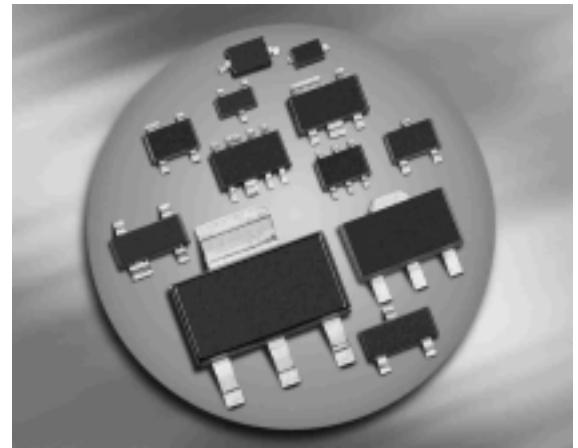


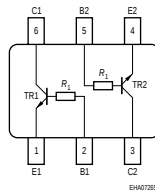
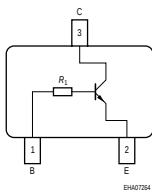
## NPN silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in resistor ( $R_1=4.7\text{ k}\Omega$ )
- BCR119S: Two internally isolated transistors with good matching in one multichip package
- BCR119S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



### BCR119/F/W

### BCR119S



| Type    | Marking | Pin Configuration |      |      |      |      |      | Package |
|---------|---------|-------------------|------|------|------|------|------|---------|
| BCR119  | WKs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SOT23   |
| BCR119F | WKs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | TSFP-3  |
| BCR119S | WKs     | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363  |
| BCR119W | WKs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SOT323  |

<sup>1</sup>Pb-containing package may be available upon special request

**Maximum Ratings**

| Parameter                                                                                                                                                                                   | Symbol       | Value                    | Unit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|------|
| Collector-emitter voltage                                                                                                                                                                   | $V_{CEO}$    | 50                       | V    |
| Collector-base voltage                                                                                                                                                                      | $V_{CBO}$    | 50                       |      |
| Input forward voltage                                                                                                                                                                       | $V_{i(fwd)}$ | 30                       |      |
| Input reverse voltage                                                                                                                                                                       | $V_{i(rev)}$ | 5                        |      |
| DC collector current                                                                                                                                                                        | $I_E$        | 100                      | mA   |
| Total power dissipation-<br>BCR119, $T_S \leq 102^\circ\text{C}$<br>BCR119F, $T_S \leq 128^\circ\text{C}$<br>BCR119S, $T_S \leq 115^\circ\text{C}$<br>BCR119W, $T_S \leq 124^\circ\text{C}$ | $P_{tot}$    | 200<br>250<br>250<br>250 | mW   |
| Junction temperature                                                                                                                                                                        | $T_j$        | 150                      |      |
| Storage temperature                                                                                                                                                                         | $T_{stg}$    | -65 ... 150              |      |

**Thermal Resistance**

| Parameter                                                                           | Symbol     | Value                                               | Unit |
|-------------------------------------------------------------------------------------|------------|-----------------------------------------------------|------|
| Junction - soldering point <sup>1)</sup><br>BCR119<br>BCR119F<br>BCR119S<br>BCR119W | $R_{thJS}$ | $\leq 240$<br>$\leq 90$<br>$\leq 140$<br>$\leq 105$ | K/W  |

