

**60V PNP HIGH PERFORMANCE TRANSISTOR IN SOT223**
**Features**

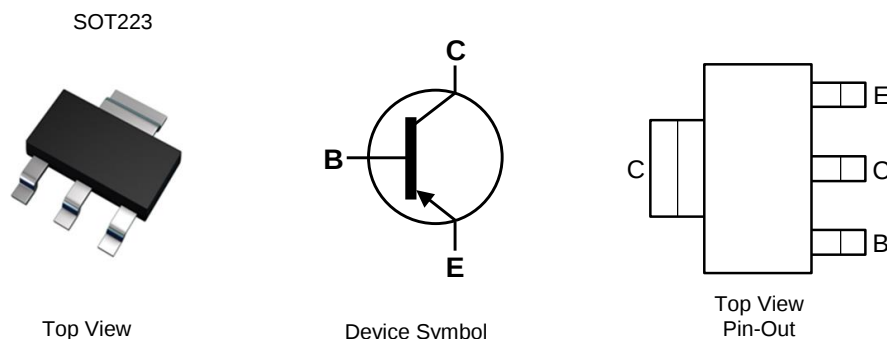
- $BV_{CEO} > -60V$
- $I_C = -3A$  High Continuous Current
- $I_{CM} = -6A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(sat)} < -300mV$  @  $-1A$
- Complementary NPN Type: FZT651
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**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 @3
- Weight: 0.112 grams (Approximate)

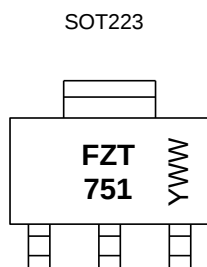
**Applications**

- Automotive Lighting
- MOSFET and IGBT Gate Driving


**Ordering Information (Note 4)**

| Product  | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|----------|------------|---------|--------------------|-----------------|-------------------|
| FZT751TA | AEC-Q101   | FZT751  | 7                  | 12              | 1,000             |
| FZT751TC | AEC-Q101   | FZT751  | 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


FZT 751 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5= 2015)  
 WW or  $\bar{W}W$  = Week Code (01-53)

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

| Characteristic               | Symbol           | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage       | V <sub>CBO</sub> | -80   | V    |
| Collector-Emitter Voltage    | V <sub>CEO</sub> | -60   | 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>  | -6    | A    |

