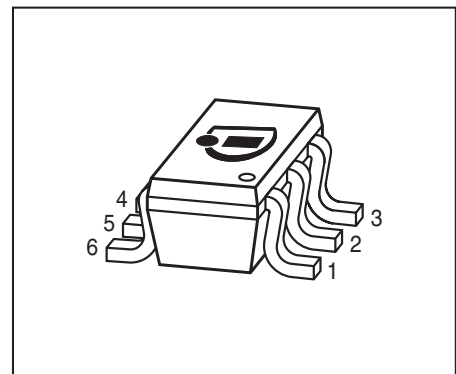
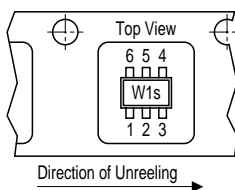


### NPN Silicon AF Transistor Array

- For AF stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated NPN/PNP transistors in one package
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

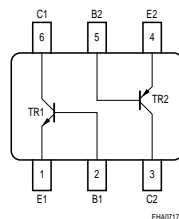


### Tape loading orientation



Marking on SC74 package (for example W1s) corresponds to pin 1 of device

Position in tape: pin 1 opposite of feed hole side



SC74\_Tape

| Type     | Marking | Pin Configuration |      |      |      |      |      | Package |
|----------|---------|-------------------|------|------|------|------|------|---------|
| BC817UPN | 1Bs     | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SC74    |

### Maximum Ratings

| Parameter                                     | Symbol    | Value       | Unit |
|---|-----------|-------------|------|
| Collector-emitter voltage                     | $V_{CEO}$ | 45          | V    |
| Collector-base voltage                        | $V_{CBO}$ | 50          |      |
| Emitter-base voltage                          | $V_{EBO}$ | 5           |      |
| Collector current                             | $I_C$     | 500         | mA   |
| Peak collector current, $t_p \leq 10$ ms      | $I_{CM}$  | 1000        |      |
| Base current                                  | $I_B$     | 100         |      |
| Peak base current                             | $I_{BM}$  | 200         | mW   |
| Total power dissipation-<br>$T_S \leq 115$ °C | $P_{tot}$ | 330         |      |
| Junction temperature                          | $T_j$     | 150         |      |
| Storage temperature                           | $T_{stg}$ | -65 ... 150 |      |

**Thermal Resistance**

| Parameter                                | Symbol     | Value      | Unit |
|--|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ | $\leq 105$ | K/W  |

**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<br>$I_C = 10\text{ mA}, I_B = 0$   | $V_{(BR)CEO}$ | 45         | -        | -         | V             |
| Collector-base breakdown voltage<br>$I_C = 10\text{ }\mu\text{A}, I_E = 0$   | $V_{(BR)CBO}$ | 50         | -        | -         |               |
| Emitter-base breakdown voltage<br>$I_E = 10\text{ }\mu\text{A}, I_C = 0$   | $V_{(BR)EBO}$ | 5          | -        | -         |               |
| Collector-base cutoff current<br>$V_{CB} = 25\text{ V}, I_E = 0$<br>$V_{CB} = 25\text{ V}, I_E = 0, T_A = 150\text{ }^\circ\text{C}$ | $I_{CBO}$     | -          | -        | 0.1<br>50 | $\mu\text{A}$ |
| Emitter-base cutoff current<br>$V_{EB} = 4\text{ V}, I_C = 0$  | $I_{EBO}$     | -          | -        | 100       | nA            |
| DC current gain <sup>2)</sup><br>$I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$<br>$I_C = 300\text{ mA}, V_{CE} = 1\text{ V}$            | $h_{FE}$      | 160<br>100 | 250<br>- | 400<br>-  | -             |
| Collector-emitter saturation voltage <sup>2)</sup><br>$I_C = 500\text{ mA}, I_B = 50\text{ mA}$                                      | $V_{CEsat}$   | -          | -        | 0.7       | V             |
| Base emitter saturation voltage <sup>2)</sup><br>$I_C = 500\text{ mA}, I_B = 50\text{ mA}$   | $V_{BEsat}$   | -          | -        | 1.2       |               |

