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A Product Line of  
Diodes Incorporated



**FZT855**

**150V NPN MEDIUM POWER TRANSISTOR IN SOT223**

## Features

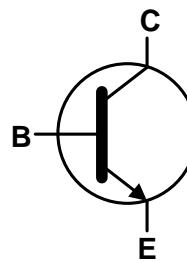
- $BV_{CEO} > 150V$
- $I_C = 5A$  High Continuous Collector Current
- $I_{CM} = 10A$  Peak Pulse Current
- Very Low Saturation Voltage  $V_{CE(sat)} < 110mV @ 1A$
- $R_{CE(sat)} = 50m\Omega$  for a Low Equivalent On-Resistance
- $h_{FE}$  Specified Up to 10A for a High Gain Hold-Up
- Complementary PNP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

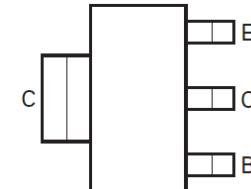
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



Top View  
Pin-Out

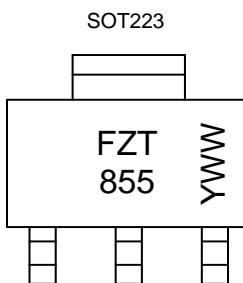
## Ordering Information (Note 4)

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  $\overline{Y}$  = Last Digit of Year (ex: 5= 2015)  
WW or  $\overline{WW}$  = Week Code (01~53)



**FZT855**

**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 (Note 5)	P <sub>D</sub>	3.0	W mW/°C
		24	
Linear Derating Factor (Note 6)		1.6	°C/W
		12.8	
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	42	
		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

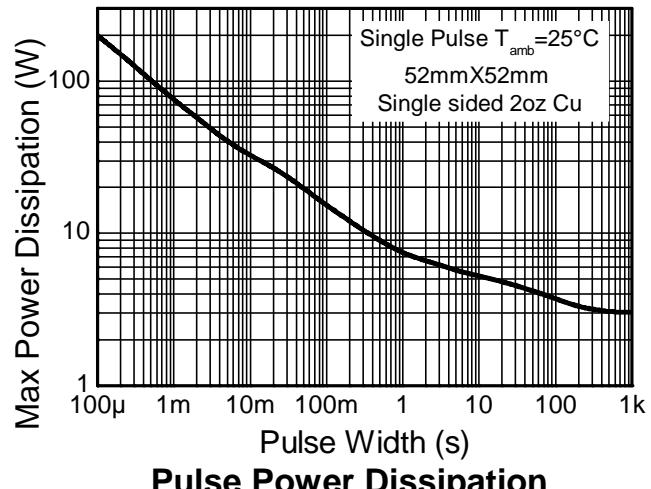
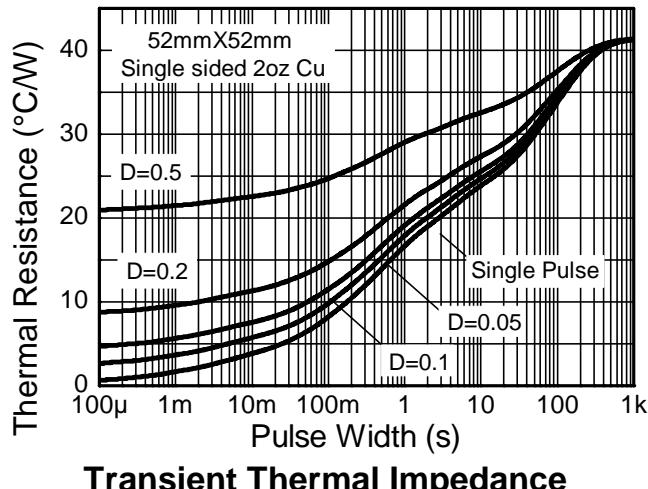
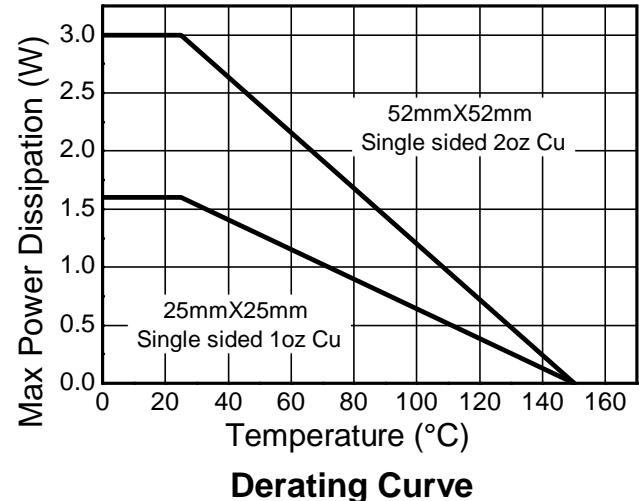
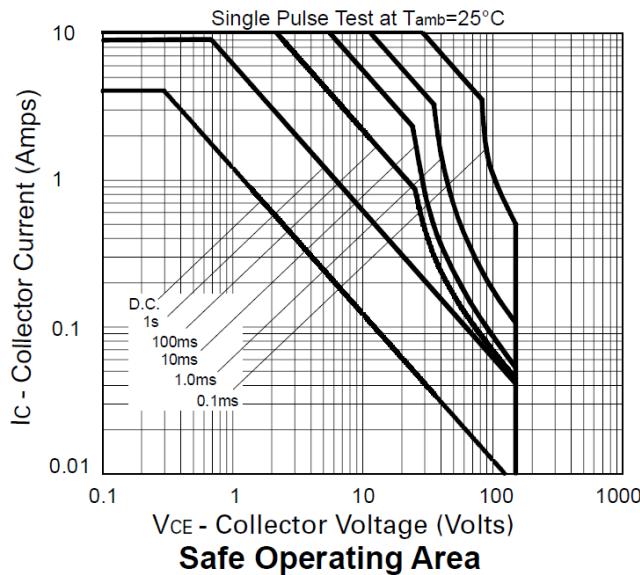
**ESD Ratings** (Note 8)

