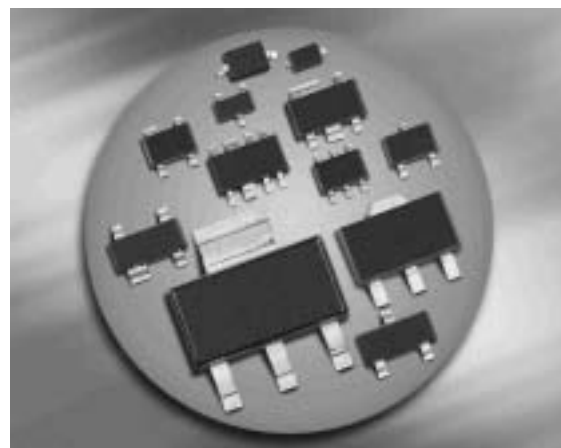


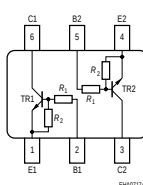
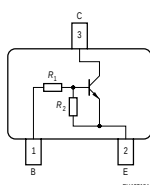
## NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1=2.2\text{ k}\Omega$ ,  $R_2=47\text{ k}\Omega$ )
- BCR108S: Two internally isolated transistors with good matching in one multichip package
- BCR108S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



**BCR108/F**  
**BCR108T/W**

**BCR108S**



| Type    | Marking | Pin Configuration |      |      |      |      |      | Package |
|---------|---------|-------------------|------|------|------|------|------|---------|
| BCR108  | WHs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | SOT23   |
| BCR108F | WHs     | 1=B               | 2=E  | 3=C  | -    | -    | -    | TSFP-3  |
| BCR108S | WHs     | 1=E1              | 2=B1 | 3=C2 | 4=E2 | 5=B2 | 6=C1 | SOT363  |
| BCR108W | WHs     | 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                                                                                                                                                                       | $V_{i(fwd)}$ | 20                       |      |
| Input reverse voltage                                                                                                                                                                       | $V_{i(rev)}$ | 5                        |      |
| Collector current                                                                                                                                                                           | $I_C$        | 100                      | mA   |
| Total power dissipation-<br>BCR108, $T_S \leq 102^\circ\text{C}$<br>BCR108F, $T_S \leq 128^\circ\text{C}$<br>BCR108S, $T_S \leq 115^\circ\text{C}$<br>BCR108W, $T_S \leq 124^\circ\text{C}$ | $P_{tot}$    | 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> | $R_{thJS}$ |            | K/W  |
| BCR108                                   |            | $\leq 240$ |      |
| BCR108F                                  |            | $\leq 90$  |      |
| BCR108S                                  |            | $\leq 140$ |      |
| BCR108W                                  |            | $\leq 105$ |      |

<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

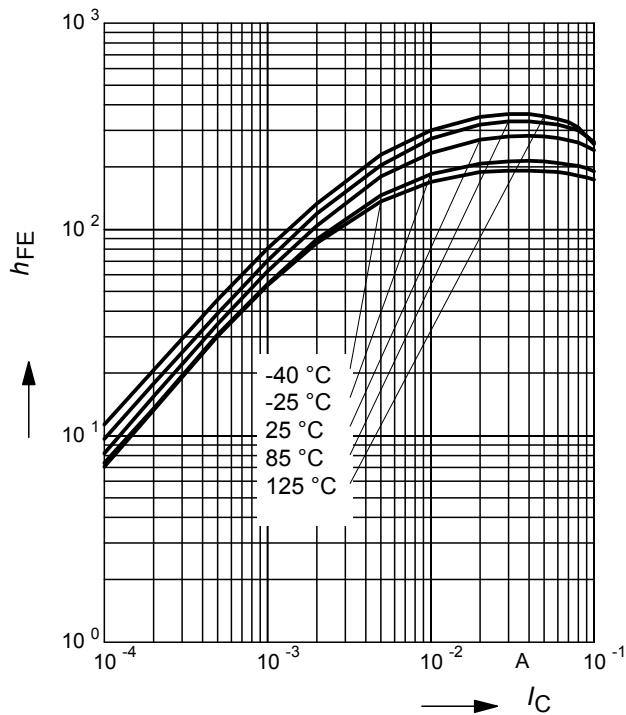
| Parameter                                                                                            | Symbol                      | Values |       |       | Unit          |
|------------------------------------------------------------------------------------------------------|-----------------------------|--------|-------|-------|---------------|
|                                                                                                      |                             | 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>$V_{\text{EB}} = 5\ \text{V}$ , $I_C = 0$                             | $I_{\text{EBO}}$            | -      | -     | 164   | $\mu\text{A}$ |
| DC current gain <sup>1)</sup><br>$I_C = 5\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$                | $h_{\text{FE}}$             | 70     | -     | -     | -             |
| 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                                                                                       | $R_1$                       | 1.5    | 2.2   | 2.9   | k $\Omega$    |
| Resistor ratio                                                                                       | $R_1/R_2$                   | 0.042  | 0.047 | 0.052 | -             |
| AC Characteristics                                                                                   |                             |        |       |       |               |
| Transition frequency<br>$I_C = 10\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$ , $f = 1\ \text{MHz}$  | $f_{\text{T}}$              | -      | 170   | -     | MHz           |
| Collector-base capacitance<br>$V_{\text{CB}} = 10\ \text{V}$ , $f = 1\ \text{MHz}$                   | $C_{\text{cb}}$             | -      | 2     | -     | 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)

