



**THE DATASHEET OF  
FZT1151ATA**



## Features

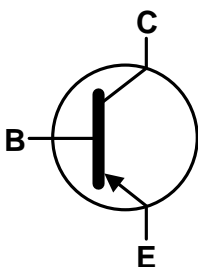
- $BV_{CEO} > -40V$
- $I_C = -3A$  High Continuous Collector Current
- $I_{CM} = -5A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -140mV @ -1A$
- $h_{FE}$  Specified up to -5A for a High Gain Hold-Up
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

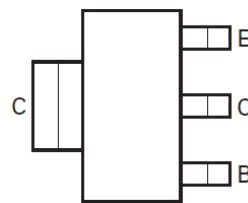
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



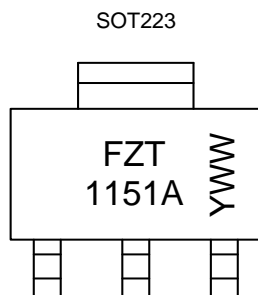
Top View  
Pin-Out

## Ordering Information (Note 4)

Part number	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT1151ATA	AEC-Q101	FZT1151A	7	12	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



FZT 1151A = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5 = 2015)  
 WW or  $\bar{W}W$  = Week Code (01~53)

### Absolute Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-45	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-3	A
Peak Pulse Current	I <sub>CM</sub>	-5	A

### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

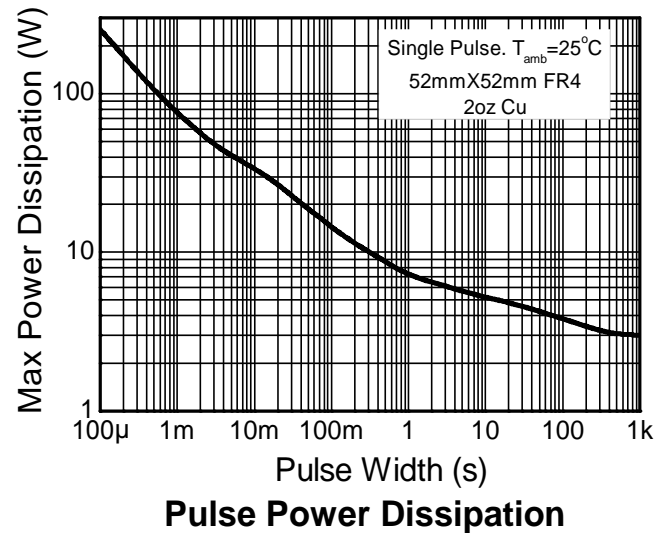
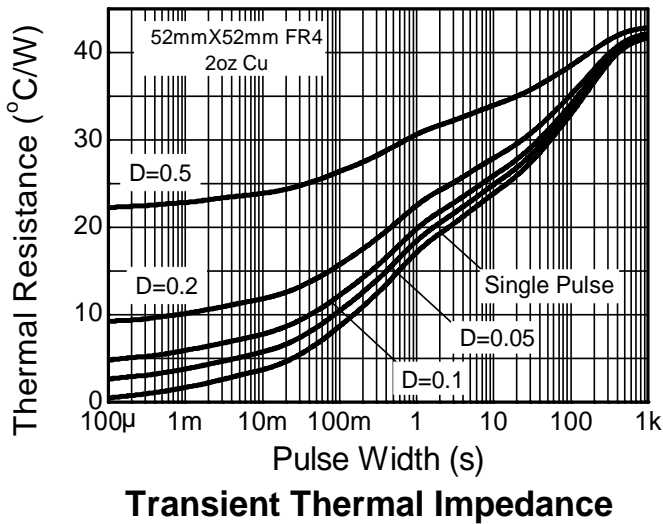
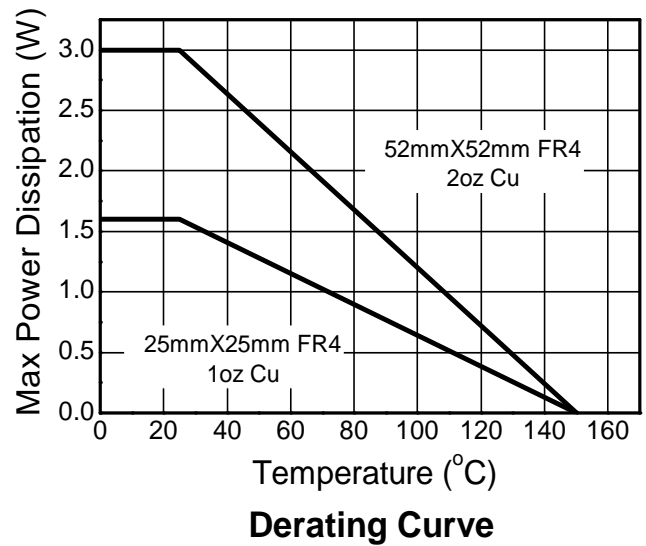
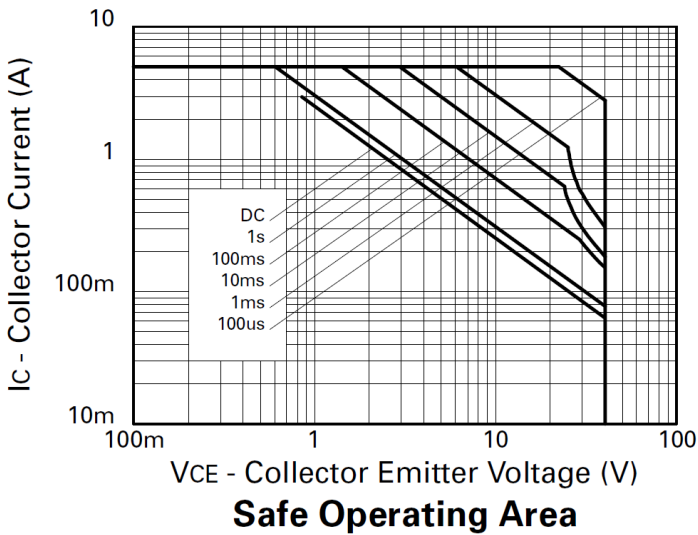
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	(Note 5)	3.0
		(Note 6)	2.0
		(Note 7)	1.6
		(Note 8)	1.2
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	41.7
		(Note 6)	62.5
		(Note 7)	78.1
		(Note 8)	104
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	10.9	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### ESD Ratings (Note 10)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 52mm x 52mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Same as note (5), except the device is mounted on 25mm x 25mm 2oz copper.
  7. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
  8. Same as note (5), except the device is mounted on minimum recommended pad layout.
  9. Thermal resistance from junction to solder-point (at the end of the collector lead).
  10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

