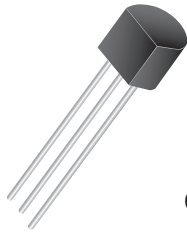
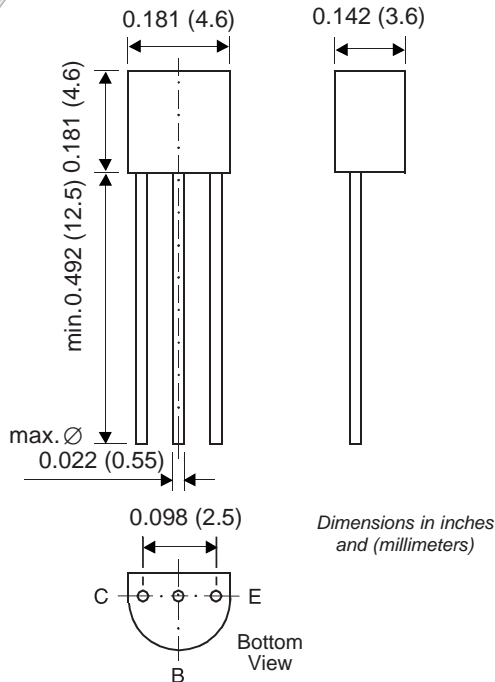


Small Signal Transistors (NPN)


TO-226AA (TO-92)


Features

- NPN Silicon Epitaxial Planar Transistors
- These transistors are subdivided into three groups A, B, and C according to their current gain. The type BC546 is available in groups A and B, however, the types BC547 and BC548 can be supplied in all three groups. As complementary types the PNP transistors BC556...BC558 are recommended.
- On special request, these transistors are also manufactured in the pin configuration TO-18.

Mechanical Data

Case: TO-92 Plastic Package

Weight: approx. 0.18g

Packaging Codes/Options:

E6/Bulk – 5K per container, 20K/box

E7/4K per Ammo mag., 20K/box

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | | Symbol | Value | Unit |
|---|-----------------------|-----------------|--------------------|---------------------------|
| Collector-Base Voltage | BC546 | V_{CB0} | 80 | V |
| | BC547 | | 50 | |
| | BC548 | | 30 | |
| Collector-Emitter Voltage | BC546 | V_{CES} | 80 | V |
| | BC547 | | 50 | |
| | BC548 | | 30 | |
| Collector-Emitter Voltage | BC546 | V_{CEO} | 65 | V |
| | BC547 | | 45 | |
| | BC548 | | 30 | |
| Emitter-Base Voltage | BC546, BC547 BC548 | V_{EBO} | 6 5 | V |
| Collector Current | | I_C | 100 | mA |
| Peak Collector Current | | I_{CM} | 200 | mA |
| Peak Base Current | | I_{BM} | 200 | mA |
| Peak Emitter Current | | $-I_{EM}$ | 200 | mA |
| Power Dissipation at $T_{amb} = 25^\circ\text{C}$ | | P_{tot} | 500 ⁽¹⁾ | mW |
| Thermal Resistance Junction to Ambient Air | | $R_{\theta JA}$ | 250 ⁽¹⁾ | $^\circ\text{C}/\text{W}$ |
| Junction Temperature | | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_s | -65 to +150 | $^\circ\text{C}$ |

