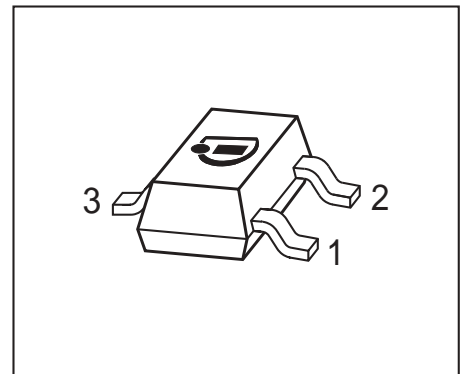


PNP Silicon AF Transistors

- For general AF applications
- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BCW66... (NPN)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



| Type | Marking | Pin Configuration | | | Package |
|--------|---------|-------------------|-----|-----|---------|
| | | 1=B | 2=E | 3=C | |
| BCW67A | DAs | 1=B | 2=E | 3=C | SOT23 |
| BCW67B | DBs | 1=B | 2=E | 3=C | SOT23 |
| BCW67C | DCs | 1=B | 2=E | 3=C | SOT23 |
| BCW68F | DFs | 1=B | 2=E | 3=C | SOT23 |
| BCW68G | DGs | 1=B | 2=E | 3=C | SOT23 |
| BCW68H | DHs | 1=B | 2=E | 3=C | SOT23 |

¹⁾Pb-containing package may be available upon special request

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|------------------|
| Collector-emitter voltage | V_{CEO} | | V |
| BCW67 | | 32 | |
| BCW68 | | 45 | |
| Collector-base voltage | V_{CBO} | | |
| BCW67 | | 45 | |
| BCW68 | | 60 | |
| Emitter-base voltage | V_{EBO} | 5 | |
| Collector current | I_C | 800 | mA |
| Peak collector current | I_{CM} | 1 | A |
| Base current | I_B | 100 | mA |
| Peak base current | I_{BM} | 200 | |
| Total power dissipation, $T_S \leq 79^\circ\text{C}$ | P_{tot} | 330 | mW |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -65 ... 150 | |

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 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 $I_C = 10\text{ mA}$, $I_B = 0$, BCW67 $I_C = 10\text{ mA}$, $I_B = 0$, BCW68 | $V_{(BR)CEO}$ | 32 45 | - - | - - | V |
| Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$, $I_E = 0$, BCW67 $I_C = 10\text{ }\mu\text{A}$, $I_E = 0$, BCW68 | $V_{(BR)CBO}$ | 45 60 | - - | - - | |
| Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$ | $V_{(BR)EBO}$ | 5 | - | - | |
| Collector-base cutoff current $V_{CB} = 32\text{ V}$, $I_E = 0$ $V_{CB} = 45\text{ V}$, $I_E = 0$ $V_{CB} = 32\text{ V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$; BCW67 $V_{CB} = 45\text{ V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$; BCW68 | I_{CBO} | - - - - | - - - - | 0.02 0.02 20 20 | μA |
| Emitter-base cutoff current $V_{EB} = 4\text{ V}$, $I_C = 0$ | I_{EBO} | - | - | 20 | nA |
| DC current gain ¹⁾ $I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ V}$, $h_{FE}\text{-grp.A/F}$ $I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ V}$, $h_{FE}\text{-grp.B/G}$ $I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 10\text{ V}$, $h_{FE}\text{-grp.C/H}$ $I_C = 10\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.A/F}$ $I_C = 10\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.B/G}$ $I_C = 10\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.C/H}$ $I_C = 100\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.A/F}$ $I_C = 100\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.B/G}$ $I_C = 100\text{ mA}$, $V_{CE} = 1\text{ V}$, $h_{FE}\text{-grp.C/H}$ $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$, $h_{FE}\text{-grp.A/F}$ $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$, $h_{FE}\text{-grp.B/G}$ $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$, $h_{FE}\text{-grp.C/H}$ | h_{FE} | 35 50 80 75 120 180 100 160 250 35 60 100 | - - - - - - 160 250 350 - - - | - - - - - - 250 400 630 - - - | - |

