

## 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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**

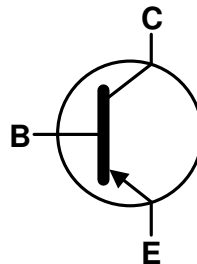
## Mechanical Data

- 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 (3)
- Weight: 0.112 grams (Approximate)

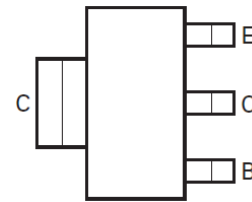
SOT223 (Type DN)



Top View



Device Symbol



Top View  
Pin-Out

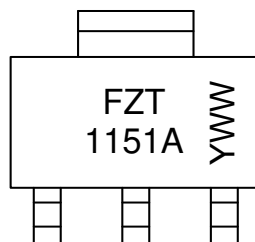
## Ordering Information (Note 4)

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) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

SOT223 (Type DN)



FZT 1151A = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 0 = 2020)  
 WW or  $\bar{W}W$  = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</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.)

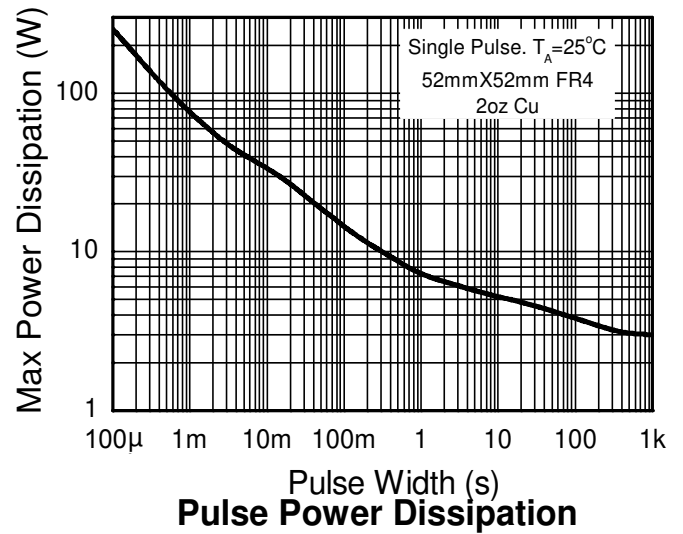
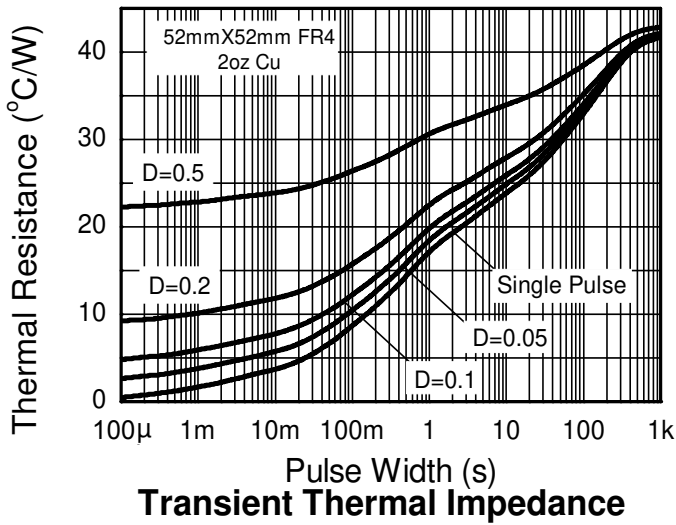
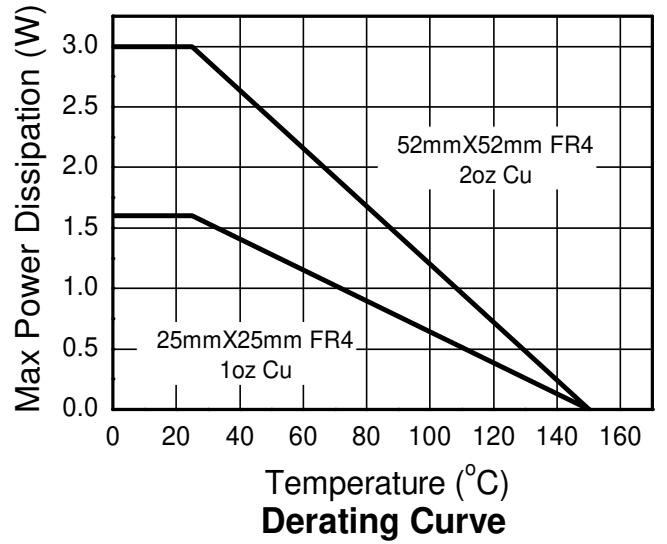
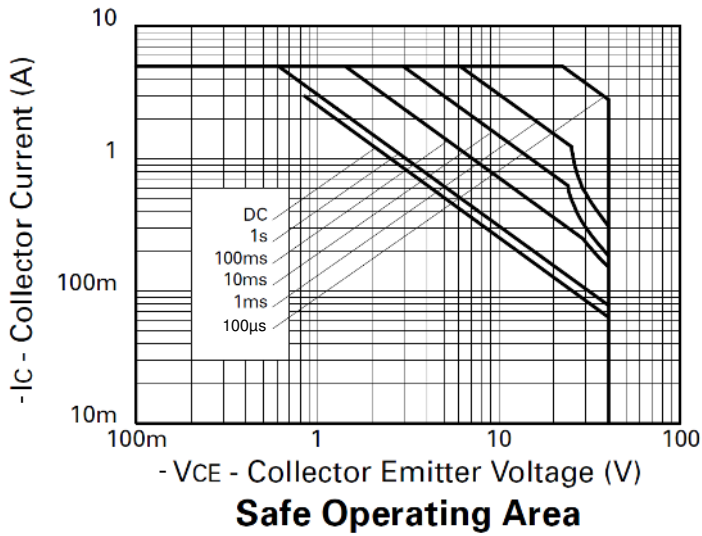
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	(Note 5)	3.0
		(Note 6)	2.0
		(Note 7)	1.6
		(Note 8)	1.2
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	41.7
		(Note 6)	62.5
		(Note 7)	78.1
		(Note 8)	104
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	10.9	°C/W
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 × 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 × 25mm 2oz copper.
  7. Same as note (5), except the device is mounted on 25mm × 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**

