

GENERAL DESCRIPTION

The BT152 is a thyristor, it uses our advanced technology to provide customers with high bidirectional blocking voltage capability and high thermal cycling performance, etc.

The BT152 is suitable for motor control, industrial, static switching, heating and domestic lighting, etc.

FEATURES

- * High bidirectional blocking voltage capability
- * High thermal cycling performance

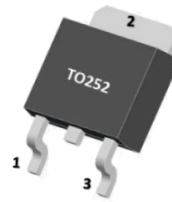
MARKING



WPM: LOGO

BT152=Device Code

800E:V_{DRM}/V_{RRM}=800V



Pin1:K (Cathode)

Pin2:A (Anode)

Pin3:G (Gate)

ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

SYMBOL	PARAMETER		TEST CONDITION	VALUE	UNIT
V_{DRM}	Repetitive Peak off-state voltage	BT152-400E	T _J =25°C	450	V
		BT152-600E		650	
		BT152-800E		800	
I_{T(RMS)}	RMS On-State Current			12	A
I_{TSM}	Non-repetitive peak on-state current		t=20ms; F=50Hz	120	A
I²t	I ² t for fusing		t=10ms	144	A ² S
di/dt	Critical rate of rise of on-state current		T _J =125°C	50	A/μs
I_{GM}	Peak gate current		tp=20μs; T _J =125°C	4	A
V_{GM}	Peak gate voltage			5	V
V_{RGM}	Peak Reverse Gate Voltage			5	V
P_{GM}	Peak gate Power			20	W
P_{G(AV)}	Average gate Power Dissipation		T _J =125°C	1	W
T_J	Operating Junction Temperature			-40 to +125	°C
T_{stg}	Storage Temperature			-40 to +150	°C

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL RESISTANCES

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220F	R θ JA	60	K/W
	TO-252		75	
Junction to Case	TO-220F	R θ JC	1.1	K/W
	TO-252		2.3	

ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
ELECTRICAL PROPERTIES						
Gate trigger current	I _{GT}	V _D =12V; R _L =100Ω			8	mA
Latching current	I _L	V _D =12V; I _G =1.2I _{GT}			40	mA
Holding current	I _H	I _T =0.5A			30	mA
On-State Voltage	V _T	I _T =40A			1.75	V
non-trigger voltage	V _{GD}	T _J =125°C	0.2			V
Gate Trigger Voltage	V _{GT}	V _D =12V; R _L =100Ω			1.5	V
		V _D =V _{DRM(max)} , I _T =0.1A, T _J =125°C	0.25			
Critical Rate of Rise of off-state Voltage	dv/dt	V _D =2/3V _{DRM} , T _J =125°C, Exponential Waveform Gate Open Circuit	500			V/μs
The critical rate of rise of commutation voltage	(dv/dt) _c	T _J =125°C	10			V/μs
STATIC PARAMETER						
Peak voltage in on-state	V _{TM}	I _{TM} =36A, T _J =25°C			1.5	V
Off-State Leakage Current	I _{DRM}	T _J =25°C			5	μA
	I _{RRM}	T _J =125°C			1	mA

TYPICAL CHARACTERISTICS (1)

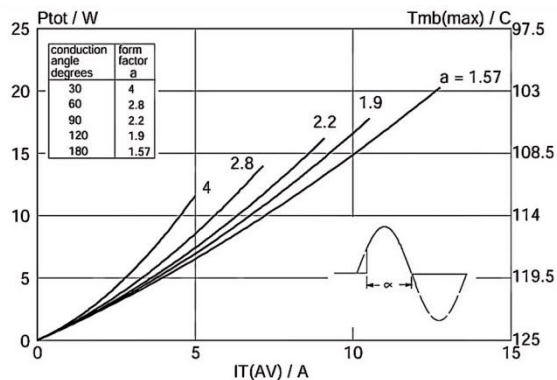


Fig.1. Maximum on-state dissipation, P_{tot} , versus average on-state current, $I_{T(AV)}$, where $a = \text{form factor} = I_{T(RMS)}/I_{T(AV)}$.