**AC Characteristics**

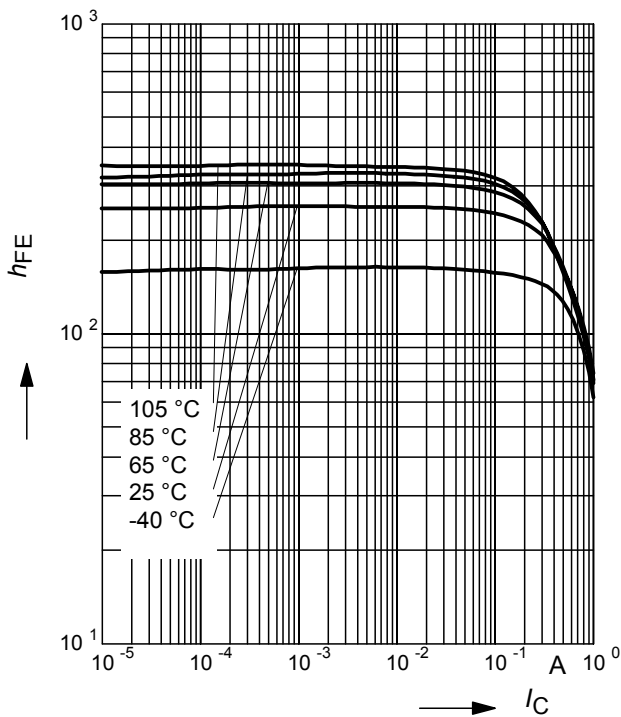
|   |          |   |     |   |     |
|---|----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 50\text{ mA}, V_{CE} = 5\text{ V}, f = 100\text{ MHz}$ | $f_T$    | - | 170 | - | MHz |
| Collector-base capacitance<br>$f = 1\text{ MHz}, V_{BE} = 10\text{ V}$                | $C_{cb}$ | - | 6   | - | pF  |
| Emitter-base capacitance<br>$V_{EB} = 0.5\text{ V}, f = 1\text{ MHz}$                 | $C_{eb}$ | - | 60  | - |     |

