

PNP Silicon AF and Switching Transistor

- For general AF applications
- High breakdown voltage
- Low collector-emitter saturation voltage
- Complementary type: BCX41 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|-------|---------|-------------------|-------|-------|---------|
| | | 1 = B | 2 = E | 3 = C | |
| BCX42 | DKs | 1 = B | 2 = E | 3 = C | SOT23 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | 125 | V |
| Collector-base voltage | V_{CBO} | 125 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 800 | mA |
| Peak collector current, $t_p \leq 10$ ms | I_{CM} | 1 | A |
| Base current | I_B | 100 | mA |
| Peak base current | I_{BM} | 200 | mA |
| Total power dissipation $T_S \leq 79$ °C | P_{tot} | 330 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -65 ... 150 | °C |

Thermal Resistance

| Parameter | Symbol | Value | Unit |
|--|------------|------------|------|
| Junction - soldering point ¹⁾ | R_{thJS} | ≤ 215 | K/W |

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

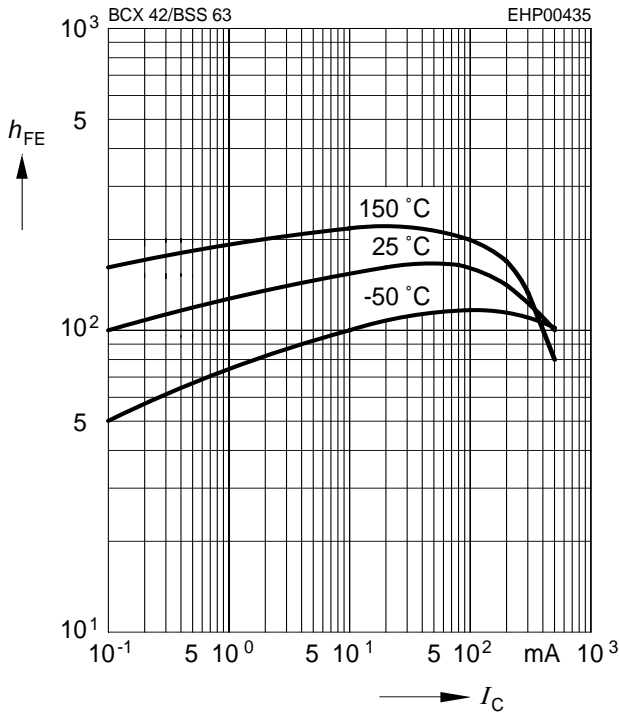
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|---------------|----------------|-------------|-------------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | 125 | - | - | V |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}, I_E = 0$ | $V_{(BR)CBO}$ | 125 | - | - | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector-base cutoff current $V_{CB} = 100\text{ V}, I_E = 0$ $V_{CB} = 100\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | I_{CBO} | - | - | 0.1 20 | μA |
| Collector-emitter cutoff current $V_{CE} = 100\text{ V}, T_A = 85\text{ }^\circ\text{C}$ $V_{CE} = 100\text{ V}, T_A = 125\text{ }^\circ\text{C}$ | I_{CEO} | - | - | 10 75 | |
| Emitter-base cutoff current $V_{EB} = 4\text{ V}, I_C = 0$ | I_{EBO} | - | - | 100 | nA |
| DC current gain ¹⁾ $I_C = 100\text{ }\mu\text{A}, V_{CE} = 1\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$ $I_C = 200\text{ mA}, V_{CE} = 1\text{ V}$ | h_{FE} | 25 63 40 | - - - | - - - | - |
| Collector-emitter saturation voltage ¹⁾ $I_C = 300\text{ mA}, I_B = 30\text{ mA}$ | V_{CEsat} | - | - | 0.9 | V |
| Base emitter saturation voltage ¹⁾ $I_C = 300\text{ mA}, I_B = 30\text{ mA}$ | V_{BEsat} | - | - | 1.4 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 20\text{ mA}, V_{CE} = 5\text{ V}, f = 20\text{ MHz}$ | f_T | - | 150 | - | MHz |
| Collector-base capacitance $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | C_{cb} | - | 12 | - | pF |

