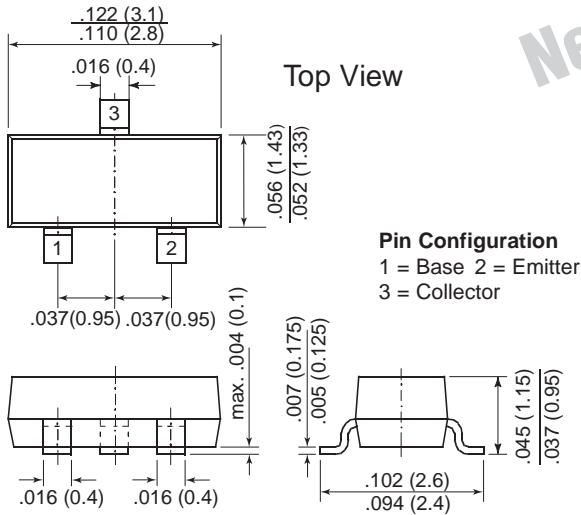


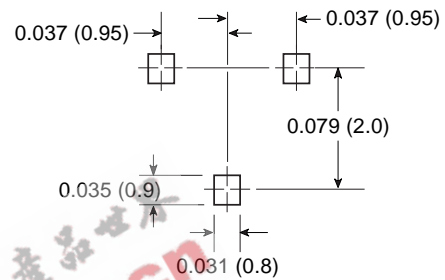


TO-236AB (SOT-23)



Dimensions in inches and (millimeters)

Mounting Pad Layout



Mechanical Data

Case: SOT-23 Plastic Package

Weight: approx. 0.008g

Marking: BCX70G = AG

Code: BCX70H = AH

BCX70J = AJ

BCX70K = AK

Packaging Codes/Options:

E8/10K per 13" reel (8mm tape), 30K/box

E9/3K per 7" reel (8mm tape), 30K/box

Features

- NPN Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- Suited for low level, low noise, low frequency applications in hybrid circuits.
- Low current, low voltage.
- As complementary types, BCX71 Series PNP transistors are recommended.

Maximum Ratings & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | Symbol | Value | Unit |
|--|-----------------|--------------------|------|
| Collector-Base Voltage | V_{CBO} | 45 | V |
| Collector-Emitter Voltage | V_{CEO} | 45 | V |
| Emitter-Base Voltage | V_{EBO} | 5.0 | V |
| Collector Current | I_C | 200 | mA |
| Peak Base Current | I_B | 50 | mA |
| Power Dissipation | P_{tot} | 250 | mW |
| Thermal Resistance Junction to Ambient Air | $R_{\theta JA}$ | 500 ⁽¹⁾ | °C/W |
| Junction Temperature | T_j | 150 | °C |
| Storage Temperature Range | T_s | -65 to +150 | °C |

Note: (1) Mounted on FR-4 printed-circuit board.

Electrical Characteristics (T_J = 25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|--------------------|--|------------------|--------------------------|---------------|----------|
| DC Current Gain | BCX70G | V _{CE} = 5 V, I _C = 10 μA | — | — | — | |
| | BCX70H | V _{CE} = 5 V, I _C = 10 μA | 30 | — | — | |
| | BCX70J | V _{CE} = 5 V, I _C = 10 μA | 40 | — | — | |
| | BCX70K | V _{CE} = 5 V, I _C = 10 μA | 100 | — | — | |
| | BCX70G | V _{CE} = 5 V, I _C = 2 mA | 120 | — | 220 | |
| | BCX70H | V _{CE} = 5 V, I _C = 2 mA | 180 | — | 310 | |
| | BCX70J | V _{CE} = 5 V, I _C = 2 mA | 250 | — | 460 | |
| | BCX70K | V _{CE} = 5 V, I _C = 2 mA | 380 | — | 630 | |
| | BCX70G | V _{CE} = 1 V, I _C = 50 mA | 50 | — | — | |
| | BCX70H | V _{CE} = 1 V, I _C = 50 mA | 70 | — | — | |
| | BCX70J | V _{CE} = 1 V, I _C = 50 mA | 90 | — | — | |
| | BCX70K | V _{CE} = 1 V, I _C = 50 mA | 100 | — | — | |
| Collector-Emitter Saturation Voltage | V _{CEsat} | I _C = 10 mA, I _B = 0.25 mA I _C = 50 mA, I _B = 1.25 mA | 50 100 | — | 350 550 | mV |
| Base-Emitter Saturation Voltage | V _{BEsat} | I _C = 10 mA, I _B = 0.25 mA I _C = 50 mA, I _B = 1.25 mA | 600 700 | — | 850 1050 | mV |
| Base-Emitter Voltage | V _{BE} | V _{CE} = 5 V, I _C = 2 mA V _{CE} = 5 V, I _C = 10 μA V _{CE} = 1 V, I _C = 50 mA | 550 — — | 650 520 780 | 750 — — | mV |
| Collector Cut-off Current | I _{CBO} | V _{CB} = 45 V, V _{BE} = 0 V V _{CB} = 45 V, V _{BE} = 0 V T _A = 150°C | — — | — | 20 20 | nA μA |
| Emitter Cut-off Current | I _{EBO} | V _{EB} = 4 V, I _C = 0 | — | — | 20 | nA |
| Gain-Bandwidth Product | f _T | V _{CE} = 5 V, I _C = 10 mA f = 100 MHz | 100 | 250 | — | MHz |
| Collector-Base Capacitance | C _{CB0} | V _{CB} = 10 V, f = 1 MHz, I _E = 0 | — | 2.5 | — | pF |
| Emitter-Base Capacitance | C _{EB0} | V _{EB} = 0.5 V, f = 1 MHz, I _C = 0 | — | 8 | — | pF |
| Noise Figure | F | V _{CE} = 5 V, I _C = 200 μA, R _S = 2 kΩ, f = 1 kHz, B = 200 Hz | — | 2 | 6 | dB |
| Small Signal Current Gain | h _{fe} | V _{CE} = 5 V, I _C = 2 mA, f = 1.0 kHz | — — — — | 200 260 330 520 | | |
| Turn-on Time at R _L = 990Ω (see fig. 1) | t _{on} | V _{CC} = 10 V, I _C = 10 mA, I _{B(on)} = -I _{B(off)} = 1 mA | — | 85 | 150 | ns |
| Turn-off Time at R _L = 990Ω (see fig. 1) | t _{off} | V _{CC} = 10 V, I _C = 10 mA, I _{B(on)} = -I _{B(off)} = 1 mA | — | 480 | 800 | ns |

Ratings and Characteristic Curves

Fig. 1 Switching Waveforms

