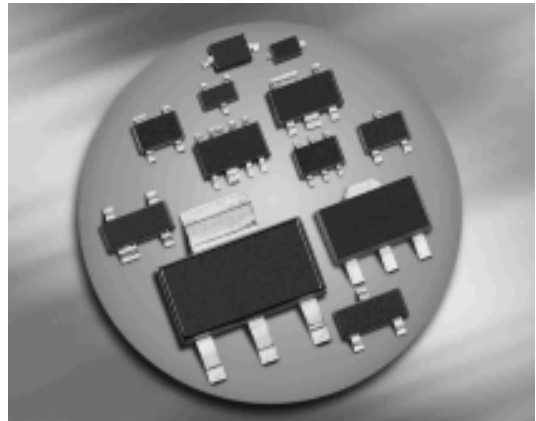
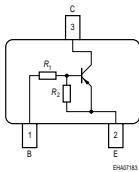


**PNP Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit, driver circuit
- Built in bias resistor ( $R_1 = 22k\Omega$  ,  $R_2 = 47k\Omega$  )
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101


**BCR192/F/W**


| Type    | Marking | Pin Configuration |     |     |   |   |   | Package |
|---------|---------|-------------------|-----|-----|---|---|---|---------|
|         |         | 1=B               | 2=E | 3=C | - | - | - |         |
| BCR192  | WPs     | 1=B               | 2=E | 3=C | - | - | - | SOT23   |
| BCR192F | WPs     | 1=B               | 2=E | 3=C | - | - | - | TSFP-3  |
| BCR192W | WPs     | 1=B               | 2=E | 3=C | - | - | - | SOT323  |

**Maximum Ratings**

| Parameter                             | Symbol       | Value       | Unit             |
|---------------------------------------|--------------|-------------|------------------|
| Collector-emitter voltage             | $V_{CEO}$    | 50          | V                |
| Collector-base voltage                | $V_{CB0}$    | 50          |                  |
| Input forward voltage                 | $V_{i(fwd)}$ | 60          |                  |
| Input reverse voltage                 | $V_{i(rev)}$ | 10          |                  |
| Collector current                     | $I_C$        | 100         | mA               |
| Total power dissipation-              | $P_{tot}$    |             | mW               |
| BCR192, $T_S \leq 102^\circ\text{C}$  |              | 200         |                  |
| BCR192F, $T_S \leq 128^\circ\text{C}$ |              | 250         |                  |
| BCR192W, $T_S \leq 124^\circ\text{C}$ |              | 250         |                  |
| Junction temperature                  | $T_j$        | 150         | $^\circ\text{C}$ |
| Storage temperature                   | $T_{stg}$    | 150 ... -65 |                  |

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

**Thermal Resistance**

| Parameter                                | Symbol     | Value | Unit |
|--|------------|-------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |       | K/W  |
| BCR192                                   |            | ≤ 240 |      |
| BCR192F                                  |            | ≤ 90  |      |
| BCR192W                                  |            | ≤ 105 |      |

**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>$I_C = 100 \mu\text{A}$ , $I_B = 0$                           | $V_{(BR)CEO}$ | 50   | -    | -    | V             |
| Collector-base breakdown voltage<br>$I_C = 10 \mu\text{A}$ , $I_E = 0$                               | $V_{(BR)CBO}$ | 50   | -    | -    |               |
| Collector-base cutoff current<br>$V_{CB} = 40 \text{ V}$ , $I_E = 0$                                 | $I_{CBO}$     | -    | -    | 100  | nA            |
| Emitter-base cutoff current<br>$V_{EB} = 10 \text{ V}$ , $I_C = 0$                                   | $I_{EBO}$     | -    | -    | 227  | $\mu\text{A}$ |
| DC current gain <sup>2)</sup><br>$I_C = 5 \text{ mA}$ , $V_{CE} = 5 \text{ V}$                       | $h_{FE}$      | 70   | -    | -    | -             |
| Collector-emitter saturation voltage <sup>2)</sup><br>$I_C = 10 \text{ mA}$ , $I_B = 0,5 \text{ mA}$ | $V_{CEsat}$   | -    | -    | 0.3  | V             |
| Input off voltage<br>$I_C = 100 \mu\text{A}$ , $V_{CE} = 5 \text{ V}$                                | $V_{i(off)}$  | 0.5  | -    | 1.2  |               |
| Input on voltage<br>$I_C = 2 \text{ mA}$ , $V_{CE} = 0,3 \text{ V}$                                  | $V_{i(on)}$   | 0.8  | -    | 2.5  |               |
| Input resistor   | $R_1$         | 15   | 22   | 29   | k $\Omega$    |
| Resistor ratio   | $R_1/R_2$     | 0.42 | 0.47 | 0.52 | -             |

