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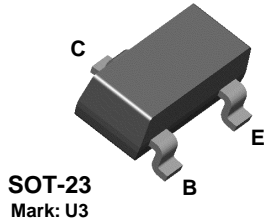
ON Semiconductor®

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BSS64



NPN General Purpose Amplifier

This device is designed for general purpose high voltage amplifiers and gas discharge display driving. Sourced from Process 16.

Absolute Maximum Ratings* TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|--|-------------|-------|
| V_{CEO} | Collector-Emitter Voltage | 80 | V |
| V_{CBO} | Collector-Base Voltage | 120 | V |
| V_{EBO} | Emitter-Base Voltage | 5.0 | V |
| I_C | Collector Current - Continuous | 200 | mA |
| T_J, T_{stg} | Operating and Storage Junction Temperature Range | -55 to +150 | °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.

Thermal Characteristics TA = 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|-----------------|---|--------|-------|
| | | *BSS64 | |
| P_D | Total Device Dissipation Derate above 25°C | 350 | mW |
| | | 2.8 | mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | °C/W |

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

NPN General Purpose Amplifier

(continued)

BSS64

Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------|-----------|-----------------|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-------|

OFF CHARACTERISTICS

| | | | | | |
|---------------|-------------------------------------|---|-----|-----------|--------------------------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C = 4.0 \text{ mA}, I_B = 0$ | 80 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 100 \text{ } \mu\text{A}, I_E = 0$ | 120 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 100 \text{ } \mu\text{A}, I_C = 0$ | 5.0 | | V |
| I_{CBO} | Collector-Cutoff Current | $V_{CB} = 90 \text{ V}, I_E = 0$ $V_{CB} = 90 \text{ V}, I_E = 0, T_A = 150^\circ\text{C}$ | | 0.1 50 | μA μA |
| I_{EBO} | Emitter-Cutoff Current | $V_{EB} = 5.0 \text{ V}, I_C = 0$ | | 200 | nA |

ON CHARACTERISTICS

| | | | | | |
|---------------|--------------------------------------|--|----|-------------|--------|
| h_{FE} | DC Current Gain | $I_C = 10 \text{ mA}, V_{CE} = 1.0 \text{ V}$ | 20 | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 4.0 \text{ mA}, I_B = 400 \text{ } \mu\text{A}$ $I_C = 50 \text{ mA}, I_B = 15 \text{ mA}$ | | 0.15 0.2 | V V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 4.0 \text{ mA}, I_B = 400 \text{ } \mu\text{A}$ | | 1.2 | V |

SMALL SIGNAL CHARACTERISTICS

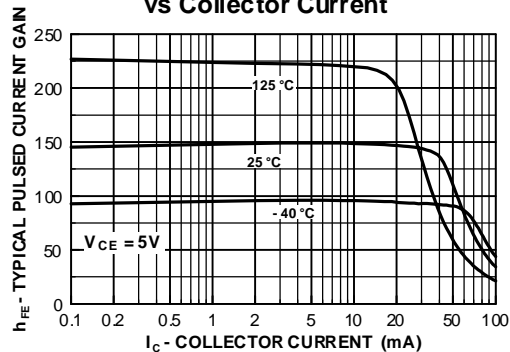
| | | | | | |
|----------|----------------------------------|---|----|-----|-----|
| f_T | Current Gain - Bandwidth Product | $I_C = 4.0 \text{ mA}, V_{CE} = 10$, $f = 35 \text{ MHz}$ | 60 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = 10 \text{ V}, f = 1.0 \text{ MHz}$ | | 5.0 | pF |

Spice Model

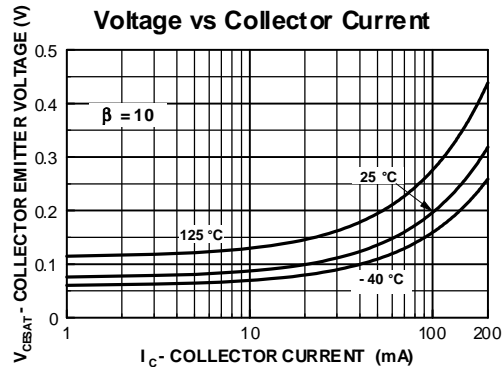
NPN (Is=2.511f Xti=3 Eg=1.11 Vaf=100 Bf=242.6 Ne=1.249 Ise=2.511f Ikf=.3458 Xtb=1.5 Br=3.197 Nc=2 Isc=0 lkr=0 Rc=1 Cjc=4.883p Mjc=.3047 Vjc=.75 Fc=.5 Cje=18.79p Mje=.3416 Vje=.75 Tr=1.202n Tf=560p ltf=50m Vtf=5 Xtf=8 Rb=10)

