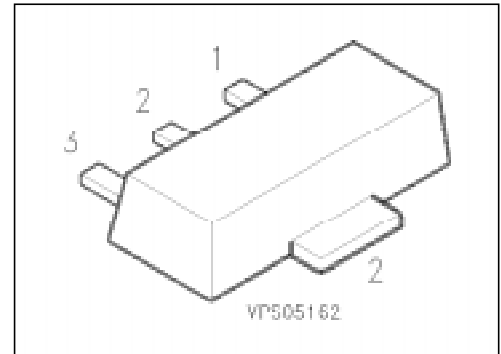


## NPN Silicon Darlington Transistors

**BCV 29**  
**BCV 49**

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV 28, BCV 48 (PNP)



| Type   | Marking | Ordering Code<br>(tape and reel) | Pin Configuration |   |   |   | Package <sup>1)</sup> |
|--------|---------|----------------------------------|-------------------|---|---|---|-----------------------|
|        |         |                                  | 1                 | 2 | 3 | 4 |                       |
| BCV 29 | EF      | Q62702-C1853                     | B                 | C | E | C | SOT-89                |
| BCV 49 | EG      | Q62702-C1832                     |                   |   |   |   |                       |

### Maximum Ratings

| Parameter                                      | Symbol     | Values         |        | Unit |
|--|------------|----------------|--------|------|
|  |            | BCV 29         | BCV 49 |      |
| Collector-emitter voltage                      | $V_{CE0}$  | 30             | 60     | V    |
| Collector-base voltage                         | $V_{CB0}$  | 40             | 80     |      |
| Emitter-base voltage                           | $V_{EB0}$  | 10             | 10     |      |
| 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, $T_s = 130\text{ °C}$ | $PI_{tot}$ | 1              |        | W    |
| Junction temperature                           | $T_j$      | 150            |        | °C   |
| Storage temperature range                      | $T_{stg}$  | - 65 ... + 150 |        |      |

### Thermal Resistance

|                                  |              |      |     |
|----------------------------------|--------------|------|-----|
| Junction - ambient <sup>2)</sup> | $R_{th\ JA}$ | ≤ 75 | K/W |
| Junction - soldering point       | $R_{th\ JS}$ | ≤ 20 |     |

<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm<sup>2</sup> Cu.

## Electrical Characteristics

at  $T_A = 25\text{ °C}$ , unless otherwise specified.

