

PNP Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCX54...BCX56 (NPN)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|----------|---------|-------------------|-----|-----|---------|
| | | 1=B | 2=C | 3=E | |
| BCX51 | AA | 1=B | 2=C | 3=E | SOT89 |
| BCX51-16 | AD | 1=B | 2=C | 3=E | SOT89 |
| BCX52 | AE | 1=B | 2=C | 3=E | SOT89 |
| BCX52-16 | AM | 1=B | 2=C | 3=E | SOT89 |
| BCX53 | AH | 1=B | 2=C | 3=E | SOT89 |
| BCX53-10 | AK | 1=B | 2=C | 3=E | SOT89 |
| BCX53-16 | AL | 1=B | 2=C | 3=E | SOT89 |

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|------|
| Collector-emitter voltage | V_{CEO} | | V |
| BCX51 | | 45 | |
| BCX52 | | 60 | |
| BCX53 | | 80 | |
| Collector-base voltage | V_{CBO} | | |
| BCX51 | | 45 | |
| BCX52 | | 60 | |
| BCX53 | | 100 | |
| Emitter-base voltage | V_{EBO} | 5 | |
| Collector current | I_C | 1 | A |
| Peak collector current, $t_p \leq 10$ ms | I_{CM} | 1.5 | |
| Base current | I_B | 100 | mA |
| Peak base current | I_{BM} | 200 | |
| Total power dissipation $T_S \leq 120$ °C | P_{tot} | 2 | 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} | ≤ 15 | K/W |

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

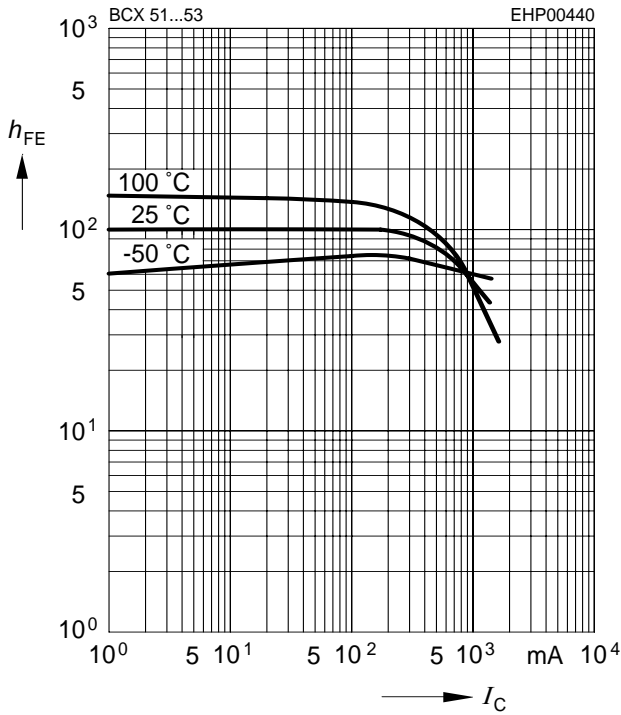
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|---------------|-----------------------------|---------------------------|-----------------------------|---------------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BCX51 | $V_{(BR)CEO}$ | 45 | - | - | V |
| $I_C = 10\text{ mA}$, $I_B = 0$, BCX52 | | 60 | - | - | |
| $I_C = 10\text{ mA}$, $I_B = 0$, BCX53 | | 80 | - | - | |
| Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCX51 | $V_{(BR)CBO}$ | 45 | - | - | |
| $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCX52 | | 60 | - | - | |
| $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCX53 | | 100 | - | - | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector-base cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$ $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$ | I_{CBO} | - | - | 0.1 20 | μA |
| DC current gain ¹⁾ $I_C = 5\text{ mA}$, $V_{CE} = 2\text{ V}$ $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX51...BCX53 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX53-10 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCX51-16...BCX53-16 $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$ | h_{FE} | 25 40 63 100 25 | - - 100 160 - | - 250 160 250 - | - |
| Collector-emitter saturation voltage ¹⁾ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ | V_{CEsat} | - | - | 0.5 | V |
| Base-emitter voltage ¹⁾ $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$ | $V_{BE(ON)}$ | - | - | 1 | |
| AC Characteristics | | | | | |
| Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 20\text{ MHz}$ | f_T | - | 125 | - | MHz |

