

PNP Silicon Darlington Transistors

- For general AF applications
- High collector current
- High current gain
- Complementary types: BCV29, BCV49 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|-------|---------|-------------------|-----|-----|---------|
| | | 1=B | 2=C | 3=E | |
| BCV28 | ED | 1=B | 2=C | 3=E | SOT89 |
| BCV48 | EE | 1=B | 2=C | 3=E | SOT89 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | | V |
| BCV28 | | 30 | |
| BCV48 | | 60 | |
| Collector-base voltage | V_{CBO} | | |
| BCV28 | | 40 | |
| BCV48 | | 80 | |
| Emitter-base voltage | V_{EBO} | 10 | |
| Collector current | I_C | 500 | mA |
| Peak collector current, $t_p \leq 10$ ms | I_{CM} | 800 | |
| Base current | I_B | 100 | |
| Peak base current | I_{BM} | 200 | |
| Total power dissipation- $T_S \leq 130$ °C | P_{tot} | 1 | W |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -65 ... 150 | |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|-----------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤ 20 | K/W |

¹⁾For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

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

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

DC Characteristics

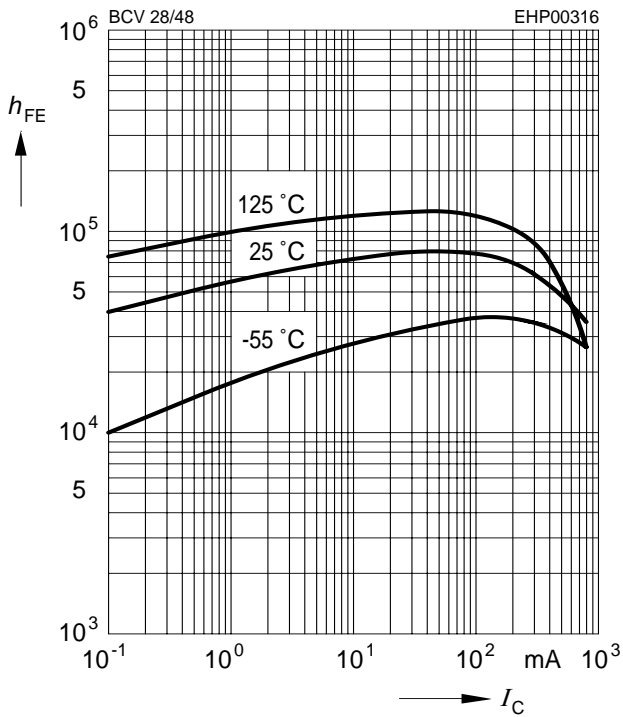
| | | | | | |
|---|---------------|---|--------------------------------------|--------------------------------------|---------------|
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BCV28 $I_C = 10\text{ mA}$, $I_B = 0$, BCV48 | $V_{(BR)CEO}$ | 30 60 | - - | - - | V |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCV28 $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCV48 | $V_{(BR)CBO}$ | 40 80 | - - | - - | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$ | $V_{(BR)EBO}$ | 10 | - | - | |
| Collector-base cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$, BCV28 $V_{CB} = 60\text{ V}$, $I_E = 0$, BCV48 $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A \leq 150^\circ\text{C}$, BCV28 $V_{CB} = 60\text{ V}$, $I_E = 0$, $T_A \leq 150^\circ\text{C}$, BCV48 | I_{CBO} | - - - - | - - - - | 0.1 0.1 10 10 | μA |
| Emitter-base cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$ | I_{EBO} | - | - | 100 | nA |
| DC current gain ¹⁾ $I_C = 10\text{ }\mu\text{A}$, $V_{CE} = 1\text{ V}$, BCV28 $I_C = 10\text{ }\mu\text{A}$, $V_{CE} = 1\text{ V}$, BCV48 $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV28 $I_C = 10\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV48 $I_C = 100\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV28 $I_C = 100\text{ mA}$, $V_{CE} = 5\text{ V}$, BCV48 $I_C = 0.5\text{ A}$, $V_{CE} = 5\text{ V}$, BCV28 $I_C = 0.5\text{ A}$, $V_{CE} = 5\text{ V}$, BCV48 | h_{FE} | 4000 2000 10000 4000 20000 10000 4000 2000 | - - - - - - - - | - - - - - - - - | - |
| 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 | |

¹Pulse test: $t < 300\mu\text{s}$; $D < 2\%$
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|----------|--------|------|------|------|
| | | min. | typ. | max. | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 100\text{ MHz}$ | f_T | - | 200 | - | MHz |
| Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$ | C_{cb} | - | 4.5 | - | pF |