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

### DC characteristics

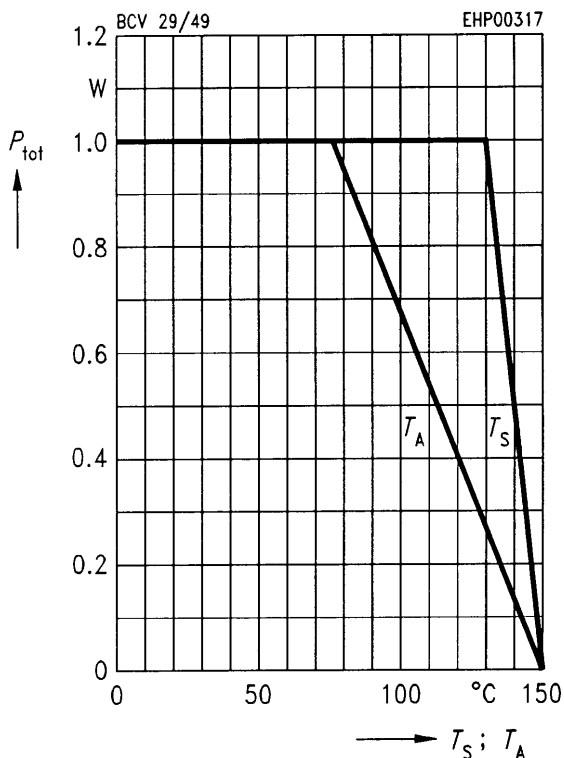
|  |               |    |   |     |               |
|--|---------------|----|---|-----|---------------|
| Collector-emitter breakdown voltage<br>$I_C = 10\text{ mA}$                                      | $V_{(BR)CE0}$ |    |   |     | V             |
| BCV 29   | 30            | –  | – |     |               |
| BCV 49   | 60            | –  | – |     |               |
| Collector-base breakdown voltage<br>$I_C = 100\text{ }\mu\text{A}$                               | $V_{(BR)CB0}$ |    |   |     |               |
| BCV 29   | 40            | –  | – |     |               |
| BCV 49   | 80            | –  | – |     |               |
| Emitter-base breakdown voltage, $I_E = 10\text{ }\mu\text{A}$                                    | $V_{(BR)EB0}$ | 10 | – | –   |               |
| Collector cutoff current<br>$V_{CB} = 30\text{ V}$   | $I_{CB0}$     |    |   |     | nA            |
| BCV 29   | –             | –  | – | 100 |               |
| $V_{CB} = 60\text{ V}$   |               |    |   |     | nA            |
| BCV 49   | –             | –  | – | 100 |               |
| $V_{CB} = 30\text{ V}, T_A = 150\text{ °C}$  |               |    |   |     | $\mu\text{A}$ |
| BCV 29   | –             | –  | – | 10  |               |
| $V_{CB} = 60\text{ V}, T_A = 150\text{ °C}$  |               |    |   |     | $\mu\text{A}$ |
| BCV 49   | –             | –  | – | 10  |               |
| Emitter cutoff current, $V_{EB} = 4\text{ V}$  | $I_{EB0}$     | –  | – | 100 | nA            |
| DC current gain <sup>1)</sup><br>$I_C = 100\text{ }\mu\text{A}, V_{CE} = 1\text{ V}$             | $h_{FE}$      |    |   |     | –             |
| BCV 29   | 4000          | –  | – |     |               |
| BCV 49   | 2000          | –  | – |     |               |
| $I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$  |               |    |   |     |               |
| BCV 29   | 10000         | –  | – |     |               |
| BCV 49   | 4000          | –  | – |     |               |
| $I_C = 100\text{ mA}, V_{CE} = 5\text{ V}$   |               |    |   |     |               |
| BCV 29   | 20000         | –  | – |     |               |
| BCV 49   | 10000         | –  | – |     |               |
| $I_C = 0.5\text{ A}, V_{CE} = 5\text{ V}$  |               |    |   |     |               |
| BCV 29   | 4000          | –  | – |     |               |
| BCV 49   | 2000          | –  | – |     |               |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$ | $V_{CEsat}$   | –  | – | 1   | V             |
| Base-emitter saturation voltage <sup>1)</sup><br>$I_C = 100\text{ mA}; I_B = 0.1\text{ mA}$      | $V_{BEsat}$   | –  | – | 1.5 |               |

### AC characteristics

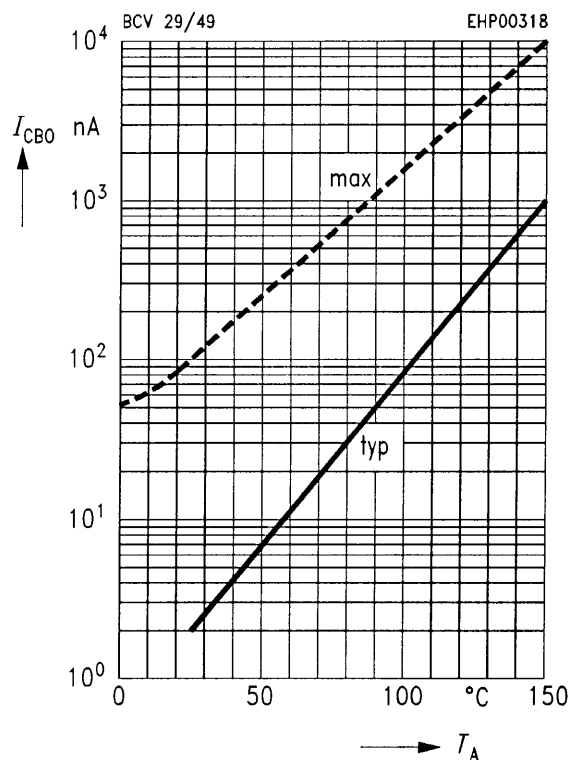
|  |           |   |     |   |     |
|--|-----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 50\text{ mA}, V_{CE} = 5\text{ V}, f = 20\text{ MHz}$ | $f$       | – | 150 | – | MHz |
| Output capacitance<br>$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$                       | $C_{obo}$ | – | 3.5 | – | pF  |

