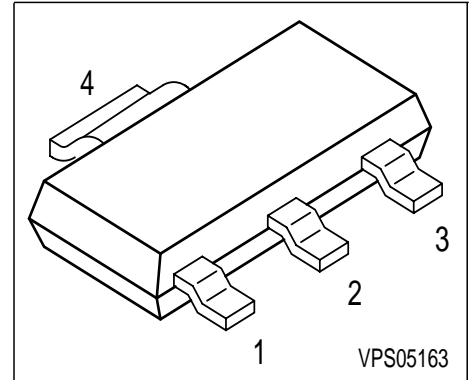




BCP54...BCP56

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51 ... BCP53 (PNP)



| Type | Marking | Pin Configuration | | | | Package |
|----------|-----------|-------------------|-------|-------|-------|---------|
| BCP54 | BCP 54 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP54-10 | BCP 54-10 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP54-16 | BCP 54-16 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP55 | BCP 55 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP55-10 | BCP 55-10 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP55-16 | BCP 55-16 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP56-10 | BCP 56-10 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BCP56-16 | BCP 56 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |



Maximum Ratings

| Parameter | Symbol | BCP54 | BCP55 | BCP56 | Unit |
|--|-----------|-------------|-------|-------|------------------|
| Collector-emitter voltage | V_{CEO} | 45 | 60 | 80 | V |
| Collector-emitter voltage $R_{BE} \leq 1k\Omega$ | V_{CER} | 45 | 60 | 100 | |
| Collector-base voltage | V_{CBO} | 45 | 60 | 100 | |
| Emitter-base voltage | V_{EBO} | 5 | 5 | 5 | |
| DC collector current | I_C | 1 | | | A |
| Peak collector current | I_{CM} | 1.5 | | | |
| Base current | I_B | 100 | | | mA |
| Peak base current | I_{BM} | 200 | | | |
| Total power dissipation, $T_S = 124^\circ\text{C}$ | P_{tot} | 1.5 | | | W |
| Junction temperature | T_j | 150 | | | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -65 ... 150 | | | |

Thermal Resistance

| | | | | | |
|--|------------|-----------|--|--|-----|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤ 17 | | | K/W |
|--|------------|-----------|--|--|-----|

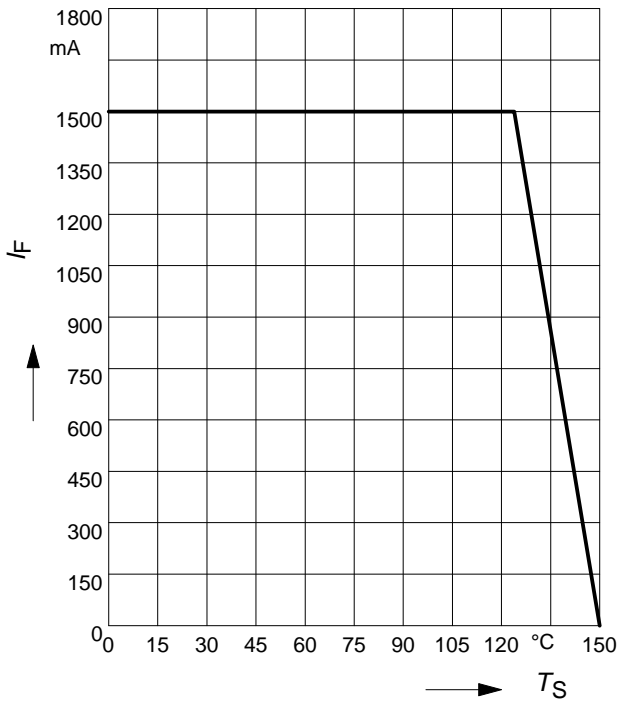
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified.