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

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

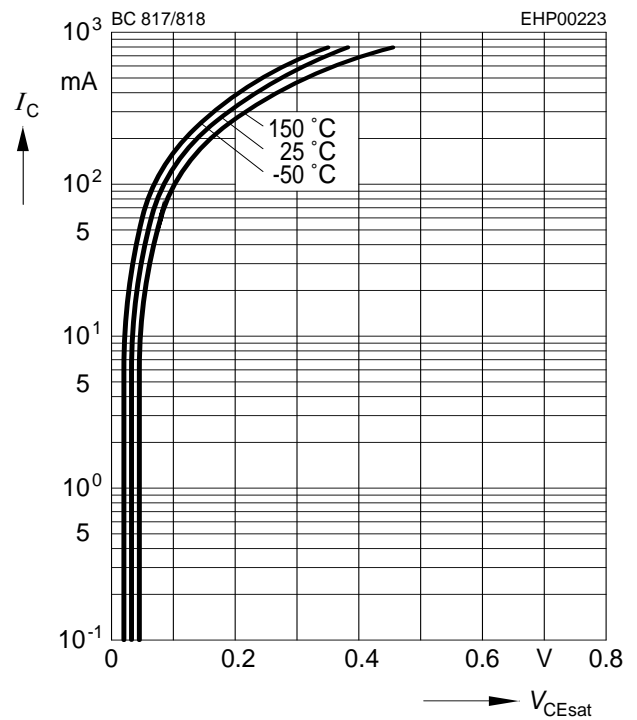
**DC current gain  $h_{FE} = f(I_C)$**

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



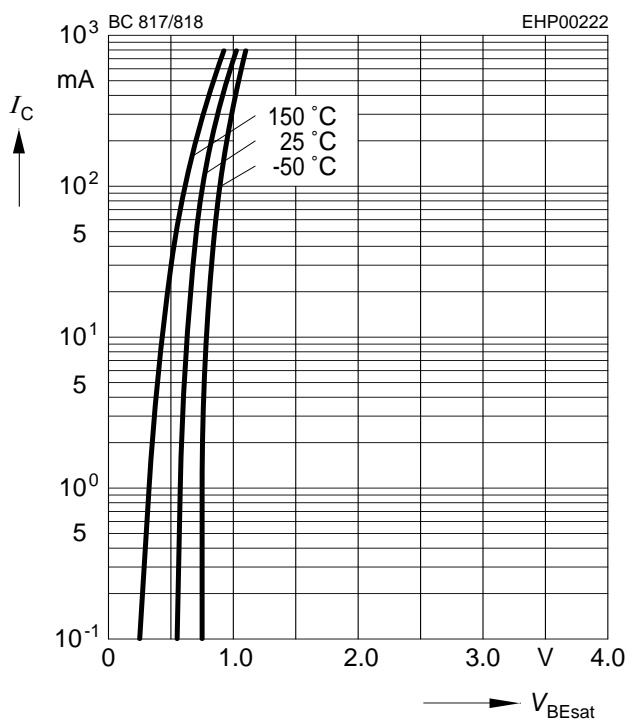
**Collector-emitter saturation voltage**

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



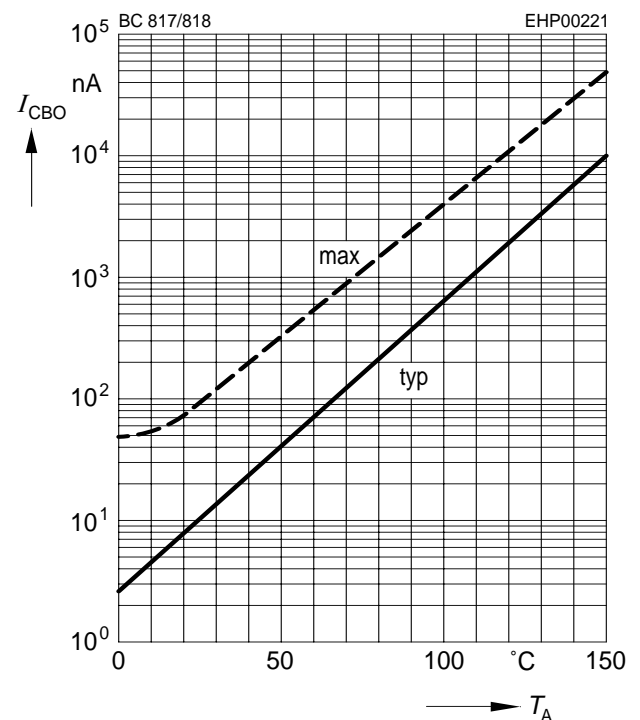
**Base-emitter saturation voltage**

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



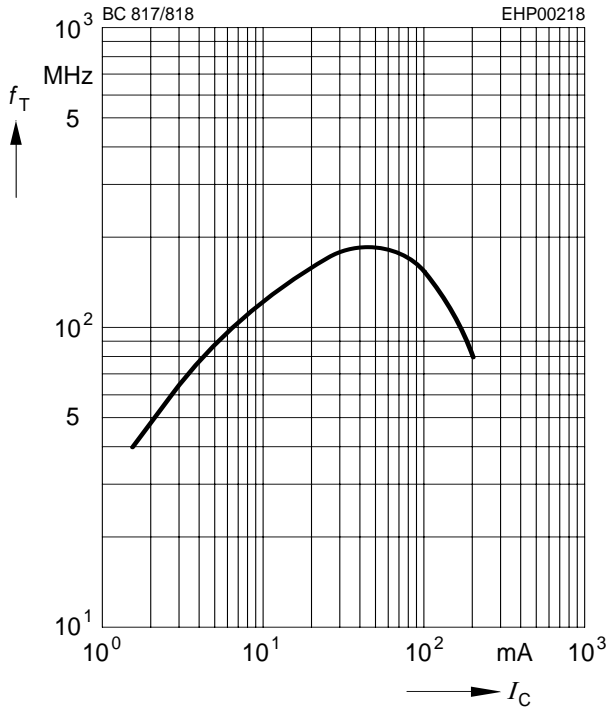
**Collector cutoff current  $I_{CBO} = f(T_A)$**

