

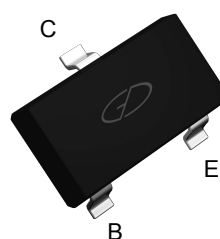
# BC857x Series PNP Small Signal Transistor

## Features

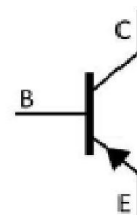
- Ideally Suited for Automatic Insertion
- Complementary NPN Types Available (BC847x series)
- RoHS Compliant

## Applications

- For Switching and RF Amplifier Applications



Package:SOT-23



Schematic Diagram

## Classifications

|                         |         |         |         |
|-------------------------|---------|---------|---------|
| $h_{FE}$ Classification | BC857A  | BC857B  | BC857C  |
| $h_{FE}$ Range          | 125-250 | 220-475 | 420-800 |

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

| Parameter                    | Symbol    | Rating      | UNIT             |
|------------------------------|-----------|-------------|------------------|
| Collector-Base Voltage       | $V_{CBO}$ | -50         | V                |
| Collector-Emitter Voltage    | $V_{CEO}$ | -45         | V                |
| Emitter-Base Voltage         | $V_{EBO}$ | -5.0        | V                |
| Peak Collector Current       | $I_{cm}$  | -300        | mA               |
| Collector Current-Continuous | $I_C$     | -100        | mA               |
| Collector Power Dissipation  | $P_C$     | 350         | mW               |
| Operating Temperature        | $T_J$     | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature Range    | $T_{STG}$ | -55 to +150 | $^\circ\text{C}$ |

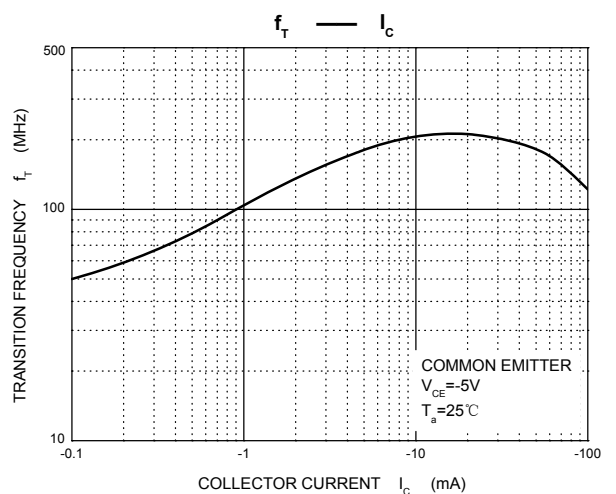
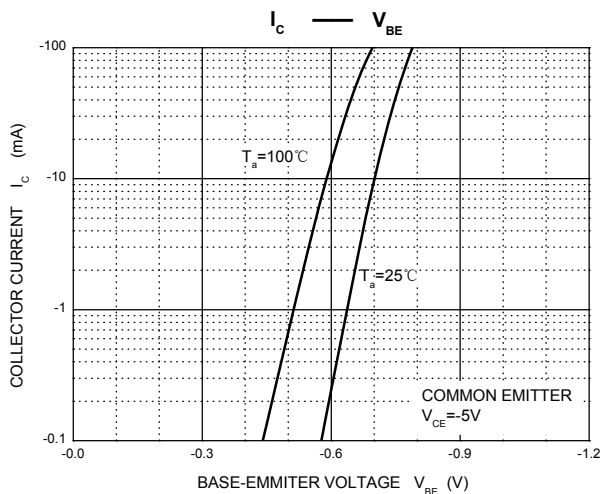
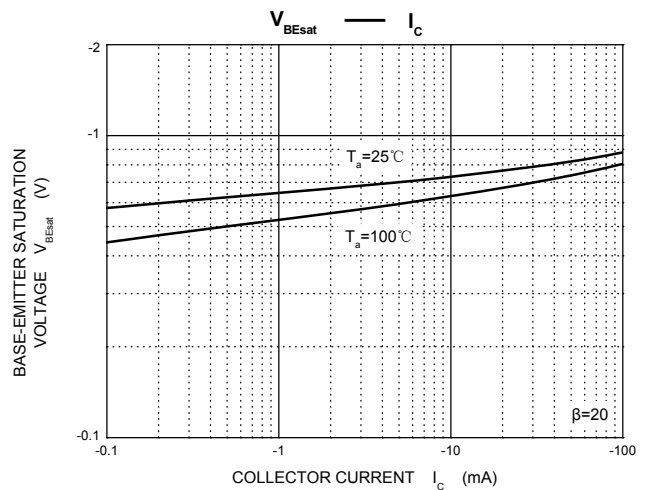
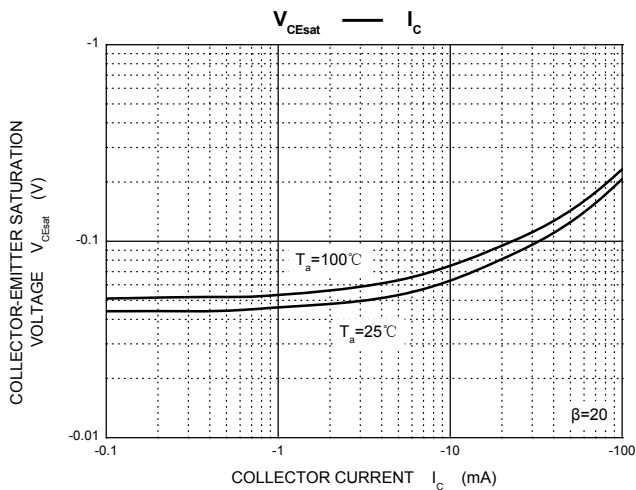
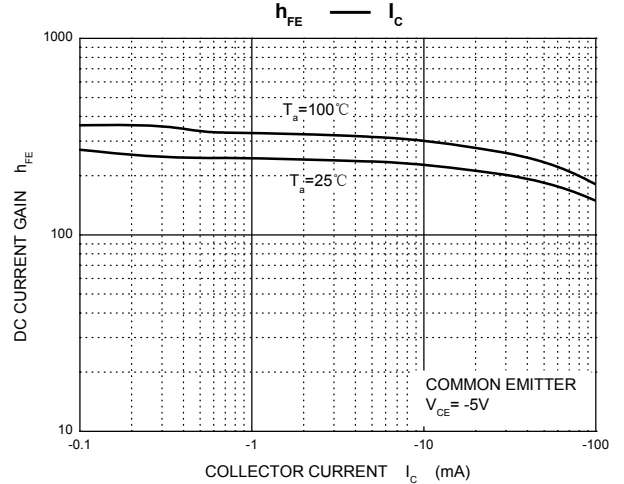
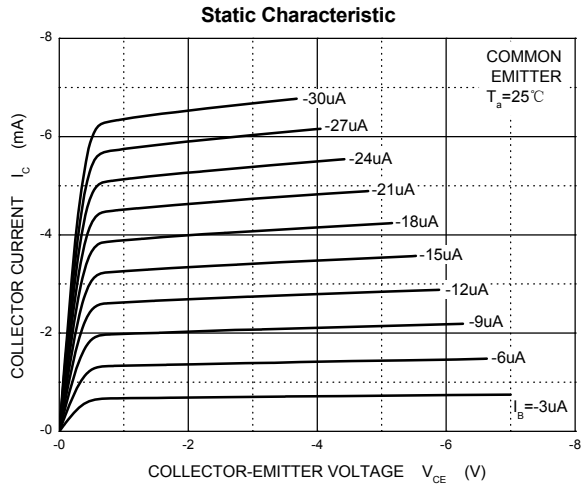
## Electrical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

