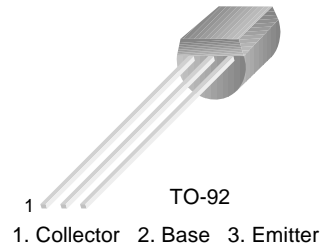


BC307/308/309

Switching and Amplifier Applications

- Low Noise: BC309



PNP Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------|-----------------------------|-----------|------------------|
| V_{CES} | Collector-Emitter Voltage | | |
| | : BC307 | -50 | V |
| | : BC308/309 | -30 | V |
| V_{CEO} | Collector-Emitter Voltage | | |
| | : BC307 | -45 | V |
| | : BC308/309 | -25 | V |
| V_{EBO} | Emitter-Base Voltage | -5 | V |
| I_C | Collector Current (DC) | -100 | mA |
| P_C | Collector Power Dissipation | 500 | mW |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | -55 ~ 150 | $^\circ\text{C}$ |

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|----------------------|---|---|------------|---------------|--------------|----------------|
| BV_{CEO} | Collector-Emitter Breakdown Voltage : BC307 : BC308/309 | $I_C = -2\text{mA}, I_B = 0$ | -45 -25 | | | V V |
| BV_{CES} | Collector-Emitter Breakdown Voltage : BC307 : BC308/309 | $I_C = -10\mu\text{A}, V_{BE} = 0$ | -50 -30 | | | V V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = -10\mu\text{A}, I_C = 0$ | -5 | | | V |
| I_{CES} | Collector Cut-off Current : BC307 : BC308/309 | $V_{CE} = -45\text{V}, V_{BE} = 0$ $V_{CE} = -25\text{V}, V_{BE} = 0$ | | -2 -2 | -15 -15 | nA nA |
| h_{FE} | DC Current Gain | $V_{CE} = -5\text{V}, I_C = -2\text{mA}$ | 120 | | 800 | |
| $V_{CE}(\text{sat})$ | Collector-Emitter Saturation Voltage | $I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$ | | -0.5 | -0.3 | V V |
| $V_{BE}(\text{sat})$ | Collector-Base Saturation Voltage | $I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$ | | -0.7 -0.85 | | V V |
| $V_{BE}(\text{on})$ | Base-Emitter On Voltage | $V_{CE} = -5\text{V}, I_C = -2\text{mA}$ | -0.55 | -0.62 | -0.7 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = -5\text{V}, I_C = -10\text{mA}, f = 50\text{MHz}$ | | 130 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$ | | | 6 | pF |
| C_{ib} | Input Capacitance | $V_{EB} = -0.5\text{V}, I_C = 0, f = 1\text{MHz}$ | | 12 | | pF |
| NF | Noise Figure : BC307/308 : BC309 : BC309 | $V_{CE} = -5\text{V}, I_C = -0.2\text{mA},$ $R_G = 2\text{K}\Omega, f = 1\text{KHz}$ $V_{CE} = -5\text{V}, I_C = -0.2\text{mA}$ $R_G = 2\text{K}\Omega, f = 30\text{--}15\text{KHz}$ | | | 10 4 4 | dB dB dB |

 h_{FE} Classification

| Classification | A | B | C |
|----------------|-----------|-----------|-----------|
| h_{FE} | 120 ~ 220 | 180 ~ 460 | 380 ~ 800 |