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



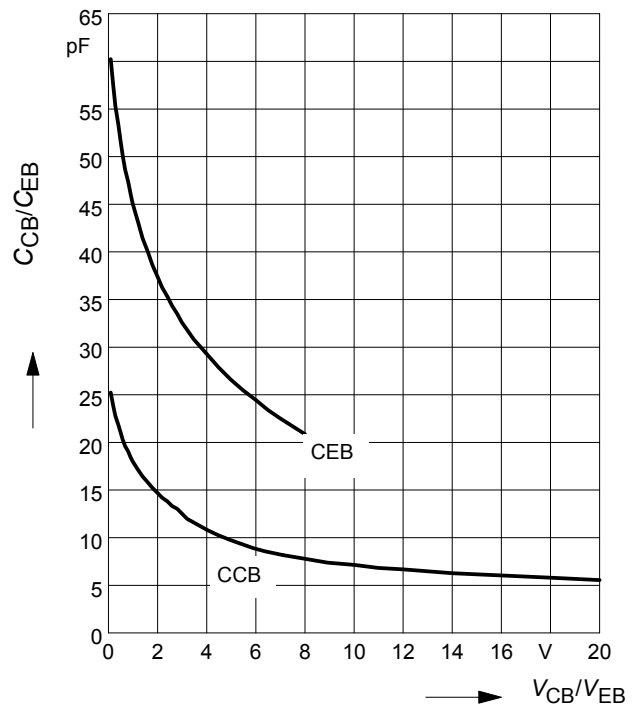
Transition frequency  $f_T = f(I_C)$

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

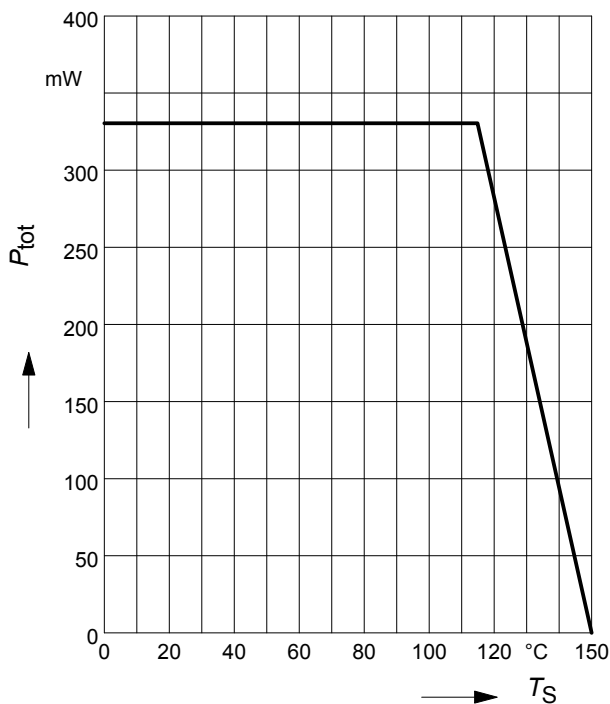


Collector-base capacitance  $C_{cb} = f(V_{CB})$

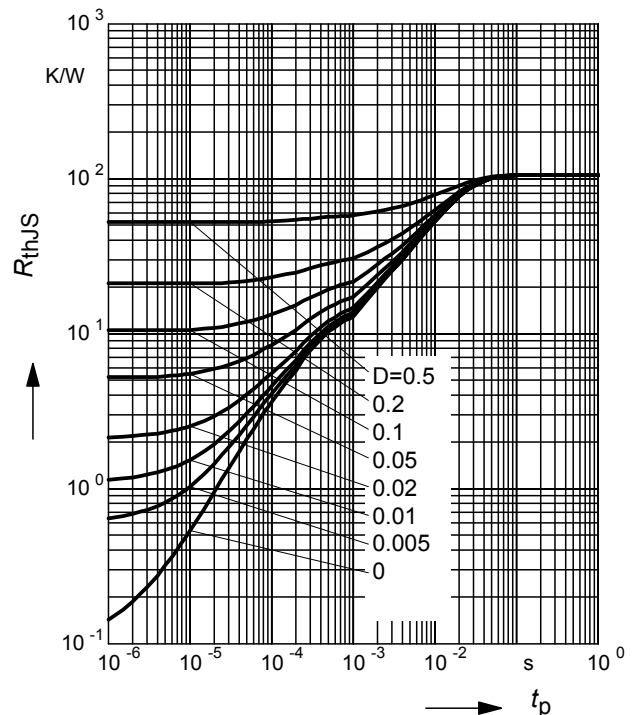
Emitter-base capacitance  $C_{eb} = f(V_{EB})$