| Parameter                            | Symbol         | Test Condition.  | Min. | Typ.  | Max.   | Unit          |
|--------------------------------------|----------------|--|------|-------|--------|---------------|
| Collector cut-off Current            | $I_{CBO}$      | $V_{CB}=-30V$ $I_E=0$  | -    | -     | -0.015 | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE}$       | $V_{CE}=-5.0V$ $I_C=-2.0\text{mA}$                                 | 125  | -     | 800    |               |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)1}$ | $I_C=-10\text{mA}$ $I_B=-0.5\text{mA}$                             | -    | -0.09 | -0.3   | V             |
|                                      | $V_{CE(sat)2}$ | $I_C=-100\text{mA}$ $I_B=-5.0\text{mA}$                            | -    | -0.25 | -0.65  | V             |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)1}$ | $I_C=1-0\text{mA}$ $I_B=-0.5\text{mA}$                             | -    | -0.7  | -      | V             |
|                                      | $V_{BE(sat)2}$ | $I_C=100\text{mA}$ $I_B=-5.0\text{mA}$                             | -    | -0.9  | -      | V             |
| Base-Emitter Voltage                 | $V_{BE(1)}$    | $V_{CE}=-5.0V$ $I_C=-2.0\text{mA}$                                 | -0.6 | -0.65 | -0.75  | V             |
|                                      | $V_{BE(2)}$    | $V_{CE}=-5.0V$ $I_C=-10\text{mA}$                                  | -    | -     | -0.82  | V             |
| Transition Frequency                 | $f_T$          | $V_{CE}=-5.0V$ $I_E=10\text{mA}$ $f=100\text{MHz}$                 | -    | 150   | -      | MHz           |
| Collector Output Capacitance         | $C_{ob}$       | $V_{CB}=10V$ $I_E=0$ $f=1.0\text{MHz}$                             | -    | -     | 4.5    | pF            |
| Noise Figure                         | NF             | $V_{CE}=-6.0V$ $I_C=0.2\text{mA}$ $R_g=2K\Omega$ $f=1.0\text{KHz}$ | -    | 2.0   | 10     | dB            |

