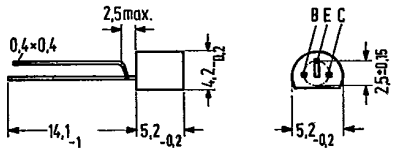
# NPN Silicon RF Transistor

**BF 503**

SIEMENS AKTIENGESELLSCHAF

BF 503 is an NPN silicon planar RF transistor in TO 92 plastic package (10 A 3 DIN 41868). The transistor is particularly intended for use in VHF amplifiers, VHF mixers, and VHF oscillators.

| Type | Ordering code |
|---|---|
| BF 503 | Q62702-F574 |




Approx. weight 0.25 g

Dimensions in mm

**Maximum ratings ($T_{amb}$ = 25°C)**

| | | | |
|---|---|---|---|
| Collector-emitter voltage | $V_{CEO}$ | 30 | V |
| Collector-base voltage | $V_{CBO}$ | 40 | V |
| Emitter-base voltage | $V_{EBO}$ | 4 | V |
| Collector current | $I_C$ | 20 | mA |
| Collector peak current | $I_{CM}$ | 50 | mA |
| Base current | $I_B$ | 5 | mA |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature range | $T_{stg}$ | −55 to +150 | °C |
| Total power dissipation | $P_{tot}$ | 500 | mW |

**Thermal resistance**

| | | | |
|---|---|---|---|
| Junction to ambient air | $R_{thJA}$ | ≤250 | K/W |

**Static characteristics** ($T_{amb}$ = 25 °C)

| | | | |
|---|---|---|---|
| Collector cutoff current ($V_{CBO}$ = 25 V) | $I_{CBO}$ | ≤100 | nA |
| Collector-emitter breakdown voltage ($I_C$ = 1 mA) | $V_{(BR)CEO}$ | ≥30 | V |
| Collector-base breakdown voltage ($I_C$ = 10 µA) | $V_{(BR)CBO}$ | ≥40 | V |
| Emitter-base breakdown voltage ($I_E$ = 10 µA) | $V_{(BR)EBO}$ | ≥4 | V |
| DC current gain ($I_C$ = 1 mA; $V_{CE}$ = 10 V) | $h_{FE}$ | ≥30 | – |
| ($I_C$ = 5 mA; $V_{CE}$ = 10 V) | $h_{FE}$ | ≥40 | – |
| Collector-emitter saturation voltage ($I_C$ = 5 mA; $I_B$ = 0.5 mA) | $V_{CEsat}$ | ≤0.6 | V |

**Dynamic characteristics** ($T_{amb}$ = 25 °C)

| | | | |
|---|---|---|---|
| Transition frequency ($I_C$ = 5 mA; $V_{CE}$ = 10 V; $f$ = 100 MHz) | $f_T$ | 750 (≥400) | MHz |
| Noise figure ($I_C$ = 3 mA; $V_{CE}$ = 10 V; $f$ = 200 MHz; $R_g$ = 60 Ω) | $NF$ | 3 (<5) | dB |
| Collector-base capacitance ($f$ = 1 MHz; $V_{CB}$ = 10 V; $V_{BE}$ = 0 V)[1] | $C_{CB}$ | 0.55 (<0.7) | pF |
| Collector-emitter capacitance ($f$ = 1 MHz; $V_{CE}$ = 10 V; $V_{BE}$ = 0 V)[1] | $C_{CE}$ | ≤0.65 | pF |
| Output admittance ($I_C$ = 1 mA; $V_{CE}$ = 10 V; $f$ = 10.7 MHz) | $g_{22e}$ | ≤10.5 | µS |

1) Third terminal at creening potential.