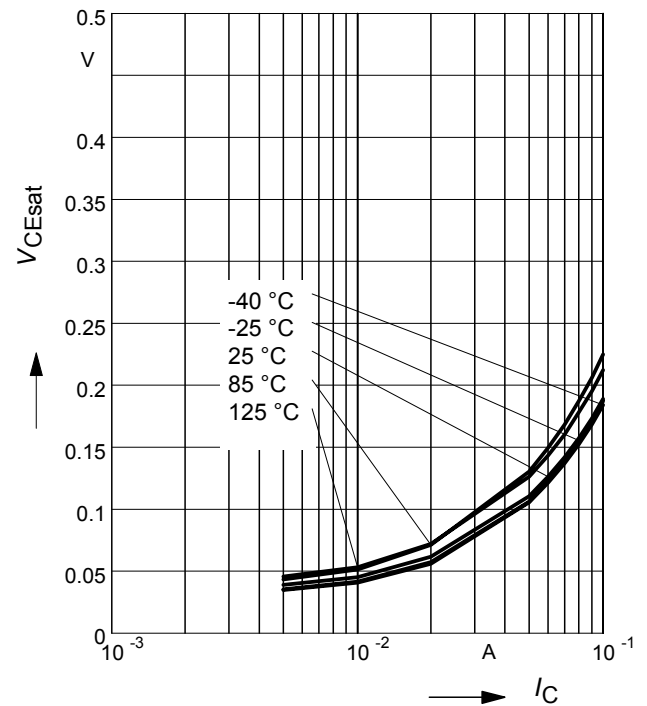
$T_A = \text{Parameter}$



### Collector-emitter saturation voltage

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

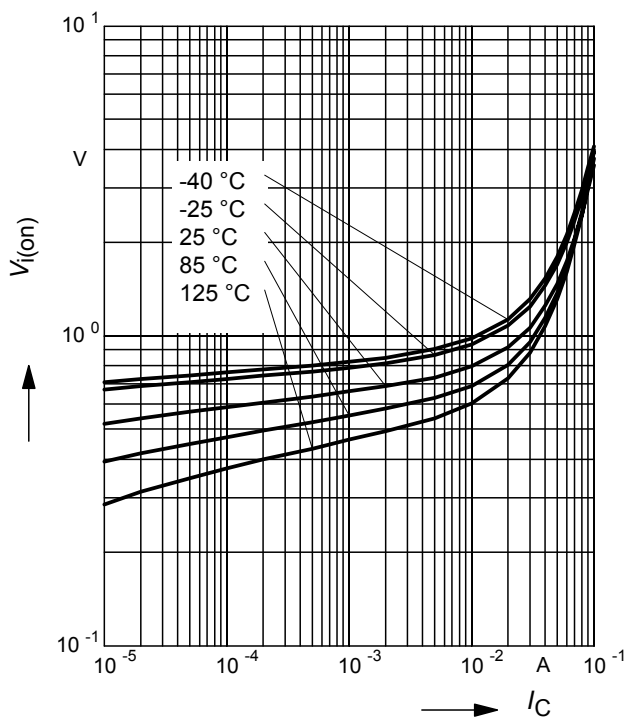
$T_A = \text{Parameter}$



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

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

