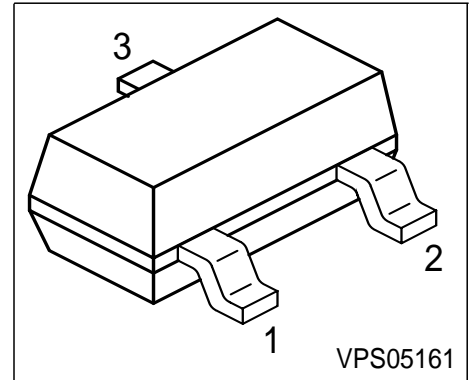


NPN Silicon Darlington Transistors

- 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 | | |
| Base current | I_B | 100 | | |
| Peak base current | I_{BM} | 200 | | |
| Total power dissipation, $T_S = 74\text{ °C}$ | P_{tot} | 360 | | mW |
| Junction temperature | T_j | 150 | | |
| 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 $T_A = 25^\circ\text{C}$, unless otherwise specified.

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

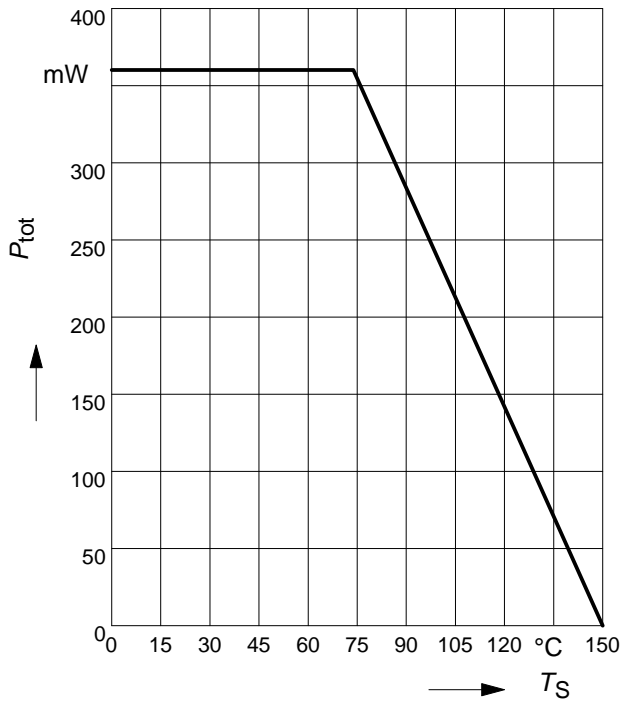
 1) Pulse test: $t \leq 300\ \mu\text{s}$, $D = 2\%$

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

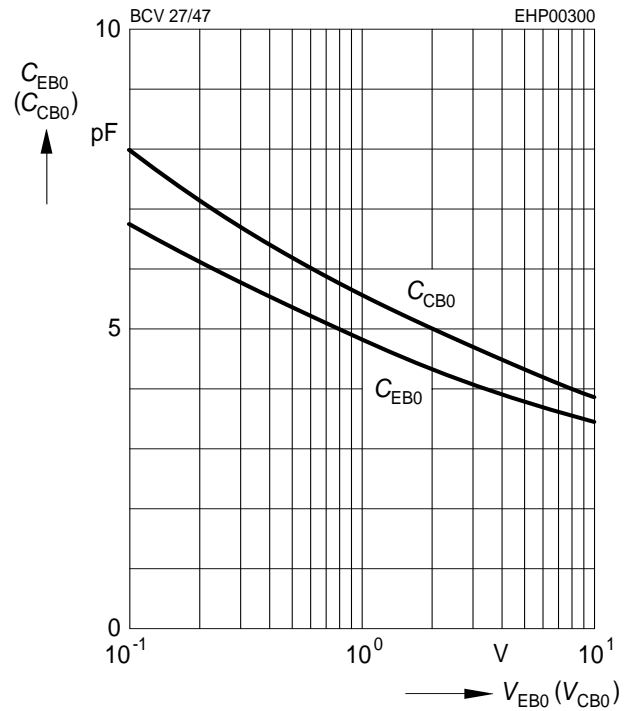
| Parameter | Symbol | Values | | | Unit |
|--|-------------|--------|------|------|------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter saturation voltage ¹⁾ $I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$ | V_{CEsat} | - | - | 1 | V |
| Base-emitter saturation voltage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