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

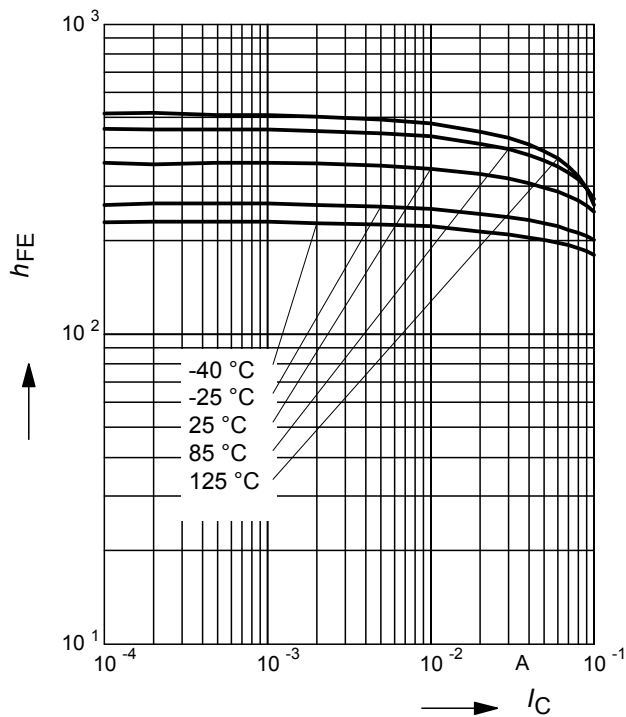
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                             | Symbol                      | Values |      |      | Unit |
|-------------------------------------------------------------------------------------------------------|-----------------------------|--------|------|------|------|
|                                                                                                       |                             | min.   | typ. | max. |      |
| DC Characteristics                                                                                    |                             |        |      |      |      |
| Collector-emitter breakdown voltage<br>$I_C = 100\ \mu\text{A}$ , $I_B = 0$                           | $V_{(\text{BR})\text{CEO}}$ | 50     | -    | -    | V    |
| Collector-base breakdown voltage<br>$I_C = 10\ \mu\text{A}$ , $I_E = 0$                               | $V_{(\text{BR})\text{CBO}}$ | 50     | -    | -    |      |
| Collector-base cutoff current<br>$V_{\text{CB}} = 40\ \text{V}$ , $I_E = 0$                           | $I_{\text{CBO}}$            | -      | -    | 100  | nA   |
| Emitter-base cutoff current<br>$V_{\text{EB}} = 5\ \text{V}$ , $I_C = 0$                              | $I_{\text{EBO}}$            | -      | -    | 100  | nA   |
| DC current gain <sup>1)</sup><br>$I_C = 5\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$                 | $h_{\text{FE}}$             | 120    | -    | 630  | -    |
| Collector-emitter saturation voltage <sup>1)</sup><br>$I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$  | $V_{\text{CEsat}}$          | -      | -    | 0.3  | V    |
| Input off voltage<br>$I_C = 100\ \mu\text{A}$ , $V_{\text{CE}} = 5\ \text{V}$                         | $V_{\text{i(off)}}$         | 0.4    | -    | 0.8  |      |
| Input on voltage<br>$I_C = 2\ \text{mA}$ , $V_{\text{CE}} = 0.3\ \text{V}$                            | $V_{\text{i(on)}}$          | 0.5    | -    | 1.1  |      |
| Input resistor                                                                                        | $R_1$                       | 3.2    | 4.7  | 6.2  | kΩ   |
| AC Characteristics                                                                                    |                             |        |      |      |      |
| Transition frequency<br>$I_C = 10\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$ , $f = 100\ \text{MHz}$ | $f_{\text{T}}$              | -      | 150  | -    | MHz  |
| Collector-base capacitance<br>$V_{\text{CB}} = 10\ \text{V}$ , $f = 1\ \text{MHz}$                    | $C_{\text{cb}}$             | -      | 3    | -    | pF   |

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

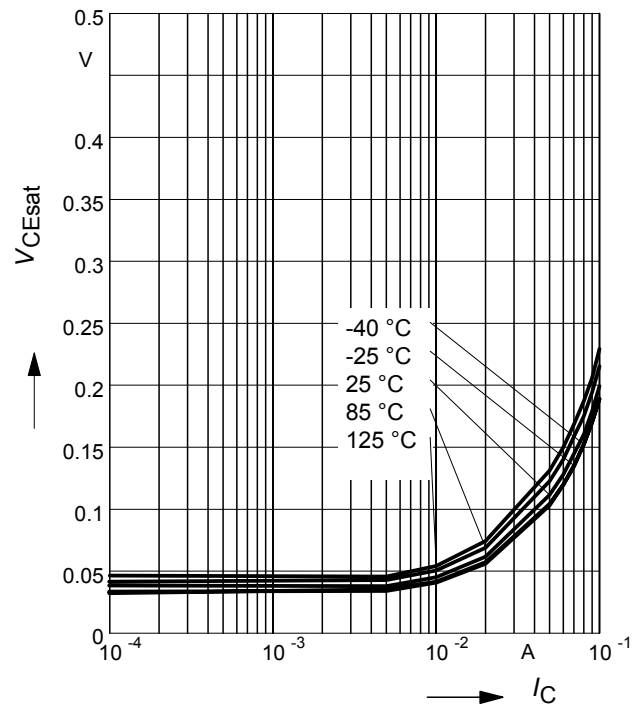
### DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$  (common emitter configuration)