DC Electrical Characteristics

| Parameter | Symbol | Values | | | Unit |
|--|-------------|--------|------|------------|------|
| | | min. | typ. | max. | |
| Characteristics | | | | | |
| Collector-emitter saturation voltage ¹⁾ $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | V_{CEsat} | - | - | 0.3 0.7 | V |
| Base emitter saturation voltage ¹⁾ $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | V_{BEsat} | - | - | 1.25 2 | |

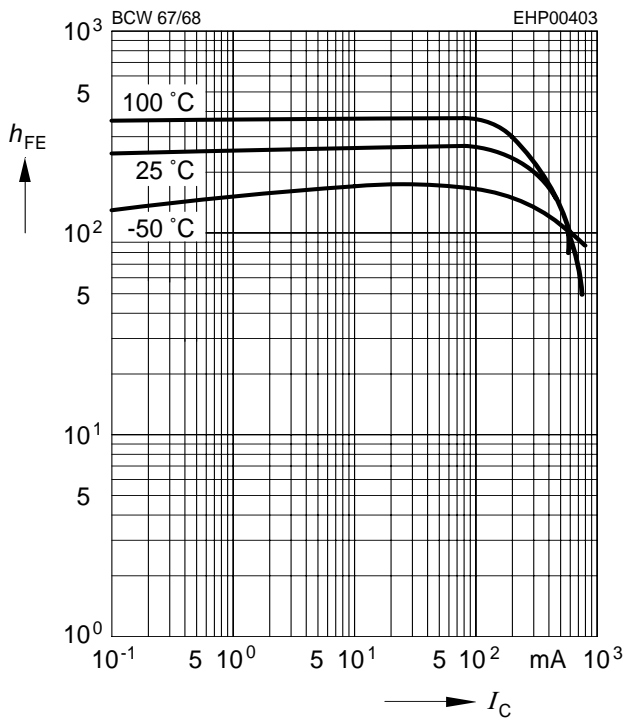
AC Characteristics

| | | | | | |
|---|----------|---|-----|---|-----|
| Transition frequency $I_C = 50 \text{ mA}, V_{CE} = 5 \text{ V}, f = 20 \text{ MHz}$ | f_T | - | 200 | - | MHz |
| Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$ | C_{cb} | - | 6 | - | pF |
| Emitter-base capacitance $V_{EB} = 0.5 \text{ V}, f = 1 \text{ MHz}$ | C_{eb} | - | 60 | - | |

