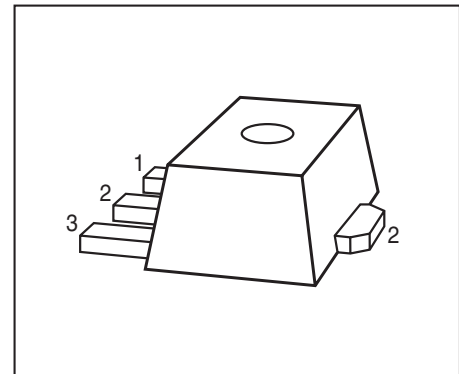


NPN Silicon AF Transistors

- For general AF applications
- High collector current
- High current gain
- Low collector-emitter saturation voltage
- Complementary type: BCX69 (PNP)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|----------|---------|-------------------|-----|-----|---------|
| BCX68-10 | CB | 1=B | 2=C | 3=E | SOT89 |
| BCX68-16 | CC | 1=B | 2=C | 3=E | SOT89 |
| BCX68-25 | CD | 1=B | 2=C | 3=E | SOT89 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | 20 | V |
| Collector-base voltage | V_{CBO} | 25 | |
| Emitter-base voltage | V_{EBO} | 5 | |
| Collector current | I_C | 1 | A |
| Peak collector current, $t_p \leq 10$ ms | I_{CM} | 2 | |
| Base current | I_B | 100 | mA |
| Peak base current | I_{BM} | 200 | |
| Total power dissipation- $T_S \leq 114$ °C | P_{tot} | 3 | 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} | ≤ 12 | K/W |

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

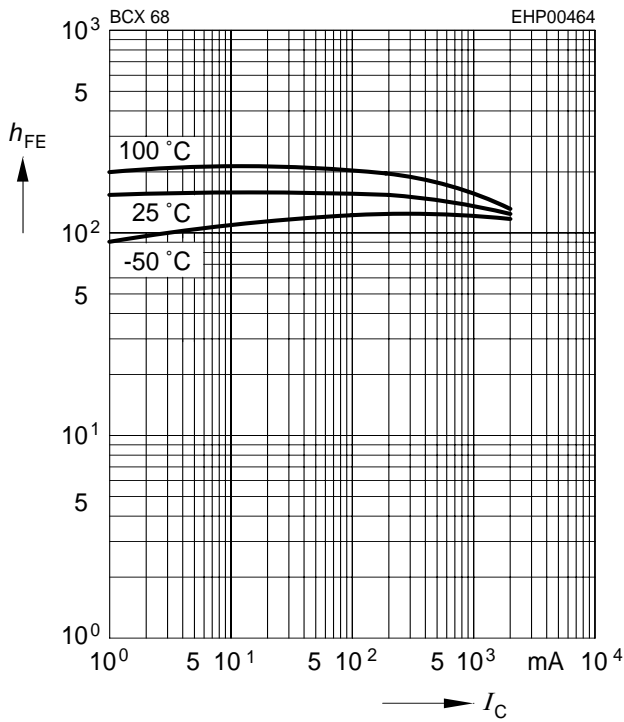
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|---------------|------------------------------|-----------------------------|-----------------------------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 30\text{ mA}, I_B = 0$ | $V_{(BR)CEO}$ | 20 | - | - | V |
| Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}, I_E = 0$ | $V_{(BR)CBO}$ | 25 | - | - | |
| Emitter-base breakdown voltage $I_E = 1\text{ }\mu\text{A}, I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector-base cutoff current $V_{CB} = 25\text{ V}, I_E = 0$ $V_{CB} = 25\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | I_{CBO} | - | - | 0.1 100 | μA |
| DC current gain ¹⁾ $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-10}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-16}$ $I_C = 500\text{ mA}, V_{CE} = 1\text{ V}, \text{BCX68-25}$ $I_C = 1\text{ A}, V_{CE} = 1\text{ V}$ | h_{FE} | 50 85 100 160 60 | - 100 160 250 - | - 160 250 375 - | - |
| Collector-emitter saturation voltage ¹⁾ $I_C = 1\text{ A}, I_B = 100\text{ mA}$ | V_{CEsat} | - | - | 0.5 | V |
| Base-emitter voltage ¹⁾ $I_C = 5\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 1\text{ A}, V_{CE} = 1\text{ V}$ | $V_{BE(ON)}$ | - | 0.6 - | - 1 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 100\text{ mA}, V_{CE} = 5\text{ V}, f = 20\text{ MHz}$ | f_T | - | 100 | - | MHz |