¹⁾Pulse test: $t < 300\mu\text{s}$; $D < 2\%$

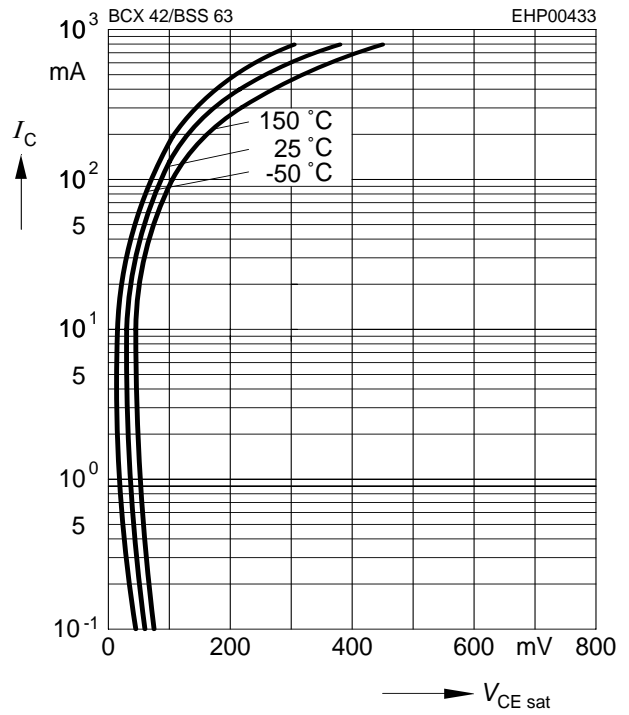
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 1\text{ V}$