**AC Characteristics**

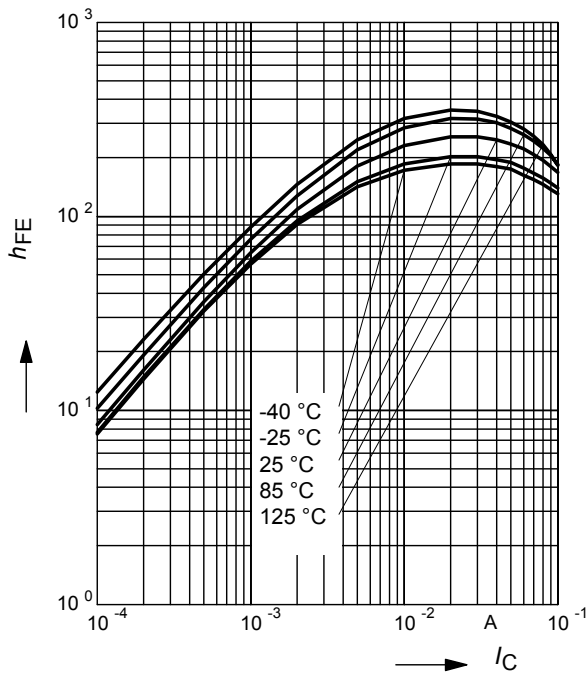
|  |          |   |     |   |     |
|--|----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 10 \text{ mA}$ , $V_{CE} = 5 \text{ V}$ , $f = 100 \text{ MHz}$ | $f_T$    | - | 200 | - | MHz |
| Collector-base capacitance<br>$V_{CB} = 10 \text{ V}$ , $f = 1 \text{ MHz}$                    | $C_{cb}$ | - | 3   | - | pF  |

