

# PZT751

## PNP Silicon Planar Epitaxial Transistor

This PNP Silicon Epitaxial transistor is designed for use in industrial and consumer applications. The device is housed in the SOT-223 package which is designed for medium power surface mount applications.

### Features

- High Current
- The SOT-223 Package can be soldered using wave or reflow.
- SOT-223 Package Ensures Level Mounting, Resulting in Improved Thermal Conduction, and Allows Visual Inspection of Soldered Joints. The Formed Leads Absorb Thermal Stress During Soldering, Eliminating the Possibility of Damage to the Die
- NPN Complement is PZT651T1G
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

| Rating                                                                                            | Symbol    | Value      | Unit                      |
|---------------------------------------------------------------------------------------------------|-----------|------------|---------------------------|
| Collector-Emitter Voltage                                                                         | $V_{CEO}$ | -60        | Vdc                       |
| Collector-Base Voltage                                                                            | $V_{CBO}$ | -80        | Vdc                       |
| Emitter-Base Voltage                                                                              | $V_{EBO}$ | -5.0       | Vdc                       |
| Collector Current                                                                                 | $I_C$     | -2.0       | Adc                       |
| Total Power Dissipation<br>@ $T_A = 25^\circ\text{C}$ (Note 1)<br>Derate above $25^\circ\text{C}$ | $P_D$     | 0.8<br>6.4 | W<br>mW/ $^\circ\text{C}$ |
| Storage Temperature Range                                                                         | $T_{stg}$ | -65 to 150 | $^\circ\text{C}$          |
| Junction Temperature                                                                              | $T_J$     | 150        | $^\circ\text{C}$          |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Device mounted on a FR-4 glass epoxy printed circuit board using minimum recommended footprint.

### THERMAL CHARACTERISTICS

| Rating                                                            | Symbol          | Value     | Unit                      |
|-------------------------------------------------------------------|-----------------|-----------|---------------------------|
| Thermal Resistance from Junction-to-Ambient in Free Air           | $R_{\theta JA}$ | 156       | $^\circ\text{C}/\text{W}$ |
| Maximum Temperature for Soldering Purposes<br>Time in Solder Bath | $T_L$           | 260<br>10 | $^\circ\text{C}$<br>Sec   |

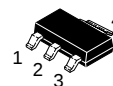
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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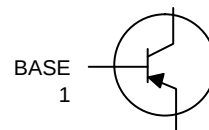
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### SOT-223 PACKAGE HIGH CURRENT NPN SILICON TRANSISTOR SURFACE MOUNT



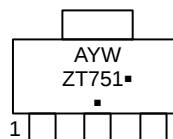
SOT-223  
CASE 318E  
STYLE 1

COLLECTOR 2, 4



EMITTER 3

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
W = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device     | Package           | Shipping†           |
|------------|-------------------|---------------------|
| PZT751T1G  | SOT-223 (Pb-Free) | 1,000 / Tape & Reel |
| SPZT751T1G | SOT-223 (Pb-Free) | 1,000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# PZT751

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristics | Symbol | Min | Max | Unit |
|-----------------|--------|-----|-----|------|
|-----------------|--------|-----|-----|------|

### OFF CHARACTERISTICS

|                                                                                          |               |      |      |                 |
|------------------------------------------------------------------------------------------|---------------|------|------|-----------------|
| Collector-Emitter Breakdown Voltage<br>( $I_C = -10\text{ mAdc}$ , $I_B = 0$ )           | $V_{(BR)CEO}$ | -60  | -    | Vdc             |
| Collector-Emitter Breakdown Voltage<br>( $I_C = -100\text{ }\mu\text{Adc}$ , $I_E = 0$ ) | $V_{(BR)CBO}$ | -80  | -    | Vdc             |
| Emitter-Base Breakdown Voltage<br>( $I_E = -10\text{ }\mu\text{Adc}$ , $I_C = 0$ )       | $V_{(BR)EBO}$ | -5.0 | -    | Vdc             |
| Base-Emitter Cutoff Current<br>( $V_{EB} = -4.0\text{ Vdc}$ )                            | $I_{EBO}$     | -    | -0.1 | $\mu\text{Adc}$ |
| Collector-Base Cutoff Current<br>( $V_{CB} = -80\text{ Vdc}$ , $I_E = 0$ )               | $I_{CBO}$     | -    | -100 | nAdc            |

