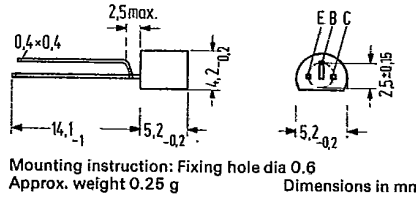


BC 546, BC 547, BC 548, BC 549 and BC 550 are epitaxial NPN silicon planar transistors in TO 92 plastic packages (10 A 3 DIN 41868). They are intended for use in AF input and driver stages (BC 549; BC 550 for low-noise input stages) and as complementary transistors to BC 556, BC 557, BC 558, BC 559 and BC 560.

| Type | Ordering code | Type | Ordering code |
|----------------------|----------------|----------------------|----------------|
| BC 546 ¹⁾ | Q62702-C687 | BC 549 ¹⁾ | Q62702-C690 |
| BC 546 VI | Q62702-C687-V3 | BC 549 B | Q62702-C690-V1 |
| BC 546 A | Q62702-C687-V1 | BC 549 C | Q62702-C690-V2 |
| BC 546 B | Q62702-C687-V2 | BC 550 ¹⁾ | Q62702-C691 |
| BC 547 ¹⁾ | Q62702-C688 | BC 550 B | Q62702-C691-V1 |
| BC 547 VI | Q62702-C688-V3 | BC 550 C | Q62702-C691-V2 |
| BC 547 A | Q62702-C688-V1 | | |
| BC 547 B | Q62702-C688-V2 | | |
| BC 548 ¹⁾ | Q62702-C689 | | |
| BC 548 VI | Q62702-C689-V4 | | |
| BC 548 A | Q62702-C689-V1 | | |
| BC 548 B | Q62702-C689-V2 | | |
| BC 548 C | Q62702-C689-V3 | | |



Maximum ratings

| | BC 546 | BC 547 | BC 548 | BC 549 | BC 550 | |
|---|--------|-------------|--------|--------|--------|----|
| Collector-base voltage | 80 | 50 | 30 | 30 | 50 | V |
| Collector-emitter voltage | 80 | 50 | 30 | 30 | 50 | V |
| Collector-emitter voltage | 65 | 45 | 30 | 30 | 45 | V |
| Emitter-base voltage | 6 | 6 | 5 | 5 | 5 | V |
| Collector current | 100 | 100 | 100 | 100 | 100 | mA |
| Collector peak current | 200 | 200 | 200 | 200 | 200 | mA |
| Base peak current | 200 | 200 | 200 | 200 | 200 | mA |
| Emitter-peak current | 200 | 200 | 200 | 200 | 200 | mA |
| Junction temperature | 150 | 150 | 150 | 150 | 150 | °C |
| Storage temperature range | | -65 to +150 | | | | °C |
| Total power dissipation ($T_{amb} = 25^\circ\text{C}$) | 500 | 500 | 500 | 500 | 500 | mW |

Thermal resistance

| | | | | | | | |
|-------------------------|------------|-------|-------|-------|-------|-------|-----|
| Junction to ambient air | R_{thJA} | ≤ 250 | ≤ 250 | ≤ 250 | ≤ 250 | ≤ 250 | K/W |
| Junction to case | R_{thJC} | ≤ 150 | ≤ 150 | ≤ 150 | ≤ 150 | ≤ 150 | K/W |

1) If the order does not include any exact indication of the current amplification group desired, a transistor of a current amplification group just available from stock will be delivered.

Static characteristics ($T_{amb} = 25^{\circ}\text{C}$)

The transistors are grouped in accordance with the DC current gain h_{FE} and are marked by A, B, and C. At $V_{CE} = 5\text{ V}$ and the collector currents tabulated below the following static characteristics apply.

| Type | BC 546 BC 547 BC 548 | BC 546 BC 547 BC 548 | BC 546 BC 547, BC 549 BC 548, BC 550 | BC 548, BC 549, BC 550 |
|----------------|----------------------------|----------------------------|--|------------------------------|
| h_{FE} group | VI | A | B | C |
| I_C mA | h_{FE} I_C/I_B | h_{FE} I_C/I_B | h_{FE} I_C/I_B | h_{FE} I_C/I_B |
| 0.01 | | 90 | 150 | 270 |
| 2 | 110 (75 to 150) | 180 (110 to 220) | 290 (200 to 450) | 500 (420 to 800) |
| 100 | | 120 | 200 | 400 |

