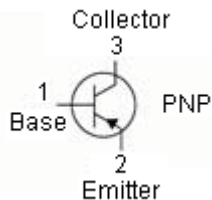


# PNP Transistor

## General Purpose



SOT-23



### Features:

- Low current (maximum 100 mA)
- Low voltage (maximum 65 V)

### Applications:

- General purpose switching and amplification

### Maximum Ratings and Characteristics : $T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified

| Parameter                                                    | Symbol         | Value             | Unit               |
|--------------------------------------------------------------|----------------|-------------------|--------------------|
| Collector - Base Voltage<br>- BC856<br>- BC857<br>- BC858    | $V_{CBO}$      | -80<br>-50<br>-30 | V                  |
| Collector - Emitter Voltage<br>- BC856<br>- BC857<br>- BC858 | $V_{CEO}$      | -65<br>-45<br>-30 |                    |
| Emitter - Base Voltage                                       | $V_{EBO}$      | -5                |                    |
| Collector Current - Continuous                               | $I_C$          | -0.1              | A                  |
| Collector Dissipation                                        | $P_C$          | 250               | mW                 |
| Junction and Storage Temperature                             | $T_j, T_{stg}$ | -65 to +150       | $^{\circ}\text{C}$ |

| Parameter                                                                                 | Symbol         | Test Conditions                                                                                 | Minimum                  | Typical | Maximum                  | Unit          |
|-------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------|--------------------------|---------|--------------------------|---------------|
| Collector-Base Breakdown Voltage                                                          | $V_{(BR) CBO}$ | $I_C = -10 \mu\text{A}$ $I_E = 0$ BC856<br>BC857<br>BC858                                       | -80<br>-50<br>-30        | -       | -                        | V             |
| Collector-Emitter Breakdown Voltage                                                       | $V_{(BR) CEO}$ | $I_C = -10 \mu\text{A}$ $I_B = 0$ BC856<br>BC857<br>BC858                                       | -65<br>-45<br>-30        |         |                          |               |
| Emitter-Base Breakdown Voltage                                                            | $V_{(BR) EBO}$ | $I_E = -1 \mu\text{A}$ $I_C = 0$                                                                | -5                       | -       | -                        |               |
| Collector Cut-Off Current                                                                 | $I_{CBO}$      | $V_{CB} = -30 \text{ V}$ $I_E = 0$                                                              | -                        | -1      | -15                      | nA            |
| Emitter Cut-Off Current                                                                   | $I_{EBO}$      | $V_{EB} = -5 \text{ V}$ $I_C = 0$                                                               | -                        | -       | -0.1                     | $\mu\text{A}$ |
| DC Current Gain<br>BC856, 857<br>BC856A, 857A, 858A<br>BC856B, 857B, 858B<br>BC857C, 858C | $h_{FE}$       | $V_{CE} = -5 \text{ V}$ $I_C = -2 \text{ mA}$                                                   | 125<br>125<br>220<br>420 | -       | 475<br>250<br>475<br>800 | -             |
| Collector-Emitter Saturation Voltage                                                      | $V_{CE (sat)}$ | $I_C = -100 \text{ mA}$ $I_B = -5 \text{ mA}$<br>$I_C = -10 \text{ mA}$ $I_B = -0.5 \text{ mA}$ | -                        | -       | -0.65<br>-0.3            | V             |

