

PNP Silicon Darlington Transistors

BCP 28
BCP 48

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



| Type | Marking | Ordering Code (tape and reel) | Pin Configuration | Package ¹⁾ |
|------------------|------------------|-------------------------------|-------------------|-----------------------|
| BCP 28 BCP 48 | BCP 28 BCP 48 | Q62702-C2134 Q62702-C2135 | | SOT-223 |

Maximum Ratings

| Parameter | Symbol | Values | | Unit |
|--|-----------|----------------|--------|------|
| | | BCP 28 | BCP 48 | |
| 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, $T_s = 124\text{ °C}^2$) | P_{tot} | 1.5 | | W |
| Junction temperature | T_j | 150 | | °C |
| Storage temperature range | T_{stg} | - 65 ... + 150 | | |

Thermal Resistance

| | | | |
|----------------------------------|--------------|------|-----|
| Junction - ambient ²⁾ | $R_{th\ JA}$ | ≤ 75 | K/W |
| Junction - soldering point | $R_{th\ JS}$ | ≤ 17 | |

¹⁾ For detailed information see chapter Package Outlines.

²⁾ Package mounted on epoxy pcb 40 mm × 40 mm × 1.5 mm/6 cm² Cu.

Electrical Characteristics

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

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

DC characteristics

| | | | | | |
|---|---------------|-------|---|-----|---------------|
| Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$ | $V_{(BR)CE0}$ | | | | V |
| BCP 28 | | 30 | — | — | |
| BCP 48 | | 60 | — | — | |
| Collector-base breakdown voltage ¹⁾ $I_C = 100\text{ }\mu\text{A}, I_B = 0$ | $V_{(BR)CB0}$ | | | | |
| BCP 28 | | 40 | — | — | |
| BCP 48 | | 80 | — | — | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$ | $V_{(BR)EB0}$ | 10 | — | — | |
| Collector-base cutoff current $V_{CB} = 30\text{ V}, I_E = 0$ | I_{CB0} | | | | nA |
| BCP 28 | | — | — | 100 | nA |
| $V_{CB} = 60\text{ V}, I_E = 0$ | | | | 100 | nA |
| BCP 48 | | — | — | 100 | nA |
| $V_{CB} = 30\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | | | | 10 | μA |
| BCP 28 | | — | — | 10 | μA |
| $V_{CB} = 60\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | | | | 10 | μA |
| BCP 48 | | — | — | 10 | μA |
| Emitter-base cutoff current $V_{EB} = 4\text{ V}, I_C = 0$ | I_{EB0} | — | — | 100 | nA |
| DC current gain ¹⁾ $I_C = 100\text{ }\mu\text{A}, V_{CE} = 1\text{ V}$ | h_{FE} | | | | — |
| BCP 28 | | 4000 | — | — | |
| BCP 48 | | 2000 | — | — | |
| $I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$ | | | | | |
| BCP 28 | | 10000 | — | — | |
| BCP 48 | | 4000 | — | — | |
| $I_C = 100\text{ mA}, V_{CE} = 5\text{ V}$ | | | | | |
| BCP 28 | | 20000 | — | — | |
| BCP 48 | | 10000 | — | — | |
| $I_C = 500\text{ mA}, V_{CE} = 5\text{ V}$ | | | | | |
| BCP 28 | | 4000 | — | — | |
| BCP 48 | | 2000 | — | — | |
| Collector-emitter saturation voltage $I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$ | V_{CEsat} | — | — | 1.0 | V |
| Base-emitter saturation voltage $I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$ | V_{BEsat} | — | — | 1.5 | |

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

Electrical Characteristics

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

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

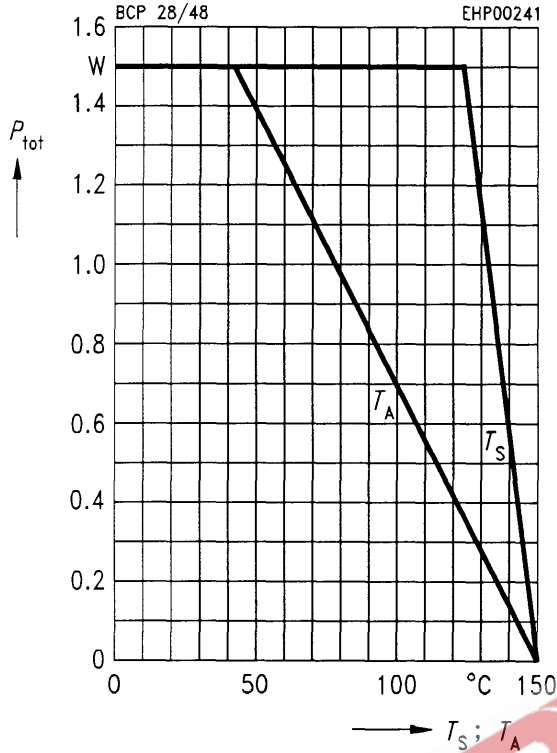
AC characteristics

| | | | | | |
|---|-----------|---|-----|---|-----|
| Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 5\text{ V}$, $f = 100\text{ MHz}$ | f_t | – | 200 | – | MHz |
| Output capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$ | C_{obo} | – | 8 | – | pF |



