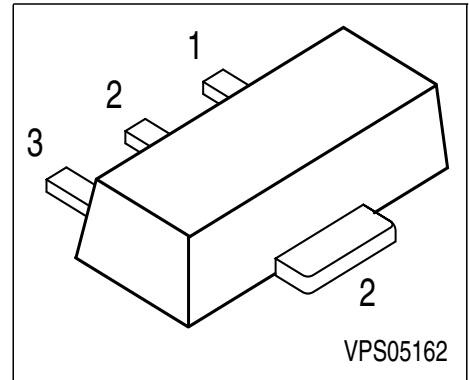


**PNP Silicon AF Transistors**

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX54...BCX56 (NPN)



| Type     | Marking | Pin Configuration |       |       | Package |
|----------|---------|-------------------|-------|-------|---------|
| BCX51    | AA      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX51-10 | AC      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX51-16 | AD      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX52    | AE      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX52-10 | AG      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX52-16 | AM      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX53    | AH      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX53-10 | AK      | 1 = B             | 2 = C | 3 = E | SOT89   |
| BCX53-16 | AL      | 1 = B             | 2 = C | 3 = E | SOT89   |

**Maximum Ratings**

| Parameter                                      | Symbol    | BCX51       | BCX52 | BCX53 | Unit |
|------------------------------------------------|-----------|-------------|-------|-------|------|
| Collector-emitter voltage                      | $V_{CEO}$ | 45          | 60    | 80    | V    |
| 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, $T_S = 130\text{ °C}$ | $P_{tot}$ | 1           |       |       | W    |
| Junction temperature                           | $T_j$     | 150         |       |       | °C   |
| Storage temperature                            | $T_{stg}$ | -65 ... 150 |       |       |      |

**Thermal Resistance**

|                                          |            |           |  |  |     |
|------------------------------------------|------------|-----------|--|--|-----|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 20$ |  |  | K/W |
|------------------------------------------|------------|-----------|--|--|-----|

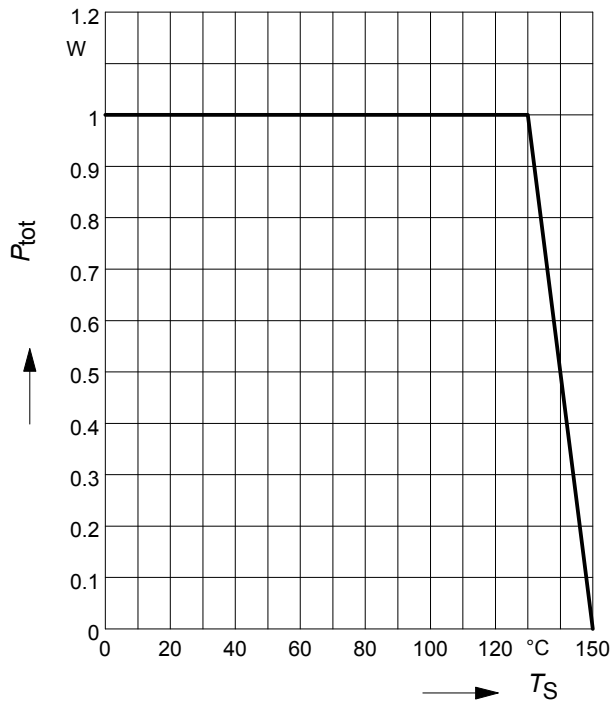
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