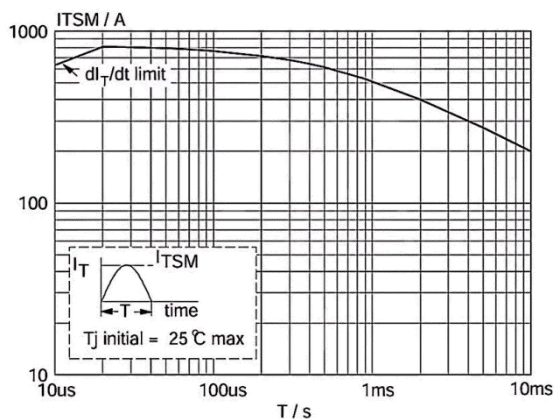


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 10\text{ms}$.

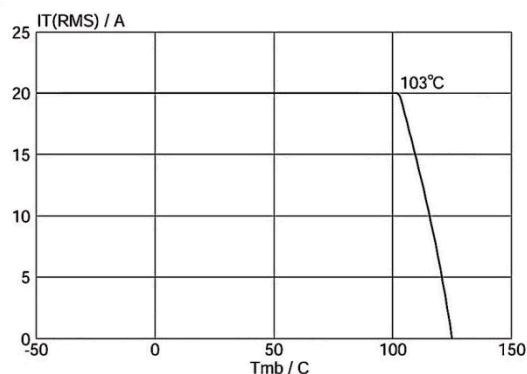


Fig.3. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

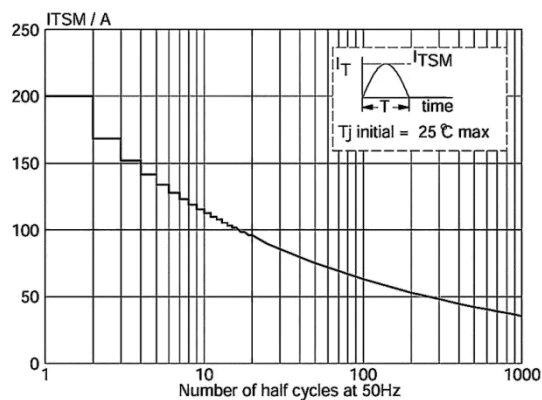


Fig.4. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50\text{ Hz}$.

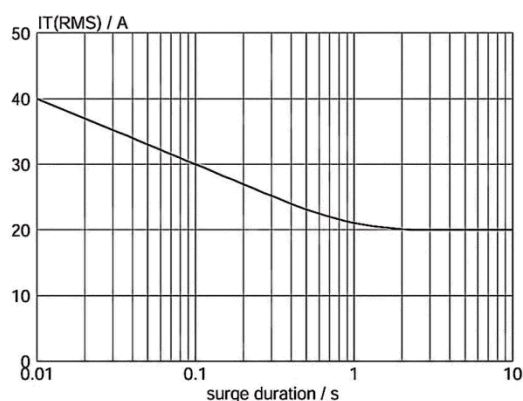


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50\text{ Hz}$; $T_{mb} \leq 103^\circ\text{C}$.

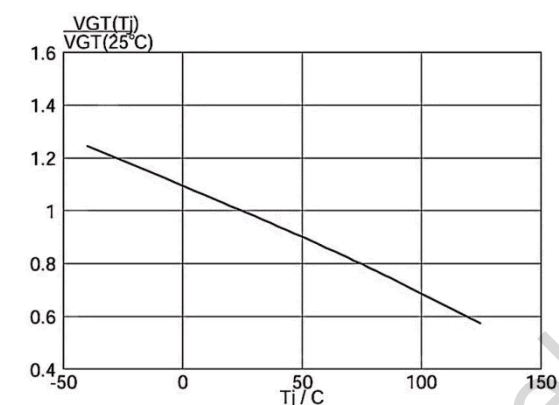


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

TYPICAL CHARACTERISTICS (2)

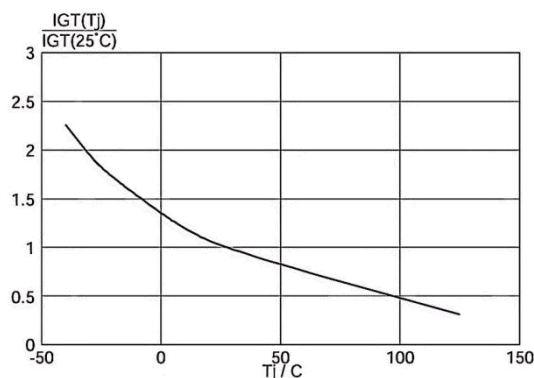


Fig. 7. Normalised gate trigger current $I_{GT}(T_J) / I_{GT}(25^\circ\text{C})$, versus junction temperature T_J .

