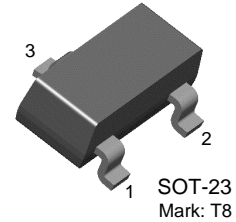


BSR16

PNP General Purpose Amplifier

- This device designed for use as general purpose amplifier and switches requiring collector currents to 500mA.
- Sourced from Process 63.
- See BCW68G for Characteristics.



1. Base 2. Emitter 3. Collector

PNP Epitaxial Silicon Transistor

Absolute Maximum Ratings* $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|---------------|--|------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | -60 | V |
| V_{CBO} | Collector-Base Voltage | -60 | V |
| V_{EBO} | Emitter-Base Voltage | -5.0 | V |
| I_C | Collector Current - Continuous | -800 | mA |
| T_J, T_{ST} | Operating and Storage Junction Temperature Range | -55 ~ +150 | $^\circ\text{C}$ |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|----------------------------|-------------------------------------|---|------|------|------------|---------------------|
| Off Characteristics | | | | | | |
| $BV_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C = -10\text{mA}, I_B = 0$ | -60 | | | V |
| $BV_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = -100\mu\text{A}, I_E = 0$ | -60 | | | V |
| $BV_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = -10\mu\text{A}, I_C = 0$ | -5.0 | | | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = -50\text{V}$ $V_{CB} = -50\text{V}, T_A = 150^\circ\text{C}$ | | | -10 -10 | nA μA |
| I_{CEX} | Collector Cut-off Current | $V_{CE} = -30\text{V}, V_{EB} = -0.5\text{V}$ | | | -50 | nA |
| I_{BEX} | Reverse Base Current | $V_{CE} = -30\text{V}, V_{EB} = -3.0\text{V}$ | | | -50 | nA |

| | | | | | | |
|---------------------------|--------------------------------------|--|-------------------------------|-----|--------------|--------|
| On Characteristics | | | | | | |
| h_{FE} | DC Current Gain | $I_C = -0.1\text{mA}, V_{CE} = -10\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $I_C = -150\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -10\text{V}$ | 75 100 100 100 50 | 300 | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$ | | | -0.4 -1.6 | V V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$ | | | -1.3 -2.6 | V V |

| | | | | | | |
|-------------------------------------|--------------------------------|--|-----|--|-----|-----|
| Small Signal Characteristics | | | | | | |
| f_T | Current Gain Bandwidth Product | $I_C = -50\text{mA}, V_{CE} = -20\text{V},$ $f = 100\text{MHz}, T_A = 25^\circ\text{C}$ | 200 | | | MHz |
| C_{cb} | Output Capacitance | $V_{CB} = -10\text{V}, I_E = 0, f = 1.0\text{MHz}$ | | | 8.0 | pF |
| C_{eb} | Emitter-Base Capacitance | $V_{CB} = -2.0\text{V}, I_E = 0, f = 1.0\text{MHz}$ | | | 30 | pF |

| | | | | | | |
|----------------------------------|---------------|--|--|--|-----|----|
| Switching Characteristics | | | | | | |
| t_{on} | Turn-On Time | $V_{CC} = -30\text{V}, I_C = -150\text{mA},$ $I_{B1} = -15\text{mA}$ | | | 45 | ns |
| t_d | Delay Time | | | | 10 | ns |
| t_r | Rise Time | | | | 40 | ns |
| t_{off} | Turn-Off Time | $V_{CC} = -30\text{V}, I_C = -150\text{mA},$ $I_{B1} = I_{B2} = -15\text{mA}$ | | | 100 | ns |
| t_s | Storage Time | | | | 80 | ns |
| t_f | Fall Time | | | | 30 | ns |

Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------|---|------------|----------------------------|
| P_D | Total Device Dissipation Derate above 25°C | 350 2.8 | mW mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | $^\circ\text{C}/\text{W}$ |

* Device mounted on FR-4 PCB 40mm \times 40mm \times 1.5mm

Package Dimensions

SOT-23



Dimensions in Millimeters

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| | | | | |
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