# BCW66F,G

**CASE 318-02/03, STYLE 6**
**SOT-23 (TO-236AA/AB)**

**GENERAL PURPOSE TRANSISTOR**

**NPN SILICON**

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## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 45 | Vdc |
| Collector-Base Voltage | $V_{CBO}$ | 75 | Vdc |
| Emitter-Base Voltage | $V_{EBO}$ | 5.0 | Vdc |
| Collector Current — Continuous | $I_C$ | 800 | mAdc |

## THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| *Total Device Dissipation, $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 350<br>2.8 | mW<br>mW/°C |
| Storage Temperature | $T_{stg}$ | 150 | °C |
| *Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 357 | °C/W |

*Package mounted on 99.5% alumina 10 x 8 x 0.6 mm.

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise noted.)

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector-Emitter Breakdown Voltage ($I_C$ = 10 mAdc, $I_B$ = 0) | | $V_{(BR)CEO}$ | 45 | — | — | Vdc |
| Collector-Emitter Breakdown Voltage ($I_C$ = 10 μAdc, $V_{EB}$ = 0) | | $V_{(BR)CES}$ | 75 | — | — | Vdc |
| Emitter-Base Breakdown Voltage ($I_E$ = 10 μAdc, $I_C$ = 0) | | $V_{(BR)EBO}$ | 5.0 | — | — | Vdc |
| Collector Cutoff Current ($V_{CE}$ = 45 Vdc, $I_C$ = 0)<br>($V_{CE}$ = 45 Vdc, $I_C$ = 0, $T_A$ = 150°C) | | $I_{CES}$ | —<br>— | —<br>— | 20<br>20 | nAdc<br>μAdc |
| Emitter Cutoff Current ($V_{EB}$ = 4.0 Vdc, $I_C$ = 0) | | $I_{EBO}$ | — | — | 20 | nAdc |
| **ON CHARACTERISTICS** | | | | | | |
| DC Current Gain | | $h_{FE}$ | — | — | — | — |
| ($I_C$ = 100 μAdc, $V_{CE}$ = 1.0 Vdc) | F | | 35 | — | — | — |
| | G | | 50 | — | — | — |
| ($I_C$ = 10 mAdc, $V_{CE}$ = 1.0 Vdc) | F | | 75 | — | — | — |
| | G | | 110 | — | — | — |
| ($I_C$ = 100 mAdc, $V_{CE}$ = 1.0 Vdc) | F | | 100 | — | 250 | — |
| | G | | 160 | — | 400 | — |
| ($I_C$ = 500 mAdc, $V_{CE}$ = 2.0 Vdc | | | 35 | — | — | — |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | | | | Vdc |
| ($I_C$ = 500 mAdc, $I_B$ = 50 mAdc) | | | — | — | 0.7 | |
| ($I_C$ = 100 mAdc, $I_B$ = 10 mAdc) | | | — | — | 0.3 | |
| Base-Emitter Saturation Voltage ($I_C$ = 500 mAdc, $I_B$ = 50 mAdc) | | $V_{BE(sat)}$ | — | — | 2.0 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | | | |
| Current-Gain — Bandwidth Product ($I_C$ = 20 mAdc, $V_{CE}$ = 10 Vdc, f = 100 MHz) | | $f_T$ | 100 | — | — | MHz |
| Output Capacitance ($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 1.0 MHz) | | $C_{obo}$ | — | — | 12 | pF |
| Input Capacitance ($V_{EB}$ = 0.5 Vdc, $I_C$ = 0, f = 1.0 MHz) | | $C_{ibo}$ | — | — | 80 | pF |
| Noise Figure ($I_C$ = 0.2 mAdc, $V_{CE}$ = 5.0 Vdc, $R_S$ = 1.0 kΩ, f = 1.0 kHz, BW = 200 Hz) | | NF | — | — | 10 | dB |
| **SWITCHING CHARACTERISTICS** | | | | | | |
| Turn-On Time ($I_{B1}$ = $I_{B2}$ = 15 mAdc, $I_C$ = 150 mAdc, $R_L$ = 150 Ω) | | $t_{on}$ | — | — | 100 | ns |
| Turn-Off Time ($I_{B1}$ = $I_{B2}$ = 15 mAdc, $I_C$ = 150 mAdc, $R_L$ = 150 Ω) | | $t_{off}$ | — | — | 400 | ns |