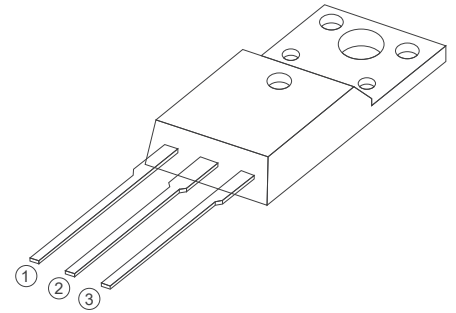
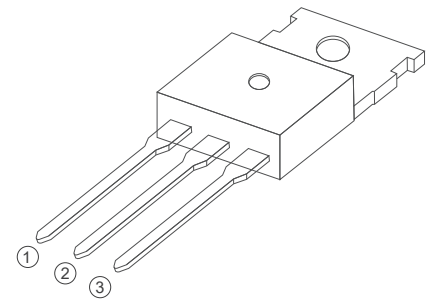


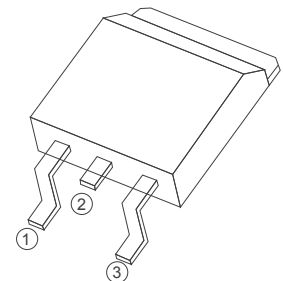
IT(RMS)		16A
VDRM/VRRM	BT139-600	600V
	BT139-800	800V
VTM		1.55V



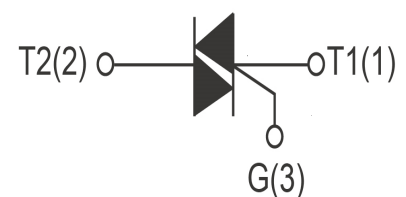
TO-220F Insulated



TO-220C



TO-263



FEATURES

IT(RMS): 16A

VGT: 1.5 V

VDRM VRRM: 600V~800V

High blocking voltage capability

Less sensitive gate for improved noise immunity

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
VDRM VRRM	Repetitive Peak Off-State Voltage	BT139-600	600	V
		BT139-800	800	V
IT(RMS)	R.M.S On-State Current	T _c =110°C	16	A
ITSM	Surge On-State Current	t _p =16.7ms/t _p =10ms	160/168	A
I ² t	I ² t for fusing	T _p =10ms	144	A ² s
PG(AV)	Average Gate Power Dissipation	T _j =125°C	1	W
IGM	Peak Gate Current	T _j =125°C	4	A
T _j	Operating Junction Temperature		~40~125	°C
TSTG	Storage Temperature		~40~150	°C

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

Symbol	Parameter		Test Conditions	Value				Unit
				D	E	F	G	
IDRM	Repetitive Peak Off-State Current		T _j =25°C	≤5				uA
			T _j =125°C	≤1				mA
IRRM	Repetitive Peak Reverse Current		T _j =25°C	≤5				uA
			T _j =125°C	≤1				mA
VTM	Forward "on" voltage		IT=20A t _p =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	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
VDG	Gate non-trigger voltage	ALL	VD=VDRM ,RL=30Ω ,T _j =125°C	≥0.2				V
dv/dt	Critical-rate of rise of commutation voltage		T _j =125°C VD=2/3VDRM Gate open circuit	≥5	≥10	≥25	≥200	V/us
Rth(j-c)	Thermal resistance		Junction to case	1.1				°C/W
Rth(j-a)	Thermal resistance		Junction to ambient	50				°C/W

