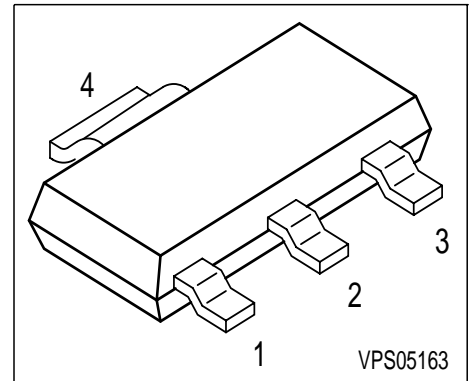


NPN Silicon AF Power Transistor

- For AF driver and output stages
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BDP952 ... BDP956 (PNP)



| Type | Marking | Pin Configuration | | | | Package |
|--------|---------|-------------------|-------|-------|-------|---------|
| BDP951 | BDP 951 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BDP953 | BDP 953 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |
| BDP955 | PDP 955 | 1 = B | 2 = C | 3 = E | 4 = C | SOT223 |

Maximum Ratings

| Parameter | Symbol | BDP 951 | BDP 953 | BDP 955 | Unit |
|---|-----------|-------------|---------|---------|------|
| Collector-emitter voltage | V_{CEO} | 80 | 100 | 120 | V |
| Collector-base voltage | V_{CBO} | 100 | 120 | 140 | |
| Emitter-base voltage | V_{EBO} | 5 | 5 | 5 | |
| DC collector current | I_C | 3 | | | A |
| Peak collector current | I_{CM} | 5 | | | |
| Base current | I_B | 200 | | | mA |
| Peak base current | I_{BM} | 500 | | | |
| Total power dissipation, $T_S = 99\text{ °C}$ | P_{tot} | 3 | | | W |
| Junction temperature | T_j | 150 | | | °C |
| Storage temperature | T_{stg} | -65 ... 150 | | | |

Thermal Resistance

| | | | |
|--|------------|-----|-----|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤17 | K/W |
|--|------------|-----|-----|

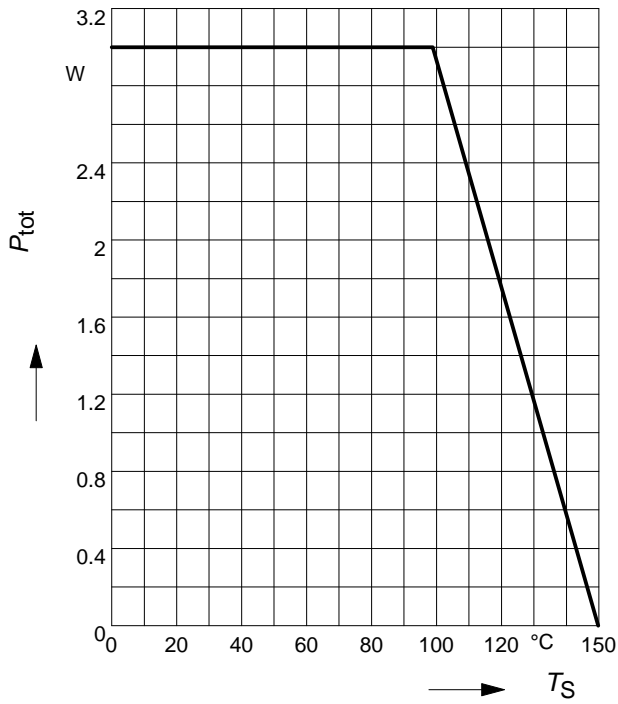
¹⁾For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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