| | | | |
|---|-------------|------------------|---------------|
| Collector cutoff current ($V_{CBO} = 30\text{ V}$) | I_{CBO} | ≤ 15 | nA |
| Collector cutoff current ($V_{CBO} = 30\text{ V}$; $T_{amb} = 150^{\circ}\text{C}$) | I_{CBO} | ≤ 5 | μA |
| Collector-emitter saturation voltage ($I_C = 10\text{ mA}$; $I_B = 0.5\text{ mA}$) | V_{CEsat} | 90 (<250) | mV |
| ($I_C = 100\text{ mA}$; $I_B = 5\text{ mA}$) | V_{CEsat} | 200 (<600) | mV |
| ($I_C = 10\text{ mA}$) ¹⁾ | V_{CEsat} | 300 (<600) | mV |
| Base-emitter saturation voltage ²⁾ ($I_C = 10\text{ mA}$; $I_B = 0.5\text{ mA}$) | V_{BEsat} | 700 | mV |
| ($I_C = 100\text{ mA}$; $I_B = 5\text{ mA}$) | V_{BEsat} | 900 | mV |
| Base-emitter voltage ($V_{CE} = 5\text{ V}$; $I_C = 2\text{ mA}$) | V_{BE} | 660 (580 to 700) | mV |
| Base-emitter voltage ($V_{CE} = 5\text{ V}$; $I_C = 10\text{ mA}$) | V_{BE} | <720 | mV |

1) For the characteristic which passes through the point $I_C = 11\text{ mA}$; $V_{CE} = 1\text{ V}$ at constant base current.

2) $\frac{\Delta V_{BEsat}}{\Delta T}$ approx. = 1.7 mV/K; $\frac{\Delta V_{BE}}{\Delta T}$ approx. = -2 mV/K

| Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$) | | BC 546 BC 547 BC 548 | BC 549 | BC 550 | |
|--|-----------|----------------------------|------------|------------|---------------|
| Transition frequency ($V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$) | f_T | 300 | 300 | 300 | MHz |
| Collector-base capacitance ($V_{CBO} = 10\text{ V}; f = 1\text{ MHz}$) | C_{CBO} | 2.5 (<4.5) | 2.5 (<4.5) | 2.5 (<4.5) | pF |
| Emitter-base capacitance ($V_{EBO} = 0.5\text{ V}; f = 1\text{ MHz}$) | C_{EBO} | 9 | 9 | 9 | pF |
| Noise figure ($V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A}; R_g = 2\text{ k}\Omega$; $f = 1\text{ kHz}; \Delta f = 200\text{ Hz}$) | NF | 2 (<10) | 1.2 (<4) | 1 (<4) | dB |
| Equivalent noise voltage ($V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A}; R_g = 2\text{ k}\Omega$; $f = 10\text{ to }50\text{ Hz}; T_{amb} = 25^{\circ}\text{C}$) | E_n | - | <0.135 | <0.135 | μV |

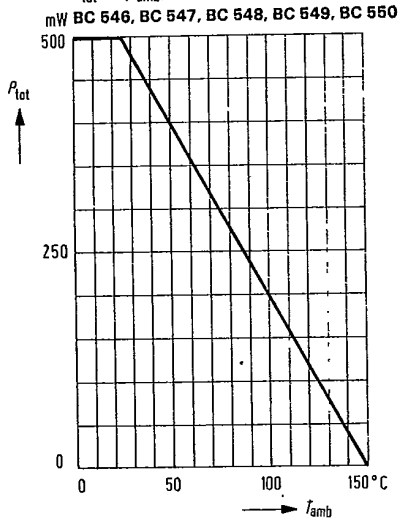
Dynamic characteristics ($T_{amb} = 25^{\circ}\text{C}$)

$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 1\text{ kHz}$

| Type | BC 546 BC 547 BC 548 | BC 546 BC 547 BC 548 | BC 546 BC 547, BC 549 BC 548, BC 550 | BC 548, BC 549, BC 550 | |
|----------------|----------------------------|----------------------------|--|------------------------------|---------------|
| h_{FE} group | VI | A | B | C | |
| h_{11e} | 1.2 (0.4 to 2.2) | 2.7 (1.6 to 4.5) | 4.5 (3.2 to 8.5) | 8.7 (6 to 15) | k Ω |
| h_{12e} | 2.5 | 1.5 | 2 | 3 | 10^{-4} |
| h_{21e} | 110 | 220 | 330 | 600 | - |
| h_{22e} | 20 (<40) | 18 (<30) | 30 (<60) | 60 (<110) | μS |

