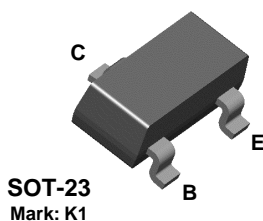


BCW71



NPN General Purpose Amplifier

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 10.

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

| Symbol | Parameter | Value | Units |
|----------------|--|-------------|-------|
| V_{CEO} | Collector-Emitter Voltage | 45 | V |
| V_{CES} | Collector-Base Voltage | 50 | V |
| V_{EBO} | Emitter-Base Voltage | 5.0 | V |
| I_C | Collector Current - Continuous | 500 | 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 |
|-----------------|---|--------|-------|
| | | *BCW71 | |
| 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)

Electrical Characteristics TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|----------------------------|-------------------------------------|---|-----|-----|-----------|---------------|
| OFF CHARACTERISTICS | | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C = 1.0 \text{ mA}, I_B = 0$ | 45 | | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 10 \text{ }\mu\text{A}, I_E = 0$ | 50 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 10 \text{ }\mu\text{A}, I_C = 0$ | 5.0 | | | V |
| I_{CBO} | Collector-Cutoff Current | $V_{CB} = 20 \text{ V}, I_E = 0$ $V_{CB} = 20 \text{ V}, I_E = 0, T_A = 100^\circ\text{C}$ | | | 100 10 | μA |

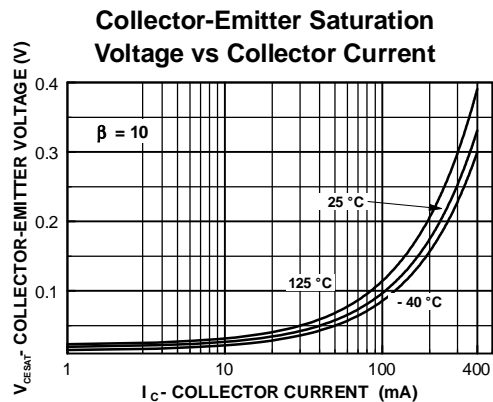
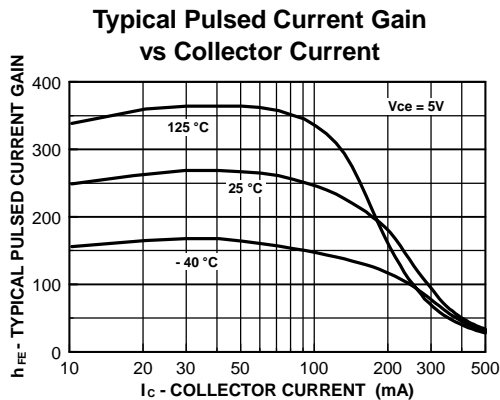
ON CHARACTERISTICS

| | | | | | | |
|---------------|--------------------------------------|--|-----|------|------|---|
| h_{FE} | DC Current Gain | $I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$ | 110 | | 220 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$ | | | 0.25 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 50 \text{ mA}, I_B = 2.5 \text{ mA}$ | | 0.85 | | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$ | 0.6 | | 0.75 | V |

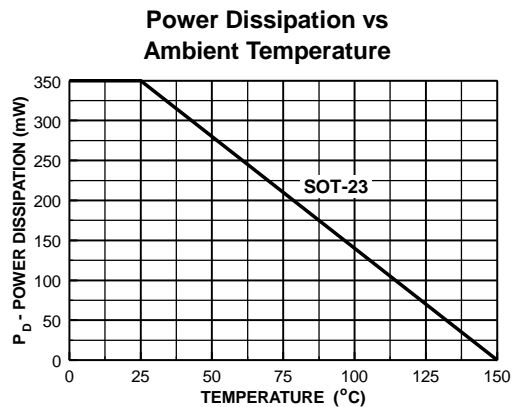
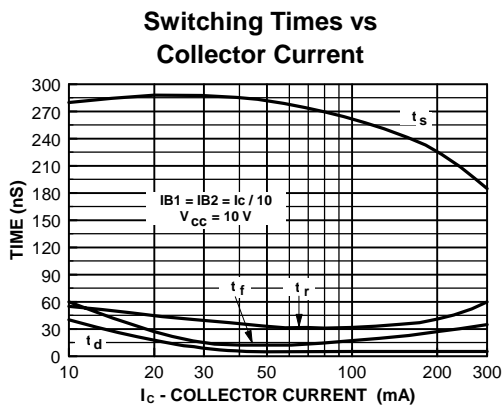
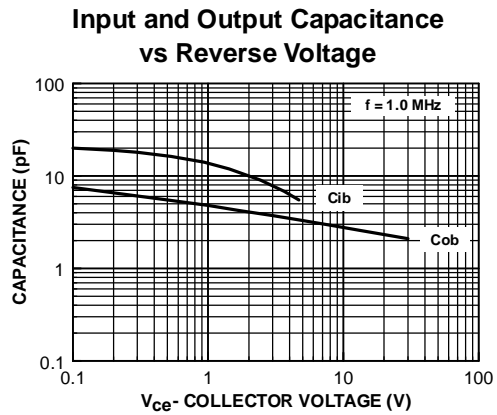
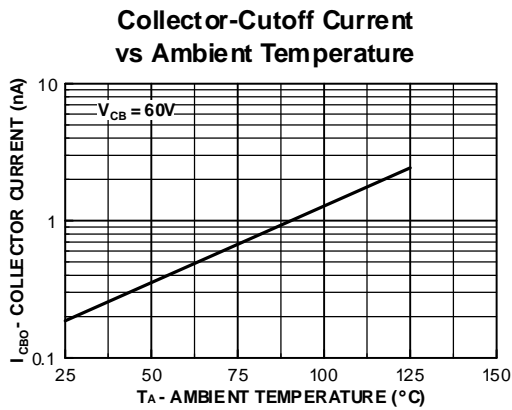
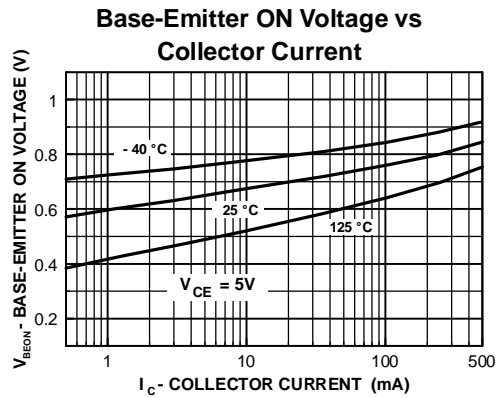
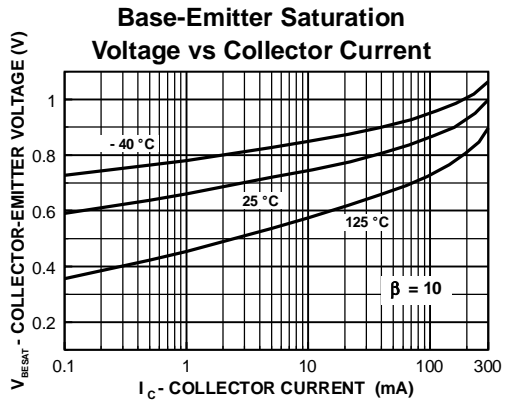
SMALL SIGNAL CHARACTERISTICS

| | | | | | | |
|-----------|----------------------------------|---|--|-----|-----|-----|
| f_T | Current Gain - Bandwidth Product | $I_C = 10 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 35 \text{ MHz}$ | | 330 | | MHz |
| C_{obo} | Output Capacitance | $V_{CE} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$ | | | 4.0 | pF |
| C_{ibo} | Input Capacitance | $V_{EB} = 0.5 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$ | | 9.0 | | pF |
| NF | Noise Figure | $I_C = 0.2 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $R_S = 2.0 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $BW = 200 \text{ Hz}$ | | | 10 | dB |

Typical Characteristics



Typical Characteristics (continued)



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| E ² CMOS TM | MICROWIRE TM | SILENT SWITCHER [®] | |
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|--------------------------|------------------------|---|
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Rev. G