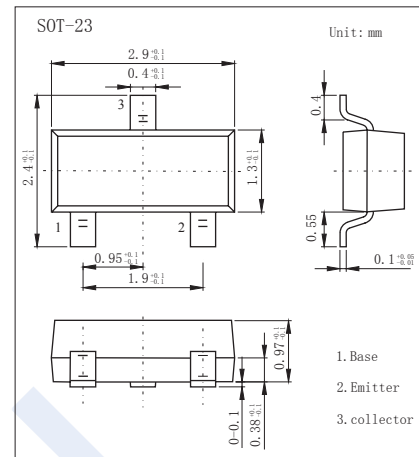


## PNP Transistors

### 2SB970-HF

#### ■ Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$ .
- For low-voltage output amplification
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

| Parameter                      | Symbol    | Rating     | Unit             |
|--------------------------------|-----------|------------|------------------|
| Collector - Base Voltage       | $V_{CBO}$ | -15        | V                |
| Collector - Emitter Voltage    | $V_{CEO}$ | -10        |                  |
| Emitter - Base Voltage         | $V_{EBO}$ | -7         |                  |
| Collector Current - Continuous | $I_C$     | -500       | mA               |
| Collector Current - Pulse      | $I_{CP}$  | -1         | A                |
| Collector Power Dissipation    | $P_C$     | 200        | mW               |
| Junction Temperature           | $T_J$     | 150        | $^\circ\text{C}$ |
| Storage Temperature range      | $T_{stg}$ | -55 to 150 |                  |

#### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

| Parameter                            | Symbol        | Test Conditions  | Min | Typ   | Max  | Unit          |
|--------------------------------------|---------------|--|-----|-------|------|---------------|
| Collector- base breakdown voltage    | $V_{CBO}$     | $I_C = -100 \mu\text{A}$ , $I_E = 0$                               | -15 |       |      | V             |
| Collector- emitter breakdown voltage | $V_{CEO}$     | $I_C = -1 \text{mA}$ , $I_B = 0$                                   | -10 |       |      |               |
| Emitter - base breakdown voltage     | $V_{EBO}$     | $I_E = -100 \mu\text{A}$ , $I_C = 0$                               | -7  |       |      |               |
| Collector-base cut-off current       | $I_{CBO}$     | $V_{CB} = -10\text{V}$ , $I_E = 0$                                 |     |       | -0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = -6\text{V}$ , $I_C = 0$                                  |     |       | -0.1 |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -400 \text{mA}$ , $I_B = -8\text{mA}$                       |     | -0.16 | -0.3 | V             |
| Base - emitter saturation voltage    | $V_{BE(sat)}$ | $I_C = -400 \text{mA}$ , $I_B = -8\text{mA}$                       |     | -0.8  | -1.2 |               |
| DC current gain                      | $h_{FE}$      | $V_{CE} = -2\text{V}$ , $I_C = -500\text{mA}$                      | 130 |       | 350  |               |
|                                      |               | $V_{CE} = -2\text{V}$ , $I_C = -1\text{A}$                         | 60  |       |      |               |
| Collector output capacitance         | $C_{ob}$      | $V_{CB} = -10\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$             |     | 22    |      | pF            |
| Transition frequency                 | $f_T$         | $V_{CE} = -10\text{V}$ , $I_E = 50\text{mA}$ , $f = 200\text{MHz}$ |     | 130   |      | MHz           |

#### ■ Classification of $h_{FE}(1)$

| Type    | 2SB970-R-HF      | 2SB970-S-HF      |
|---------|------------------|------------------|
| Range   | 130-220          | 180-350          |
| Marking | 1RR <sub>F</sub> | 1RS <sub>F</sub> |

### PNP Transistors

### 2SB970-HF

■ Typical Characteristics

