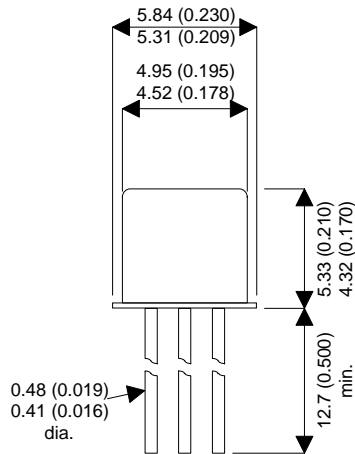


**MECHANICAL DATA**

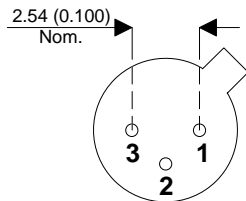
Dimensions in mm (inches)

**PNP SILICON EPITAXIAL TRANSISTOR**



**APPLICATIONS**

- It is suitable for a wide range of applications including low noise, low current high gain RF and wide band pulse amplifiers.



**TO18 PACKAGE**

Pin 1 = Emitter    Pin 2 = Base    Pin 3 = Collector

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

|                |   |              |
|----------------|---|--------------|
| $V_{CBO}$      | Collector – Base Voltage ( $I_E = 0$ )              | -30V         |
| $V_{CEO}$      | Collector – Emitter Voltage ( $I_B = 0$ )           | -30V         |
| $V_{EBO}$      | Emitter – Base Voltage ( $I_C = 0$ )                | -5V          |
| $I_C$          | Collector Current                                   | -100mA       |
| $P_{tot}$      | Total Power Dissipation $T_{amb} \leq 25^{\circ}C$  | 0.36W        |
|                | $T_{case} \leq 25^{\circ}C$                         | 1W           |
| $T_j, T_{stg}$ | Storage Temperature, Operating Junction Temperature | -65 to 200°C |

**ELECTRICAL CHARACTERISTICS** ( $T_j = 25^\circ\text{C}$  unless otherwise stated)

| Parameter  | Test Conditions  | Min. | Typ.  | Max.  | Unit          |
|--|--|------|-------|-------|---------------|
| $I_{CES}$ Collector Cut-off Current                    | $V_{BE} = 0$   |      |       | -15   | nA            |
|  | $V_{CE} = -20\text{V}$   $T_{amb} = 125^\circ\text{C}$                                 |      |       | -15   | $\mu\text{A}$ |
| $V_{(BR)CBO}$ Collector – Base Breakdown Voltage       | $I_E = 0$   $I_C = 10\mu\text{A}$  | -30  |       |       | V             |
| $V_{(BR)CEO}^*$ Collector– Emitter Breakdown Voltage   | $I_C = -10\text{mA}$   $I_B = 0$   | -30  |       |       | V             |
| $V_{(BR)EBO}$ Emitter-Base Breakdown Voltage           | $I_E = -10\mu\text{A}$   $I_C = 0$   | -5   |       |       | V             |
| $V_{CE(sat)}^*$ Collector – Emitter Saturation Voltage | $I_C = -1\text{mA}$   $I_B = -0.1\text{mA}$  |      |       | -0.13 | V             |
|  | $I_C = -10\text{mA}$   $I_B = -1\text{mA}$   |      | -0.1  | -0.14 |               |
|  | $I_C = -50\text{mA}$   $I_B = -5\text{mA}$   |      |       | -0.3  |               |
| $V_{BE(sat)}^*$ Base – Emitter Saturation Voltage      | $I_C = -1\text{mA}$   $I_B = -0.1\text{mA}$  |      |       | -0.75 | V             |
|  | $I_C = -10\text{mA}$   $I_B = -1\text{mA}$   |      | -0.77 | -0.9  |               |
|  | $I_C = -50\text{mA}$   $I_B = -5\text{mA}$   |      |       | -1.1  |               |
| $h_{FE}^*$ DC Current Gain                             | $I_C = -10\mu\text{A}$   $V_{CE} = -1\text{V}$   | 40   | 80    |       | —             |
|  | $I_C = -100\mu\text{A}$   $V_{CE} = -1\text{V}$  | 70   | 130   |       |               |
|  | $I_C = -10\text{mA}$   $V_{CE} = -1\text{V}$   | 90   | 160   |       |               |
|  | $I_C = -50\text{mA}$   $V_{CE} = -1\text{V}$   | 20   | 40    |       |               |
|  | $I_C = -10\text{mA}$   $V_{CE} = -1\text{V}$<br>$T_{amb} = -55^\circ\text{C}$          | 30   |       |       |               |
| $f_T$ Transistion Frequency                            | $I_C = -10\text{mA}$   $V_{CE} = -20\text{V}$<br>$f = 100\text{MHz}$                   | 400  | 550   |       | MHz           |
| $C_{EBO}$ Emitter – Base Capacitance                   | $I_C = 0$   $V_{EB} = -0.5\text{V}$<br>$f = 1\text{MHz}$                               |      | 4     | 5.5   | pF            |
| $C_{CBO}$ Collector-Base Capacitance                   | $I_E = 0$   $V_{CB} = -10\text{V}$<br>$f = 1\text{MHz}$                                |      | 2.2   | 3.5   |               |
| NF Noise Figure  | $I_C = -1\text{mA}$   $V_{CE} = -5\text{V}$<br>$f = 100\text{MHz}$   $R_g = 100\Omega$ |      | 3.5   | 6     | dB            |
| $t_{on}$ Turn-on time                                  | $I_C = -50\text{mA}$   $I_{B1} = -5\text{mA}$  |      | 20    | 50    | ns            |
| $t_{off}$ Turn-off time                                | $I_C = -50\text{mA}$<br>$I_{B1} = I_{B2} = -5\text{mA}$                                |      | 95    | 160   | ns            |
| $r_{bb}C_{b'c}$ Feedback Time Constant                 | $I_C = -10\text{mA}$   $V_{CE} = -20\text{V}$<br>$f = 80\text{MHz}$                    |      |       | 40    | ps            |

\*Pulsed: pulse duration = 300 $\mu\text{s}$ , duty cycle = 1%

**THERMAL CHARACTERISTICS**

|  |  |     |  |                    |
|--|--|-----|--|--------------------|
| $R_{\theta th(j-case)}$ Thermal Resistance Junction - Case   |  | 175 |  | $^\circ\text{C/W}$ |
| $R_{\theta th(j-amb)}$ Thermal Resistance Junction - Ambient |  | 486 |  | $^\circ\text{C/W}$ |