

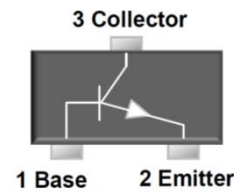
Small Signal Product

200mW, NPN Small Signal Transistor
FEATURES

- Epitaxial planar die construction
- Surface mount device type
- Moisture sensitivity level 1
- Matte Tin(Sn) lead finish with Nickel(Ni) under plate
- Pb free and RoHS compliant
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21


SOT-23
MECHANICAL DATA

- Case: SOT- 23 small outline plastic package
- Terminal: Matte tin plated, lead free, solderable per MIL-STD-202, Method 208 guaranteed
- High temperature soldering guaranteed: 260°C/10s
- Weight: 8mg (approximately)



| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T _A =25°C unless otherwise noted) | | | | |
|--|-------|-----------------------------------|-------------|------|
| PARAMETER | | SYMBOL | VALUE | UNIT |
| Power dissipation | | P _D | 200 | mW |
| Collector-Base Voltage | BC846 | V _{CB0} | 80 | V |
| | BC847 | | 50 | |
| | BC848 | | 30 | |
| Collector-Emitter Voltage | BC846 | V _{CEO} | 65 | V |
| | BC847 | | 45 | |
| | BC848 | | 30 | |
| Emitter-Base Voltage | BC846 | V _{EBO} | 6 | V |
| | BC847 | | 6 | |
| | BC848 | | 5 | |
| Collector Current | | I _C | 0.1 | A |
| Junction and Storage Temperature Range | | T _J , T _{STG} | -55 to +150 | °C |

Notes: 1. Valid provided that electrodes are kept at ambient temperature

| PARAMETER | | SYMBOL | MIN | MAX | UNIT | |
|--------------------------------------|------------------------|---|---|-----|------|-----|
| Collector-Base Breakdown Voltage | BC846 | V _{(BR)CBO} | 80 | - | V | |
| | BC847 | | I _C = 10μA I _E = 0 | | | 50 |
| | BC848 | | 30 | | | |
| Collector-Emitter Breakdown Voltage | BC846 | V _{(BR)CEO} | 65 | - | V | |
| | BC847 | | I _C = 10mA I _B = 0 | | | 45 |
| | BC848 | | 30 | | | |
| Emitter-Base Breakdown Voltage | BC846 | V _{(BR)EBO} | 6 | - | V | |
| | BC847 | | I _E = 1μA I _C = 0 | | | 6 |
| | BC848 | | 5 | | | |
| Collector Cut-off Current | | V _{CB} = 30V I _E = 0 | I _{CB0} | - | 100 | nA |
| Emitter Cut-off Current | | V _{EB} = 5 V I _C =0 | I _{EBO} | - | 0.1 | μA |
| DC Current Gain | BC846A, BC847A, BC848A | h _{FE} | 110 | 220 | | |
| | BC846B, BC847B, BC848B | | V _{CE} = 5V I _C = 2mA | 200 | | 450 |
| | BC847C, BC848C | | 420 | 800 | | |
| Collector-Emitter Saturation Voltage | | I _C = 100mA I _B = 5mA | V _{CE(sat)} | - | 0.5 | V |
| Base-Emitter Saturation Voltage | | I _C = 100mA I _B = 5mA | V _{BE(sat)} | - | 1.1 | V |
| Transition frequency | | V _{CE} = 5V I _C = 10 mA f= 100MHz | f _T | 100 | - | MHz |

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RATINGS AND CHARACTERISTICS CURVES