# PNP Transistor

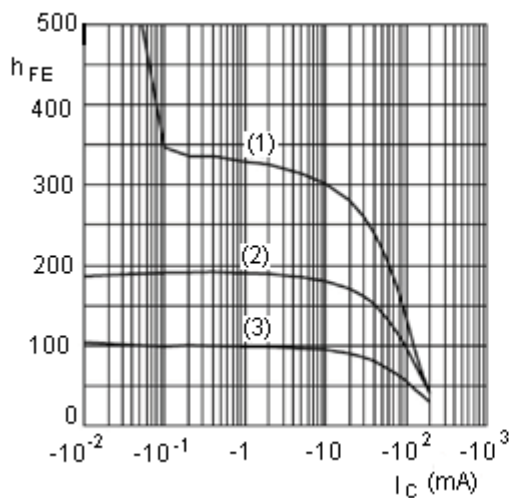
## General Purpose



| Parameter                         | Symbol        | Test Conditions                                                                                                              | Minimum | Typical       | Maximum        | Unit |
|-----------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------|---------|---------------|----------------|------|
| Base - Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$<br>$I_C = -100\text{ mA}, I_B = -5\text{ mA}$                                    | -       | -0.7<br>-0.85 | -              | V    |
| Base Emitter Voltage              | $V_{BE}$      | $I_C = -2\text{ mA}, V_{CE} = -5\text{ V}$<br>$I_C = -10\text{ mA}, V_{CE} = -5\text{ V}$                                    | -0.6    | -0.65         | -0.75<br>-0.82 | V    |
| Collector Capacitance             | $C_C$         | $V_{CB} = -10\text{ V}, I_E = I_e = 0$<br>$f = 1\text{ MHz}$                                                                 | -       | 4.5           | -              | pF   |
| Transition Frequency              | F             | $I_C = -200\text{ }\mu\text{A}, V_{CE} = -5\text{ V},$<br>$R_s = 2\text{ k}\Omega, f = 1\text{ KHz},$<br>$B = 200\text{ Hz}$ | -       | 2             | 10             | dB   |
| Transition Frequency              | $f_T$         | $V_{CE} = -10, I_C = -50,$<br>$f = 20\text{ MH}$                                                                             | 100     | -             | -              | MHz  |

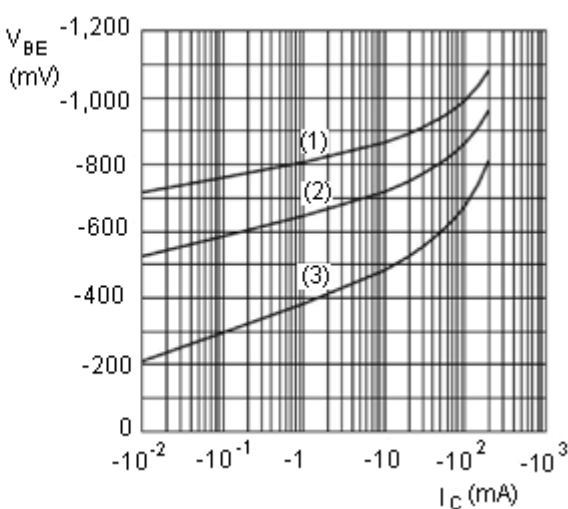
### Maximum Ratings and Characteristics : $T_{amb} = 25^\circ\text{C}$ unless otherwise specified

#### Ratings and Characteristic Curves



**BC857A :  $V_{CE} = -5\text{ V}$**   
 (1)  $T_{amb} = 150^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = -55^\circ\text{C}$

DC Current Gain as a Function of Collector Current; Typical Values



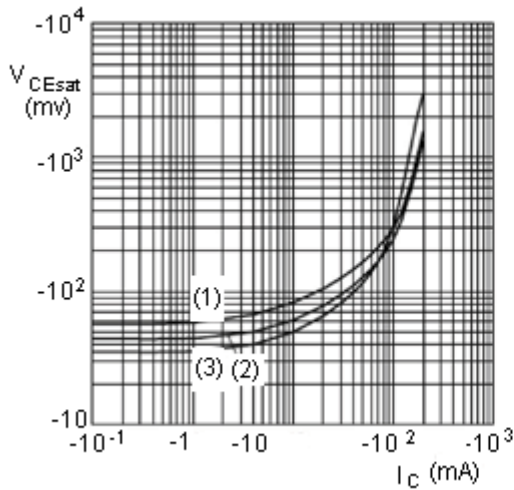
**BC857A :  $V_{CE} = -5\text{ V}$**   
 (1)  $T_{amb} = -55^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = 150^\circ\text{C}$

Base-Emitter Voltage as a Function of Collector Current; Typical Values



# PNP Transistor

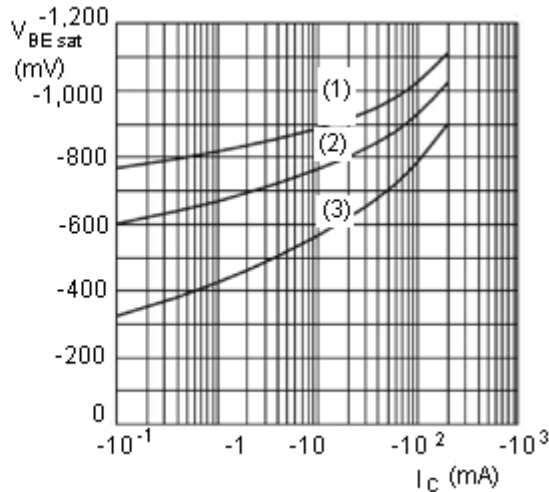
## General Purpose



**BC857A** :  $I_C / I_B = 20$

- (1)  $T_{amb} = 150^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = -55^\circ\text{C}$

