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A Product Line of  
Diodes Incorporated



**FZT855**

## 150V NPN MEDIUM POWER TRANSISTOR IN SOT223

### Features

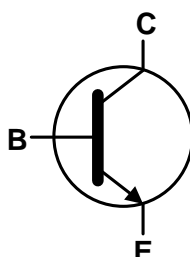
- $BV_{CEO} > 150V$
- $I_C = 5A$  High Continuous Collector Current
- $I_{CM} = 10A$  Peak Pulse Current
- Very Low Saturation Voltage  $V_{CE(sat)} < 110mV$  @ 1A
- $R_{CE(sat)} = 50m\Omega$  for a Low Equivalent On-Resistance
- $h_{FE}$  Specified Up to 10A for a High Gain Hold-Up
- Complementary PNP Type: FZT955
- **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

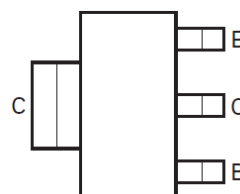
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 (G3)
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



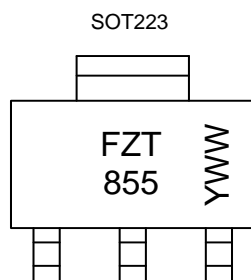
Top View  
Pin-Out

### Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT855TA	FZT855	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 855 = Product Type Marking Code  
YWW = Date Code Marking  
Y or  $\bar{Y}$  = Last Digit of Year (ex: 5= 2015)  
WW or  $\bar{WW}$  = 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>	250	V
Collector-Emitter Voltage	V <sub>CEO</sub>	150	V
Emitter-Base Voltage	V <sub>EBO</sub>	7	V
Continuous Collector Current	I <sub>C</sub>	5	A
Peak Pulse Current	I <sub>CM</sub>	10	A
Base Current	I <sub>B</sub>	1	A

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

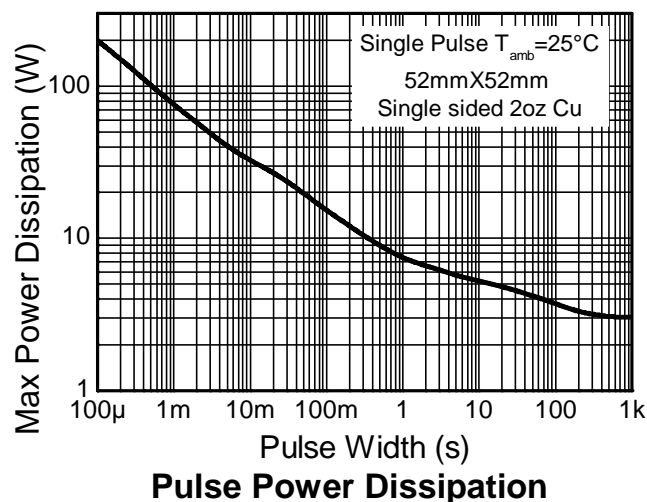
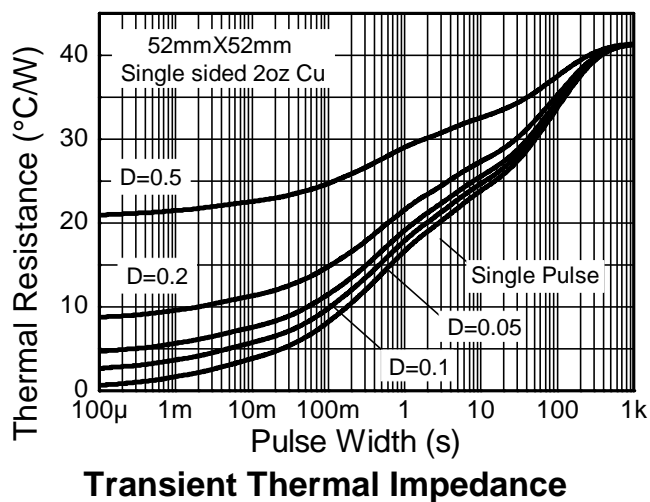
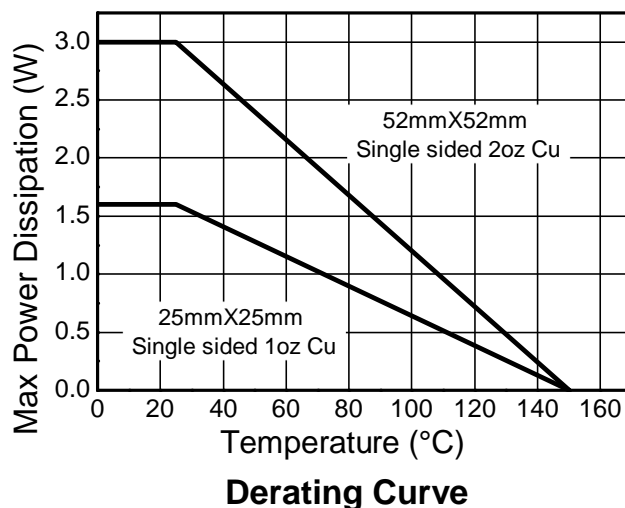
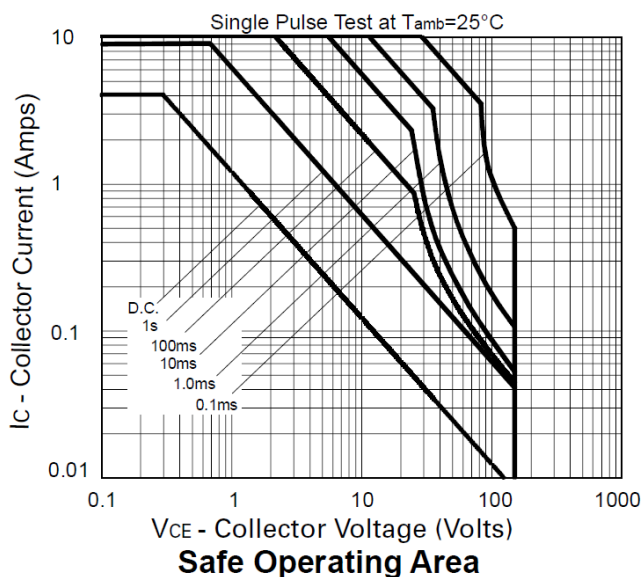
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	3.0	W
Linear Derating Factor		24	
		1.6	
		12.8	mW/°C
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	42	°C/W
	R <sub>θJA</sub>	78	
Thermal Resistance Junction to Lead	R <sub>θJL</sub>	8.8	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