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

Fig.1 Static Characteristic

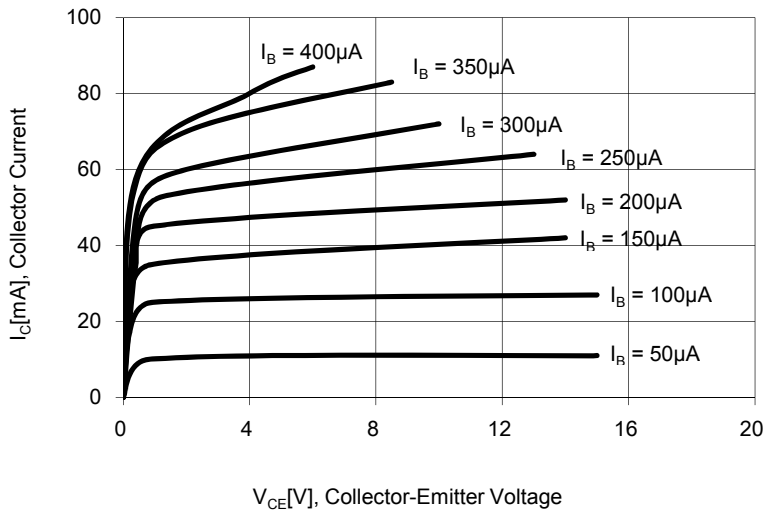


Fig.2 DC Current Gain

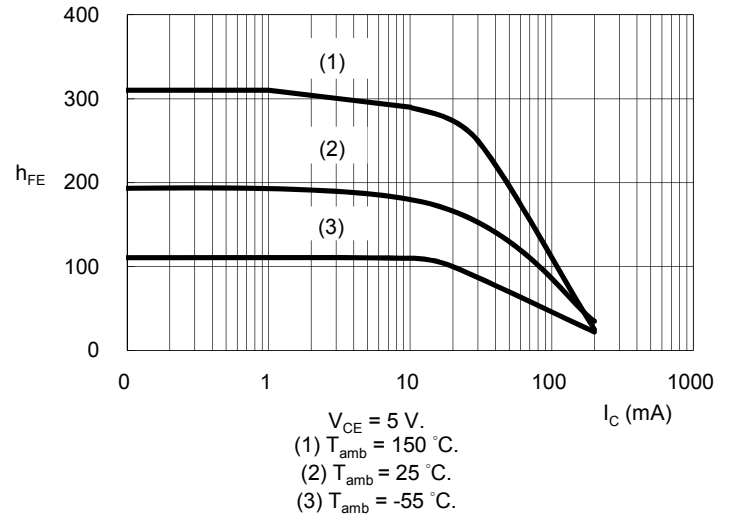


Fig.3 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

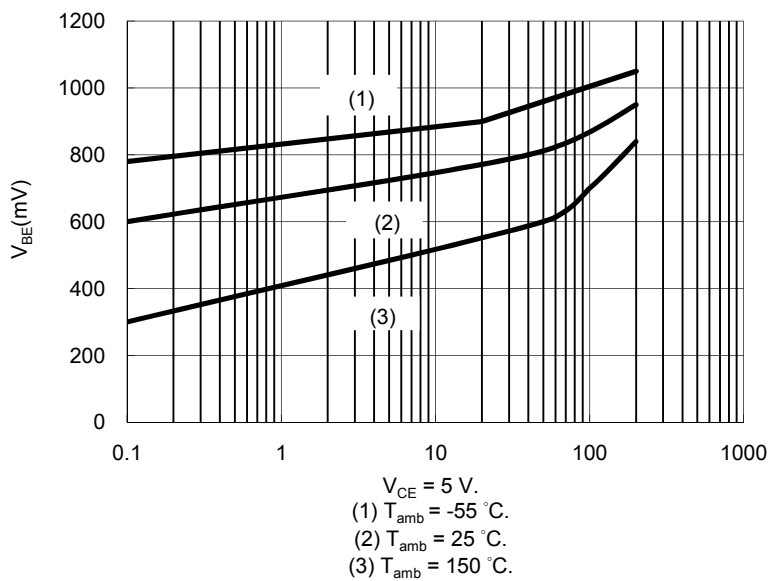


Fig. 4 Base-Emitter On Voltage

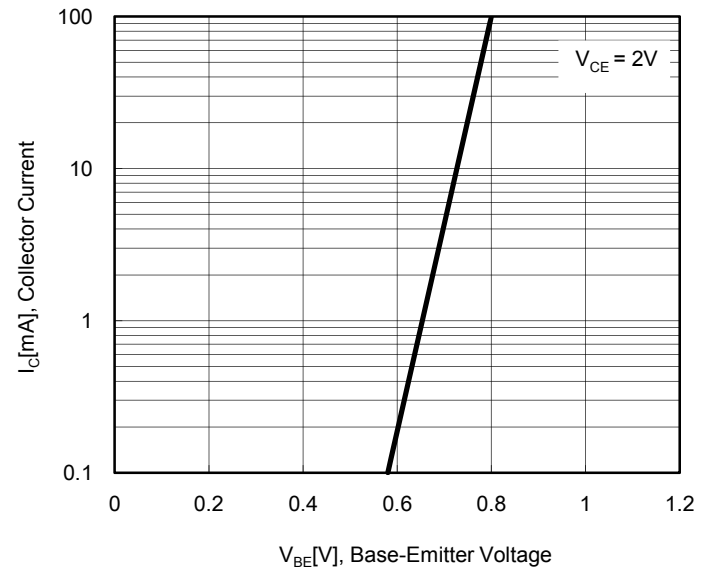


Fig.5 Collector Output Capacitance

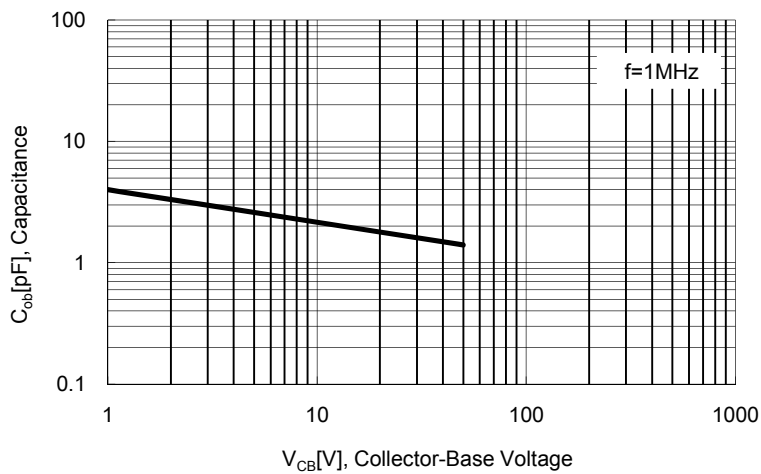
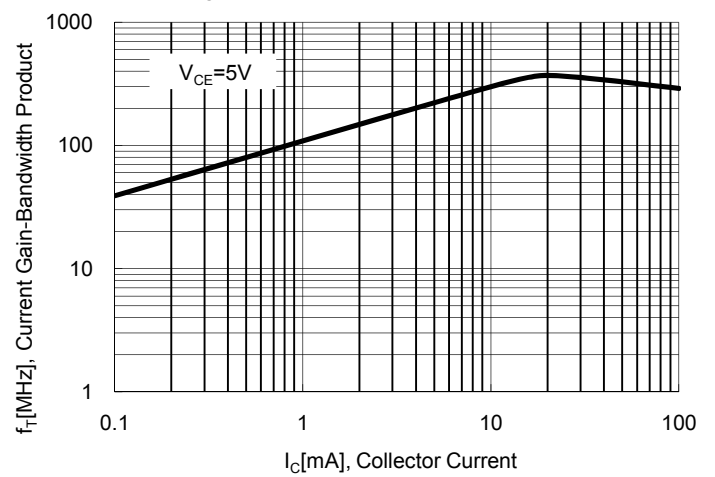


Fig. 6 Current Gain Bandwidth Product



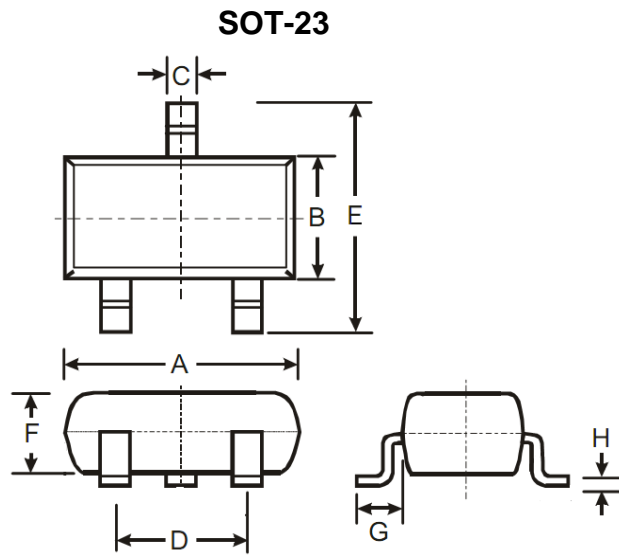
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| ORDERING INFORMATION | | | | |
|----------------------|--------------|---------------------|---------|----------------|
| PART NO. | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING |
| BC84xx (Note 1) | RF | G | SOT-23 | 3K / 7" Reel |
| | R5 | | | 10K / 13" Reel |

Note 1: "xx" is device code from "BC846A" ~ "BC848C", detail could follow the previous page

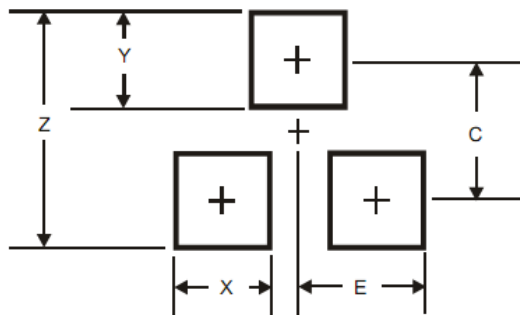