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

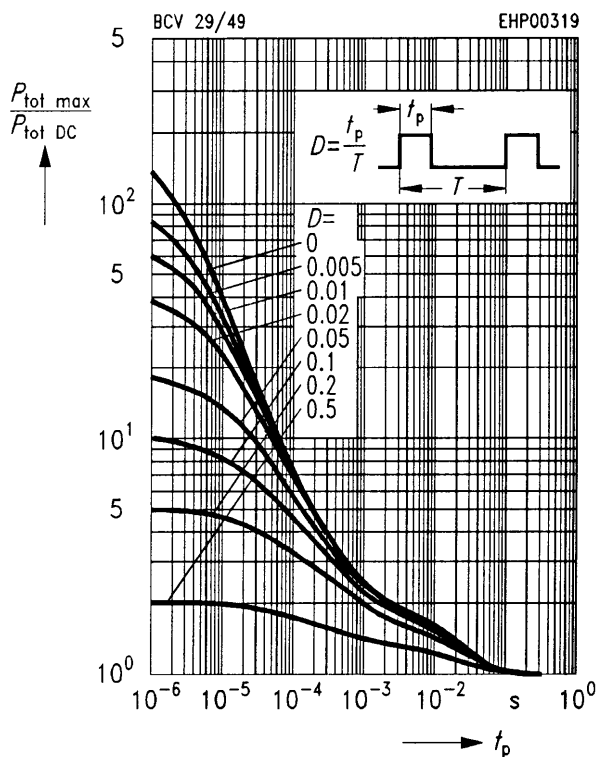
**Total power dissipation**  $P_{tot} = f(T_A^*; T_S)$   
\* Package mounted on epoxy



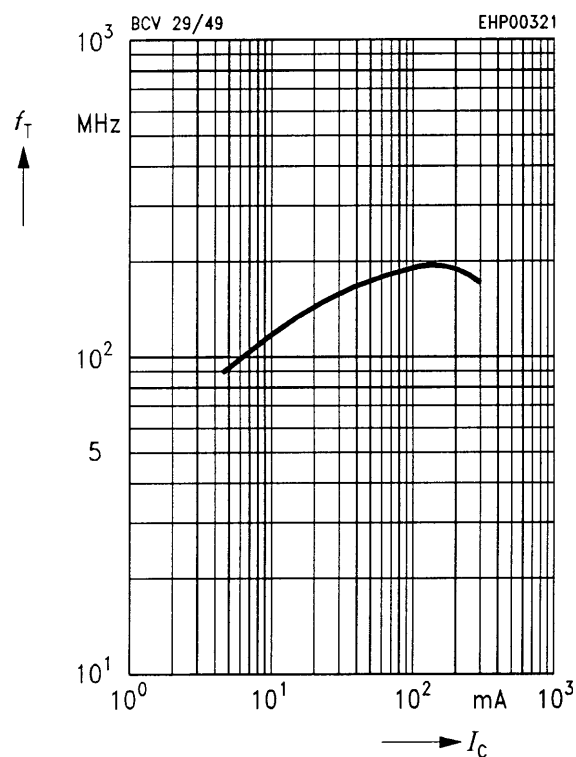
**Collector cutoff current**  $I_{CB0} = f(T_A)$