- Notes:
- For a device surface mounted on 52mm X 52mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; device measured when operating in steady state condition.
  - Same as Note 5, except the device is mounted on 25mm X 25mm single sided 1oz weight copper.
  - Thermal resistance from junction to solder-point (at the end of the collector lead).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

## Thermal Characteristics and Derating Information

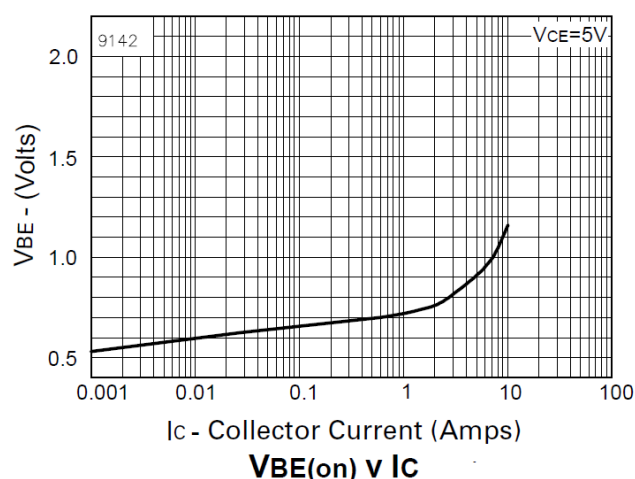
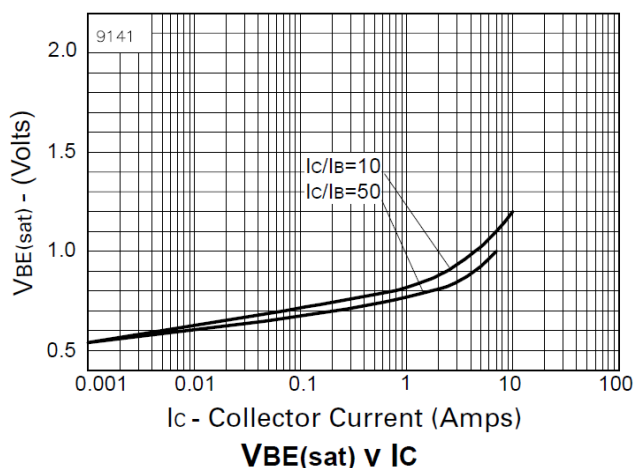
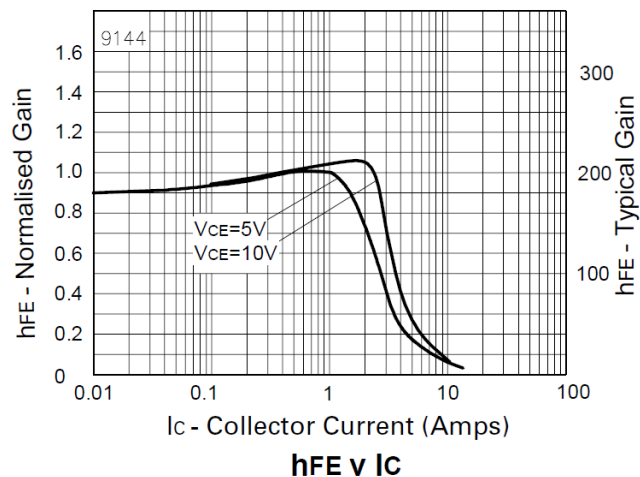
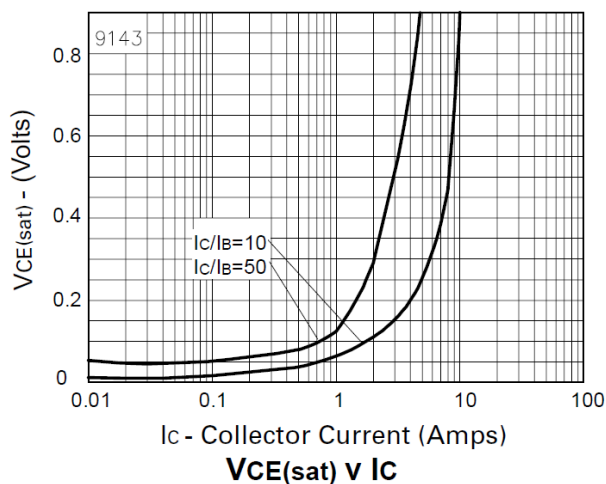