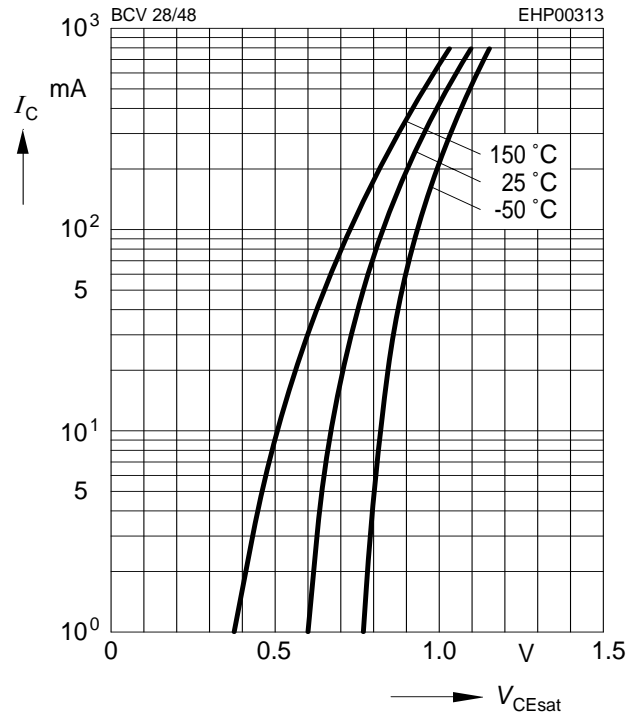
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5\text{ V}$