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

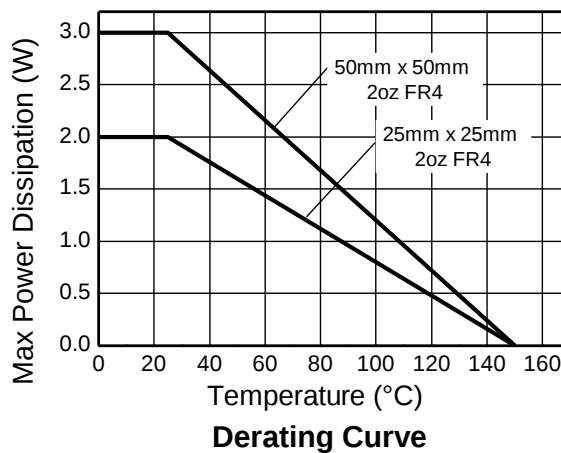
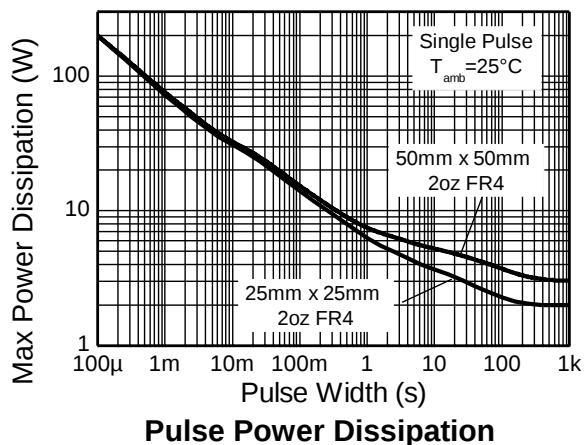
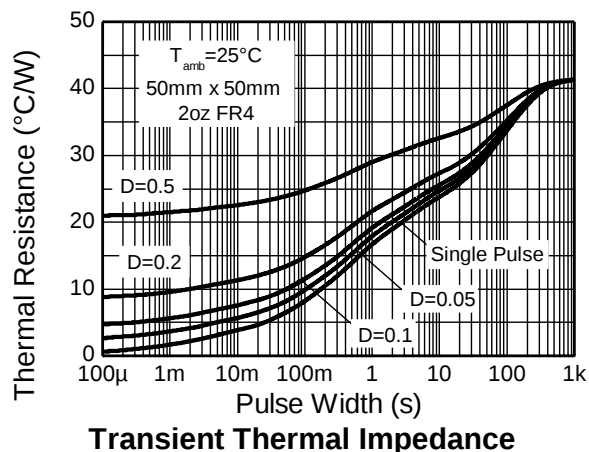
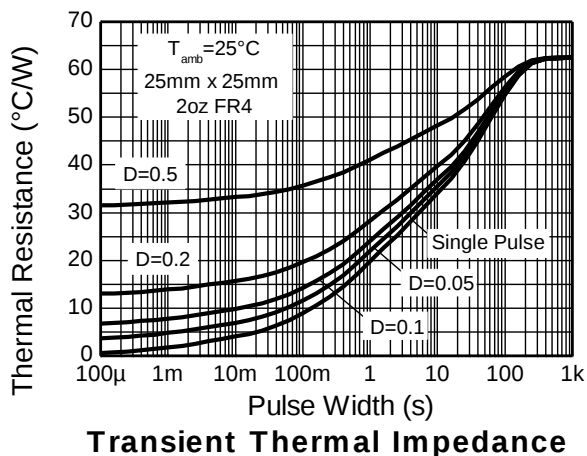
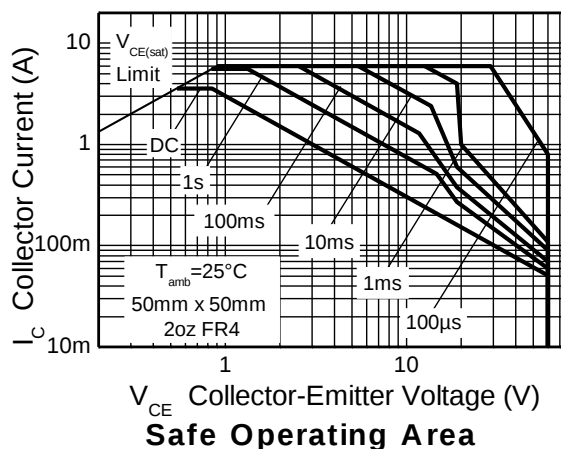
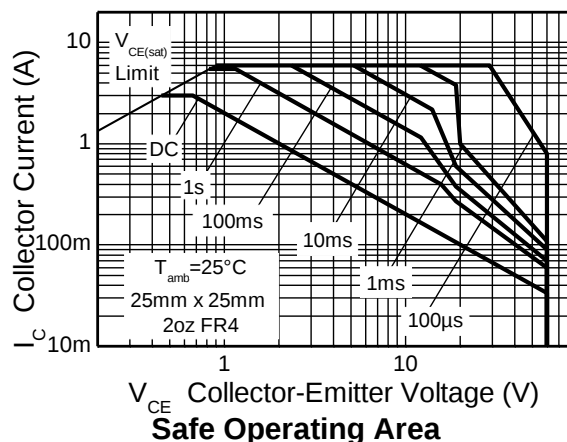
| Characteristic                          | Symbol                            | Value       | Unit |
|-----------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation                       | P <sub>D</sub>                    | 2           | W    |
|                                         |                                   | 3           | W    |
| Thermal Resistance, Junction to Ambient | R <sub>θJA</sub>                  | 62.5        | °C/W |
|                                         |                                   | 41.7        | °C/W |
| Thermal Resistance, Junction to Leads   | R <sub>θJL</sub>                  | 12.9        | °C/W |
| Operating and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °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 device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
  - Same as Note 5, except the device is mounted on 50mm x 50mm 2oz copper.
  - Thermal resistance from junction to solder-point (at the end of the collector lead).
  - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