| EXAMPLE | | | | |
|-------------|----------|--------------|---------------------|----------------|
| EXAMPLE P/N | PART NO. | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| BC846A RFG | BC846A | RF | G | Green compound |

DIMENSIONS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| A | 2.70 | 3.10 | 0.106 | 0.122 |
| B | 1.10 | 1.50 | 0.043 | 0.059 |
| C | 0.30 | 0.51 | 0.012 | 0.020 |
| D | 1.78 | 2.04 | 0.070 | 0.080 |
| E | 2.10 | 2.64 | 0.083 | 0.104 |
| F | 0.89 | 1.30 | 0.035 | 0.051 |
| G | 0.55 REF | | 0.022 REF | |
| H | 0.1 REF | | 0.004 REF | |

SUGGEST PAD LAYOUT



| DIM. | Unit (mm) | Unit (inch) |
|------|-----------|-------------|
| | Typ. | Typ. |
| Z | 2.90 | 0.114 |
| X | 0.80 | 0.031 |
| Y | 0.90 | 0.035 |
| C | 2.00 | 0.079 |
| E | 1.35 | 0.053 |

MARKING CODE

| PART NO. | MARKING |
|----------|---------|
| BC846A | 1A |
| BC846B | 1B |
| BC847A | 1E |
| BC847B | 1F |
| BC847C | 1G |
| BC848A | 1J |
| BC848B | 1K |
| BC848C | 1L |

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