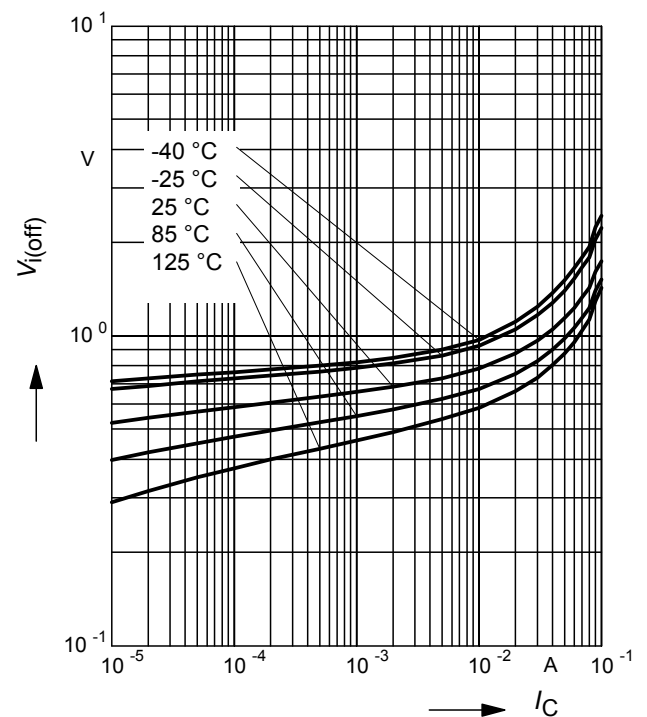
$T_A = \text{Parameter}$



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

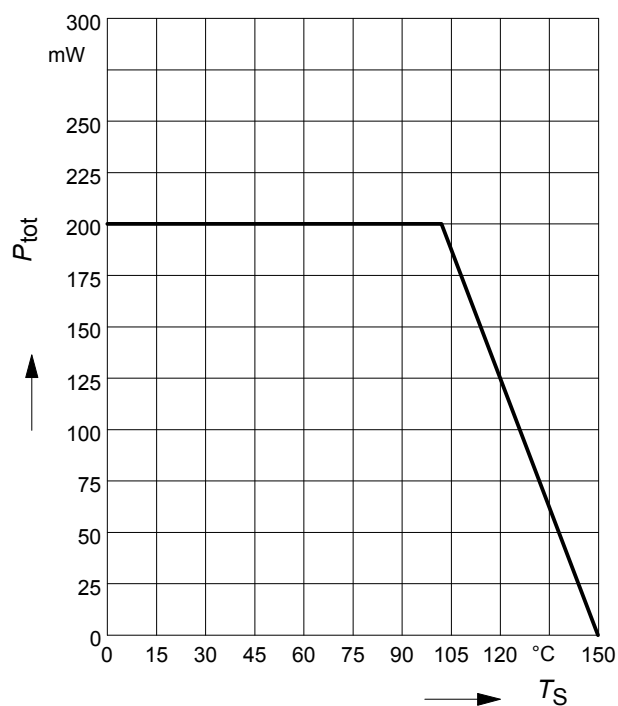
$V_{CE} = 5V$  (common emitter configuration)

$T_A = \text{Parameter}$



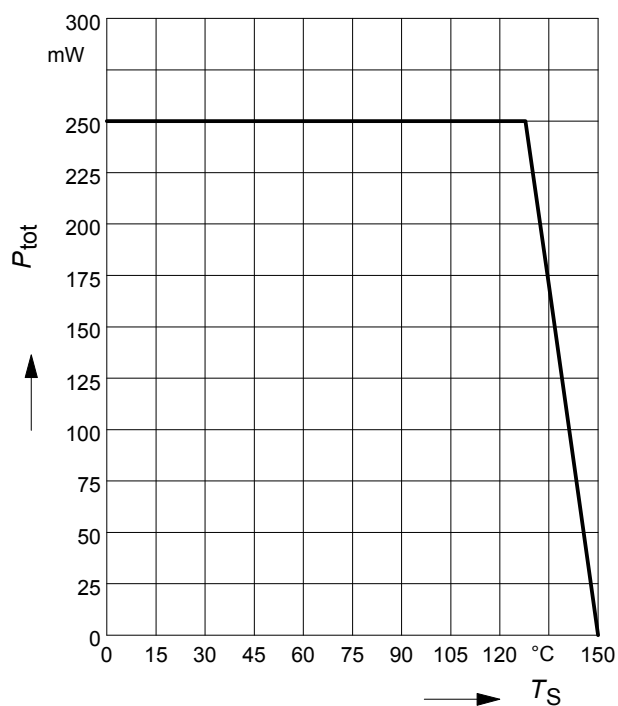
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**