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

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

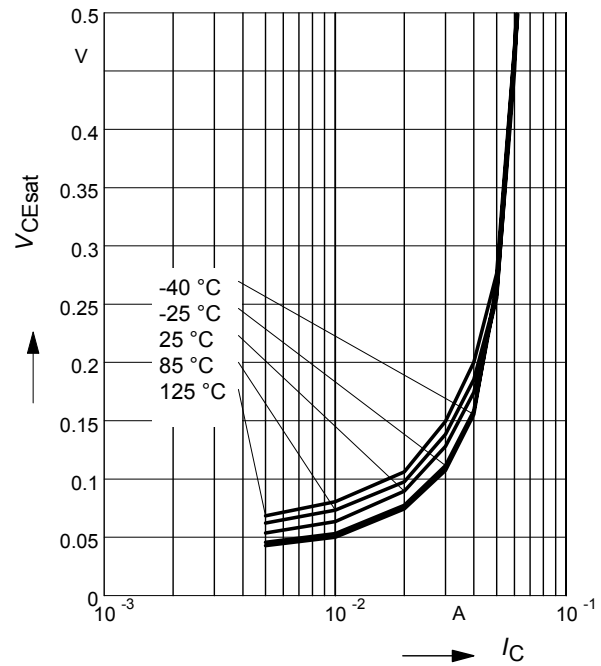
**DC current gain  $h_{FE} = f(I_C)$**

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



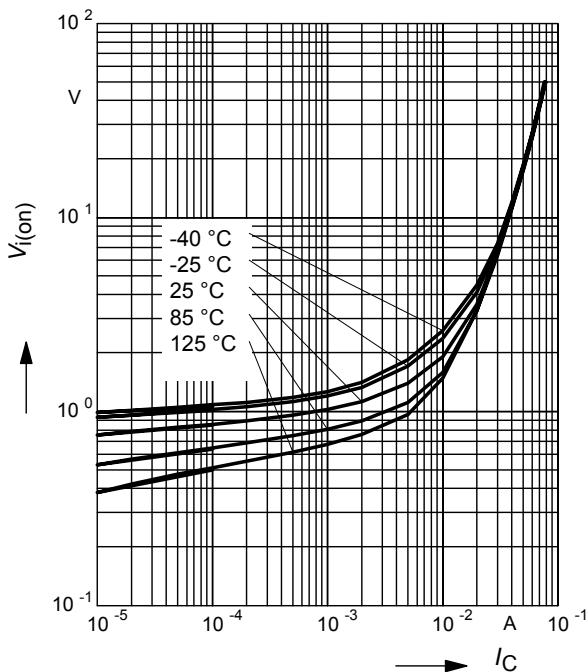
**Collector-emitter saturation voltage**

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



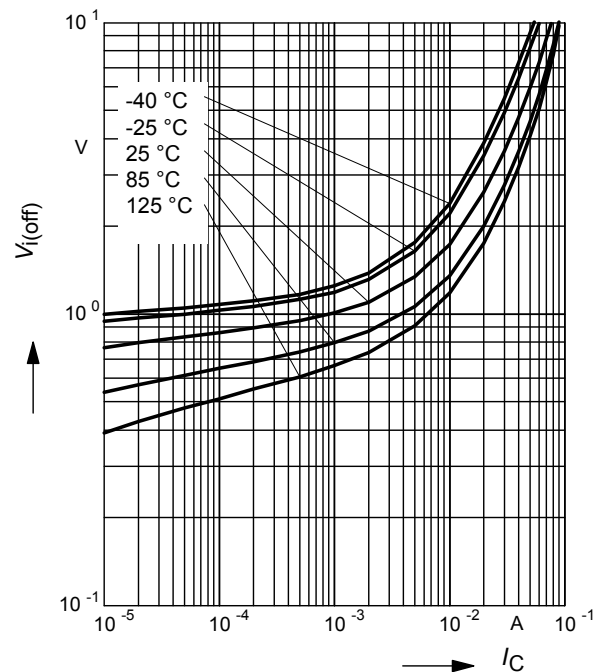
**Input on Voltage  $V_{i(on)} = f(I_C)$**

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



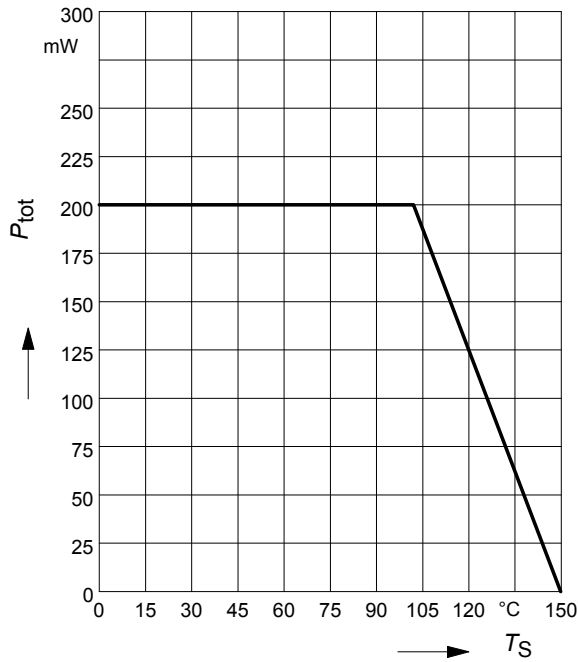
**Input off voltage  $V_{i(off)} = f(I_C)$**