| Parameter | Symbol | Values | | | Unit |
|--|---------------|--------|------|------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | | | | V |
| BCP54 | | 45 | - | - | |
| BCP55 | | 60 | - | - | |
| BCP56 | | 80 | - | - | |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}, I_E = 0$ | $V_{(BR)CBO}$ | | | | |
| BCP54 | | 45 | - | - | |
| BCP55 | | 60 | - | - | |
| BCP56 | | 100 | - | - | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector cutoff current $V_{CB} = 30\text{ V}, I_E = 0$ | I_{CBO} | - | - | 100 | nA |
| Collector cutoff current $V_{CB} = 30\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | I_{CBO} | - | - | 20 | μA |
| DC current gain 1) $I_C = 5\text{ mA}, V_{CE} = 2\text{ V}$ | h_{FE} | 25 | - | - | - |
| DC current gain 1) $I_C = 150\text{ mA}, V_{CE} = 2\text{ V}$ | h_{FE} | | | | |
| BCP54...56 | | 40 | - | 250 | |
| hFE-grp.10 | | 63 | 100 | 160 | |
| hFE-grp.16 | | 100 | 160 | 250 | |
| DC current gain 1) $I_C = 500\text{ mA}, V_{CE} = 2\text{ V}$ | h_{FE} | 25 | - | - | |
| Collector-emitter saturation voltage1) $I_C = 500\text{ mA}, I_B = 50\text{ mA}$ | V_{CEsat} | - | - | 0.5 | V |
| Base-emitter voltage 1) $I_C = 500\text{ mA}, V_{CE} = 2\text{ V}$ | $V_{BE(ON)}$ | - | - | 1 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 50\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$ | f_T | - | 100 | - | MHz |

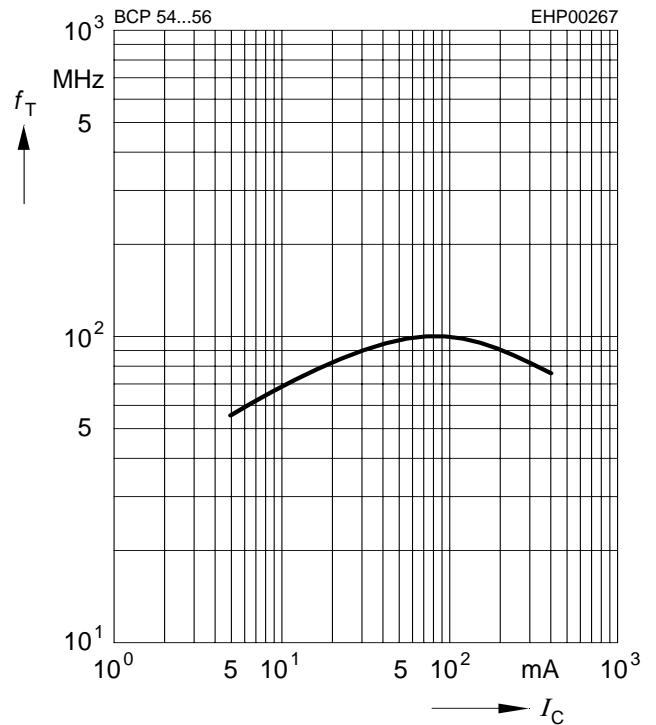
1) Pulse test: $t \leq 300\mu\text{s}$, $D = 2\%$