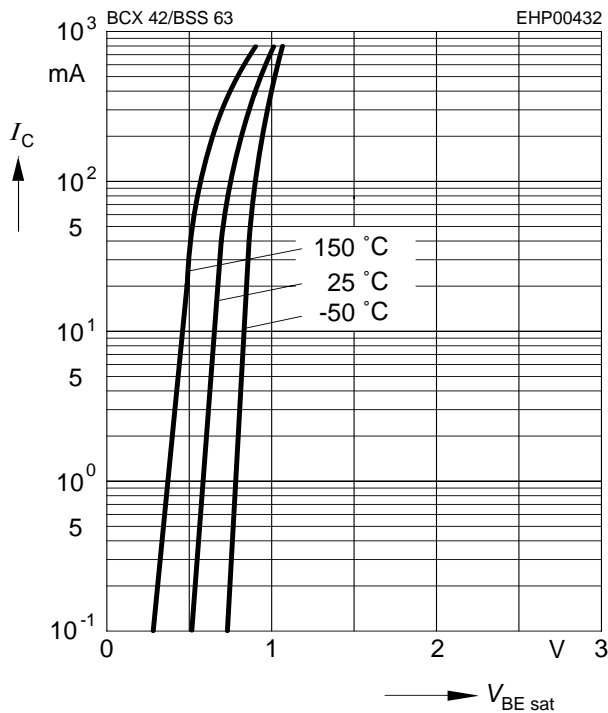
Collector-emitter saturation voltage

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



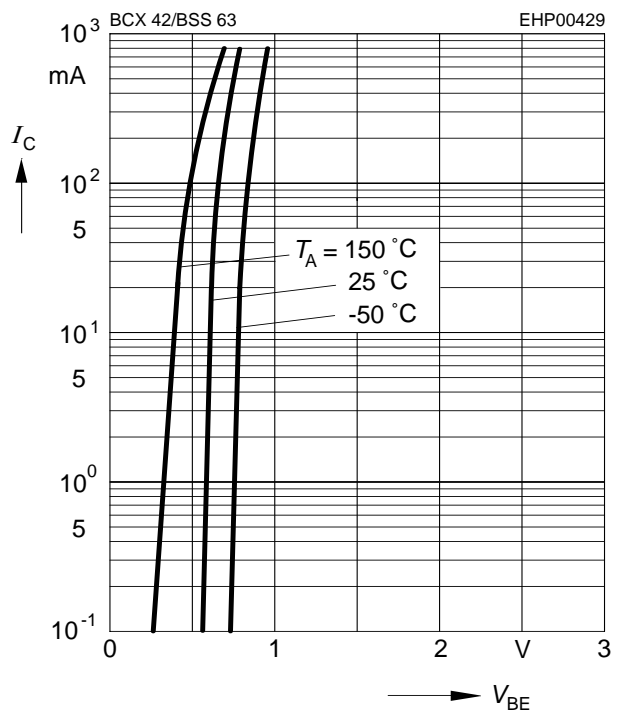
Base-emitter saturation voltage

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



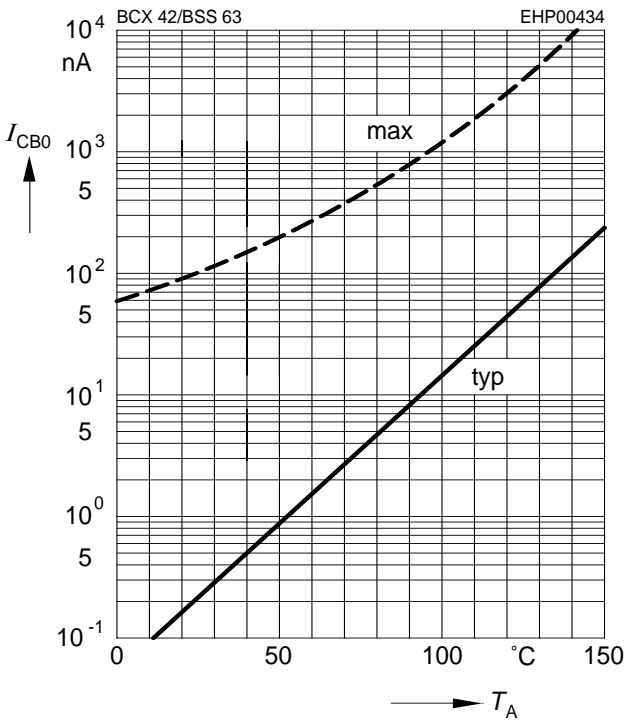
Collector current $I_C = f(V_{BE})$

$V_{CE} = 1\text{ V}$



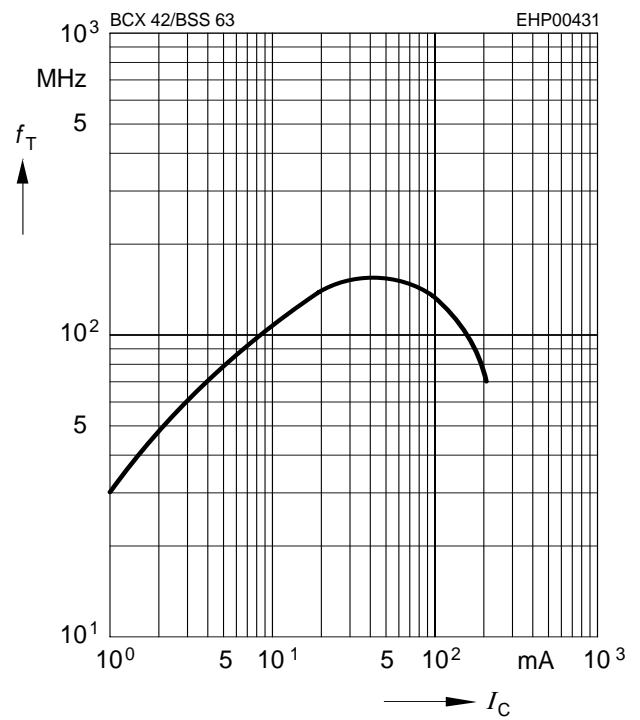
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 100\text{ V}$



