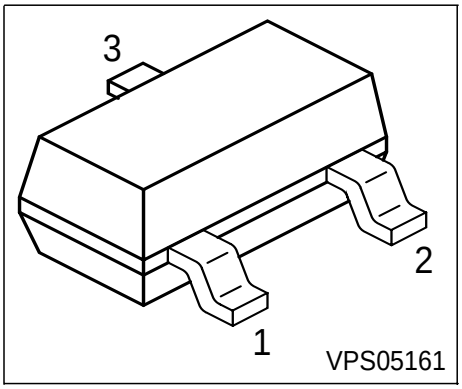
**NPN Silicon Darlington Transistors**

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV26, BCV46 (PNP)




| Type | Marking | Pin Configuration | | | Package |
|---|---|---|---|---|---|
| BCV27 | FFs | 1 = B | 2 = E | 3 = C | SOT23 |
| BCV47 | FGs | 1 = B | 2 = E | 3 = C | SOT23 |

**Maximum Ratings**

| Parameter | Symbol | BCV27 | BCV47 | 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 | | mA |
| Base current | $I_B$ | 100 | | |
| Peak base current | $I_{BM}$ | 200 | | |
| Total power dissipation, $T_S$ = 74 °C | $P_{tot}$ | 360 | | mW |
| Junction temperature | $T_j$ | 150 | | °C |
| Storage temperature | $T_{stg}$ | -65 ... 150 | | |

**Thermal Resistance**

| | | | |
|---|---|---|---|
| Junction - soldering point[1)] | $R_{thJS}$ | ≤210 | K/W |

[1]For calculation of $R_{thJA}$ please refer to Application Note Thermal Resistance

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

| Parameter | | Symbol | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| **DC Characteristics** | | | | | | |
| Collector-emitter breakdown voltage | | $V_{(BR)CEO}$ | | | | V |
| $I_C$ = 10 mA, $I_B$ = 0 | BCV27 | | 30 | - | - | |
| | BCV47 | | 60 | - | - | |
| Collector-base breakdown voltage | | $V_{(BR)CBO}$ | | | | |
| $I_C$ = 100 µA, $I_B$ = 0 | BCV27 | | 40 | - | - | |
| | BCV47 | | 80 | - | - | |
| Emitter-base breakdown voltage | | $V_{(BR)EBO}$ | 10 | - | - | |
| $I_E$ = 10 µA, $I_C$ = 0 | | | | | | |
| Collector cutoff current | | $I_{CBO}$ | | | | nA |
| $V_{CB}$ = 30 V, $I_E$ = 0 | BCV27 | | - | - | 100 | |
| $V_{CB}$ = 60 V, $I_E$ = 0 | BCV47 | | - | - | 100 | |
| Collector cutoff current | | $I_{CBO}$ | | | | µA |
| $V_{CB}$ = 30 V, $I_E$ = 0 , $T_A$ = 150 °C | BCV27 | | - | - | 10 | |
| $V_{CB}$ = 60 V, $I_E$ = 0 , $T_A$ = 150 °C | BCV47 | | - | - | 10 | |
| Emitter cutoff current | | $I_{EBO}$ | - | - | 100 | nA |
| $V_{EB}$ = 4 V, $I_C$ = 0 | | | | | | |
| DC current gain 1) | | $h_{FE}$ | | | | - |
| $I_C$ = 100 µA, $V_{CE}$ = 1 V | BCV27 | | 4000 | - | - | |
| | BCV47 | | 2000 | - | - | |
| DC current gain 1) | | $h_{FE}$ | | | | |
| $I_C$ = 10 mA, $V_{CE}$ = 5 V | BCV27 | | 10000 | - | - | |
| | BCV47 | | 4000 | - | - | |
| DC current gain 1) | | $h_{FE}$ | | | | |
| $I_C$ = 100 mA, $V_{CE}$ = 5 V | BCV27 | | 20000 | - | - | |
| | BCV47 | | 10000 | - | - | |
| DC current gain 1) | | $h_{FE}$ | | | | |
| $I_C$ = 0.5 A, $V_{CE}$ = 5 V | BCV27 | | 4000 | - | - | |
| | BCV47 | | 2000 | - | - | |