Total perm. power dissipation versus temperature

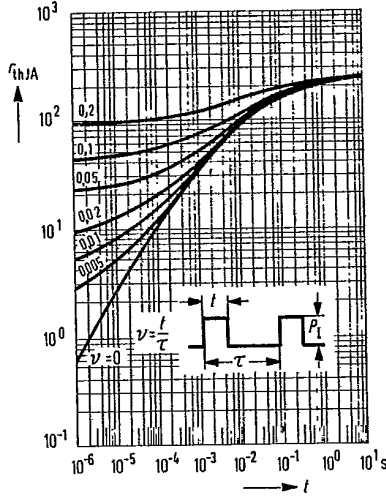
$P_{tot} = f(T_{amb})$



Permissible pulse load

$r_{thJA} = f(t) v = \text{parameter}$

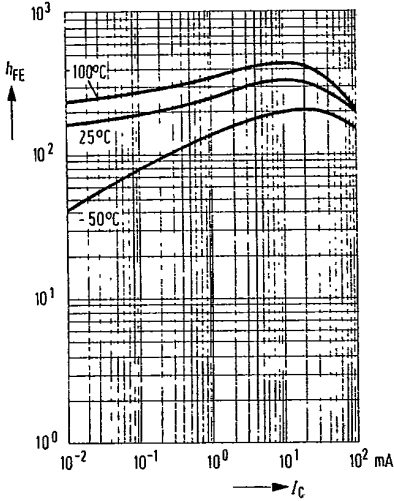
BC 546, BC 547, BC 548, BC 549, BC 550



DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5 \text{ V}; T_{amb} = \text{parameter}$
(common-emitter configuration)

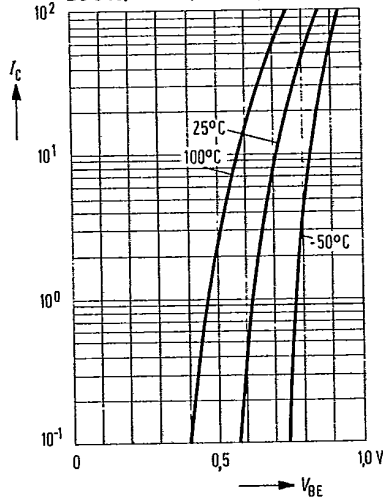
BC 546 B, BC 547 B, BC 548 B,
BC 549 B, BC 550 B



Collector current $I_C = f(V_{BE})$

$V_{CE} = 5 \text{ V}$
(common-emitter configuration)

BC 546, BC 547, BC 548, BC 549, BC 550



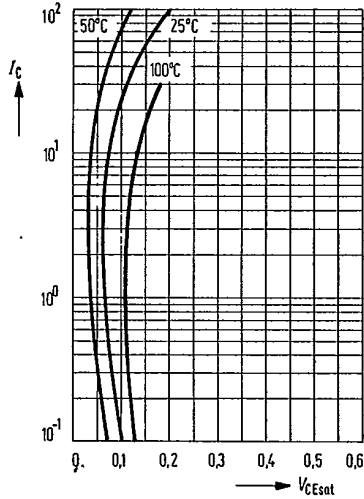
Collector-emitter saturation voltage

$V_{CEsat} = f(I_C); \eta_{FE} = 20;$

$T_{amb} = \text{parameter}$

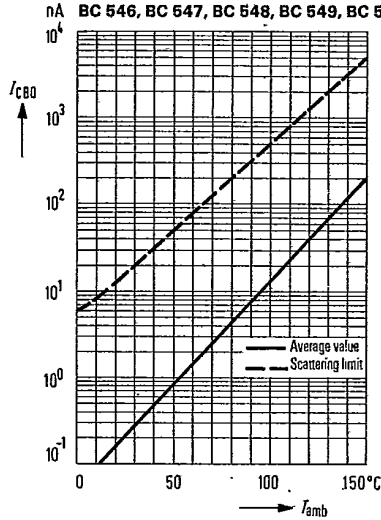
(common-emitter configuration)

BC 546, BC 547, BC 548, BC 549, BC 550



Collector-cutoff current versus temperature $I_{CBO} = f(T_{amb})$ for max. permissible reverse voltage

