

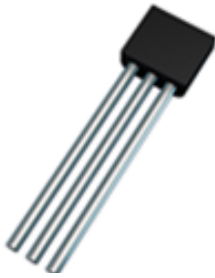
**NPN SILICON PLANAR MEDIUM POWER TRANSISTOR**

**Features**

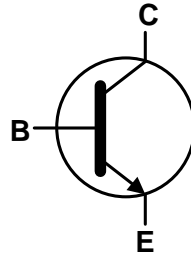
- $BV_{CEO} > 100V$  (ZTX453)
- $I_{CM} = 2A$  Peak Pulse Current
- $I_C = 1A$  High Continuous Current
- $P_D = 1W$  Power Dissipation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

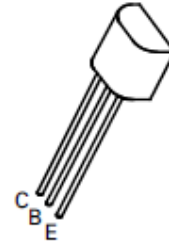
- Case: E-Line
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 <sup>Ⓔ3</sup>
- Weight: 159mg (Approximate)



E-Line



Device Symbol



Top View  
Pin-Out

**Ordering Information** (Note 4)

Part Number	Compliance	Marking	Quantity
ZTX453	Standard	ZTX 453	4000 Bulk
ZTX453STZ	Standard	ZTX 453	2000 Taped

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  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**



ZTX 453 = 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>	120	V
Collector-Emitter Voltage	V <sub>CEO</sub>	100	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub>	1	A
Peak Collector Current	I <sub>CM</sub>	2	A
Peak Dissipation at T <sub>A</sub> = +25°C	P <sub>D</sub>	1	W

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

Characteristic	Symbol	Value	Unit
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 6)

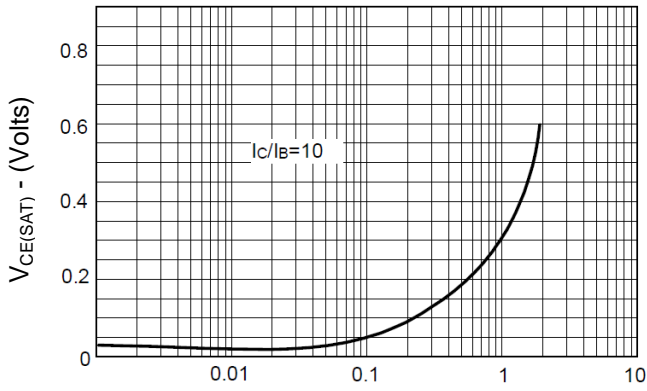
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

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

Characteristic (Note 5)	Symbol	Min	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	120	—	V	I <sub>C</sub> = 100μA, I <sub>B</sub> = 0
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	100	—	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	5	—	V	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0
DC Current Gain	h <sub>FE</sub>	40	200	—	V <sub>CE</sub> = 10V, I <sub>C</sub> = 150mA, V <sub>CE</sub> = 10V, I <sub>C</sub> = 1A
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	0.7	V	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	1.3	V	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA
Collector-Cutoff Current	I <sub>CB0</sub>	—	0.1	μA	V <sub>CB</sub> = 100V
Emitter-Cutoff Current	I <sub>EBO</sub>	—	0.1	μA	V <sub>EB</sub> = 4V
Gain Bandwidth Product	f <sub>T</sub>	150	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA, f = 100MHz
Collector-Base Capacitance	C <sub>CB0</sub>	—	3.0	pF	V <sub>CB</sub> = 10V, f = 1MHz
Output Capacitance	C <sub>OBO</sub>	—	15	pF	V <sub>CB</sub> = 10V, f = 1MHz

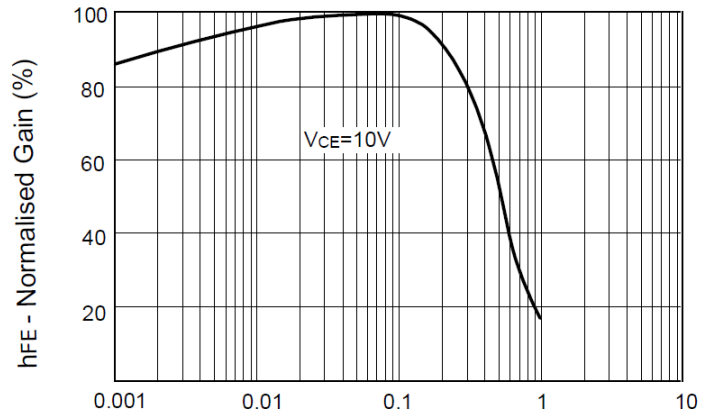
Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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