**BCR108**



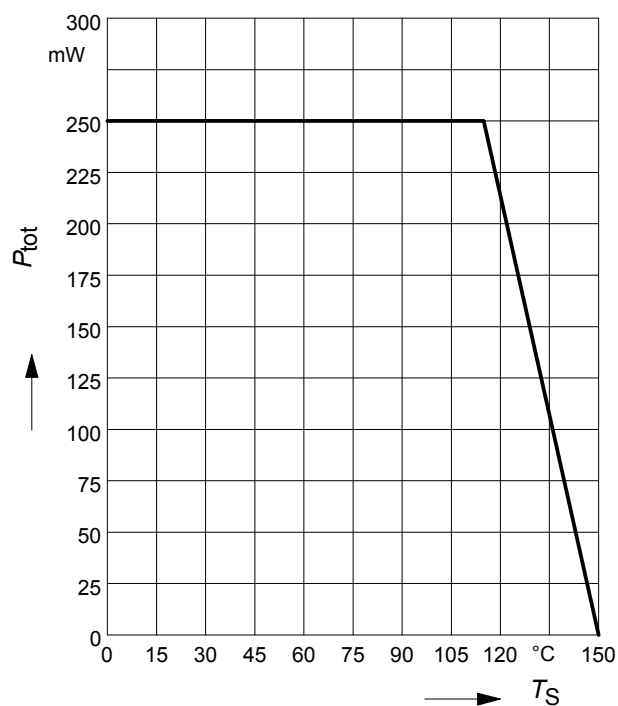
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**

**BCR108F**



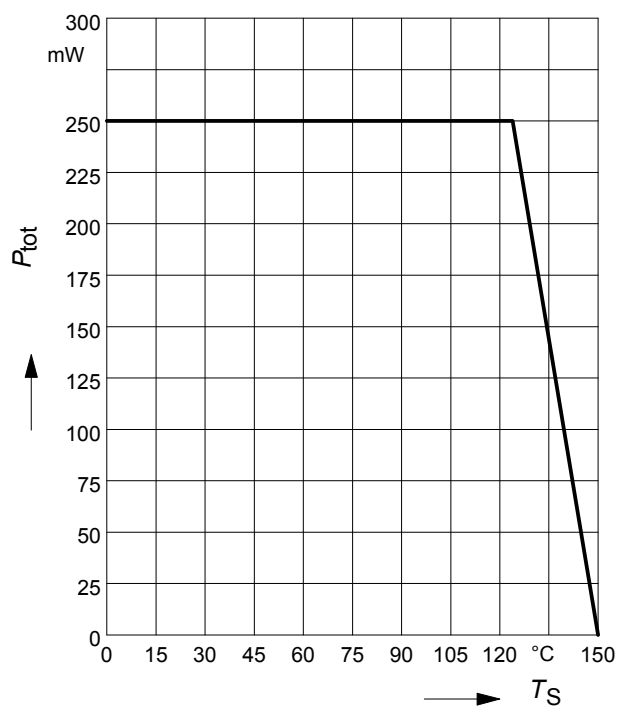
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**

**BCR108S**



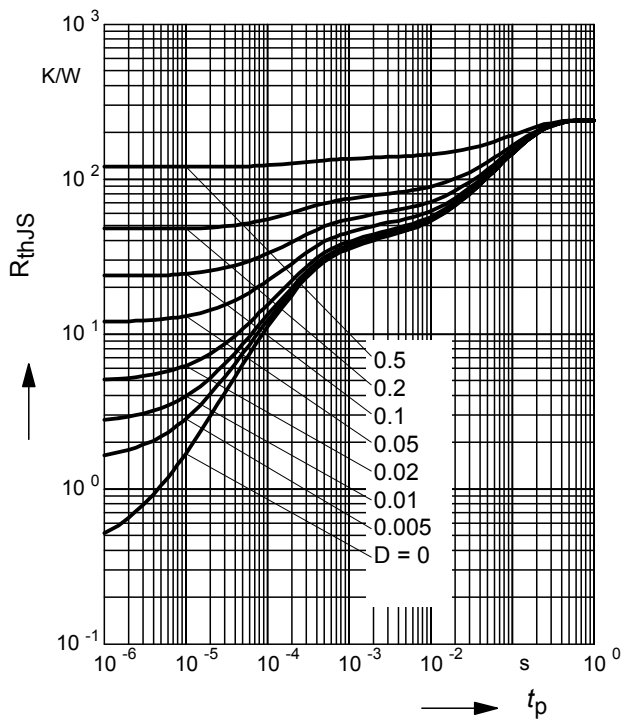
**Total power dissipation  $P_{\text{tot}} = f(T_S)$**