**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<br>$I_C = 10\text{ mA}$ , $I_B = 0$                            | $V_{(BR)CEO}$ | 45     | -    | -    | V             |   |
| BCX51                                                                                              |               | 60     | -    | -    |               |   |
| BCX52                                                                                              |               | 80     | -    | -    |               |   |
| BCX53                                                                                              |               |        |      |      |               |   |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$                     | $V_{(BR)CBO}$ | 45     | -    | -    |               |   |
| BCX51                                                                                              |               | 60     | -    | -    |               |   |
| BCX52                                                                                              |               | 100    | -    | -    |               |   |
| BCX53                                                                                              |               |        |      |      |               |   |
| Emitter-base breakdown voltage<br>$I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$                        | $V_{(BR)EBO}$ | 5      | -    | -    |               |   |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}$ , $I_E = 0$                                     | $I_{CBO}$     | -      | -    | 100  | nA            |   |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}$ , $I_E = 0$ , $T_A = 150\text{ }^\circ\text{C}$ | $I_{CBO}$     | -      | -    | 20   | $\mu\text{A}$ |   |
| DC current gain 1)<br>$I_C = 5\text{ mA}$ , $V_{CE} = 2\text{ V}$                                  | $h_{FE}$      | 25     | -    | -    | -             |   |
| DC current gain 1)<br>$I_C = 150\text{ mA}$ , $V_{CE} = 2\text{ V}$                                | $h_{FE}$      | 40     | -    | 250  |               |   |
| BCX51...53                                                                                         |               | 63     | 100  | 160  |               |   |
| hFE-grp.10                                                                                         |               | 100    | 160  | 250  |               |   |
| hFE-grp.16                                                                                         |               |        |      |      |               |   |
| DC current gain 1)<br>$I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$                                | $h_{FE}$      | 25     | -    | -    |               |   |
| Collector-emitter saturation voltage1)<br>$I_C = 500\text{ mA}$ , $I_B = 50\text{ mA}$             | $V_{CEsat}$   | -      | -    | 0.5  |               | V |
| Base-emitter voltage 1)<br>$I_C = 500\text{ mA}$ , $V_{CE} = 2\text{ V}$                           | $V_{BE(ON)}$  | -      | -    | 1    |               |   |
| AC Characteristics                                                                                 |               |        |      |      |               |   |
| Transition frequency<br>$I_C = 50\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 20\text{ MHz}$        | $f_T$         | -      | 125  | -    | MHz           |   |

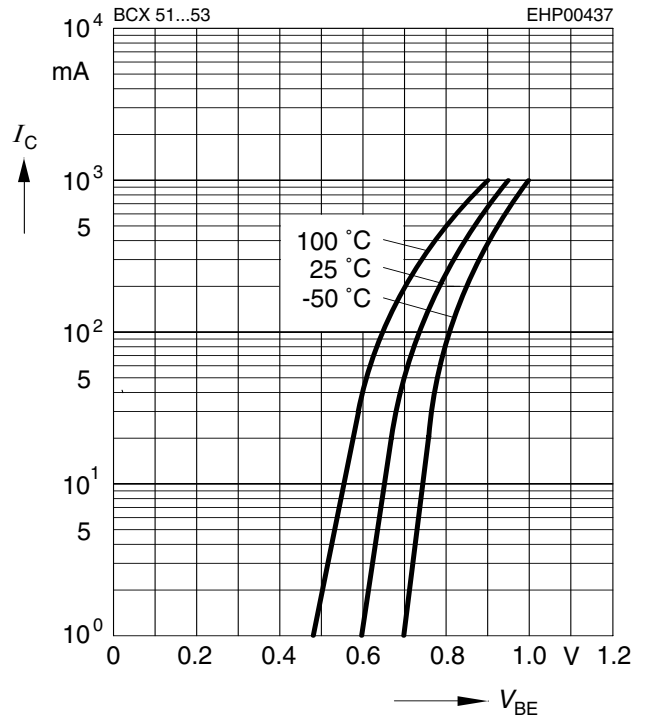
1) Pulse test:  $t \leq 300\mu\text{s}$ ,  $D = 2\%$