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	250	375	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage	BV <sub>CER</sub>	250	375	—	V	I <sub>C</sub> = 1μA, R <sub>B</sub> ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	150	180	—	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7	8	—	V	I <sub>E</sub> = 100μA
Collector Cut-Off Current	I <sub>CB0</sub>	—	—	50 1	nA μA	V <sub>CB</sub> = 200V V <sub>CB</sub> = 200V, @T <sub>A</sub> = +100°C
Collector Cut-Off Current	I <sub>CER</sub> R ≤ 1kΩ	—	—	50 1	nA μA	V <sub>CB</sub> = 200V V <sub>CB</sub> = 200V, @T <sub>A</sub> = +100°C
Emitter Cut-Off Current	I <sub>EBO</sub>	—	—	10	nA	V <sub>EB</sub> = 6V
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	—	20 35 60 260	40 65 110 355	mV	I <sub>C</sub> = 100mA, I <sub>B</sub> = 5mA I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA I <sub>C</sub> = 5A, I <sub>B</sub> = 500mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	—	—	1250	mV	I <sub>C</sub> = 5A, I <sub>B</sub> = 500mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	—	—	1100	mV	I <sub>C</sub> = 5A, V <sub>CE</sub> = 5V
DC Current Gain (Note 9)	h <sub>FE</sub>	100 100 15	200 200 30 10	— 300 — —		I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 1A, V <sub>CE</sub> = 5V I <sub>C</sub> = 5A, V <sub>CE</sub> = 5V I <sub>C</sub> = 10A, V <sub>CE</sub> = 5V
Current Gain-Bandwidth Product (Note 9)	f <sub>T</sub>	—	90	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA f = 50MHz
Output Capacitance (Note 9)	C <sub>obo</sub>	—	22	—	pF	V <sub>CB</sub> = 10V, f = 1MHz
Switching Times	t <sub>on</sub> t <sub>off</sub>	—	66 2130	—	ns ns	I <sub>C</sub> = 1A, V <sub>CC</sub> = 50V I <sub>B1</sub> = -I <sub>B2</sub> = 100mA

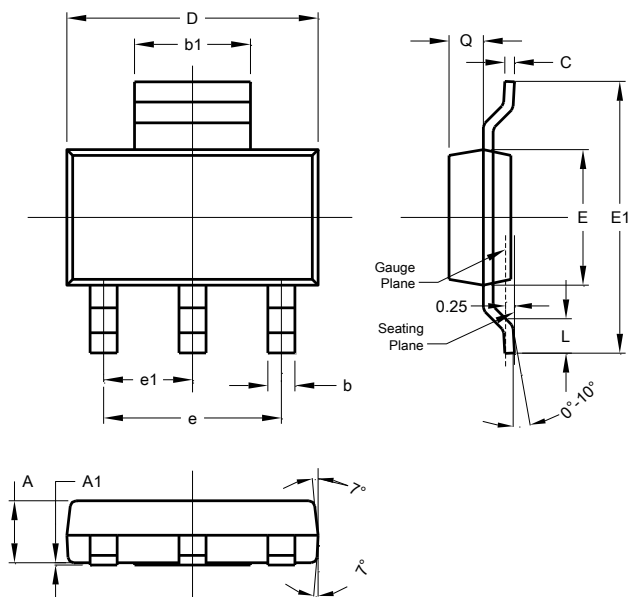
Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



## Package Outline Dimensions

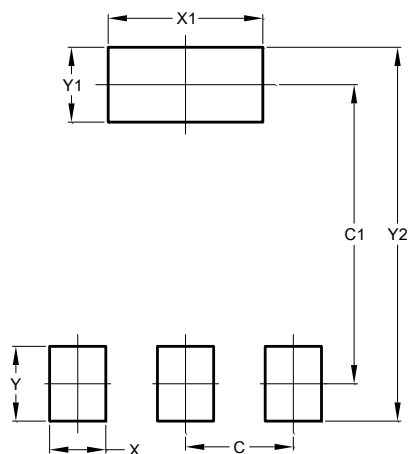
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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/datasheets/ap02001.pdf> for the latest version.



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

For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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Diodes Incorporated****FZT855**

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