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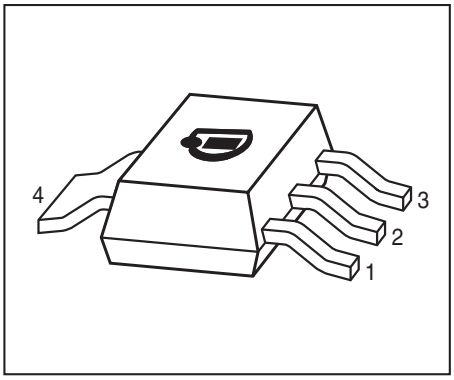
## PNP Silicon AF Power Transistors




- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP947, BDP949
  BDP953 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

| Type | Marking | Pin Configuration | | | | | | Package |
|---|---|---|---|---|---|---|---|---|
| BDP948 | BDP948 | 1=B | 2=C | 3=E | 4=C | - | - | SOT223 |
| BDP950 | BDP950 | 1=B | 2=C | 3=E | 4=C | - | - | SOT223 |
| BDP954 | BCP954 | 1=B | 2=C | 3=E | 4=C | - | - | SOT223 |

## Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-emitter voltage | $V_{CEO}$ | | V |
| BDP948 | | 45 | |
| BDP950 | | 60 | |
| BDP954 | | 100 | |
| Collector-base voltage | $V_{CBO}$ | | |
| BDP948 | | 45 | |
| BDP950 | | 60 | |
| BDP954 | | 120 | |
| Emitter-base voltage | $V_{EBO}$ | 5 | |
| Collector current | $I_C$ | 3 | A |
| Peak collector current, $t_p \leq 10$ ms | $I_{CM}$ | 5 | |
| Base current | $I_B$ | 200 | mA |
| Peak base current | $I_{BM}$ | 500 | |
| Total power dissipation- $T_S \leq 100$ °C | $P_{tot}$ | 5 | W |
| Junction temperature | $T_j$ | 150 | °C |
| Storage temperature | $T_{stg}$ | -65 ... 150 | |

## Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Junction - soldering point[1)] | $R_{thJS}$ | ≤ 10 | K/W |

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

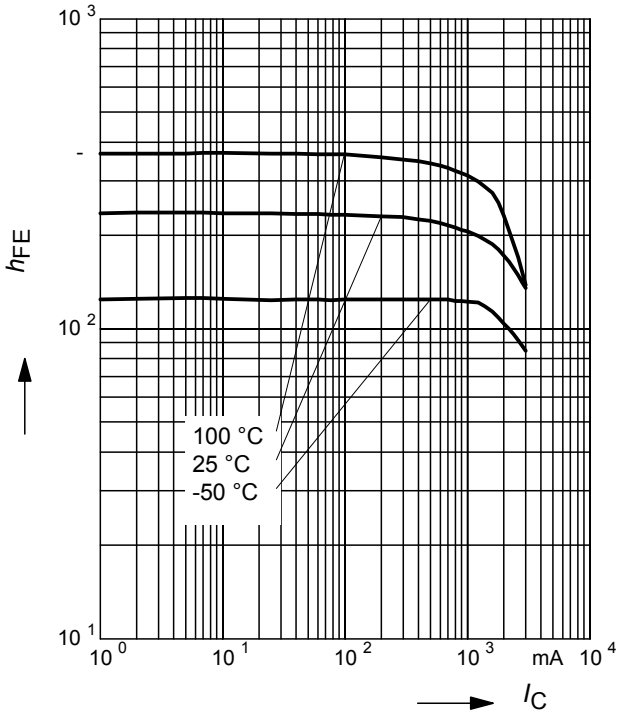
**Electrical Characteristics** at $T_A$ = 25°C, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---|---|---|---|---|
| | | min. | typ. | max. | |
| **DC Characteristics** | | | | | |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | | | | V |
| $I_C$ = 10 mA, $I_B$ = 0 , BDP948 | | 45 | - | - | |
| $I_C$ = 10 mA, $I_B$ = 0 , BDP950 | | 60 | - | - | |
| $I_C$ = 10 mA, $I_B$ = 0 , BDP954 | | 100 | - | - | |
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | | | | |
| $I_C$ = 100 µA, $I_E$ = 0 , BDP948 | | 45 | - | - | |
| $I_C$ = 100 µA, $I_E$ = 0 , BDP950 | | 60 | - | - | |
| $I_C$ = 100 µA, $I_E$ = 0 , BDP954 | | 120 | - | - | |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | 5 | - | - | |
| $I_E$ = 10 µA, $I_C$ = 0 | | | | | |
| Collector-base cutoff current | $I_{CBO}$ | | | | µA |
| $V_{CB}$ = 45 V, $I_E$ = 0 | | - | - | 0.1 | |
| $V_{CB}$ = 45 V, $I_E$ = 0 , $T_A$ = 150 °C | | - | - | 20 | |
| Emitter-base cutoff current | $I_{EBO}$ | - | - | 100 | nA |
| $V_{EB}$ = 4 V, $I_C$ = 0 | | | | | |
| DC current gain[1)] | $h_{FE}$ | | | | - |
| $I_C$ = 10 mA, $V_{CE}$ = 5 V | | 25 | - | - | |
| $I_C$ = 500 mA, $V_{CE}$ = 1 V | | 85 | - | 475 | |
| $I_C$ = 1 A, $V_{CE}$ = 2 V BDP948,BDP950 | | 50 | - | - | |
| BDP954 | | 15 | - | - | |
| $I_C$ = 1 A, $V_{CE}$ = 2 V | | | | | |
| Collector-emitter saturation voltage[1)] | $V_{CEsat}$ | - | - | 0.5 | V |
| $I_C$ = 2 A, $I_B$ = 0.2 A | | | | | |
| Base emitter saturation voltage[1)] | $V_{BEsat}$ | - | - | 1.3 | |
| $I_C$ = 2 A, $I_B$ = 0.2 A | | | | | |
| **AC Characteristics** | | | | | |
| Transition frequency | $f_T$ | - | 100 | - | MHz |
| $I_C$ = 50 mA, $V_{CE}$ = 10 V, $f$ = 100 MHz | | | | | |
| Collector-base capacitance | $C_{cb}$ | - | 40 | - | pF |
| $V_{CB}$ = 10 V, $f$ = 100 MHz | | | | | |