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:

- 5. 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.
- 6. Same as Note 5, except the device is mounted on 25mm X 25mm single sided 1oz weight copper.
- 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
- 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

## Thermal Characteristics and Derating Information

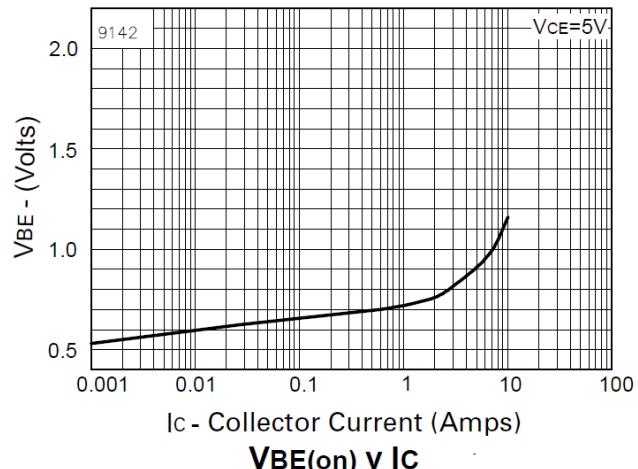
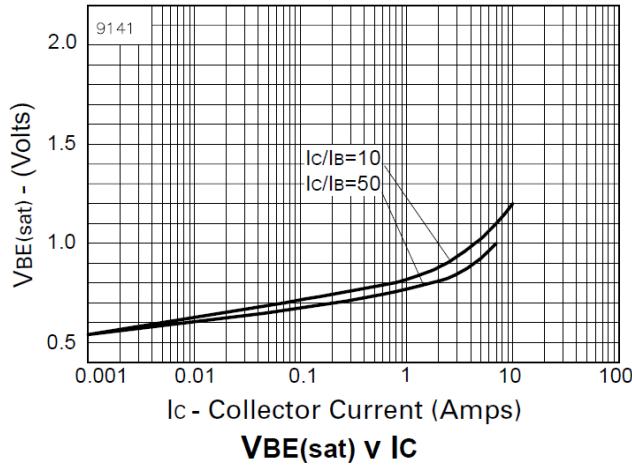
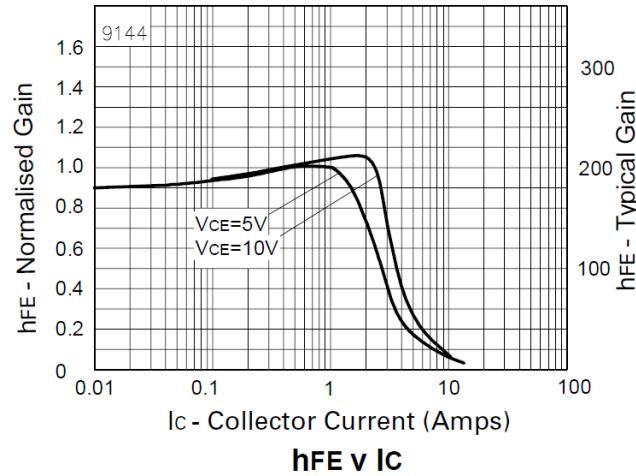
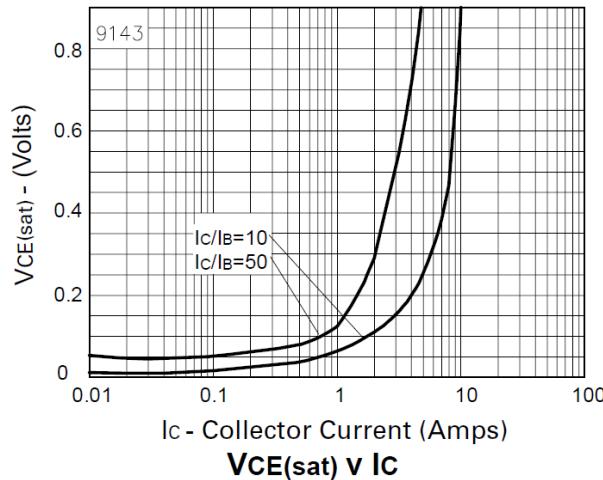


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$\text{BV}_{\text{CBO}}$	250	375	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$\text{BV}_{\text{CER}}$	250	375	—	V	$I_C = 1\mu\text{A}, R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	$\text{BV}_{\text{CEO}}$	150	180	—	V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage	$\text{BV}_{\text{EBO}}$	7	8	—	V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	$I_{\text{CBO}}$	—	—	50 1	nA $\mu\text{A}$	$V_{\text{CB}} = 200\text{V}$ $V_{\text{CB}} = 200\text{V}, @T_A = +100^\circ\text{C}$
Collector Cut-Off Current	$I_{\text{CER}}$ $R \leq 1\text{k}\Omega$	—	—	50 1	nA $\mu\text{A}$	$V_{\text{CB}} = 200\text{V}$ $V_{\text{CB}} = 200\text{V}, @T_A = +100^\circ\text{C}$
