

**150V NPN MEDIUM POWER TRANSISTOR IN E-LINE**

**Features**

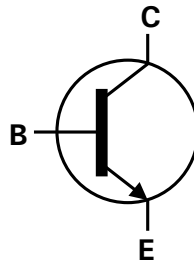
- $BV_{CEO} > 150V$
- $I_C = 4A$  High Continuous Collector Current
- $I_{CM} = 10A$  Peak Pulse Current
- $T_J$  up to 200°C for High Temperature Operation
- Low Saturation Voltage  $< 100mV @ 1A$
- $P_D = 1.2W$  Power dissipation
- Complementary NPN Type: ZTX955
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

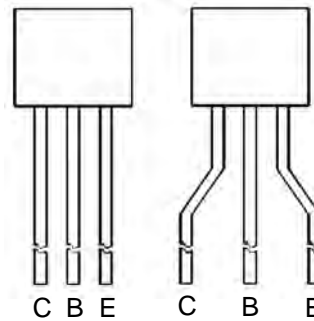
- Case: E-Line (TO-92 Compatible)
- Case Material: molded plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208  $\text{Ⓢ3}$
- Weight: 0.159 grams (approximate)



Flat Face View

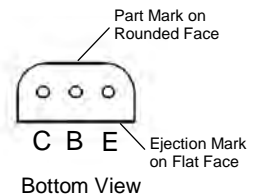


Device Symbol



Rounded Face View

Pin-Out Configuration

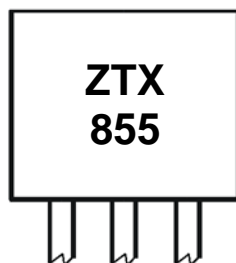


**Ordering Information (Note 4)**

Product	Marking	Package	Leads	Quantity
ZTX855STZ	ZTX855	E-Line	Joggled	2,000 taped per Ammo Box
ZTX855	ZTX855	E-Line	Straight	4,000 loose in a Box

- 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**



Rounded Face View

ZTX855 = Product type Marking Code

### 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>	6	V
Continuous Collector Current	I <sub>C</sub>	4	A
Peak Pulse Current	I <sub>CM</sub>	10	A

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

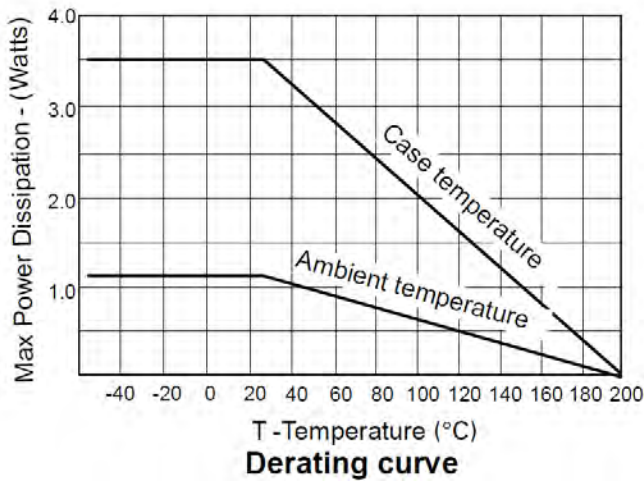
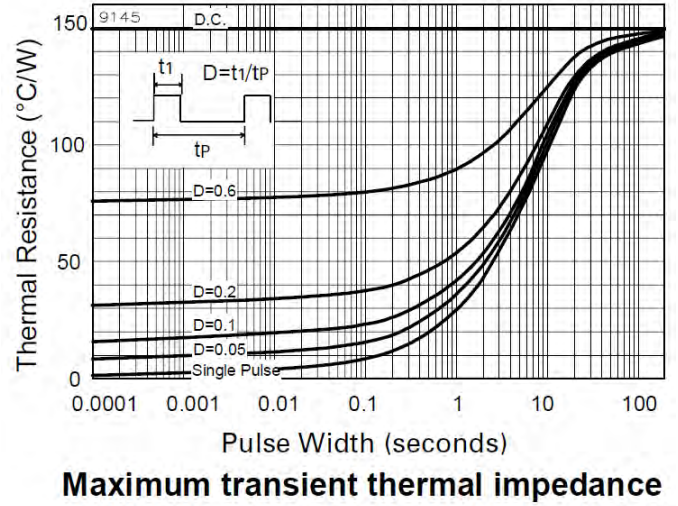
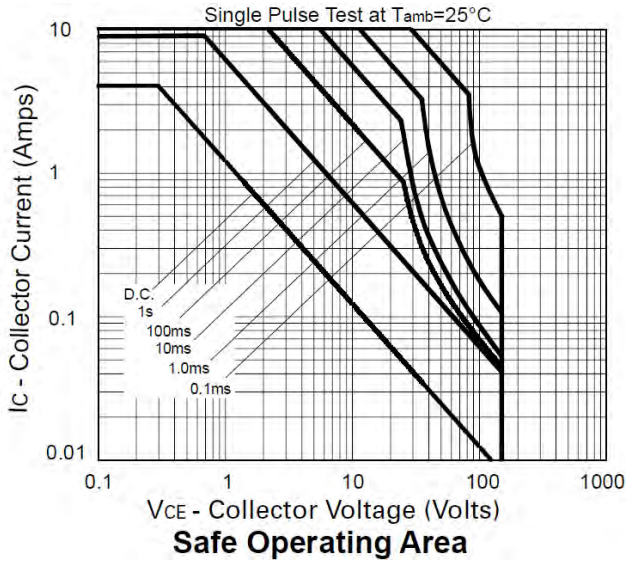
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1.58	W
Power Dissipation (Note 6)	P <sub>D</sub>	1.2	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	150	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	110	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R <sub>θJC</sub>	50	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +200	°C