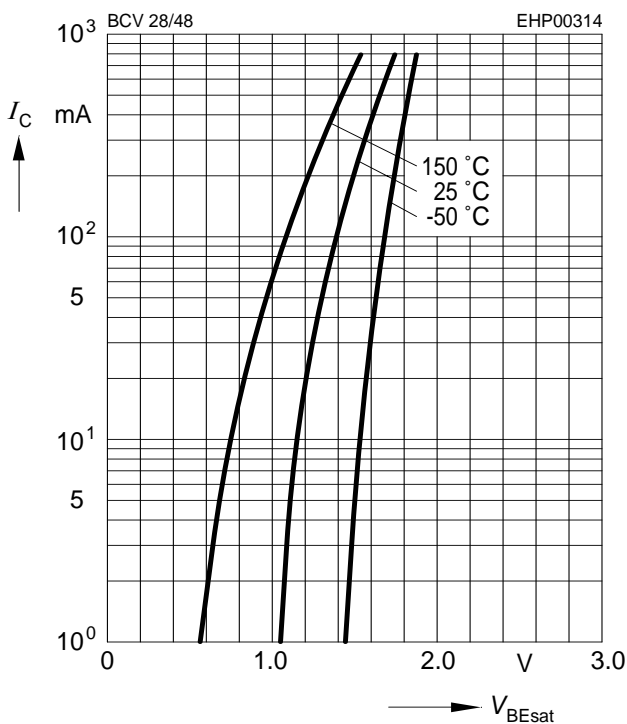
Collector-emitter saturation voltage

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



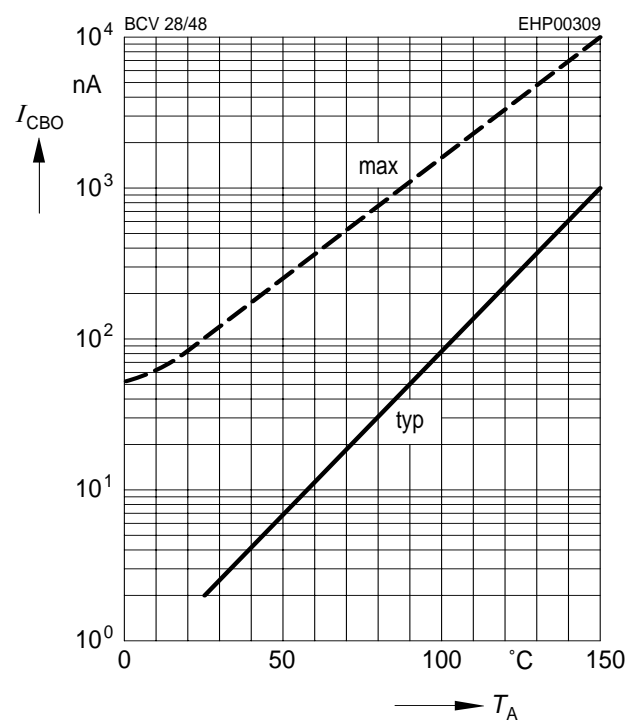
Base-emitter saturation voltage

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



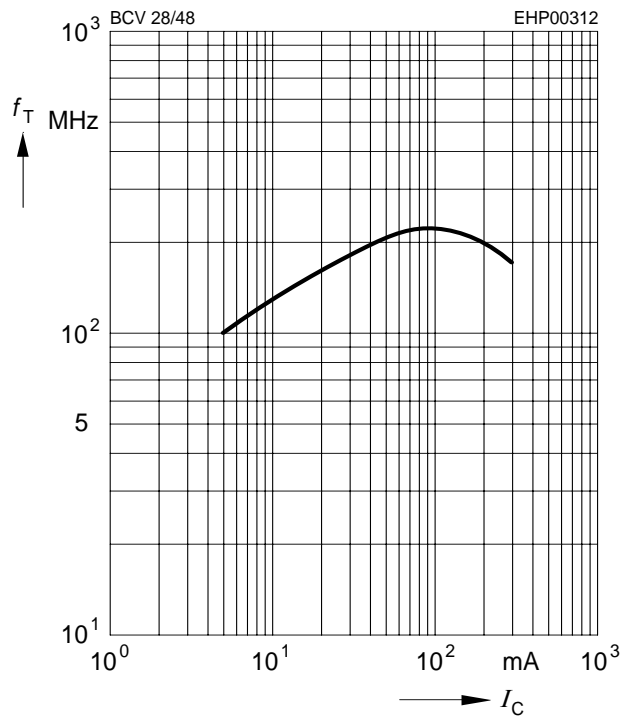
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CEmax}$



