

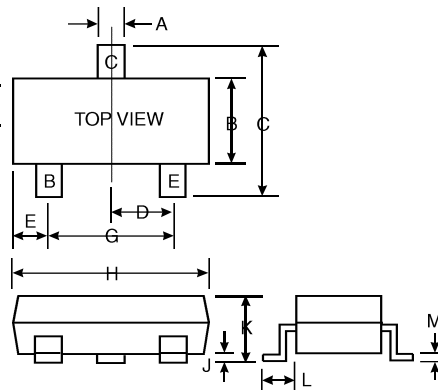
Features

Epitaxial Die Construction
 Ideally Suited for Automatic Insertion
 310 mW Power Dissipation
 Complementary PNP Types Available
 (BC856-BC858)
 For Switching and AF Amplifier Applications

Mechanical Data

Case: SOT-23, Molded Plastic
 Terminals: Solderable per MIL-STD-202,
 Method 208
 Pin Connections and Marking Codes
 (See Table & Diagram)
 Approx. Weight: 0.008 grams
 Mounting Position: Any

| Marking Code | | | |
|--------------|---------|--------|---------|
| Type | Marking | Type | Marking |
| BC846A | 1A | BC847C | 1G |
| BC846B | 1B | BC848A | 1J |
| BC847A | 1E | BC848B | 1K |
| BC847B | 1F | BC848C | 1L |



| SOT-23 | | |
|----------------------|-------|-------|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.19 | 1.40 |
| C | 2.10 | 2.50 |
| D | 0.89 | 1.05 |
| E | 0.45 | 0.61 |
| G | 1.78 | 2.05 |
| H | 2.65 | 3.05 |
| J | 0.013 | 0.15 |
| K | 0.89 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.076 | 0.178 |
| All Dimensions in mm | | |

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|---|----------------|------|
| Collector-Base Voltage | BC846 BC847 BC848 V _{CB0} | 80 50 30 | V |
| Collector-Emitter Voltage | BC846 BC847 BC848 V _{CEO} | 65 45 30 | V |
| Emitter-Base Voltage | BC846, BC847 BC848 V _{EBO} | 6.0 5.0 | V |
| Collector Current | I _C | 100 | mA |
| Peak Collector Current | I _{CM} | 200 | mA |
| Peak Emitter Current | I _{EM} | 200 | mA |
| Power Dissipation at T _{SB} = 50°C (Note 1) | P _d | 310 | mW |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

- Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area.
 2. Current gain subgroup "C" is not available for BC846.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition | |
|--|--|------------------|----------------------------|--|----------------------------------|--|---|
| h-Parameters (Note 2) | | | | | | | |
| Small Signal Current Gain | Current Gain Group A B C | h_{fe} | — 220 330 | — — — | — — — | V _{CE} = 5.0V, I _C = 2.0mA, f = 1.0kHz | |
| Input Impedance | Current Gain Group A B C | h_{ie} | 1.6 2.7 4.5 | — 4.5 8.5 | k k k | | |
| Output Admittance | Current Gain Group A B C | h_{oe} | 6.0 — — | 8.7 18 30 | k μS μS | | |
| Reverse Voltage Transfer Ratio | Current Gain Group A B C | h_{re} | — — — | 60 1.5×10 ⁻⁴ 2×10 ⁻⁴ 3×10 ⁻⁴ | μS — — — | | |
| DC Current Gain | Current Gain Group A B C | h_{FE} | — — — | 90 150 270 | — — — | | V _{CE} = 5.0V, I _C = 10μA |
| | Current Gain Group A B C (Note 2) | | 110 200 420 | 180 290 520 | 220 450 800 | | V _{CE} = 5.0V, I _C = 2.0mA |
| Thermal Resistance, Junction to Substrate Backside | R _{SB} | — | — | 320 | K/W | | Note 1 |
| Thermal Resistance, Junction to Ambient Air | R _{JA} | — | — | 400 | K/W | | Note 1 |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | 90 200 | 250 600 | mV | | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | 700 900 | — | mV | | I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA |
| Base-Emitter Voltage | V _{BE} | 580 — | 660 — | 700 720 | mV | V _{CE} = 5.0V, I _C = 2.0mA V _{CE} = 5.0V, I _C = 10mA | |
| Collector-Emitter Cutoff Current | BC846 BC847 BC848 BC846 BC847 BC848 | I _{CES} | — — — — — — | 0.2 0.2 0.2 4.0 4.0 4.0 | 15 15 15 μA μA μA | V _{CE} = 80V V _{CE} = 50V V _{CE} = 30V V _{CE} = 80V, T _J = 125°C V _{CE} = 50V, T _J = 125°C V _{CE} = 30V, T _J = 125°C I _{CB0} = 30V I _{CB0} = 30V, T _J = 125°C | |
| Gain Bandwidth Product | f _T | — | 300 | — | MHz | V _{CE} = 5.0V, I _C = 10mA, f = 100MHz | |
| Collector-Base Capacitance | C _{CB0} | — | 3.5 | 6.0 | pF | V _{CB} = 10V, f = 1.0MHz | |
| Emitter-Base Capacitance | C _{EB0} | — | 9.0 | — | pF | V _{EB} = 0.5V, f = 1.0MHz | |
| Noise Figure | NF | — | 2.0 | 10 | dB | V _{CE} = 5V, I _C = 200μA, R _G = 2.0k f = 1.0kHz, f = 200Hz | |

- Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area.
2. Current gain subgroup "C" is not available for BC846.

