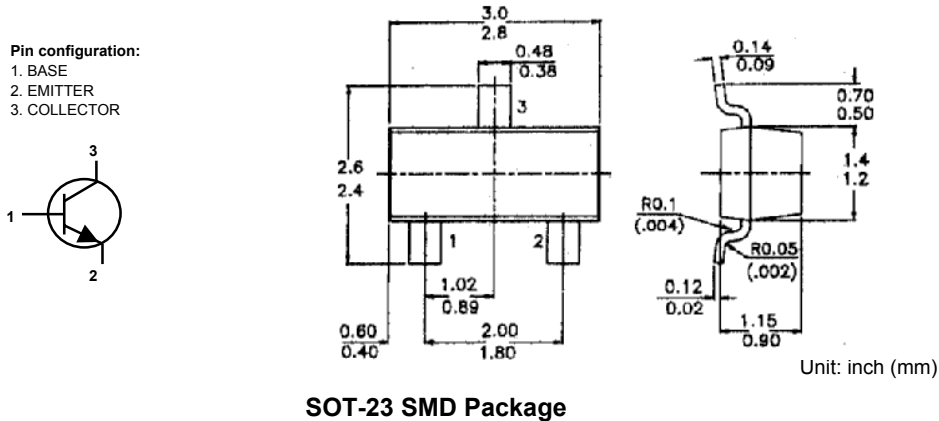


NPN Silicon Planar Epitaxial Transistors



Absolute Maximum Ratings (Ta = 25 °C unless specified otherwise)

| DESCRIPTION | SYMBOL | BC846 | BC847 | BC848 | UNITS |
|---|----------------|-------|-------------|-------|------------------|
| Collector Base Voltage | V_{CBO} | 80 | 50 | 30 | V |
| Collector Emmitter Voltage ($V_{BE} = 0V$) | V_{CES} | 80 | 50 | 30 | V |
| Collector Emitter Voltage | V_{CEO} | 65 | 45 | 30 | V |
| Emitter Base Voltage | V_{EBO} | 6 | 6 | 5 | V |
| Collector Current (DC) | I_C | | 100 | | mA |
| Collector Current - Peak | I_{CM} | | 200 | | mA |
| Emitter Current - Peak | $-I_{EM}$ | | 200 | | mA |
| Base Current - Peak | I_{BM} | | 200 | | mA |
| Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$ | P_{tot}^{**} | | 250 | | mW |
| Storage Temperature | T_{stg} | | -55 to +150 | | $^\circ\text{C}$ |
| Junction Temperature | T_j | | 150 | | $^\circ\text{C}$ |

Thermal Resistance

| | | | | | |
|--------------------------|--------------------|--|-----|--|-----|
| From junction to ambient | $R_{th(j-a)}^{**}$ | | 500 | | K/W |
|--------------------------|--------------------|--|-----|--|-----|

**Mounted on a ceramic substrate of 8mm x 10mm x 0.7mm

Electrical Characteristics (at Ta=25 °C unless otherwise specified)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNITS |
|--------------------------------------|---------------------|--|------|-----|------|-------|
| Collector Cut Off Current | I_{CBO} | $V_{CB} = 30V, I_E = 0$ | | | 15 | nA |
| | | $V_{CB} = 30V, I_E = 0, T_j = 150^\circ C$ | | | 4 | uA |
| Base Emitter On Voltage | $V_{BE(on)}^*$ | $I_C = 2mA, V_{CE} = 5V$ | 0.58 | | 0.7 | V |
| | | $I_C = 10mA, V_{CE} = 5V$ | | | 0.77 | |
| Collector Emitter Saturation Voltage | $V_{CE(Sat)}$ | $I_C = 10mA, I_B = 0.5mA$ | | | 0.25 | V |
| | | $I_C = 100mA, I_B = 5mA$ | | | 0.60 | |
| Base Emitter Saturation Voltage | $V_{BE(Sat)}^{***}$ | $I_C = 10mA, I_B = 0.5mA$ | | 0.7 | | V |
| | | $I_C = 100mA, I_B = 5mA$ | | 0.9 | | |
| DC Current Gain | h_{FE} | $I_C = 10uA, V_{CE} = 5V$ BC846A/BC847A/BC848A | | 90 | | |
| | | BC846B/BC847B/BC848B | | 150 | | |
| | | BC847C/BC848C | | 270 | | |
| | | $I_C = 2mA, V_{CE} = 5V$ BC846 | 110 | 450 | | |
| | | BC847/BC848 | 110 | 800 | | |
| | | BC846A/BC847A/BC848A | 110 | 220 | | |
| | | BC846B/BC847B/BC848B | 200 | 450 | | |
| BC847C/BC848C | 420 | 800 | | | | |
| Collector Capacitance | C_C | $I_E = i_e = 0, V_{CB} = 10V, f = 1MHz$ | | 2.5 | | pF |
| Transition Frequency | f_T | $I_C = 10mA, V_{CB} = 5V, f = 100MHz$ | 100 | | | MHz |
| Small Signal Current Gain | $ h_{fe} $ | $I_C = 2mA, V_{CE} = 5V, f = 1kHz$ BC856 | 125 | 500 | | |
| | | BC857/BC858 | 125 | 900 | | |
| | | BC846A/BC847A/BC848A | 125 | 260 | | |
| | | BC846B/BC847B/BC848B | 240 | 500 | | |
| | | BC847C/BC848C | 450 | 900 | | |
| Noise Figure | NF | $I_C = 0.2mA, V_{CE} = 5V$ $R_S = 2k\ ohm, f = 1kHz, B = 200Hz$ | | 10 | | dB |

* $V_{BE(on)}$ decreases by about 2mV/K with increase temperature.

*** $V_{BE(Sat)}$ decreases by about 1.7mV/K with increase temperature.

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