

**25V PNP HIGH PERFORMANCE TRANSISTOR IN SOT223**

**Features**

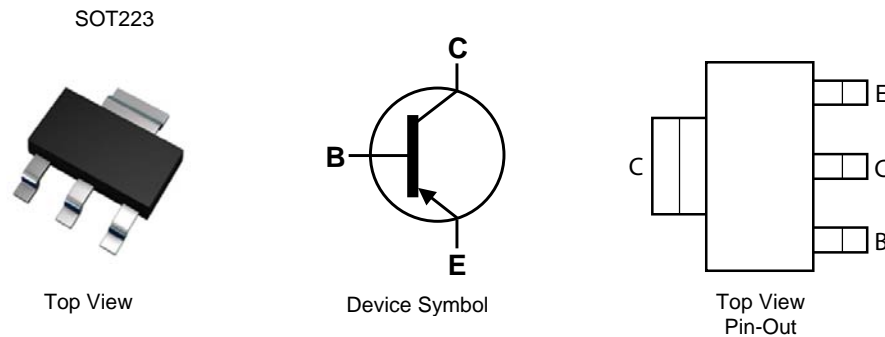
- $BV_{CEO} > -25V$
- $I_C = -3A$  High Continuous Current
- $I_{CM} = -8A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -300mV @ -1A$
- Complementary NPN Type: FZT649
- **Lead-Free Finish; RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

**Mechanical Data**

- Case: SOT223
- 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>(e3)</sup>
- Weight: 0.112 grams (approximate)

**Applications**

- MOSFET and IGBT Gate Driving

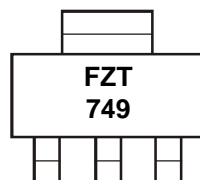


**Ordering Information** (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT749TA	AEC-Q101	FZT749	7	12	1,000
FZT749QTA	Automotive	FZT749	7	12	1,000
FZT749TC	AEC-Q101	FZT749	13	12	4,000
FZT749QTC	Automotive	FZT749	13	12	4,000

- 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified.
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**



FZT749 = 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>	-35	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-25	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-3	A
Peak Pulse Current	I <sub>CM</sub>	-8	A

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

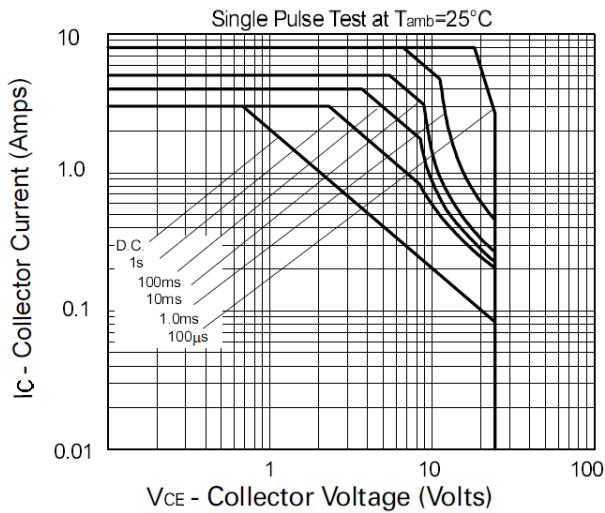
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	2	W
		3	W
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	62.5	°C/W
		41.7	°C/W
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	12.93	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### ESD Ratings (Note 9)

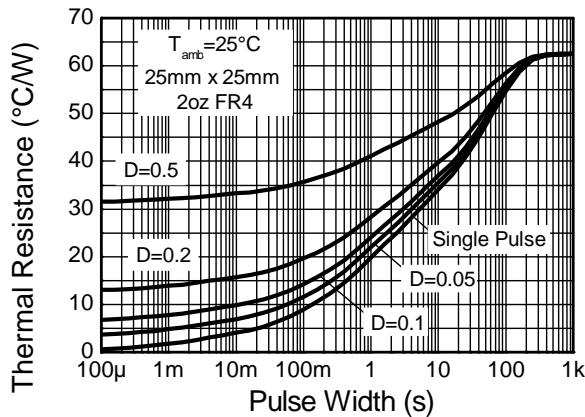
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