Emitter Cut-Off Current	$I_{\text{EBO}}$	—	—	10	nA	$V_{\text{EB}} = 6\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{\text{CE}(\text{sat})}$	—	20 35 60 260	40 65 110 355	mV	$I_C = 100\text{mA}, I_B = 5\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$ $I_C = 1\text{A}, I_B = 100\text{mA}$ $I_C = 5\text{A}, I_B = 500\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{\text{BE}(\text{sat})}$	—	—	1250	mV	$I_C = 5\text{A}, I_B = 500\text{mA}$
Base-Emitter Turn-On Voltage (Note 9)	$V_{\text{BE}(\text{on})}$	—	—	1100	mV	$I_C = 5\text{A}, V_{\text{CE}} = 5\text{V}$
DC Current Gain (Note 9)	$\text{h}_{\text{FE}}$	100 100 15	200 200 30 10	— 300 — —		$I_C = 10\text{mA}, V_{\text{CE}} = 5\text{V}$ $I_C = 1\text{A}, V_{\text{CE}} = 5\text{V}$ $I_C = 5\text{A}, V_{\text{CE}} = 5\text{V}$ $I_C = 10\text{A}, V_{\text{CE}} = 5\text{V}$
Current Gain-Bandwidth Product (Note 9)	$f_T$	—	90	—	MHz	$V_{\text{CE}} = 10\text{V}, I_C = 100\text{mA}$ $f = 50\text{MHz}$
Output Capacitance (Note 9)	$C_{\text{obo}}$	—	22	—	pF	$V_{\text{CB}} = 10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{\text{on}}$ $t_{\text{off}}$	—	66 2130	—	ns ns	$I_C = 1\text{A}, V_{\text{CC}} = 50\text{V}$ $I_{B1} = -I_{B2} = 100\text{mA}$

