

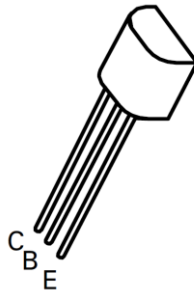
Features

- 60 Volt V_{CE0}
- 1 Amp Continuous Current
- $P_{tot} = 1$ Watt
- **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 [contact us](https://www.diodes.com) or your local Diodes representative.**
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: E-Line
- Package Material: Molded Plastic, UL Flammability Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.159 grams (Approximate)

E-Line (TO92 Compatible)



Ordering Information (Note 4)

Orderable Part Number	Status (Note 5)	Marking	Package	Reel Size (inches)	Tape Width (mm)	Packing	
						Qty.	Carrier
ZTX450	Active	ZTX450	E-Line	7	8	4,000	Reel
ZTX450STZ	NRND	ZTX450	E-Line	7	8	2,000	Reel
ZTX450Q	Obsolete	ZTX450	E-Line	N/A	N/A	N/A	N/A
ZTX451	NRND	ZTX451	E-Line	7	8	4,000	Reel
ZTX451STZ	NRND	ZTX451	E-Line	7	8	2,000	Reel

- 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/>.
 5. NRND = Not Recommended for New Designs.

Absolute Maximum Ratings

Parameter	Symbol	ZTX450	ZTX451	Unit
Collector-Base Voltage	V_{CB0}	60	80	V
Collector-Emitter Voltage	V_{CEO}	45	60	V
Emitter-Base Voltage	V_{EBO}	5		V
Peak Pulse Current	I_{CM}	2		A
Continuous Collector Current	I_C	1		A
Power Dissipation at $T_{amb} = 25^{\circ}\text{C}$	P_{tot}	1		W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 200		$^{\circ}\text{C}$

Electrical Characteristics (@ $T_{amb} = +25^{\circ}\text{C}$)

Parameter	Symbol	ZTX450		ZTX451		Unit	Conditions
		Min	Max	Min	Max		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	—	80	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Sustaining Voltage	$V_{CE(sus)}$	45	—	60	—	V	$I_C = 10\text{mA}$ (Note 6)
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	5	—	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	0.1	—	—	μA	$V_{CB} = 45\text{V}$ $V_{CB} = 60\text{V}$
Emitter Cutoff Current	I_{EBO}	—	0.1	—	0.1	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	0.25	—	0.35	V	$I_C = 150\text{mA}$, $I_B = 15\text{mA}$ (Note 6)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	1.1	—	1.1	V	$I_C = 150\text{mA}$, $I_B = 15\text{mA}$ (Note 6)
Static Forward Current Transfer Ratio	h_{FE}	100 15	300 —	50 10	150 —	—	$I_C = 150\text{mA}$, $V_{CE} = 10\text{V}$ (Note 6) $I_C = 1\text{A}$, $V_{CE} = 10\text{V}$ (Note 6)
Transition Frequency	f_T	150	—	150	—	MHz	$I_C = 50\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	15	—	15	pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$