FIG1

Maximum power dissipation versus RMS on-state current

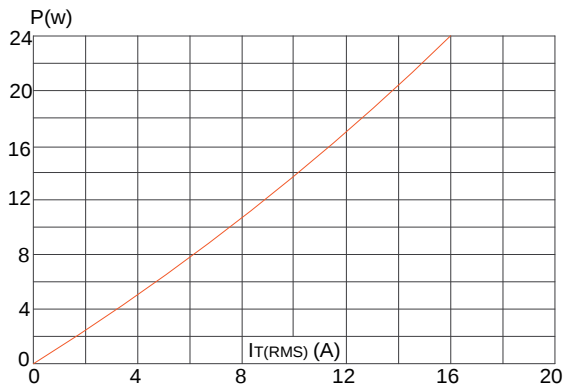


FIG2

RMS on-state current versus case temperature

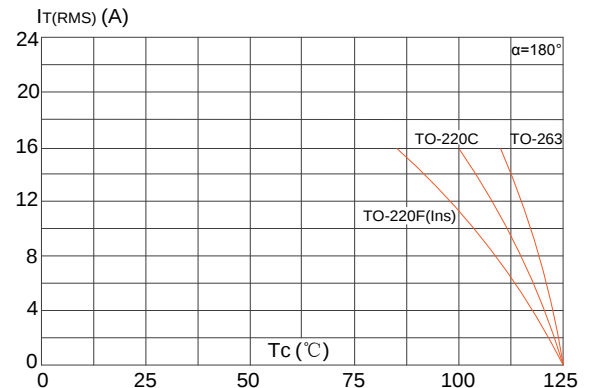


FIG3

Surge peak on-state current versus number of cycles

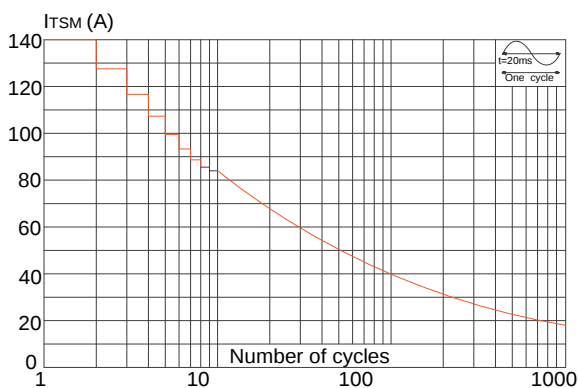


FIG4

On-state characteristics (maximum values)

