FZT855

150V NPN MEDIUM POWER TRANSISTOR IN SOT223

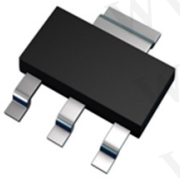
Features

- 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
- $R_{CE(sat)}$ = 50mΩ 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**

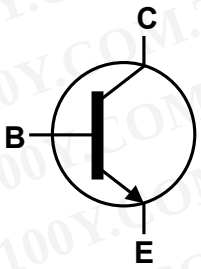
Mechanical Data

- 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)

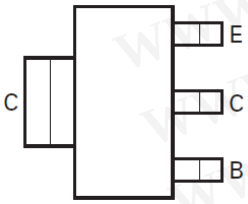
SOT223



Top View



Device Symbol



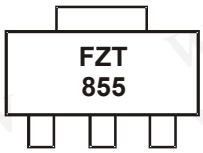
Top View
Pin-Out

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 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



FZT855 = Product type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	250	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	5	A
Peak Pulse Current	I_{CM}	10	A
Base Current	I_B	1	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

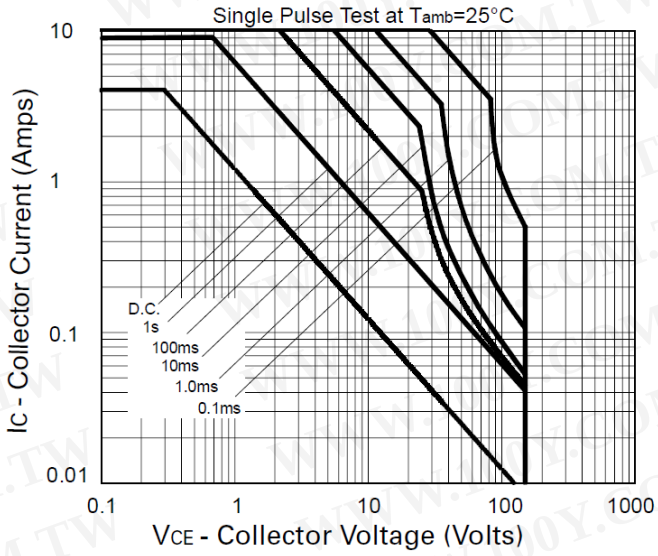
Characteristic		Symbol	Value	Unit
Power Dissipation Linear derating factor	(Note 5)	P_D	3.0 24	W mW/°C
	(Note 6)		1.6 12.8	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	42	°C/W
	(Note 6)	$R_{\theta JA}$	78	
Thermal Resistance Junction to Lead	(Note 7)	$R_{\theta JL}$	8.84	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

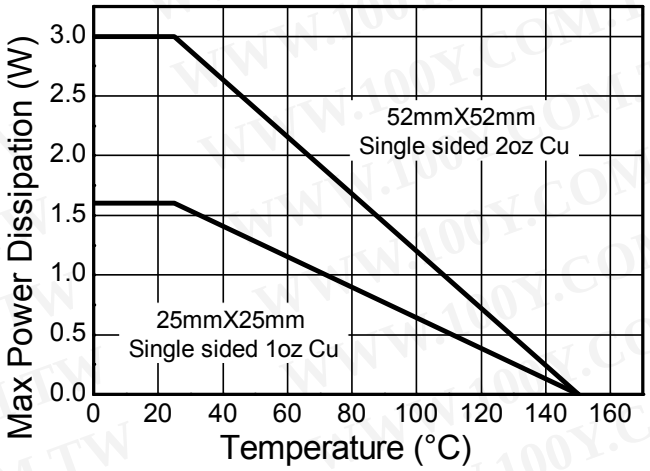
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

Notes:
5. For a device surface mounted on 50mm X 50mm FR4 PCB with high coverage of single sided 2 oz 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.

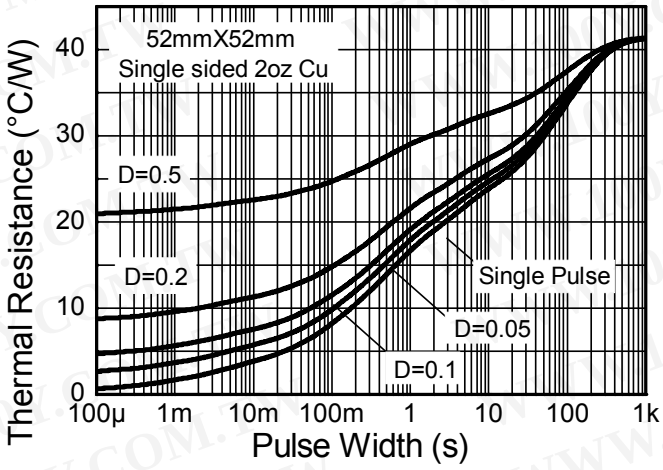
Thermal Characteristics and Derating Information