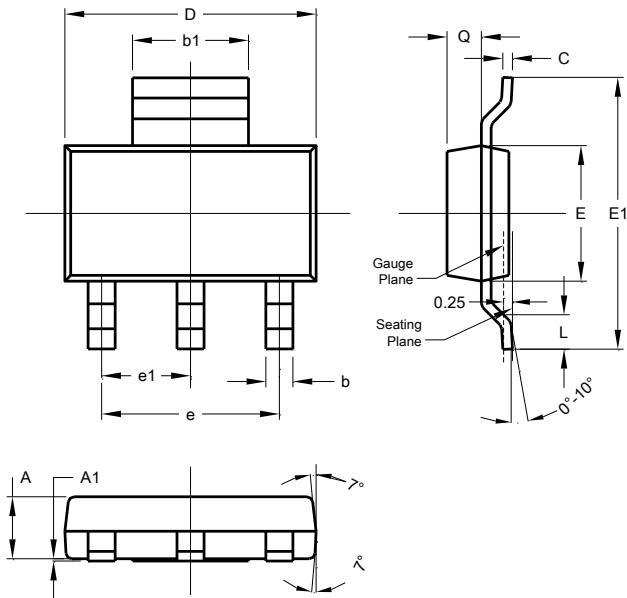
Note: 9. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

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



## Package Outline Dimensions

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

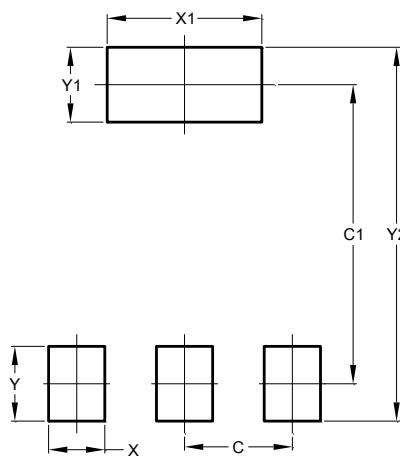


SOT223			
Dim	Min	Max	Typ
<b>A</b>	1.55	1.65	1.60
<b>A1</b>	0.010	0.15	0.05
<b>b</b>	0.60	0.80	0.70
<b>b1</b>	2.90	3.10	3.00
<b>C</b>	0.20	0.30	0.25
<b>D</b>	6.45	6.55	6.50
<b>E</b>	3.45	3.55	3.50
<b>E1</b>	6.90	7.10	7.00
<b>e</b>	-	-	4.60
<b>e1</b>	-	-	2.30
<b>L</b>	0.85	1.05	0.95
<b>Q</b>	0.84	0.94	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)
<b>C</b>	2.30
<b>C1</b>	6.40
<b>X</b>	1.20
<b>X1</b>	3.30
<b>Y</b>	1.60
<b>Y1</b>	1.60
<b>Y2</b>	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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