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



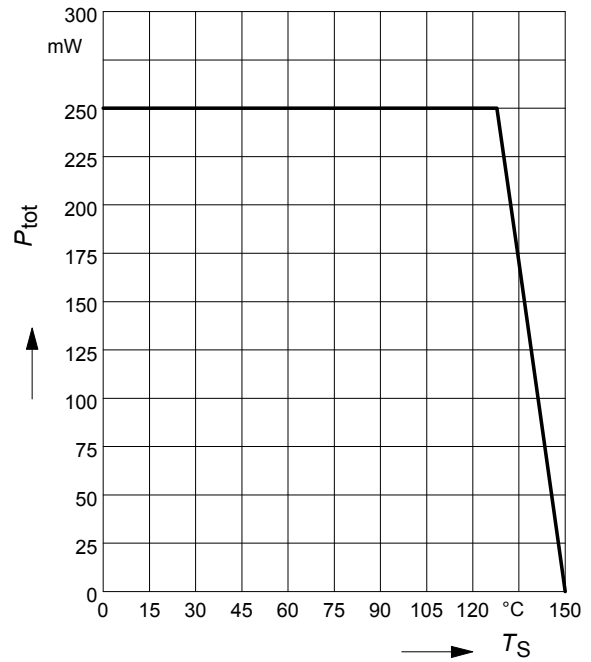
Total power dissipation  $P_{tot} = f(T_S)$

BCR192



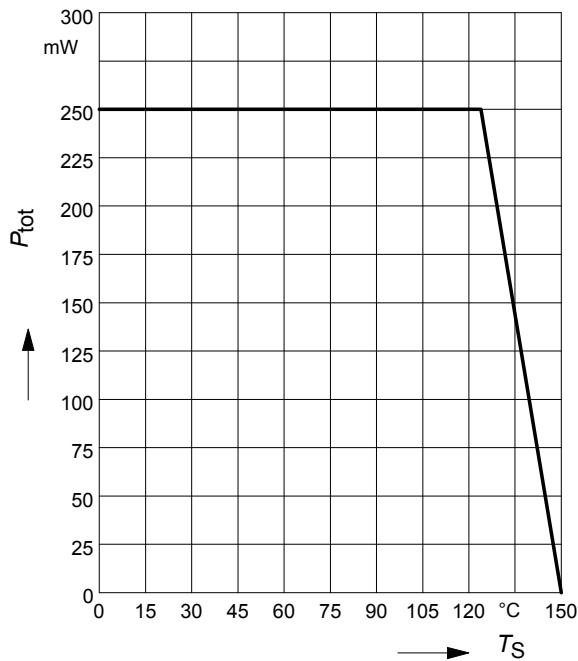
Total power dissipation  $P_{tot} = f(T_S)$

BCR192F



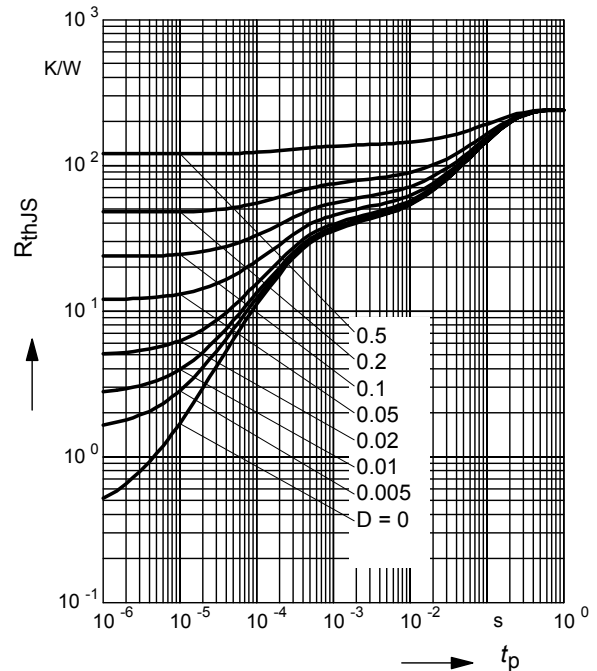
Total power dissipation  $P_{tot} = f(T_S)$