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

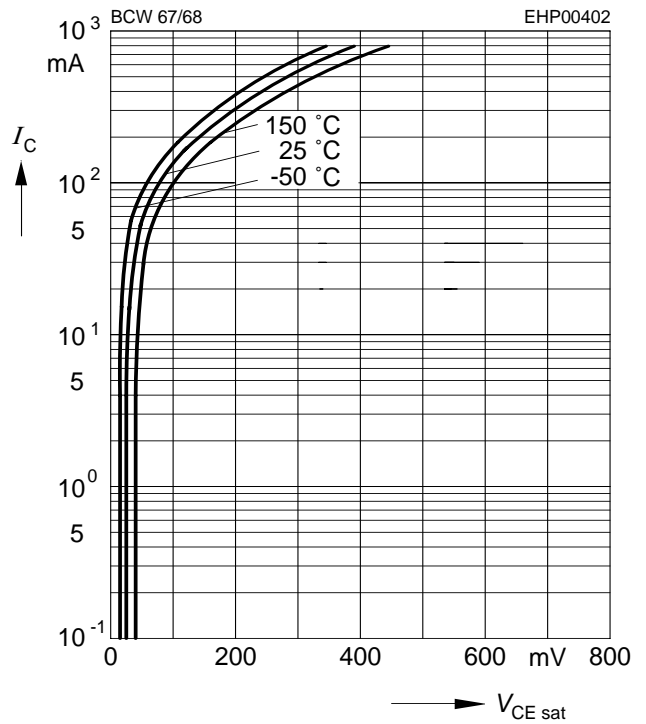
DC current gain $h_{FE} = f(I_C)$

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



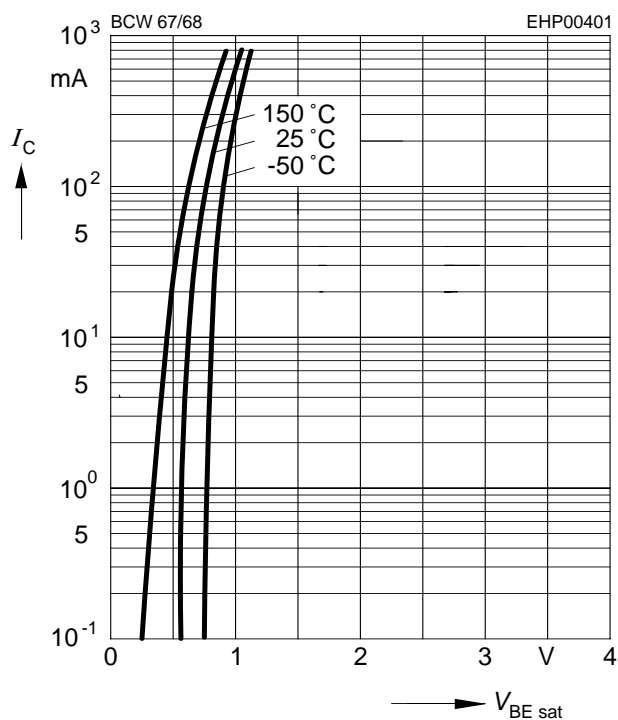
Collector-emitter saturation voltage

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