**BCR108W**



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

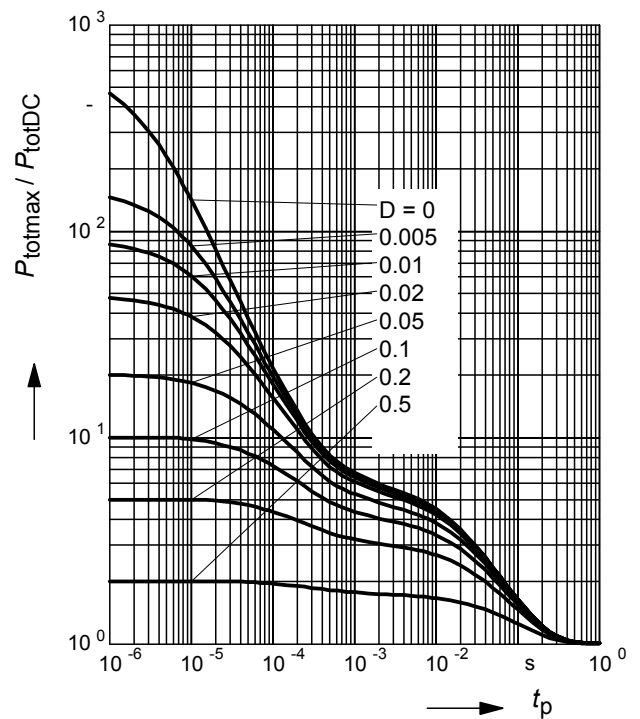
BCR108



### Permissible Pulse Load

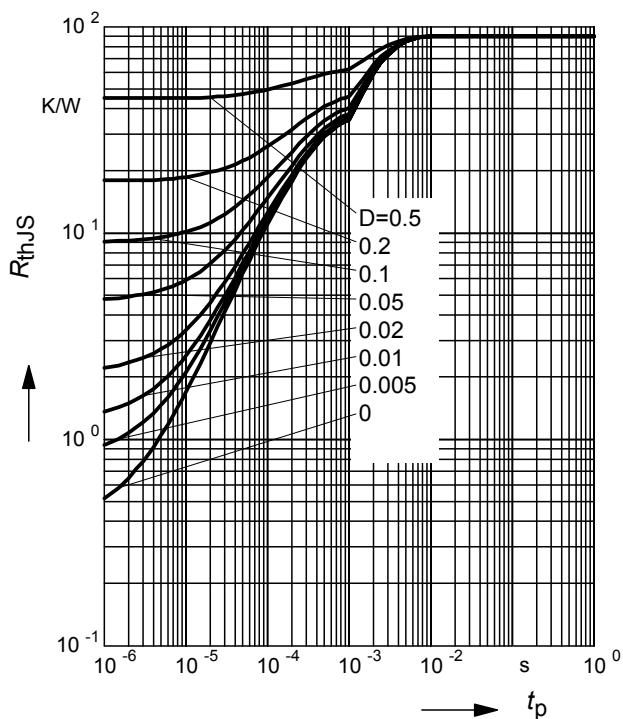
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR108



