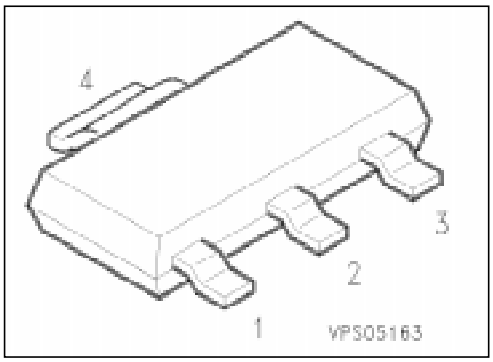
SIEMENS

## NPN Silicon AF Transistors

**BCP 54**
**... BCP 56**

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP 51 … BCP 53 (PNP)




| Type | Marking | Ordering Code (tape and reel) | Pin Configuration 1 | 2 | 3 | 4 | Package[1)] |
|---|---|---|---|---|---|---|---|
| BCP 54 | BCP 54 | Q62702-C2117 | B | C | E | C | SOT-223 |
| BCP 54-10 | BCP 54-10 | Q62702-C2119 | | | | | |
| BCP 54-16 | BCP 54-16 | Q62702-C2120 | | | | | |
| BCP 55 | BCP 55 | Q62702-C2148 | | | | | |
| BCP 55-10 | BCP 55-10 | Q62702-C2122 | | | | | |
| BCP 55-16 | BCP 55-16 | Q62702-C2123 | | | | | |
| BCP 56 | BCP 56 | Q62702-C2149 | | | | | |
| BCP 56-10 | BCP 56-10 | Q62702-C2125 | | | | | |
| BCP 56-16 | BCP 56-16 | Q62702-C2106 | | | | | |

1) For detailed information see chapter Package Outlines.

## Maximum Ratings

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | BCP 54 | BCP 55 | BCP 56 | |
| Collector-emitter voltage<br>$R_{BE} \leq 1$ kΩ | $V_{CE0}$<br>$V_{CER}$ | 45<br>45 | 60<br>60 | 80<br>100 | V |
| Collector-base voltage | $V_{CB0}$ | 45 | 60 | 100 | |
| Emitter-base voltage | $V_{EB0}$ | 5 | | | |
| 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, $T_S = 124$ °C[1)] | $P_{tot}$ | 1.5 | | | W |
| Junction temperature | $T_j$ | 150 | | | °C |
| Storage temperature range | $T_{stg}$ | – 65 … + 150 | | | |

## Thermal Resistance

| | | | |
|---|---|---|---|
| Junction - ambient[1)] | $R_{th\ JA}$ | ≤ 72 | K/W |
| Junction - soldering point | $R_{th\ JS}$ | ≤ 17 | |

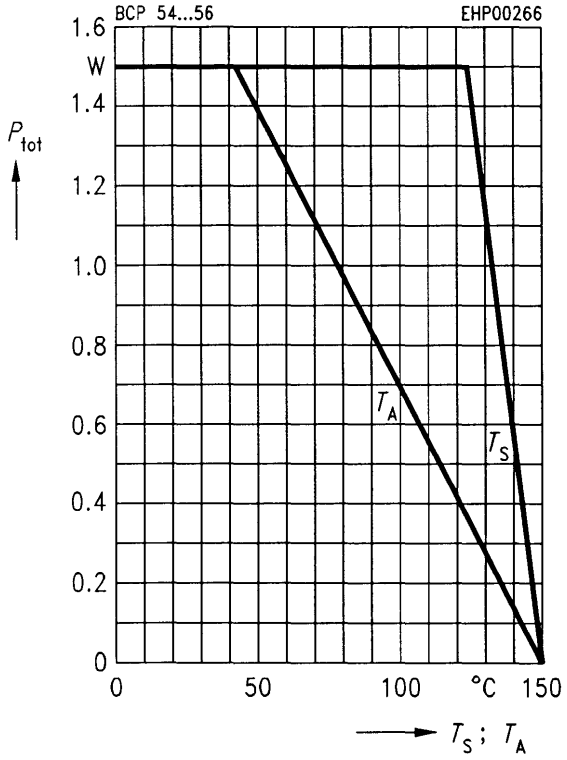
1) Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm$^2$ Cu.