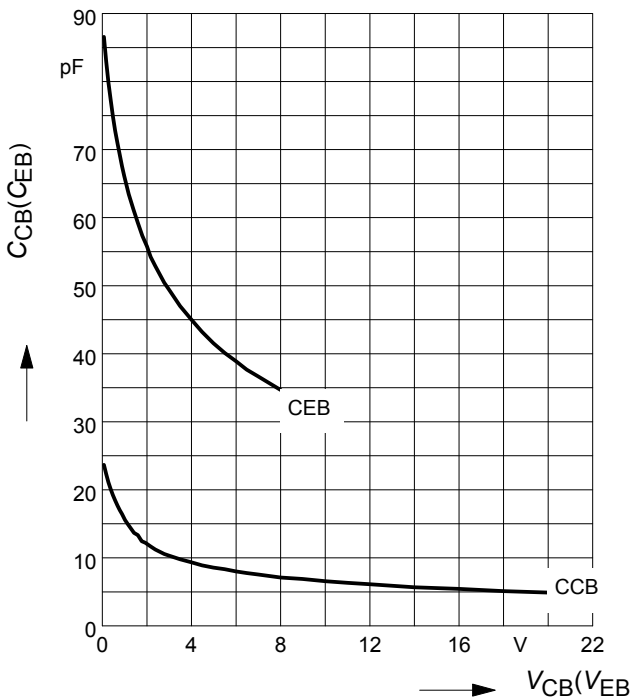
Transition frequency $f_T = f(I_C)$

$V_{CE} = \text{parameter in V, } f = 2\text{ GHz}$

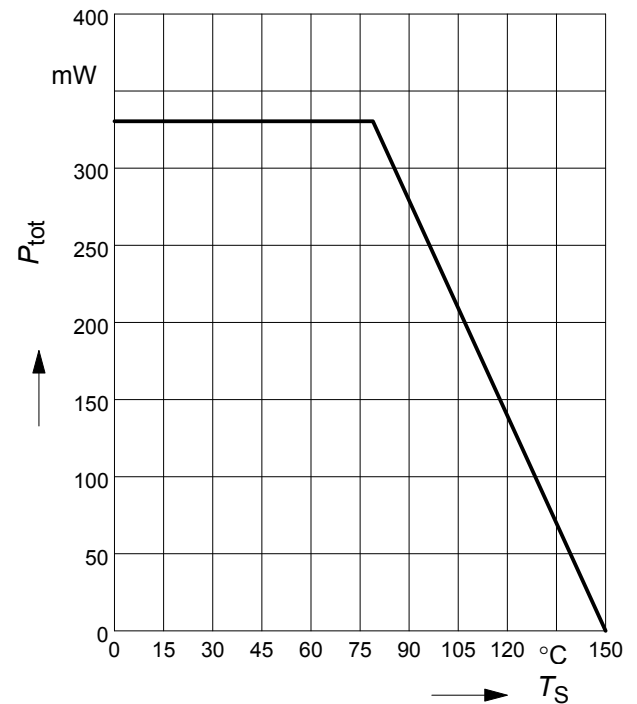


Collector-base capacitance $C_{cb} = f(V_{CB})$

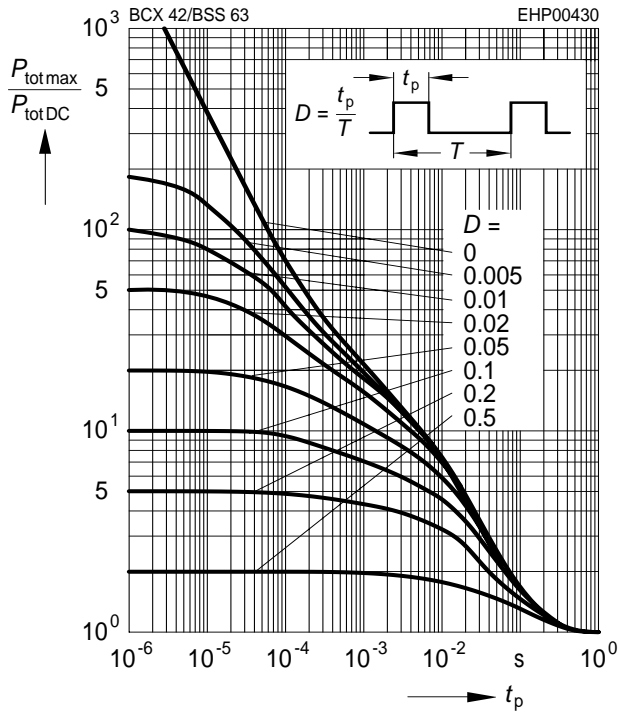
Emitter-base capacitance $C_{eb} = f(V_{EB})$



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



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



Package Outline



1) Lead width can be 0.6 max. in dambar area

Foot Print



Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



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