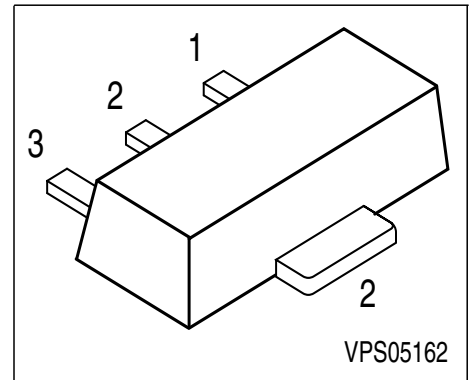


**PNP Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV 29, BCV 49 (NPN)



| Type   | Marking | Pin Configuration |       |       |       | Package |
|--------|---------|-------------------|-------|-------|-------|---------|
| BCV 28 | ED      | 1 = B             | 2 = C | 3 = E | 4 = C | SOT-89  |
| BCV 48 | EE      | 1 = B             | 2 = C | 3 = E | 4 = C | SOT-89  |

**Maximum Ratings**

| Parameter                                      | Symbol    | BCV 28      | BCV 48 | Unit |
|--|-----------|-------------|--------|------|
| Collector-emitter voltage                      | $V_{CEO}$ | 30          | 60     | V    |
| Collector-base voltage                         | $V_{CBO}$ | 40          | 80     |      |
| Emitter-base voltage                           | $V_{EBO}$ | 10          | 10     |      |
| DC collector current                           | $I_C$     | 500         |        | mA   |
| Peak collector current                         | $I_{CM}$  | 800         |        |      |
| Base current                                   | $I_B$     | 100         |        |      |
| 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 ambient <sup>1)</sup> | $R_{thJA}$ | ≤72 | K/W |
| Junction - soldering point     | $R_{thJS}$ | ≤20 |     |

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 6cm<sup>2</sup> Cu

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

| Parameter  | Symbol        | Values |      |      | Unit          |
|--|---------------|--------|------|------|---------------|
|  |               | min.   | typ. | max. |               |
| <b>DC Characteristics</b>  |               |        |      |      |               |
| Collector-emitter breakdown voltage<br>$I_C = 10\text{ mA}, I_B = 0$                 | $V_{(BR)CEO}$ |        |      |      | V             |
| BCV 28   |               | 30     | -    | -    |               |
| BCV 48   |               | 60     | -    | -    |               |
| Collector-base breakdown voltage<br>$I_C = 100\ \mu\text{A}, I_B = 0$                | $V_{(BR)CBO}$ |        |      |      |               |
| BCV 28   |               | 40     | -    | -    |               |
| BCV 48   |               | 80     | -    | -    |               |
| Emitter-base breakdown voltage<br>$I_E = 10\ \mu\text{A}, I_C = 0$                   | $V_{(BR)EBO}$ | 10     | -    | -    |               |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}, I_E = 0$                          | $I_{CBO}$     |        |      |      | nA            |
| BCV 28   |               | -      | -    | 100  |               |
| $V_{CB} = 60\text{ V}, I_E = 0$  |               |        |      | 100  |               |
| BCV 48   |               | -      | -    | 100  |               |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}, I_E = 0, T_A = 150^\circ\text{C}$ | $I_{CBO}$     |        |      |      | $\mu\text{A}$ |
| BCV 28   |               | -      | -    | 10   |               |
| $V_{CB} = 60\text{ V}, I_E = 0, T_A = 150^\circ\text{C}$                             |               |        |      | 10   |               |
| BCV 48   |               | -      | -    | 10   |               |
| Emitter cutoff current<br>$V_{EB} = 4\text{ V}, I_C = 0$                             | $I_{EBO}$     | -      | -    | 100  | nA            |
| DC current gain 1)<br>$I_C = 10\ \mu\text{A}, V_{CE} = 1\text{ V}$                   | $h_{FE}$      |        |      |      | -             |
| BCV 28   |               | 4000   | -    | -    |               |
| BCV 48   |               | 2000   | -    | -    |               |
| DC current gain 1)<br>$I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$                      | $h_{FE}$      |        |      |      | -             |
| BCV 28   |               | 10000  | -    | -    |               |
| BCV 48   |               | 4000   | -    | -    |               |
| DC current gain 1)<br>$I_C = 100\text{ mA}, V_{CE} = 5\text{ V}$                     | $h_{FE}$      |        |      |      | -             |
| BCV 28   |               | 20000  | -    | -    |               |
| BCV 48   |               | 10000  | -    | -    |               |
| DC current gain 1)<br>$I_C = 0.5\text{ A}, V_{CE} = 5\text{ V}$                      | $h_{FE}$      |        |      |      | -             |
| BCV 28   |               | 4000   | -    | -    |               |
| BCV 48   |               | 2000   | -    | -    |               |