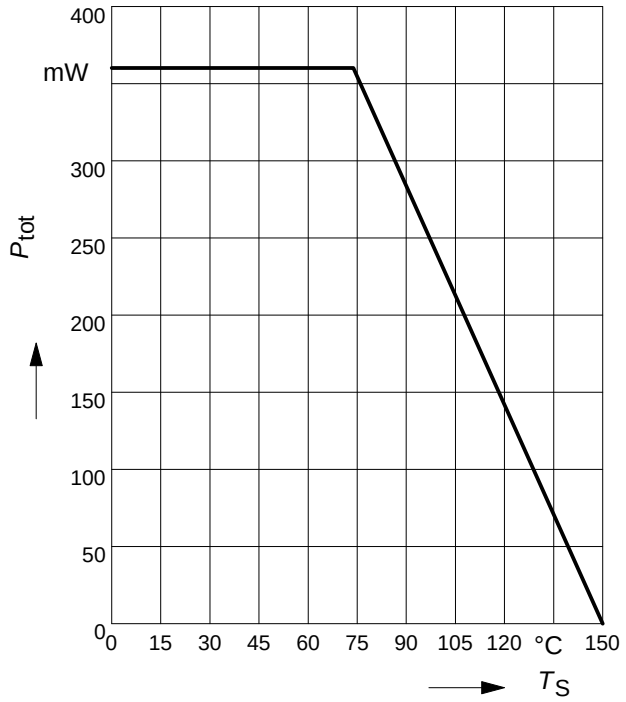
1) Pulse test: t ≤ 300µs, D = 2%

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

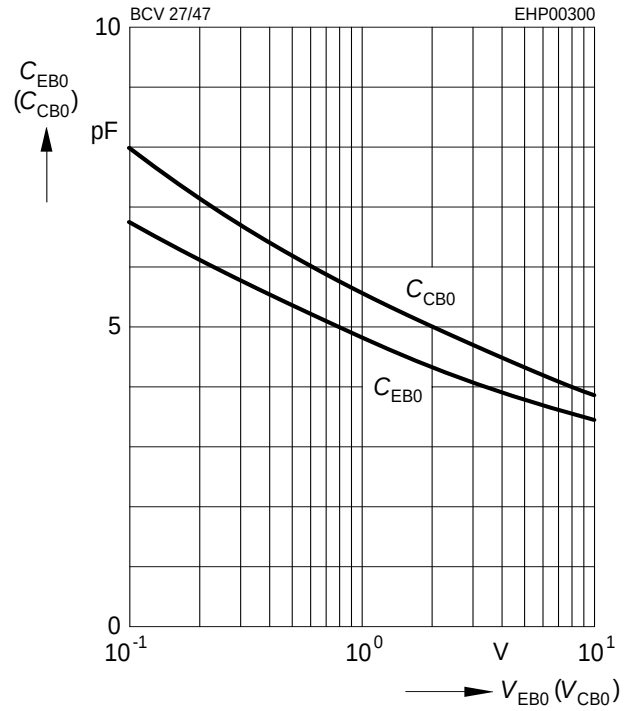
| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter saturation voltage1)<br>$I_C$ = 100 mA, $I_B$ = 0.1 mA | $V_{CEsat}$ | - | - | 1 | V |
| Base-emitter saturation voltage 1)<br>$I_C$ = 100 mA, $I_B$ = 0.1 mA | $V_{BEsat}$ | - | - | 1.5 | |
| **AC Characteristics** | | | | | |
| Transition frequency<br>$I_C$ = 50 mA, $V_{CE}$ = 5 V, $f$ = 100 MHz | $f_T$ | - | 170 | - | MHz |
| Collector-base capacitance<br>$V_{CB}$ = 10 V, $f$ = 1 MHz | $C_{cb}$ | - | 3.5 | - | pF |

