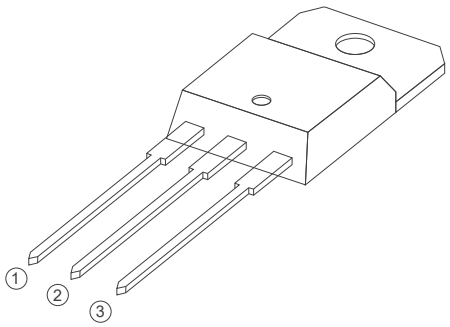
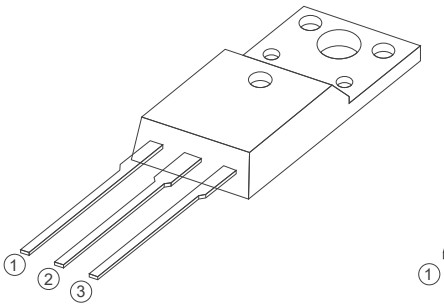
IT(RMS)		20A
VDRM/VRRM		600V
VTM		1.6V



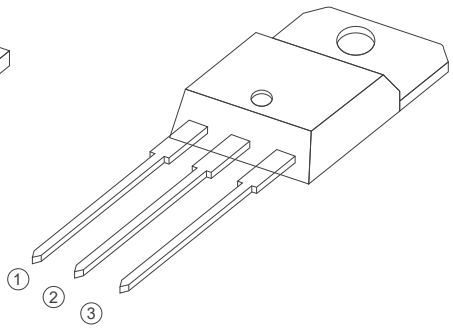
TO-220A Insulated

FEATURES

IT(RMS): 20A
VGT: 1.0 V
VDRM VRRM:600V



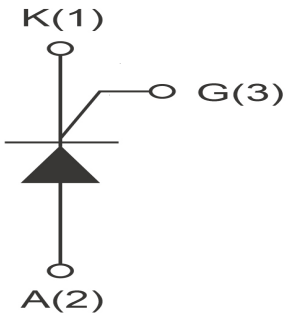
TO-220F Insulated

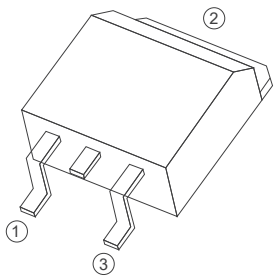


TO-220B Non-Insulated

APPLICATIONS

Heater Control
Motor Speed Controller
Washing machine
Vacuums
Solid state relay





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Absolute Maximum Ratings (Tj=25°C unless otherwise specifed)

Symbol	Parameter	Conditions	Ratings	Unit
VDRM VRRM	Repetitive Peak Off-State Voltage	TYN620	600	V
		TYN820	800	
IT(RMS)	R.M.S On-State Current		20	A
IT(AV)	average On-State Current		13	A
ITSM	Surge On-State Current	F=50Hz,tp=10ms	200	A
I²t	I²t for fusing	Tp=10ms	200	A²s
PG(AV)	Average Gate Power Dissipation	Tj=125°C	1	W
PGM	Peak Gate Current	Tj=125°C	5	W
Tj	Operating Junction Temperature		~40~125	°C
TSTG	Storage Temperature		~40~150	°C

Electrical Characteristics (Tj=25°C unless otherwise specifed)

Symbol	Parameter	Test Conditions	Value	Unit
IDRM	Repetitive Peak Off-State Current	Tc=25°C	≤10	uA
		Tc=125°C	≤1	mA
IRRM	Repetitive Peak Reverse Current	Tc=25°C	≤10	uA
		Tc=125°C	≤1	mA
VTM	Forward "on" voltage	IT=30A tp=380us	≤1.6	V
VGD	Gate nontrigger voltage	VD=VDRM,Tj=125°C, RL=3.3KΩ	≥0.25	V
IL	Latching current	IG=1.2IGT	≤60	mA
IH	Holding current	VD=12V ,IGT=0.1A	≤40	mA
VGT	Gate trigger voltage	VD=12V	≤1.0	V
IGT	Gate trigger current	VD=12V,IT=0.1A	≤25	mA
dv/dt	Critical-rate of rise of commutation voltage	VD=2/3VDRM,Tj=110°C,RGK=1KΩ	≥500	V/us
di/dt	Critical-rate of rise of commutation current	IG=2XIG,tr≤100us,Tj=125°C	≥50	A/us
Rth(j-c)	Thermal resistance	Junction to case	1.0	°C/W
Rth(j-a)	Thermal resistance	Junction to ambient	50	°C/W