- Notes:
6. For a device mounted with the collector lead on 25mm x 25mm 1oz copper that is on a single-sided FR4 PCB; device is measured under still air when conditions whilst operating in steady-state.
  7. Same as note (6), except the device is mounted on 50mm x 50mm 2oz copper.
  8. Thermal resistance from junction to solder-point (at the end of the collector lead).
  9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

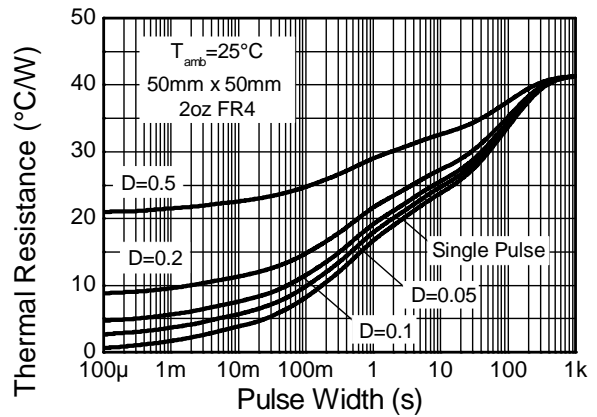
**Thermal Characteristics and Derating Information**



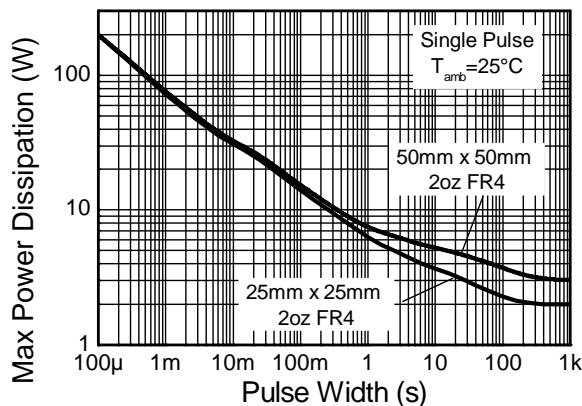
**Safe Operating Area**



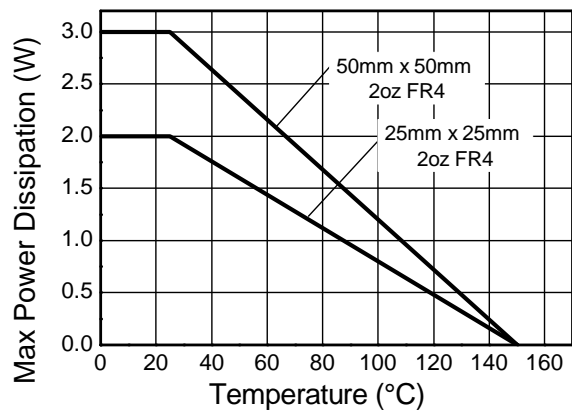
**Transient Thermal Impedance**



**Transient Thermal Impedance**



**Pulse Power Dissipation**



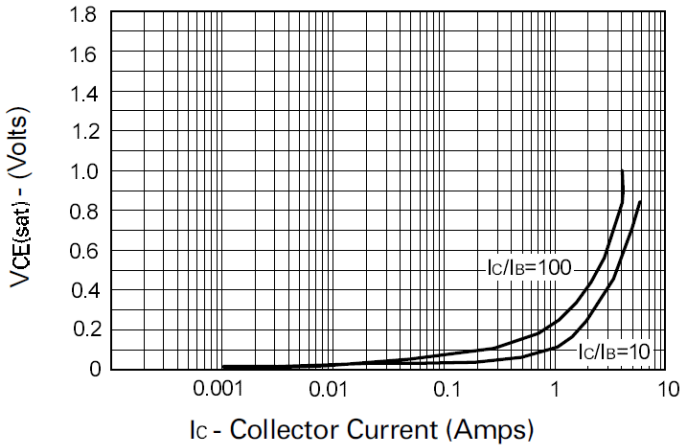
**Derating Curve**

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

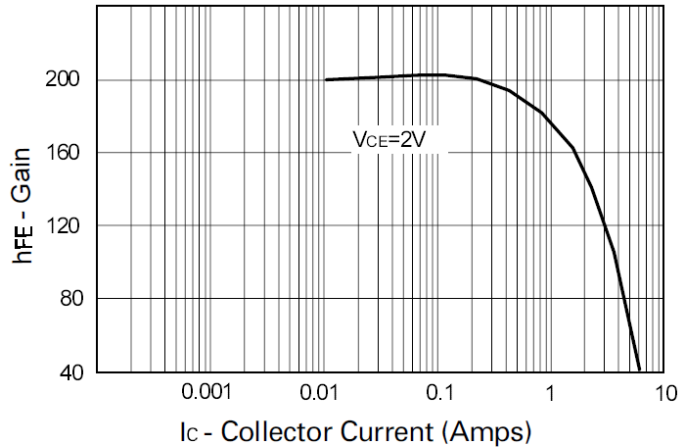
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-35	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	$BV_{CEO}$	-25	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	—	—	V	$I_E = -100\mu\text{A}$
Collector Cut-off Current	$I_{CBO}$	—	<1	-100	nA	$V_{CB} = -30\text{V}$
		—	—	-10	$\mu\text{A}$	$V_{CB} = -30\text{V}, T_{AMB} = +100^\circ\text{C}$