Note: 6. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

Typical Characteristics

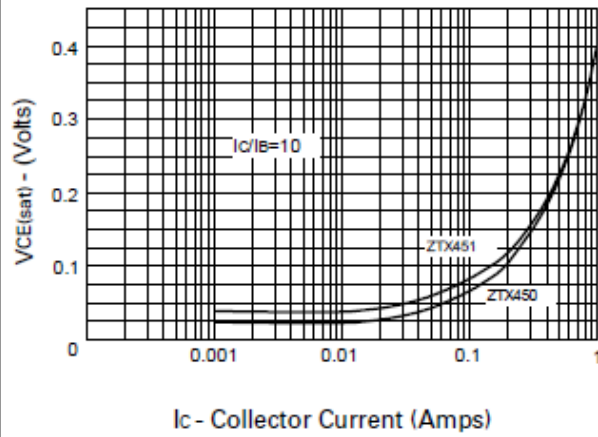


Figure 1. $V_{CE(sat)}$ vs. I_C

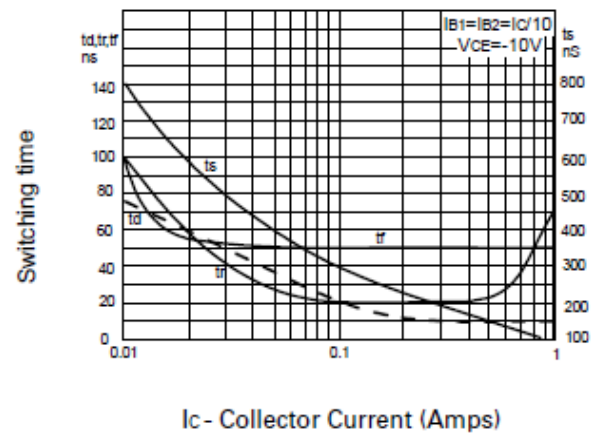


Figure 2. Typical Switching Speeds

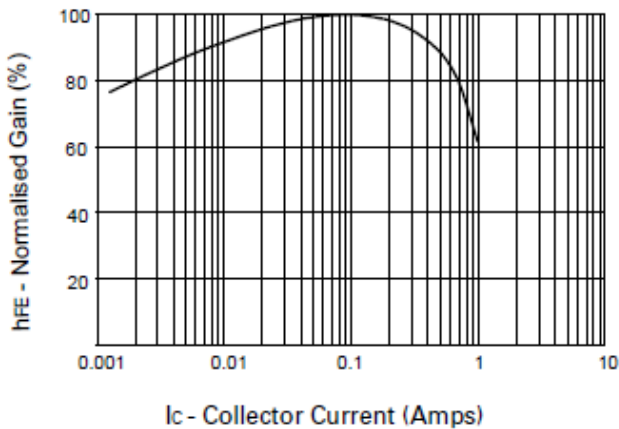


Figure 3. h_{FE} vs. I_C

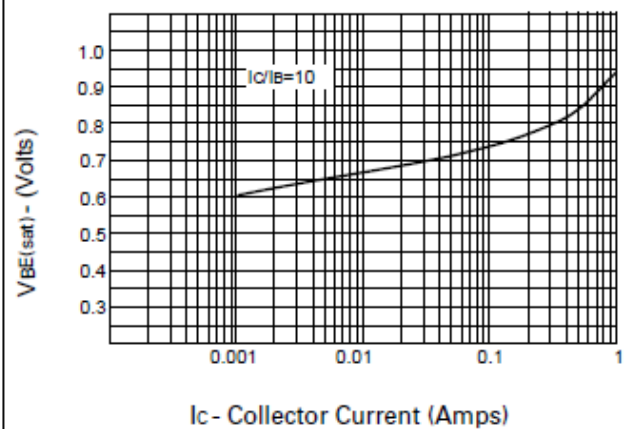


Figure 4. $V_{BE(sat)}$ vs. I_C

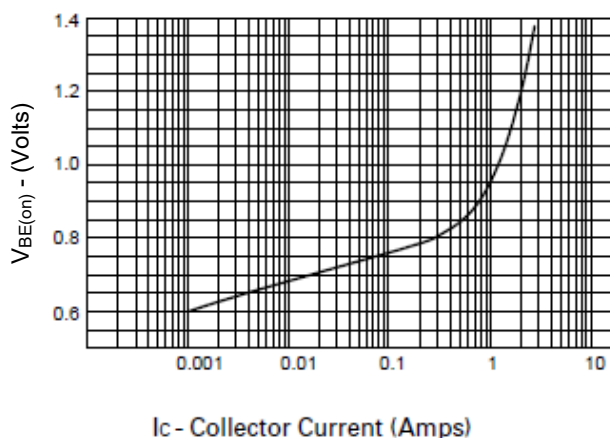


Figure 5. $V_{BE(on)}$ vs. I_C

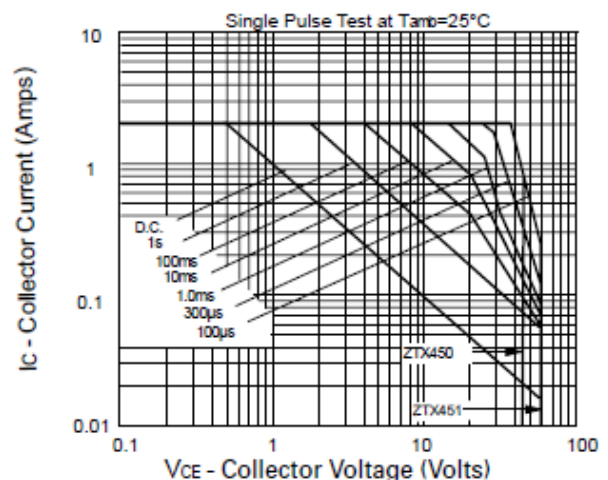
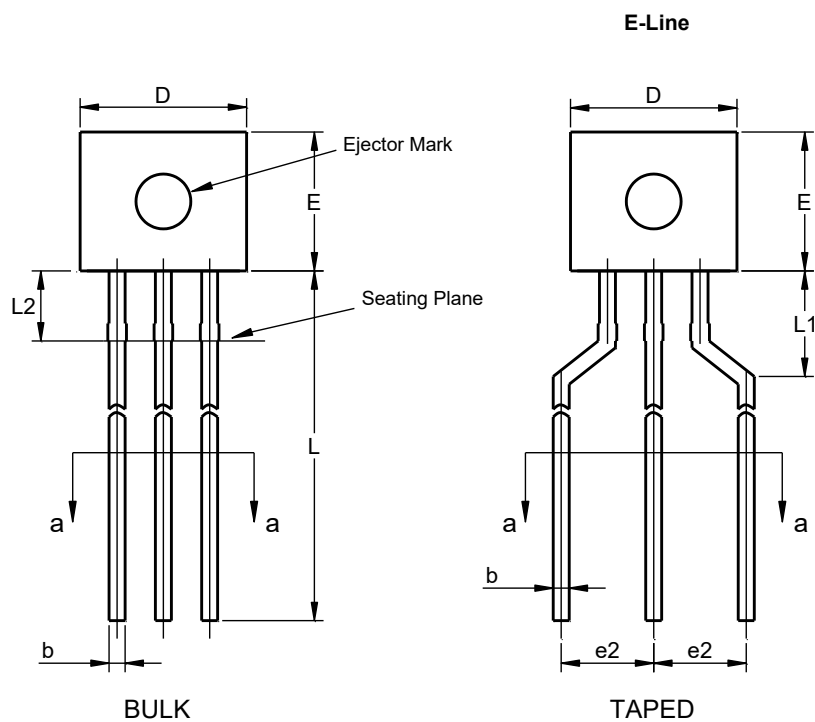