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

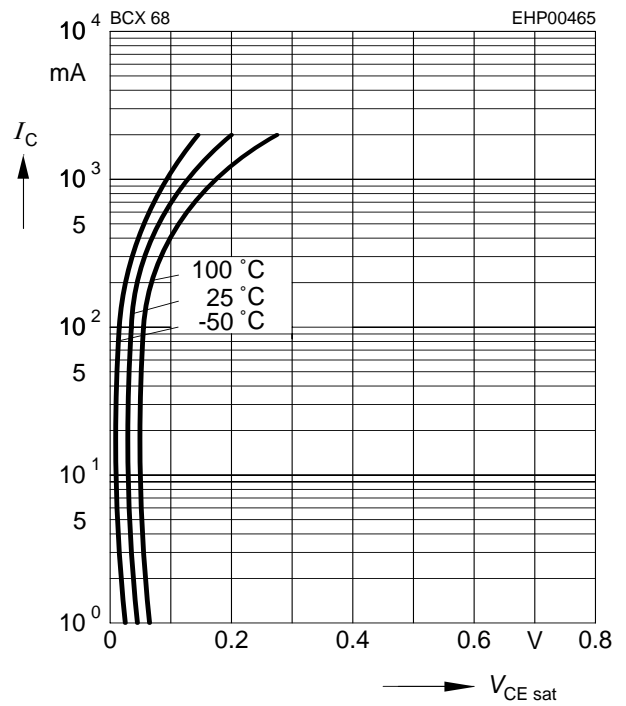
DC current gain $h_{FE} = f(I_C)$

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



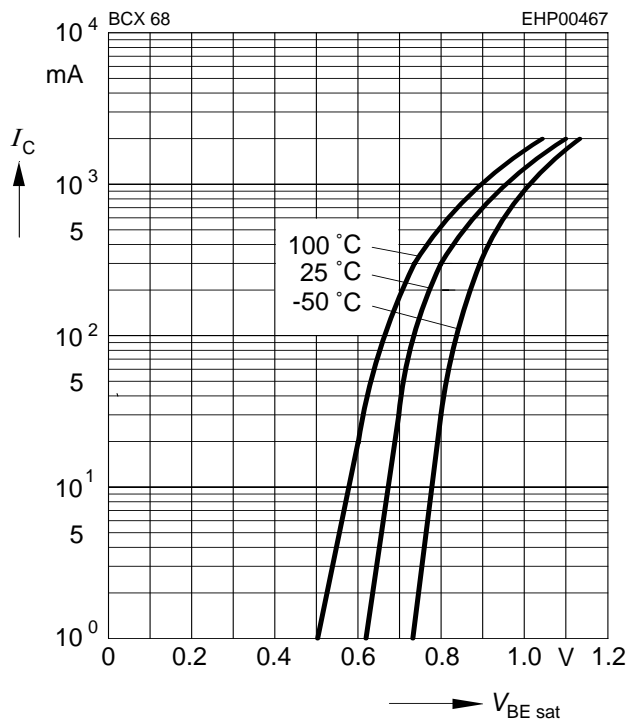
Collector-emitter saturation voltage

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



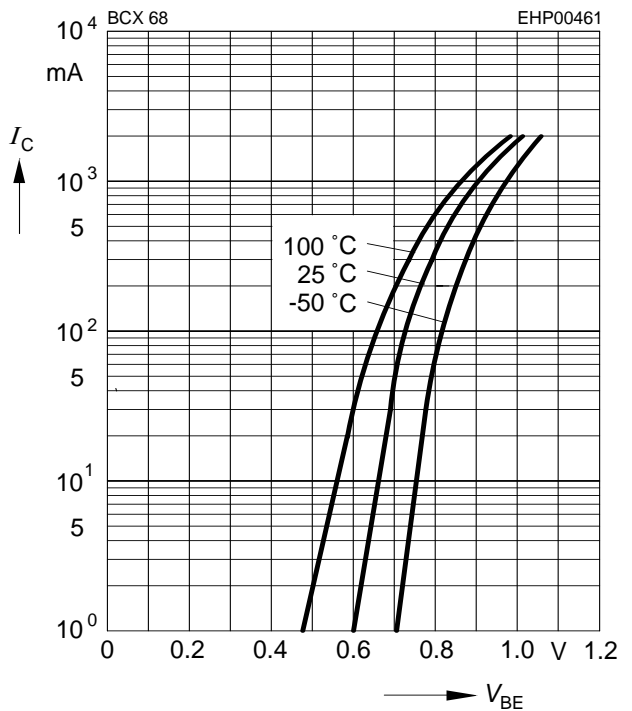