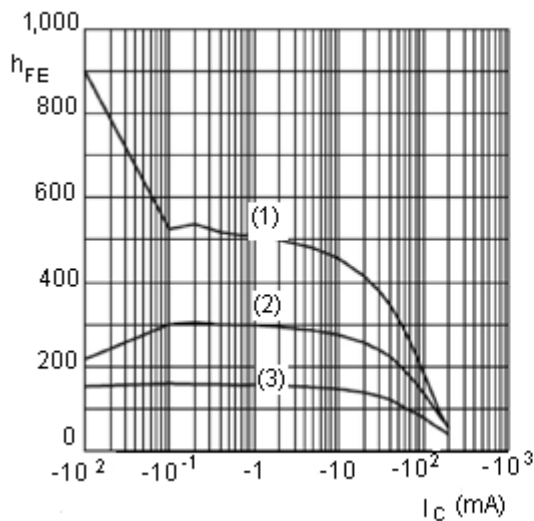
Collector-Emitter Saturation Voltage as a Function of Collector Current; Typical Values



**BC857A** :  $I_C / I_B = 20$

- (1)  $T_{amb} = -55^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = 150^\circ\text{C}$

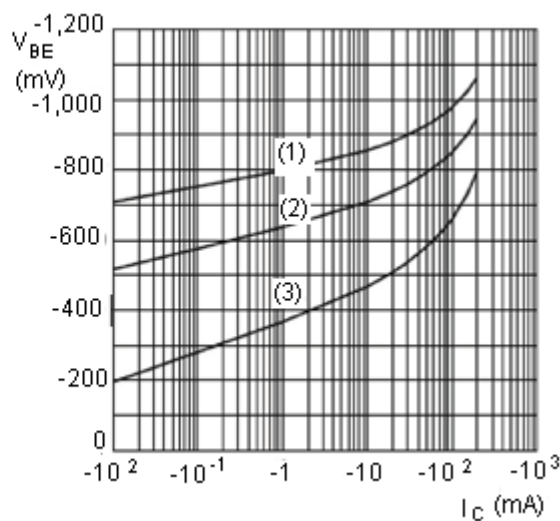
Base-Emitter Voltage as a Function of Collector Current; Typical Values



**BC857B** :  $V_{CE} = -5\text{ V}$

- (1)  $T_{amb} = 150^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = -55^\circ\text{C}$

DC Current Gain as a Function of Collector Current; Typical Values



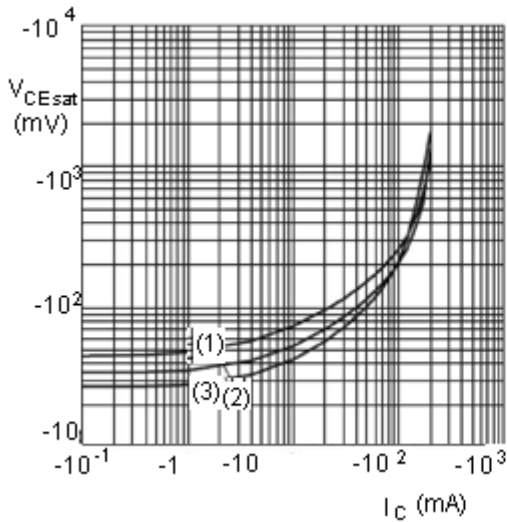
**BC857B** :  $V_{CE} = -5\text{ V}$

- (1)  $T_{amb} = -55^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = 150^\circ\text{C}$

