



**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  $200^{\circ}C$  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**

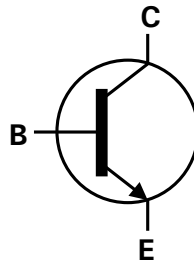
**Mechanical Data**

- 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)

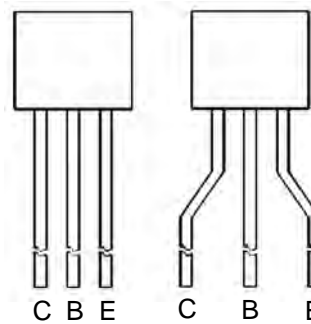
E-Line  
(TO-92 Compatible)



Flat Face View

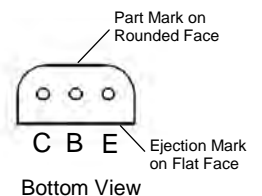


Device Symbol



Rounded Face View

Pin-Out Configuration



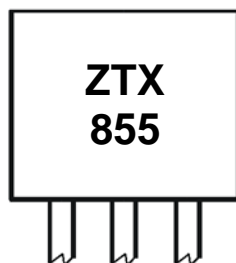
Bottom View

**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.)

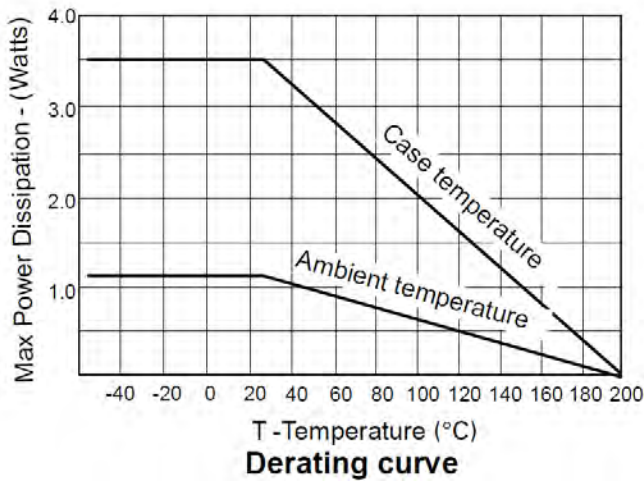
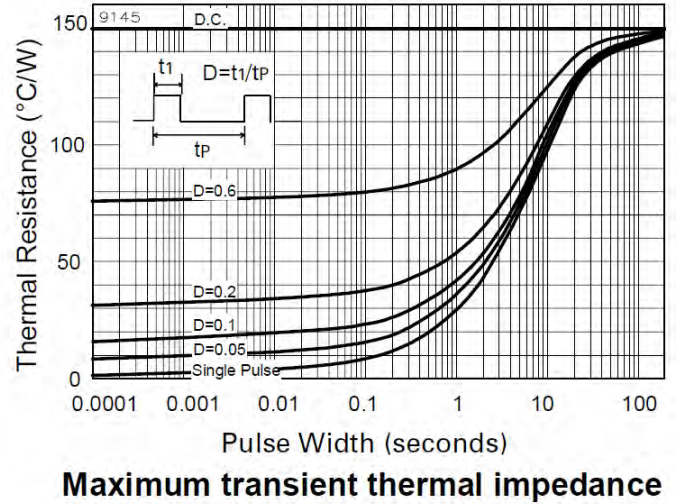
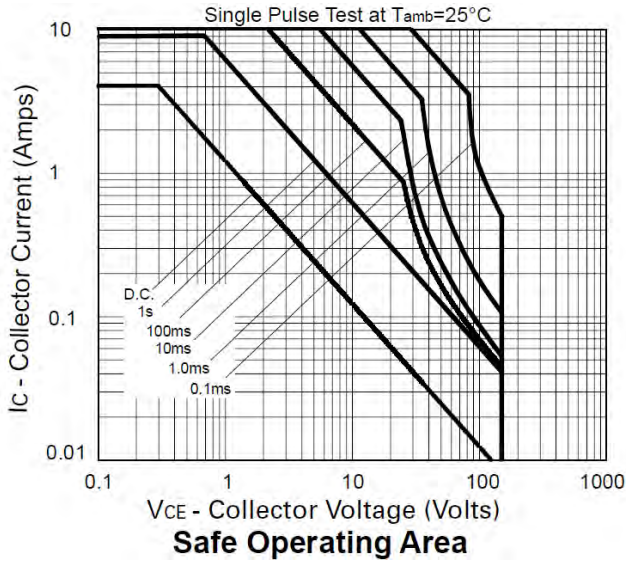
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1.58	W
Power Dissipation (Note 6)	P <sub>D</sub>	1.2	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	150	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	110	°C/W
Thermal Resistance, Junction 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:
- 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.
  - 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.
  - Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