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

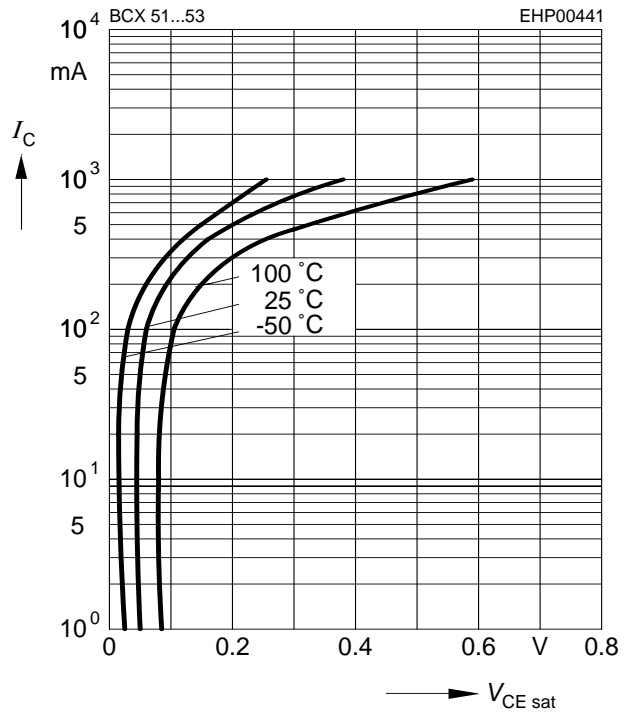
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2\text{ V}$