Base-emitter saturation voltage

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



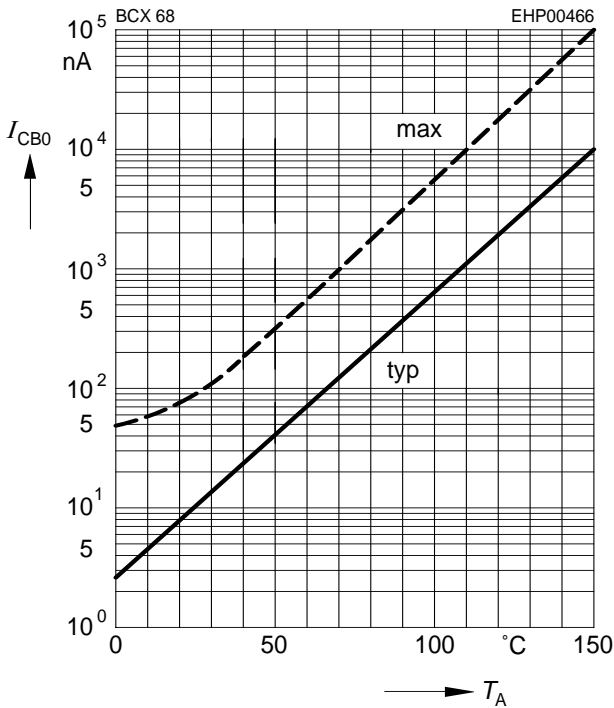
Collector current $I_C = f(V_{BE})$

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



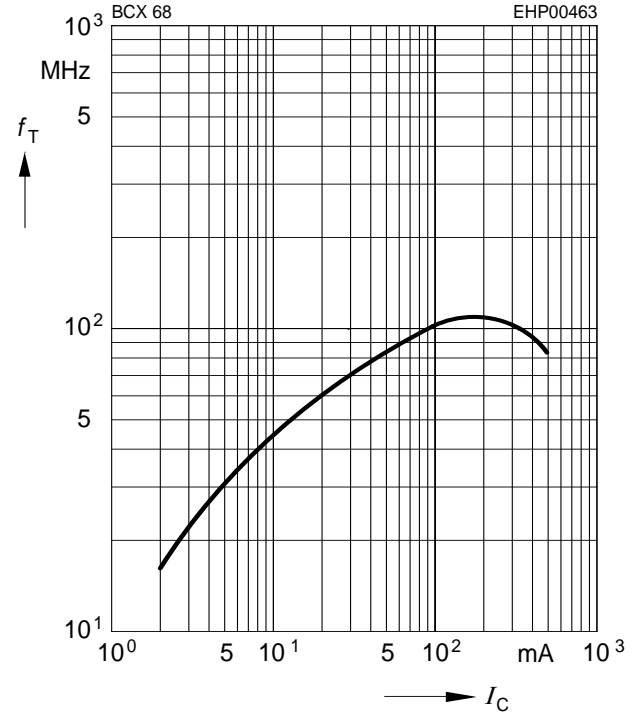
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CB} = 25\text{ V}$