### ON CHARACTERISTICS (Note 2)

|                                                                                                                                                                                                                                                                  |               |                      |                  |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------|------------------|-----|
| DC Current Gain<br>( $I_C = -50\text{ mAdc}$ , $V_{CE} = -2.0\text{ Vdc}$ )<br>( $I_C = -500\text{ mAdc}$ , $V_{CE} = -2.0\text{ Vdc}$ )<br>( $I_C = -1.0\text{ Adc}$ , $V_{CE} = -2.0\text{ Vdc}$ )<br>( $I_C = -2.0\text{ Adc}$ , $V_{CE} = -2.0\text{ Vdc}$ ) | $h_{FE}$      | 75<br>75<br>75<br>40 | -<br>-<br>-<br>- | -   |
| Collector-Emitter Saturation Voltages<br>( $I_C = -2.0\text{ Adc}$ , $I_B = -200\text{ mAdc}$ )<br>( $I_C = -1.0\text{ Adc}$ , $I_B = -100\text{ mAdc}$ )                                                                                                        | $V_{CE(sat)}$ | -<br>-               | -0.5<br>-0.3     | Vdc |
| Base-Emitter Voltages<br>( $I_C = -1.0\text{ Adc}$ , $V_{CE} = -2.0\text{ Vdc}$ )                                                                                                                                                                                | $V_{BE(on)}$  | -                    | -1.0             | Vdc |
| Base-Emitter Saturation Voltage<br>( $I_C = -1.0\text{ Adc}$ , $I_B = -100\text{ mAdc}$ )                                                                                                                                                                        | $V_{BE(sat)}$ | -                    | -1.2             | Vdc |
| Current-Gain-Bandwidth<br>( $I_C = -50\text{ mAdc}$ , $V_{CE} = -5.0\text{ Vdc}$ , $f = 100\text{ MHz}$ )                                                                                                                                                        | $f_T$         | 75                   | -                | MHz |

2. Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ , Duty Cycle = 2.0%.