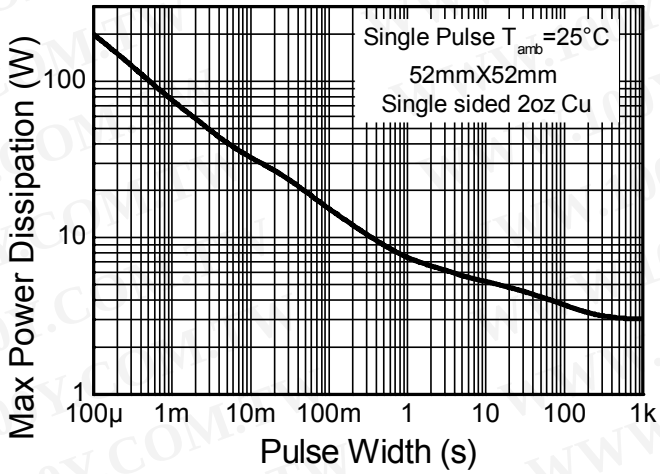
Safe Operating Area



Derating Curve



Transient Thermal Impedance



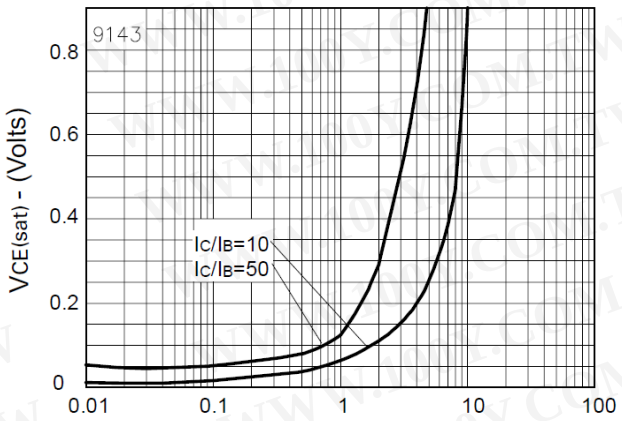
Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

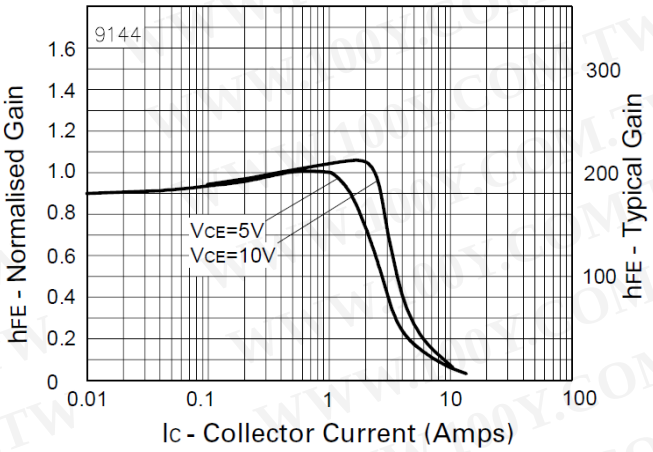
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	250	375	–	V	I_C = 100µA
Collector-Emitter Breakdown Voltage	BV_{CER}	250	375	–	V	I_C = 1µA,R_B ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	150	180	–	V	I_C = 1mA
Emitter-Base Breakdown Voltage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

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

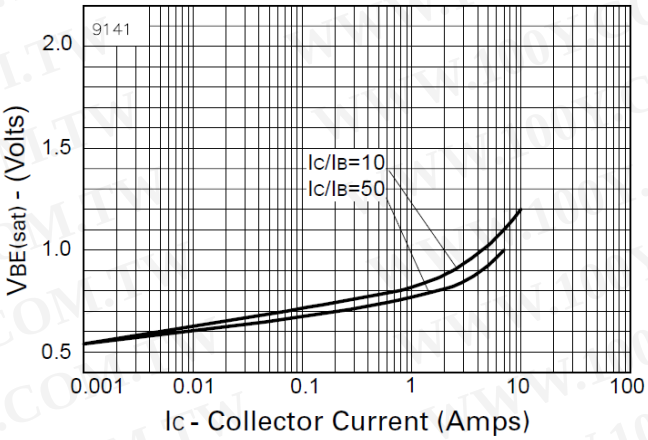
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



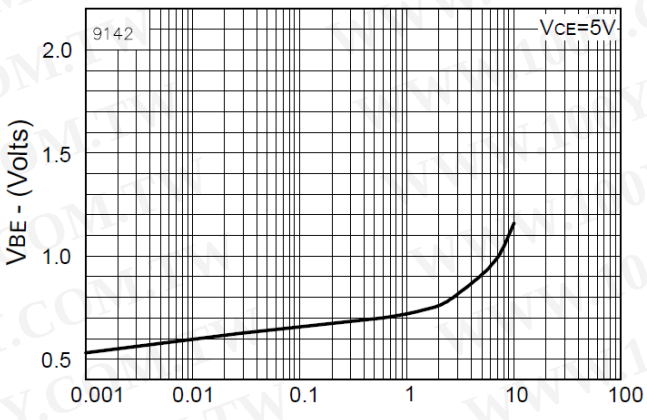
VCE(sat) v IC



hFE v IC



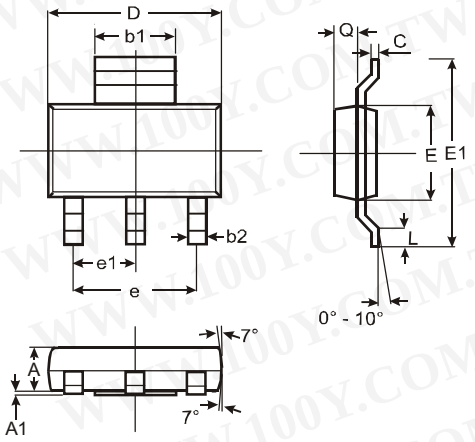
VBE(sat) v IC



VBE(on) v IC

Package Outline Dimensions

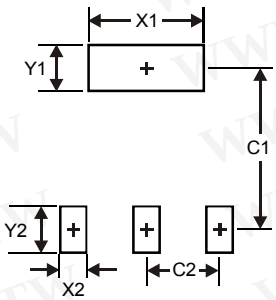
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
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)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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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