### ESD Ratings (Note 8)

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 through-hole device mounted at the seating plane (2.5mm lead length) with the collector lead on 25mm x 25mm 1oz copper that is on a single-sided 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 minimum recommended pad layout with 12mm lead length from the bottom of package to the board.
  7. Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

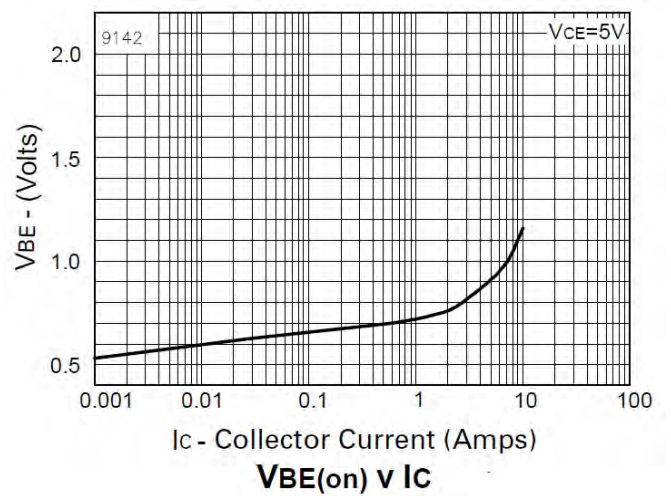
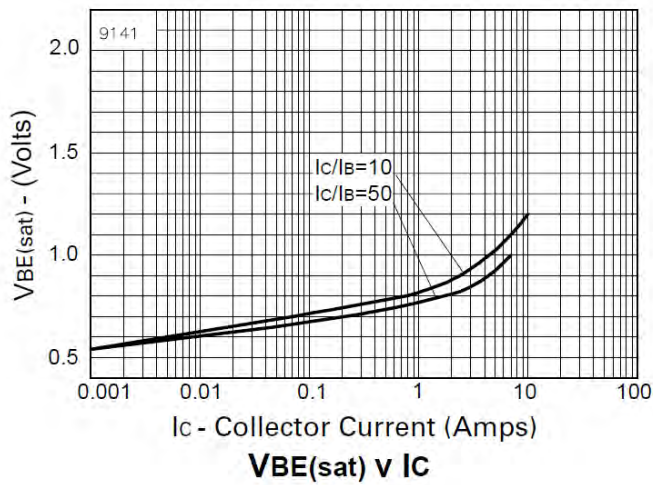
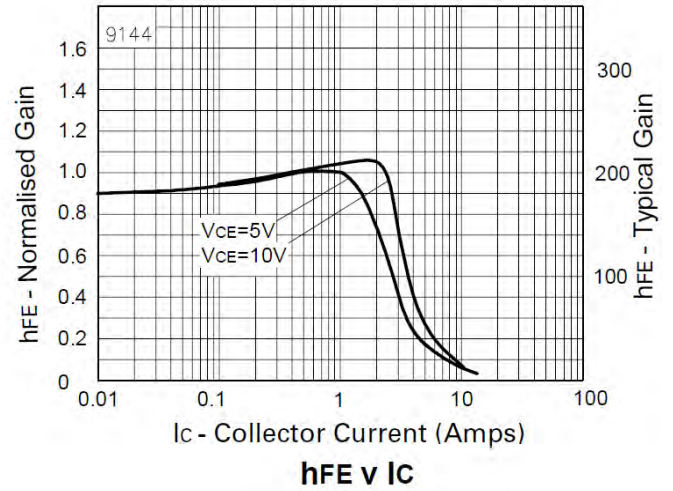
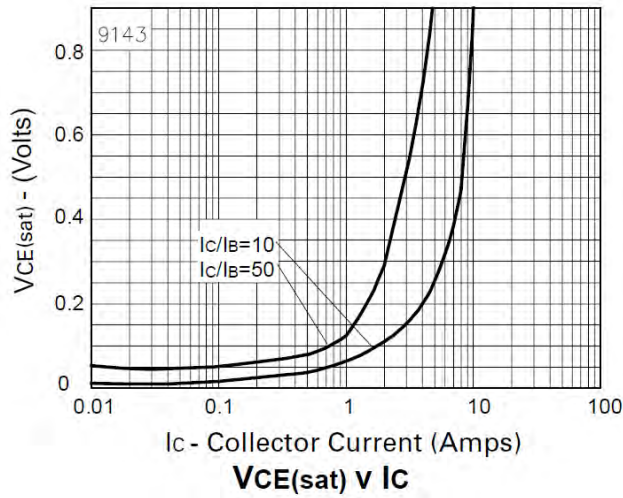


