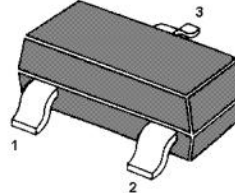




## NPN Silicon Epitaxial Transistor

for switching and amplifier applications

As complementary types the PNP transistors BC856...BC860 is recommended.



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

| Parameter                 | Symbol              | Value         | Units            |   |
|---------------------------|---------------------|---------------|------------------|---|
| Collector Base Voltage    | BC846               | $V_{CBO}$     | 80               | V |
|                           | BC847, BC850        | $V_{CBO}$     | 50               | V |
|                           | BC848, BC849        | $V_{CBO}$     | 30               | V |
| Collector Emitter Voltage | BC846               | $V_{CEO}$     | 65               | V |
|                           | BC847, BC850        | $V_{CEO}$     | 45               | V |
|                           | BC848, BC849        | $V_{CEO}$     | 30               | V |
| Emitter Base Voltage      | BC846, BC847        | $V_{EBO}$     | 6                | V |
|                           | BC848, BC849, BC850 | $V_{EBO}$     | 5                | V |
| Collector Current         | $I_C$               | 100           | mA               |   |
| Peak Collector Current    | $I_{CM}$            | 200           | mA               |   |
| Power Dissipation         | $P_{tot}$           | 200           | mW               |   |
| Junction Temperature      | $T_J$               | 150           | $^\circ\text{C}$ |   |
| Storage Temperature Range | $T_S$               | - 65 to + 150 | $^\circ\text{C}$ |   |

### MARKING CODE

| TYPE | 846A | 846B | 846C | 847A | 847B | 847C | 848A | 848B | 848C | 849A | 849B | 849C | 850A | 850B | 850C |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MARK | 1A   | 1B   | 1C   | 1E   | 1F   | 1G   | 1J   | 1K   | 1L   | 2A   | 2B   | 2C   | 2E   | 2F   | 2G   |



**CHINA BASE**  
INTERNATIONAL

# SOT-23



# BC846-BC850

www.china-base.com.hk

**Characteristics at  $T_{amb} = 25\text{ }^{\circ}\text{C}$**

| Parameter   | Symbol              | Min.     | Typ. | Max. | Units |    |
|---|---------------------|----------|------|------|-------|----|
| DC Current Gain<br>at $V_{CE} = 5\text{ V}$ , $I_C = 2\text{ mA}$   | A                   | $h_{FE}$ | 110  | -    | 220   | -  |
|   | B                   | $h_{FE}$ | 200  | -    | 450   | -  |
|   | C                   | $h_{FE}$ | 420  | -    | 800   | -  |
| Collector Emitter Saturation Voltage<br>at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$<br>at $I_C = 100\text{ mA}$ , $I_B = 5\text{ mA}$   | $V_{CEsat}$         | -        | -    | 250  | mV    |    |
|   | $V_{CEsat}$         | -        | -    | 600  | mV    |    |
| Base Emitter On Voltage<br>at $I_C = 2\text{ mA}$ , $V_{CE} = 5\text{ V}$<br>at $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ V}$  | $V_{BE(on)}$        | 580      | -    | 700  | mV    |    |
|   | $V_{BE(on)}$        | -        | -    | 720  | mV    |    |
| Collector Cutoff Current<br>at $V_{CB} = 30\text{ V}$   | $I_{CBO}$           | -        | -    | 15   | nA    |    |
| Current Gain Bandwidth Product<br>at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$ , $f = 100\text{ MHz}$  | $f_T$               | -        | 300  | -    | MHz   |    |
| Output Capacitance<br>at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$  | $C_{ob}$            | -        | -    | 6    | pF    |    |
| Input Capacitance<br>at $V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$  | $C_{ib}$            | -        | 9    | -    | pF    |    |
| Noise Figure<br>at $I_C = 200\text{ }\mu\text{A}$ , $V_{CE} = 5\text{ V}$ ,<br>$R_G = 2\text{ K}\Omega$ , $f = 1\text{ KHz}$<br>at $I_C = 200\text{ }\mu\text{A}$ , $V_{CE} = 5\text{ V}$ ,<br>$R_G = 2\text{ K}\Omega$ , $f = 30\text{ } \sim 15\text{ KHz}$ | BC846, BC847, BC848 | NF       | -    | -    | 10    | dB |
|   | BC849, BC850        | NF       | -    | -    | 4     | dB |
|   | BC849               | NF       | -    | -    | 4     | dB |
|   | BC850               | NF       | -    | -    | 3     | dB |