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



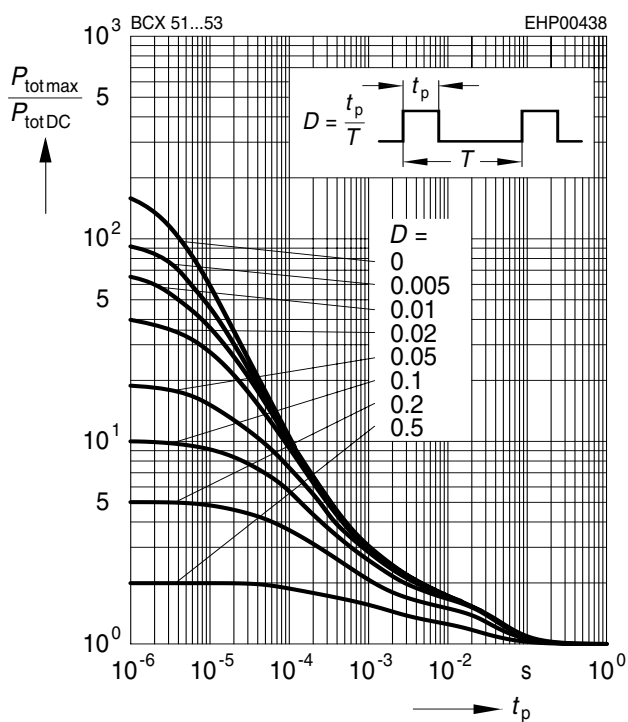
**Collector current  $I_C = f(V_{\text{BE}})$**

$V_{\text{CE}} = 2\text{V}$



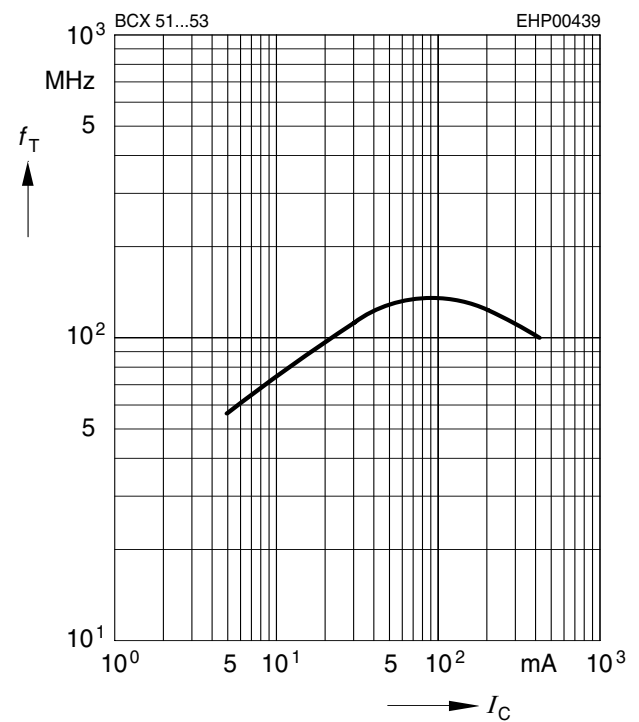
**Permissible pulse load**

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



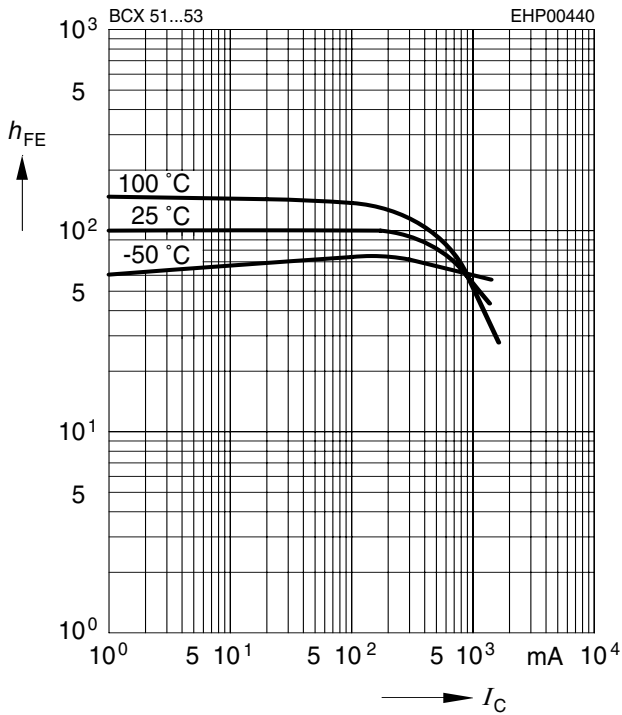
**Transition frequency  $f_T = f(I_C)$**