Base-Emitter Voltage as a Function of Collector Current; Typical Values

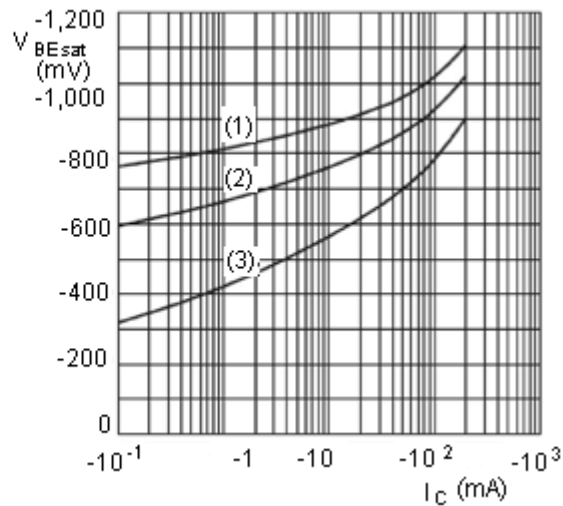
# PNP Transistor

## General Purpose



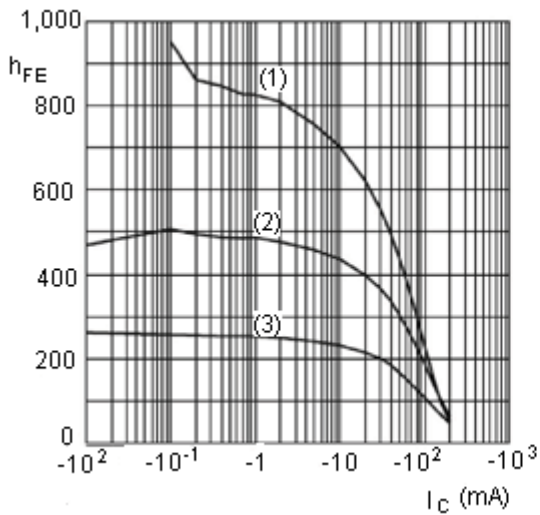
**BC857B** :  $I_C / I_B = 20$   
 (1)  $T_{amb} = 150^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = -55^\circ\text{C}$

Collector-Emitter Saturation Voltage as a Function of Collector Current; Typical Values



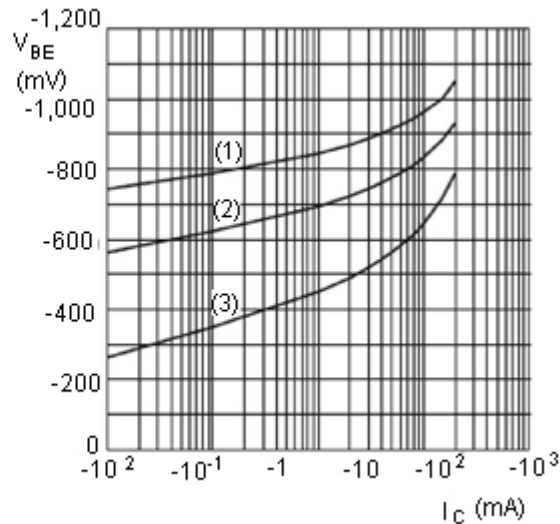
**BC857B** :  $I_C / I_B = 20$   
 (1)  $T_{amb} = -55^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = 150^\circ\text{C}$

Base-Emitter Voltage as a Function of Collector Current; Typical Values



**BC857C** :  $V_{CE} = -5\text{ V}$   
 (1)  $T_{amb} = 150^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = -55^\circ\text{C}$

DC Current Gain as a Function of Collector Current; Typical Values



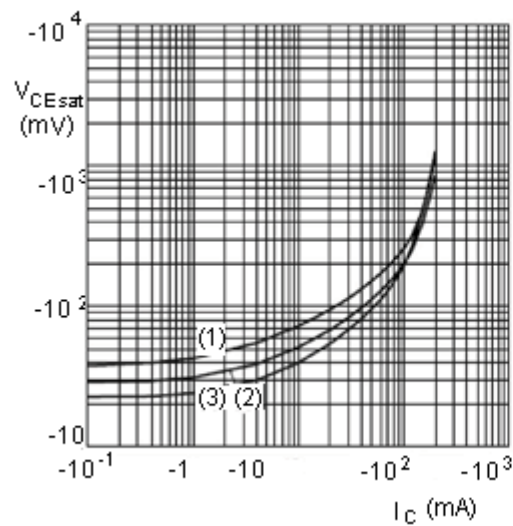
**BC857C** :  $V_{CE} = -5\text{ V}$   
 (1)  $T_{amb} = -55^\circ\text{C}$   
 (2)  $T_{amb} = 25^\circ\text{C}$   
 (3)  $T_{amb} = 150^\circ\text{C}$

Base-Emitter Voltage as a Function of Collector Current; Typical Values

# PNP Transistor

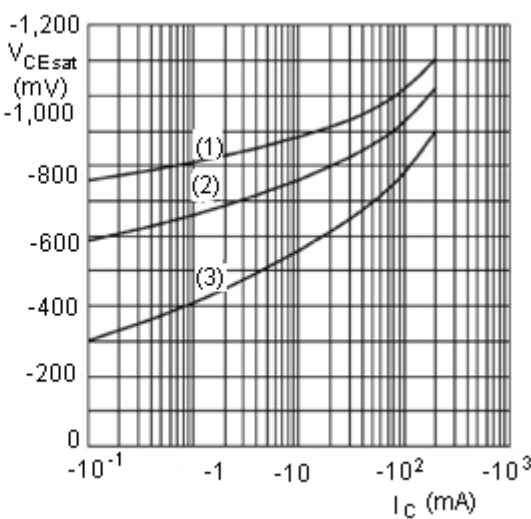


## General Purpose



**BC857C** :  $I_C / I_B = 20$   
 (1)  $T_{amb} = 150^{\circ}\text{C}$   
 (2)  $T_{amb} = 25^{\circ}\text{C}$   
 (3)  $T_{amb} = -55^{\circ}\text{C}$