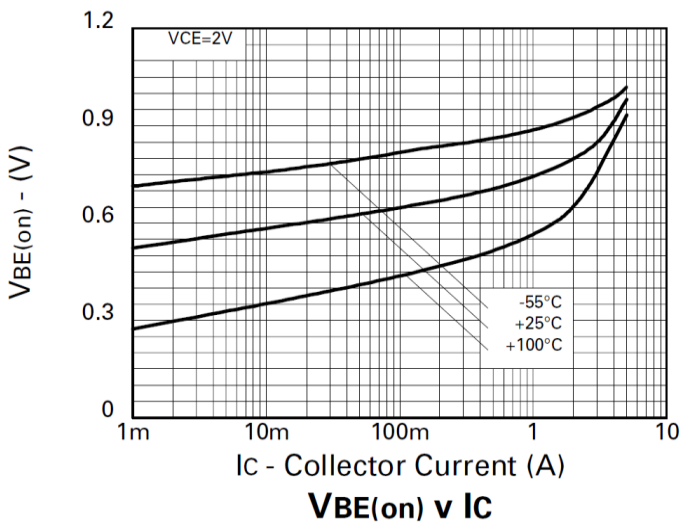
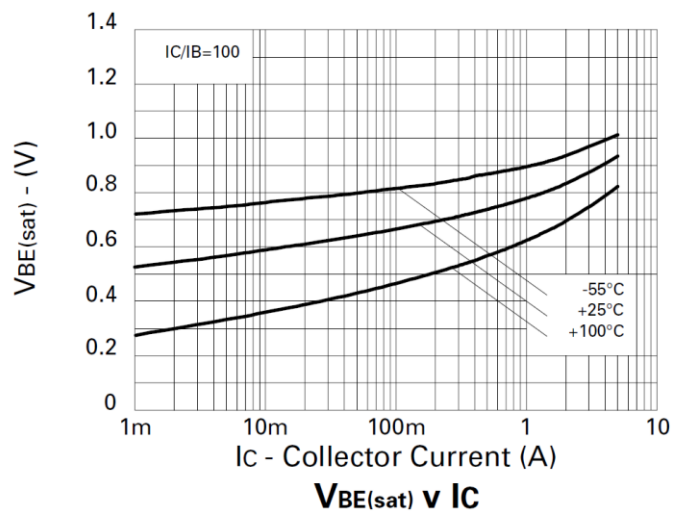
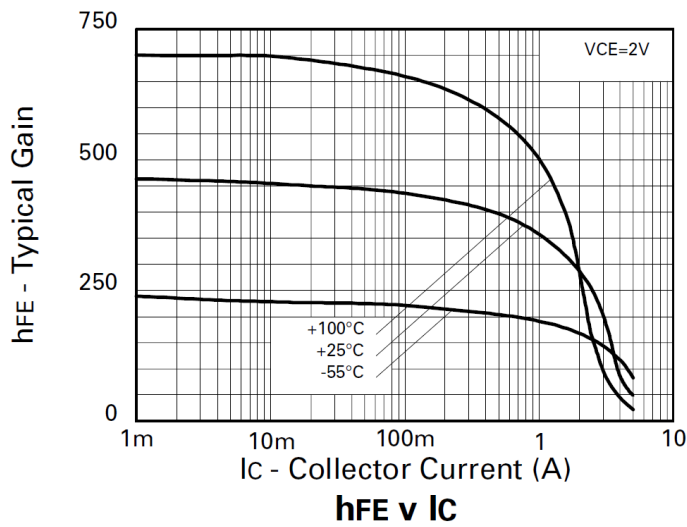
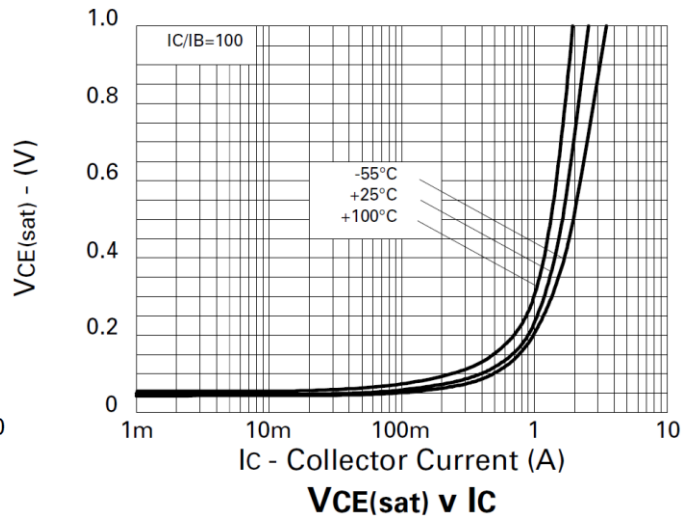
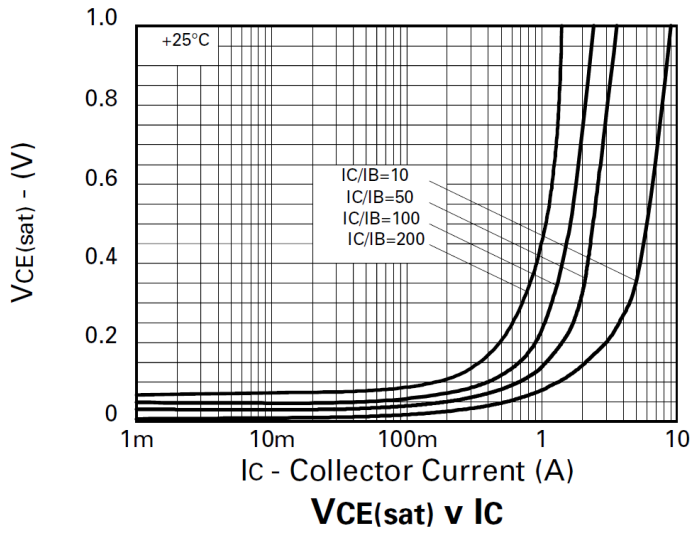