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



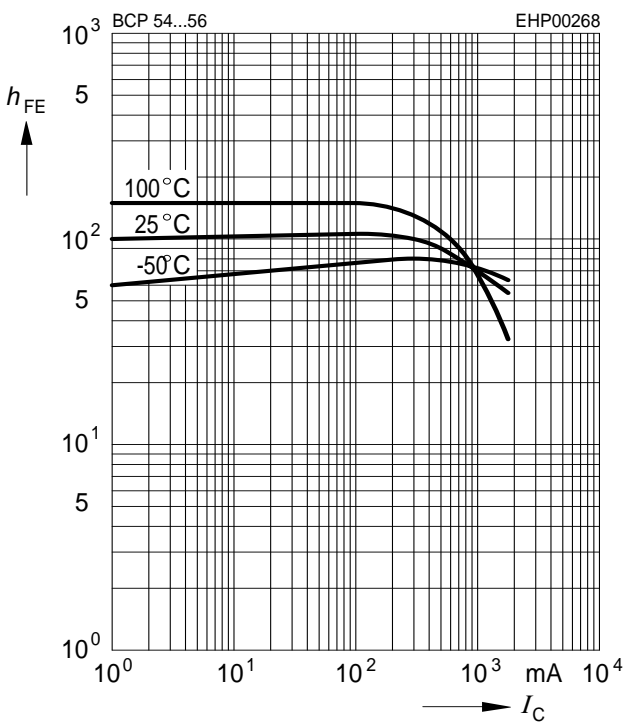
Transition frequency $f_T = f(I_C)$

$V_{CE} = 10V$



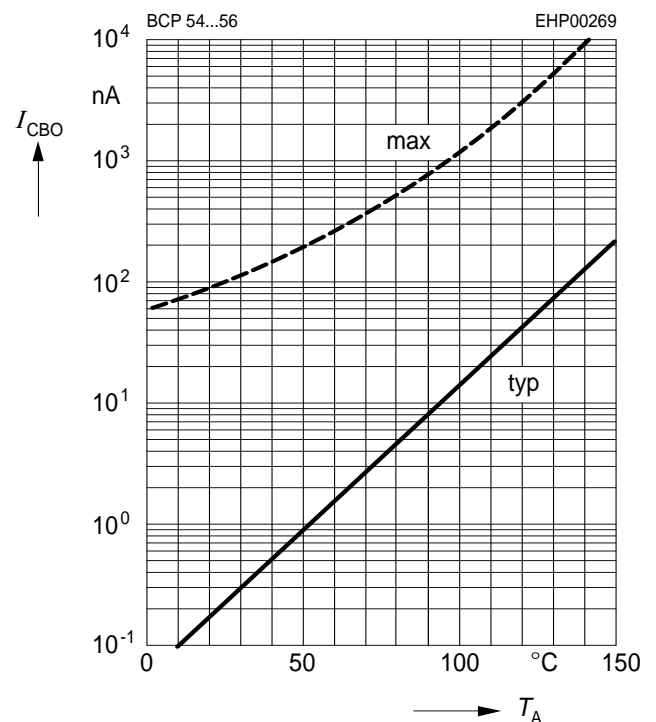
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2V$



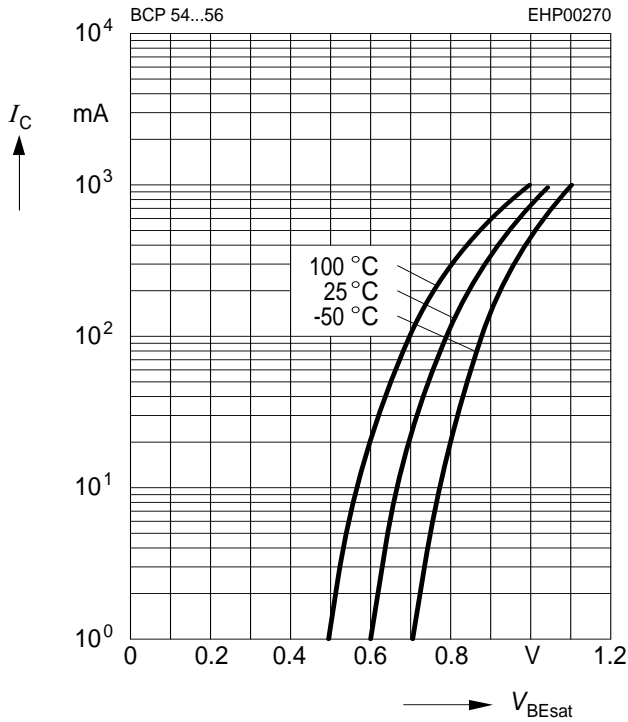
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 30V$

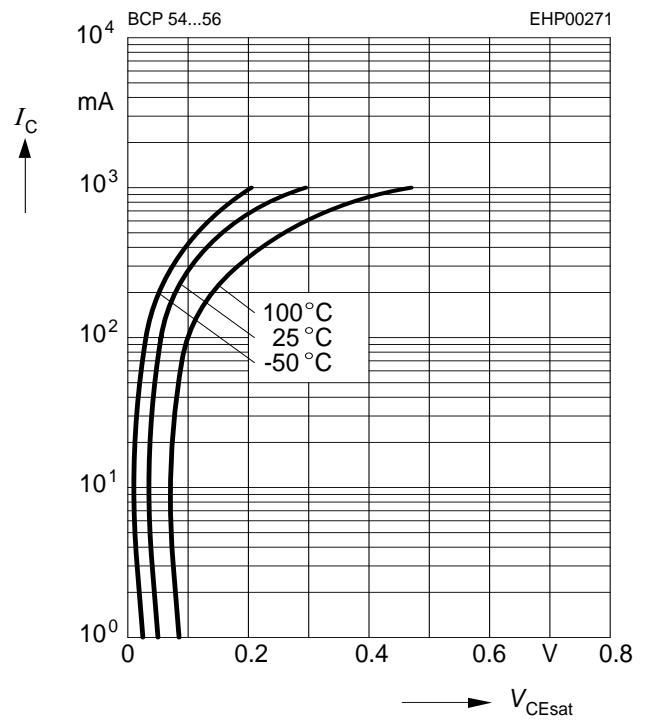


Base-emitter saturation voltage

$$I_C = f(V_{BEsat}), h_{FE} = 10$$


Collector-emitter saturation voltage

$$I_C = f(V_{CEsat}), h_{FE} = 10$$


Permissible pulse load

$$P_{totmax} / P_{totDC} = f(t_p)$$

