

BC846A-BC848C

NPN SURFACE MOUNT SMALL SIGNAL TRANSISTOR IN SOT23

Features

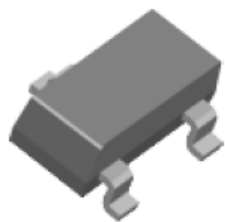
- Ideally Suited for Automatic Insertion
- Complementary PNP Types Available
- For switching and AF Amplifier
- RoHS compliant package

Mechanical Data

- Case: SOT-23 Molded plastic
- Epoxy: UL94V-O rate flame retardant

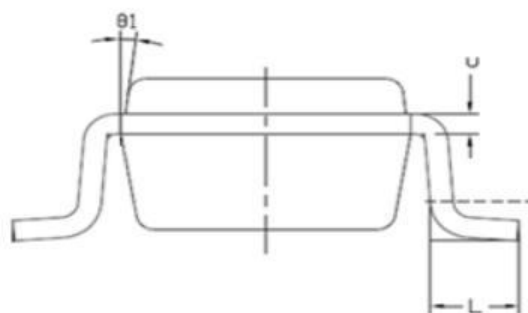
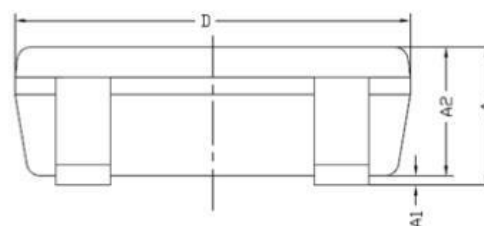
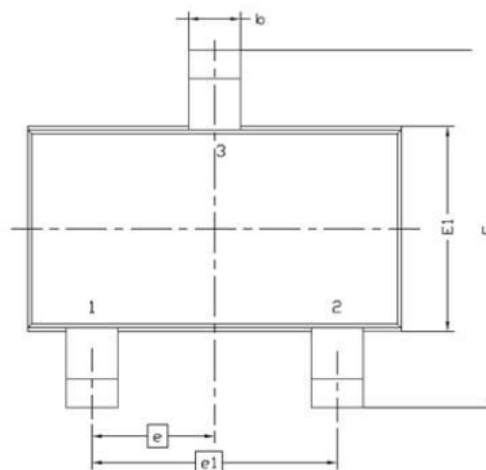
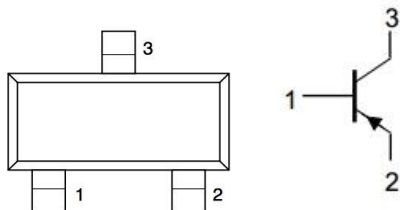
Packing & Order Information

3,000/Reel



**RoHS
COMPLIANT**

Graphic symbol



| Symbol | MILLIMETERS | |
|--------|-------------|-----|
| | MIN | MAX |
| A | 0.8 | 1.2 |
| A1 | 0 | 0.1 |
| A2 | 0.7 | 1.1 |
| b | 0.3 | 0.5 |
| c | 0.1 | 0.2 |
| D | 2.7 | 3.1 |
| E | 2.6 | 3 |
| E1 | 1.4 | 1.8 |
| e | 0.95 BSC | |
| e1 | 1.9 BSC | |
| L | 0.3 | 0.6 |
| theta1 | 7° NOM | |

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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Maximum Ratings (Tc=25°C unless otherwise noted)

| Symbol | Parameter | BC846A,B | BC847A,B | BC848A,B,C | Unit |
|--------|------------------------------|----------|----------|------------|------|
| VCEO | Collector-Emitter Voltage | 65 | 45 | 30 | Vdc |
| VCBO | Collector-Base Voltage | 80 | 50 | 30 | Vdc |
| VEBO | Emitter-Base Voltage | 6 | 6 | -5 | Vdc |
| Ic | Collector Current Continuous | 100 | 100 | 100 | mAdc |

THERMAL CHARACTERISTICS

| Symbol | Parameter | Max | Unit |
|-------------|--|------------|-------|
| PD(Ta=25°C) | Total Device Dissipation | 225 | mW |
| | FR-5 Board(1), TA=25° Derate above 25° | 1.8 | mW/°C |
| PD(Ta=25°C) | Total Device Dissipation | 300 | mW |
| | Alumina Substrate, TA=25° Derate above 25° | 2.4 | mW/°C |
| RθJA | Thermal Resistance Junction to Ambient | 80 | V |
| TJ ,Tstg | Junction and Storage Temperature | 55 to +150 | °C |

