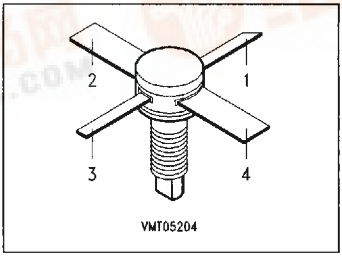
**SIEMENS**

# NPN Silicon RF Transistors

**BFT 98**
**BFT 98B**

- For low-distortion broadband amplifier output stages up to 1 GHz at collector currents up to 150 mA.
- With integrated emitter stabilizing resistors.



| Type | Marking | Ordering Code | Pin Configuration | | | | Package[1] |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | |
| BFT 98 | BFT 98 | Q62702-F523 | C | E | B | E | TO-117 |

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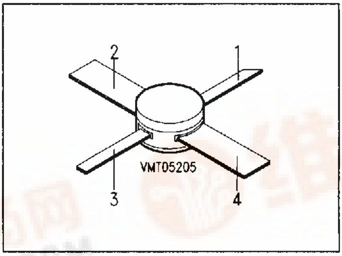

| Type | Marking | Ordering Code | Pin Configuration | | | | Package[1] |
|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | |
| BFT 98B | BFT 98B | Q62702-F1084 | C | E | B | E | TO-117 |

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[1] Package Outlines.

## Maximum Ratings

| Parameter | Symbol | Values | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CE0}$ | 20 | V |
| Collector-emitter voltage, $V_{BE} = 0$ | $V_{CES}$ | 30 | |
| Emitter-base voltage | $V_{EB0}$ | 3 | |
| Collector current | $I_C$ | 200 | mA |
| Peak collector current, $t \leq 100$ µs | $I_{CM}$ | 250 | |
| Base current | $I_B$ | 50 | |
| Total power dissipation, $T_C \leq 70$ °C[1] | $P_{tot}$ | 2.25 | W |
| Junction temperature | $T_j$ | 150 | °C |
| Ambient temperature range | $T_A$ | – 65 … + 150 | |
| Storage temperature range | $T_{stg}$ | – 65 … + 150 | |

## Thermal Resistance

| | | | |
|---|---|---|---|
| Junction - ambient | $R_{th\,JA}$ | ≤ 85 | K/W |
| Junction - case (bottom plate) | $R_{th\,JC}$ | ≤ 35 | |

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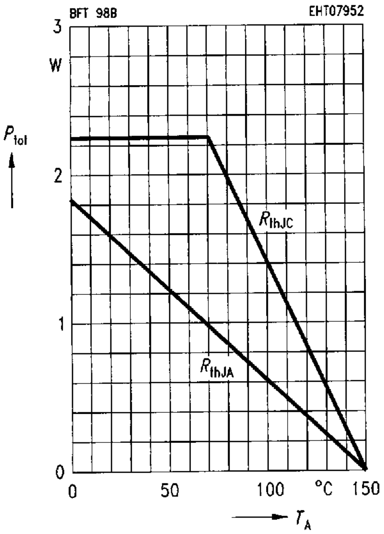
[1] P [illegible] 16.7 mm × 0.7 mm.

## Electrical Characteristics

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

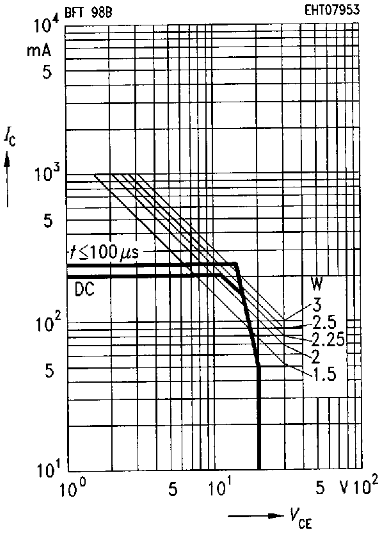
| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter cutoff current<br>$V_{CE}$ = 30 V, $V_{BE}$ = 0 | $I_{CES}$ | – | – | 1 | mA |
| Collector-base cutoff current<br>$V_{CB}$ = 15 V, $I_E$ = 0 | $I_{CBO}$ | – | – | 200 | nA |
| DC current gain<br>$I_C$ = 120 mA, $V_{CE}$ = 5 V | $h_{FE}$ | 25 | – | – | – |
| **AC Characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 120 mA, $V_{CE}$ = 5 V, $f$ = 200 MHz | $f_T$ | – | 3.3 | – | GHz |
| Collector-base capacitance<br>$V_{CB}$ = 15 V, $V_{BE}$ = $v_{be}$ = 0, $f$ = 1 MHz | $C_{cb}$ | – | 0.75 | 1 | pF |
| Power gain<br>$I_C$ = 120 mA, $V_{CE}$ = 15 V, $f$ = 800 MHz,<br>$Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$ | $G_{pe}$ | – | 15 | – | dB |
| Linear output voltage<br>two-tone intermodulation test<br>$I_C$ = 120 mA, $V_{CE}$ = 15 V, $d_{IM}$ = 60 dB,<br>$f_1$ = 806 MHz, $f_2$ = 810 MHz, $Z_S = Z_L$ = 50 Ω | $V_{o1} = V_{o2}$ | – | 800 | – | mV |
| Third order intercept point<br>$I_C$ = 120 mA, $V_{CE}$ = 15 V, $f$ = 800 MHz | $IP_3$ | – | 41 | – | dBm |

### Total power dissipation $P_{tot} = f(T_A)$



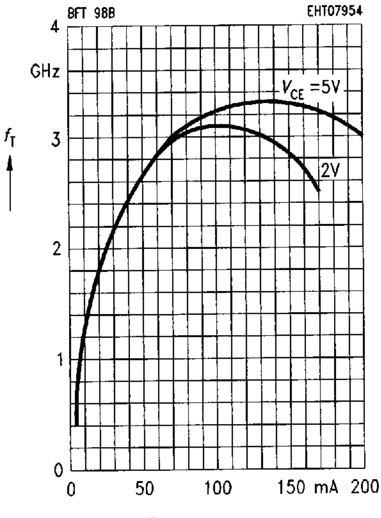
### Operating range $I_C = f(V_{CE})$

$T_C = 70\ ^\circ\text{C}$, $R_{th\,JC} = 35$ K/W



### Transition frequency $f_T = f(I_C)$

$f = 200$ MHz



### Collector-base capacitance $C_{cb} = f(V_{CB})$

$V_{BE} = v_{be} = 0$, $f = 1$ MHz