



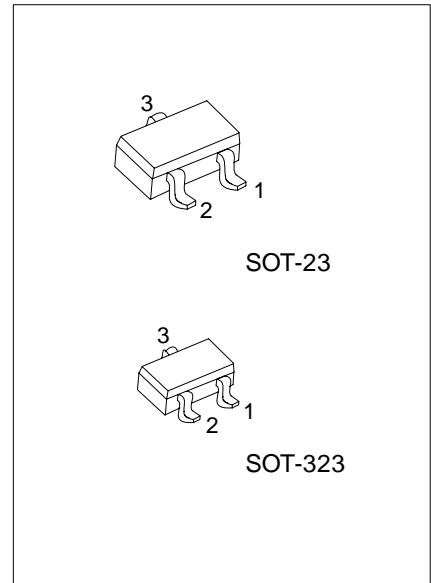
# BC846-BC850

## NPN SILICON TRANSISTOR

### SWITCHING AND AMPLIFIER APPLICATION

■ FEATURES

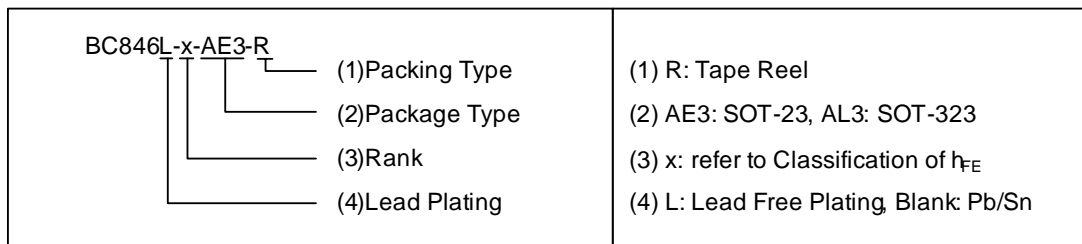
- \* Suitable for automatic insertion in thick and thin-film circuits.
- \* Complement to BC856 ... BC860



\*Pb-free plating product number:  
BC846L/BC847L/BC848L/BC849L/BC850L

■ ORDERING INFORMATION

| Order Number  |                   | Package | Pin Assignment |   |   | Packing   |
|---------------|-------------------|---------|----------------|---|---|-----------|
| Normal        | Lead Free Plating |         | 1              | 2 | 3 |           |
| BC846-x-AE3-R | BC846L-x-AE3-R    | SOT-23  | E              | B | C | Tape Reel |
| BC847-x-AE3-R | BC847L-x-AE3-R    | SOT-23  | E              | B | C | Tape Reel |
| BC848-x-AE3-R | BC848L-x-AE3-R    | SOT-23  | E              | B | C | Tape Reel |
| BC849-x-AE3-R | BC849L-x-AE3-R    | SOT-23  | E              | B | C | Tape Reel |
| BC850-x-AE3-R | BC850L-x-AE3-R    | SOT-23  | E              | B | C | Tape Reel |
| BC846-x-AL3-R | BC846L-x-AL3-R    | SOT-323 | E              | B | C | Tape Reel |
| BC847-x-AL3-R | BC847L-x-AL3-R    | SOT-323 | E              | B | C | Tape Reel |
| BC848-x-AL3-R | BC848L-x-AL3-R    | SOT-323 | E              | B | C | Tape Reel |
| BC849-x-AL3-R | BC849L-x-AL3-R    | SOT-323 | E              | B | C | Tape Reel |
| BC850-x-AL3-R | BC850L-x-AL3-R    | SOT-323 | E              | B | C | Tape Reel |



■ MARKING

| BC846 | BC847 | BC848 | BC849 | BC850 |
|-------|-------|-------|-------|-------|
| 8A□   | 8B□   | 8C□   | 8D□   | 8E□   |