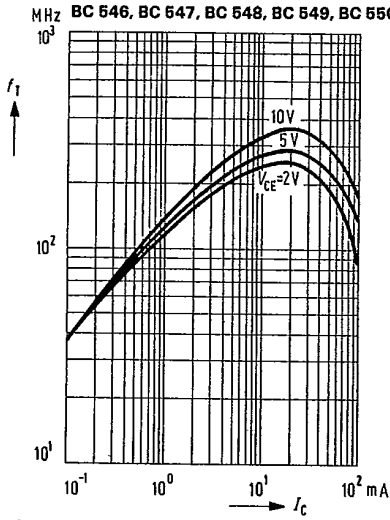
BC 546, BC 547, BC 548, BC 549, BC 550



Transition frequency $f_T = f(I_C)$

$V_{CE} = \text{parameter}; T_{amb} = 25^\circ\text{C}$

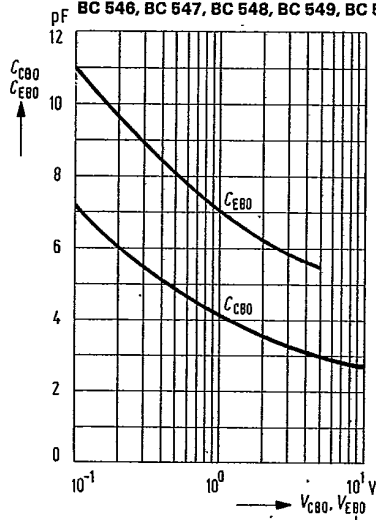
BC 546, BC 547, BC 548, BC 549, BC 550



Collector-base capacitance $C_{CBO} = f(V_{CBO})$

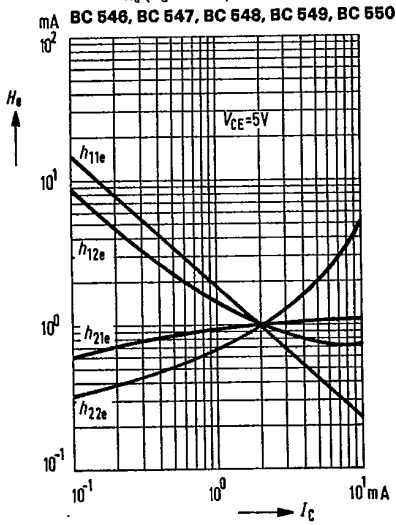
Emitter-base capacitance $C_{EBO} = f(V_{EBO})$

BC 546, BC 547, BC 548, BC 549, BC 550

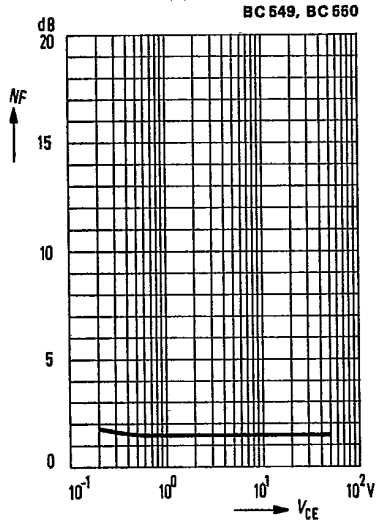


h-parameter versus collector current

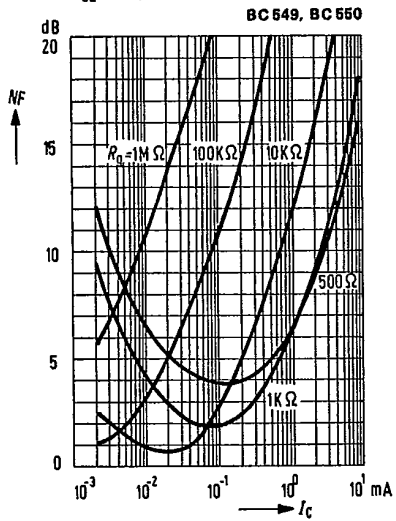
$$H_e = \frac{h_a(I_C)}{h_e(I_C = 2 \text{ mA})} = f(I_C)$$



Noise figure $NF = f(V_{CE})$
 $I_C = 0.2 \text{ mA}; R_G = 2 \text{ k}\Omega; f = 1 \text{ kHz}$
 $\Delta f = 200 \text{ Hz}; T_{amb} = 25 \text{ }^\circ\text{C}$



Noise figure $NF = f(I_C)$
 $V_{CE} = 5 \text{ V}; f = 1 \text{ kHz}$



Noise figure $NF = f(I_C)$
 $V_{CE} = 5 \text{ V}; f = 120 \text{ Hz}$