1) Pulse test: t ≤ 300µs, D = 2%

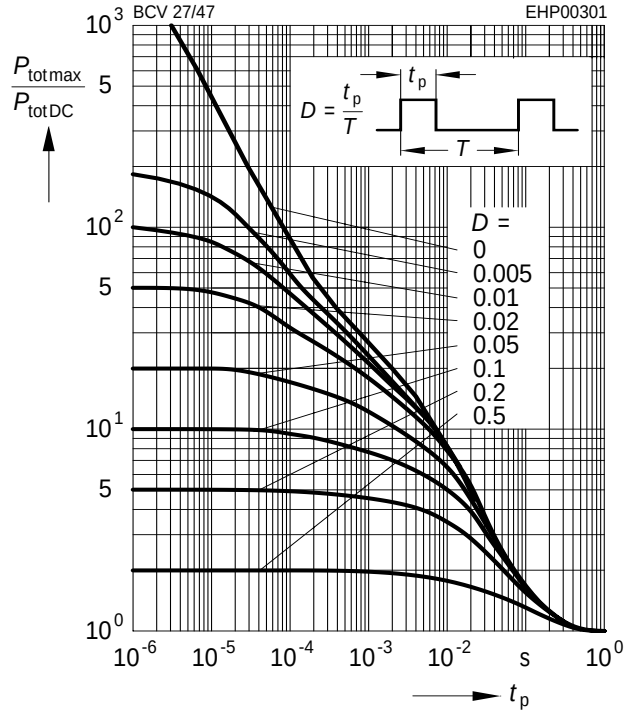
**Total power dissipation** $P_{tot} = f(T_S)$



