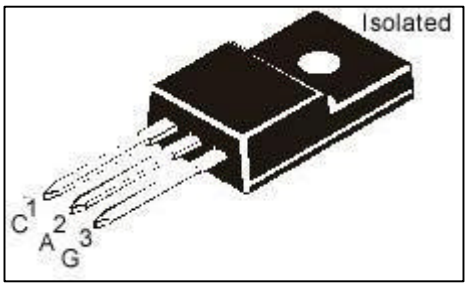
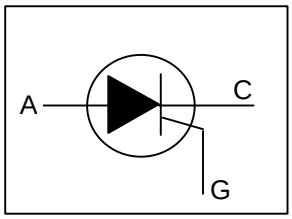
THYRISTORS

BT151X

TO-220FP Fully Isolated Plastic Package





For use in Applications Requiring High Bidirectional Blocking Voltage Capability and high Thermal Cycling Performance. Typical Applications include Motor Control, Industrial and Domestic Lighting, Heating and Static Switching.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITION	VALUE		UNIT
		BT151X-	500	650	
Repetitive Peak Off State Voltage	V_{DRM}, V_{RRM}		*500	*650	V
Average On State Current	$I_{T\,(AV)}$	half sine wave, $T_{hs} \leq 87^oC$	5.7		A
RMS On State Current	$I_{T\,(RMS)}$	all conduction angles	9.0		A
Non Repetitive Peak On State Current	I_{TSM}	half sine wave, $T_J=25^oC$ prior to surge t=10ms t=8.3ms	 100 110		 A A
I^2t for Fusing	I^2t	t=10ms	50		A^2s
Repetitive Rate Of Rise of On State Current After Triggering	dI_T/dt	I_{TM}=20A, I_G=50mA, dI_G/dt=50mA/µs	50		A/µs
Peak Gate Current	I_{GM}		2.0		A
Peak Gate Voltage	V_{GM}		5.0		V
Peak Reverse Gate Voltage	V_{RGM}		5.0		V
Peak Gate Power	P_{GM}		5.0		W
Average Gate Power	$P_{G\,(AV)}$	Over any 20ms period	0.5		W
Storage Temperature	T_{stg}		- 40 to +150		°C
Operating Junction Temperature	T_j		125		°C

ISOLATION LIMITING VALUE and CHARACTERISTIC (T_{hs}=25°C unless specified otherwise)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
R.M.S Isolation Voltage from all three terminals to external heatsink	V_{ISOL}	f=50-60 Hz; sinusoidal waveform; R.H. ≤ 65%; clean and dustfree			2500	V
Capacitance from T2 to external heatsink	C_{ISOL}	f=1MHz		10		pF

THERMAL RESISTANCE

Junction to Heatsink	$R_{th\,(j\text{-}hs)}$	with heatsink compound without heatsink compound	4.5 max 6.5 max	K/W K/W
Junction to Ambient	$R_{th\,(j\text{-}a)}$	in free air	55 typ	K/W

***Although not recommended, off state voltage upto 800V may be applied without damage, but the thyristor may switch to the on state. The rate of rise of current should not exceed 15A/ms**

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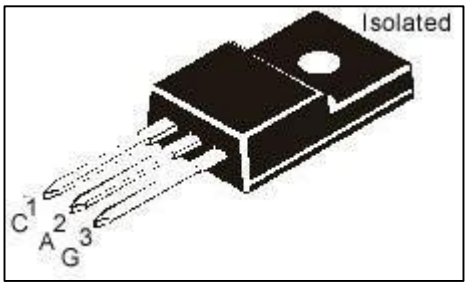

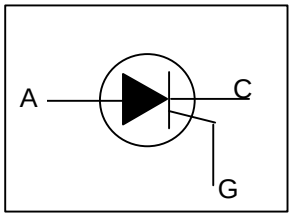

ELECTRICAL CHARACTERISTICS (T_J=25ºC unless specified otherwise)

PARAMETER	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Gate Trigger Current	I_{GT}	V_D=12V, I_T=0.1A		15	mA
Latching Current	I_L	V_D=12V, I_{GT}=0.1A		40	mA
Holding Current	I_H	V_D=12V, I_{GT}=0.1A		20	mA
On State Voltage	V_T	I_T=23A		1.75	V
Gate Trigger Voltage	V_{GT}	V_D=12V, I_T=0.1A V_D=V_{DRM} (max), I_T=0.1A,T_J=125ºC	 0.25	1.5	V V
Off State Leakage Current	$I_{D,}$ I_R	V_D= V_{DRM} (max), V_R=V_{RRM}(max) T_J=125ºC		0.5	mA

DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Critical Rate of Rise of Off State Voltage	dV_D/dt	V_{DM}=67% V_{DRM}=max, T_J=125ºC, exponential waveform gate open circuit R_{GK} =100Ω	 50 200			 V/µs V/µs
Gate Controlled Turn On time	t_{gt}	I_{TM}=40A, V_D=V_{DRM} (max), I_G=0.1A, dI_G/dt=5A/µs		2.0		µs
Circuit Commutated Turn Off time	t_q	V_{DM}=67% V_{DRM}=(max), T_J=125ºC, I_{TM}=20A, V_R=25V, dI_{TM}/dt=30A/µs, dV_D/dt=50V/µs, R_{GK}=100Ω		70		µs

Marking	**BT151X-500**	**BT151X-650**
	CDXX	**CDXX**
	BT151X	**BT151X**
	- 500	**- 650**
XX=Date Code		