□: Rank Code, refer to Classification of  $h_{FE}$

# BC846-BC850

## NPN SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATING (Ta=25 , unless otherwise specified)

| PARAMETER                 |                       | SYMBOL           | VALUE      | UNIT |
|---------------------------|-----------------------|------------------|------------|------|
| Collector-Base Voltage    | BC846                 | V <sub>CBO</sub> | 80         | V    |
|                           | BC847 / BC850         |                  | 50         | V    |
|                           | BC848 / BC849         |                  | 30         | V    |
| Collector-Emitter Voltage | BC846                 | V <sub>CEO</sub> | 65         | V    |
|                           | BC847 / BC850         |                  | 45         | V    |
|                           | BC848 / BC849         |                  | 30         | V    |
| Emitter-Base Voltage      | BC846 / BC847         | V <sub>EBO</sub> | 6          | V    |
|                           | BC848 / BC849 / BC850 |                  | 5          | V    |
|                           |                       |                  |            |      |
| Collector Current (DC)    |                       | I <sub>C</sub>   | 100        | mA   |
| Collector Dissipation     | SOT-23                | P <sub>D</sub>   | 310        | mW   |
|                           | SOT-323               |                  | 200        | mW   |
| Junction Temperature      |                       | T <sub>J</sub>   | +150       | °C   |
| Storage Temperature       |                       | T <sub>STG</sub> | -40 ~ +150 | °C   |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

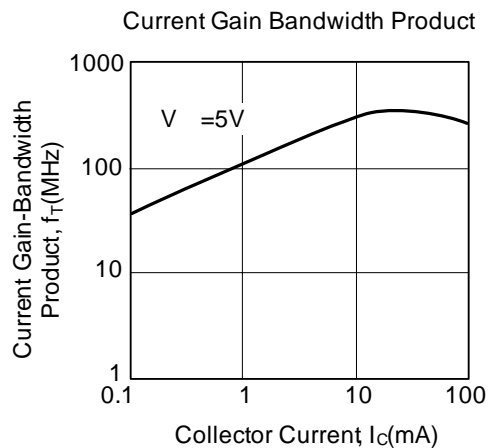
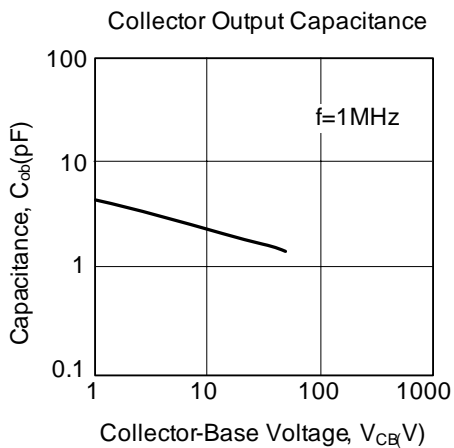
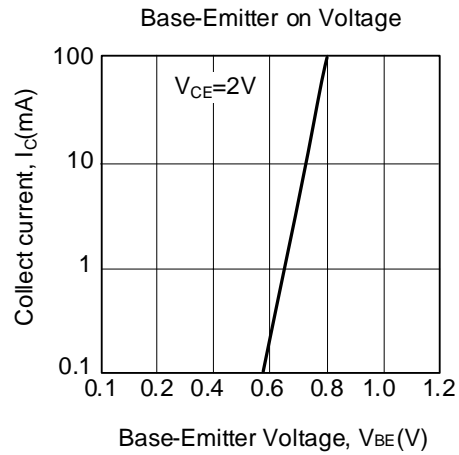
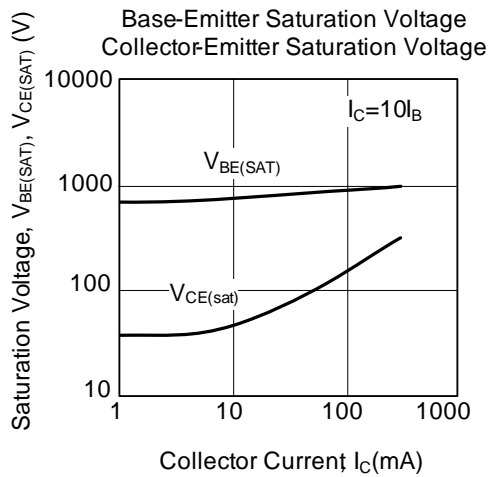
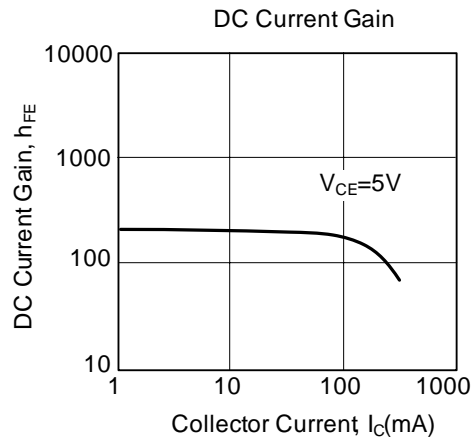
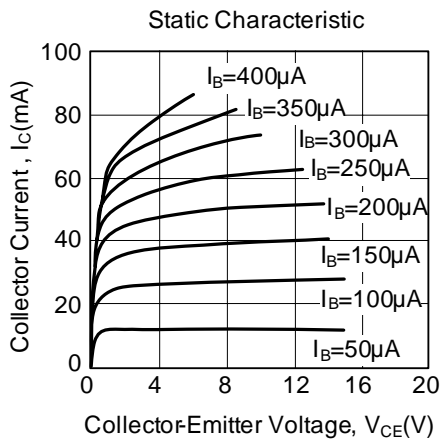
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

