

## SOT-223 Plastic-Encapsulate Transistors

### PZT3906 TRANSISTOR (PNP)

#### FEATURES

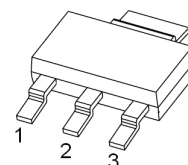
- Low Voltage and Low Current
- Complementary to PZT3904
- General Purpose Amplifier and Switch Application

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

| Symbol          | Parameter                                        | Value    | Unit                 |
|-----------------|--------------------------------------------------|----------|----------------------|
| $V_{CBO}$       | Collector-Base Voltage                           | -40      | V                    |
| $V_{CEO}$       | Collector-Emitter Voltage                        | -40      | V                    |
| $V_{EBO}$       | Emitter-Base Voltage                             | -5       | V                    |
| $I_C$           | Collector Current                                | -200     | mA                   |
| $P_C$           | Collector Power Dissipation                      | 1        | W                    |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient      | 125      | $^{\circ}\text{C/W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55~+150 | $^{\circ}\text{C}$   |

#### SOT-223

1. BASE
2. COLLECTOR
3. EMITTER

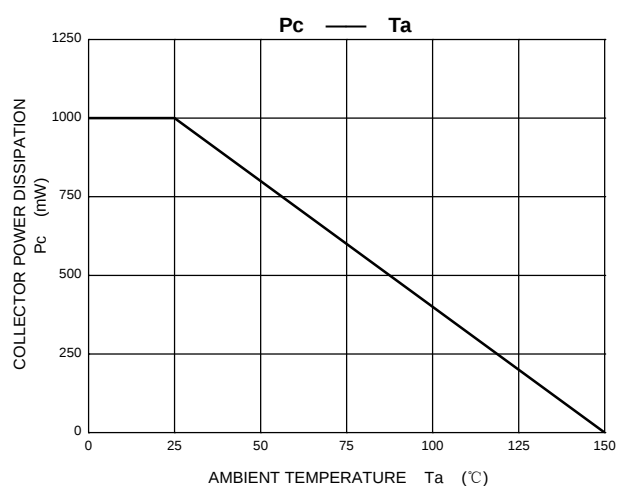
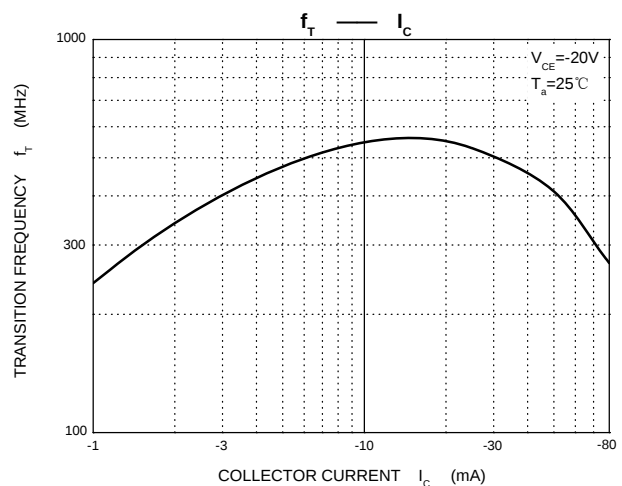
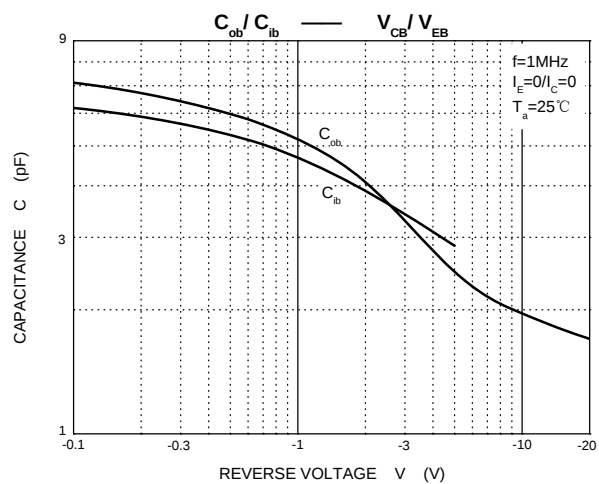
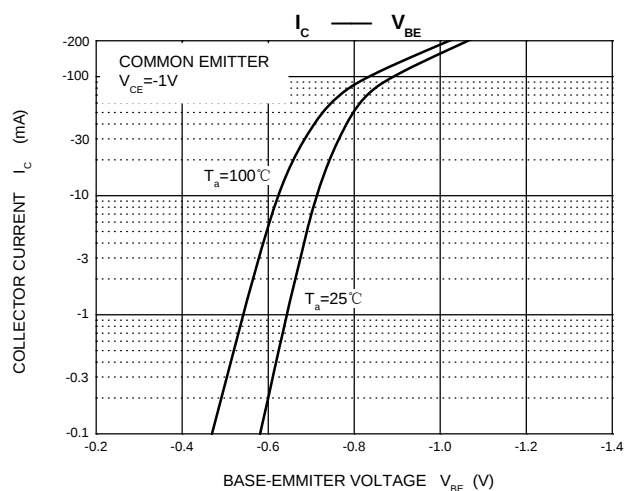
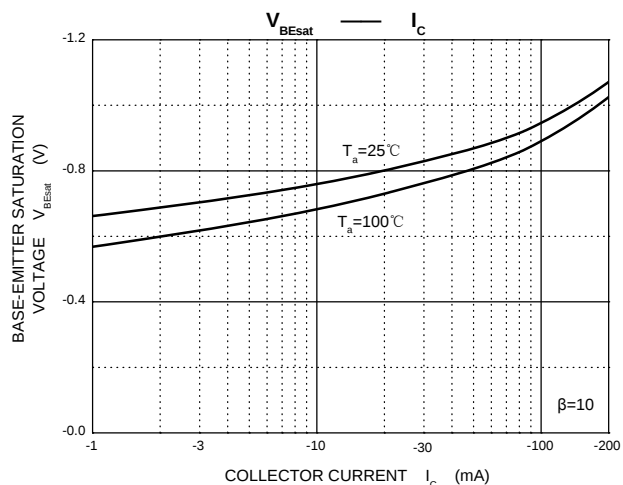
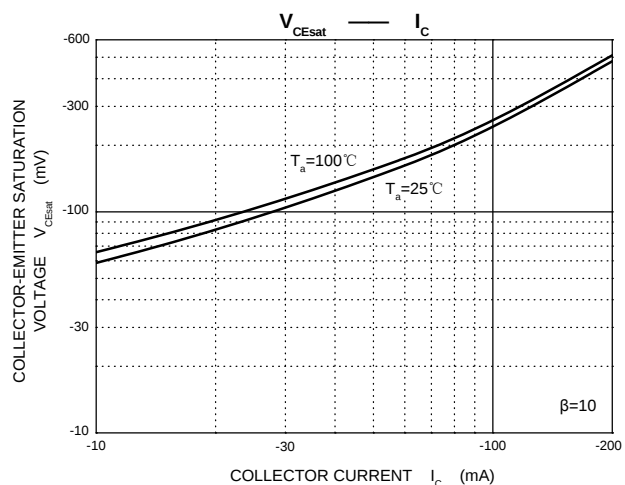
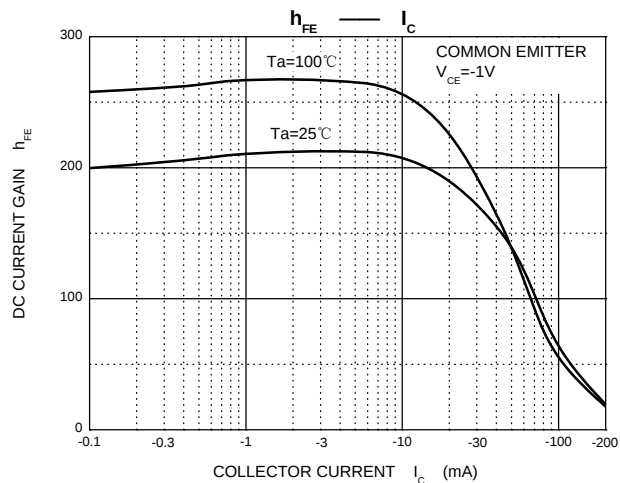
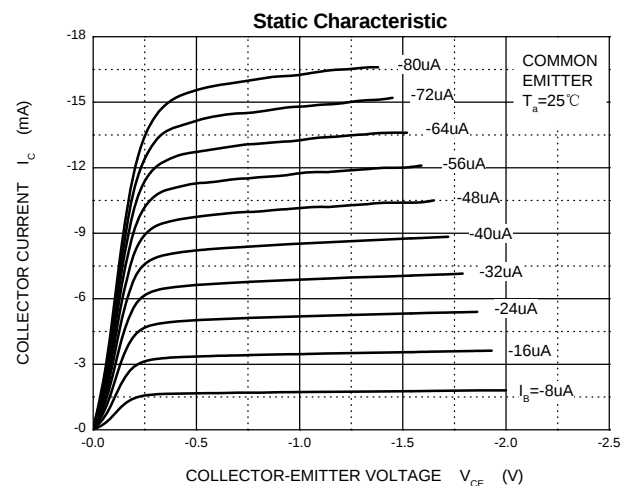