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

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

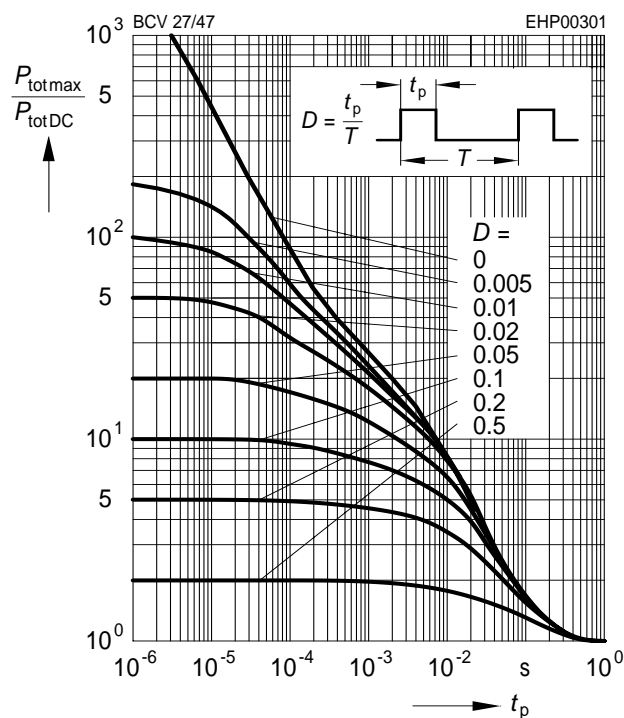


**Collector-base capacitance $C_{CB} = f(V_{CB0})$
Emitter-base capacitance $C_{EB} = f(V_{EB0})$**



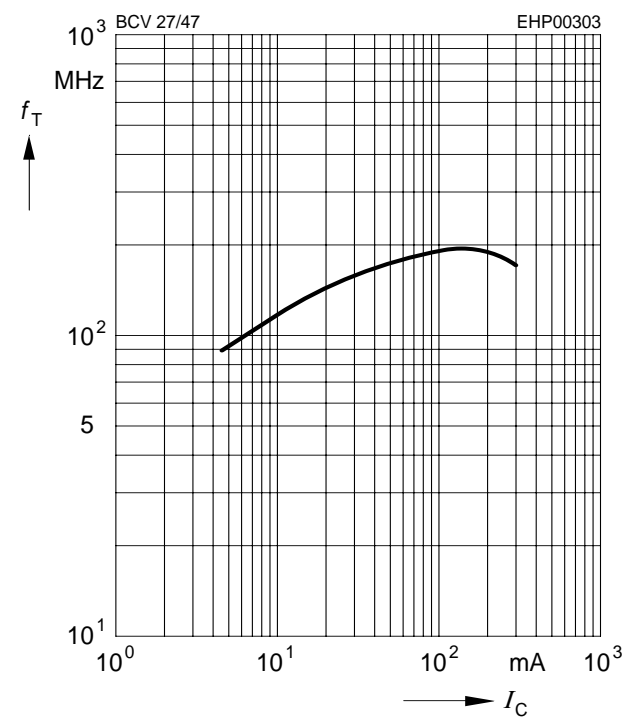
Permissible pulse load

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



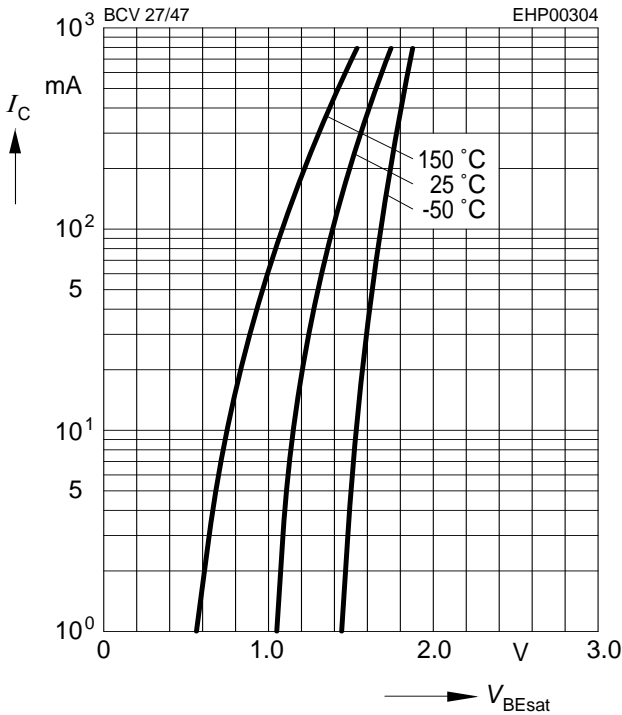