TYPICAL CHARACTERISTICS

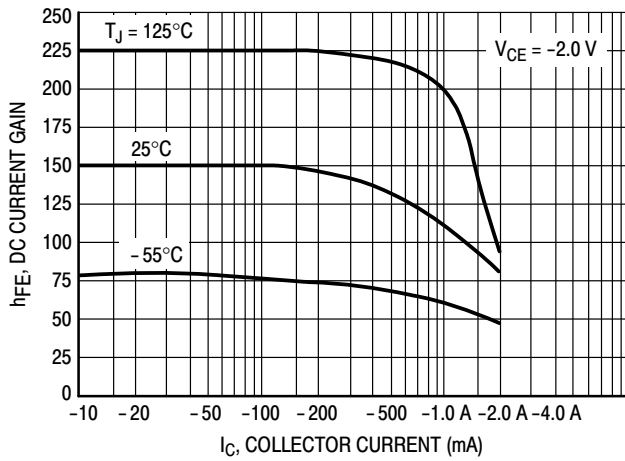


Figure 1. Typical DC Current Gain

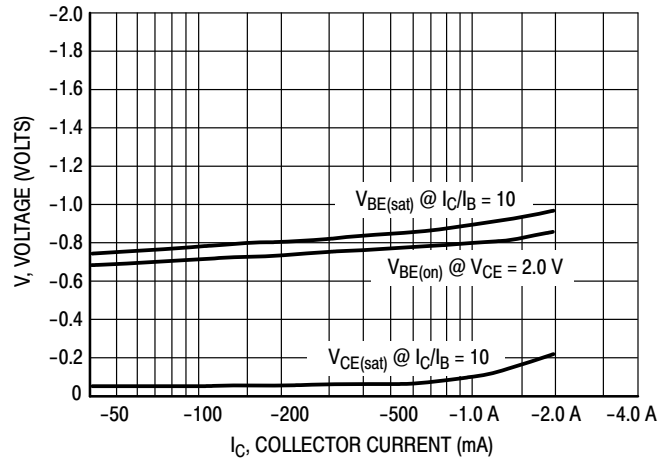


Figure 2. On Voltages

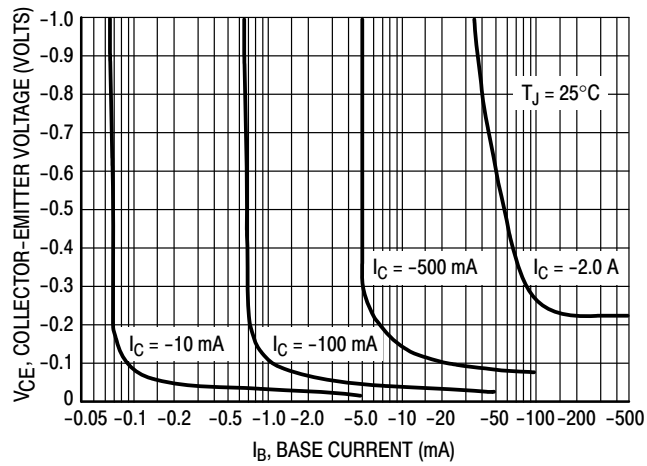
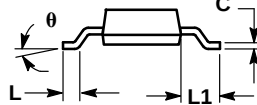
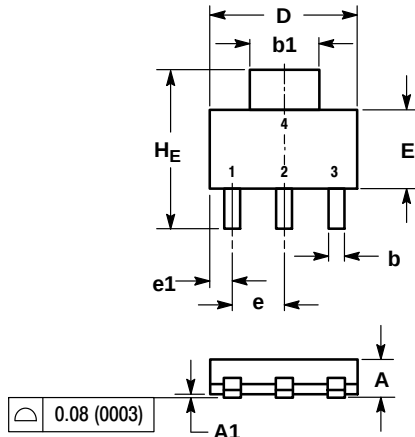


Figure 3. Collector Saturation Region

# PZT751

## PACKAGE DIMENSIONS

### SOT-223 (TO-261) CASE 318E-04 ISSUE N



#### NOTES:

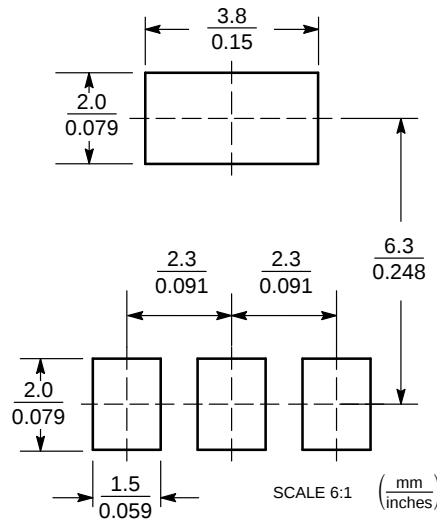
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH

| DIM   | MILLIMETERS |      |      | INCHES |       |       |
|-------|-------------|------|------|--------|-------|-------|
|       | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A     | 1.50        | 1.63 | 1.75 | 0.060  | 0.064 | 0.068 |
| A1    | 0.02        | 0.06 | 0.10 | 0.001  | 0.002 | 0.004 |
| b     | 0.60        | 0.75 | 0.89 | 0.024  | 0.030 | 0.035 |
| b1    | 2.90        | 3.06 | 3.20 | 0.115  | 0.121 | 0.126 |
| c     | 0.24        | 0.29 | 0.35 | 0.009  | 0.012 | 0.014 |
| D     | 6.30        | 6.50 | 6.70 | 0.249  | 0.256 | 0.263 |
| E     | 3.30        | 3.50 | 3.70 | 0.130  | 0.138 | 0.145 |
| e     | 2.20        | 2.30 | 2.40 | 0.087  | 0.091 | 0.094 |
| e1    | 0.85        | 0.94 | 1.05 | 0.033  | 0.037 | 0.041 |
| L     | 0.20        | ---  | ---  | 0.008  | ---   | ---   |
| L1    | 1.50        | 1.75 | 2.00 | 0.060  | 0.069 | 0.078 |
| HE    | 6.70        | 7.00 | 7.30 | 0.264  | 0.276 | 0.287 |
| theta | 0°          | ---  | 10°  | 0°     | ---   | 10°   |

#### STYLE 1:

- PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

### SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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