FIG1

Maximum power dissipation versus RMS on-state current

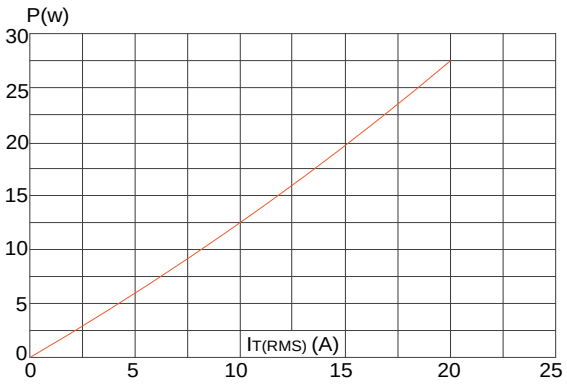


FIG2

RMS on-state current versus case temperature

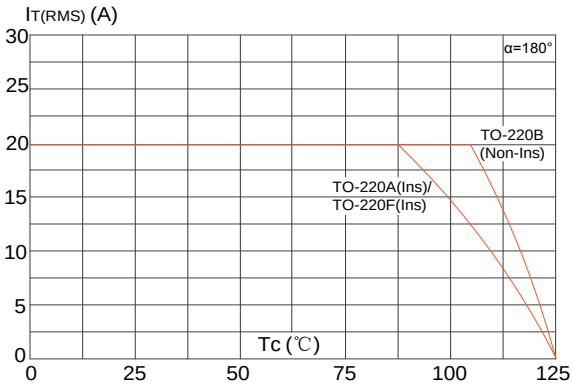


FIG3

Surge peak on-state current versus number of cycles

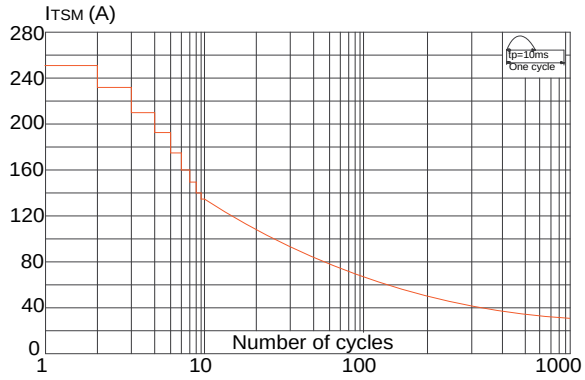


FIG4

On-state characteristics (maximum values)

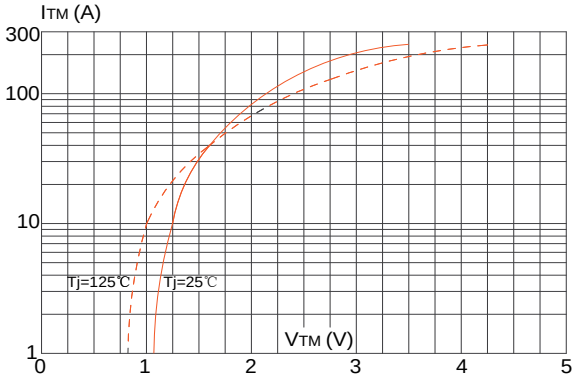


FIG5

Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 100A/μs)

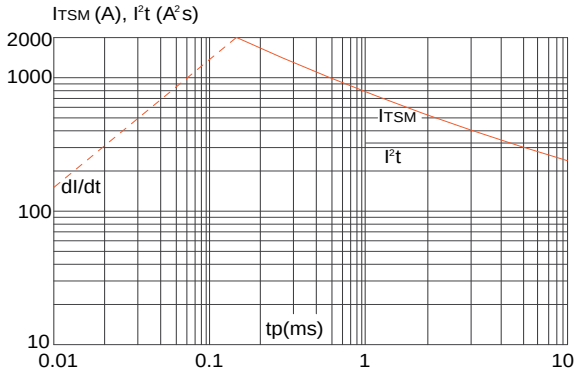
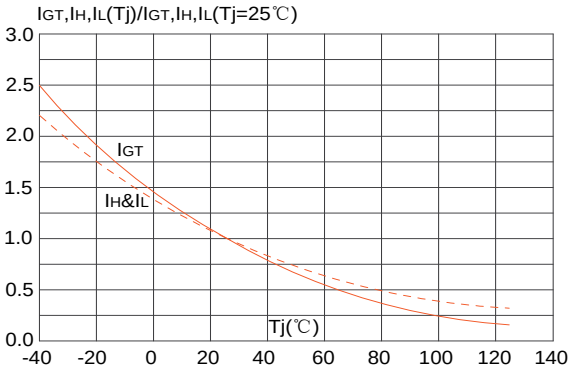
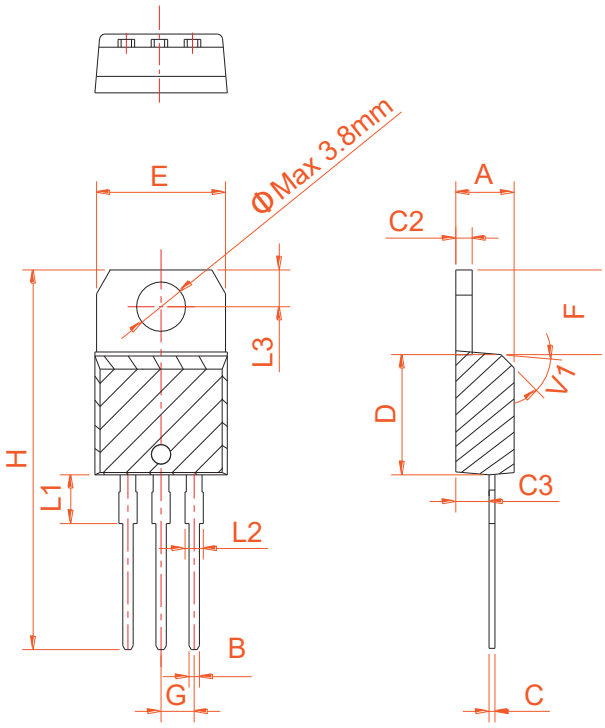


