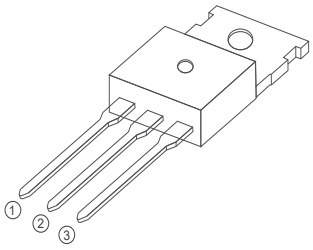
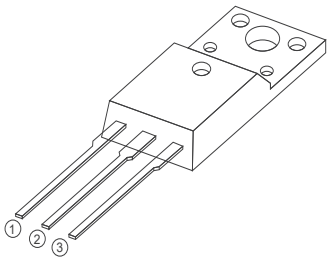
IT(RMS)		12A
VDRM/VRRM	BT138-600	600V
	BT138-800	800V
VTM		1.55V



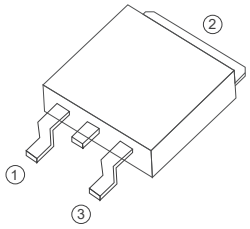
TO-220C

FEATURES

IT(RMS): 12A
VGT: 1.5 V
VDRM VRRM: 600 V~800V
High blocking voltage capability
Less sensitive gate for improved noise immunity



TO-220F Insulated



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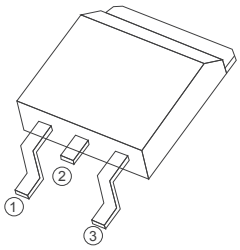

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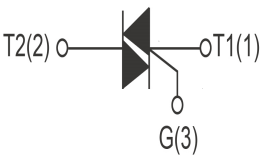
APPLICATIONS

Heater Control
Motor Speed Controller
Washing machine
Vacuums
Solid state relay
General purpose motor controls
General purpose switching



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

Symbol	Parameter	Conditions	Ratings	Unit
VDRM VRRM	Repetitive Peak Off-State Voltage	BT138-600	600	V
		BT138-800	800	V
IT(RMS)	R.M.S On-State Current	Tc=110°C	12	A
ITSM	Surge On-State Current	tp=16.7ms/tp=10ms	115/120	A
I²t	I²t for fusing	Tp=10ms	70	A²s
PG(AV)	Average Gate Power Dissipation	Tj=125°C	1	W
IGM	Peak Gate Current	tp=20us Tj=125°C	4	A
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
				D	E	F	G	
IDRM	Repetitive Peak Off-State Current		Tj=25°C	≤5				uA
			Tj=125°C	≤1				mA
IRRM	Repetitive Peak Reverse Current		Tj=25°C	≤5				uA
			Tj=125°C	≤1				mA
VTM	Forward "on" voltage		IT=15A tp=380us	≤1.55				V
VGT	Gate trigger voltage		VD=12V ,RL=30Ω	≤1.5				V
di/dt	Critical-rate of rise of commutation current.	I,II,III	Tj=125°C ,IG=2XIGT,tr ≤100ns,F=100Hz	≥50				A /us
		IV		≥10				A /us
IGT	Gate trigger current	I,II,III	VD=12V RL=30Ω	≤5	≤10	≤25	≤50	mA
		IV		≤10	≤25	≤70	≤100	mA
IH	Holding current		IT=0.2A	≤10	≤25	≤30	≤60	mA
VGD	Gate non-trigger voltage	ALL	VD=VDRM TJ=125°C,RL=3.3KΩ	≥0.2				V
dv/dt	Critical-rate of rise of commutation voltage		TJ=125°C VD=2/3VDRM Gate	≥5	≥10	≥50	≥200	V/us