| PARAMETER                            |                      | SYMBOL           | TEST CONDITIONS  | MIN | TYP | MAX | UNIT |
|--------------------------------------|----------------------|------------------|--|-----|-----|-----|------|
| Collector Cut-Off Current            |                      | I <sub>CBO</sub> | V <sub>CB</sub> =30V, I <sub>E</sub> =0                                    |     |     | 15  | nA   |
| DC Current Gain                      |                      | h <sub>FE</sub>  | V <sub>CE</sub> =5.0V, I <sub>C</sub> =2.0mA                               | 110 |     | 800 |      |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> |                  | I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA                                |     | 90  | 250 | mV   |
|                                      |                      |                  | I <sub>C</sub> =100mA, I <sub>B</sub> =5.0mA                               |     | 200 | 600 | mV   |
| Collector-Base Saturation Voltage    | V <sub>BE(SAT)</sub> |                  | I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA                                |     | 700 |     | mV   |
|                                      |                      |                  | I <sub>C</sub> =100mA, I <sub>B</sub> =5.0mA                               |     | 900 |     | mV   |
| Base-Emitter On Voltage              | V <sub>BE(ON)</sub>  |                  | V <sub>CE</sub> =5.0V, I <sub>C</sub> =2.0mA                               | 580 | 660 | 700 | mV   |
|                                      |                      |                  | V <sub>CE</sub> =5.0V, I <sub>C</sub> =10mA                                |     |     | 720 | mV   |
| Current Gain Bandwidth Product       |                      | f <sub>T</sub>   | V <sub>CE</sub> =5.0V, I <sub>C</sub> =10mA<br>f=100MHz                    |     | 300 |     | MHz  |
| Output Capacitance                   |                      | C <sub>ob</sub>  | V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1.0MHz                          |     | 3.5 | 6   | pF   |
| Input Capacitance                    |                      | C <sub>ib</sub>  | V <sub>EB</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz                         |     | 9   |     | pF   |
| Noise Figure                         | BC846/BC847/BC848    | NF               | V <sub>CE</sub> =5V, I <sub>C</sub> =200μA,<br>f=1KHz, R <sub>G</sub> =2KΩ |     | 2   | 10  | dB   |
|                                      | BC849/BC850          |                  |  |     | 1.2 | 4   | dB   |
|                                      | BC849                |                  |  |     | 1.4 | 4   | dB   |
|                                      | BC850                |                  |  |     | 1.4 | 3   | dB   |

■ CLASSIFICATION OF h<sub>FE</sub>

| RANK  | A       | B       | C       |
|-------|---------|---------|---------|
| RANGE | 110-220 | 200-450 | 420-800 |

## TYPICAL CHARACTERISTICS



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