#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

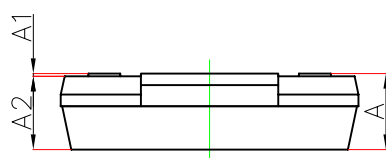
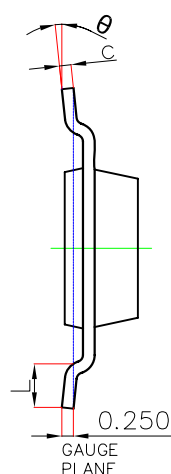
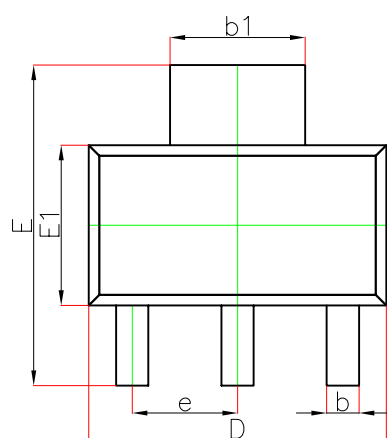
| Parameter                            | Symbol          | Test conditions                                                                             | Min   | Typ | Max   | Unit |
|--------------------------------------|-----------------|---------------------------------------------------------------------------------------------|-------|-----|-------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}^*$ | $I_C=-0.01\text{mA}, I_E=0$                                                                 | -40   |     |       | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C=-1\text{mA}, I_B=0$                                                                    | -40   |     |       | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}^*$ | $I_E=0.01\text{mA}, I_C=0$                                                                  | -5    |     |       | V    |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB}=-30\text{V}, I_E=0$                                                                 |       |     | -50   | nA   |
| Collector cut-off current            | $I_{CEX}$       | $V_{CE}=-30\text{V}, V_{BE(off)}=-3\text{V}$                                                |       |     | -50   | nA   |
| DC current gain                      | $h_{FE(1)}^*$   | $V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$                                                      | 60    |     |       |      |
|                                      | $h_{FE(2)}$     | $V_{CE}=-1\text{V}, I_C=-1\text{mA}$                                                        | 80    |     |       |      |
|                                      | $h_{FE(3)}$     | $V_{CE}=-1\text{V}, I_C=-10\text{mA}$                                                       | 100   |     | 300   |      |
|                                      | $h_{FE(4)}$     | $V_{CE}=-1\text{V}, I_C=-50\text{mA}$                                                       | 60    |     |       |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$                                                         |       |     | -0.25 | V    |
|                                      |                 | $I_C=-50\text{mA}, I_B=-5\text{mA}$                                                         |       |     | -0.4  | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$                                                         | -0.65 |     | -0.85 | V    |
|                                      |                 | $I_C=-50\text{mA}, I_B=-5\text{mA}$                                                         |       |     | -0.95 | V    |
| Transition frequency                 | $f_T$           | $V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$                                     | 250   |     |       | MHz  |
| Collector output capacitance         | $C_{ob}$        | $V_{CB}=-5\text{V}, I_E=0, f=1\text{MHz}$                                                   |       |     | 4.5   | pF   |
| Emitter input capacitance            | $C_{ib}$        | $V_{BE}=-0.5\text{V}, I_C=0, f=1\text{MHz}$                                                 |       |     | 10    | pF   |
| Delay time                           | $t_d$           | $V_{CC}=-3\text{V}, V_{BE(off)}=-0.5\text{V}, I_C=-10\text{mA}, I_{B1}=-I_{B2}=-1\text{mA}$ |       |     | 35    | ns   |
| Rise time                            | $t_r$           |                                                                                             |       |     | 35    |      |
| Storage time                         | $t_s$           | $V_{CC}=-3\text{V}, I_C=-10\text{mA}, I_{B1}=-I_{B2}=-1\text{mA}$                           |       |     | 225   | ns   |
| Fall time                            | $t_f$           |                                                                                             |       |     | 75    |      |