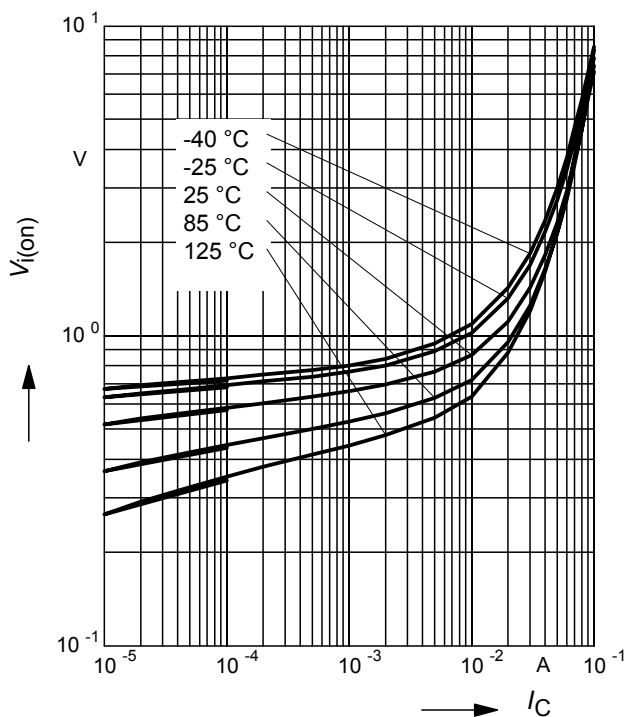
### Collector-emitter saturation voltage

$V_{CEsat} = f(I_C)$ ,  $I_C/I_B = 20$



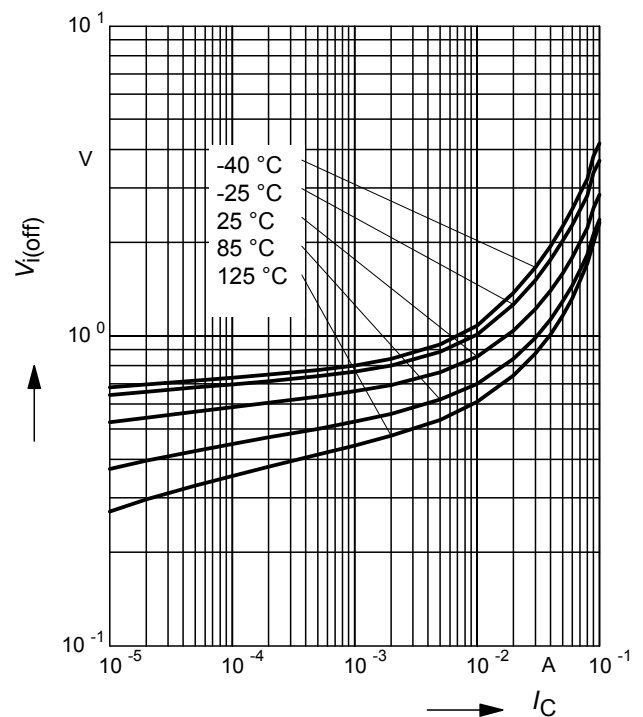
### Input on Voltage $V_{i(on)} = f(I_C)$

$V_{CE} = 0.3V$  (common emitter configuration)



### Input off voltage $V_{i(off)} = f(I_C)$

$V_{CE} = 5V$  (common emitter configuration)



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

**BCR119**



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

**BCR119F**



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

**BCR119S**



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

**BCR119W**



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

BCR119



### Permissible Pulse Load

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

BCR119



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

BCR119F



### Permissible Pulse Load

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

BCR119F



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

BCR119S



### Permissible Pulse Load

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

BCR119S



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

BCR119W

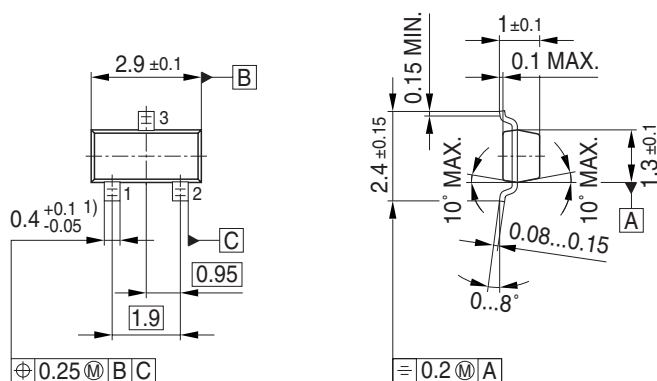


### Permissible Pulse Load

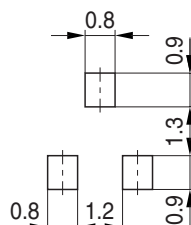
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR119W



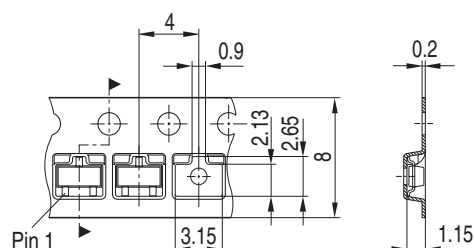


## Foot Print



The diagram shows a top-down view of a BCW66 LED package. It is a rectangular component with four pins. The top pin is labeled 'Pin 1'. The package has a central rectangular area containing the text 'EHS' and '65'. To the right of this area, the text '2005, June' and 'Date code (YM)' is shown. Above the package, the Infineon logo and the text 'Manufacturer' are displayed. Below the package, the text 'BCW66' and 'Type code' are shown.