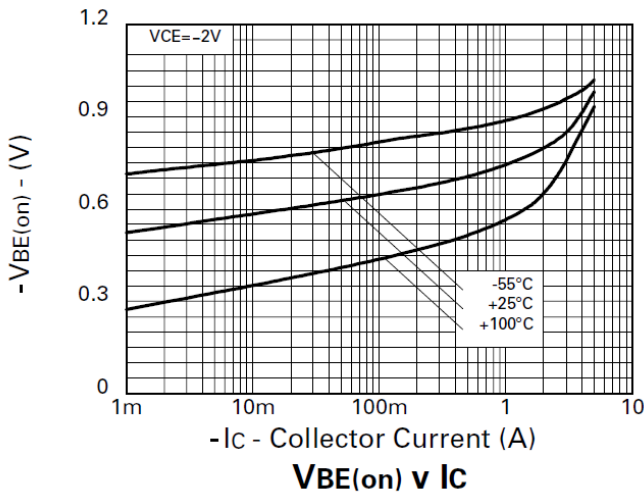
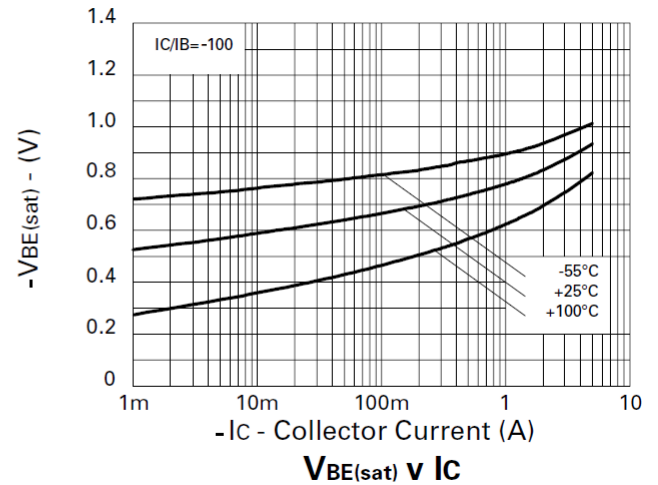
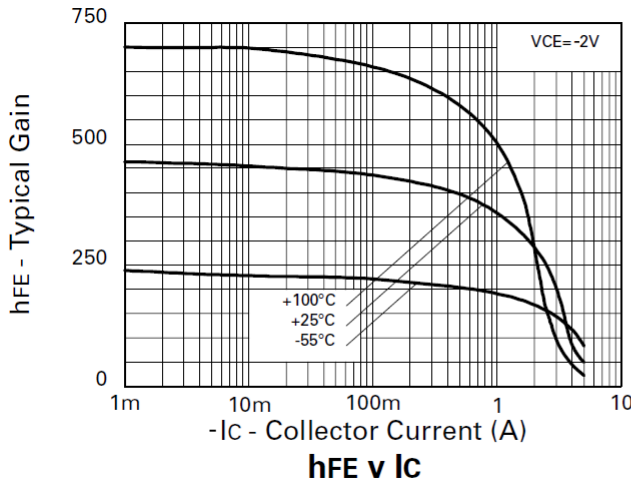
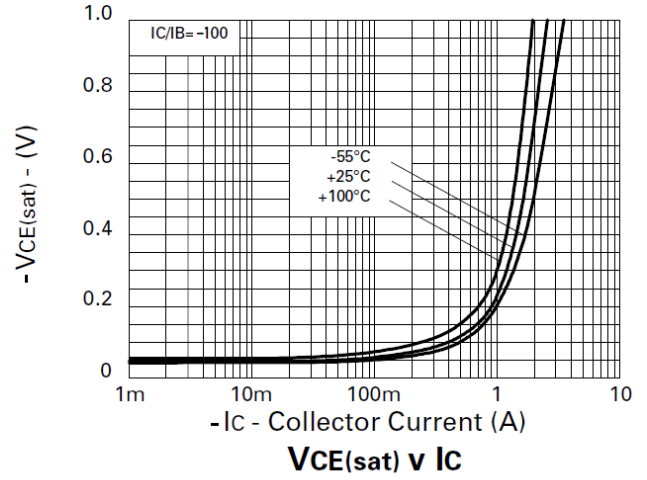
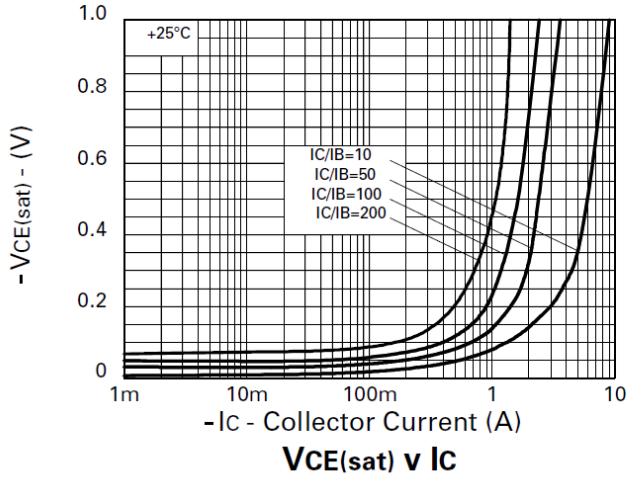