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

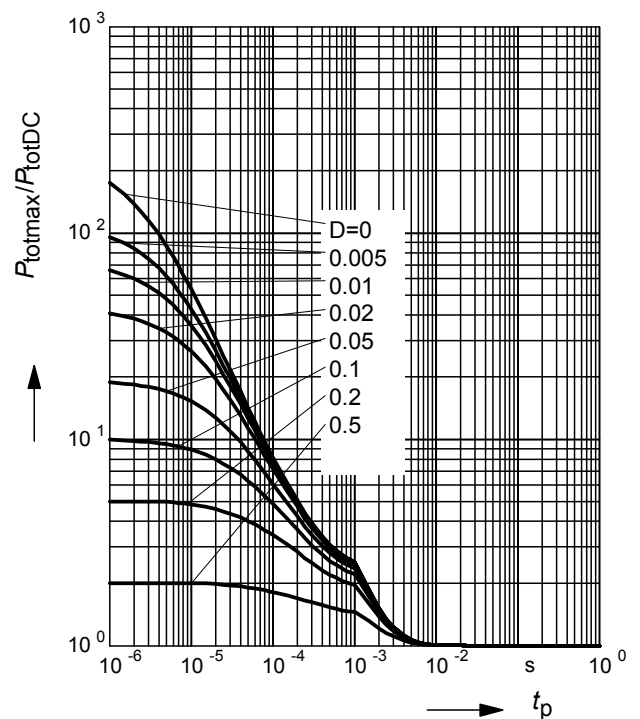
BCR108F



### Permissible Pulse Load

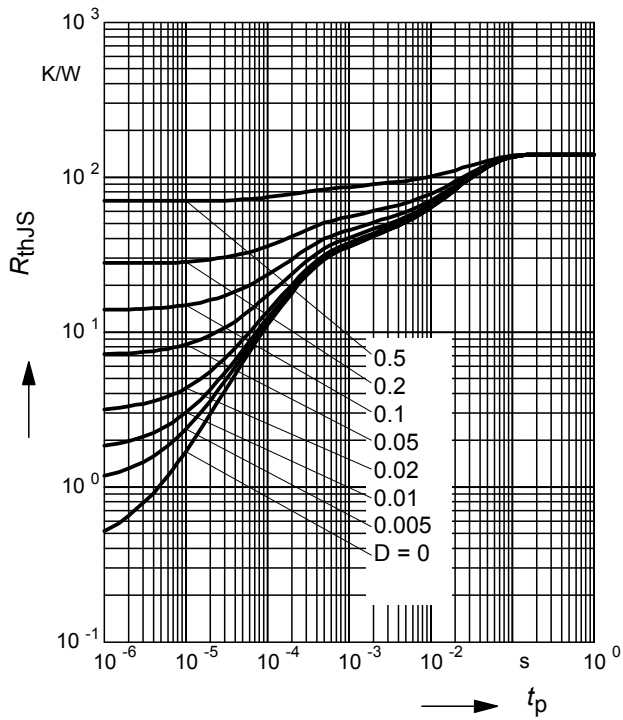
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR108F



