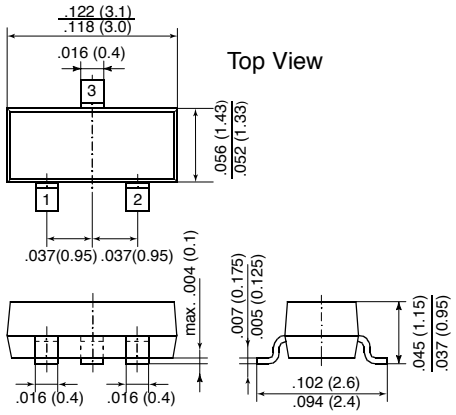
# BCX70 SERIES

## SMALL SIGNAL TRANSISTORS (NPN)

**SOT-23**




Dimensions in inches and (millimeters)

Pin configuration
1 = Base, 2 = Emitter, 3 = Collector.

## FEATURES

- NPN Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- Suited for low level, low noise, low frequency applications in hybrid cicuits.
- Low Current, Low Voltage.
- As complementary types, BCX71 SERIES PNP transistors are recommended.

## MECHANICAL DATA

**Case:** SOT-23 Plastic Package
**Weight:** approx. 0.008g
**Marking code:**

| Type | Marking |
|---|---|
| BCX70G | AG |
| BCX70H | AH |
| BCX70J | AJ |
| BCX70K | AK |

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

| | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 45 | Volts |
| Collector-Emitter Voltage | $V_{CEO}$ | 45 | Volts |
| Emitter-Base Voltage | $V_{EBO}$ | 5.0 | Volts |
| Collector Current (DC) | $I_C$ | 100 | mA |
| Peak Collector Current | $I_{CM}$ | 200 | mA |
| Peak Base Current | $I_{BM}$ | 200 | mA |
| Power Dissipation | $P_{tot}$ | 250 | mW |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_S$ | –65 to +150 | °C |
| Thermal Resistance, Junction to Ambient Air | $R_{\Theta JA}$ | 500(1) | °C/W |

**NOTES:**
(1) Mounted on FR-4 printed-ciruit board.



GENERAL SEMICONDUCTOR®

# BCX70 SERIES

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

| | | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| DC Current Gain | | | | | | |
| at $V_{CE}$ = 5 V, $I_C$ = 10 μA | BCX70G | $h_{FE}$ | – | – | – | – |
| at $V_{CE}$ = 5 V, $I_C$ = 10 μA | BCX70H | $h_{FE}$ | 30 | – | – | – |
| at $V_{CE}$ = 5 V, $I_C$ = 10 μA | BCX70J | $h_{FE}$ | 40 | – | – | – |
| at $V_{CE}$ = 5 V, $I_C$ = 10 μA | BCX70K | $h_{FE}$ | 100 | – | – | – |
| at $V_{CE}$ = 5 V, $I_C$ = 2 mA | BCX70G | $h_{FE}$ | 120 | – | 220 | – |
| at $V_{CE}$ = 5 V, $I_C$ = 2 mA | BCX70H | $h_{FE}$ | 180 | – | 310 | – |
| at $V_{CE}$ = 5 V, $I_C$ = 2 mA | BCX70J | $h_{FE}$ | 250 | – | 460 | – |
| at $V_{CE}$ = 5 V, $I_C$ = 2 mA | BCX70K | $h_{FE}$ | 380 | – | 630 | – |
| at $V_{CE}$ = 1 V, $I_C$ = 50 mA | BCX70G | $h_{FE}$ | 50 | – | – | – |
| at $V_{CE}$ = 1 V, $I_C$ = 50 mA | BCX70H | $h_{FE}$ | 70 | – | – | – |
| at $V_{CE}$ = 1 V, $I_C$ = 50 mA | BCX70J | $h_{FE}$ | 90 | – | – | – |
| at $V_{CE}$ = 1 V, $I_C$ = 50 mA | BCX70K | $h_{FE}$ | 100 | – | – | – |
| Collector-Emitter Saturation Voltage | | | | | | |
| at $I_C$ = 10 mA, $I_B$ = 0.25 mA | | $V_{CEsat}$ | 50 | – | 350 | mV |
| at $I_C$ = 50 mA, $I_B$ = 1.25 mA | | $V_{CEsat}$ | 100 | – | 550 | mV |
| Base-Emitter Saturation Voltage | | | | | | |
| at $I_C$ = 10 mA, $I_B$ = 0.25 mA | | $V_{BEsat}$ | 600 | – | 850 | mV |
| at $I_C$ = 50 mA, $I_B$ = 1.25 mA | | $V_{BEsat}$ | 700 | – | 1050 | mV |
| Base-Emitter Voltage | | | | | | |
| at $V_{CE}$ = 5 V, $I_C$ = 2 mA | | $V_{BE}$ | 550 | 650 | 750 | mV |
| at $V_{CE}$ = 5 V, $I_C$ = 10 μA | | $V_{BE}$ | – | 520 | – | mV |
| at $V_{CE}$ = 1 V, $I_C$ = 50 mA | | $V_{BE}$ | – | 780 | – | mV |
| Collector Cut-off Current | | | | | | |
| at $V_{CB}$ = 45 V | | $I_{CBO}$ | – | – | 20 | nA |
| at $V_{CB}$ = 45 V, $T_A$ = 150°C | | | – | – | 20 | μA |
| Emitter Cut-off Current | | | | | | |
| at $V_{EB}$ = 4 V | | $I_{EBO}$ | – | – | 20 | nA |
| Gain-Bandwidth Product | | | | | | |
| at $V_{CE}$ = 5 V, $I_C$ = 10 mA, f = 100 MHz | | $f_T$ | 100 | 250 | – | MHz |
| Collector-Base Capacitance | | | | | | |
| at $V_{CB}$ = 10 V, f = 1 MHz | | $C_{CBO}$ | – | 1.7 | – | pF |
| Emitter-Base Capacitance | | | | | | |
| at $V_{EB}$ = 0.5 V, f = 1 MHz | | $C_{EBO}$ | – | 11 | – | pF |
| Noise Figure | | | | | | |
| at $V_{CE}$ = 5 V, $I_C$ = 200 μA, $R_S$ = 2 kΩ, f= 1kHZ, B = 200Hz | | F | – | 2 | 6 | dB |