BCR192W



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

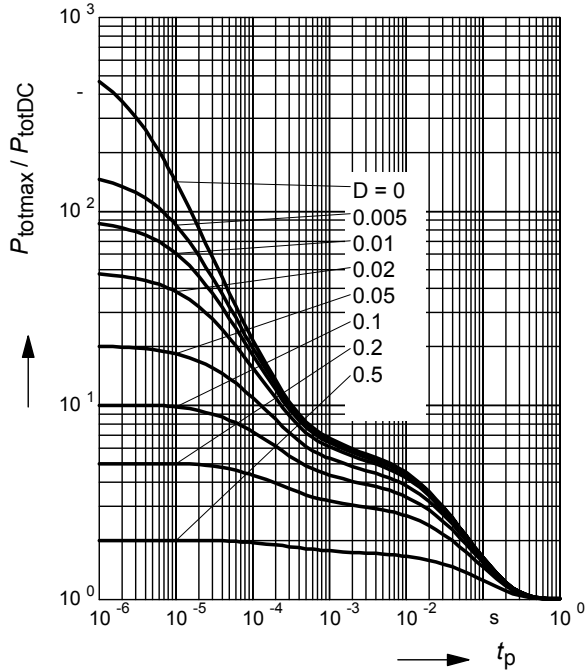
BCR192



**Permissible Pulse Load**

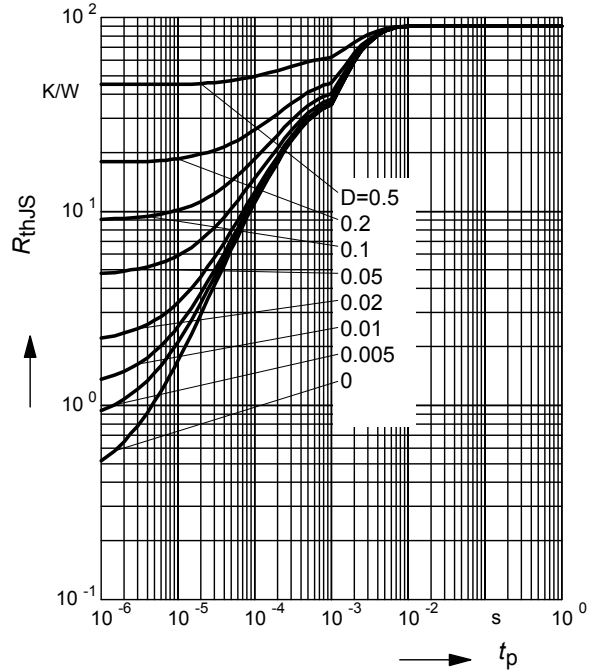
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$