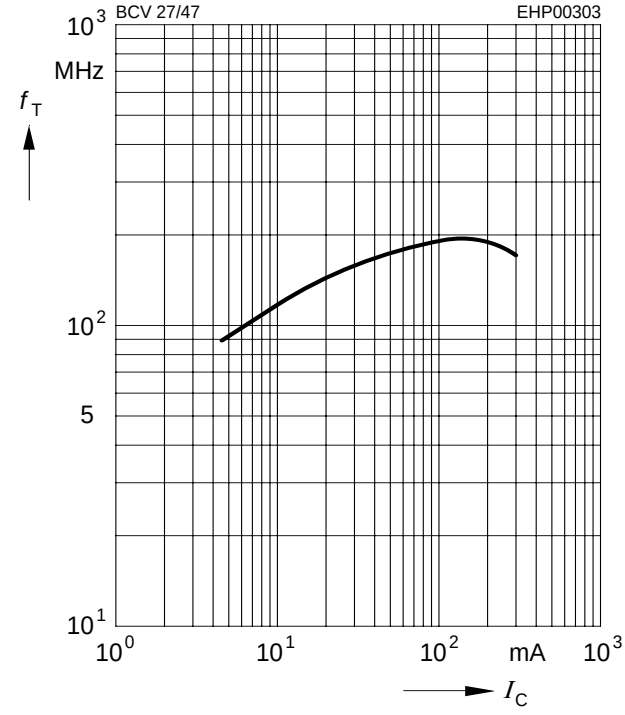

**Collector-base capacitance** $C_{CB} = f(V_{CBO})$
**Emitter-base capacitance** $C_{EB} = f(V_{EBO})$




**Permissible pulse load**
$P_{totmax} / P_{totDC} = f(t_p)$

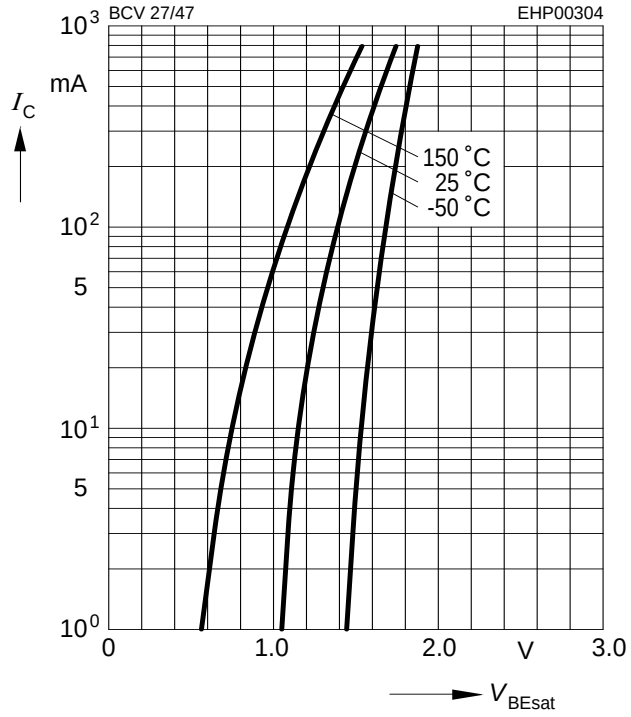



**Transition frequency** $f_T = f(I_C)$
$V_{CE} = 5V$



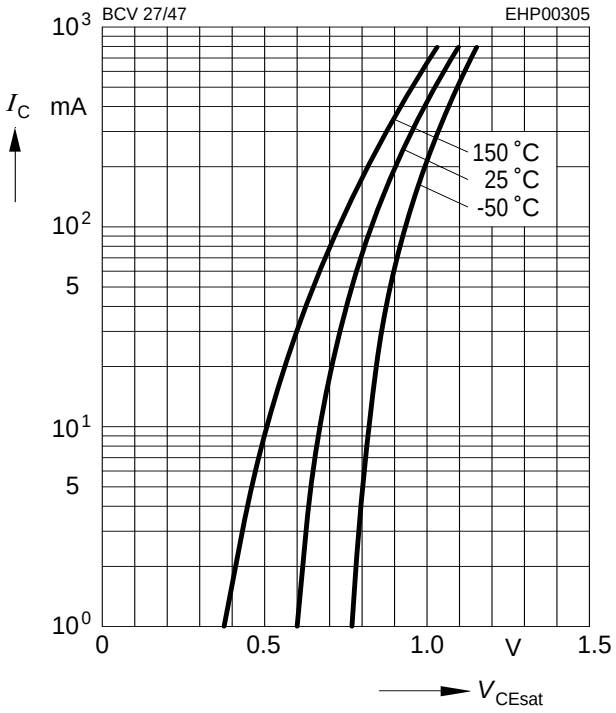
**Base-emitter saturation voltage**

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



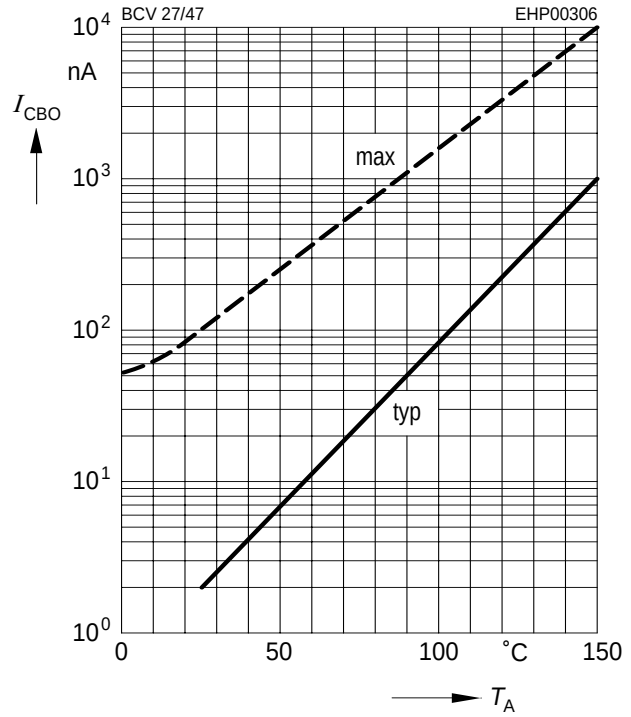

**Collector-emitter saturation voltage**

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




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

$V_{CB} = V_{CEmax}$




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

$V_{CE} = 5V$