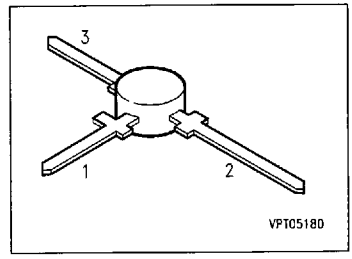
# SIEMENS

## NPN Silicon RF Transistor

**BFW 92**

- For broadband amplifiers up to 1 GHz at collector currents from 1 mA to 20 mA.




**ESD:** Electrostatic discharge sensitive device, observe handling precautions!

| Type | Marking | Ordering Code | Pin Configuration 1 | 2 | 3 | Package[1] |
|---|---|---|---|---|---|---|
| BFW 92 | BFW 92 | Q62702-F321 | E | C | B | T-plast |

### Maximum Ratings

| Parameter | Symbol | Values | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CE0}$ | 15 | V |
| Collector-base voltage | $V_{CB0}$ | 25 | |
| Emitter-base voltage | $V_{EB0}$ | 2.5 | |
| Collector current | $I_C$ | 25 | mA |
| Peak base current, $f \geq 10$ MHz | $I_{CM}$ | 50 | |
| Total power dissipation, $T_S \leq 101$ °C[3] | $P_{tot}$ | 280 | mW |
| Junction temperature | $T_j$ | 150 | °C |
| Ambient temperature range | $T_A$ | – 65 ... + 150 | |
| Storage temperature range | $T_{stg}$ | – 65 ... + 150 | |

### Thermal Resistance

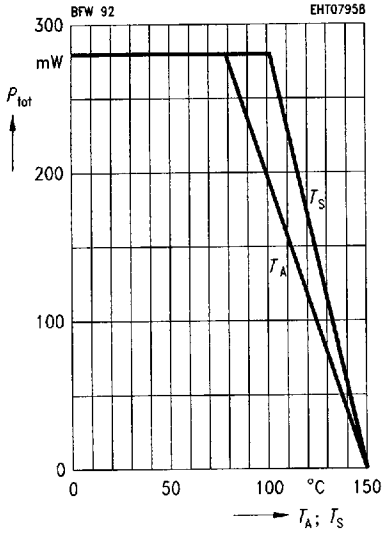
| | | | |
|---|---|---|---|
| Junction - ambient[2] | $R_{th\,JA}$ | ≤ 255 | K/W |
| Junction - soldering point[3] | $R_{th\,JS}$ | ≤ 175 | |

1) For detailed information see chapter Package Outlines.
2) Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.
3) $T_S$ is measured on the collector lead at the soldering point to the pcb.

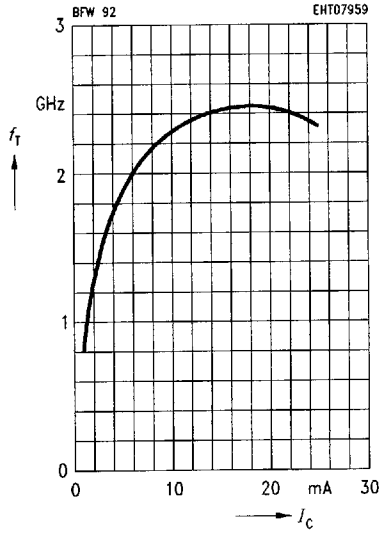
**Electrical Characteristics**
at $T_A$ = 25 °C, unless otherwise specified.

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter breakdown voltage<br>$I_C$ = 1 mA, $I_B$ = 0 | $V_{(BR)CE0}$ | 15 | – | – | V |
| Collector-base cutoff current<br>$V_{CB}$ = 10 V, $I_E$ = 0 | $I_{CB0}$ | – | – | 50 | nA |
| Emitter-base cutoff current<br>$V_{EB}$ = 2.5 V, $I_C$ = 0 | $I_{EB0}$ | – | – | 100 | µA |
| DC current gain<br>$I_C$ = 2 mA, $V_{CE}$ = 1 V<br>$I_C$ = 25 mA, $V_{CE}$ = 1 V | $h_{FE}$ | <br>20<br>20 | <br>–<br>– | <br>150<br>– | – |
| Collector-emitter saturation voltage<br>$I_C$ = 20 mA, $I_B$ = 1 mA | $V_{CEsat}$ | – | – | 0.75 | V |
| **AC Characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 14 mA, $V_{CE}$ = 5 V, $f$ = 200 MHz | $f_T$ | – | 2.4 | – | GHz |
| Collector-base capacitance<br>$V_{CB}$ = 5 V, $V_{BE}$ = $v_{be}$ = 0, $f$ = 1 MHz | $C_{cb}$ | – | 0.48 | – | pF |
| Collector-emitter capacitance<br>$V_{CE}$ = 5 V, $V_{BE}$ = $v_{be}$ = 0, $f$ = 1 MHz | $C_{ce}$ | – | 0.3 | – | |
| Output capacitance<br>$V_{CE}$ = 5 V, $V_{BE}$ = $v_{be}$ = 0, $f$ = 1 MHz | $C_{obs}$ | – | 0.8 | – | |
| Noise figure<br>$I_C$ = 2 mA, $V_{CE}$ = 5 V, $f$ = 800 MHz, $Z_S$ = 60 Ω | $F$ | – | 4 | – | dB |
| Power gain<br>$I_C$ = 14 mA, $V_{CE}$ = 5 V, $f$ = 800 MHz,<br>$Z_S$ = 60 Ω, $Z_L$ = $Z_{Lopt}$ | $G_{pe}$ | – | 11 | – | |
| Linear output voltage<br>two-tone intermodulation test<br>$I_C$ = 14 mA, $V_{CE}$ = 5 V, $d_{IM}$ = 60 dB,<br>$f_1$ = 806 MHz, $f_2$ = 810 MHz, $Z_S$ = $Z_L$ = 50 Ω | $V_{o1}$ = $V_{o2}$ | – | 100 | – | mV |
| Third order intercept point<br>$I_C$ = 14 mA, $V_{CE}$ = 5 V, $f$ = 800 MHz | $IP_3$ | – | 23 | – | dBm |

**Total power dissipation $P_{tot} = f(T_A^*; T_S)$**
*Package mounted on alumina




**Transition frequency $f_T = f(I_C)$**
$V_{CE}$ = 5 V, $f$ = 200 MHz




**Collector-base capacitance $C_{cb} = f(V_{CB})$**
$V_{BE} = v_{be} = 0$, $f$ = 1 MHz