Collector-Emitter Saturation Voltage as a Function of Collector Current; Typical Values

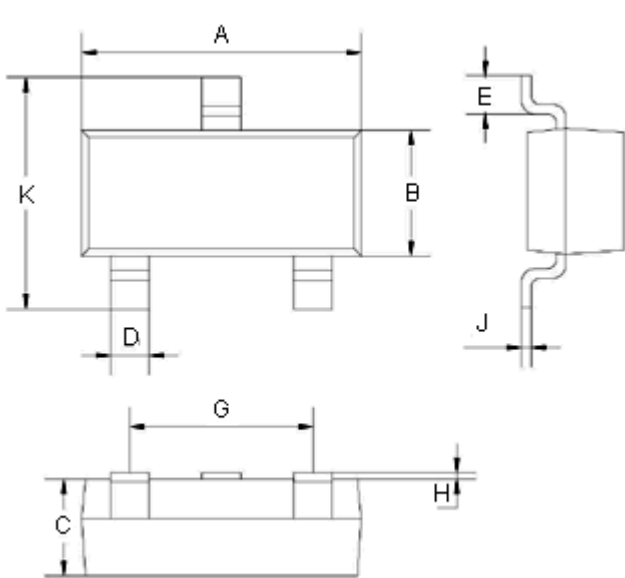


**BC857C** :  $I_C / I_B = 20$   
 (1)  $T_{amb} = -55^{\circ}\text{C}$   
 (2)  $T_{amb} = 25^{\circ}\text{C}$   
 (3)  $T_{amb} = 150^{\circ}\text{C}$

Base-Emitter Voltage as a Function of Collector Current; Typical Values

### Package Outline

Plastic Surface Mounted Package



| SOT-23     |             |         |
|------------|-------------|---------|
| Dimensions | Minimum     | Maximum |
| A          | 2.85        | 2.95    |
| B          | 1.25        | 1.35    |
| C          | 1 Typical   |         |
| D          | 0.4 Typical |         |
| E          | 0.35        | 0.48    |
| G          | 1.85        | 1.95    |
| H          | 0.02        | 0.1     |
| J          | 0.1 Typical |         |
| K          | 2.35        | 2.45    |

Dimensions : Millimetres

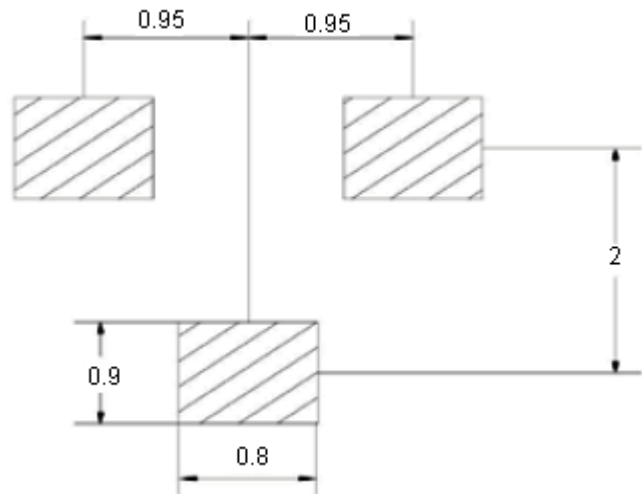


# PNP Transistor



## General Purpose

### Soldering Footprint



Dimensions : Millimetres

### Package Information

| Device            | Package | Shipping              |
|-------------------|---------|-----------------------|
| BC856 / 857 / 858 | SOT-23  | 3,000 / Tape and Reel |

### Part Number Table

| Description                         | Part Number |
|-------------------------------------|-------------|
| Transistor, PNP, 0.1 A, 65 V, SOT23 | BC856       |
| Transistor, PNP, 0.1 A, 65 V, SOT23 | BC856A      |
| Transistor, PNP, 0.1 A, 65 V, SOT23 | BC856B      |
| Transistor, PNP, 0.1 A, 45 V, SOT23 | BC857       |
| Transistor, PNP, 0.1 A, 45 V, SOT23 | BC857A      |
| Transistor, PNP, 0.1 A, 45 V, SOT23 | BC857B      |
| Transistor, PNP, 0.1 A, 45 V, SOT23 | BC857C      |
| Transistor, PNP, 0.1 A, 30 V, SOT23 | BC858B      |

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