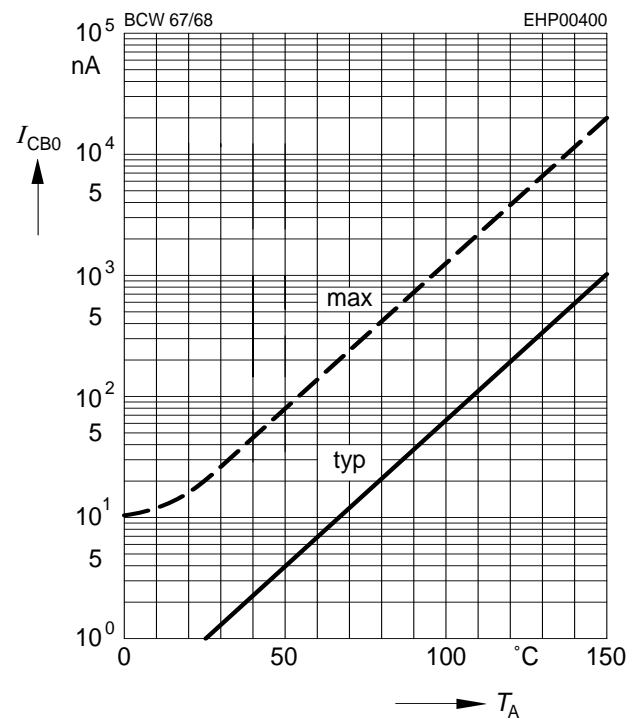
Base-emitter saturation voltage

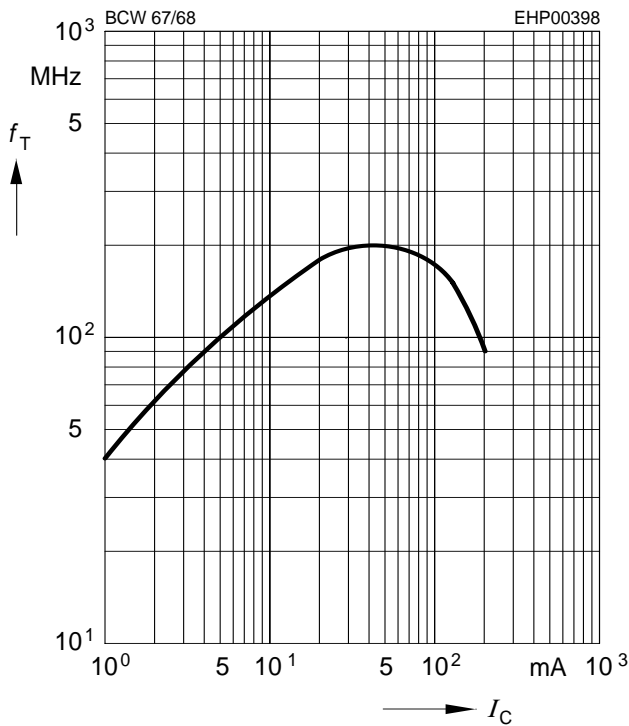
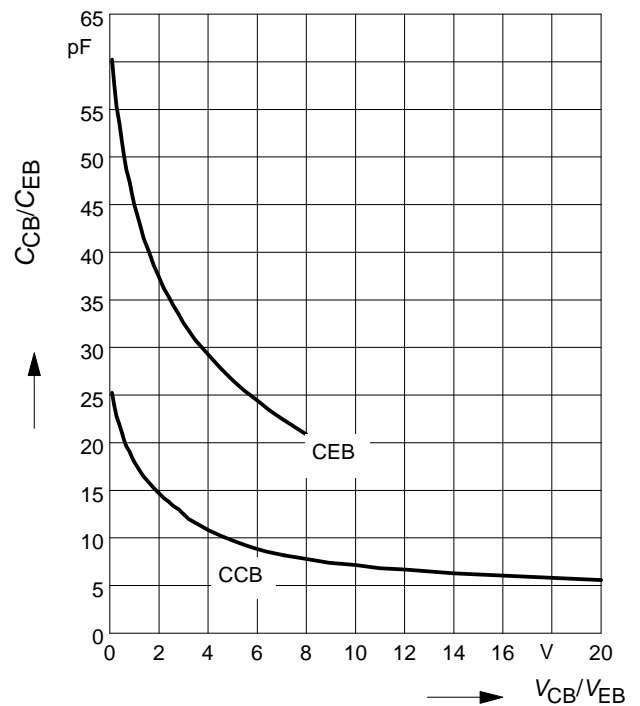
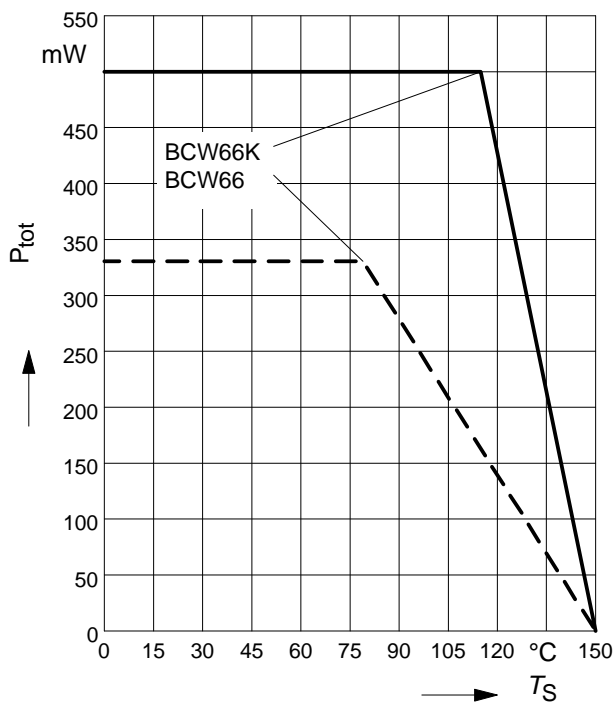
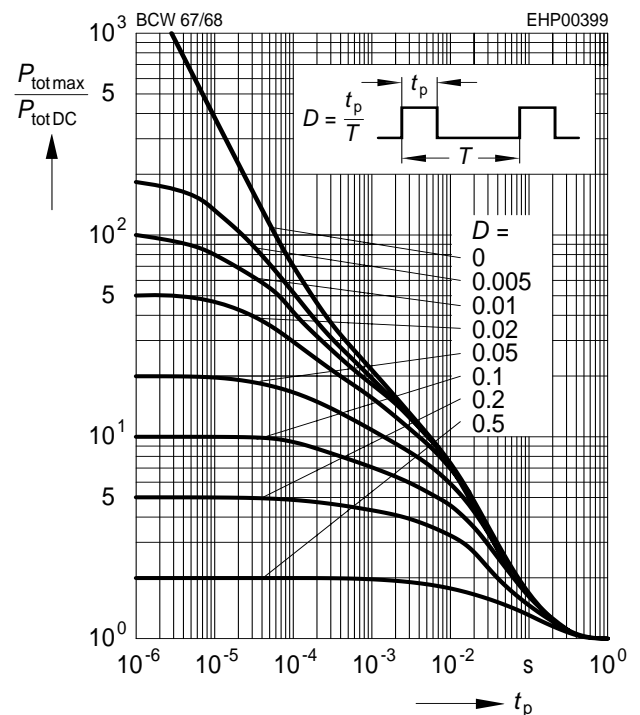
$I_C = f(V_{BEsat}), h_{FE} = 10$



