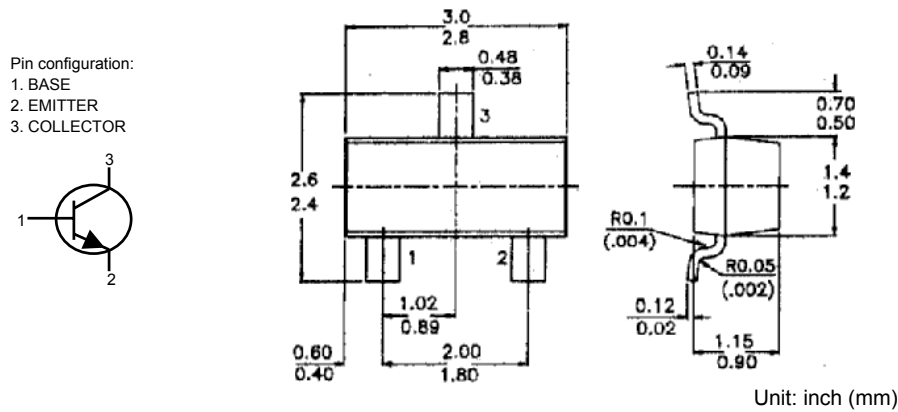


NPN Silicon Planar Epitaxial Transistors



Absolute Maximum Ratings

| | Symbol | Value | UNIT |
|---|-----------|--------------------|------|
| Collector-base voltage (open emitter) | V_{CBO} | max 75 | V |
| Collector-emmitter voltage (open base) | V_{CEO} | max 40 | V |
| Emmitter base voltage (open collector) | V_{EBO} | max 6.0 | V |
| Collector current (d.c.) | I_C | max 600 | mA |
| Total power dissipation up to $T_{amb} = 25^{\circ}C$ | P_{tot} | max 250 | mW |
| D.C. current gain $I_C = 150mA; V_{CE} = 10V$ $I_C = 500mA; V_{CE} = 10V$ | h_{FE} | 100 to 300 > 40 | |
| Transition frequency at $f = 100MHz$ $I_C = 20mA; V_{CE} = 20V$ | f_T | > 300 | MHz |

Ratings (at $T_A = 25^{\circ}C$ unless otherwise specified)

Limmiting values

| | Symbol | Value | UNIT |
|---|---------------|-------------|-------------|
| Collector-base voltage (open emitter) | V_{CBO} | max 75 | V |
| Collector-emitter voltage (open base) | V_{CEO} | max 40 | V |
| Emitter-base voltage (open collector) | V_{EBO} | max 6.0 | V |
| Collector current (d.c.) | I_C | max 600 | mA |
| Total power dissipation up to $T_{amb} = 25^{\circ}C$ | P_{tot} | max 250 | mW |
| Storage Temperature | T_{stg} | -55 to +150 | $^{\circ}C$ |
| Junction Temperature | T_J | max 150 | $^{\circ}C$ |
| Thermal Resistance from junction to Ambient | $R_{th\ j-a}$ | 500 | K/W |

NPN Silicon Planar Epitaxial Transistors

Characteristics (at $T_j=25^\circ\text{C}$ unless otherwise specified)

| | Symbol | Value | UNIT |
|---|---------------|------------|---------------|
| Collector cut-off current $I_E = 0; V_{CB} = 60\text{V}$ | I_{CBO} | < 0.01 | μA |
| $I_E = 0; V_{CB} = 60\text{V}; T_j = 125^\circ\text{C}$ | I_{CBO} | < 10 | |
| $V_{EB} = 3\text{V}; V_{CE} = 60\text{V}$ | I_{CEX} | < 10 | nA |
| Base current with reverse biased emitter junction $V_{FB} = 3\text{V}; V_{CE} = 60\text{V}$ | I_{BEX} | < 20 | nA |
| Emitter-base cut-off current $I_C = 0; V_{EB} = 3\text{V}$ | I_{EBO} | < 10 | nA |
| Saturation voltage $I_C = 150\text{mA}; I_B = 15\text{mA}$ | V_{CEsat} | < 300 | mV |
| | V_{BEsat} | 0.6 to 1.2 | V |
| $I_C = 500\text{mA}; I_B = 50\text{mA}$ | V_{CEsat} | < 1.0 | V |
| | V_{BEsat} | < 2.0 | V |
| Breakdown voltages $I_C = 1.0\text{mA}; I_B = 0$ | $V_{(BR)CEO}$ | > 40 | V |
| $I_C = 100\mu\text{A}; I_E = 0$ | $V_{(BR)CBO}$ | > 75 | |
| $I_C = 0; I_E = 10\mu\text{A}$ | $V_{(BR)EBO}$ | > 6.0 | |
| D.C. current gain $I_C = 0.1\text{mA}; V_{CE} = 10\text{V}$ | h_{FE} | > 35 | |
| $I_C = 1\text{mA}; V_{CE} = 10\text{V}$ | | > 50 | |
| $I_C = 10\text{mA}; V_{CE} = 10\text{V}$ | | > 75 | |
| $I_C = 10\text{mA}; V_{CE} = 10\text{V}; T_{amb} = -55^\circ\text{C}$ | | > 35 | |
| $I_C = 150\text{mA}; V_{CE} = 10\text{V}$ | | 100 to 300 | |
| $I_C = 150\text{mA}; V_{CE} = 1\text{V}$ | | > 50 | |
| $I_C = 500\text{mA}; V_{CE} = 10\text{V}$ | | > 40 | |
| Transition frequency at $f = 100\text{MHz}$ $I_C = 20\text{mA}; V_{CE} = 20\text{V}$ | f_T | > 300 | MHz |
| Output capacitance at $f = 1\text{MHz}$ $I_E = 0; V_{CB} = 10\text{V}$ | C_O | < 8.0 | pF |
| Input capacitance at $f = 1\text{MHz}$ $I_E = 0; V_{EB} = 0.5\text{V}$ | C_i | < 25 | pF |
| Noise figure at $R_s = 1\text{K ohm}$ $I_C = 100\mu\text{A}; V_{CE} = 10\text{V}; f = 1\text{kHz}$ | F | < 4.0 | dB |