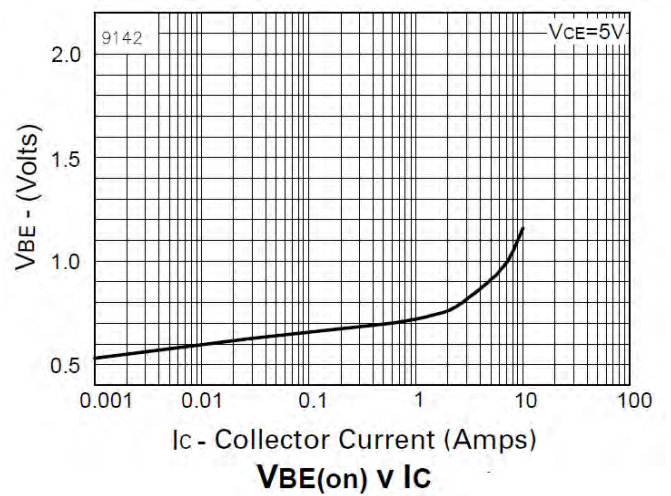
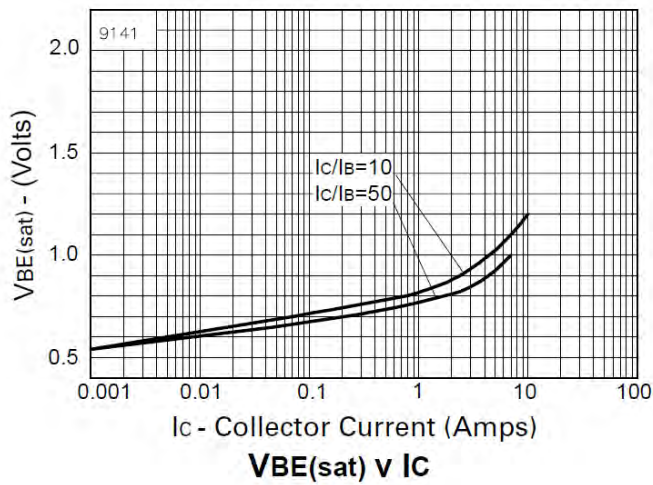
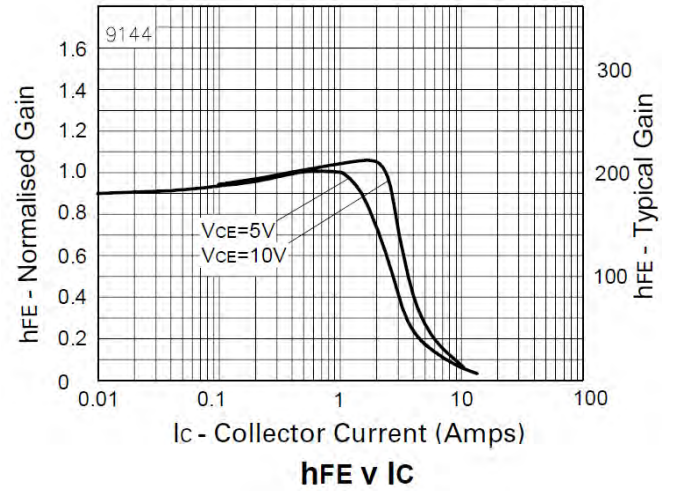
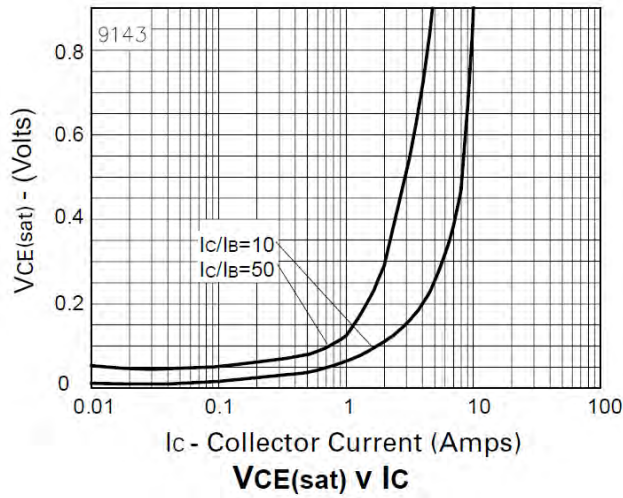


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>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

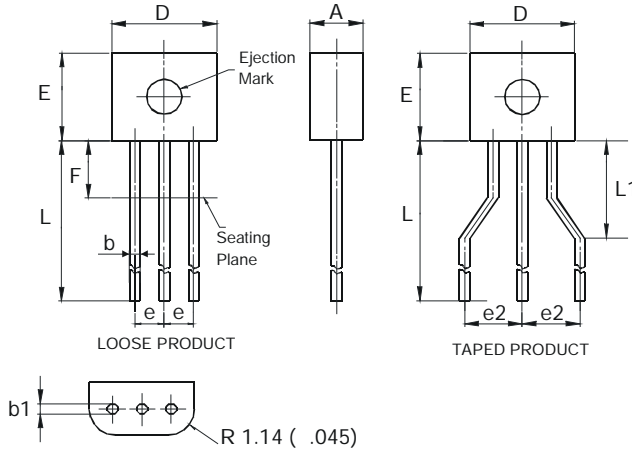
Notes: 9. Measured under pulsed conditions. Pulse width • 300μs. Duty cycle • 2%

**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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