Electrical characteristics (Tc=25°C unless otherwise noted)

OFF CHARACTERISTICS

| Symbol | Parameter | | MIN | TYP | MAX | UNIT |
|----------|--|------------|-----|-----|-----|------|
| V(BR)CEO | Collector-Emitter Breakdown Voltage (Ic=-10mAdc,IB=0) | BC846A,B | 65 | | | V |
| | | BC847A,B | 45 | | | V |
| | | BC848A,B,C | 30 | | | V |
| V(BR)CBO | Collector-Base Breakdown Voltage (Ic=-10μAdc,IE=0) | BC846A,B | 80 | | | V |
| | | BC847A,B | 50 | | | V |
| | | BC848A,B,C | 30 | | | V |
| V(BR)EBO | Emitter-Base Breakdown Voltage (IE=-10μAdc,Ic=0) | BC846A,B | 6 | | | V |
| | | BC847A,B | 6 | | | V |
| | | BC848A,B,C | 5 | | | V |
| IBO | Collector Cutoff Current V | | | | | V |
| | (VCB=-30v) | | | | 15 | nA |
| | (VcB=-30Vdc,TA=150°C) | | | | 5 | uA |

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ON CHARACTERISTICS

| Symbol | Parameter | | MIN | TYP | MAX | UNIT |
|------------|--------------------------------------|------------|-----|-----|------|------|
| VCE(sat) | Collector-Emitter Saturation Voltage | | | | | V |
| | (Ic=10mA, IB=-0.5mA) | | | | 0.25 | V |
| | (Ic=100mA, IB=-5.0mA) | | | | 0.6 | V |
| HFE | DC Current Gain | BC846A,B | | 90 | | |
| | (Ic=10μA, VCE=-5.0V) | BC847A,B | | 150 | | |
| | | BC848A,B,C | | 270 | | |
| | (Ic=2.0mA, VCE=-5.0V) | BC846A,B | 125 | 180 | 250 | |
| | | BC847A,B | 220 | 290 | 475 | |
| BC848A,B,C | | 420 | 520 | 800 | | |
| VBE(sat) | Base-Emitter Saturation Voltage | | | | | V |
| | (Ic=10mA, IB=-0.5mA) | | | 0.7 | | V |
| | (Ic=100mA, IB=-5.0mA) | | | 0.9 | | V |
| VBE(on) | Base-Emitter Voltage | | | | | V |
| | (Ic=2.0mA, VCE=-5.0V) | | 580 | 660 | 700 | mV |
| | (Ic=10mA, VCE=-5.0V) | | | | 770 | mV |

ON CHARACTERISTICS

| Symbol | Parameter | | MIN | TYP | MAX | UNIT |
|--------|---|--|-----|-----|-----|------|
| fT | Current-Gain-Bandwidth Product (Ic=10mA, VCE=-5.0V, f=100MHz) | | 100 | | | MHz |
| Cobo | Output Capacitance (VCB=-10V, IE=0, f=1.0MHz) | | | | 4.5 | pF |
| NF | Noise Figure (VCE=-5.0V, IC=200μA, Rs=2.0kΩ, f=1.0KHz, BW=200Hz) | | | | 10 | dB |

DEVICE MARK

| | |
|--------|----|
| BC846A | 1A |
| BC846B | 1B |
| BC847A | 1E |
| BC847B | 1F |
| BC848A | 1J |
| BC848B | 1K |
| BC848C | |

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RATINGS AND CHARACTERISTIC CURVES