## Thermal Characteristics and Derating Information

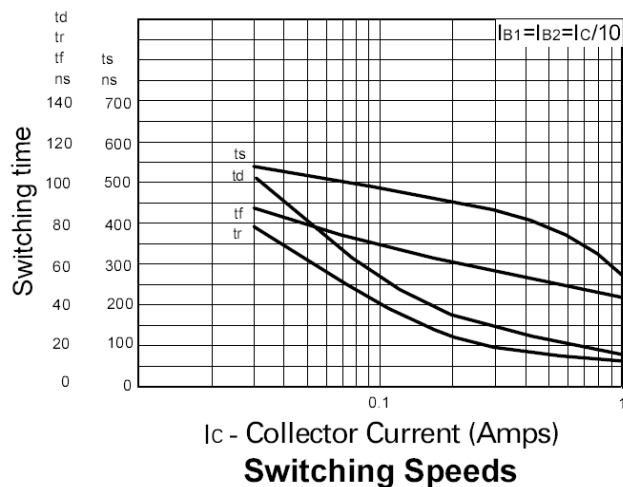
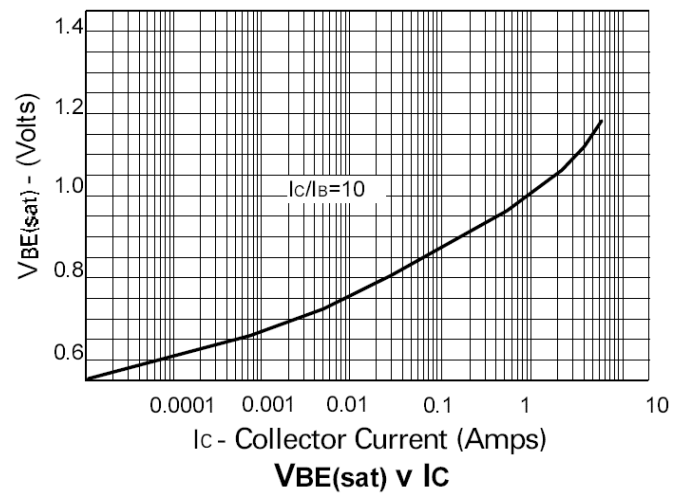
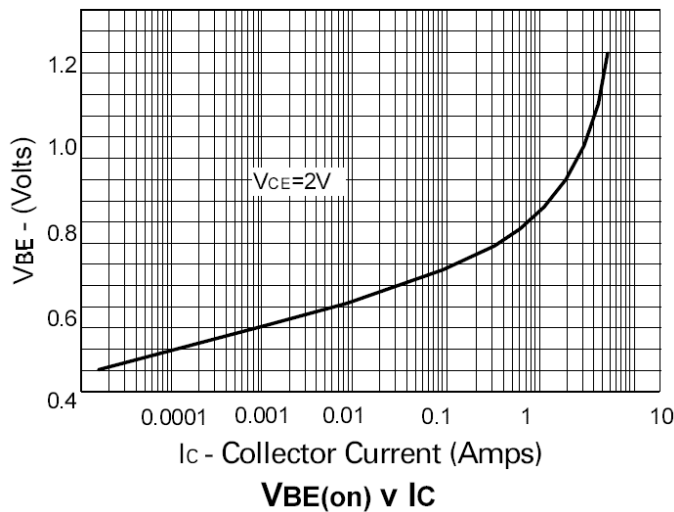
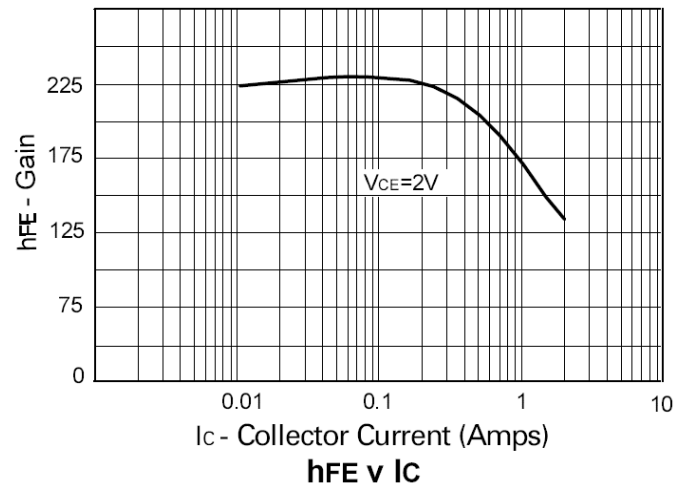
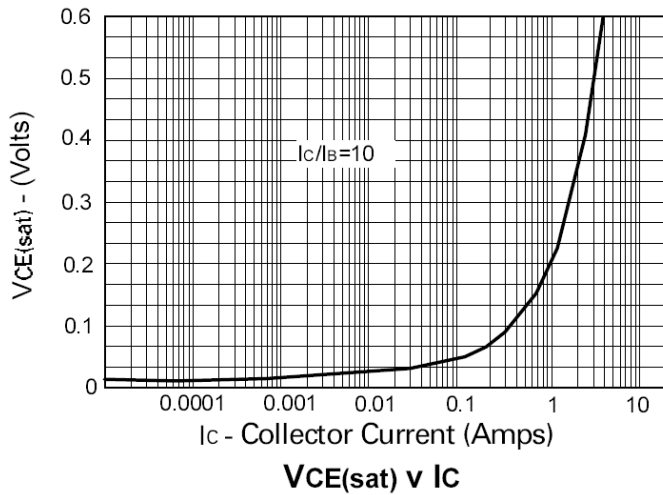