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

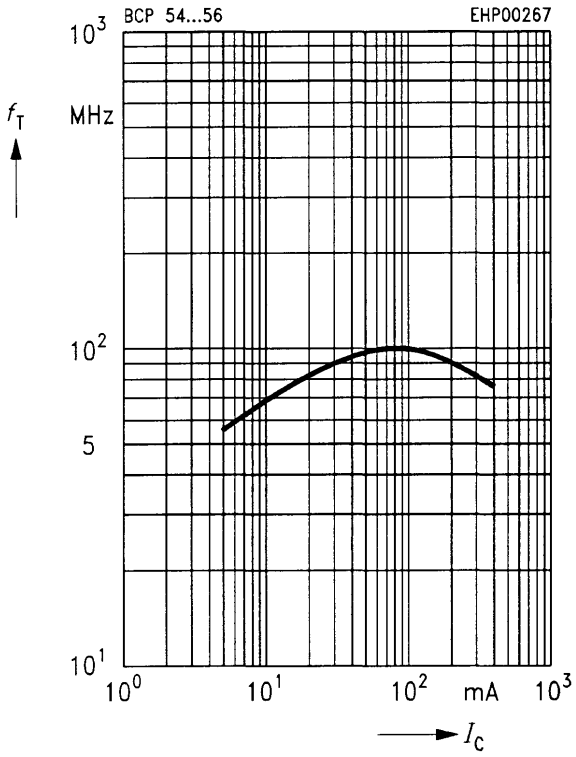
| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC characteristics** | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CE0}$ | | | | V |
| $I_C$ = 10 mA, $I_B$ = 0 BCP 54 | | 45 | – | – | |
| BCP 55 | | 60 | – | – | |
| BCP 56 | | 80 | – | – | |
| Collector-base breakdown voltage[1] | $V_{(BR)CB0}$ | | | | |
| $I_C$ = 100 µA, $I_B$ = 0 BCP 54 | | 45 | – | – | |
| BCP 55 | | 60 | – | – | |
| BCP 56 | | 100 | – | – | |
| Emitter-base breakdown voltage<br>$I_E$ = 10 µA, $I_C$ = 0 | $V_{(BR)EB0}$ | 5 | – | – | |
| Collector-base cutoff current | $I_{CB0}$ | | | | |
| $V_{CB}$ = 30 V, $I_E$ = 0 | | – | – | 100 | nA |
| $V_{CB}$ = 30 V, $I_E$ = 0, $T_A$ = 150 ˚C | | – | – | 20 | µA |
| Emitter-base cutoff current<br>$V_{EB}$ = 5 V | $I_{EB0}$ | – | – | 10 | µA |
| DC current gain | $h_{FE}$ | | | | – |
| $I_C$ = 5 mA, $V_{CE}$ = 2 V | | 25 | – | – | |
| $I_C$ = 150 mA, $V_{CE}$ = 2 V | | | | | |
| BCP 54/BCP 55/BCP 56 | | 40 | – | 250 | |
| BCP 54/BCP 55/BCP 56-10 | | 63 | 100 | 160 | |
| BCP 54/BCP 55/BCP 56-16 | | 100 | 160 | 250 | |
| $I_C$ = 500 mA, $V_{CE}$ = 2 V | | 25 | – | – | |
| Collector-emitter saturation voltage[1]<br>$I_C$ = 500 mA, $I_B$ = 50 mA | $V_{CEsat}$ | – | – | 0.5 | V |
| Base-emitter voltage[1]<br>$I_C$ = 500 mA, $V_{CE}$ = 2 V | $V_{BE}$ | – | – | 1 | |
| **AC characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 50 mA, $V_{CE}$ = 10 V, $f$ = 100 MHz | $f_T$ | – | 100 | – | MHz |

[1] Pulse test conditions: $t \leq 300$ µs, $D$ = 2 %.