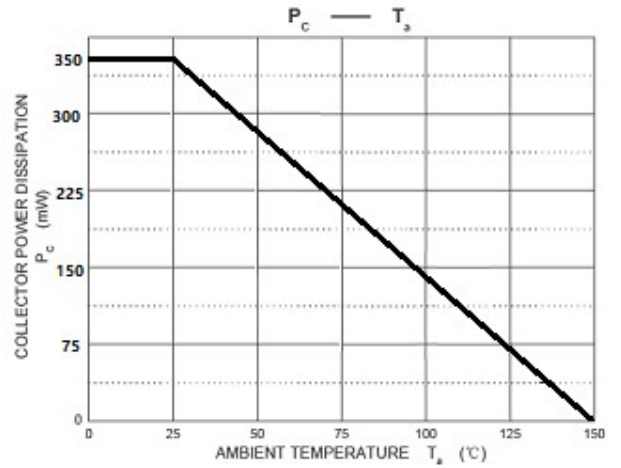
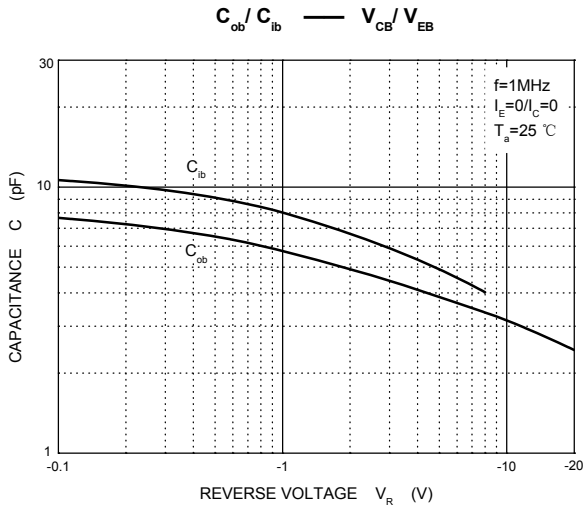
## Thermal Characteristics

| Parameter   | Symbol          | Value | Unit               |
|---|-----------------|-------|--------------------|
| Typical Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 410   | $^\circ\text{C/W}$ |

**Ratings and Characteristic Curves**

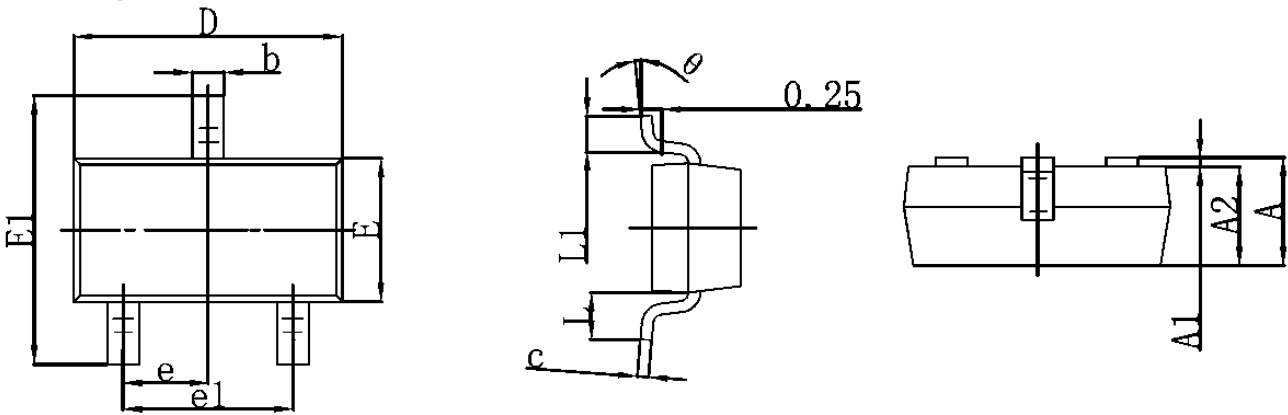


**Ratings and Characteristic Curves**



**Package Outline Dimensions**

**SOT-23**



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min                       | Max   | Min                  | Max   |
| A        | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1       | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2       | 0.900                     | 1.050 | 0.035                | 0.041 |
| b        | 0.300                     | 0.500 | 0.012                | 0.020 |
| c        | 0.080                     | 0.150 | 0.003                | 0.006 |
| D        | 2.800                     | 3.000 | 0.110                | 0.118 |
| E        | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1       | 2.250                     | 2.550 | 0.089                | 0.100 |
| e        | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1       | 1.800                     | 2.000 | 0.071                | 0.079 |
| L        | 0.550 REF                 |       | 0.022 REF            |       |
| L1       | 0.300                     | 0.500 | 0.012                | 0.020 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |