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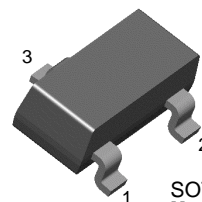
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BCW32

NPN General Purpose Amplifier

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



SOT-23
Mark: D2
1. Base 2. Emitter 3. Collector

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

| Symbol | Parameter | Value | Units |
|----------------|--|------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | 32 | V |
| V_{CBO} | Collector-Base Voltage | 32 | V |
| V_{EBO} | Emitter-Base Voltage | 5.0 | V |
| I_C | Collector current (DC) | 500 | mA |
| T_J, T_{stg} | 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 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 | | | | | | |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 2.0\text{mA}, I_B = 0$ | 32 | | | V |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C = 10\mu\text{A}, I_B = 0$ | 32 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_C = 10\mu\text{A}, I_E = 0$ | 5.0 | | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 32\text{V}, I_E = 0$ $V_{CB} = 32\text{V}, I_E = 0, T_A = 100^\circ\text{C}$ | | | 100 10 | nA μA |
| On Characteristics | | | | | | |
| h_{FE} | DC Current Gain | $I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V}$ | 200 | | 450 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 10\text{mA}, I_B = 0.5\text{mA}$ | | | 0.25 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V}$ | 0.55 | | 0.7 | V |
| Small Signal Characteristics | | | | | | |
| f_T | Current Gain Bandwidth Product | $I_C = 2.0\text{mA}, V_{CE} = 5.0\text{V}$ $f = 35\text{MHz}$ | 200 | | | |
| C_{obo} | Output Capacitance | $V_{CB} = 10\text{V}, I_E = 0, f = 1.0\text{MHz}$ | | | 4.0 | pF |
| NF | Noise Figure | $I_C = 0.2\text{mA}, V_{CE} = 5.0\text{V}$ $R_S = 2.0\text{k}\Omega, f = 1.0\text{kHz}$ $B_W = 200\text{Hz}$ | | | 10 | dB |

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-4PCB 40mm x 40mm x 1.5mm

Typical Characteristics

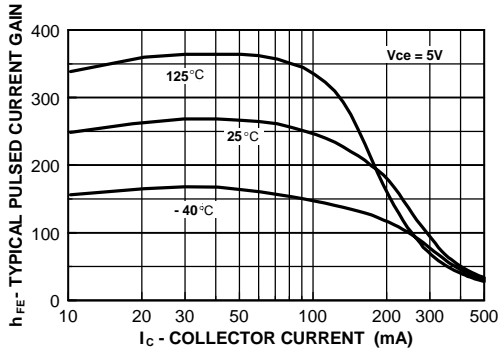


Figure 1. Typical Pulsed Current Gain vs Collector Current

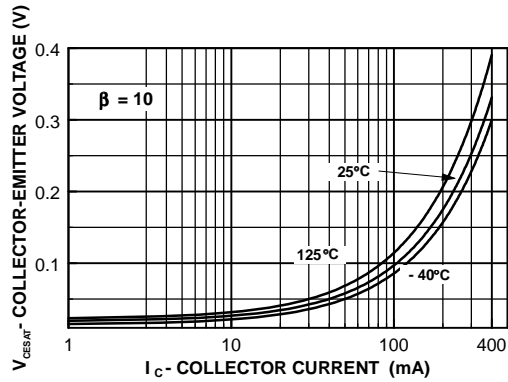


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

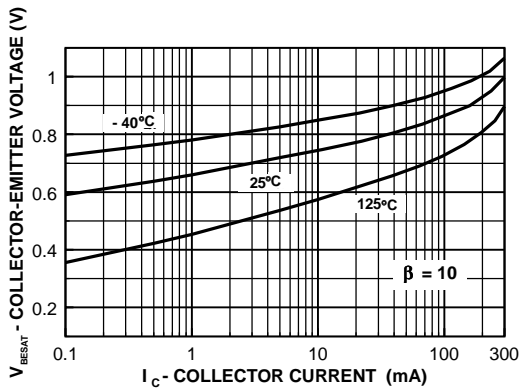


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

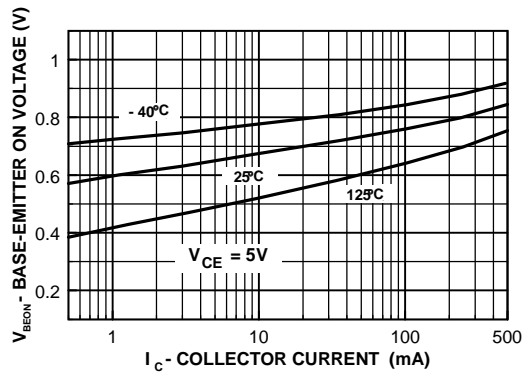


Figure 4. Base-Emitter On Voltage vs Collector Current

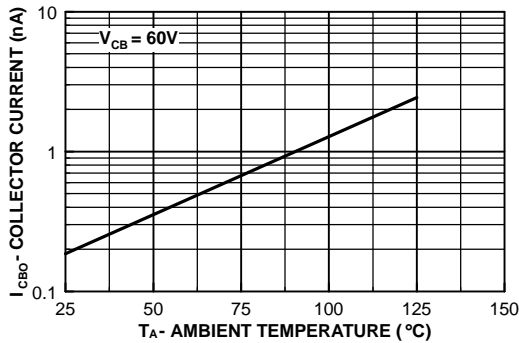


Figure 5. Collector-Cutoff Current vs Ambient Temperature

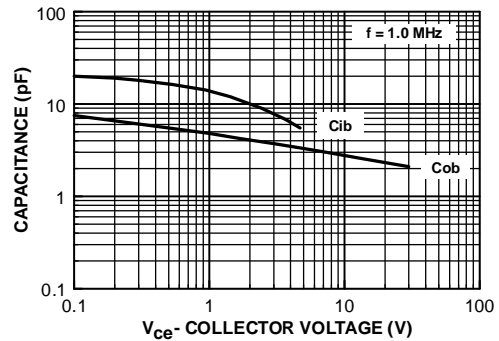


Figure 6. Input and Output Capacitance vs Reverse Voltage

Typical Characteristics (Continued)

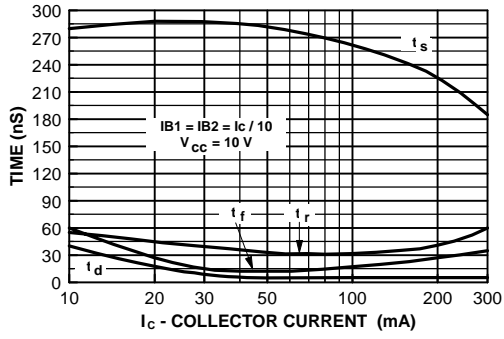


Figure 7. Switching Times vs Collector Current

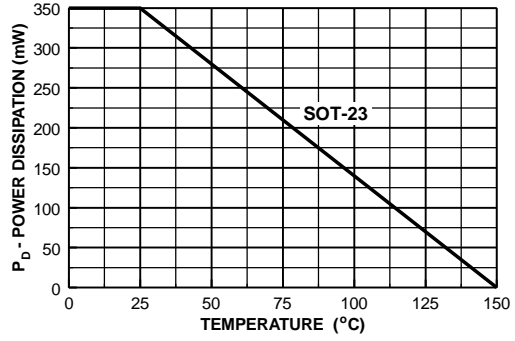
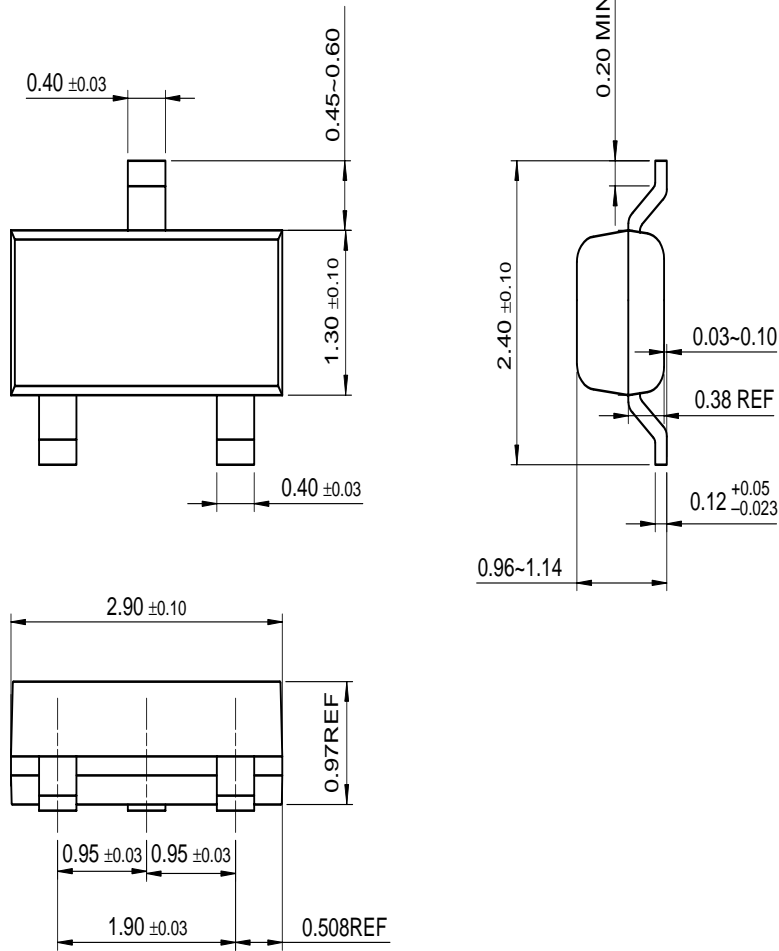


Figure 8. Power Dissipation vs Ambient Temperature

Package Dimensions

SOT-23



Dimensions in Millimeters

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