BCR192



**Permissible Puls Load  $R_{\text{thJS}} = f(t_p)$**

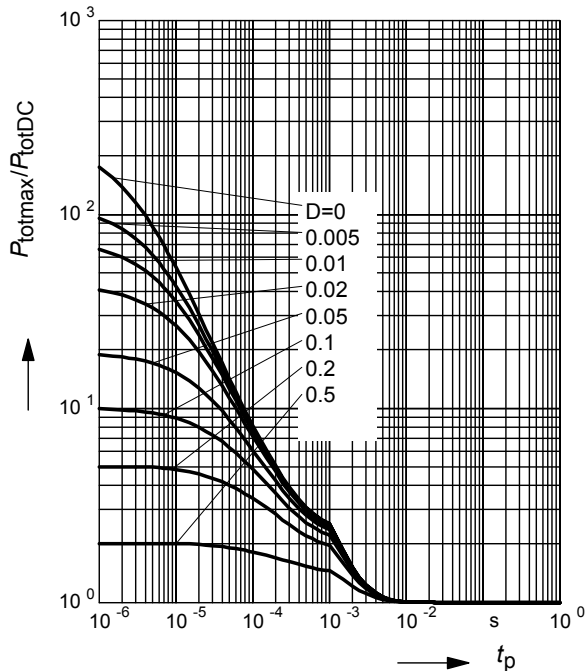
BCR192F



**Permissible Pulse Load**

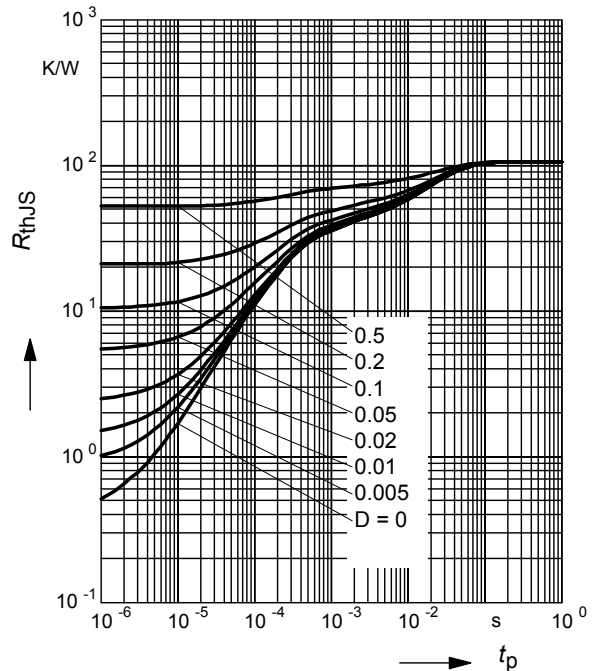
$$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$$