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5V$



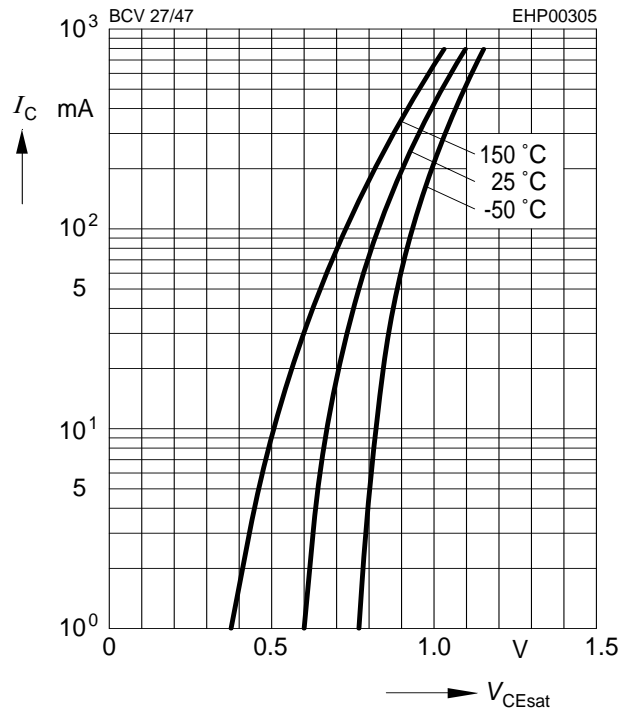
Base-emitter saturation voltage

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



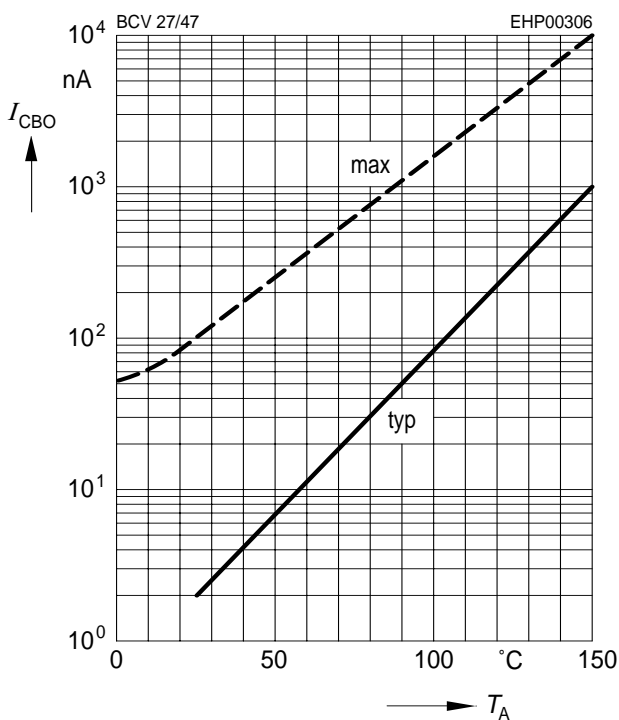
Collector-emitter saturation voltage

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



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

$V_{CB} = V_{CEmax}$



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

$V_{CE} = 5V$