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



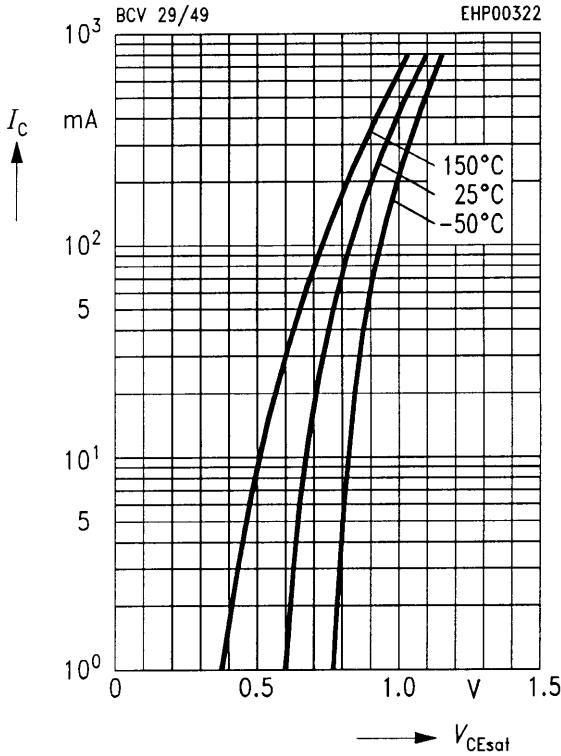
**Transition frequency**  $f_T = f(I_C)$   
 $V_{CE} = 5\ V$



**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat})$

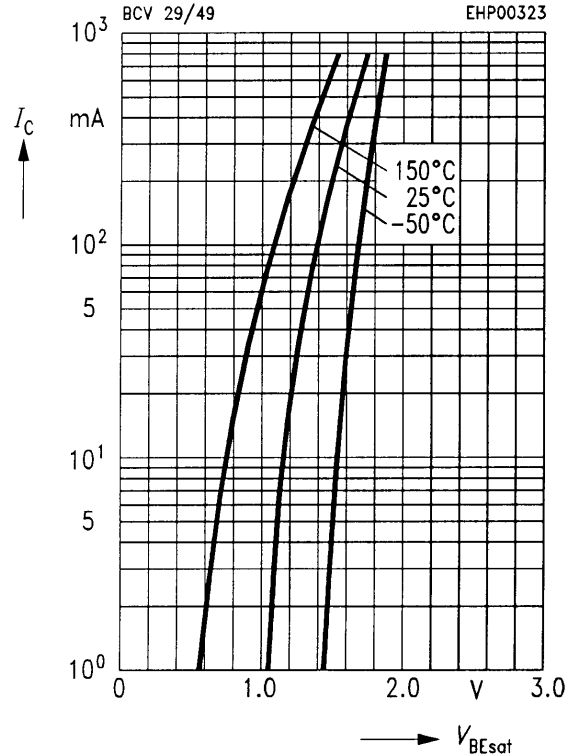
$h_{FE} = 1000$



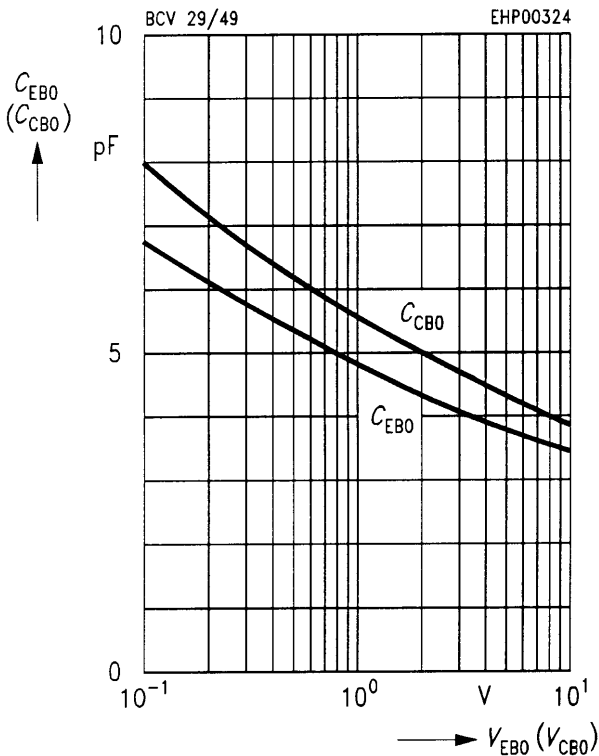
**Base-emitter saturation voltage**

$I_C = f(V_{BEsat})$

$h_{FE} = 1000$



**Collector-base capacitance  $C_{CB0} = f(V_{CB0})$**   
**Emitter-base capacitance  $C_{EB0} = f(V_{EB0})$**



**DC current gain  $h_{FE} = f(I_C)$**   
 $V_{CE} = 5 V$