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-45	-95	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	$BV_{CER}$	-40	-90	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	$BV_{CEO}$	-40	-85	-	V	$I_C = -10\text{mA}$
Collector-Emitter Breakdown Voltage (Note 11)	$BV_{CEV}$	-40	-90	-	V	$I_C = -100\mu\text{A}, V_{EB} = +1\text{V}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	-8.5	-	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$	-	-0.3	-100	nA	$V_{CB} = -36\text{V}$
Emitter Cut-Off Current	$I_{EBO}$	-	-0.3	-100	nA	$V_{EB} = -4\text{V}$
Collector Emitter Cut-Off Current	$I_{CEO}$	-	-0.3	-100	nA	$V_{CE} = -32\text{V}$
DC Current Transfer Static Ratio (Note 11)	$h_{FE}$	270	450	-	-	$I_C = -10\text{mA}, V_{CE} = -2\text{V}$
		250	400	800		$I_C = -500\text{mA}, V_{CE} = -2\text{V}$
		180	300	-		$I_C = -2\text{A}, V_{CE} = -2\text{V}$
		100	190	-		$I_C = -3\text{A}, V_{CE} = -2\text{V}$
		-	45	-		$I_C = -5\text{A}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(sat)}$	-	-60	-90	mV	$I_C = -100\text{mA}, I_B = -1.0\text{mA}$
		-	-120	-180		$I_C = -500\text{mA}, I_B = -5\text{mA}$
		-	-140	-220		$I_C = -1\text{A}, I_B = -20\text{mA}$
		-	-170	-260		$I_C = -1.8\text{A}, I_B = -70\text{mA}$
		-	-200	-300		$I_C = -3\text{A}, I_B = -250\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{BE(sat)}$	-	-985	-1,100	mV	$I_C = -3\text{A}, I_B = -250\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(on)}$	-	-850	-1,000	mV	$I_C = -3\text{A}, V_{CE} = -2\text{V}$
Transitional Frequency (Note 11)	$f_T$	-	145	-	MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}, f = 50\text{MHz}$
Output Capacitance	$C_{obo}$	-	40	-	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Time	$t_{ON}$	-	170	-	ns	$V_{CC} = -30\text{V}, I_C = -2\text{A}, I_B = \pm 20\text{mA}$
	$t_{OFF}$	-	460	-		

