



## BT152

Preliminary

SCR

### THYRISTOR

#### DESCRIPTION

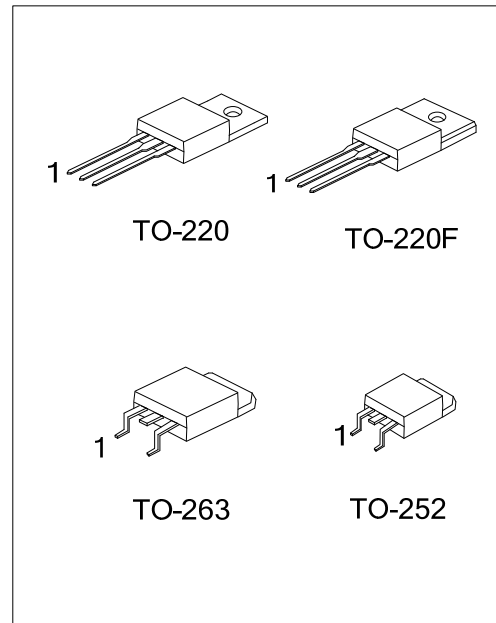
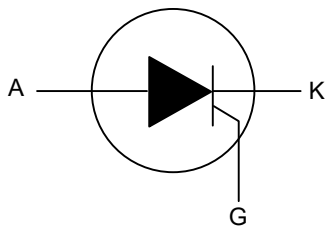
The UTC **BT152** is a thyristor, it uses UTC's advanced technology to provide customers with high bidirectional blocking voltage capability and high thermal cycling performance, etc.

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

#### FEATURES

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

#### SYMBOL



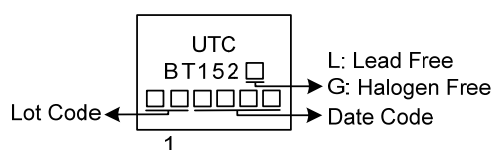
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BT152L-x-TA3-T	BT152G-x-TA3-T	TO-220	K	A	G	Tube
BT152L-x-TF3-T	BT152G-x-TF3-T	TO-220F	K	A	G	Tube
BT152L-x-TN3-R	BT152G-x-TN3-R	TO-252	K	A	G	Tape Reel
BT152L-x-TQ2-T	BT152G-x-TQ2-T	TO-263	K	A	G	Tube
BT152L-x-TQ2-R	BT152G-x-TQ2-R	TO-263	K	A	G	Tape Reel

Note: Pin Assignment: K: Cathode A: Anode G: Gate

<p>BT152G-x-TA3-T</p> <p>(1) Packing Type (2) Package Type (3) Peak Voltage (4) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF3: TO-220F, TN3: TO-252 TQ2: TO-263 (3) 4: 450V, 6: 650V, 8: 800V (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltages	BT152-4	$V_{DRM}, V_{RRM}$	450	V
	BT152-6		650	V
	BT152-8		800	V
Average On-State Current	Half Sine Wave, $T_{MB} \leq 103^{\circ}\text{C}$	$I_{T(AV)}$	13	A
RMS On-State Current	All Conduction Angles	$I_{T(RMS)}$	20	A
Non Repetitive Surge Peak On-State Current (Half Sine Wave; $T_J = 25^{\circ}\text{C}$ Prior to Surge)	$t = 10\text{ms}$	$I_{TSM}$	200	A
	$t = 8.3\text{ms}$		220	A
$I^2t$ Value for Fusing	$t = 10\text{ms}$	$I^2t$	200	$\text{A}^2\text{s}$
Repetitive Rate of Rise of On-State Current After Triggering	$I_{TM} = 50\text{A}$ , $I_G = 0.2\text{A}$ , $di_G/dt = 0.2\text{A}/\mu\text{s}$	$di_T/dt$	200	$\text{A}/\mu\text{s}$
Peak Gate Current		$I_{GM}$	5	A
Peak Gate Voltage		$V_{GM}$	5	V
Peak Reverse Gate Voltage		$V_{RGM}$	5	V
Peak Gate Power		$P_{GM}$	20	W
Average Gate Power Dissipation	Over Any 20ms Period	$P_{G(AV)}$	0.5	W
Operating Junction Temperature		$T_J$	+125	$^{\circ}\text{C}$
Storage Junction Temperature		$T_{STG}$	-40 ~ +150	$^{\circ}\text{C}$

Note: 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 DATA

PARAMETER			SYMBOL	RATINGS	UNIT
Junction to Ambient	In Free Air	TO-220	$\theta_{JA}$	60	K/W
		TO-220F			
		TO-263			
		TO-252			
Thermal Resistance Junction to Mounting Base		TO-220	$\theta_{JMB}$	1.1	K/W
		TO-220F			
		TO-263			
		TO-252			

### ■ STATIC CHARACTERISTICS ( $T_J = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	$I_{GT}$	$V_D = 12\text{V}$ , $I_T = 0.1\text{A}$		3	32	mA
Latching Current	$I_L$	$V_D = 12\text{V}$ , $I_{GT} = 0.1\text{A}$		25	80	mA
Holding Current	$I_H$	$V_D = 12\text{V}$ , $I_{GT} = 0.1\text{A}$		15	60	mA
On-State Voltage	$V_T$	$I_T = 40\text{A}$		1.4	1.75	V
Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $I_T = 0.1\text{A}$		0.6	1.5	V
		$V_D = V_{DRM(max)}$ , $I_T = 0.1\text{A}$ , $T_J = 125^{\circ}\text{C}$	0.25	0.4		V
Off-State Leakage Current	$I_D$	$V_D = V_{DRM(max)}$ , $V_R = V_{RRM(max)}$ , $T_J = 125^{\circ}\text{C}$		0.2	1.0	mA
	$I_R$			0.2	1.0	mA

■ DYNAMIC CHARACTERISTICS ( $T_J=25^\circ\text{C}$  unless otherwise stated)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Critical Rate of Rise of Off-State Voltage	$dV_D/dt$	$V_{DM}=67\%V_{DRM(max)}$ , $T_J=125^\circ\text{C}$ , Exponential Waveform Gate Open Circuit	200	300		V/ $\mu\text{s}$
Gate Controlled Turn-On Time	$t_{GT}$	$V_D=V_{DRM(max)}$ , $I_G=0.1\text{A}$ , $dI_G/dt=5\text{A}/\mu\text{s}$ , $I_{TM}=40\text{A}$		2		$\mu\text{s}$
Circuit Commutated Turn-Off Time	$t_Q$	$I_{TM}=50\text{A}$ , $V_R=25\text{V}$ , $dI_{TM}/dt=30\text{A}/\mu\text{s}$ , $dV_D/dt=50\text{V}/\mu\text{s}$ , $R_{GK}=100\Omega$		70		$\mu\text{s}$

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