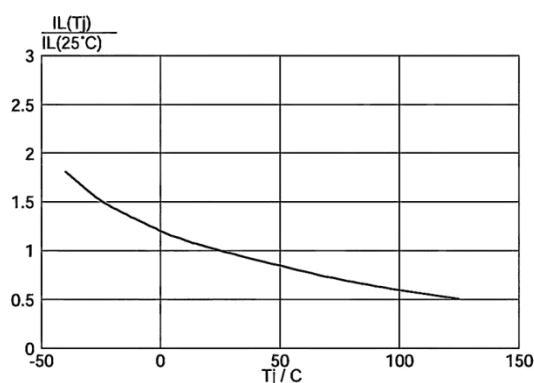


Fig. 8. Normalised latching current $I_L(T_J) / I_L(25^\circ\text{C})$, versus junction temperature T_J .

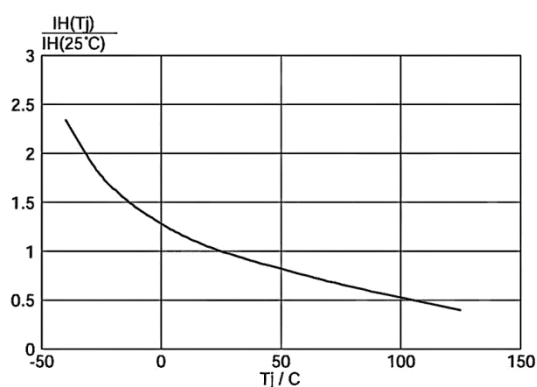


Fig. 9. Normalised holding current $I_H(T_J) / I_H(25^\circ\text{C})$, versus junction temperature T_J .

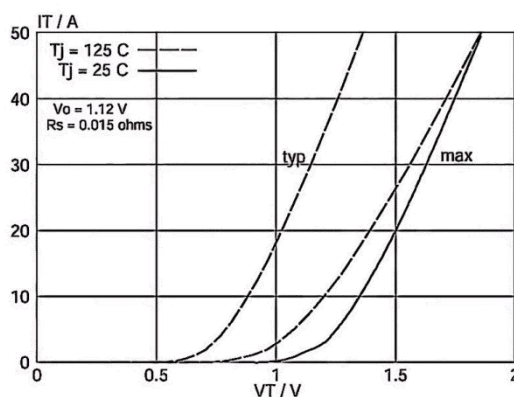


Fig. 10. Typical and maximum on-state characteristic.

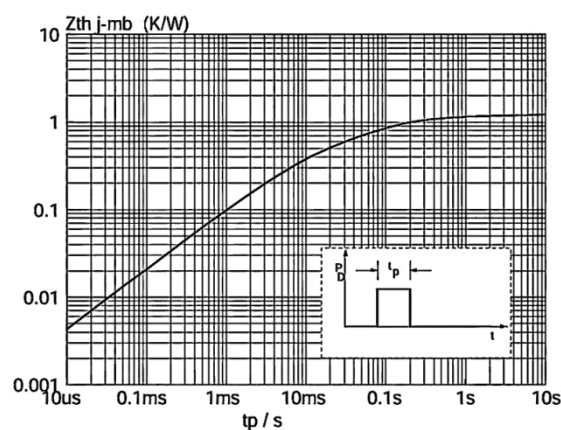


Fig. 11. Transient thermal impedance $Z_{th j-mb}$ versus pulse width t_p .