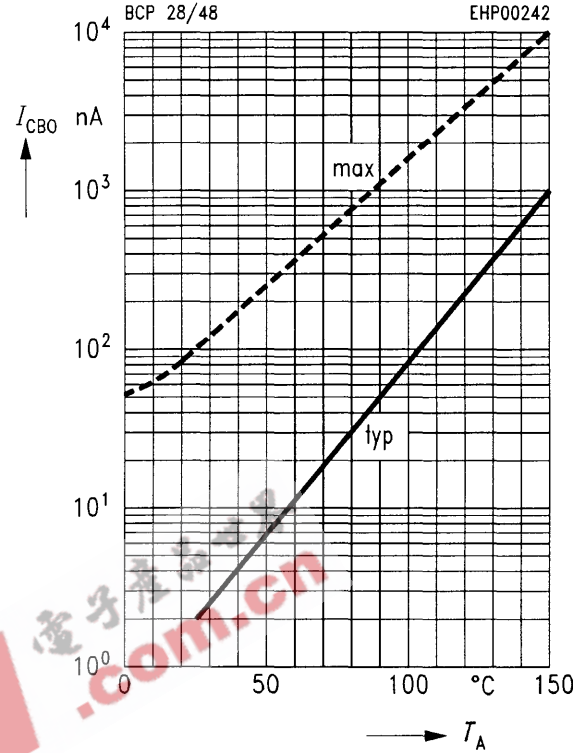
Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy



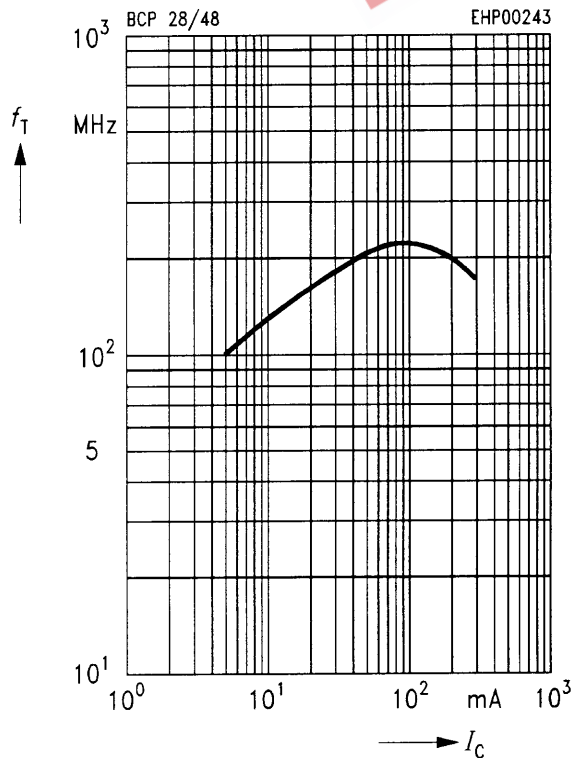
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = V_{CE\ max}$