Emitter Cut-off Current	$I_{EBO}$	—	<1	-100	nA	$V_{EB} = -5.6\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(SAT)}$	—	-0.12	-0.3	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
		—	-0.40	-0.6		$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{CE(SAT)}$	—	-0.9	-1.25	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(ON)}$	—	-0.8	-1.0	V	$I_C = -1\text{A}, V_{CE} = -2\text{V}$
DC Current Gain (Note 11)	$h_{FE}$	70	200	—	—	$I_C = -50\text{mA}, V_{CE} = -2\text{V}$
		100	200	300		$I_C = -1\text{A}, V_{CE} = -2\text{V}$
		75	570	—		$I_C = -2\text{A}, V_{CE} = -2\text{V}$
		15	50	—		$I_C = -6\text{A}, V_{CE} = -2\text{V}$
Current Gain-Bandwidth Product (Note 11)	$f_T$	100	160	—	MHz	$V_{CE} = -5\text{V}, I_C = -100\text{mA}$ $f = 100\text{MHz}$
Turn-On Time	$t_{on}$	—	40	—	ns	$V_{CC} = -10\text{V}, I_C = -500\text{mA}$
Turn-Off Time	$t_{off}$	—	450	—	ns	$I_{B1} = I_{B2} = -50\text{mA}$
Output Capacitance (Note 11)	$C_{obo}$	—	55	100	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$

Note: 11. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

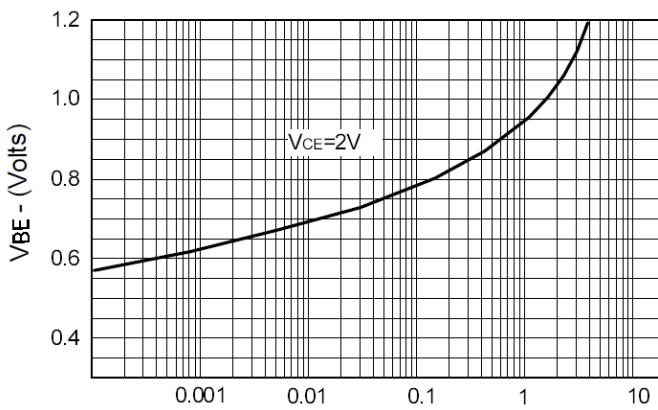
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