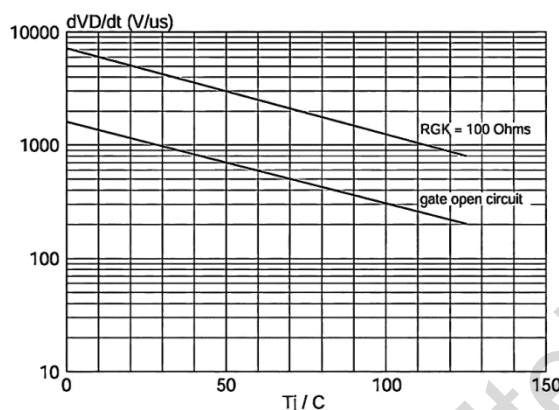
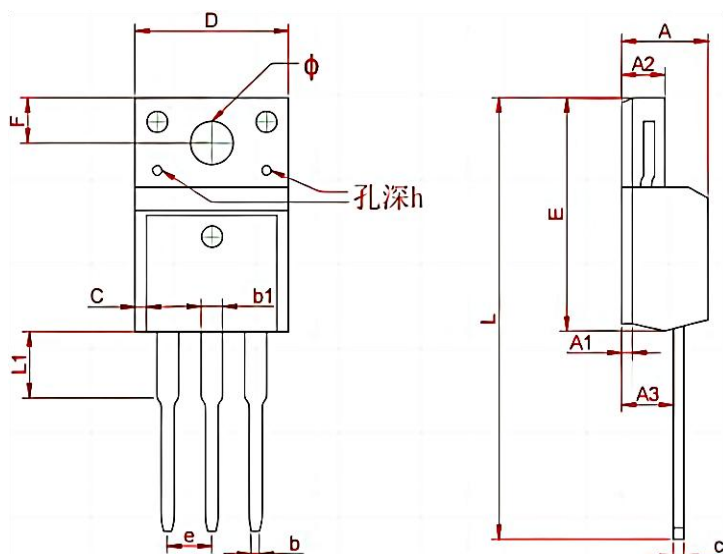


Fig. 12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_J .

TO- 220F PACKAGE OUTLINE DIMENSIONS

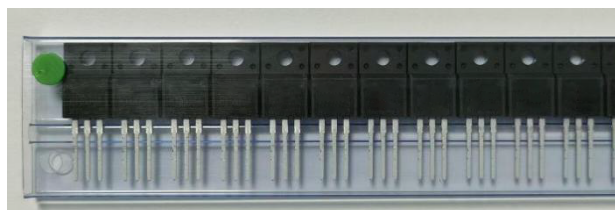


Symbol	Dimensions In Millimeters	
	Min	Max
A	4.300	4.750
A1	0.7 REF	
A2	2.300	2.850
A3	2.500	2.900
b	0.380	0.420
b1	1.220	1.280
C	1.08	1.200
c	0.480	0.520
D	10.15	10.450
E	15.700	15.950
e	2.574 TYP	
F	3.470 REF	
y	3.200 REF	
h	0.000	0.800
L	28.780	28.900
L1	2.990	3.100