Typical Characteristics

Typical Pulsed Current Gain vs Collector Current

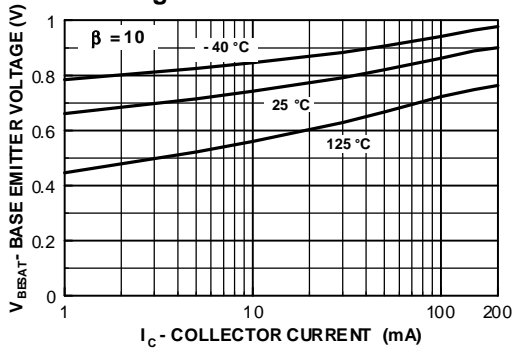


Collector-Emitter Saturation Voltage vs Collector Current

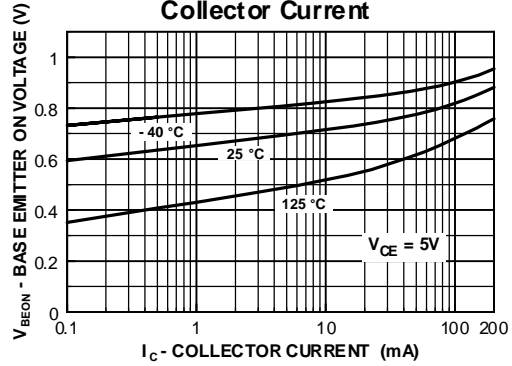


Typical Characteristics

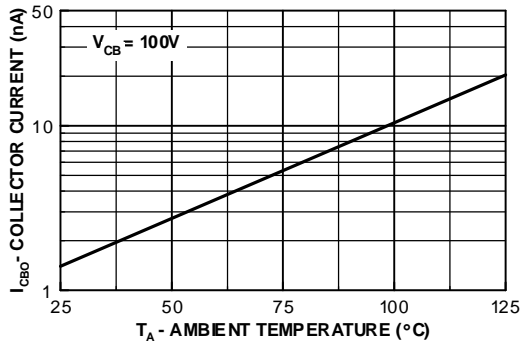
Base-Emitter Saturation Voltage vs Collector Current



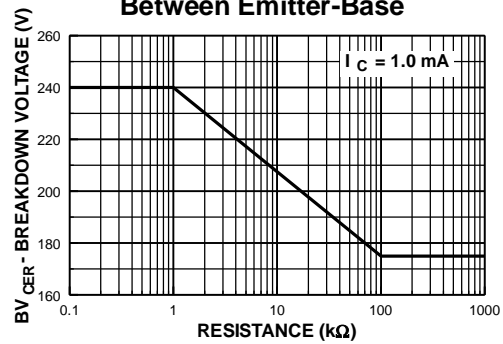
Base Emitter ON Voltage vs Collector Current



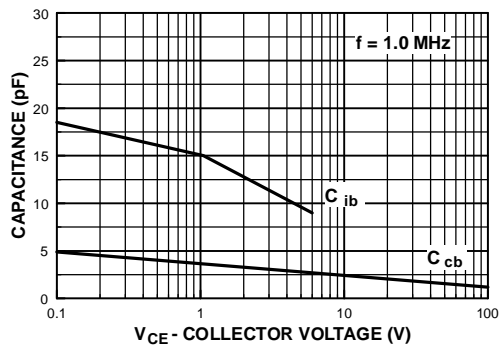
Collector-Cutoff Current vs. Ambient Temperature



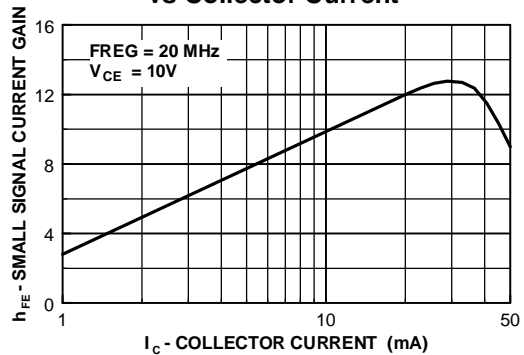
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



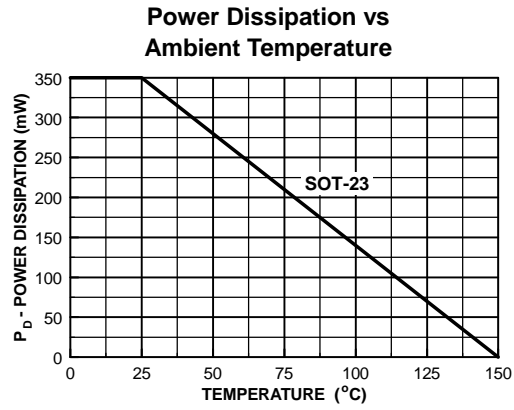
Input and Output Capacitance vs Reverse Voltage



Small Signal Current Gain vs Collector Current



Typical Characteristics (continued)



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|--------------------------|------------------------|---|
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