

## Features

- $BV_{CEO} > -400V$
- $I_C = -200mA$  Continuous Current
- $P_D = 1W$  Power Dissipation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**

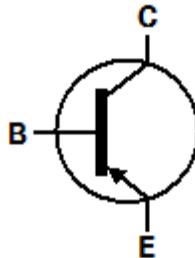
## Mechanical Data

- Package: E-Line
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 159mg (Approximate)

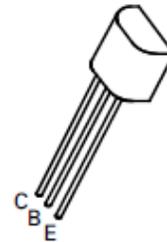
E-Line  
(TO92 Compatible)



Flat Face View



Device Symbol



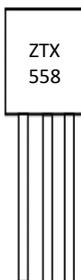
Top View  
Pinout

## Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Leads	Packing	
				Qty.	Carrier
ZTX558	E-Line	ZTX558	Straight	4,000	Loose in a Box
ZTX558STZ	E-Line	ZTX558	Joggled	2,000	Taped per Ammo Box

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



ZTX 558 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-400	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-400	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current	I <sub>C</sub>	-200	mA

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

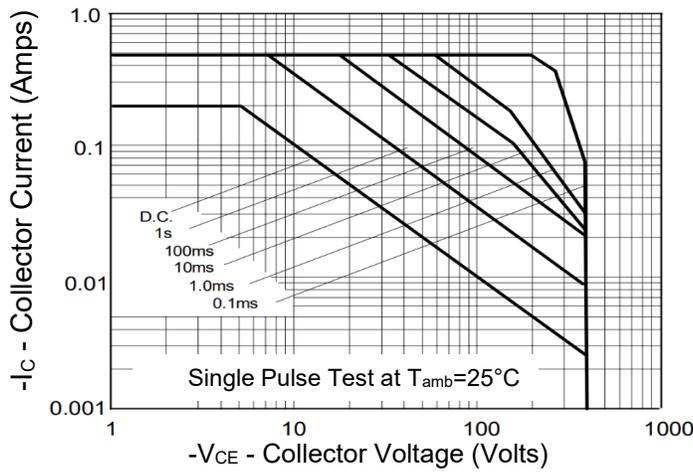
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1.5	W
Power Dissipation (Note 6)	P <sub>D</sub>	1	W
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	116	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	175	°C/W
Thermal Resistance Junction to Lead (Note 7)	R <sub>θJL</sub>	63.75	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +200	°C

### ESD Ratings (Note 8)

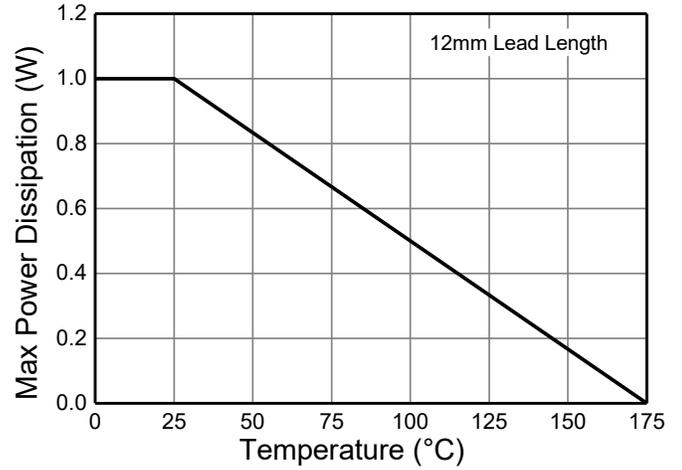
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a through-hole device mounted at the seating plane (2.5mm lead length) with the collector lead on 25mm × 25mm 1oz weight 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 specifications JESD22-A114 and JESD22-A115.

