

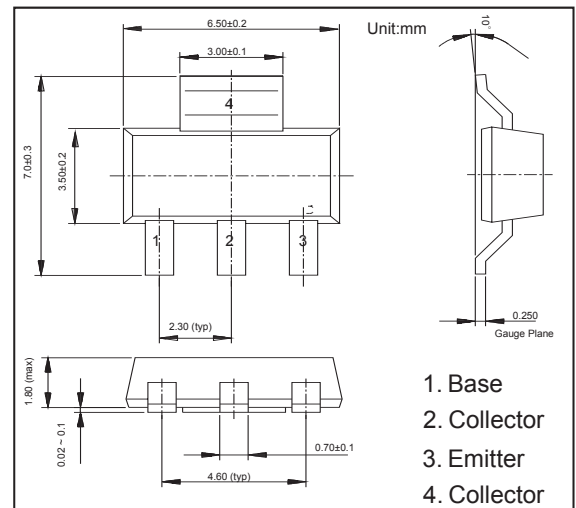
## SOT-223 Plastic Encapsulate Transistors

### FEATURES

- Low Voltage and Low Current
- General Purpose Amplifier and Switch Application
- NPN Transistors

### MECHANICAL DATA

- Case: SOT-223 Small Outline Plastic Package
- Mounting Position: Any



### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

| Parameter                                   | Symbol           | Rating     | Unit |
|---|------------------|------------|------|
| Collector - Base Voltage                    | V <sub>CB0</sub> | 60         | V    |
| Collector - Emitter Voltage                 | V <sub>CE0</sub> | 40         |      |
| Emitter - Base Voltage                      | V <sub>EB0</sub> | 6          |      |
| Collector Current - Continuous              | I <sub>C</sub>   | 200        | mA   |
| Collector Power Dissipation                 | P <sub>C</sub>   | 1          | W    |
| Thermal Resistance From Junction To Ambient | R <sub>θJA</sub> | 125        | °C/W |
| Junction Temperature                        | T <sub>J</sub>   | 150        | °C   |
| Storage Temperature Range                   | T <sub>stg</sub> | -55 to 150 |      |

**SOT-223 Plastic Encapsulate Transistors**

| Parameter                            | Symbol        | Test Conditions  | Min  | Typ | Max  | Unit |
|--------------------------------------|---------------|--|------|-----|------|------|
| Collector- base breakdown voltage    | $V_{CB0}$     | $I_C = 100 \mu A, I_E = 0$   | 60   |     |      | V    |
| Collector- emitter breakdown voltage | $V_{CEO}$     | $I_C = 1 mA, I_B = 0$  | 40   |     |      |      |
| Emitter - base breakdown voltage     | $V_{EBO}$     | $I_E = 100 \mu A, I_C = 0$   | 6    |     |      |      |
| Collector-base cut-off current       | $I_{CBO}$     | $V_{CB} = 60 V, I_E = 0$   |      |     | 100  | nA   |
| Collector cut-off current            | $I_{CEX}$     | $V_{CE} = 30 V, V_{EB(off)} = -3V$   |      |     | 50   |      |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 6V, I_C = 0$   |      |     | 100  |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 10 mA, I_B = 1mA$   |      |     | 0.2  | V    |
|                                      |               | $I_C = 50 mA, I_B = 5mA$   |      |     | 0.3  |      |
| Base - emitter saturation voltage    | $V_{BE(sat)}$ | $I_C = 10 mA, I_B = 1mA$   | 0.65 |     | 0.85 |      |
|                                      |               | $I_C = 50 mA, I_B = 5mA$   |      |     | 0.95 |      |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE} = 1V, I_C = 0.1mA$   | 40   |     |      |      |
|                                      | $h_{FE(2)}$   | $V_{CE} = 1V, I_C = 1mA$   | 70   |     |      |      |
|                                      | $h_{FE(3)}$   | $V_{CE} = 1V, I_C = 10mA$  | 100  |     | 300  |      |
|                                      | $h_{FE(4)}$   | $V_{CE} = 1V, I_C = 50mA$  | 60   |     |      |      |
| Delay time                           | $t_d$         | $V_{CC} = 3V, V_{BE(off)} = -0.5V$<br>$I_C = 10mA, I_{B1} = -I_{B2} = 1mA$ |      |     | 35   | nS   |
| Rise time                            | $t_r$         |  |      |     | 35   |      |
| Storage time                         | $t_s$         |  |      |     | 200  |      |
| Fall time                            | $t_f$         |  |      |     | 50   |      |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = 5V, I_E = 0, f = 1MHz$   |      |     | 4    | pF   |
| Transition frequency                 | $f_T$         | $V_{CE} = 20V, I_C = 10mA, f = 100MHz$                                     | 300  |     |      | MHz  |