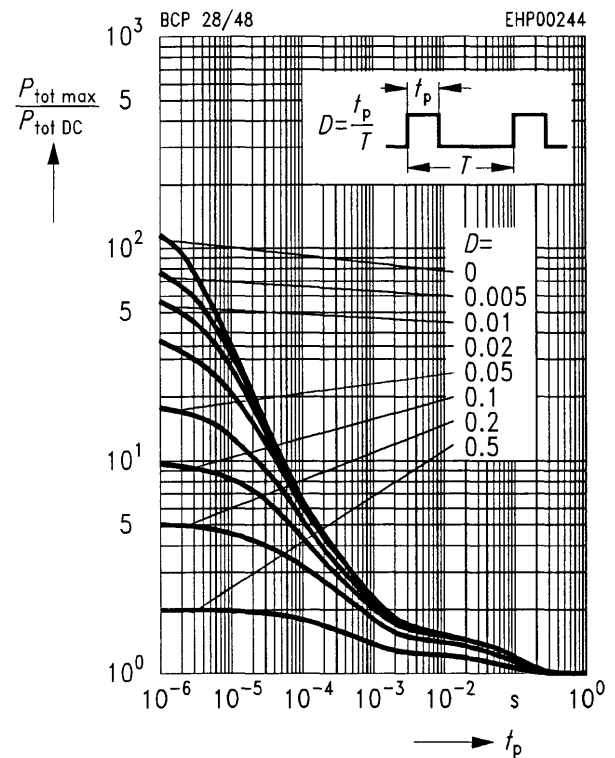


Transition frequency $f_T = f(I_C)$

$V_{CE} = 5\ V$

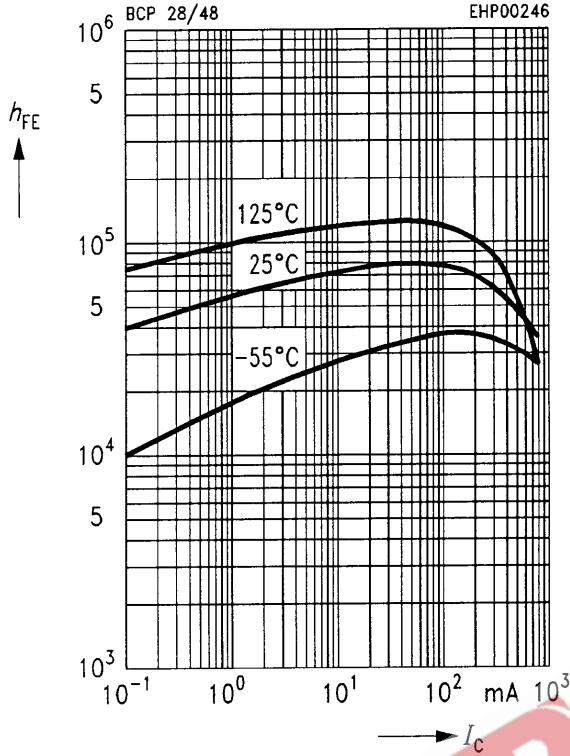


Permissible pulse load $P_{tot\ max}/P_{tot\ DC} = f(t_p)$



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

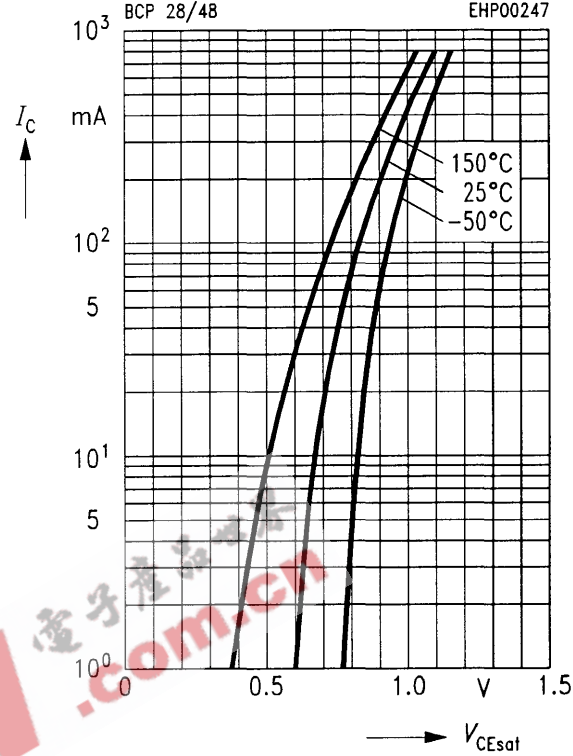
$V_{CE} = 5\text{ V}$



Collector-emitter saturation voltage

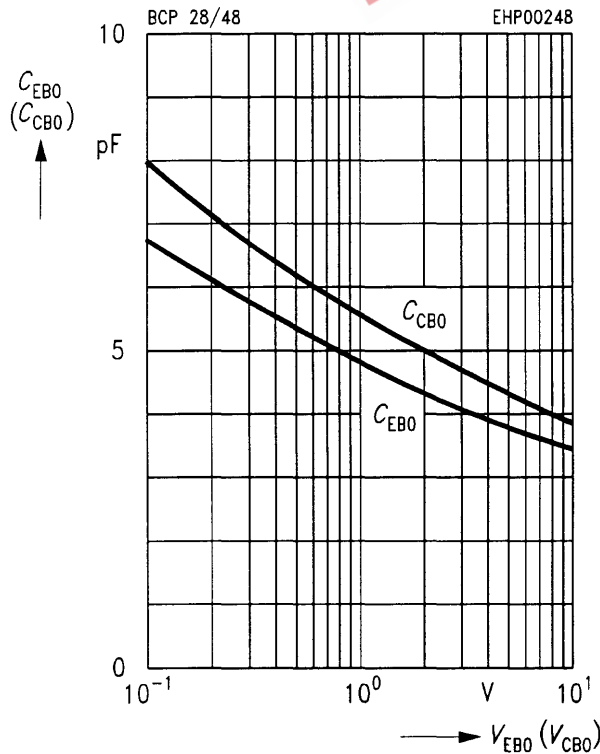
$I_C = f(V_{CEsat})$

$h_{FE} = 1000$



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

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



Base-emitter saturation voltage

$I_C = f(V_{BEsat})$

$h_{FE} = 1000$