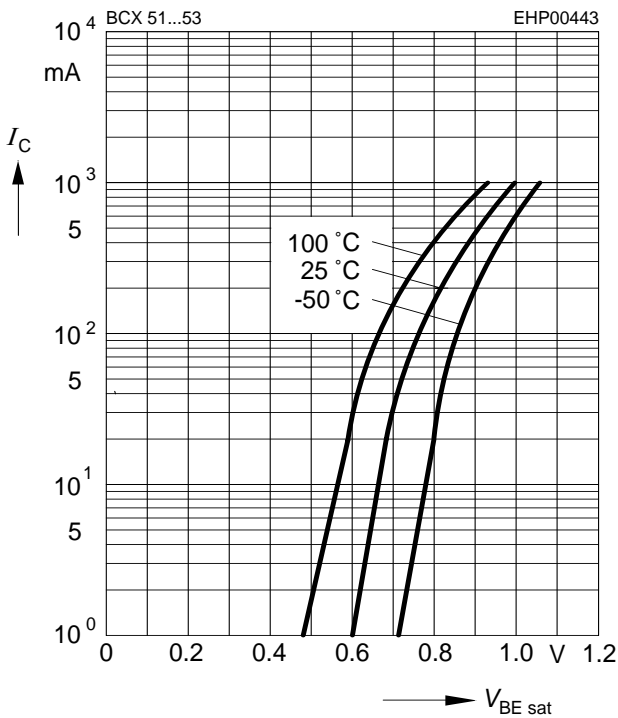
Collector-emitter saturation voltage

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



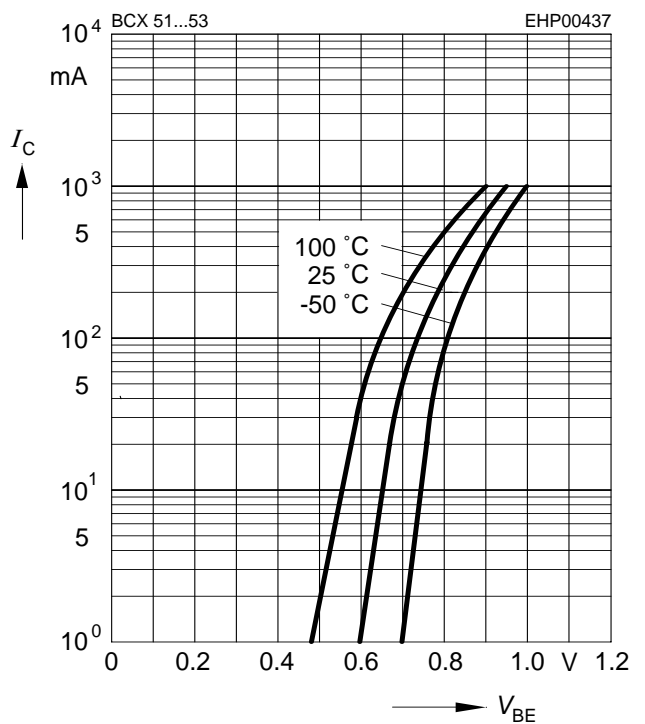
Base-emitter saturation voltage

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



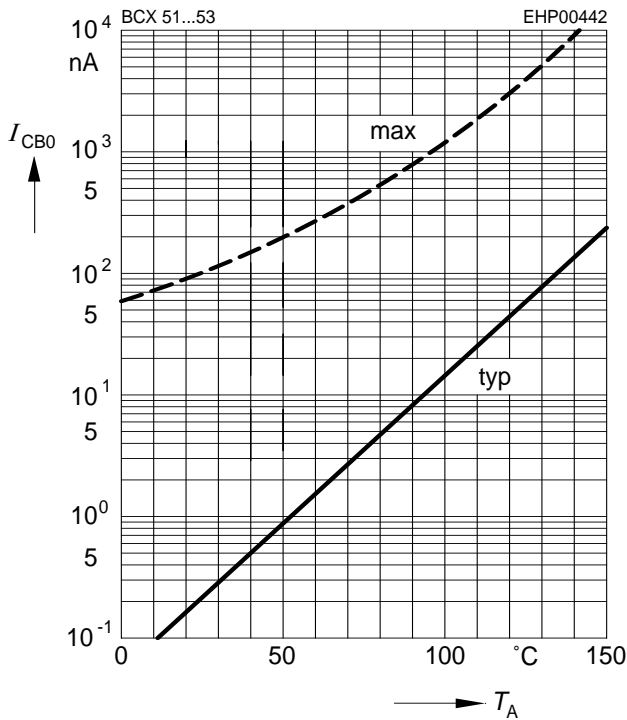
Collector current $I_C = f(V_{BE})$

$V_{CE} = 2\text{ V}$



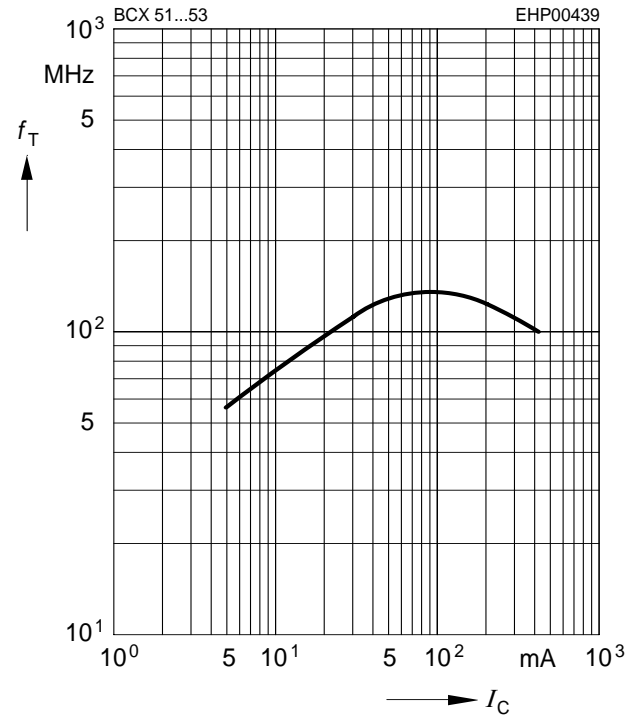
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 30\text{ V}$