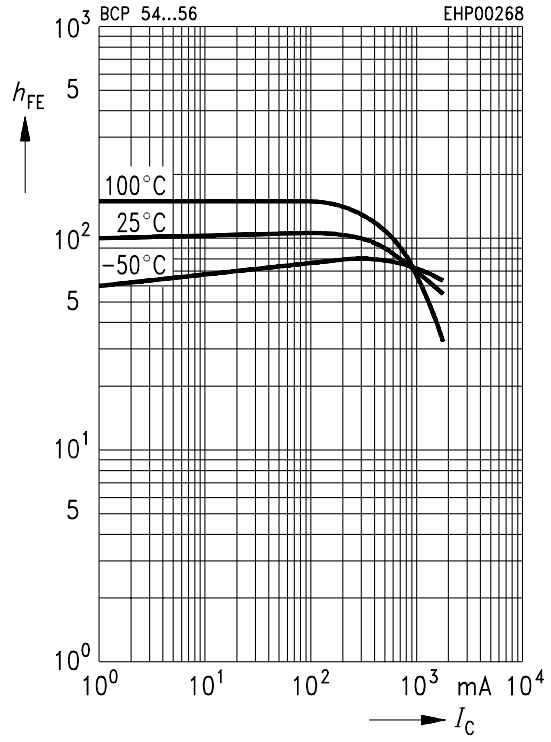
**Total power dissipation** $P_{tot} = f(T_A^*; T_S)$
* Package mounted on epoxy