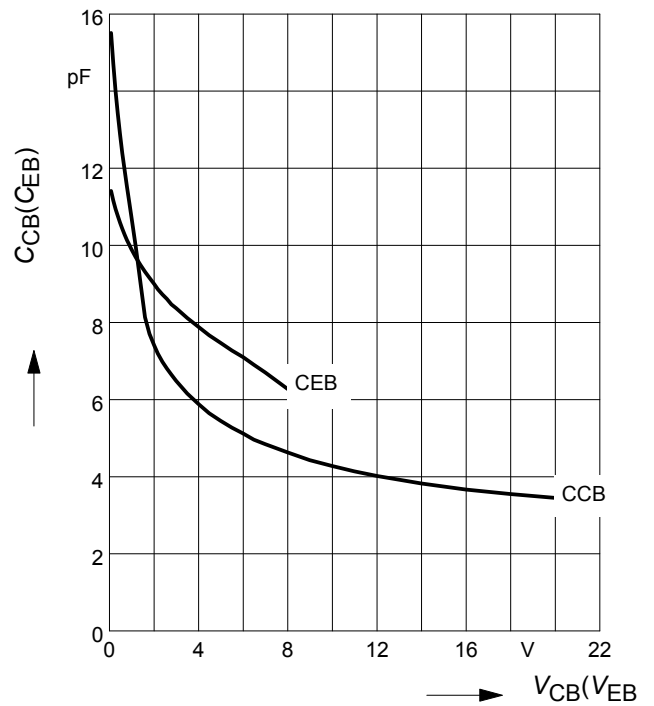
Transition frequency $f_T = f(I_C)$

$V_{CE} = 5\text{ V}$

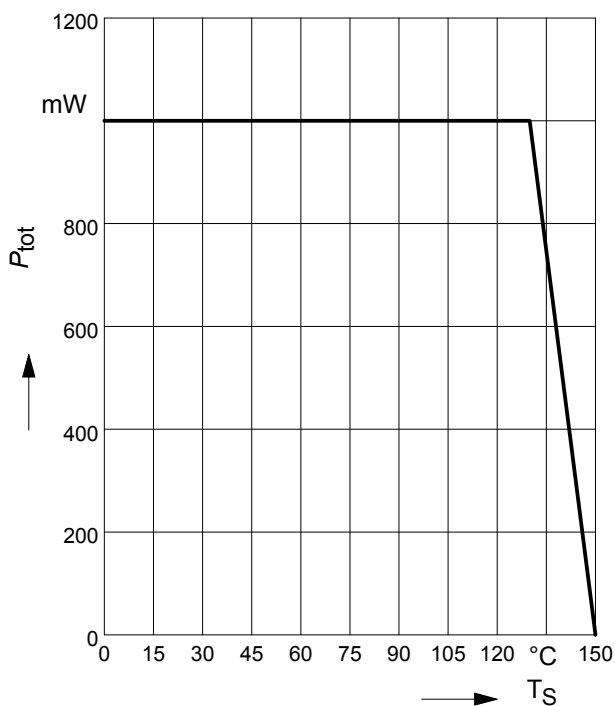


Collector-base capacitance $C_{cb} = f(V_{CB})$

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

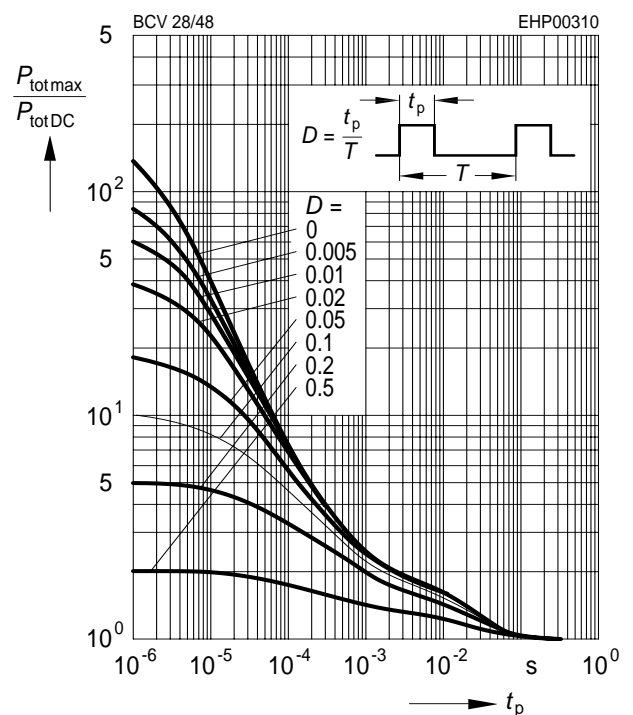


Total power dissipation $P_{tot} = f(T_S)$

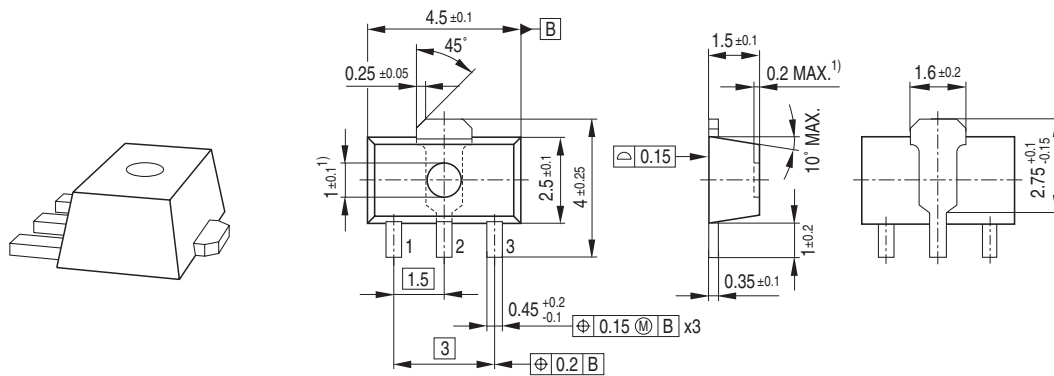


Permissible Pulse Load

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

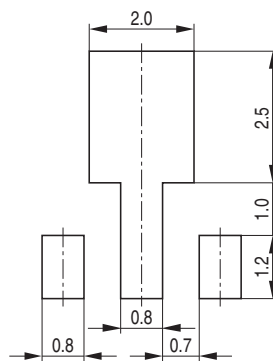


Package Outline

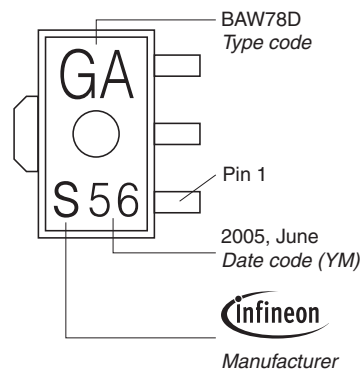


1) Ejector pin markings possible

Foot Print

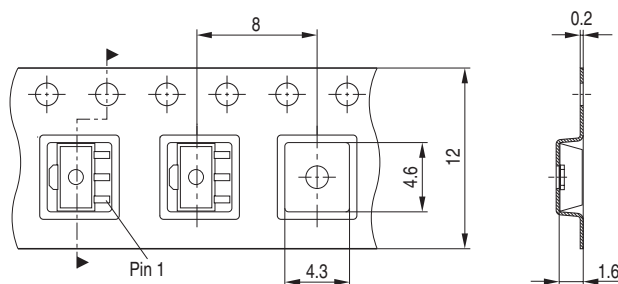


Marking Layout (Example)



Standard Packing

Reel $\varnothing 180$ mm = 1.000 Pieces/Reel
 Reel $\varnothing 330$ mm = 4.000 Pieces/Reel



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