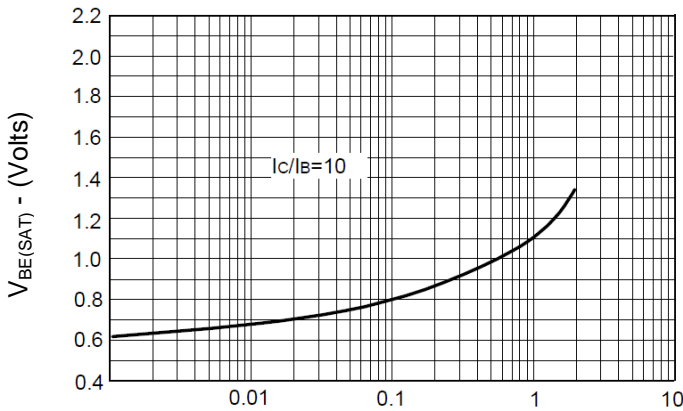
$I_C$  - Collector Current (Amps)

$V_{CE(SAT)} \ v \ I_C$



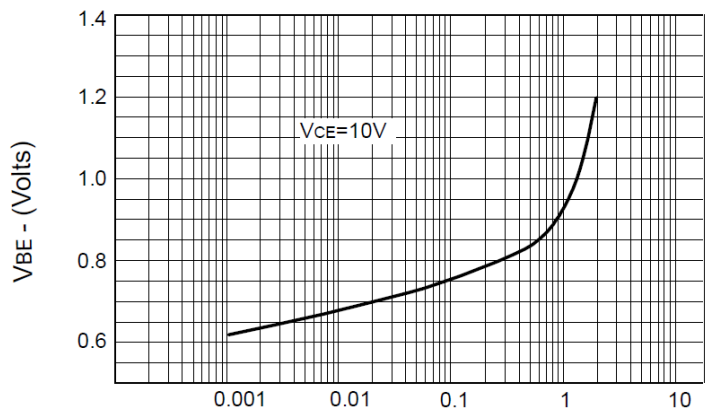
$I_C$  - Collector Current (Amps)

$h_{FE} \ v \ I_C$



$I_C$  - Collector Current (Amps)

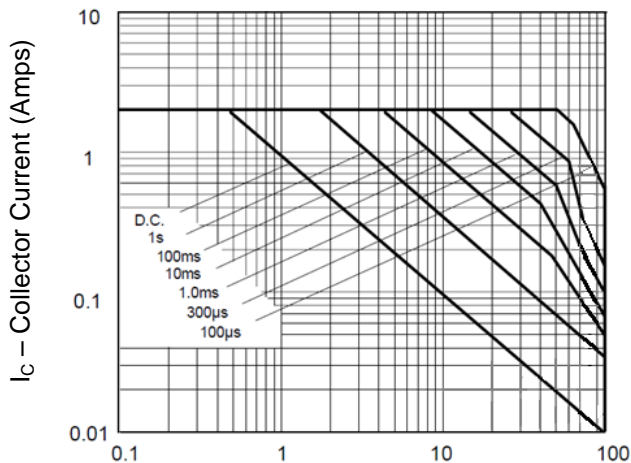
$V_{BE(SAT)} \ v \ I_C$



$I_C$  - Collector Current (Amps)

