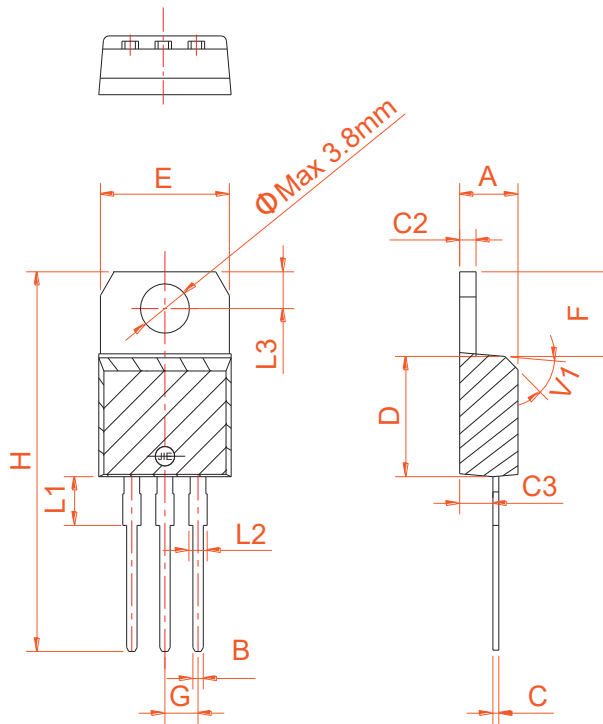


FIG6

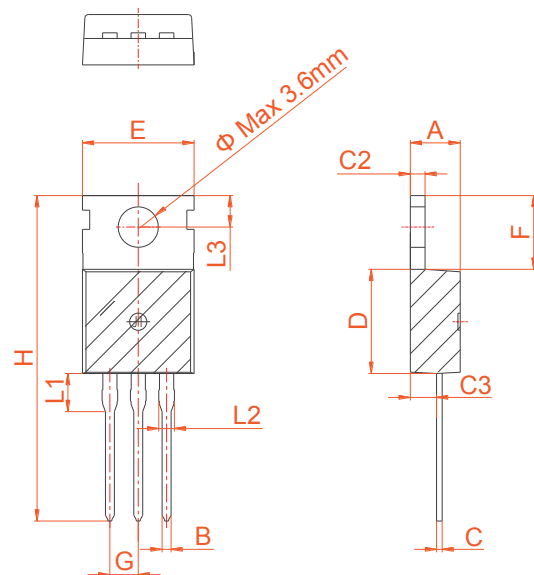
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

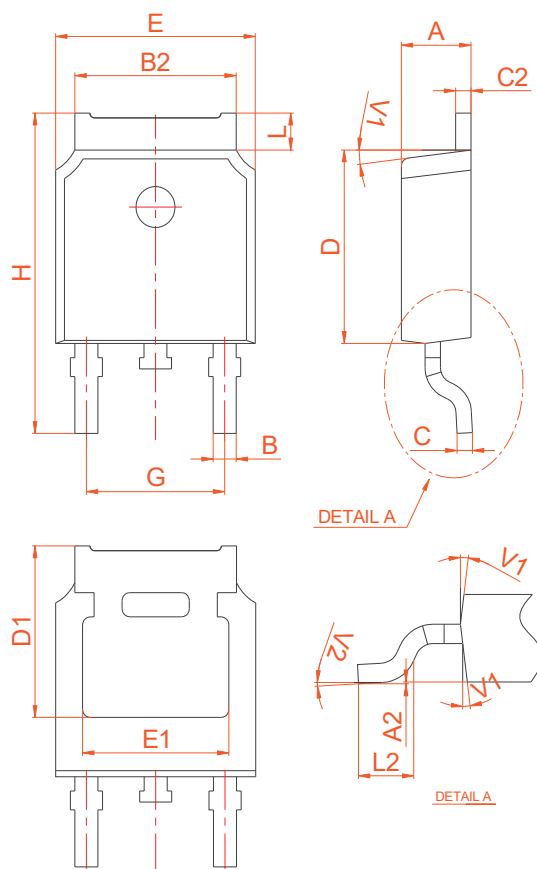


PACKAGE MECHANICAL DATA

TO-220B Non-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°	

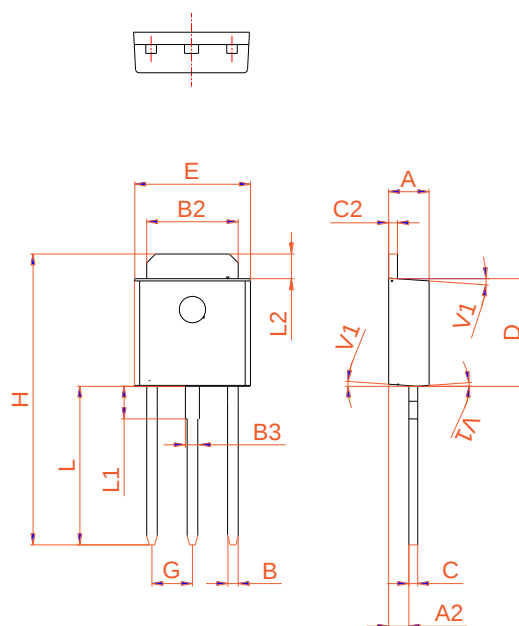
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
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	

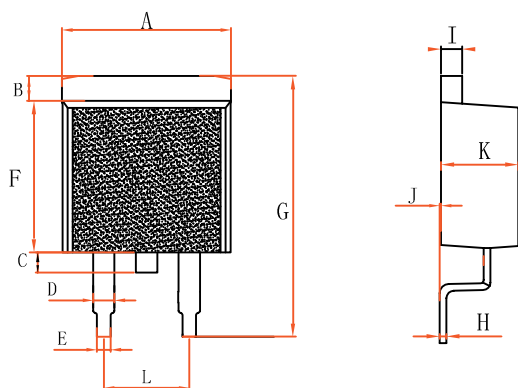

TO-220C

PACKAGE MECHANICAL DATA


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.55	0.018		0.022
C2	2.70		2.90	0.106		0.114
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G	4.40		4.70	0.173		0.185
H	9.35		10.6	0.368		0.417
L1	1.30		1.70	0.051		0.067
L2	1.37		1.50	0.054		0.059
L3		0.8			0.031	
L4		0.8			0.031	
V1		4°			4°	
V2	0°		8°	0°		8°

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.095
A2	0.90		1.20	0.035		0.047
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
B3	0.76		0.85	0.030		0.033
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.70	0.252		0.264
G		2.30			0.091	
H	16.0		17.0	0.630		0.669
L	8.90		9.40	0.350		0.370
L1	1.80		1.90	0.071		0.075
L2	1.37		1.50	0.054		0.059
V1		4°			4°	



PACKAGE MECHANICAL DATA


T0-263

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