BT151XRev020103E

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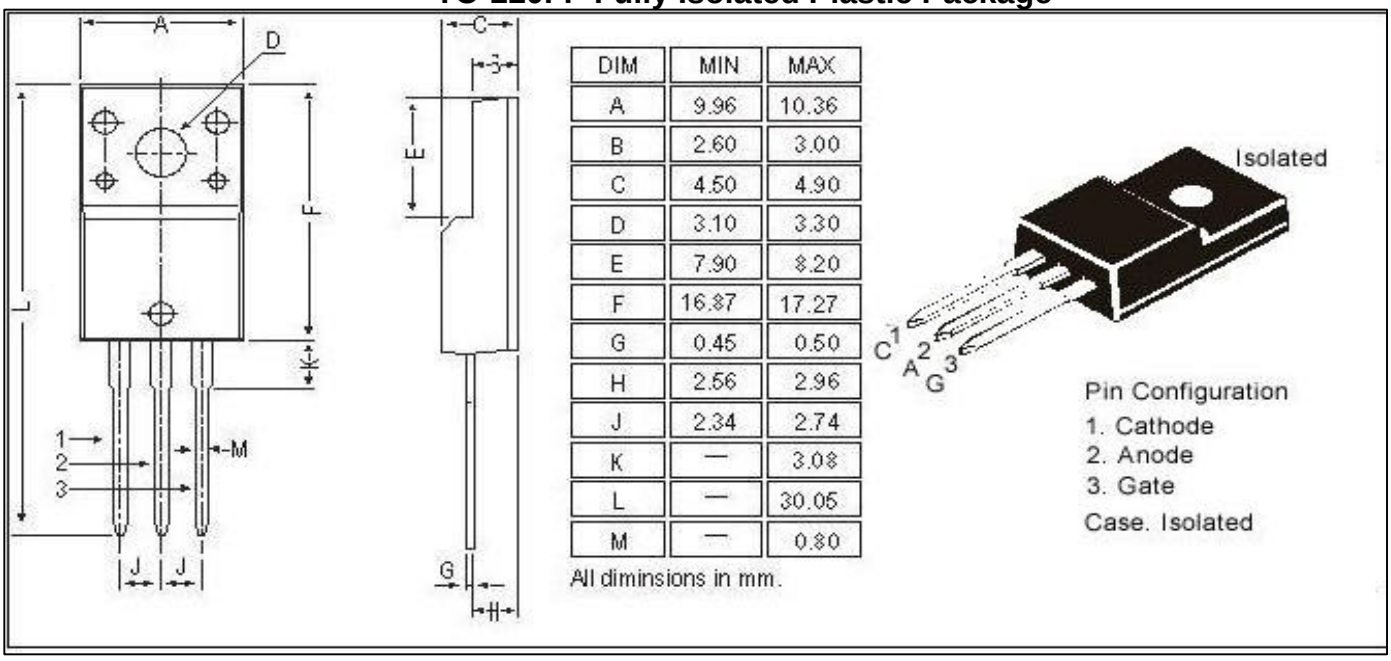
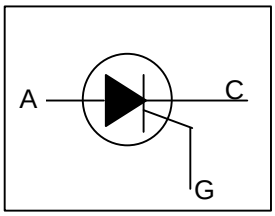


DIM	MIN	MAX
A	9.96	10.36
B	2.60	3.00
C	4.50	4.90
D	3.10	3.30
E	7.90	8.20
F	16.87	17.27
G	0.45	0.50
H	2.56	2.96
J	2.34	2.74
K	—	3.08
L	—	30.05
M	—	0.80

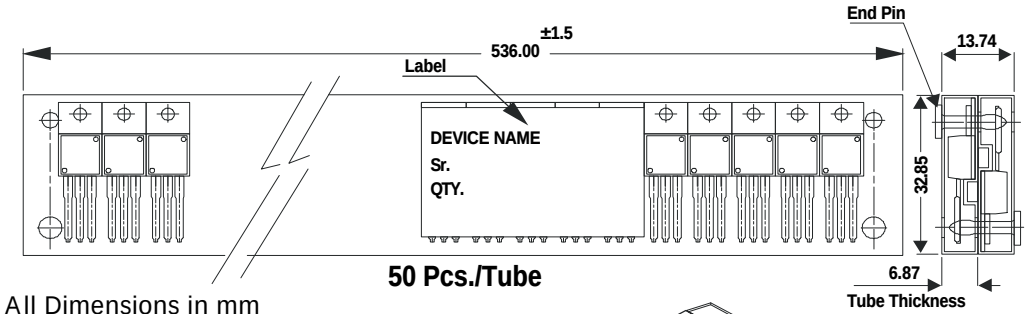
All diminsions in mm.

Pin Configuration
1. Cathode
2. Anode
3. Gate

Case. Isolated



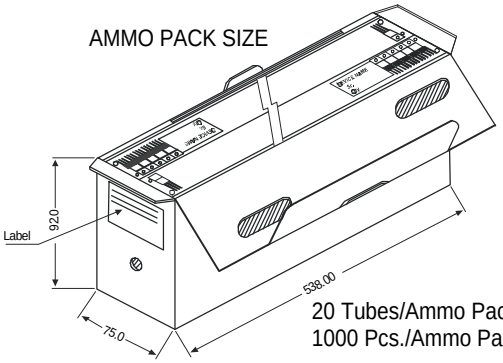
TO-220 Tube Packing



50 Pcs./Tube

All Dimensions in mm

AMMO PACK SIZE



20 Tubes/Ammo Pack
1000 Pcs./Ammo Pack

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-220 /FP	200 pcs/polybag 50 pcs/tube	396 gm/200 pcs 120 gm/50 pcs	3" x 7.5" x 7.5" 3.5" x 3.7" x 21.5"	1.0K 1.0K	17" x 15" x 13.5" 19" x 19" x 19"	16.0K 10.0K	36 kgs 29 kgs

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