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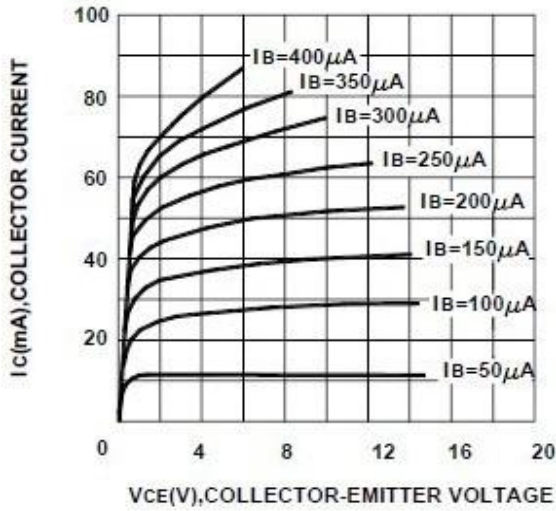
SOT-23



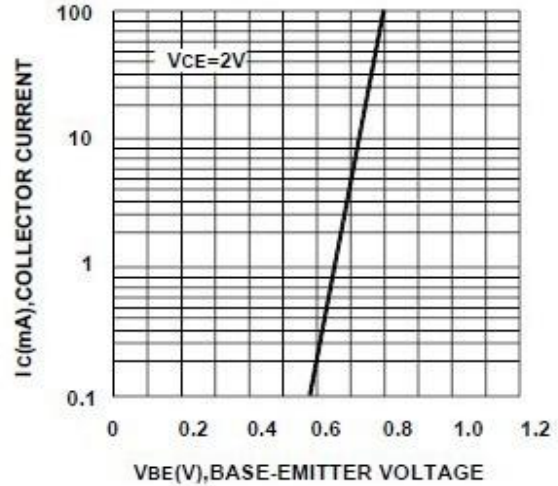
BC846-BC850

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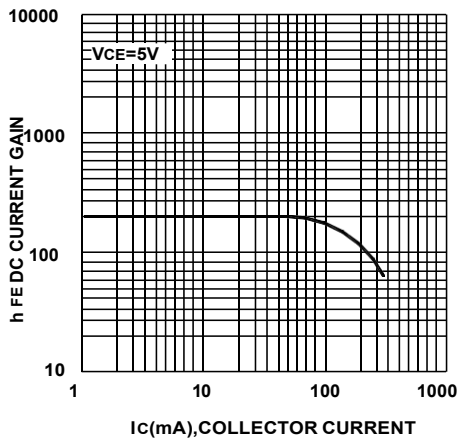
STATIC CHARACTERISTIC