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

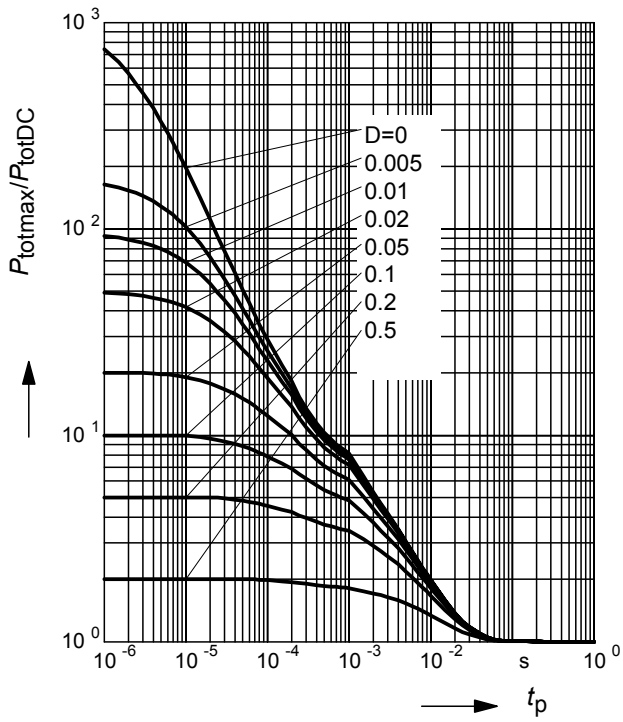


Permissible Pulse Load  $R_{thJS} = f(t_p)$

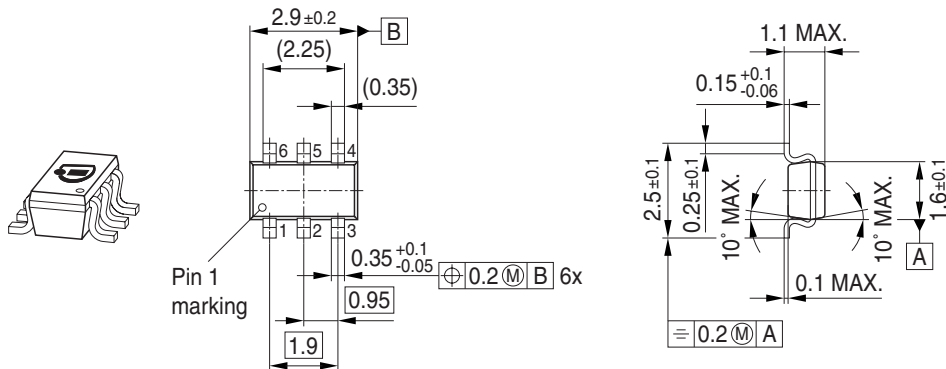


**Permissible Pulse Load**

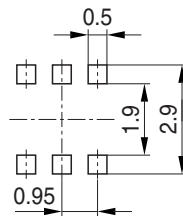
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$



Package Outline

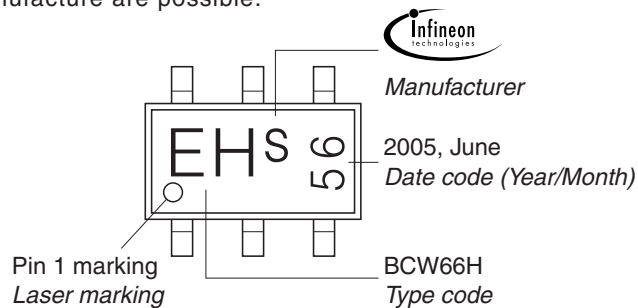


Foot Print



Marking Layout (Example)

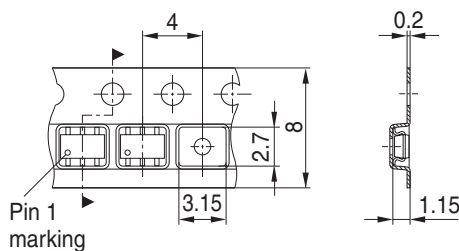
Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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