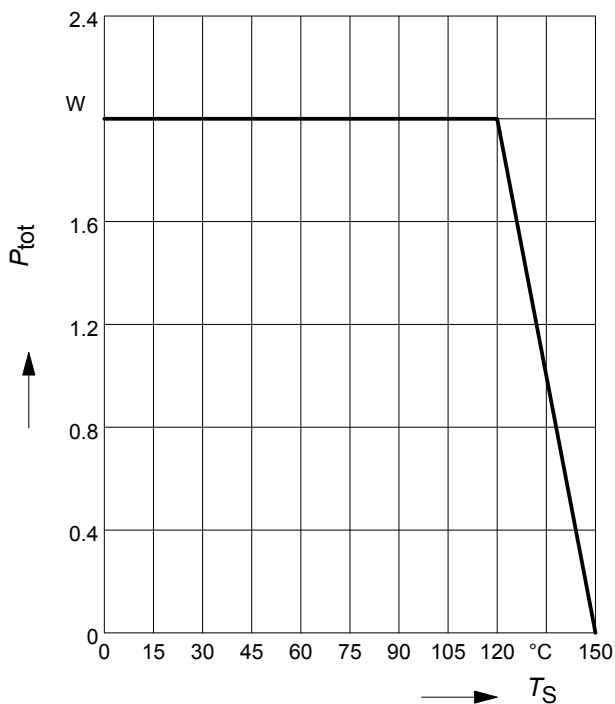


Transition frequency $f_T = f(I_C)$

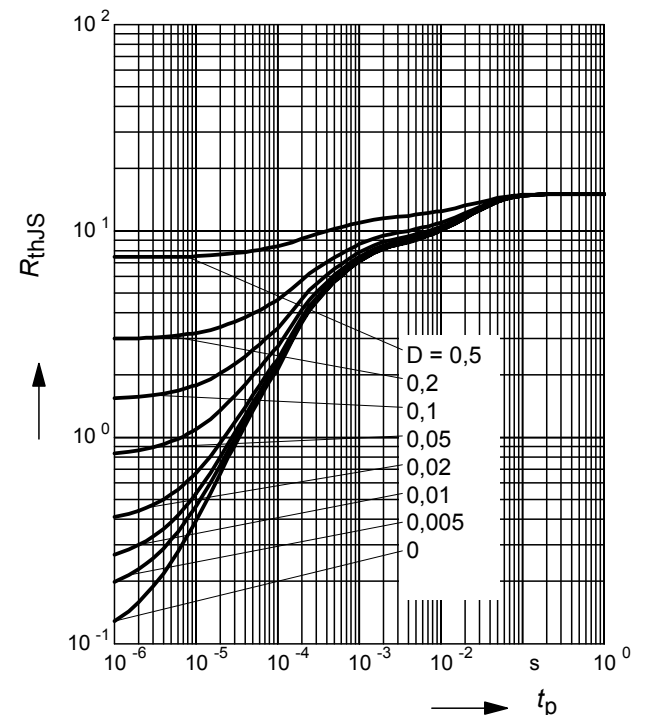
$V_{CE} = 10\text{ V}$



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



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



Permissible Pulse Load

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



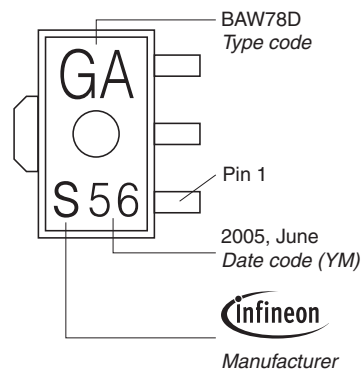
Package Outline



Foot Print

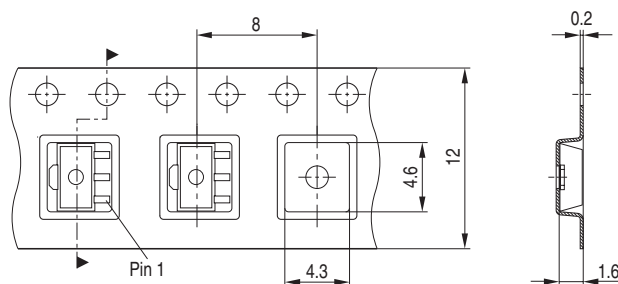


Marking Layout (Example)



Standard Packing

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



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