Note: (1) Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

BC546 thru BC548

Vishay Semiconductors
formerly General Semiconductor



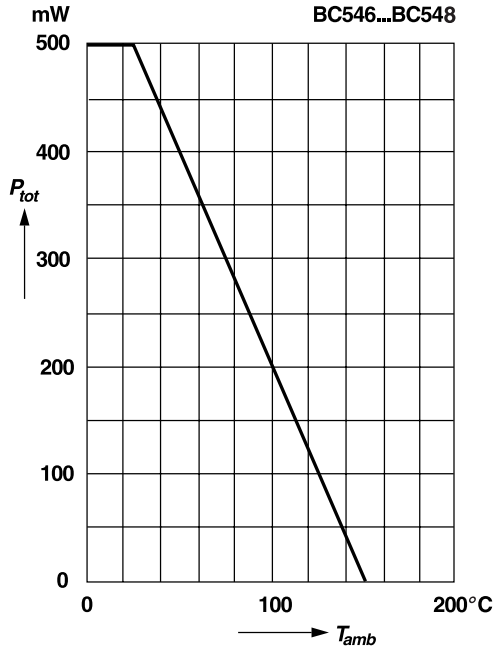
Electrical Characteristics (T_J = 25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit | |
|----------------------------------|--|---|---|---------------------|------------|---------------|---------------|
| Small Signal Current Gain | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$ | — | 220 | — | — | |
| | B | | — | 330 | — | | |
| | C | | — | 600 | — | | |
| Input Impedance | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$ | 1.6 | 2.7 | 4.5 | k Ω | |
| | B | | 3.2 | 4.5 | 8.5 | | |
| | C | | 6 | 8.7 | 15 | | |
| Output Admittance | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$ | — | 18 | 30 | μS | |
| | B | | — | 30 | 60 | | |
| | C | | — | 60 | 110 | | |
| Reverse Voltage Transfer Ratio | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA},$ $f = 1\text{ kHz}$ | — | $1.5 \cdot 10^{-4}$ | — | — | |
| | B | | — | $2 \cdot 10^{-4}$ | — | | |
| | C | | — | $3 \cdot 10^{-4}$ | — | | |
| DC Current Gain | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 10\text{ }\mu\text{A}$ | — | 90 | — | — | |
| | B | | — | 150 | — | | |
| | C | | — | 270 | — | | |
| | Current gain group A | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA}$ | 110 | 180 | 220 | | |
| | B | | 200 | 290 | 450 | | |
| | C | | 420 | 500 | 800 | | |
| Current gain group A | $V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$ | — | 120 | — | | | |
| B | | — | 200 | — | | | |
| C | | — | 400 | — | | | |
| Collector Saturation Voltage | V_{CEsat} | $I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}, I_B = 5\text{ mA}$ | — — | 80 200 | 200 600 | mV | |
| Base Saturation Voltage | V_{BEsat} | $I_C = 10\text{ mA}, I_B = 0.5\text{ mA}$ $I_C = 100\text{ mA}, I_B = 5\text{ mA}$ | — — | 700 900 | — — | mV | |
| Base-Emitter Voltage | V_{BE} | $V_{CE} = 5\text{ V}, I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$ | 580 — | 660 — | 700 720 | mV | |
| Collector-Emitter Cutoff Current | BC546 BC547 BC548 BC546 BC547 BC548 | I_{CES} | $V_{CE} = 80\text{ V}$ | — | 0.2 | 15 | nA |
| | | | $V_{CE} = 50\text{ V}$ | — | 0.2 | 15 | nA |
| | | | $V_{CE} = 30\text{ V}$ | — | 0.2 | 15 | nA |
| | | | $V_{CE} = 80\text{ V}, T_J = 125^\circ\text{C}$ | — | — | 4 | μA |
| | | | $V_{CE} = 50\text{ V}, T_J = 125^\circ\text{C}$ | — | — | 4 | μA |
| | | | $V_{CE} = 30\text{ V}, T_J = 125^\circ\text{C}$ | — | — | 4 | μA |
| Gain-Bandwidth Product | f_T | $V_{CE} = 5\text{ V}, I_C = 10\text{ mA},$ $f = 100\text{ MHz}$ | — | 300 | — | MHz | |
| Collector-Base Capacitance | C_{CBO} | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | — | 3.5 | 6 | pF | |
| Emitter-Base Capacitance | C_{EBO} | $V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$ | — | 9 | — | pF | |
| Noise Figure | BC546, BC547 BC548 | F | $V_{CE} = 5\text{ V}, I_C = 200\text{ }\mu\text{A},$ $R_G = 2\text{ k}\Omega, f = 1\text{ kHz},$ $\Delta f = 200\text{ Hz}$ | — | 2 | 10 | dB |