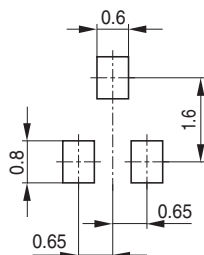
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



## Package Outline



## Foot Print

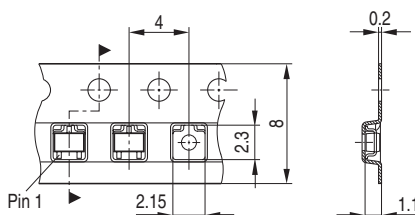


## Marking Layout (Example)

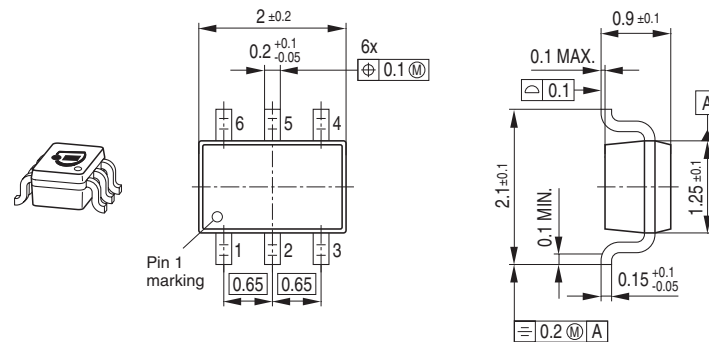


## Standard Packing

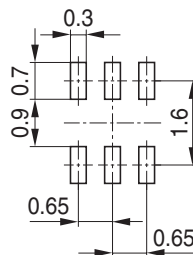
Reel  $\varnothing 180 \text{ mm}$  = 3.000 Pieces/Reel  
 Reel  $\varnothing 330 \text{ mm}$  = 10.000 Pieces/Reel



## Package Outline

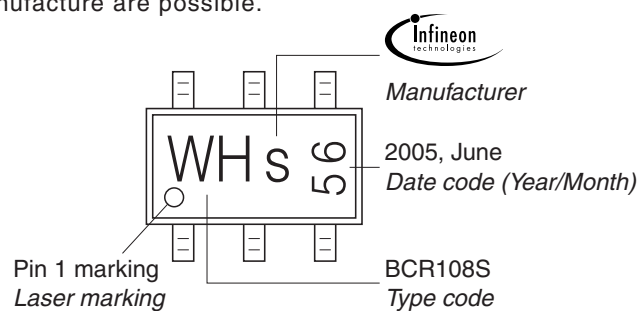


## Foot Print



## Marking Layout (Example)

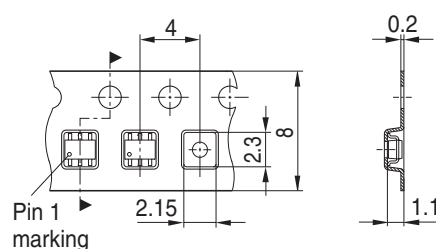
Small variations in positioning of  
Date code, Type code and Manufacture are possible.



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



[illegible]

Technical drawing of a mechanical part. The drawing shows a top view and a side view. The top view is a rectangle with a width of 0.4 and a height of 0.45. The side view is a rectangle with a width of 0.4 and a height of 1.05. The drawing is labeled with dimensions: 0.4, 0.45, 1.05, and 0.4.

Infineon  
Manufacturer

1F S

Pin 1

BCR847BF  
Type code

Technical drawing of a mechanical part with dimensions. The drawing shows a side view of a component with a total width of 4 and a total height of 8. The part features three circular features (holes) with diameters of 1.2, 1.5, and 1.35. The distance between the centers of the first two holes is 0.3, and the distance between the center of the second hole and the third hole is 1.5. The distance from the left edge to the center of the first hole is 0.7. The distance from the center of the third hole to the right edge is 0.2. The part is labeled 'Pin 1' at the bottom left.

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