\*Pulse test: pulse width  $\leq 300\mu\text{s}$ , duty cycles  $\leq 2.0\%$ .

## Typical Characteristics

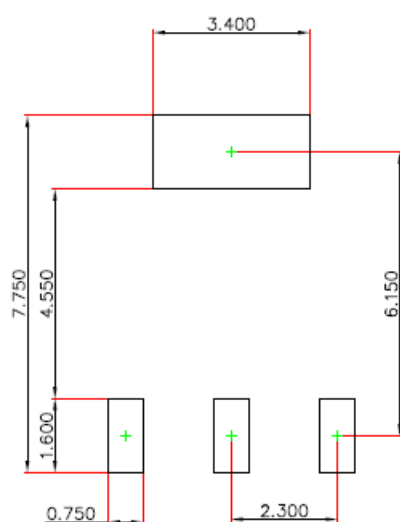


## SOT-223 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | —                         | 1.800 | —                    | 0.071 |
| A1     | 0.020                     | 0.100 | 0.001                | 0.004 |
| A2     | 1.500                     | 1.700 | 0.059                | 0.067 |
| b      | 0.660                     | 0.840 | 0.026                | 0.033 |
| b1     | 2.900                     | 3.100 | 0.114                | 0.122 |
| c      | 0.230                     | 0.350 | 0.009                | 0.014 |
| D      | 6.300                     | 6.700 | 0.248                | 0.264 |
| E      | 6.700                     | 7.300 | 0.264                | 0.287 |
| E1     | 3.300                     | 3.700 | 0.130                | 0.146 |
| e      | 2.300(BSC)                |       | 0.091(BSC)           |       |
| L      | 0.750                     | —     | 0.030                | —     |
| θ      | 0°                        | 10°   | 0°                   | 10°   |

## SOT-223 Suggested Pad Layout



### Note:

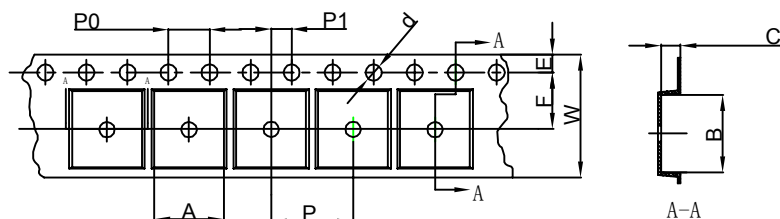
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