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-45	-95	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 11)	BV <sub>CER</sub>	-40	-90	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 11)	BV <sub>CEO</sub>	-40	-85	—	V	I <sub>C</sub> = -10mA
Collector-Emitter Breakdown Voltage (Note 11)	BV <sub>CEV</sub>	-40	-90	—	V	I <sub>C</sub> = -100μA, V <sub>EB</sub> = +1V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	-8.5	—	V	I <sub>E</sub> = -100μA
Collector Cut-Off Current	I <sub>CBO</sub>	—	-0.3	-100	nA	V <sub>CB</sub> = -36V
Emitter Cut-Off Current	I <sub>EBO</sub>	—	-0.3	-100	nA	V <sub>EB</sub> = -4V
Collector Emitter Cut-Off Current	I <sub>CEO</sub>	—	-0.3	-100	nA	V <sub>CE</sub> = -32V
DC Current Transfer Static Ratio (Note 11)	h <sub>FE</sub>	270	450	—	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -2V
		250	400	800		I <sub>C</sub> = -500mA, V <sub>CE</sub> = -2V
		180	300	—		I <sub>C</sub> = -2A, V <sub>CE</sub> = -2V
		100	190	—		I <sub>C</sub> = -3A, V <sub>CE</sub> = -2V
		—	45	—		I <sub>C</sub> = -5A, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 11)	V <sub>CE(sat)</sub>	—	-60	-90	mV	I <sub>C</sub> = -100mA, I <sub>B</sub> = -1.0mA
		—	-120	-180		I <sub>C</sub> = -500mA, I <sub>B</sub> = -5mA
		—	-140	-220		I <sub>C</sub> = -1A, I <sub>B</sub> = -20mA
		—	-170	-260		I <sub>C</sub> = -1.8A, I <sub>B</sub> = -70mA
		—	-200	-300		I <sub>C</sub> = -3A, I <sub>B</sub> = -250mA
Base-Emitter Saturation Voltage (Note 11)	V <sub>BE(sat)</sub>	—	-985	-1100	mV	I <sub>C</sub> = -3A, I <sub>B</sub> = -250mA
Base-Emitter Turn-On Voltage (Note 11)	V <sub>BE(on)</sub>	—	-850	-1000	mV	I <sub>C</sub> = -3A, V <sub>CE</sub> = -2V
Transitional Frequency (Note 11)	f <sub>T</sub>	—	145	—	MHz	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V, f = 50MHz
Output Capacitance	C <sub>obo</sub>	—	40	—	pF	V <sub>CB</sub> = -10V, f = 1MHz
Switching Time	t <sub>on</sub>	—	170	—	ns	V <sub>CC</sub> = -30V, I <sub>C</sub> = -2A, I <sub>B</sub> = ±20mA
	t <sub>off</sub>	—	460	—		