FIG6

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



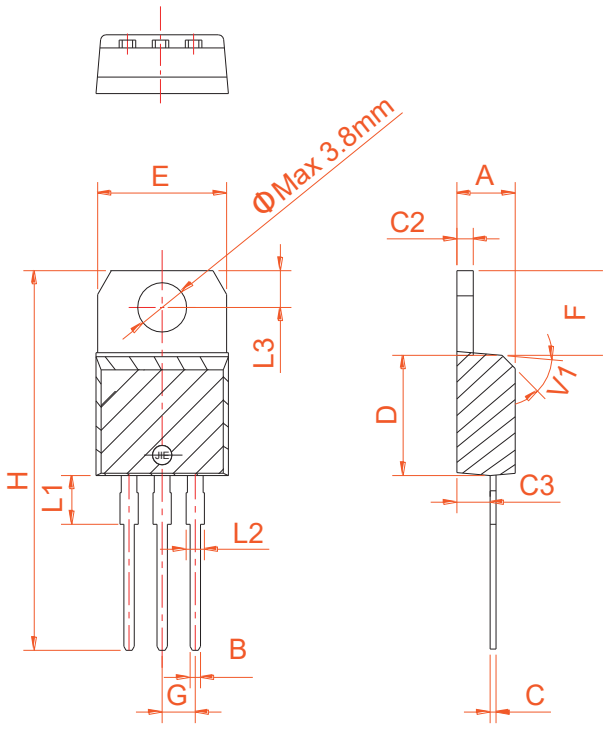
PACKAGE MECHANICAL DATA



TO-220A Ins

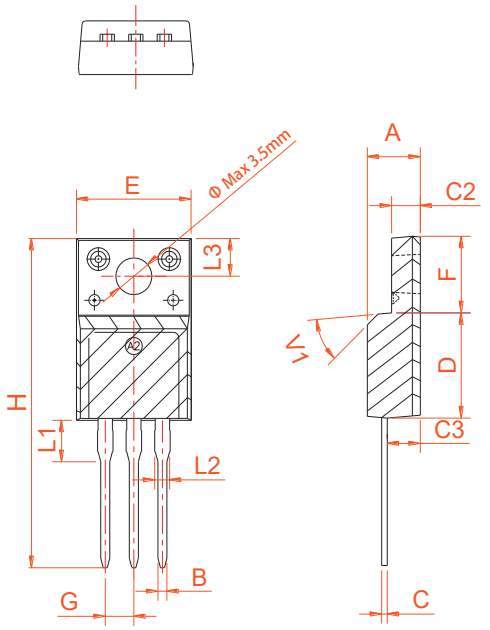
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	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

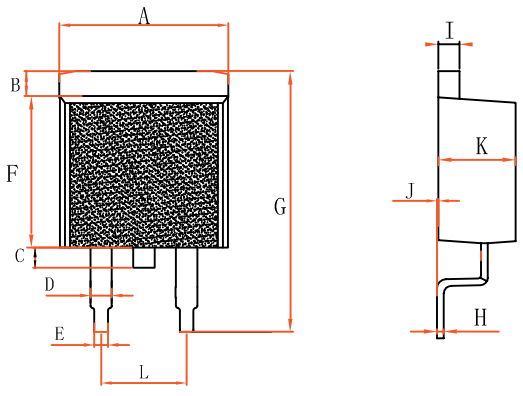
PACKAGE MECHANICAL DATA



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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