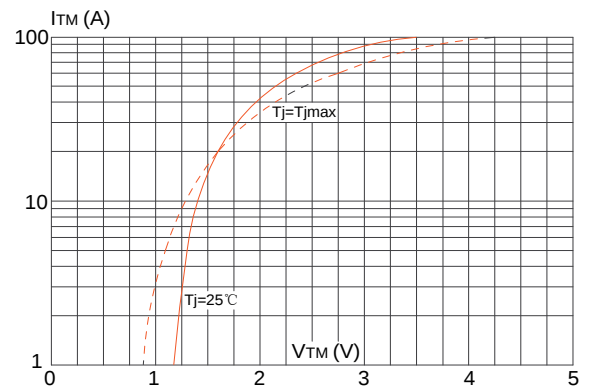


FIG5

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

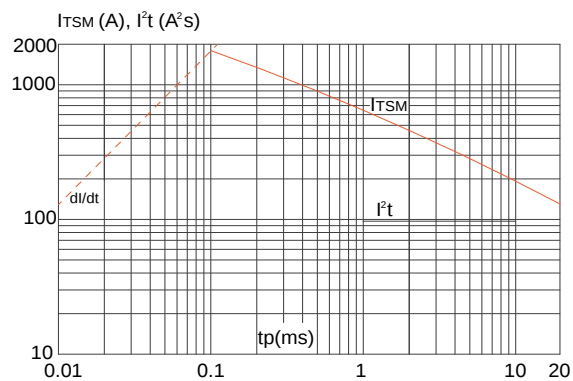


FIG6

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

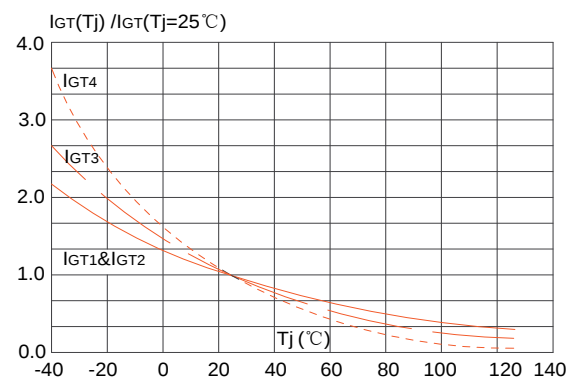


FIG7

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

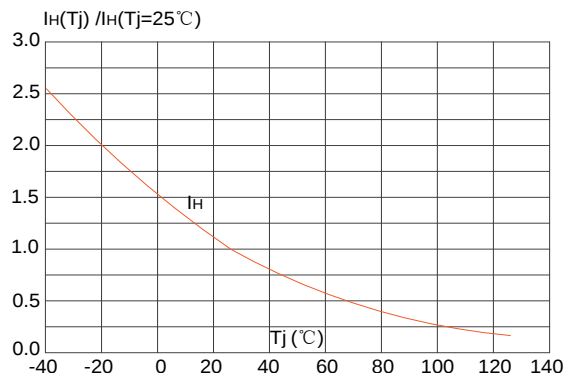
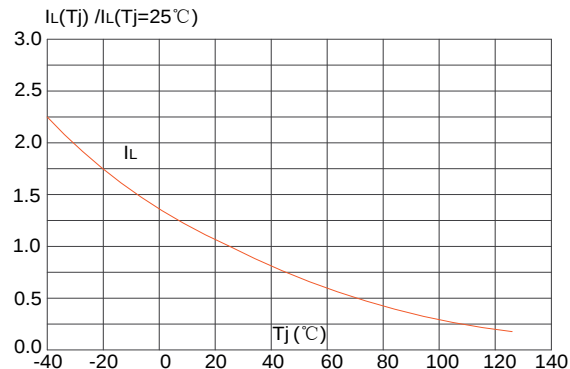
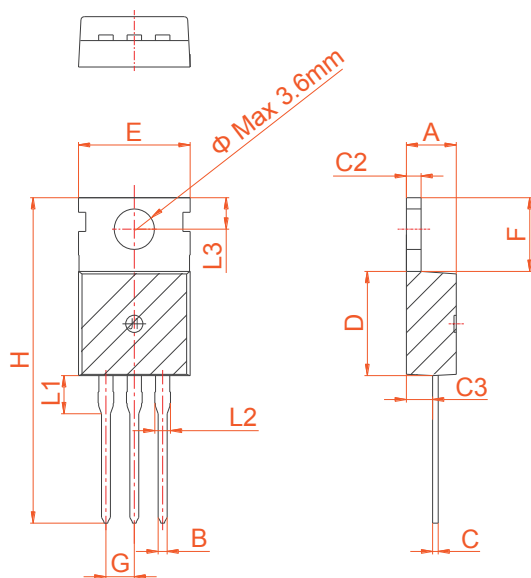


FIG8

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

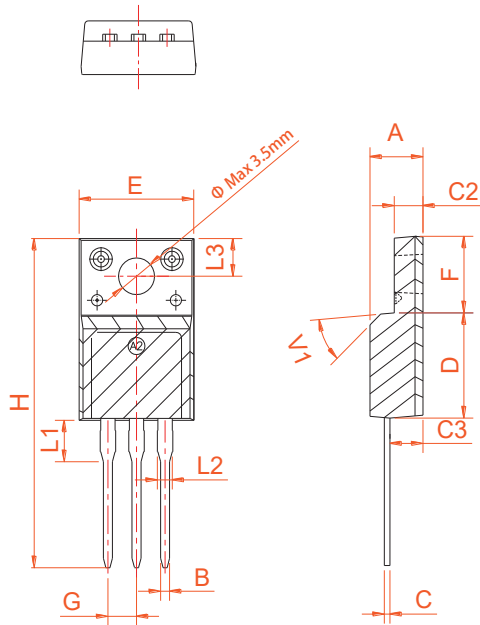


PACKAGE MECHANICAL DATA



TO-220C

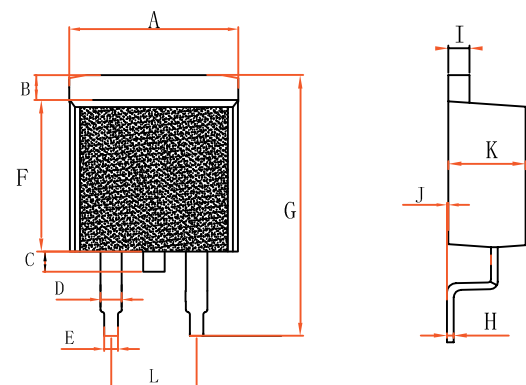
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	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



T0-263