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

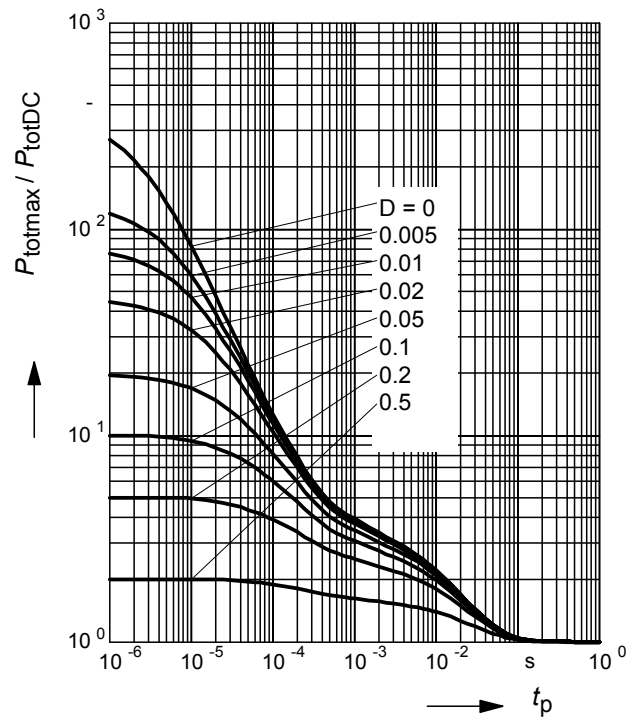
BCR108S



### Permissible Pulse Load

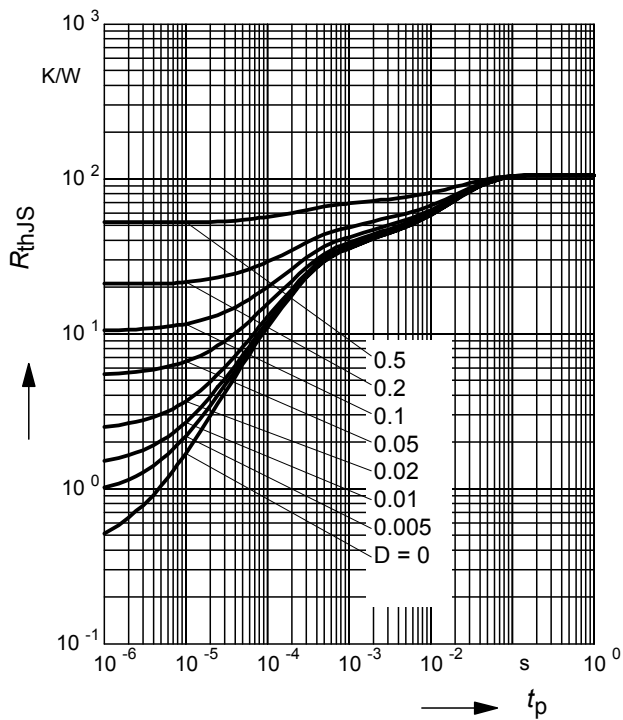
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR108S



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

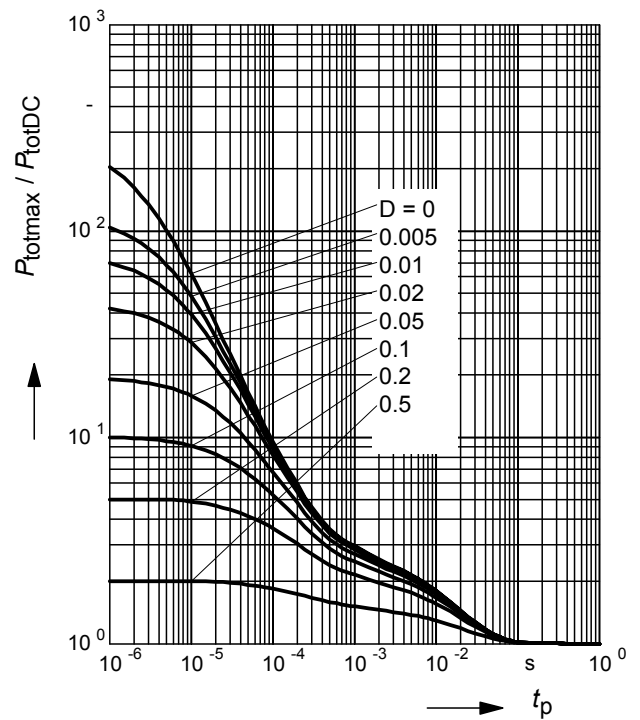
BCR108W

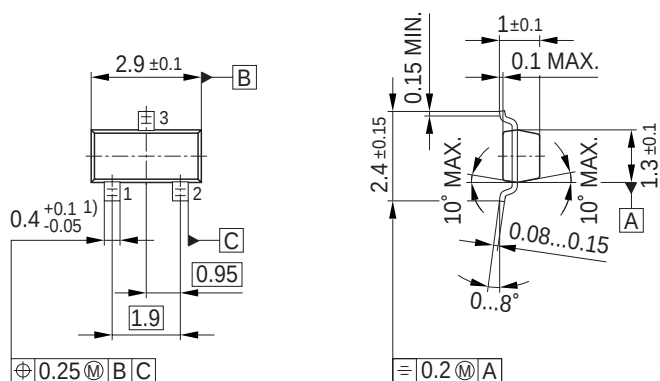


### Permissible Pulse Load

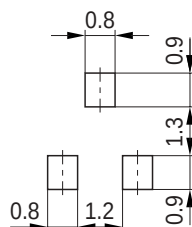
$$P_{totmax}/P_{totDC} = f(t_p)$$

BCR108W



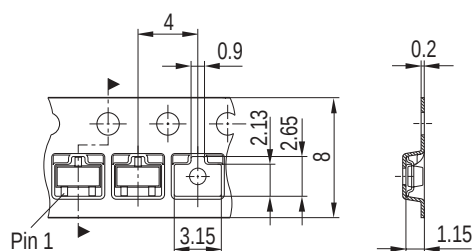


## Foot Print



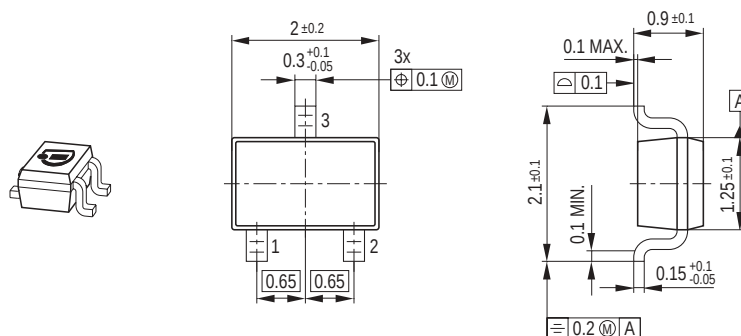
The diagram shows a top-down view of a BCW66 LED package. It is a rectangular component with four pins. The top pin is labeled 'Pin 1'. The package has a central rectangular area containing the text 'EHS' and '65'. To the right of this area, the text '2005, June' and 'Date code (YM)' is shown. Above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