Typical Characteristics

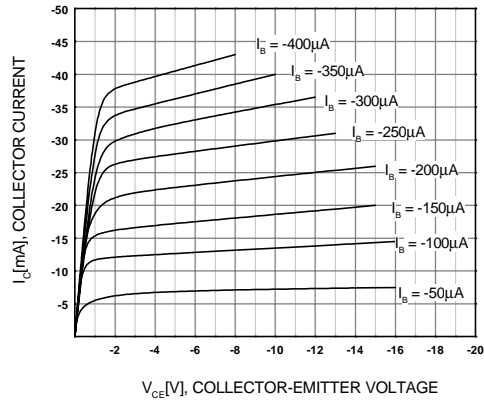


Figure 1. Static Characteristic

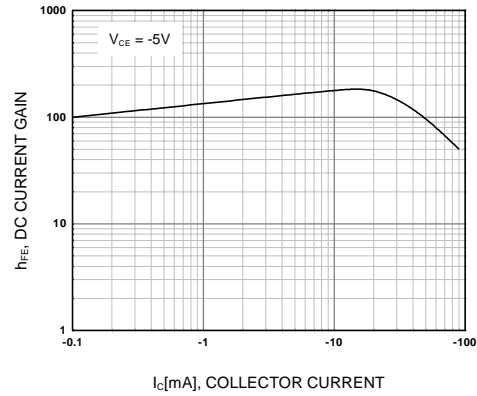


Figure 2. DC current Gain

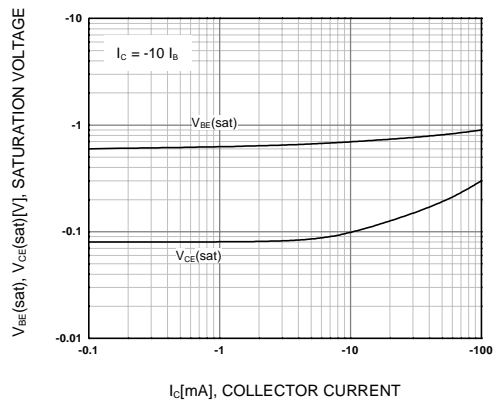


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

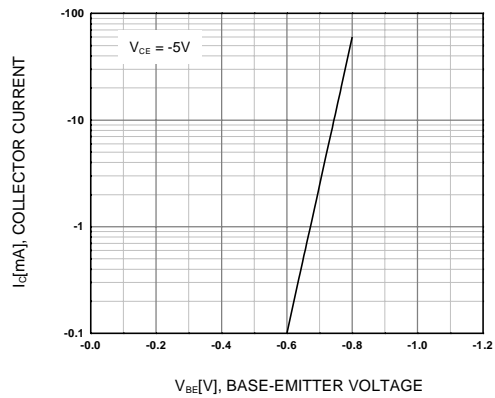


Figure 4. Base-Emitter Capacitance

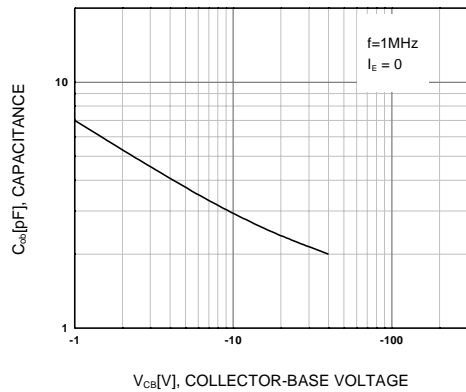


Figure 5. Collector Output Capacitance

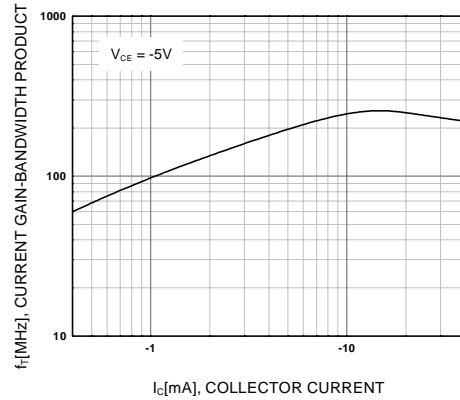
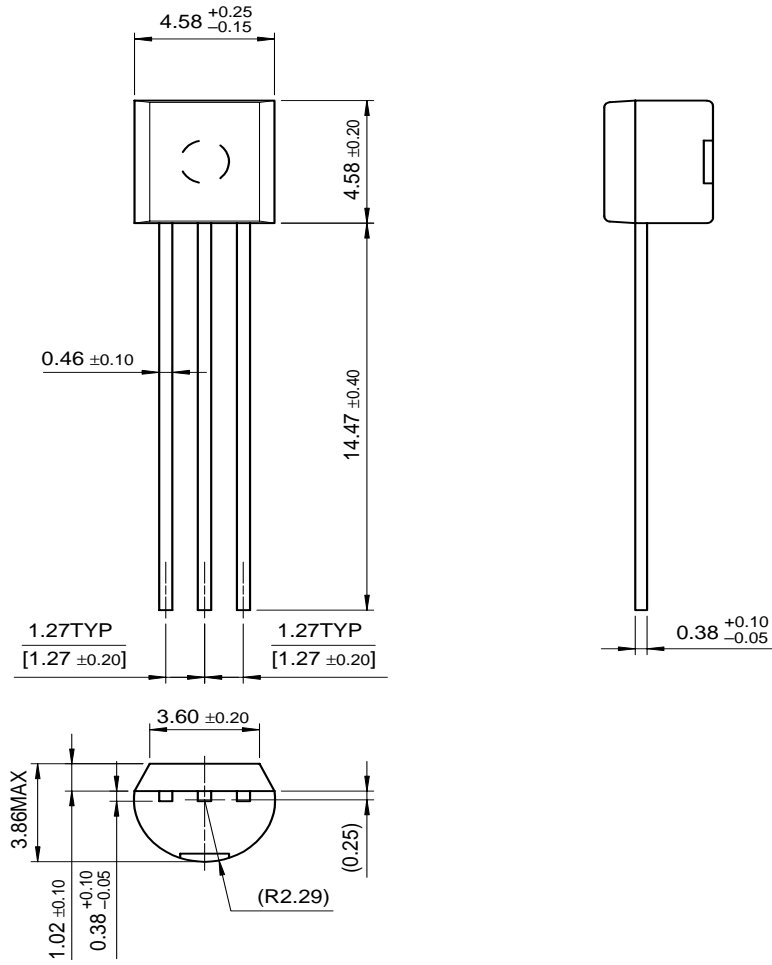


Figure 6. Current Gain Bandwidth Product

Package Dimensions

TO-92

BC307/308/309



Dimensions in Millimeters

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