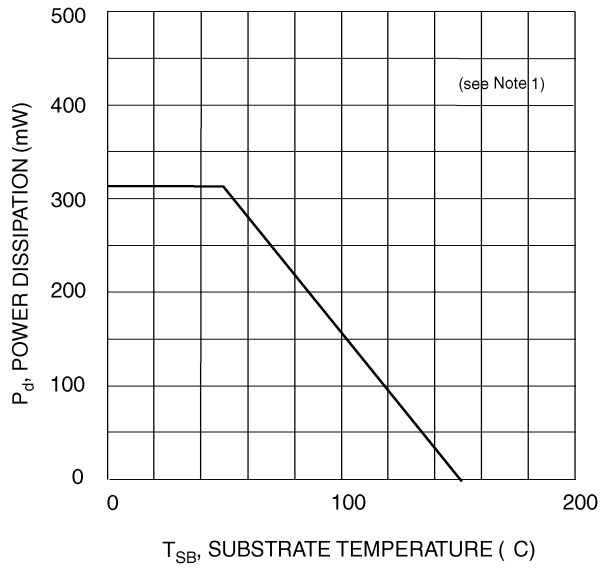


Fig. 1, Power Derating Curve

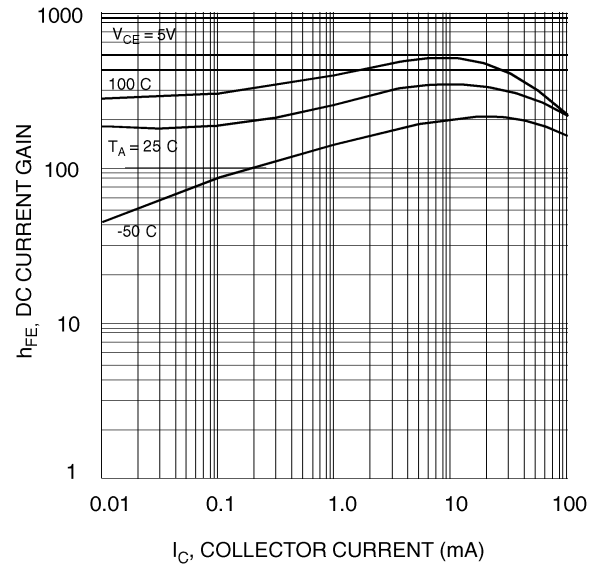


Fig. 2, DC Current Gain vs Collector Current

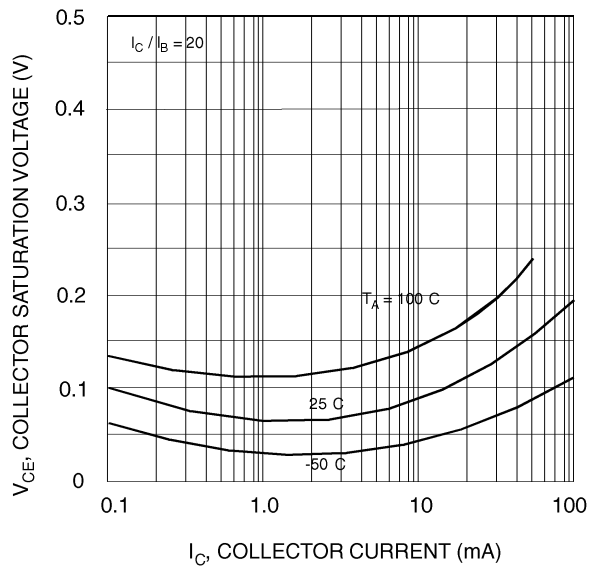


Fig. 3, Collector Saturation Voltage vs Collector Current

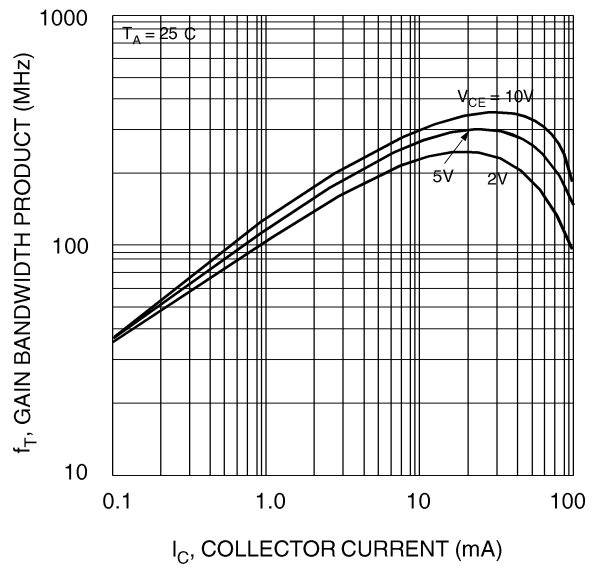


Fig. 4, Gain Bandwidth Product vs Collector Current

Notes: 1. Device mounted on ceramic substrate 0.7mm x 2.5cm² area