

BT151-F

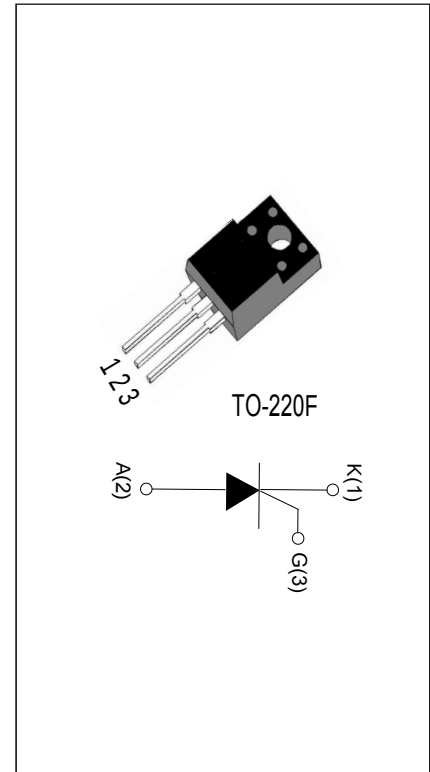
MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	8	A
V_{DRM}/V_{RRM}	650	V

DESCRIPTION:

With high ability to withstand the shock loading of large current, BT151-F of silicon controlled rectifiers provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. From all three terminals to external heatsink.

Package TO-220F is RoHS compliant.



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	$^{\circ}C$
Operating junction temperature range	T_j	-40-125	$^{\circ}C$
Repetitive peak off-state voltage ($T_j=25^{\circ}C$)	V_{DRM}	650	V
Repetitive peak reverse voltage ($T_j=25^{\circ}C$)	V_{RRM}	650	V
RMS on-state current ($T_c \leq 80^{\circ}C$)	$I_{T(RMS)}$	8	A
Non repetitive surge peak on-state current (full cycle , $t_p=20ms$, $T_j=25^{\circ}C$)	I_{TSM}	80	A
I^2t value for fusing ($t_p=10ms$, $T_j=25^{\circ}C$)	I^2t	64	A^2s
Critical rate of rise of on-state current ($T_j=125^{\circ}C$)	di/dt	50	$A/\mu s$
Peak gate current ($t_p=20\mu s$, $T_j=125^{\circ}C$)	I_{GM}	4	A
Average gate power dissipation ($T_j=125^{\circ}C$)	$P_{G(AV)}$	1	W

ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Value		Unit
I_{GT}	$V_D=12\text{V}$ $R_L=100\Omega$	MAX.	15	mA
V_{GT}		MAX.	1.5	V
V_{GD}	$V_D=V_{DRM}$ $T_J=125^{\circ}\text{C}$ $R_L=100\Omega$	MIN.	0.2	V
I_L	$I_G=1.2I_{GT}$	MAX.	30	mA
			40	
I_H	$I_T=500\text{mA}$	MAX.	30	mA
dV/dt	$V_D=2/3V_{DRM}$ $T_J=125^{\circ}\text{C}$	MIN.	500	V/ μs

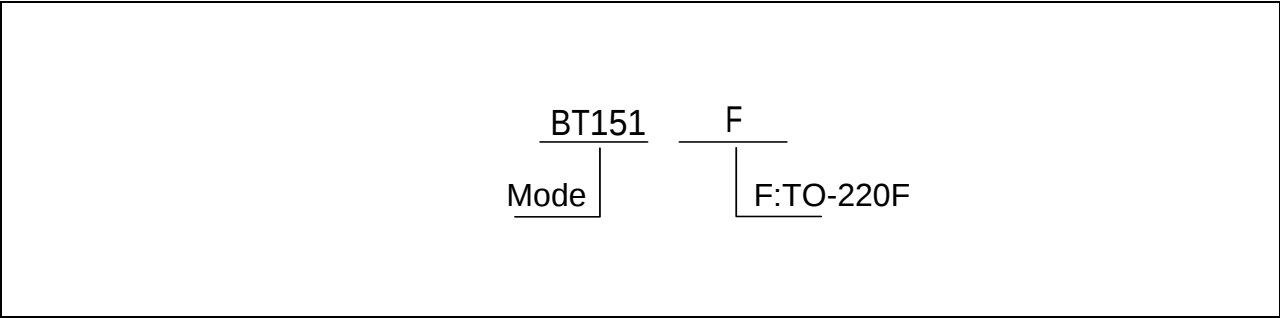
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	$I_{TM}=24\text{A}$ $t_p=380\mu\text{s}$	$T_J=25^{\circ}\text{C}$	1.50	V
V_{TO}	Threshold voltage	$T_J=125^{\circ}\text{C}$	0.86	V
R_D	Dynamic resistance	$T_J=125^{\circ}\text{C}$	36.6	$\text{m}\Omega$
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_J=25^{\circ}\text{C}$	5	μA
I_{RRM}		$T_J=125^{\circ}\text{C}$	1	mA