$V_{\text{CE}} = 10\text{V}$



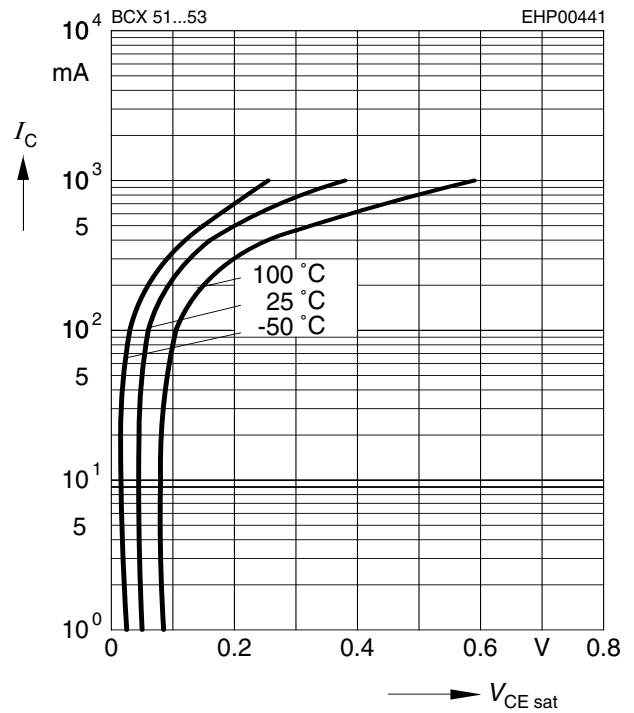
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 2V$



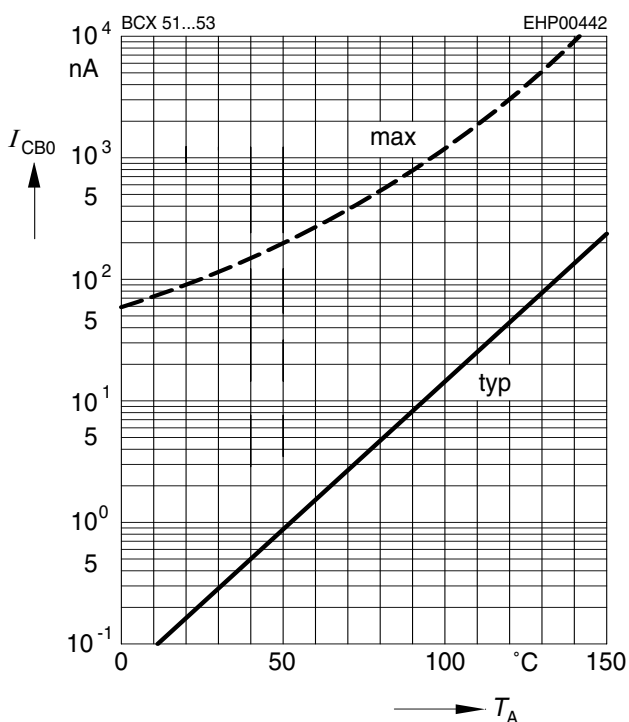
**Collector-emitter saturation voltage**

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



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

$V_{CB} = 30V$



**Base-emitter saturation voltage**

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