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

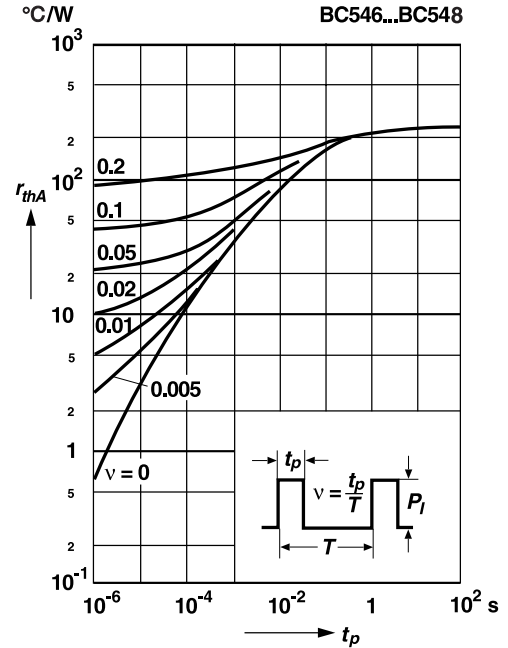
Admissible power dissipation versus temperature

Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case

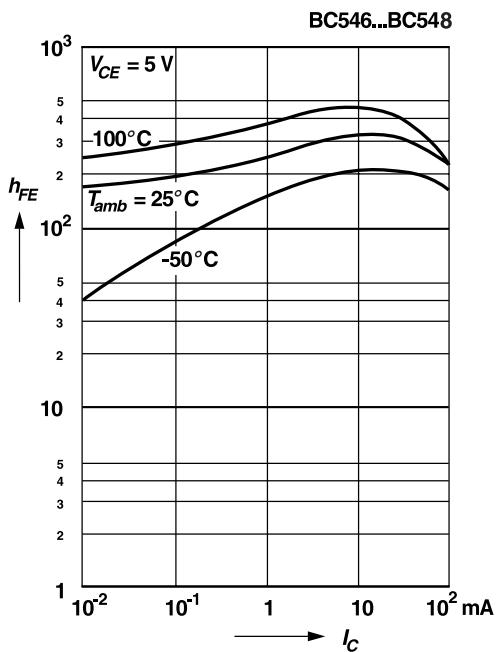


Pulse thermal resistance versus pulse duration

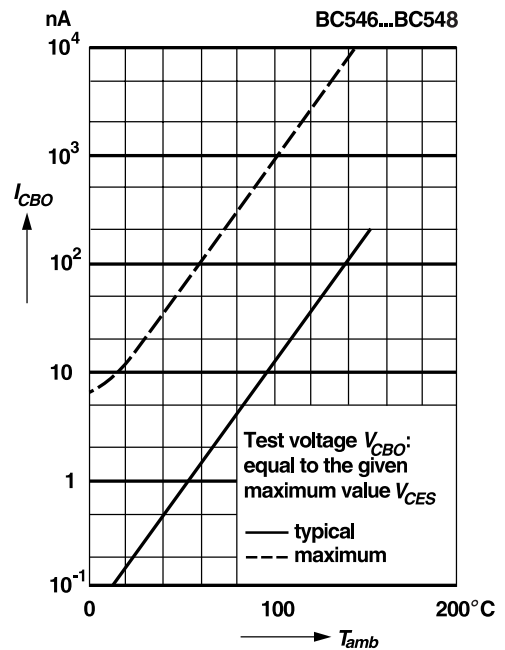
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