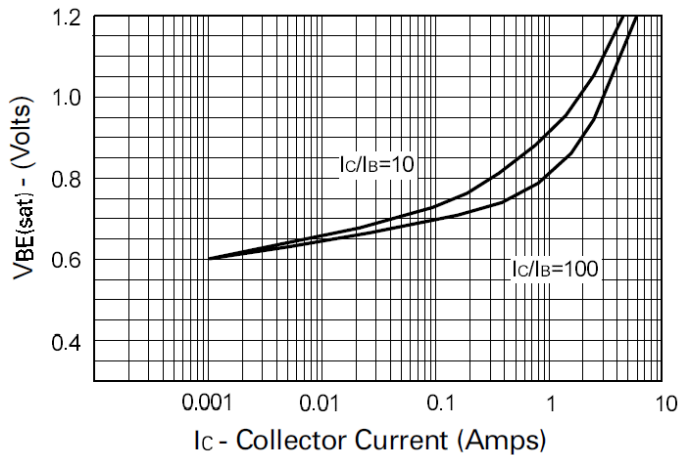
**VCE(sat) v IC**



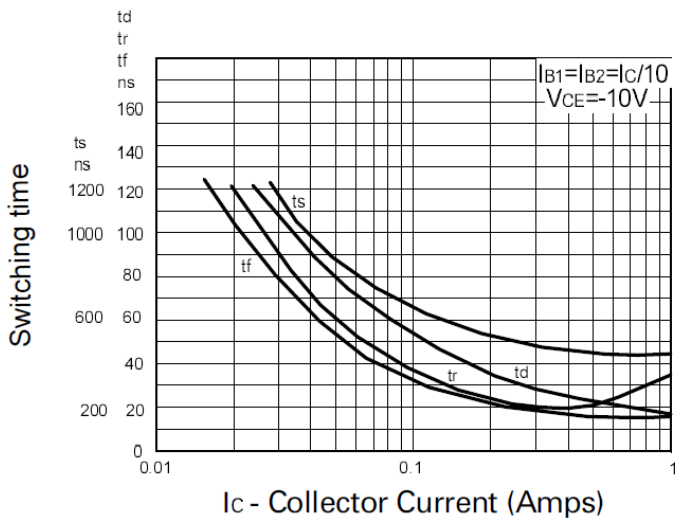
**hFE v IC**



**VBE(on) v IC**



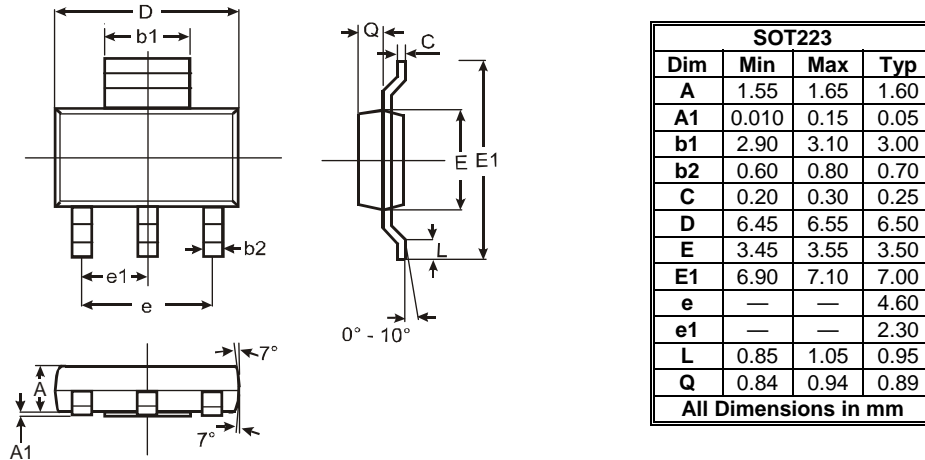
**VBE(sat) v IC**



**Switching Speeds**

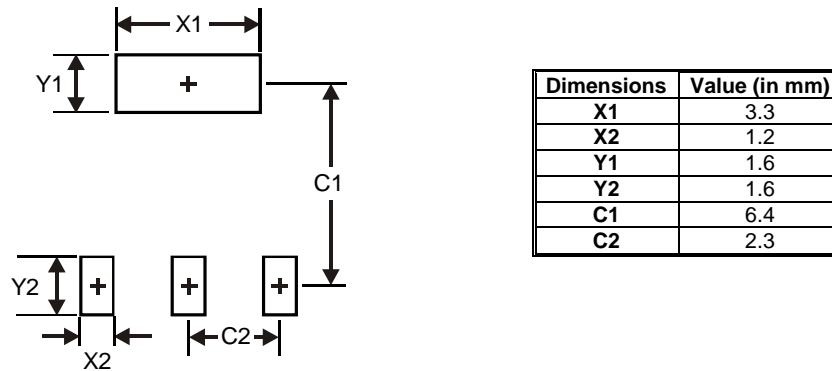
## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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