FIG1

Maximum power dissipation versus RMS on-state current

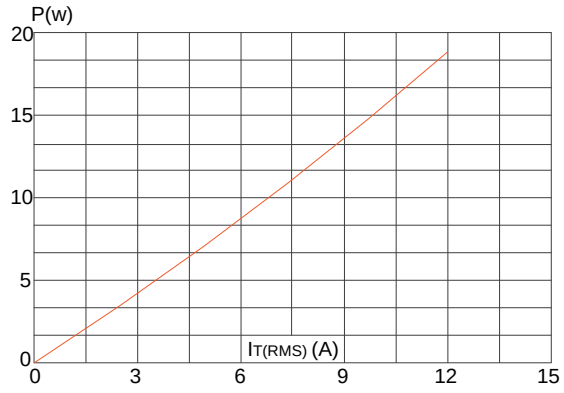


FIG2

RMS on-state current versus case temperature

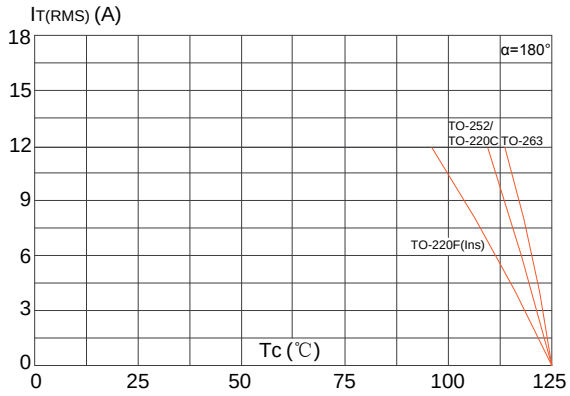


FIG3

Surge peak on-state current versus number of cycles

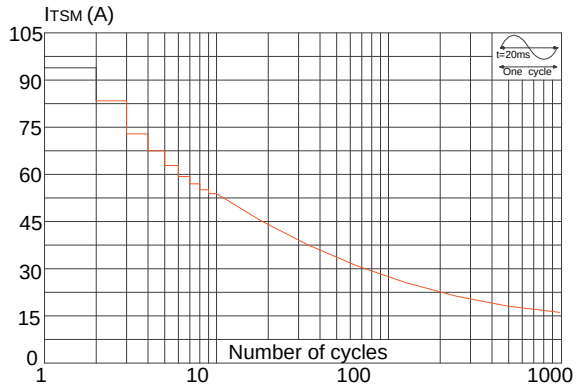


FIG4

On-state characteristics (maximum values)

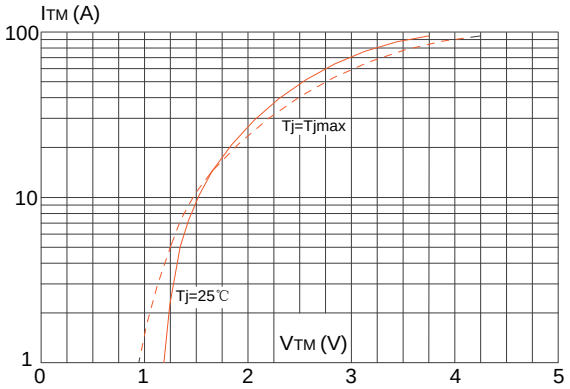


FIG5

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)