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	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>	6	8	–	V	I <sub>E</sub> = 100μA
Collector-Base Cut-off Current	I <sub>CBO</sub>	–	–	50 1	nA μA	V <sub>CB</sub> = 200V V <sub>CB</sub> = 200V, @T <sub>A</sub> = +100°C
Collector-Emitter 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-Base 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 60 210	40 60 100 260	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> = 4A, I <sub>B</sub> = 400mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	–	960	1100	mV	I <sub>C</sub> = 4A, I <sub>B</sub> = 400mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	–	880	1000	mV	I <sub>C</sub> = 4A, V <sub>CE</sub> = 5V
DC Current Gain (Note 9)	h <sub>FE</sub>	100 100 35	200 200 55 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> = 4A, 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> = 20V, 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

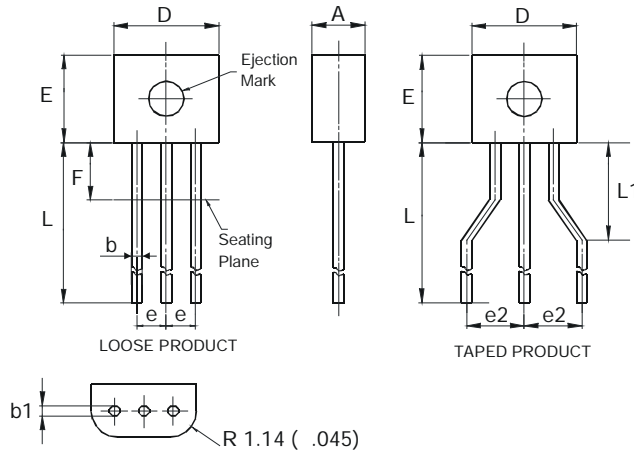
Notes: 9. Measured under pulsed conditions. Pulse width • 300μs. Duty cycle • 2%

**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 latest version.



E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	–
b	0.41	0.495	–
b1	0.41	0.495	–
D	4.37	4.77	–
E	3.61	4.01	–
e	–	–	1.27
e2	–	–	2.54
F	–	2.50	–
L	13.00	13.97	–
L1	2.50	3.50	–
<b>All Dimensions in mm</b>			

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to voltage spacing between terminals.



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