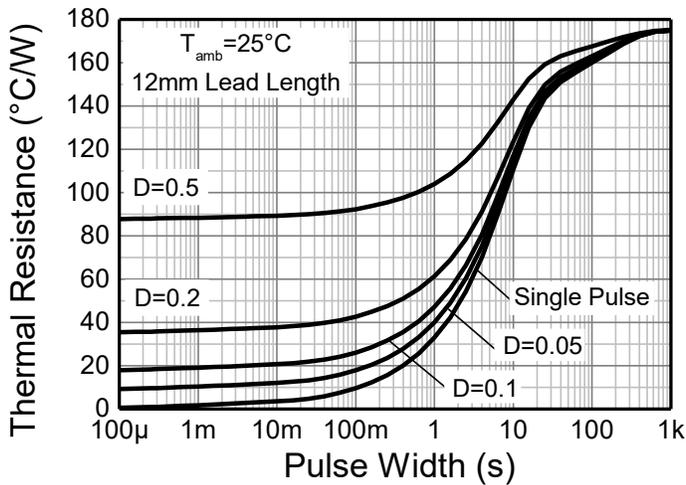
**Thermal Characteristics and Derating Information**



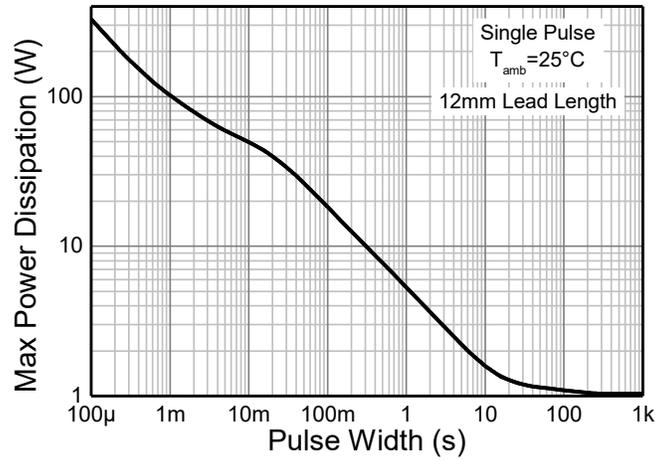
**Figure 1. Safe Operating Area**



**Figure 2. Derating Curve**



**Figure 3. Transient Thermal Impedance**



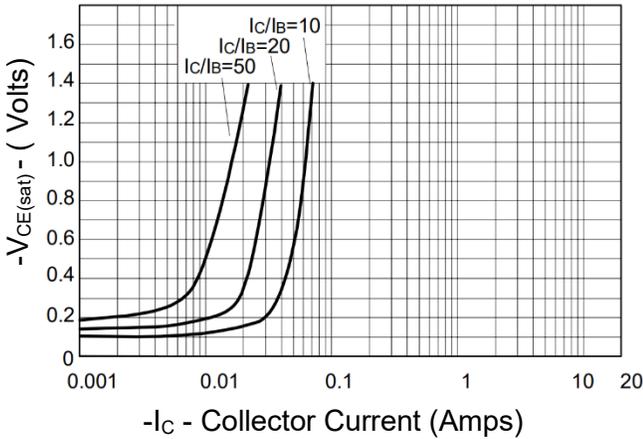
**Figure 4. Pulse Power Dissipation**

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

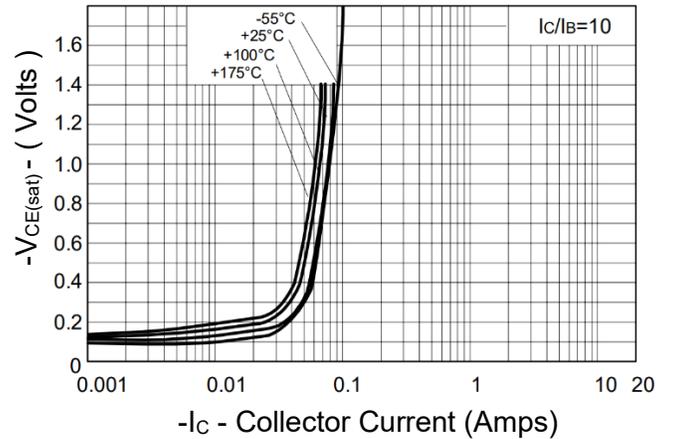
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	-400	—	—	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-400	—	—	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -100μA
DC Current Gain (Note 9)	h <sub>FE</sub>	100 100 15	— — —	— 300 —	— — —	V <sub>CE</sub> = -10V, I <sub>C</sub> = -1mA V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA V <sub>CE</sub> = -10V, I <sub>C</sub> = -100mA
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	— —	— —	-0.2 -0.5	V V	I <sub>C</sub> = -20mA, I <sub>B</sub> = -2mA I <sub>C</sub> = -50mA, I <sub>B</sub> = -6mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	—	—	-0.9	V	I <sub>C</sub> = -50mA, I <sub>B</sub> = -5mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	—	—	-0.9	V	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V
Collector-Cutoff Current	I <sub>CBO</sub>	—	—	-100	nA	V <sub>CB</sub> = -320V
Collector-Cutoff Current	I <sub>CES</sub>	—	—	-100	nA	V <sub>CE</sub> = -320V
Emitter-Cutoff Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -4V
Current Gain-Bandwidth Product	f <sub>T</sub>	50	—	—	MHz	V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA f = 20MHz
Output Capacitance	C <sub>OBO</sub>	—	—	5	pF	V <sub>CB</sub> = -20V, f = 1MHz
Switching Time	t <sub>on</sub> t <sub>off</sub>	— —	95 1600	— —	ns ns	I <sub>C</sub> = -50mA, V <sub>C</sub> = -100V I <sub>B1</sub> = 5mA, I <sub>B2</sub> = -10mA