DC current gain versus collector current



Collector-base cutoff current versus ambient temperature



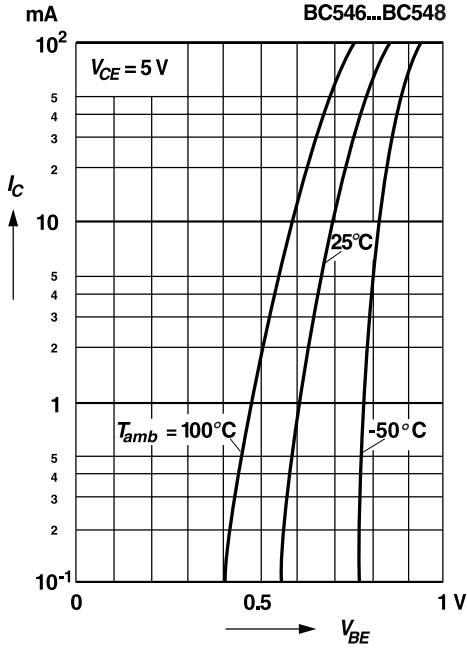
BC546 thru BC548

Vishay Semiconductors
formerly General Semiconductor

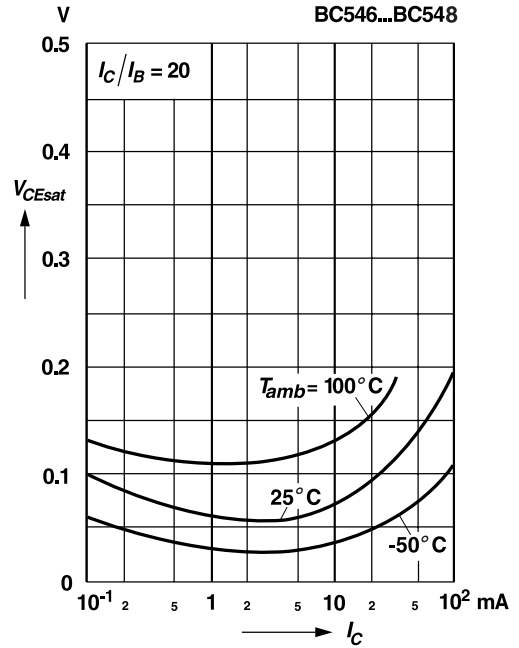


Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

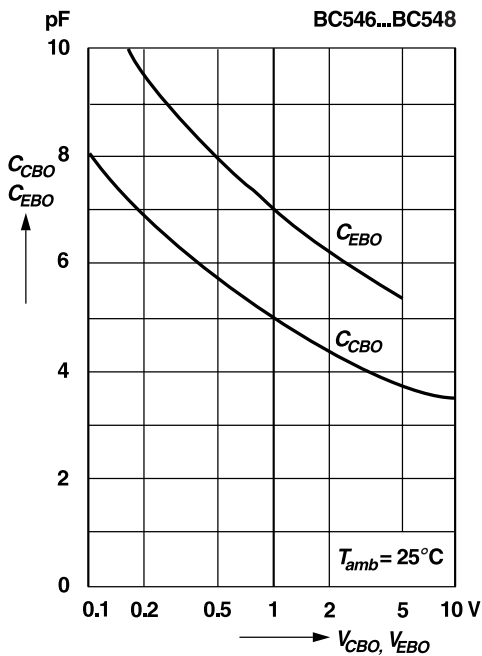
Collector current versus base-emitter voltage



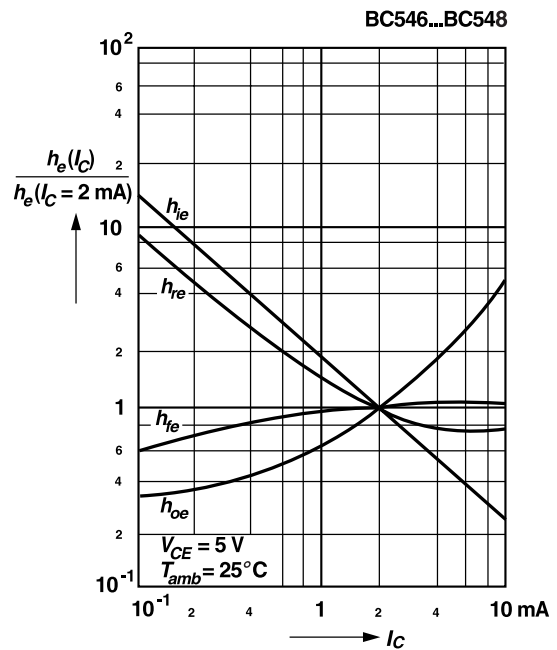
Collector saturation voltage versus collector current



Collector-base capacitance, Emitter-base capacitance versus reverse bias voltage



Relative h-parameters versus collector current





Ratings and
Characteristic Curves (T_A = 25°C unless otherwise noted)

Gain-bandwidth product
versus collector current