TO - 220F PACKING INFORMATION



50PCS



20 Tube



5 Inner Box

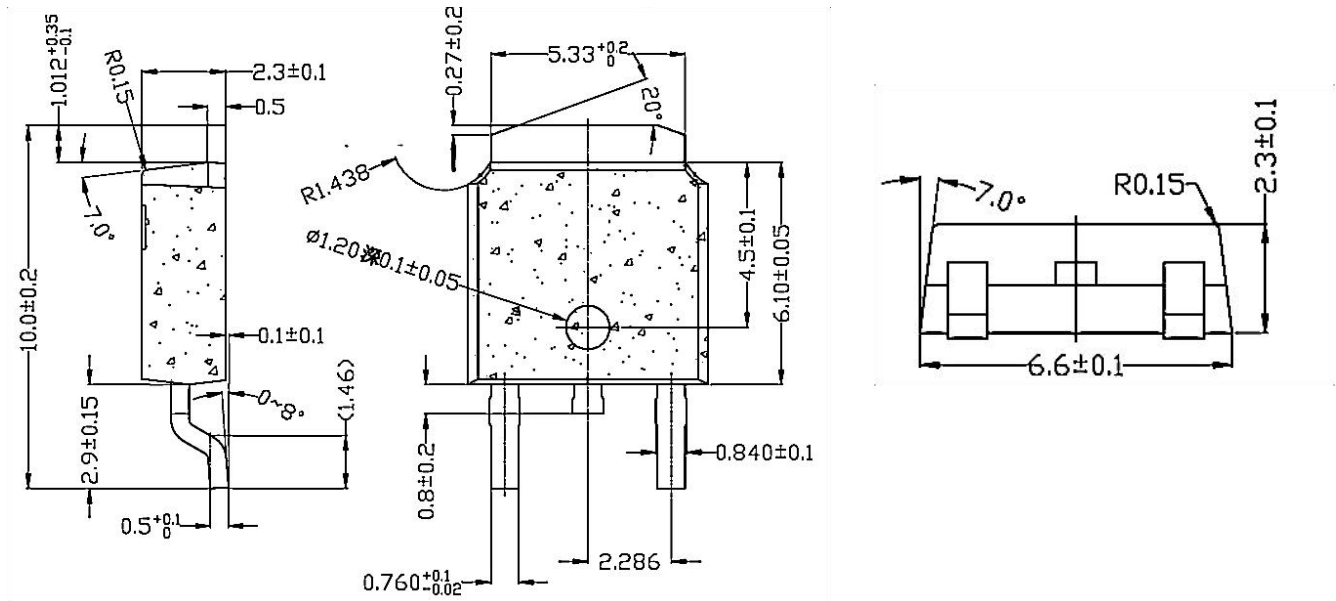


Outer Box

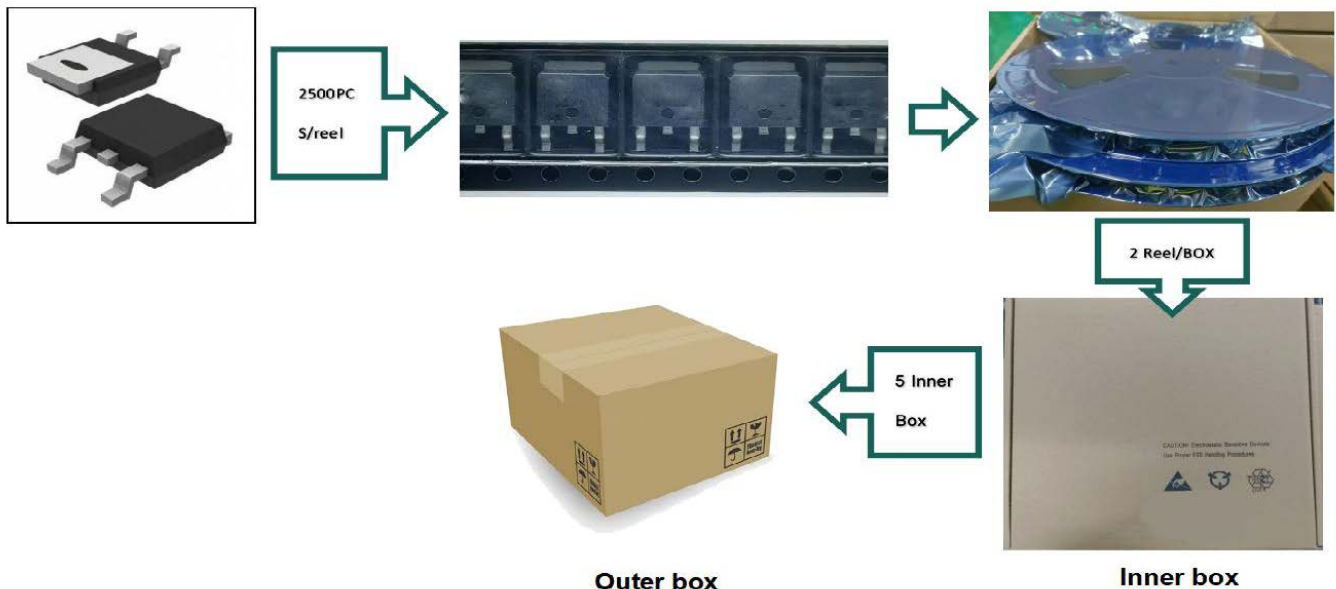
Inner Box

Package version	Tube dimensions LxWxH (mm)	Per Tube (pcs)	Tube per box	Inner box dimensions LxWxH (mm)	PCS/ Inner box	Outer box dimensions LxWxH(mm)	PCS/ Outer box
TO-220F	530*32*7	50	20	580*155*50	1000	602*277*188	5000

TO - 252 Package Outline Dimensions



TO - 252 Packing Information



Package version	Reel dimensions $\Phi \times H$ (mm)	Per Reel (pcs)	Reels per box	Inner box dimensions $L \times W \times H$ (mm)	Outer box (pcs)	Outer box dimensions $L \times W \times H$ (mm)
T0-252	$\Phi 330 \times 20$	2500	2	360*340*50	25000	375*375*280

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