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                                | Symbol               | Min | Typ   | Max   | Unit | Test Condition                                               |
|-----------------------------------------------|----------------------|-----|-------|-------|------|--------------------------------------------------------------|
| Collector-Base Breakdown Voltage              | BV <sub>CBO</sub>    | -80 | —     | —     | V    | I <sub>C</sub> = -100μA                                      |
| Collector-Emitter Breakdown Voltage (Note 9)  | BV <sub>CEO</sub>    | -60 | —     | —     | V    | I <sub>C</sub> = -10mA                                       |
| Emitter-Base Breakdown Voltage                | BV <sub>EBO</sub>    | -7  | —     | —     | V    | I <sub>E</sub> = -100μA                                      |
| Collector Cut-Off Current                     | I <sub>CBO</sub>     | —   | <1    | -100  | nA   | V <sub>CB</sub> = -60V                                       |
|                                               |                      | —   | —     | -10   | μA   | V <sub>CB</sub> = -60V, T <sub>amb</sub> = +100°C            |
| Emitter Cut-Off Current                       | I <sub>EBO</sub>     | —   | <1    | -100  | nA   | V <sub>EB</sub> = -4V                                        |
| Collector-Emitter Saturation Voltage (Note 9) | V <sub>CE(sat)</sub> | —   | -0.15 | -0.3  | V    | I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA                |
|                                               |                      | —   | -0.45 | -0.6  |      | I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA                |
| Base-Emitter Saturation Voltage (Note 9)      | V <sub>BE(sat)</sub> | —   | -0.9  | -1.25 | V    | I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA                |
| Base-Emitter Turn-On Voltage (Note 9)         | V <sub>BE(on)</sub>  | —   | -0.8  | -1.0  | V    | I <sub>C</sub> = -1A, V <sub>CE</sub> = -2V                  |
| DC Current Gain (Note 9)                      | h <sub>FE</sub>      | 70  | 200   | —     | —    | I <sub>C</sub> = -50mA, V <sub>CE</sub> = -2V                |
|                                               |                      | 100 | 200   | 300   |      | I <sub>C</sub> = -500mA, V <sub>CE</sub> = -2V               |
|                                               |                      | 80  | 170   | —     |      | I <sub>C</sub> = -1A, V <sub>CE</sub> = -2V                  |
|                                               |                      | 40  | 150   | —     |      | I <sub>C</sub> = -2A, V <sub>CE</sub> = -2V                  |
| Current Gain-Bandwidth Product                | f <sub>T</sub>       | 100 | 140   | —     | MHz  | V <sub>CE</sub> = -5V, I <sub>C</sub> = -100mA<br>f = 100MHz |
| Turn-On Time                                  | t <sub>on</sub>      | —   | 40    | —     | ns   | V <sub>CC</sub> = -10V, I <sub>C</sub> = -500mA              |
| Turn-Off Time                                 | t <sub>off</sub>     | —   | 450   | —     | ns   | I <sub>B1</sub> = I <sub>B2</sub> = -50mA                    |
| Output Capacitance                            | C <sub>obo</sub>     | —   | —     | 30    | pF   | V <sub>CB</sub> = -10V, f = 1MHz                             |