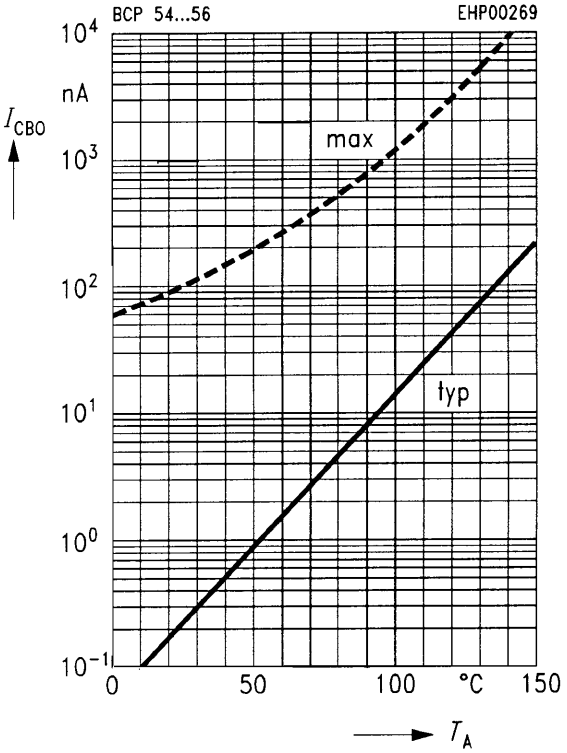

**Transition frequency** $f_T = f(I_C)$
$V_{CE}$ = 10 V




**DC current gain** $h_{FE} = f(I_C)$
$V_{CE}$ = 2 V



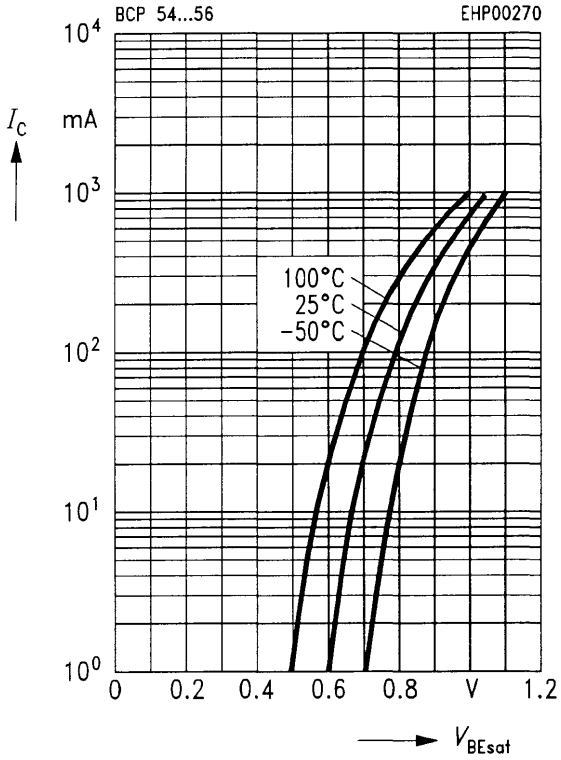

**Collector cutoff current** $I_{CB0} = f(T_A)$
$V_{CB}$ = 30 V



**Base-emitter saturation voltage**

$I_C = f(V_{BEsat})$

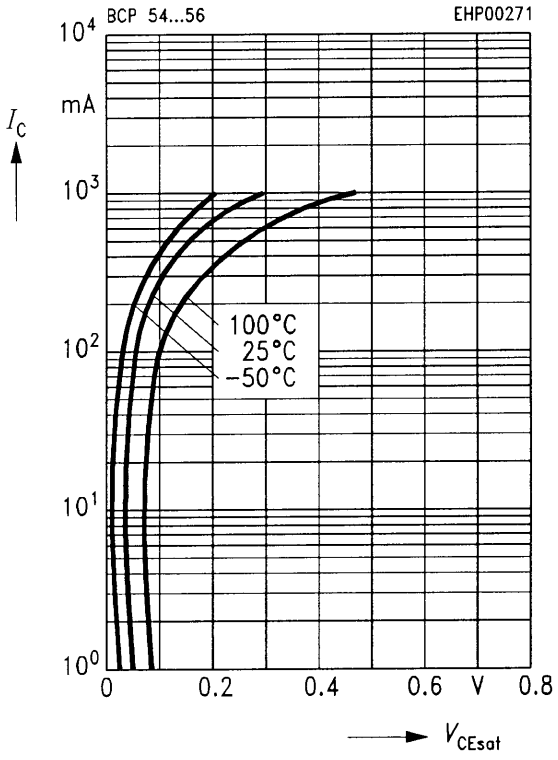
$h_{FE} = 10$



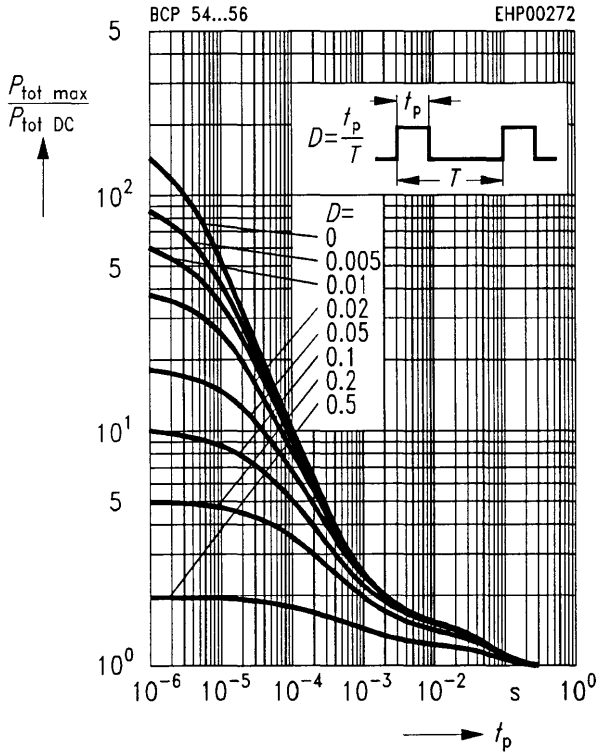

**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat})$

$h_{FE} = 10$




**Permissible pulse load** $P_{tot\,max}/P_{tot\,DC} = f(t_p)$



littlediode
COMPONENTS FOR ALL

Littlediode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

**LittleDiode.com**

Looking forward to providing you with the best possible service.