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

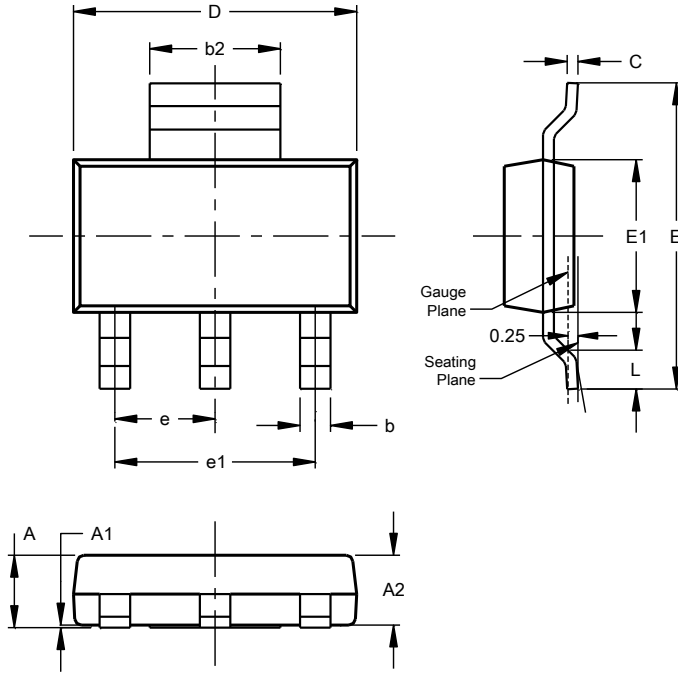
**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)

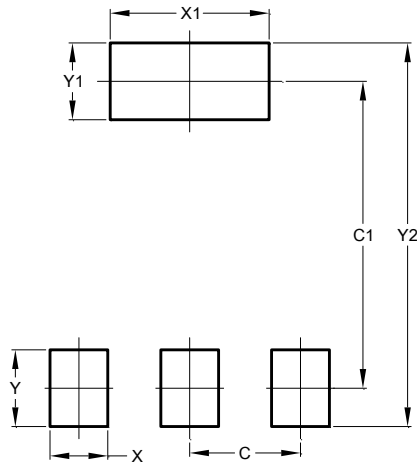


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223 (Type DN)



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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