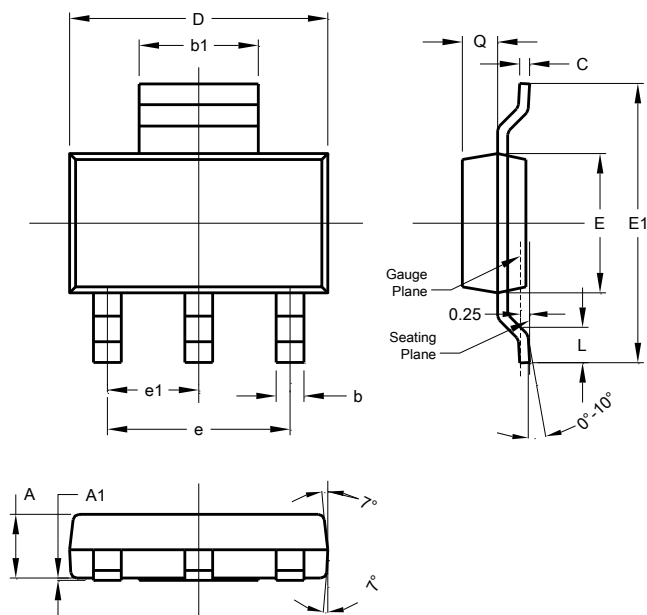
Note: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

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



## Package Outline Dimensions

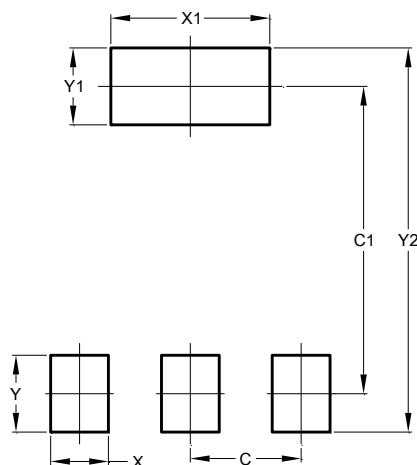
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SOT223               |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 1.55  | 1.65 | 1.60 |
| A1                   | 0.010 | 0.15 | 0.05 |
| b                    | 0.60  | 0.80 | 0.70 |
| b1                   | 2.90  | 3.10 | 3.00 |
| C                    | 0.20  | 0.30 | 0.25 |
| D                    | 6.45  | 6.55 | 6.50 |
| E                    | 3.45  | 3.55 | 3.50 |
| E1                   | 6.90  | 7.10 | 7.00 |
| e                    | -     | -    | 4.60 |
| e1                   | -     | -    | 2.30 |
| L                    | 0.85  | 1.05 | 0.95 |
| Q                    | 0.84  | 0.94 | 0.89 |
| All Dimensions in mm |       |      |      |

## Suggested Pad Layout

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



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.30          |
| C1         | 6.40          |
| X          | 1.20          |
| X1         | 3.30          |
| Y          | 1.60          |
| Y1         | 1.60          |
| Y2         | 8.00          |

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