[1]Pulse test: t < 300µs; D < 2%

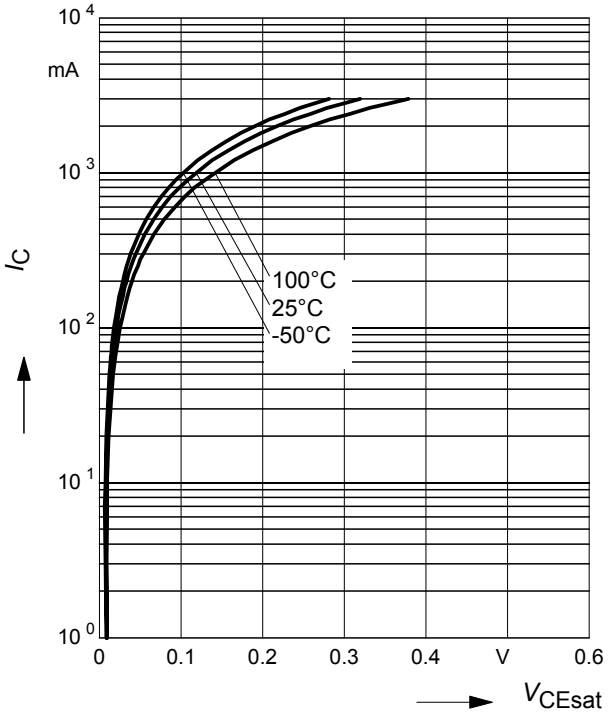
**DC current gain $h_{FE} = f(I_C)$**

$V_{CE}$ = 2 V



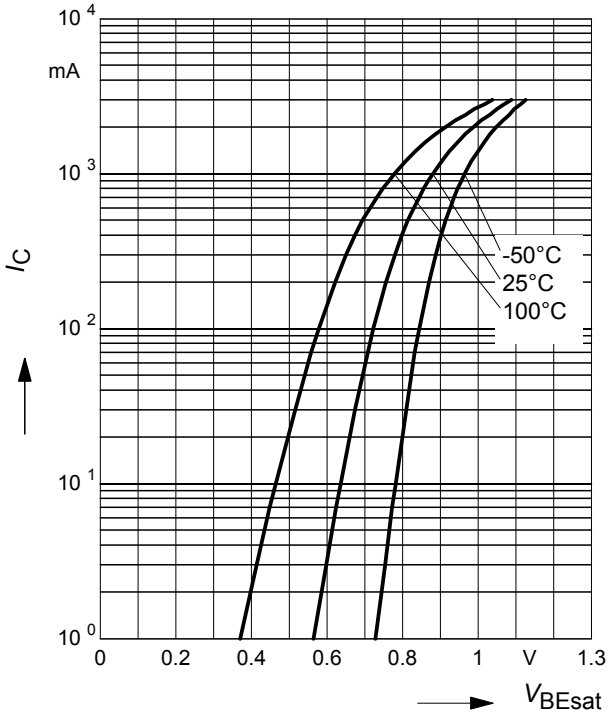

**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat})$, $h_{FE}$ = 10



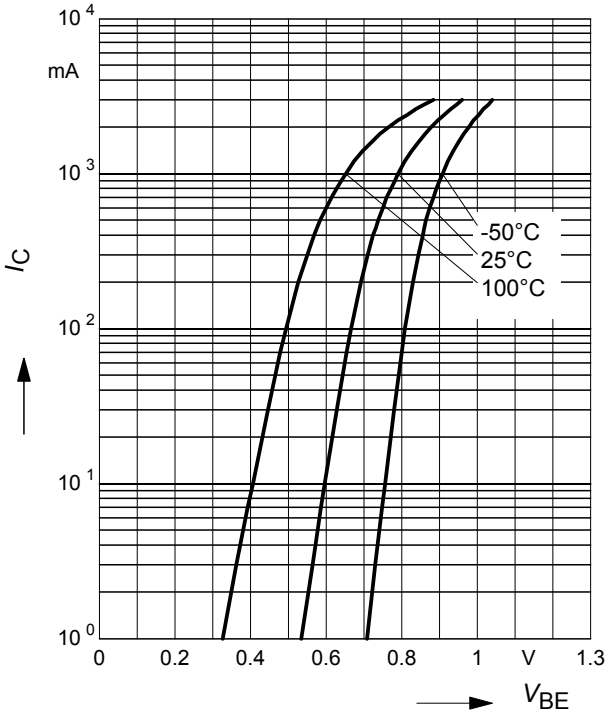