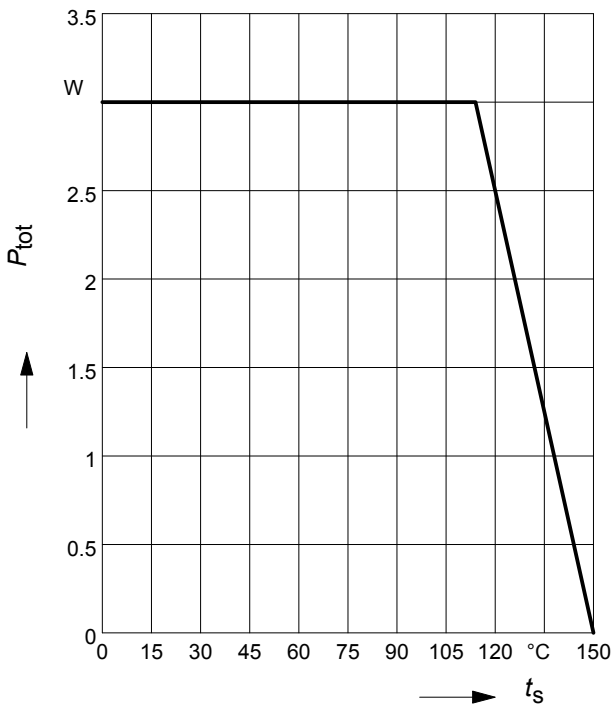


Transition frequency $f_T = f(I_C)$

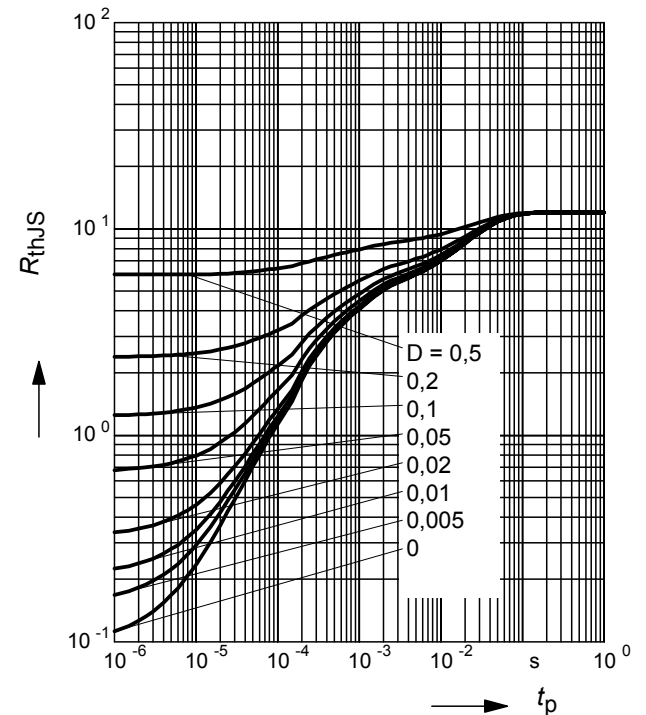
$V_{CE} = 5\text{ V}$



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

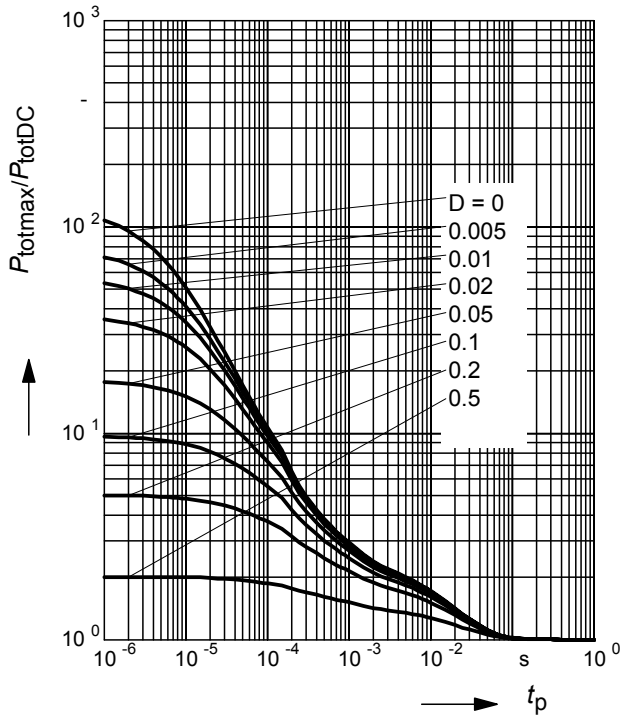


Permissible Pulse Load $R_{thJS} = f(t_p)$



Permissible Pulse Load

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

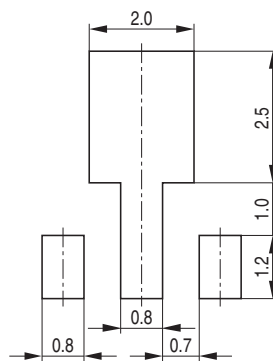


Package Outline

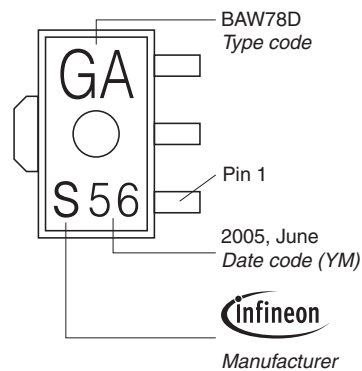


1) Ejector pin markings possible

Foot Print

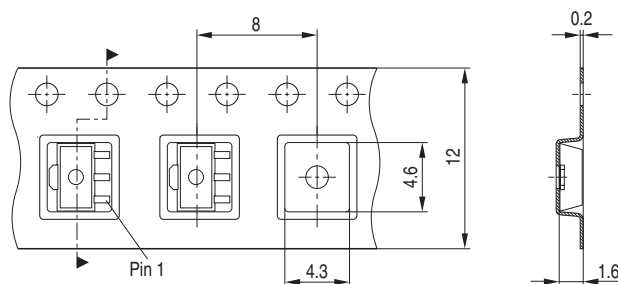


Marking Layout (Example)



Standard Packing

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



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