$V_{BE(ON)} \ v \ I_C$

Single Pulse Test at  $T_A = +25^\circ\text{C}$

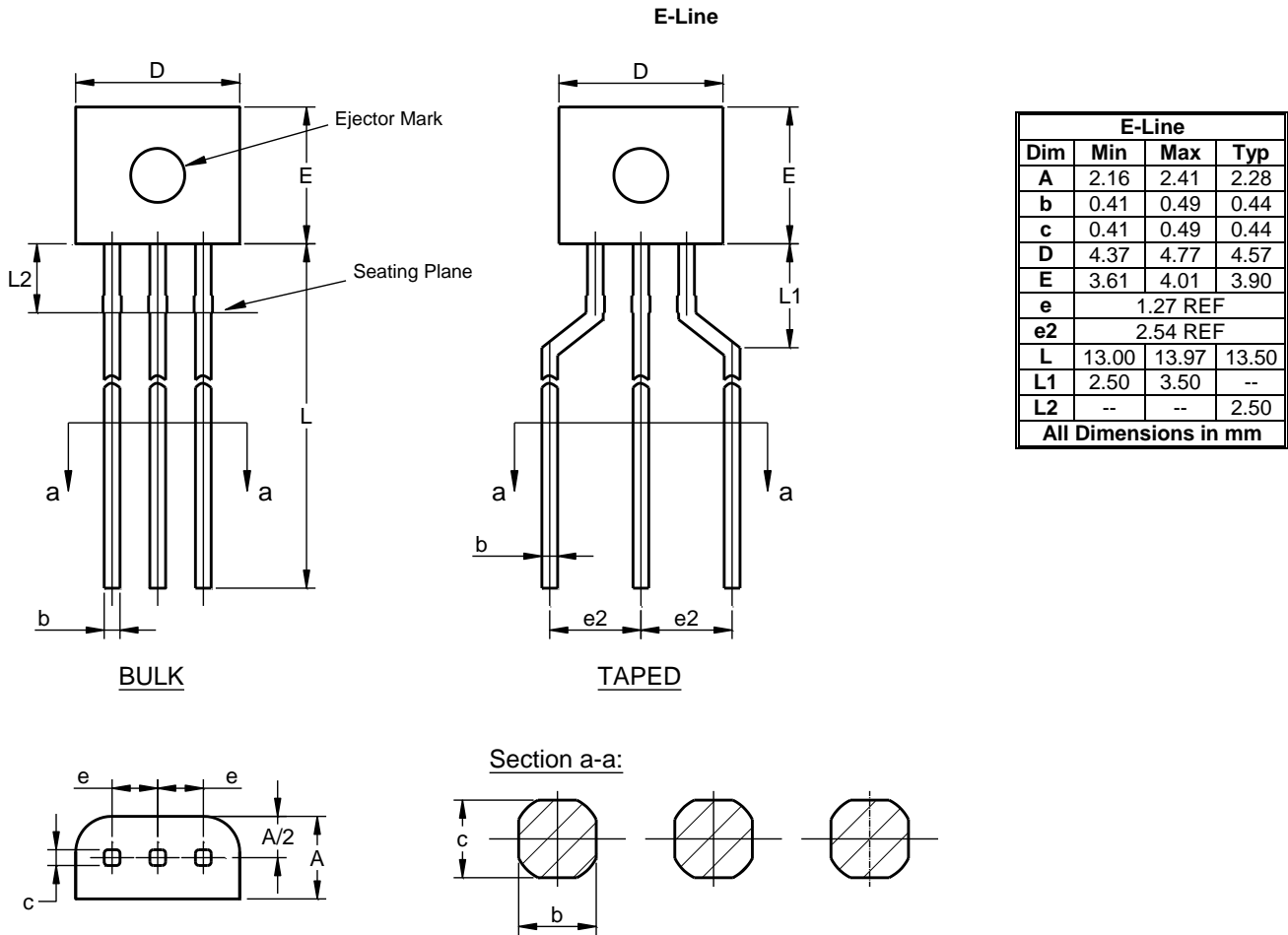


$V_{CE}$  - Collector Voltage (Volts)

**Safe Operating Area**

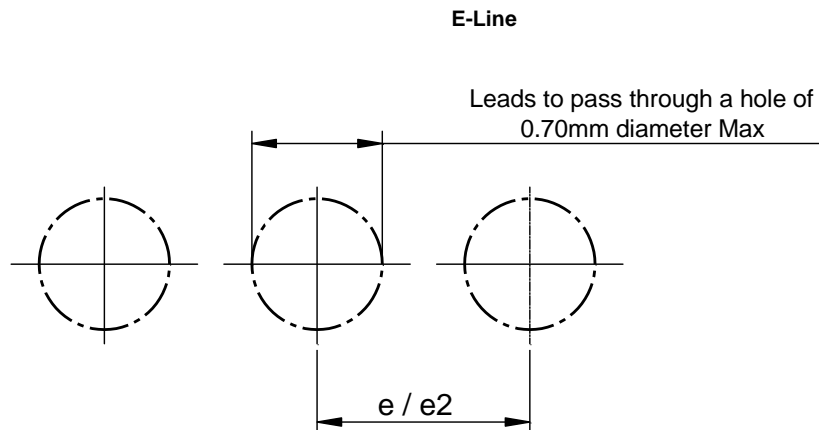
**Package Outline Dimensions**

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



**Suggested Pad Hole**

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



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