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

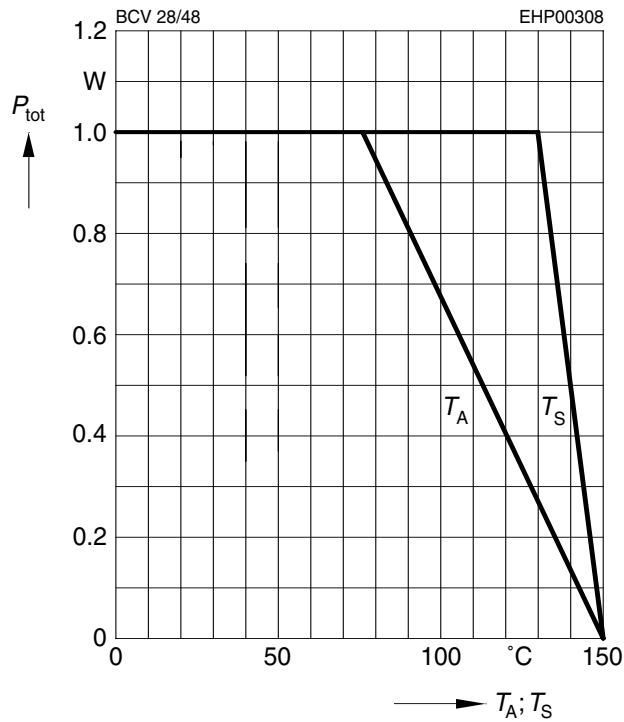
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

| Parameter   | Symbol      | Values |      |      | Unit |
|---|-------------|--------|------|------|------|
|   |             | min.   | typ. | max. |      |
| <b>DC Characteristics</b>   |             |        |      |      |      |
| Collector-emitter saturation voltage1)<br>$I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$  | $V_{CEsat}$ | -      | -    | 1    | V    |
| Base-emitter saturation voltage 1)<br>$I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$      | $V_{BEsat}$ | -      | -    | 1.5  |      |
| <b>AC Characteristics</b>   |             |        |      |      |      |
| Transition frequency<br>$I_C = 50\text{ mA}, V_{CE} = 5\text{ V}, f = 100\text{ MHz}$ | $f_T$       | -      | 200  | -    | MHz  |
| Collector-base capacitance<br>$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$                | $C_{cb}$    | -      | 4.5  | -    | pF   |

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

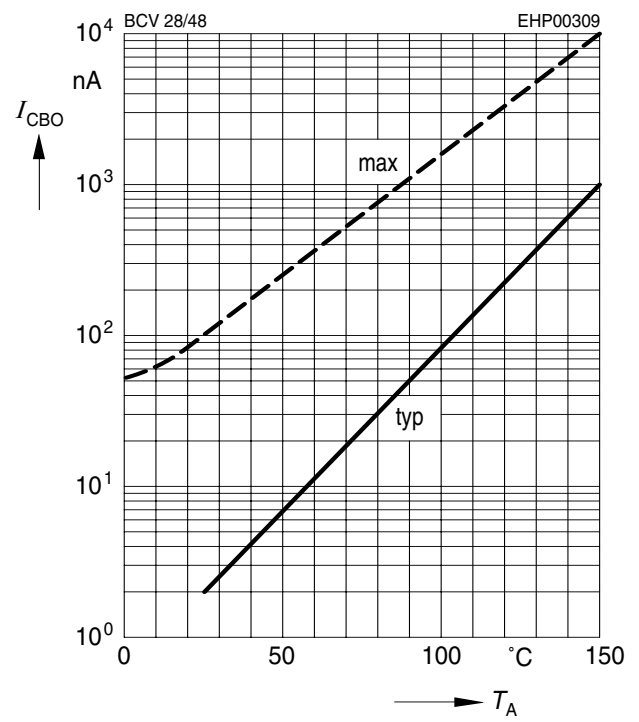
**Total power dissipation  $P_{tot} = f(T_A^*; T_S)$**