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

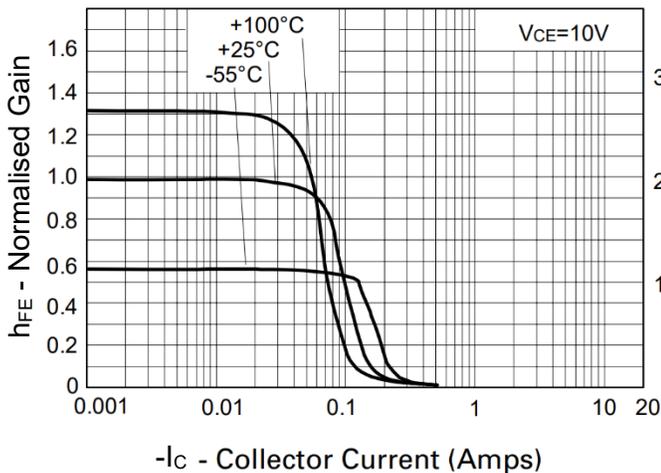
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



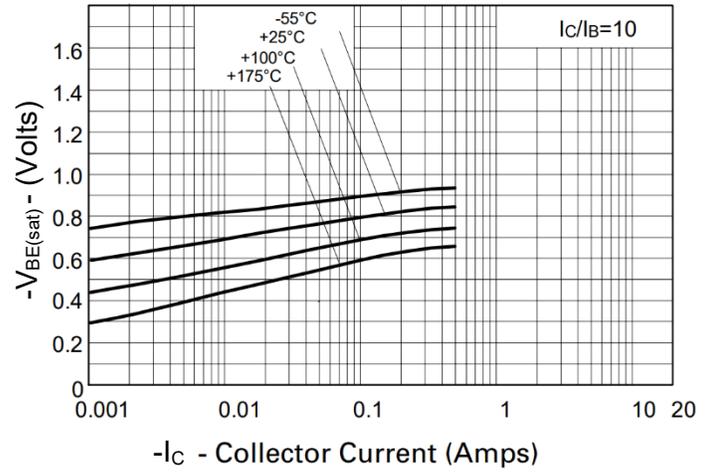
**Figure 5.  $V_{CE(sat)}$  vs.  $I_C$**



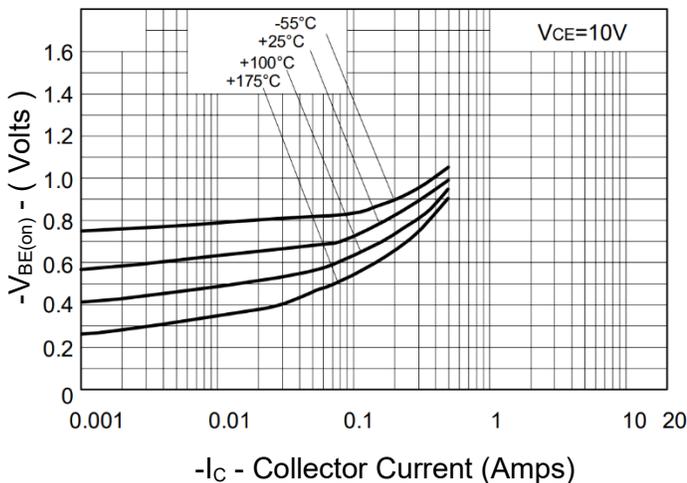
**Figure 6.  $V_{CE(sat)}$  vs.  $I_C$**