**Base-emitter saturation voltage**

$I_C = (V_{BEsat})$, $h_{FE}$ = 10



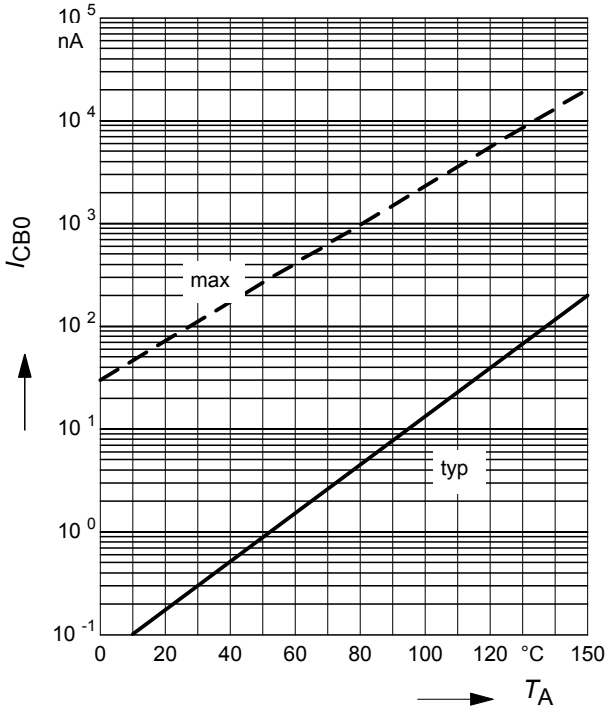

**Collector current $I_C = f(V_{BE})$**

$V_{CE}$ = 2 V



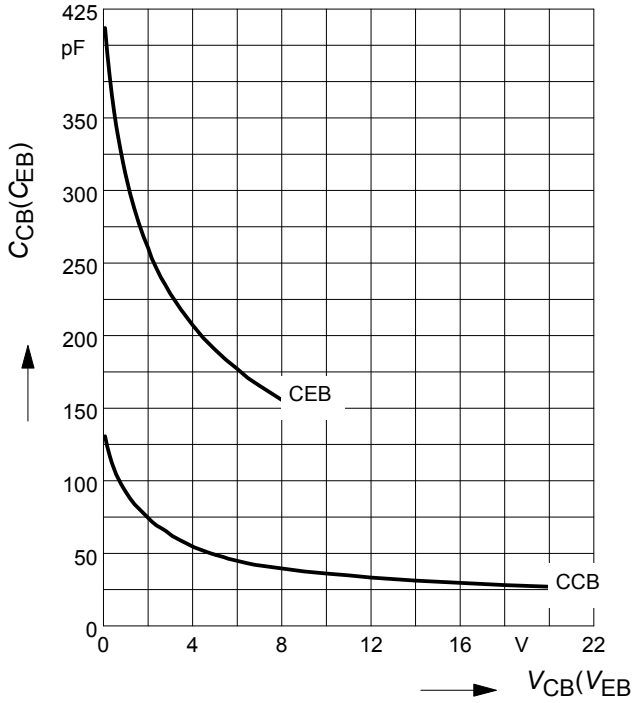