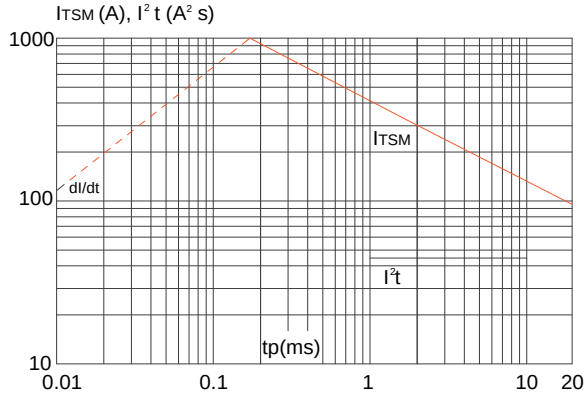


FIG6

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

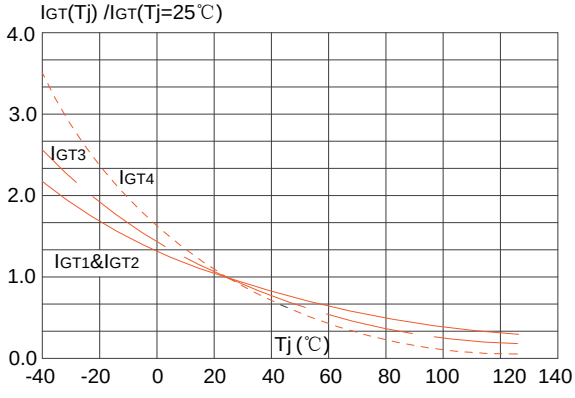


FIG7

FIG.7: Relative variations of holding current versus junction temperature

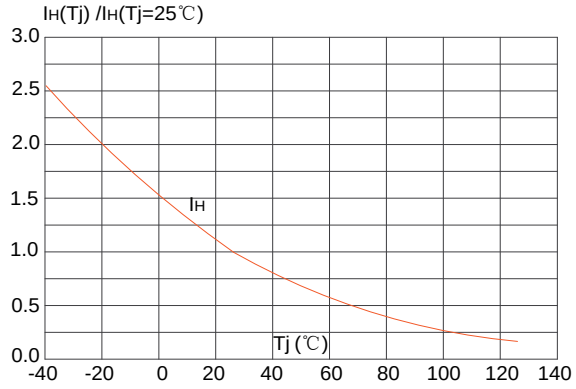
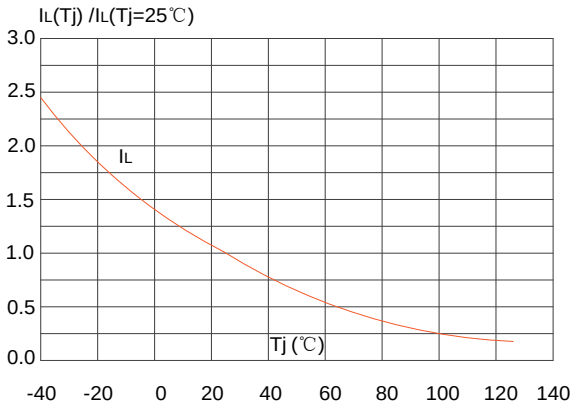
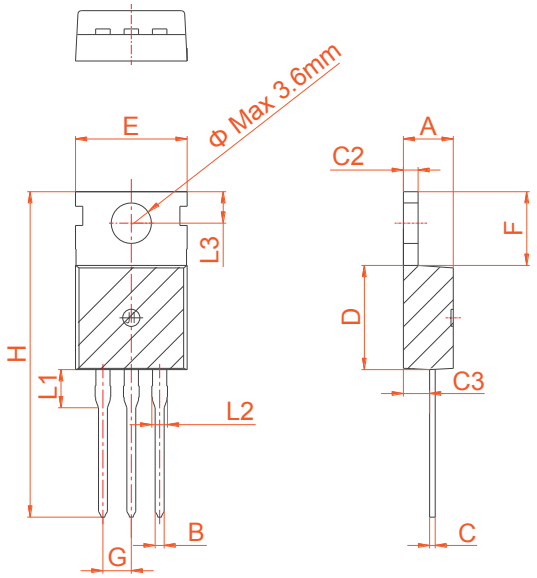


FIG8

FIG.8: Relative variations of latching current versus junction temperature



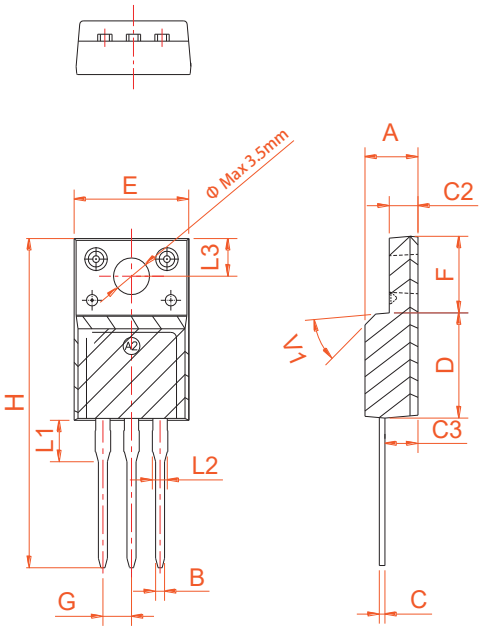
PACKAGE MECHANICAL DATA



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	

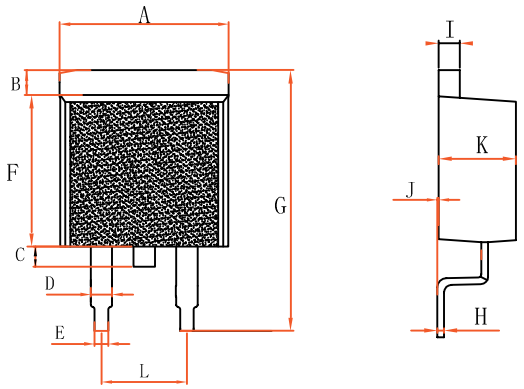
PACKAGE MECHANICAL DATA



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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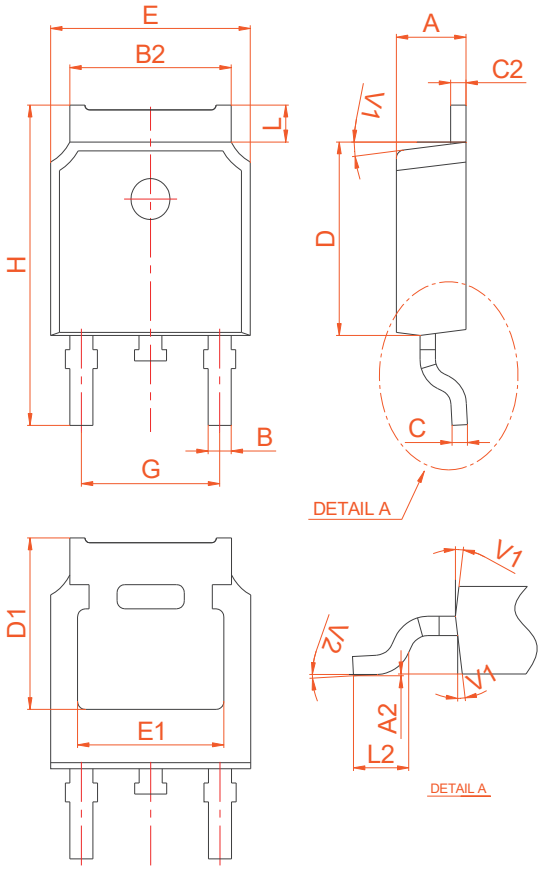
PACKAGE MECHANICAL DATA



TO-252

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°