\* Package mounted on epoxy



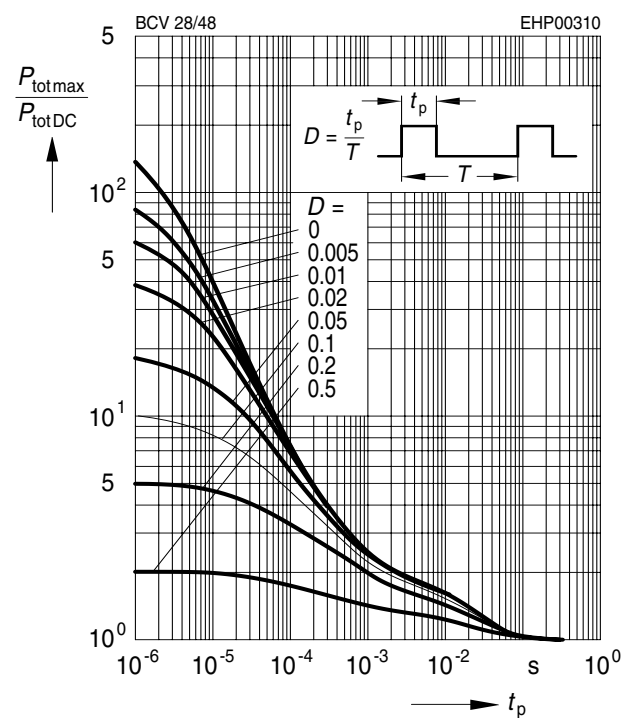
**Collector cutoff current  $I_{CBO} = f(T_A)$**