## SOT-223 Tape and Reel

### SOT-223 Embossed Carrier Tape

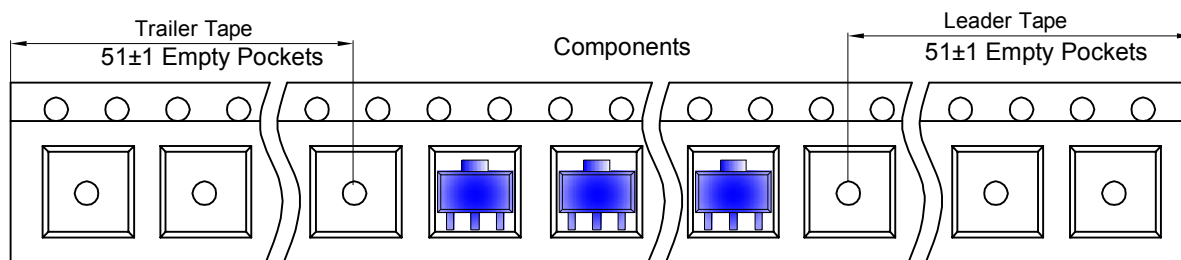


#### Packaging Description:

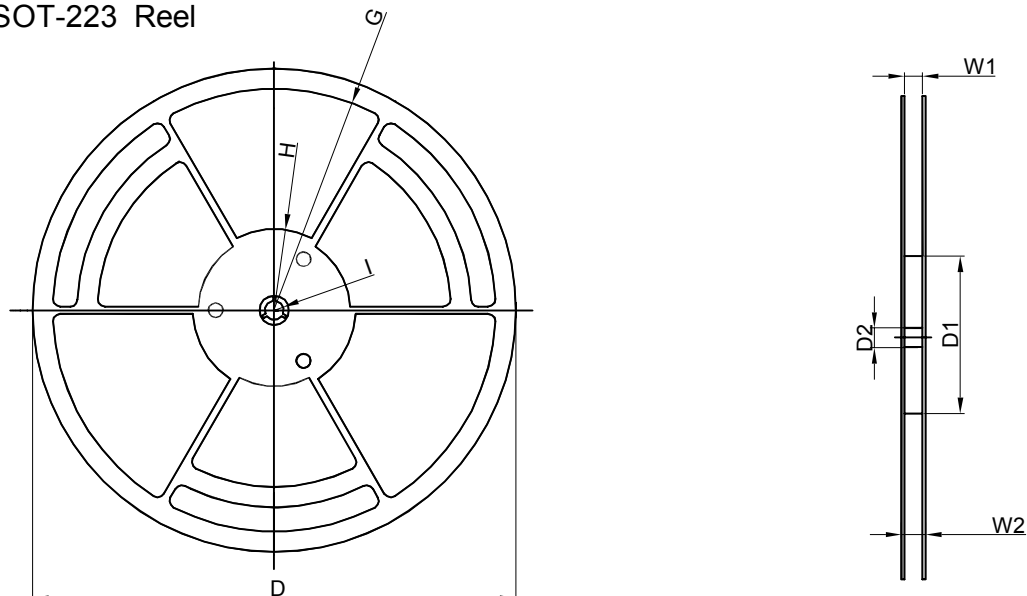
SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |       |       |      |       |      |      |      |      |      |       |
|------------------------------|-------|-------|------|-------|------|------|------|------|------|-------|
| Pkg type                     | A     | B     | C    | d     | E    | F    | P0   | P    | P1   | W     |
| SOT-223                      | 6.765 | 7.335 | 1.88 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

### SOT-223 Tape Leader and Trailer



### SOT-223 Reel



| Dimensions are in millimeter |         |        |       |         |        |       |       |       |
|------------------------------|---------|--------|-------|---------|--------|-------|-------|-------|
| Reel Option                  | D       | D1     | D2    | G       | H      | I     | W1    | W2    |
| 13" Dia                      | Ø330.00 | 100.00 | 13.00 | R151.00 | R56.00 | R6.50 | 12.40 | 17.60 |

| REEL      | Reel Size | Box       | Box Size(mm) | Carton     | Carton Size(mm) | G.W.(kg) |
|-----------|-----------|-----------|--------------|------------|-----------------|----------|
| 2,500 pcs | 13 inch   | 2,500 pcs | 336×336×48   | 20,000 pcs | 445×355×365     |          |