**Figure 7.  $h_{FE}$  vs.  $I_C$**



**Figure 8.  $V_{BE(sat)}$  vs.  $I_C$**

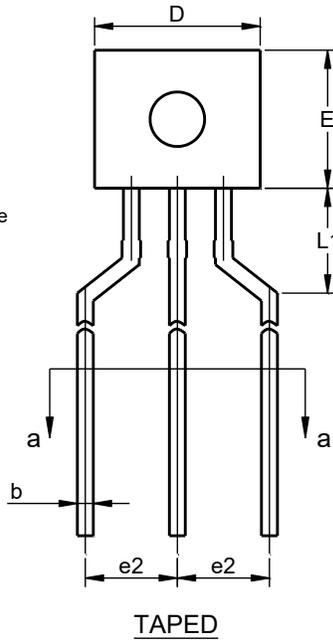
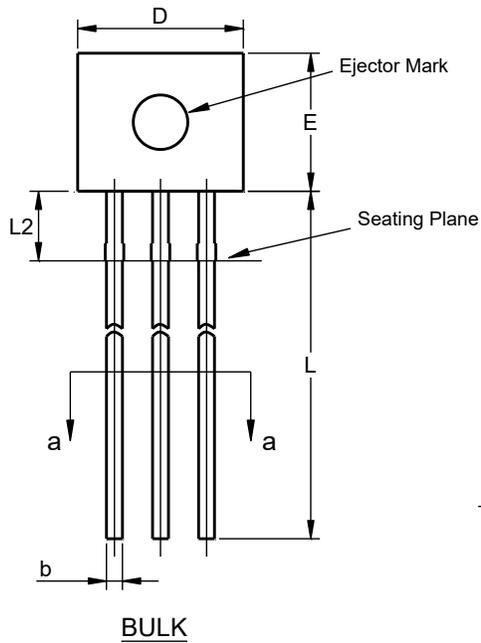


**Figure 9.  $V_{BE(on)}$  vs.  $I_C$**

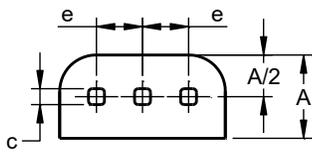
**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

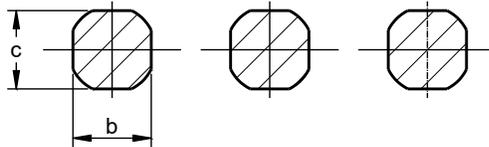
**E-Line**



E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	2.28
b	0.41	0.49	0.44
c	0.41	0.49	0.44
D	4.37	4.77	4.57
E	3.61	4.01	3.90
e	1.27 REF		
e2	2.54 REF		
L	13.00	13.97	13.50
L1	2.50	3.50	--
L2	--	--	2.50
All Dimensions in mm			



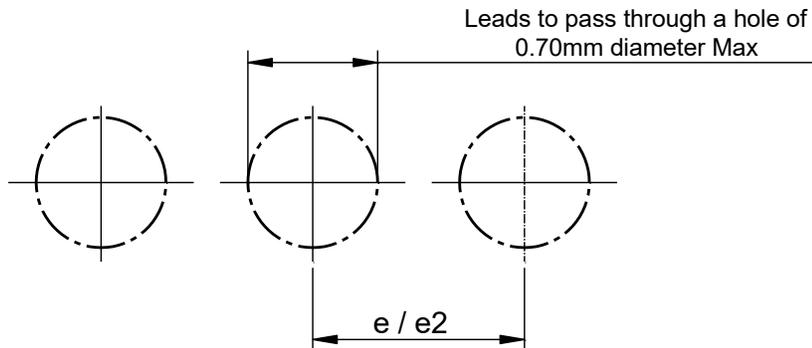
**Section a-a:**



**Suggested Pad Hole**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**E-Line**



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