

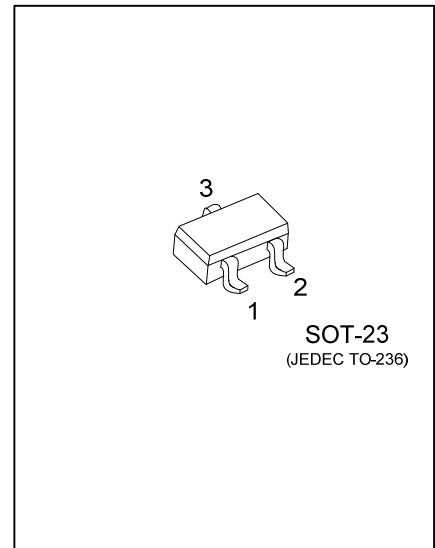


**BCX70**

Preliminary

***NPN EPITAXIAL SILICON TRANSISTOR***

**GENERAL PURPOSE TRANSISTOR**



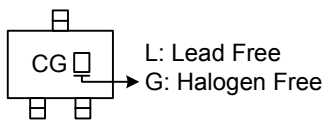
■ ORDERING INFORMATION

| Ordering Number |              | Package | Pin Assignment |   |   | Packing   |
|-----------------|--------------|---------|----------------|---|---|-----------|
| Lead Free       | Halogen Free |         | 1              | 2 | 3 |           |
| BCX70L-AE3-R    | BCX70G-AE3-R | SOT-23  | B              | E | C | Tape Reel |

Note: Pin Assignment: B: Base E: Emitter C: Collector

|  |   |
|--|---|
| <p>BCX70G-AE3-R</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Green Package</p> | <p>(1) R: Tape Reel<br/>(2) AE3: SOT-23<br/>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|---|

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                   | SYMBOL    | RATINGS    | UNIT             |
|-----------------------------|-----------|------------|------------------|
| Collector-Base Voltage      | $V_{CBO}$ | 45         | V                |
| Collector-Emitter Voltage   | $V_{CEO}$ | 45         | V                |
| Emitter-Base Voltage        | $V_{EBO}$ | 5          | V                |
| Collector Current           | $I_C$     | 200        | mA               |
| Collector Power Dissipation | $P_C$     | 350        | mW               |
| Storage Temperature         | $T_{STG}$ | -40 ~ +150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

| PARAMETER           | SYMBOL        | RATINGS | UNIT               |
|---------------------|---------------|---------|--------------------|
| Junction to Ambient | $\theta_{JA}$ | 325     | $^\circ\text{C/W}$ |

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                            | SYMBOL        | TEST CONDITIONS   | MIN  | TYP | MAX  | UNIT |
|--------------------------------------|---------------|---|------|-----|------|------|
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C=2.0\text{mA}$ , $I_B=0$  | 45   |     |      | V    |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E=1.0\mu\text{F}$ , $I_C=0$  | 5    |     |      | V    |
| Collector Cut-off Current            | $I_{CES}$     | $V_{CE}=32\text{V}$ , $V_{BE}=0$  |      |     | 20   | nA   |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB}=4\text{V}$ , $I_C=0$  |      |     | 20   | nA   |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=5\text{V}$ , $I_C=10\mu\text{A}$  | 100  |     |      |      |
|                                      |               | $V_{CE}=5\text{V}$ , $I_C=2.0\text{mA}$   | 380  |     | 630  |      |
|                                      |               | $V_{CE}=1\text{V}$ , $I_C=50\text{mA}$  | 100  |     |      |      |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=10\text{mA}$ , $I_B=0.25\text{mA}$   |      |     | 0.35 | V    |
|                                      |               | $I_C=50\text{mA}$ , $I_B=1.25\text{mA}$   |      |     | 0.55 | V    |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=10\text{mA}$ , $I_B=0.25\text{mA}$   | 0.6  |     | 0.85 | V    |
|                                      |               | $I_C=50\text{mA}$ , $I_B=1.25\text{mA}$   | 0.7  |     | 1.05 | V    |
| Base-Emitter On Voltage              | $V_{BE(on)}$  | $I_C=2.0\text{mA}$ , $V_{CE}=5\text{V}$   | 0.55 |     | 0.75 | V    |
| Current Gain Bandwidth Product       | $f_T$         | $I_C=10\text{mA}$ , $V_{CE}=5\text{V}$ , $f=100\text{MHz}$                                    | 125  |     |      | MHz  |
| Output Capacitance                   | $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$   |      |     | 4.5  | pF   |
| Noise Figure                         | NF            | $V_{CE}=5\text{V}$ , $I_C=0.2\text{mA}$ , $R_S=2\text{K}\Omega$<br>$f=1\text{KHz}$            |      |     | 6    | dB   |
| Turn On Time                         | $t_{ON}$      | $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$   |      |     | 150  | ns   |
| Turn Off Time                        | $t_{OFF}$     | $V_{BB}=3.6\text{V}$ , $I_{B2}=1.0\text{mA}$ ,<br>$R_1=R_2=5\text{K}\Omega$ , $R_L=990\Omega$ |      |     | 800  | ns   |

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