Note: 11. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

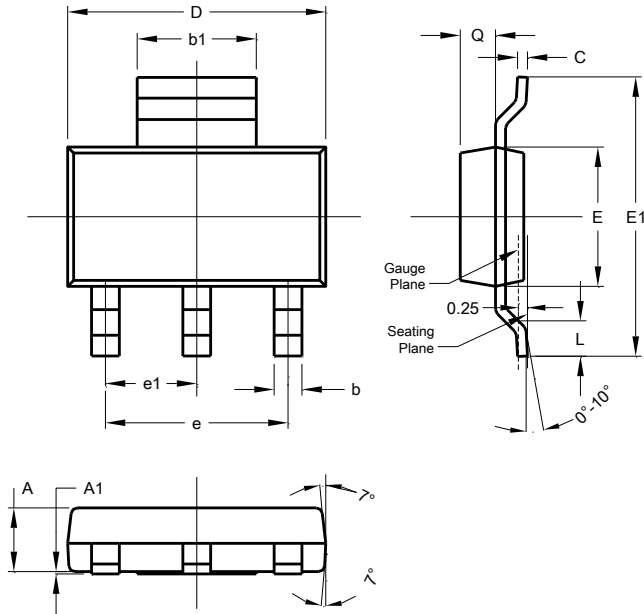
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**Package Outline Dimensions**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOT223**



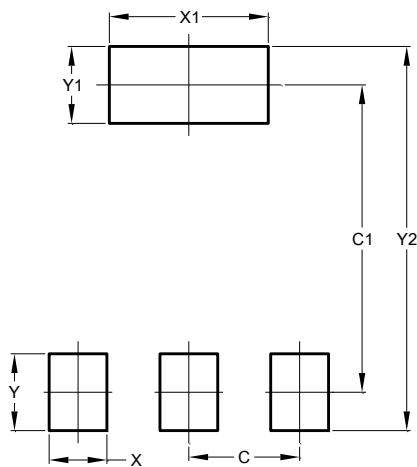
SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89

**All Dimensions in mm**

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.

**SOT223**



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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