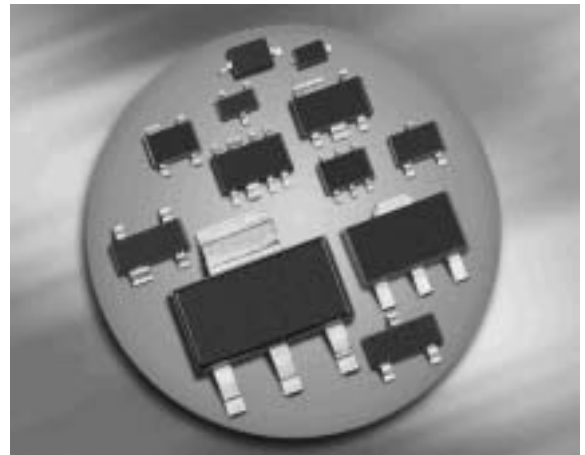
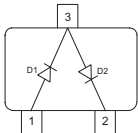


## Silicon Switching Diode

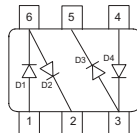
- For high-speed switching applications
- Series pair configuration
- BAV99S / U: For orientation in reel see package information below
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



### BAV99 BAV99W



### BAV99S BAV99U



| Type   | Package | Configuration | Marking |
|--------|---------|---------------|---------|
| BAV99  | SOT23   | series        | A7s     |
| BAV99S | SOT363  | dual series   | A7s     |
| BAV99U | SC74    | dual series   | A7s     |
| BAV99W | SOT323  | series        | A7s     |

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

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

| Parameter                                 | Symbol    | Value       | Unit             |
|---|-----------|-------------|------------------|
| Diode reverse voltage                     | $V_R$     | 80          | V                |
| Peak reverse voltage                      | $V_{RM}$  | 85          |                  |
| Forward current                           | $I_F$     | 200         | mA               |
| Non-repetitive peak surge forward current | $I_{FSM}$ |             | A                |
| $t = 1 \mu\text{s}$                       |           | 4.5         |                  |
| $t = 1 \text{ ms}$                        |           | 1           |                  |
| $t = 1 \text{ s, single}$                 |           | 0.5         |                  |
| $t = 1 \text{ s, double}$                 |           | 0.75        |                  |
| Total power dissipation                   | $P_{tot}$ |             | mW               |
| BAV99, $T_S \leq 28^\circ\text{C}$        |           | 330         |                  |
| BAV99S, $T_S \leq 85^\circ\text{C}$       |           | 250         |                  |
| BAV99U, $T_S \leq 113^\circ\text{C}$      |           | 250         |                  |
| BAV99W, $T_S \leq 110^\circ\text{C}$      |           | 250         |                  |
| Junction temperature                      | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                       | $T_{stg}$ | -65 ... 150 |                  |

#### Thermal Resistance

| Parameter                                | Symbol     | Value      | Unit |
|--|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |            | K/W  |
| BAV99                                    |            | $\leq 360$ |      |
| BAV99S                                   |            | $\leq 260$ |      |
| BAV99U                                   |            | $\leq 150$ |      |
| BAV99W                                   |            | $\leq 160$ |      |

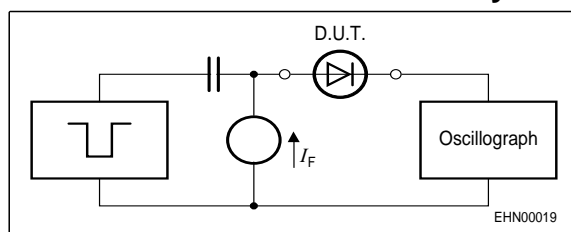
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

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

| Parameter   | Symbol     | Values                |                       |                                    | Unit    |
|---|------------|-----------------------|-----------------------|------------------------------------|---------|
|   |            | min.                  | typ.                  | max.                               |         |
| DC Characteristics  |            |                       |                       |                                    |         |
| Breakdown voltage<br>$I_{(BR)} = 100 \mu A$   | $V_{(BR)}$ | 85                    | -                     | -                                  | V       |
| Reverse current<br>$V_R = 70 V$<br>$V_R = 25 V, T_A = 150 ^\circ C$<br>$V_R = 70 V, T_A = 150 ^\circ C$ | $I_R$      | -<br>-<br>-           | -<br>-<br>-           | 0.15<br>30<br>50                   | $\mu A$ |
| Forward voltage<br>$I_F = 1 mA$<br>$I_F = 10 mA$<br>$I_F = 50 mA$<br>$I_F = 100 mA$<br>$I_F = 150 mA$   | $V_F$      | -<br>-<br>-<br>-<br>- | -<br>-<br>-<br>-<br>- | 715<br>855<br>1000<br>1200<br>1250 | mV      |

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

| Parameter  | Symbol   | Values |      |      | Unit |
|--|----------|--------|------|------|------|
|  |          | min.   | typ. | max. |      |
| AC Characteristics   |          |        |      |      |      |
| Diode capacitance<br>$V_R = 0 \text{ V}, f = 1 \text{ MHz}$  | $C_T$    | -      | -    | 1.5  | pF   |
| Reverse recovery time<br>$I_F = 10 \text{ mA}, I_R = 10 \text{ mA}$ , measured at $I_R = 1 \text{ mA}$ ,<br>$R_L = 100 \Omega$ | $t_{rr}$ | -      | -    | 4    | ns   |