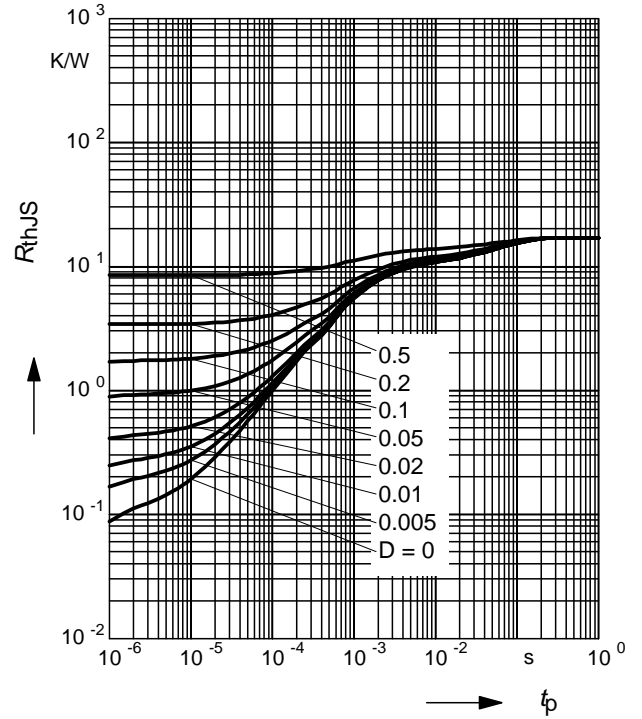
| Parameter | Symbol | Values | | | Unit |
|--|---------------|----------------|-------------|---------------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | | | | V |
| BDP951 | | 80 | - | - | |
| BDP953 | | 100 | - | - | |
| BDP955 | | 120 | - | - | |
| Collector-base breakdown voltage $I_C = 100\ \mu\text{A}, I_B = 0$ | $V_{(BR)CBO}$ | | | | |
| BDP951 | | 100 | - | - | |
| BDP953 | | 120 | - | - | |
| BDP955 | | 140 | - | - | |
| Emitter-base breakdown voltage $I_E = 10\ \mu\text{A}, I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector cutoff current $V_{CB} = 100\text{ V}, I_E = 0$ | I_{CBO} | - | - | 100 | nA |
| Collector cutoff current $V_{CB} = 100\text{ V}, I_E = 0, T_A = 150\ ^\circ\text{C}$ | I_{CBO} | - | - | 20 | μA |
| Emitter cutoff current $V_{EB} = 4\text{ V}, I_C = 0$ | I_{EBO} | - | - | 100 | nA |
| DC current gain 1) $I_C = 10\text{ mA}, V_{CE} = 5\text{ V}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}$ $I_C = 2\text{ A}, V_{CE} = 2\text{ V}$ | h_{FE} | 25 40 15 | - - - | - 475 - | - |
| Collector-emitter saturation voltage 1) $I_C = 2\text{ A}, I_B = 0.2\text{ A}$ | V_{CEsat} | - | - | 0.8 | V |
| Base-emitter saturation voltage 1) $I_C = 2\text{ A}, I_B = 0.2\text{ A}$ | V_{BEsat} | - | - | 1.5 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 50\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$ | f_T | - | 100 | - | MHz |
| Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | C_{cb} | - | 25 | - | pF |