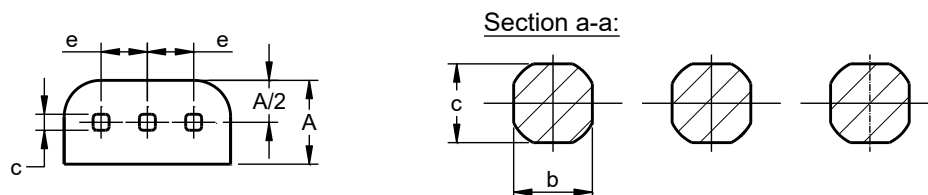
Figure 6. Safe Operating Area

Package Outline Dimensions

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

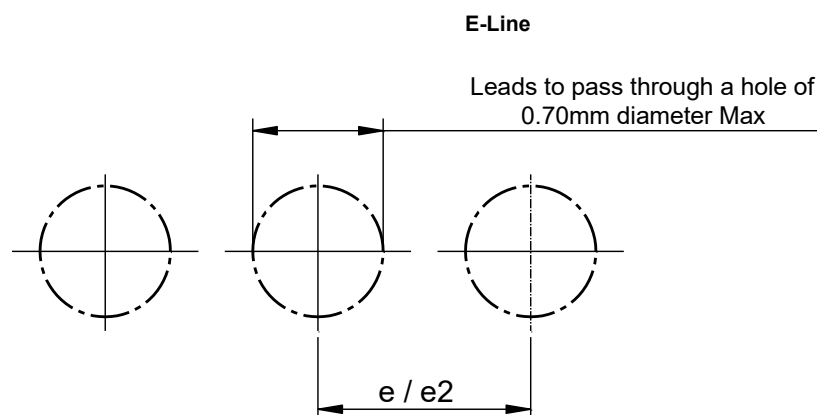


E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	2.28
b	0.41	0.49	0.44
c	0.41	0.49	0.44
D	4.37	4.77	4.57
E	3.61	4.01	3.90
e	1.27 REF		
e2	2.54 REF		
L	13.00	13.97	13.50
L1	2.50	3.50	--
L2	--	--	2.50
All Dimensions in mm			



Suggested Pad Layout

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



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