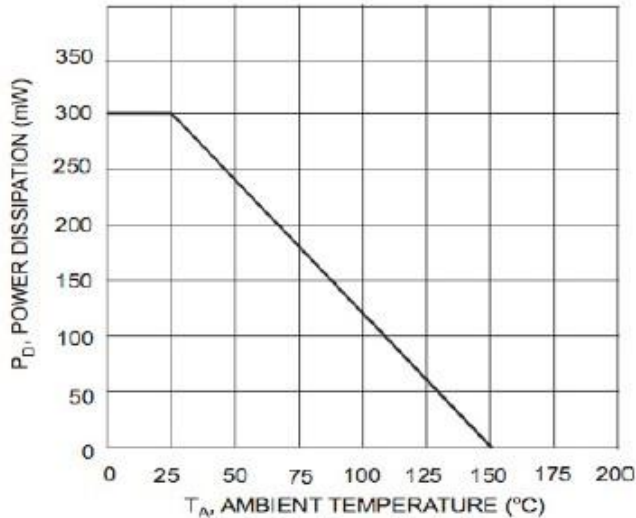


Fig. 1, Max Power Dissipation vs Ambient Temperature

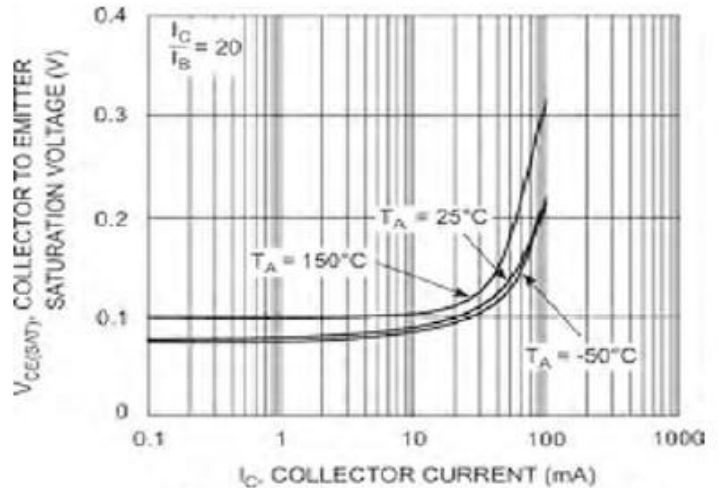


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

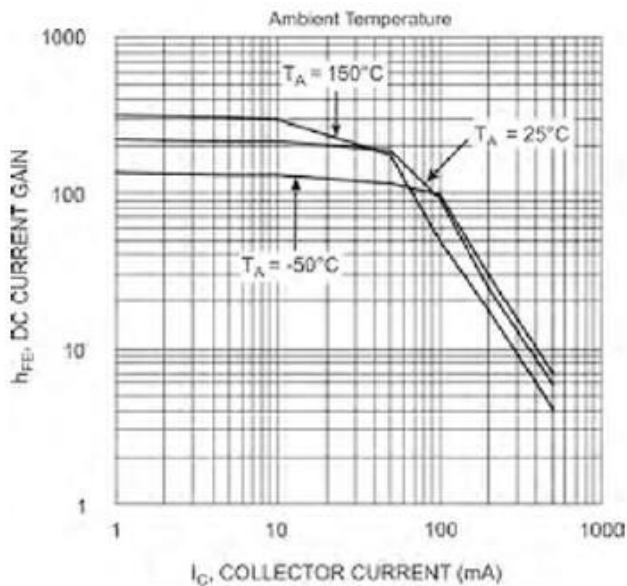


Fig. 3, DC Current Gain vs. Collector Current

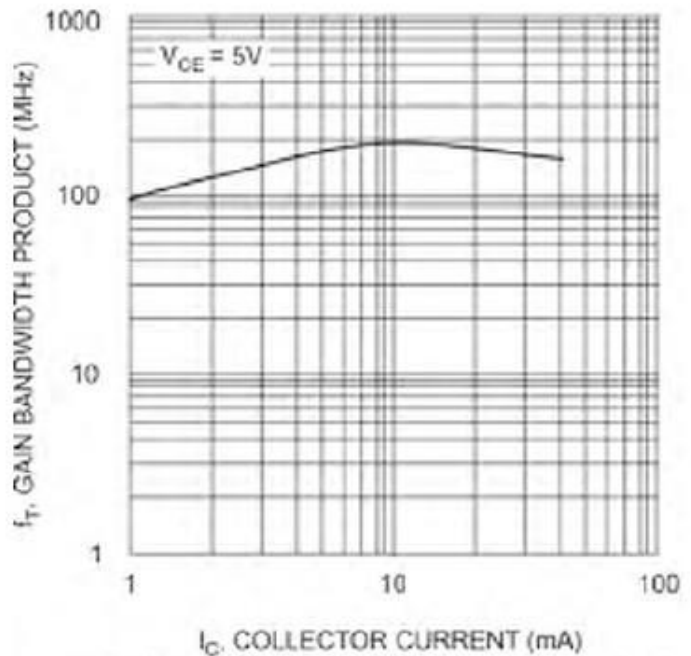


Fig. 4, Gain Bandwidth Product vs Collector Current

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