**Collector cutoff current $I_{CBO} = f(T_A)$**

$V_{CB}$ = 45 V

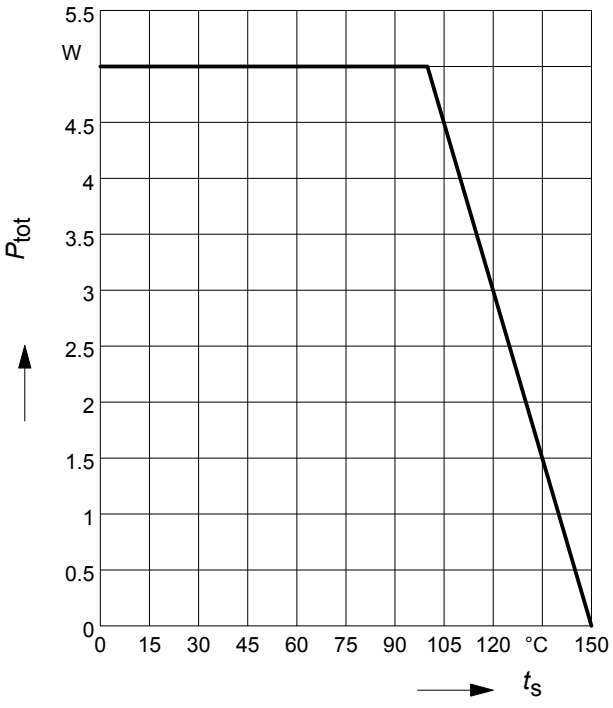



**Collector-base capacitance $C_{cb} = f(V_{CB})$**

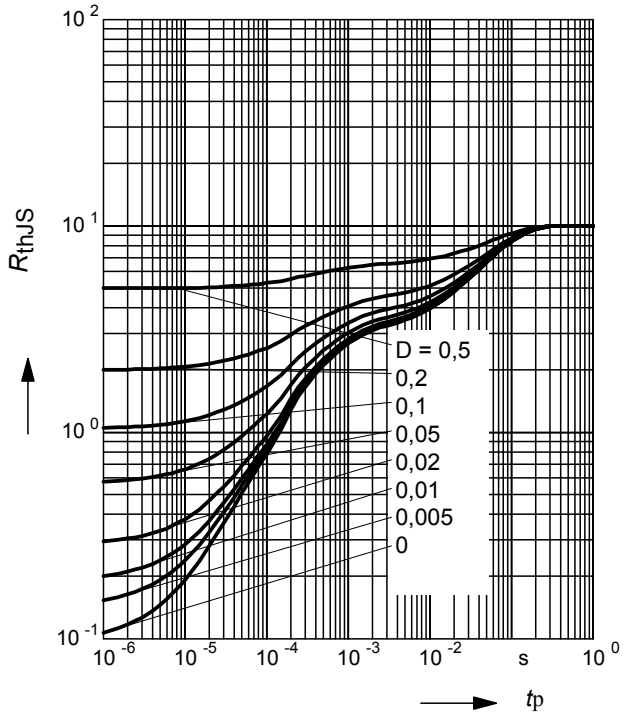
**Emitter-base capacitance $C_{eb} = f(V_{EB})$**