$V_{CB} = V_{CEmax}$



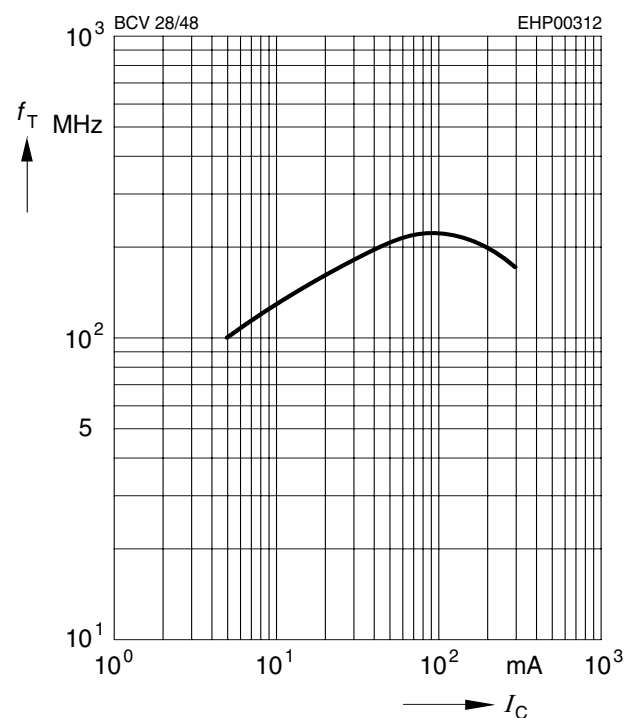
**Permissible pulse load**

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



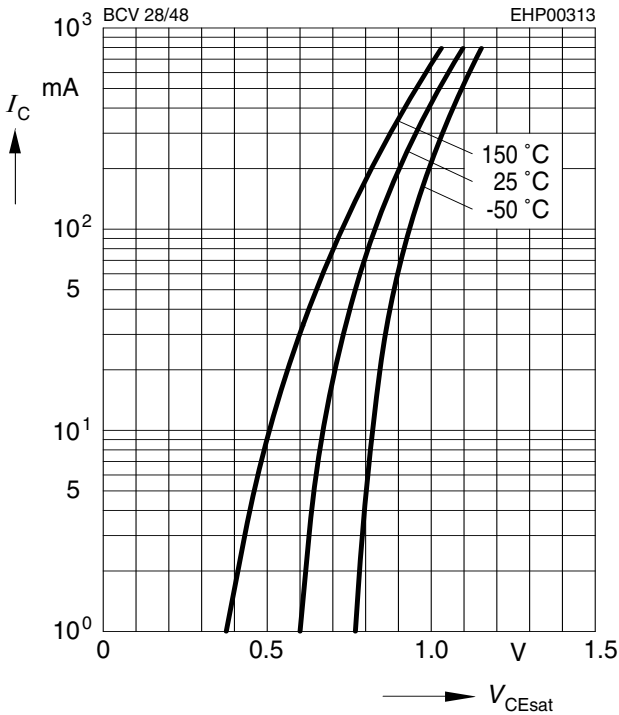
**Transition frequency  $f_T = f(I_C)$**

$V_{CE} = 5V$



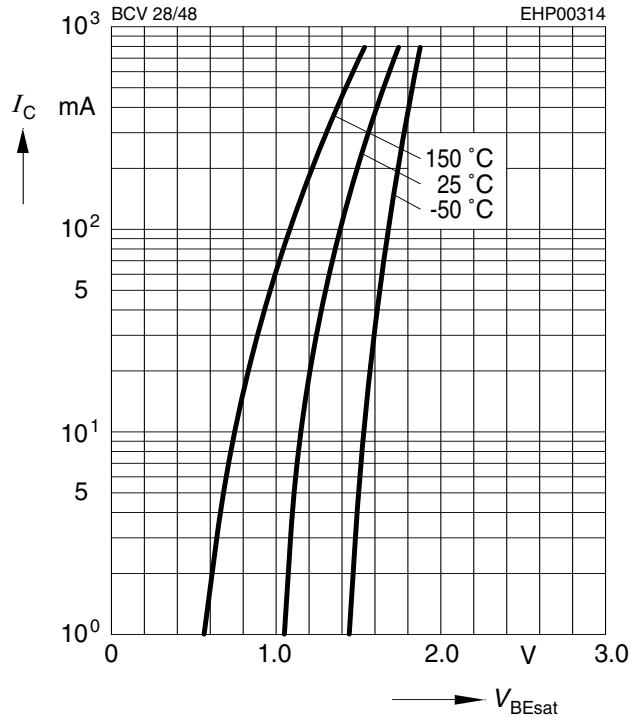
**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat}), h_{FE} = 1000$



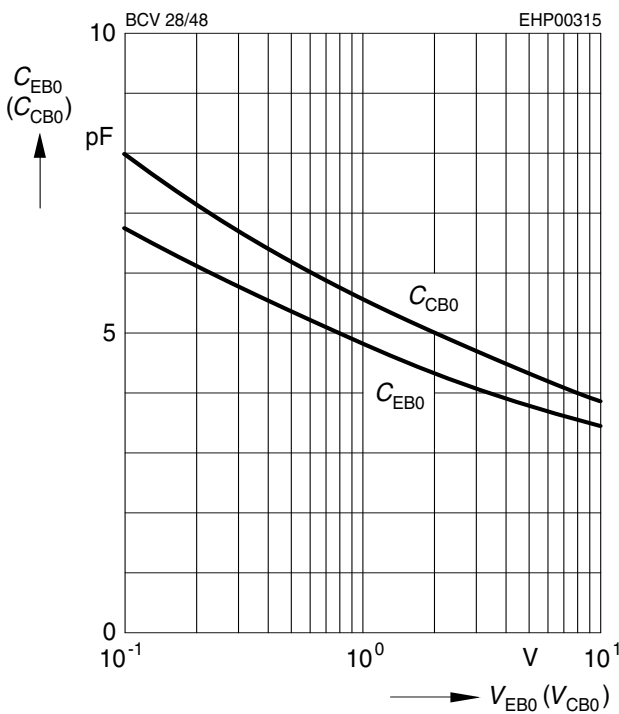
**Base-emitter saturation voltage**

$I_C = f(V_{BEsat}), h_{FE} = 1000$



**Collector-base capacitance  $C_{CB} = f(V_{CB0})$**

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



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

$V_{CE} = 5V$