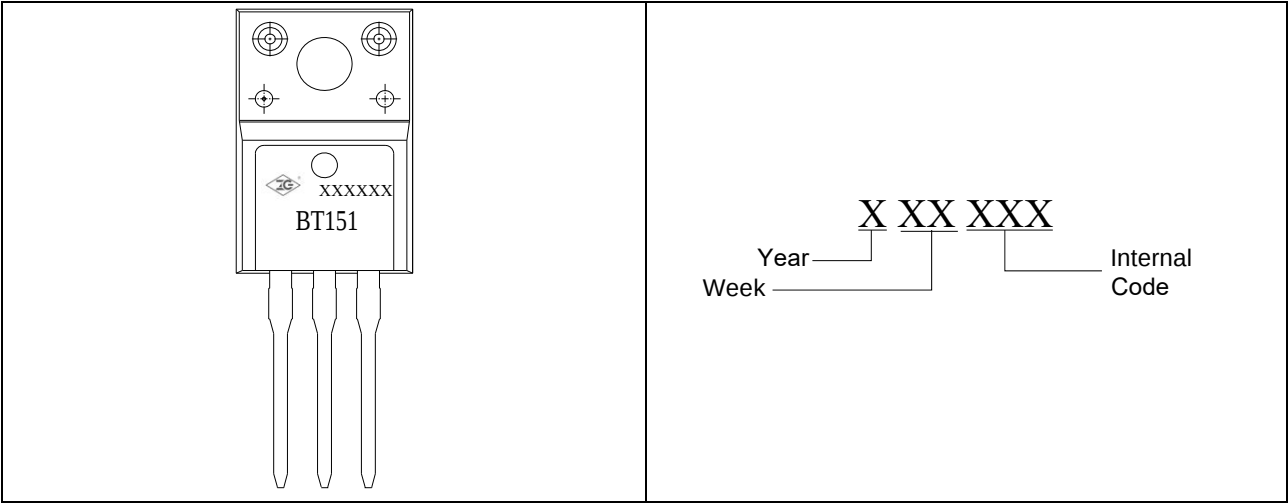
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	2.05	$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION



MARKING



ORDERING INFORMATION

Order code	Voltage V _{DRM} /V _{RRM} (V)	Package	Base qty. (pcs)	Delivery mode
BT151-F	650	TO-220F	50	Tube

Technical drawing of the TO-220F package showing top, front, and side views with dimensions.

Top View: Shows the package footprint with dimensions E (width) and G (lead spacing). The mounting holes are spaced $L2$ apart. A lead diameter of $\phi 3.05-3.25\text{mm}$ is indicated.

Front View: Shows the package height H and lead length $L4$. The lead width at the base is B , and the lead thickness is $L1$. The mounting hole diameter is $\phi 3.05-3.25\text{mm}$.

Side View: Shows the package height H and lead length $L4$. The lead width at the base is B , and the lead thickness is $L1$. The mounting hole diameter is $\phi 3.05-3.25\text{mm}$.

Dimensions:

- E : Package width
- G : Lead spacing
- H : Package height
- $L1$: Lead thickness
- $L2$: Mounting hole spacing
- $L3$: Mounting hole diameter
- $L4$: Lead length
- $L5$: Lead width at base
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- $L99$: Lead width at base
- $L100$: Lead width at base

Ref.	Dimensions		
	Millimeters		
	Min.	Typ.	Max.
A	4.50	4.70	4.90
B	0.60	0.80	1.00
C	0.40	0.50	0.60
C2	2.35	2.55	2.75
C3	2.15	2.35	2.55
D	8.97	9.17	9.37
E	9.96	10.16	10.36
F	6.48	6.68	6.88
G	2.44	2.54	2.64
H	28.65	28.95	29.25
L1	1.10	1.30	1.50
L2	3.15	3.30	3.45
L3	2.90	3.00	3.10
L4	9.90	10.10	10.30

Technical drawing of a rectangular component with dimensions and labels. The main dimensions are 530±1 (length) and 60 (width). The drawing includes a central wavy line indicating a fold or break. Key features and dimensions include:

- Top edge: 4.5±0.2 (width of the top flange), 45 (distance from the top edge to the center of the top flange), 5.0±0.2 (width of the top flange), 7.5±0.2 (distance from the top edge to the center of the top flange).
- Bottom edge: 4.5±0.2 (width of the bottom flange), 6.0±0.2 (distance from the bottom edge to the center of the bottom flange), 4.5±0.2 (width of the bottom flange).
- Left edge: 4-φ3 (four holes of diameter 3), 4-φ4.5 (four holes of diameter 4.5), 7 (distance from the left edge to the center of the holes).
- Right edge: 7.0±0.2 (width of the right flange), 32.8±0.2 (distance from the right edge to the center of the right flange), 5 (width of the right flange), 2.9±0.1 (distance from the right edge to the center of the right flange).
- Internal features: ANTISTATIC (text), RoHS (RoHS compliance mark), 4.0 (width of the central section), 30 (distance from the center of the central section to the center of the top flange).
- Other labels: 差钉子 (Difference nail), A (width of the top flange), B (width of the bottom flange), C (width of the right flange), D (width of the left flange), T=0.5±0.1 (thickness).

PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220F	TUBE	50	1,000	5,000

FIG.1 Maximum power dissipation versus RMS on-state current

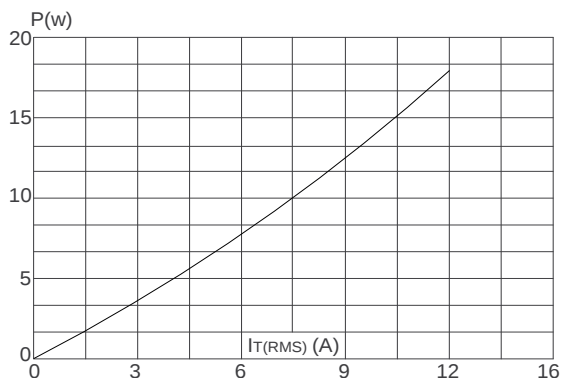


FIG.2 RMS on-state current versus case temperature

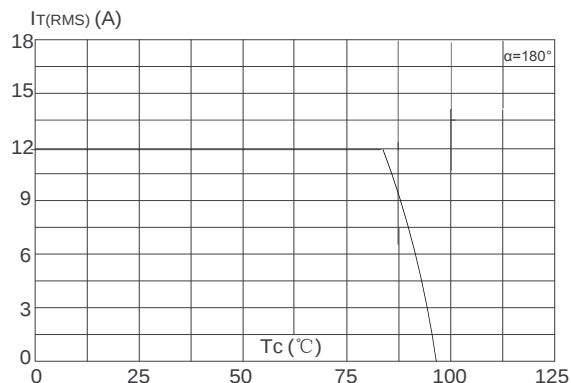


FIG.3 Surge peak on-state current versus number of cycles

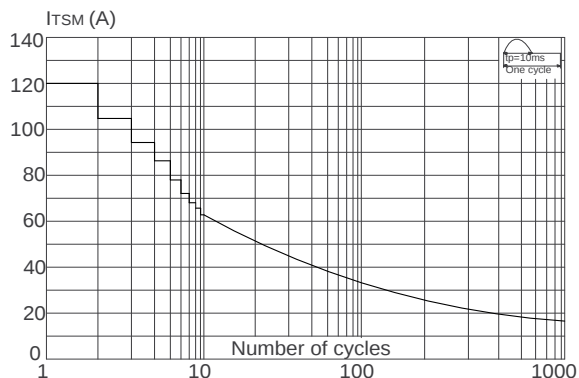


FIG.4 On-state characteristics (maximum values)

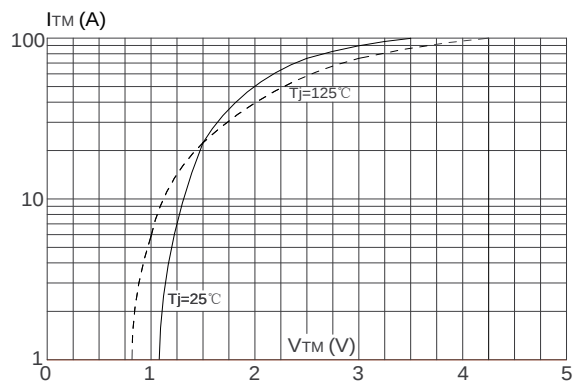
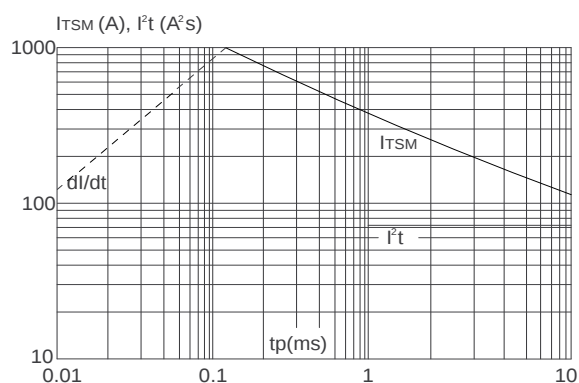
FIG.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of $I^2 t$ ($di/dt < 100A/\mu s$)

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