BCR192F



**Permissible Puls Load  $R_{\text{thJS}} = f(t_p)$**

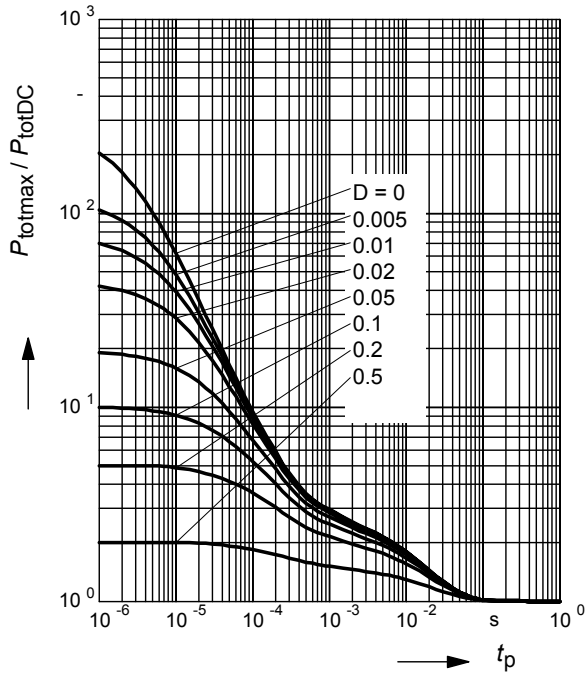
BCR192W



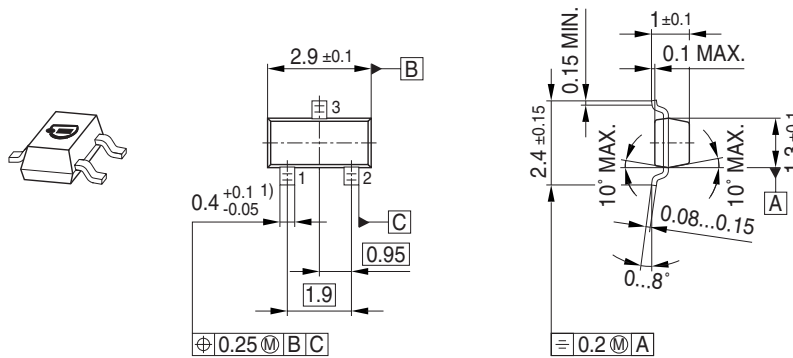
**Permissible Pulse Load**

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

BCR192W

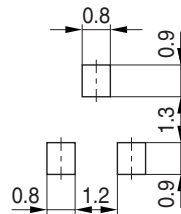


Package Outline

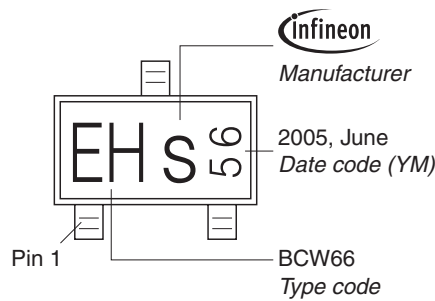


1) Lead width can be 0.6 max. in dambar area

Foot Print

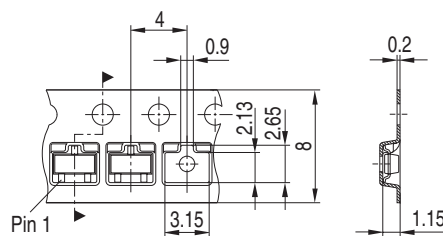


Marking Layout (Example)

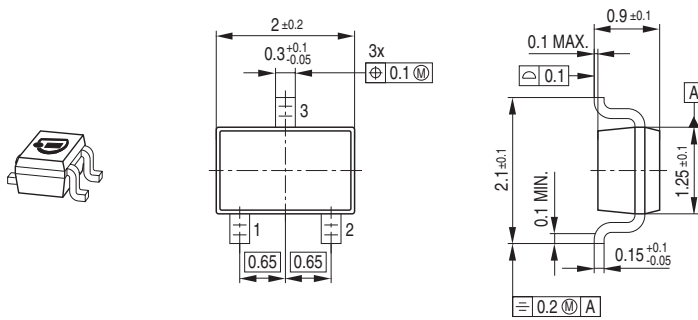


Standard Packing

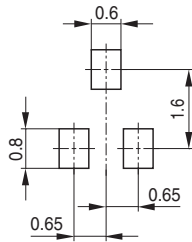
Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel



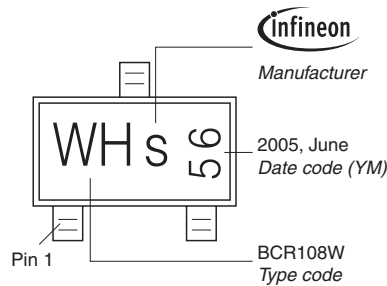
Package Outline



Foot Print

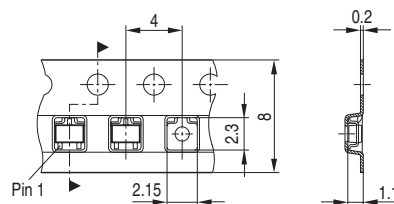


Marking Layout (Example)



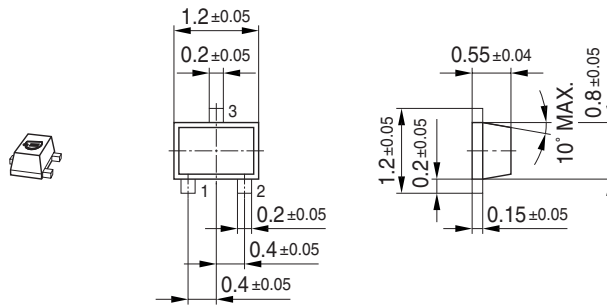
Standard Packing

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

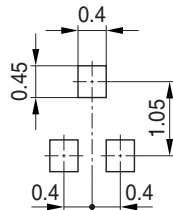




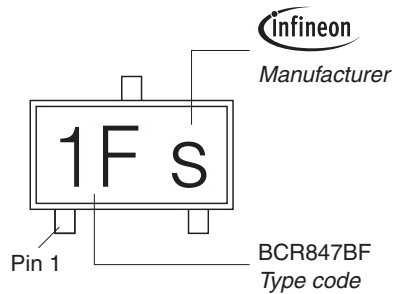
Package Outline



Foot Print

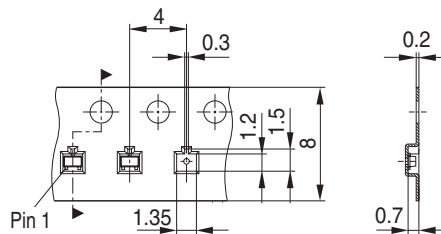


Marking Layout (Example)



Standard Packing

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



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