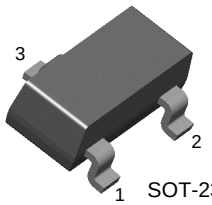
FAIRCHILD
SEMICONDUCTOR®

# BCW60A/B/C/D

## General Purpose Transistor




SOT-23

1. Base 2. Emitter 3. Collector

## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 32 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 32 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | V |
| $I_C$ | Collector Current | 100 | mA |
| $P_C$ | Collector Power Dissipation | 350 | mW |
| $T_{STG}$ | Storage Temperature | 150 | °C |

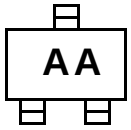
## Electrical Characteristics $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|---|---|---|---|---|---|
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$=2mA, $I_B$=0 | 32 | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$=1μA, $I_C$=0 | 5 | | V |
| $I_{CES}$ | Collector Cut-off Current | $V_{CE}$=32V, $V_{BE}$=0 | | 20 | nA |
| $I_{EBO}$ | Emitter Cut-off Current | $V_{EB}$=4V, $I_C$=0 | | 20 | nA |
| $h_{FE}$ | DC Current Gain | | | | |
| | : BCW60B | $V_{CE}$=5V, $I_C$=10μA | 20 | | |
| | : BCW60C | | 40 | | |
| | : BCW60D | | 100 | | |
| | : BCW60A | $V_{CE}$=5V, $I_C$=2mA | 120 | 220 | |
| | : BCW60B | | 180 | 310 | |
| | : BCW60C | | 250 | 460 | |
| | : BCW60D | | 380 | 630 | |
| | : BCW60A | $V_{CE}$=1V, $I_C$=50mA | 60 | | |
| | : BCW60B | | 70 | | |
| | : BCW60C | | 90 | | |
| | : BCW60D | | 100 | | |
| $V_{CE}$(sat) | Collector-Emitter Saturation Voltage | $I_C$=50mA, $I_B$=1.25mA | | 0.55 | V |
| | | $I_C$=10mA, $I_B$=0.25mA | | 0.35 | V |
| $V_{BE}$(sat) | Base-Emitter Saturation Voltage | $I_C$=50mA, $I_B$=1.25mA | 0.7 | 1.05 | V |
| | | $I_C$=10mA, $I_B$=0.25mA | 0.6 | 0.85 | V |
| $V_{BE}$(on) | Base-Emitter On Voltage | $V_{CE}$=5V, $I_C$=2mA | 0.55 | 0.75 | V |
| $C_{ob}$ | Output Capacitance | $V_{CB}$=10V, $I_E$=0, f=1MHz | | 4.5 | pF |
| $f_T$ | Current Gain Bandwidth Product | $I_C$=10mA, $V_{CE}$=5V, f=100MHz | 125 | | MHz |
| NF | Noise Figure | $I_C$=0.2mA, $V_{CE}$=5V<br>$R_G$=2KΩ, f=1KHz | | 6 | dB |
| $t_{ON}$ | Turn On Time | $I_C$=10mA, $I_{B1}$=1mA | | 150 | ns |
| $t_{OFF}$ | Turn Off Time | $V_{BB}$=3.6V, $I_{B2}$=1mA<br>R1=R2=5KΩ,$R_L$=990Ω | | 800 | ns |

## Marking Code

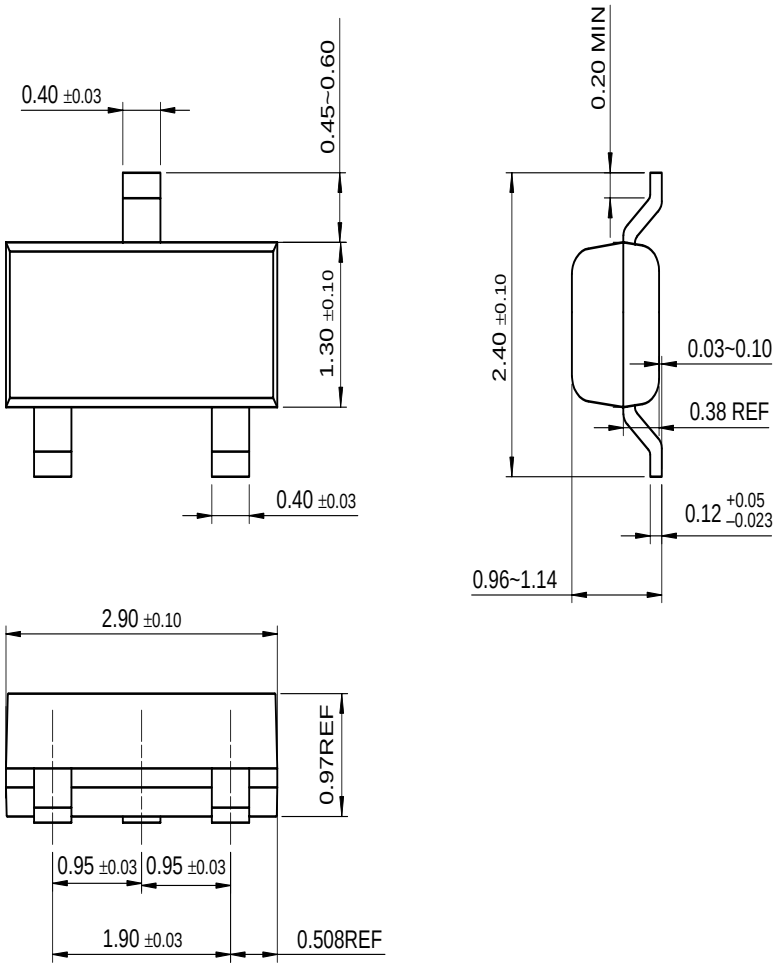
| Type | BCW60A | BCW60B | BCW60C | BCW60D |
|---|---|---|---|---|
| Mark. | AA | AB | AC | AD |

Marking



## Package Dimensions

SOT-23




Dimensions in Millimeters

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