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

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

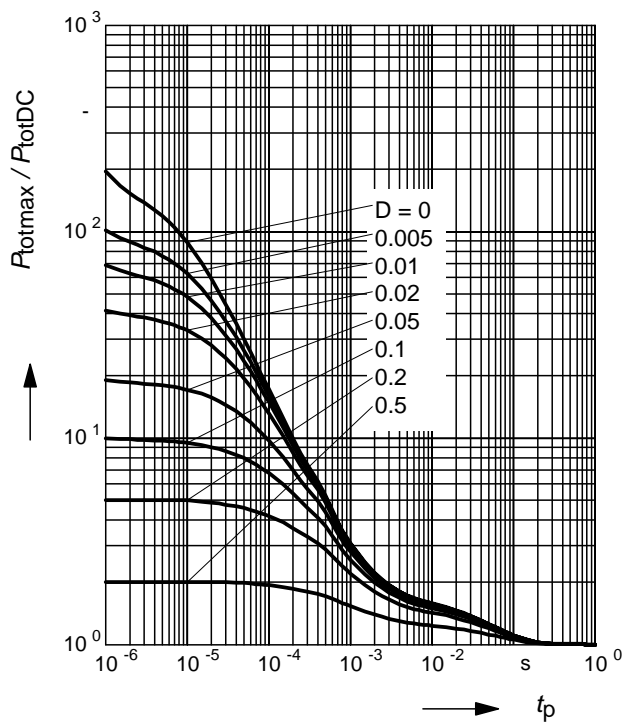


Permissible Pulse Load $R_{thJS} = f(t_p)$



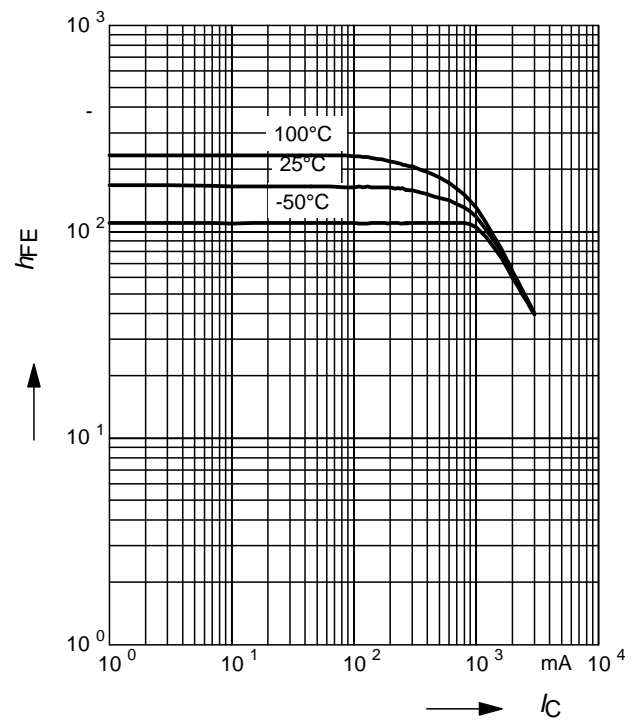
Permissible Pulse Load

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



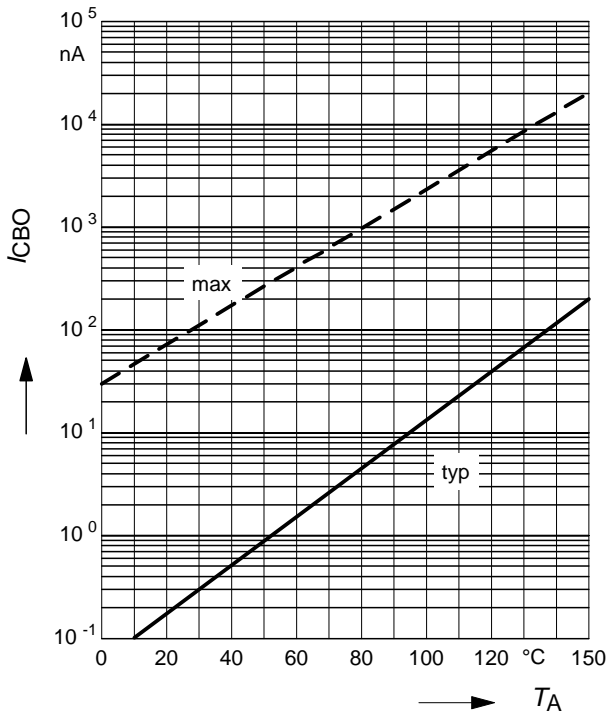
DC current gain $h_{FE} = f(I_C)$

$$V_{CE} = 2V$$



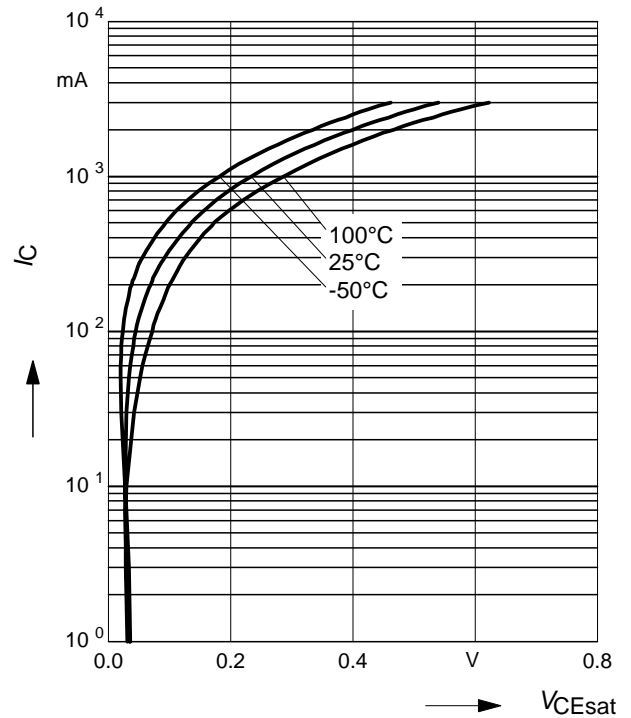
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 45V$



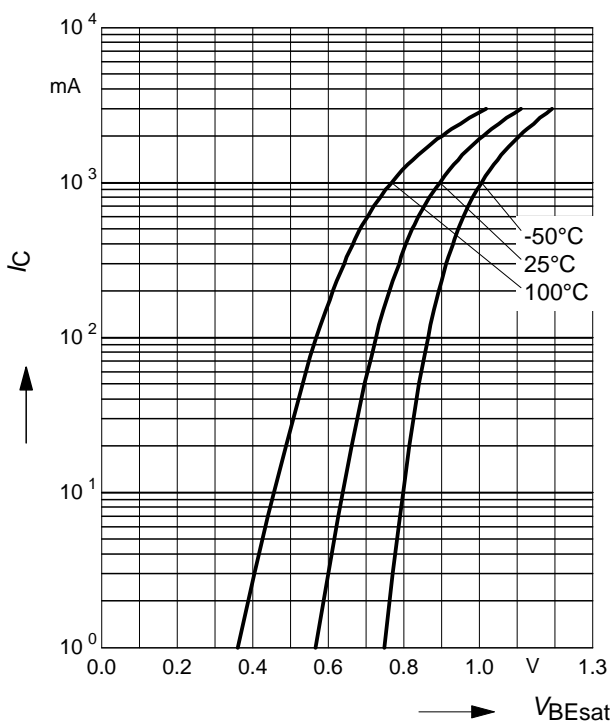
Collector-emitter saturation voltage

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



Base-emitter saturation voltage

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



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

$V_{CE} = 2V$