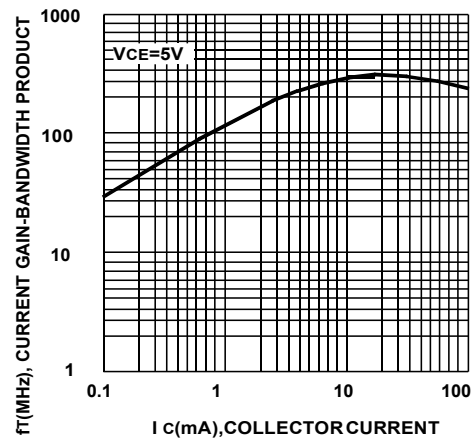
BASE-EMITTER ON VOLTAGE



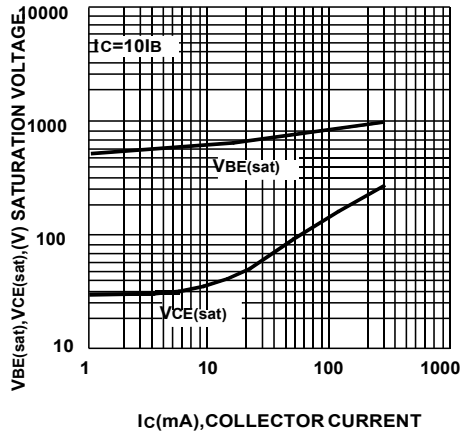
DC CURRENT GAIN



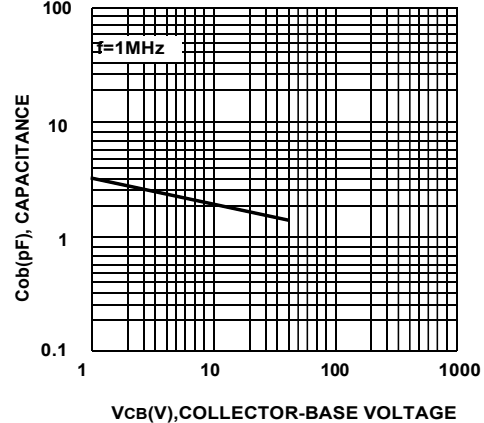
CURRENT GAIN BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR OUTPUT CAPACITANCE





CHINA BASE  
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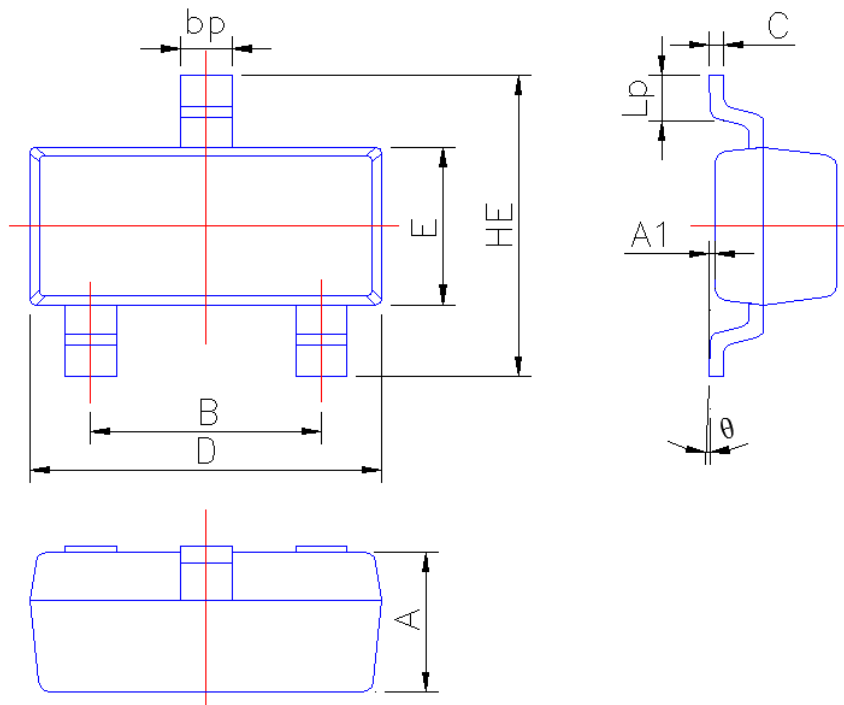
BC846-BC850

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| Symbol   | Dimension in Millimeters |       |
|----------|--------------------------|-------|
|          | Min                      | Max   |
| A        | 0.90                     | 1.10  |
| A1       | 0.013                    | 0.100 |
| B        | 1.80                     | 2.00  |
| bp       | 0.35                     | 0.50  |
| C        | 0.09                     | 0.150 |
| D        | 2.80                     | 3.00  |
| E        | 1.20                     | 1.40  |
| HE       | 2.20                     | 2.80  |
| Lp       | 0.20                     | 0.50  |
| $\theta$ | 0°                       | 5°    |