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

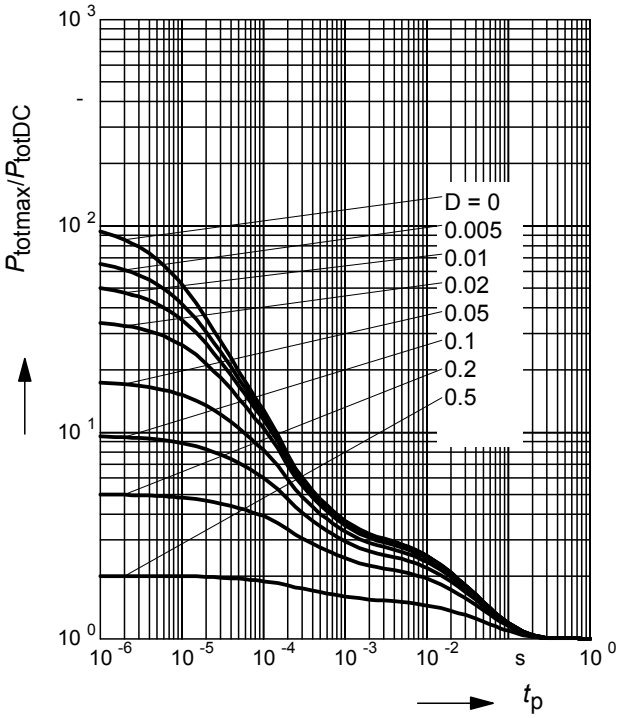



**Permissible Pulse Load $R_{thJS} = f(t_p)$**

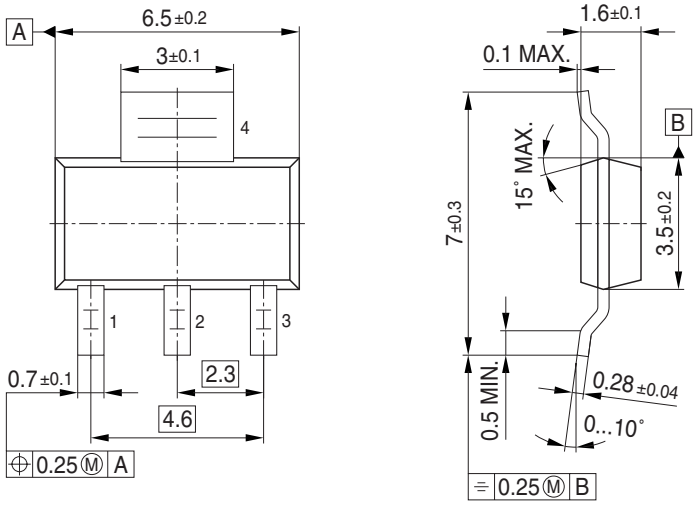


## Permissible Pulse Load

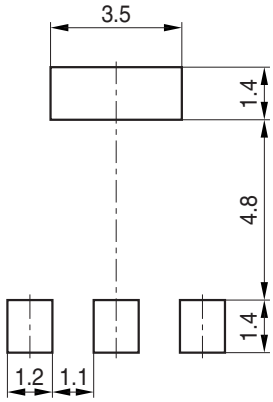
$P_{totmax}/P_{totDC} = f(t_p)$



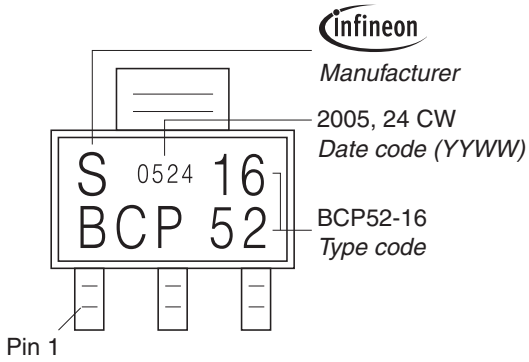
## Package Outline




## Foot Print

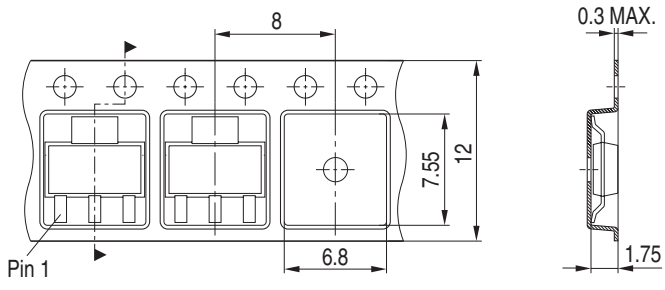



## Marking Layout (Example)




## Packing

Reel ø180 mm = 1.000 Pieces/Reel
Reel ø330 mm = 4.000 Pieces/Reel



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