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

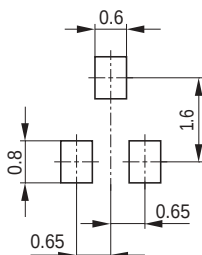




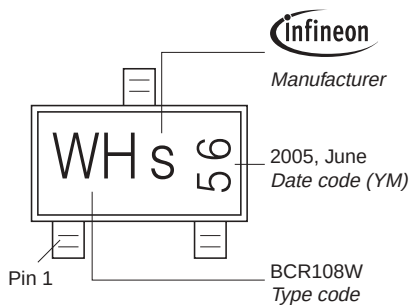
## Package Outline



## Foot Print

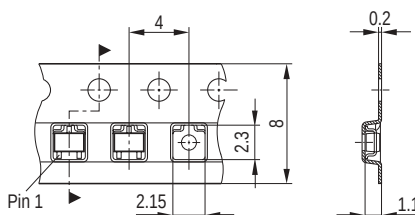


## Marking Layout (Example)

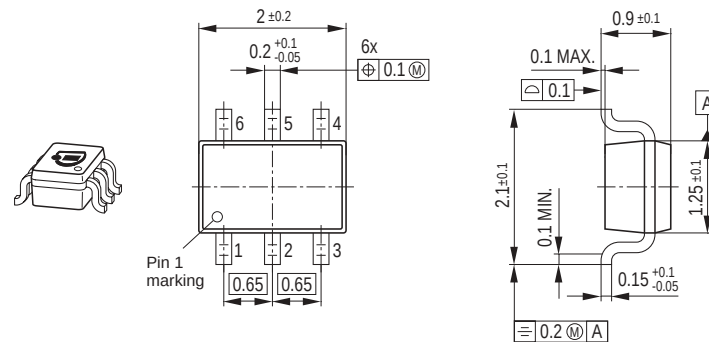


## Standard Packing

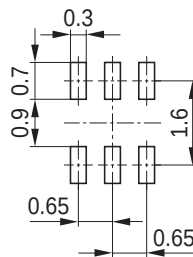
Reel  $\varnothing 180$  mm = 3.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel



## Package Outline

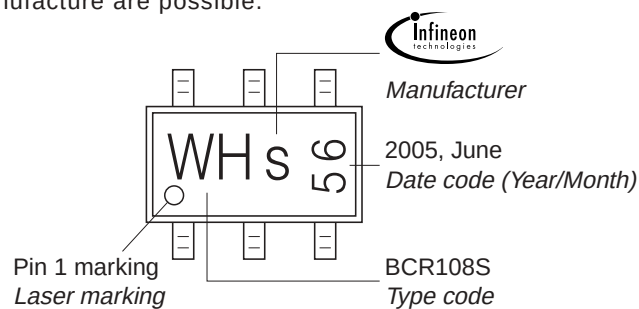


## Foot Print



## Marking Layout (Example)

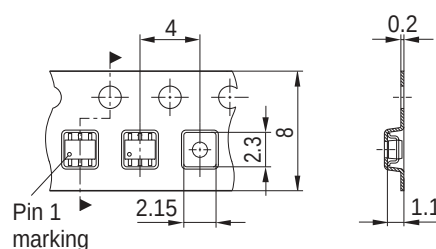
Small variations in positioning of Date code, Type code and Manufacture are possible.



## Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



[illegible]

Technical drawing of a mechanical part with dimensions: 0.4, 0.45, 1.05, and 0.4.

Diagram illustrating the marking on the BCR847BF diode:

- infineon**: Manufacturer
- 1F S**: Type code
- Pin 1**: Cathode

Technical drawing of a mechanical part with dimensions. The drawing shows a side view and a cross-section. Dimensions include: 4, 0.3, 1.2, 1.5, 8, 0.2, 0.7, 1.35, and Pin 1.

Edition 2006-02-01

Published by

Infineon Technologies AG

81726 München, Germany

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