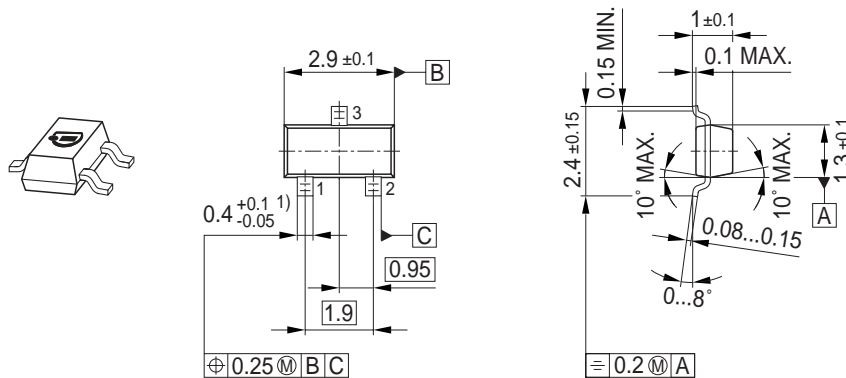
Collector cutoff current $I_{CBO} = f(T_A)$

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



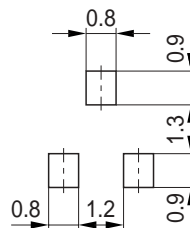
Transition frequency $f_T = f(I_C)$
 $V_{CE} = 5\text{ V}$

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


Package Outline

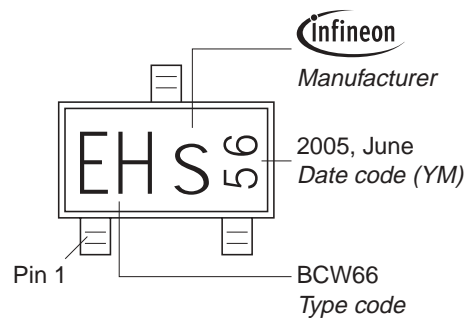


1) Lead width can be 0.6 max. in dambar area

Foot Print

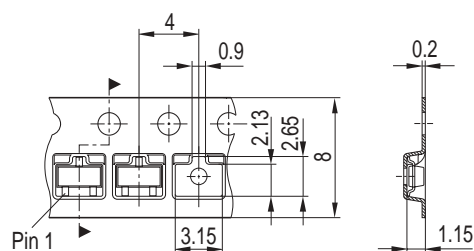


Marking Layout (Example)



Standard Packing

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



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