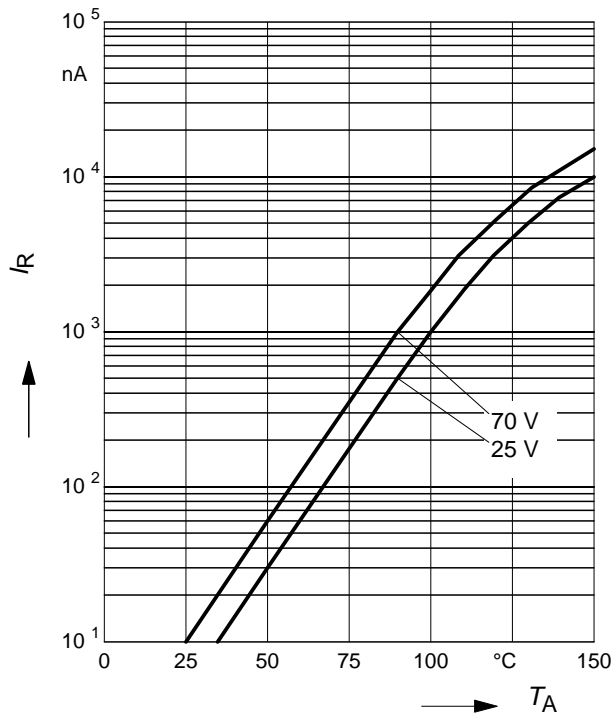
**Test circuit for reverse recovery time**


Pulse generator:  $t_p = 100\text{ns}$ ,  $D = 0.05$ ,  
 $t_r = 0.6\text{ns}$ ,  $R_i = 50\Omega$

Oscilloscope:  $R = 50$ ,  $t_r = 0.35\text{ns}$   
 $C \leq 1\text{pF}$

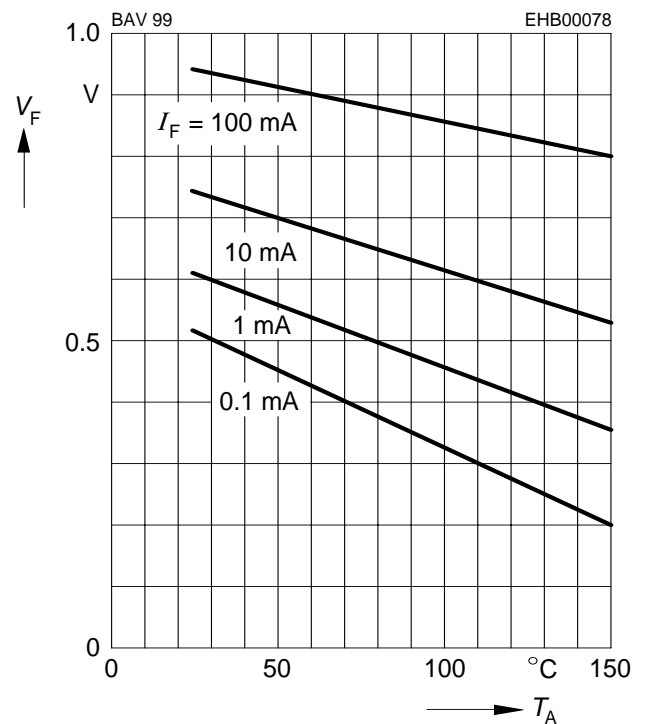
**Reverse current**  $I_R = f(T_A)$

$V_R = \text{Parameter}$



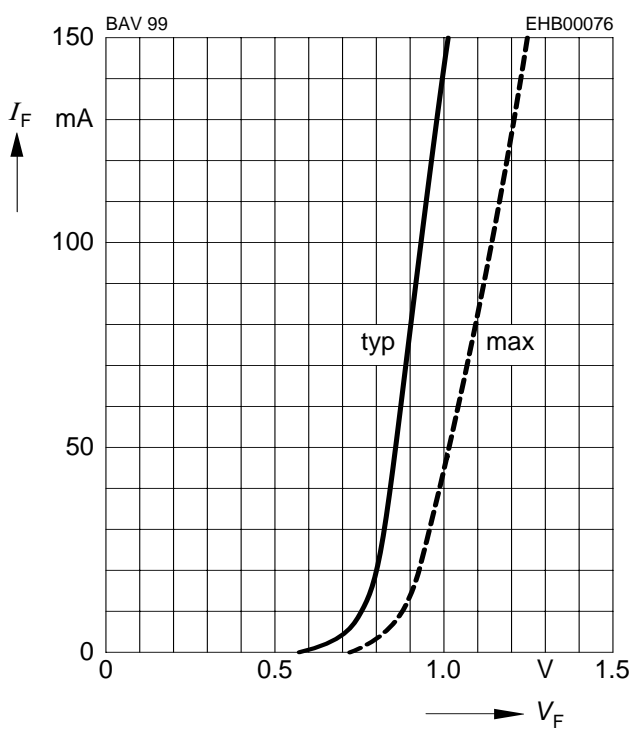
**Forward Voltage**  $V_F = f(T_A)$

$I_F = \text{Parameter}$



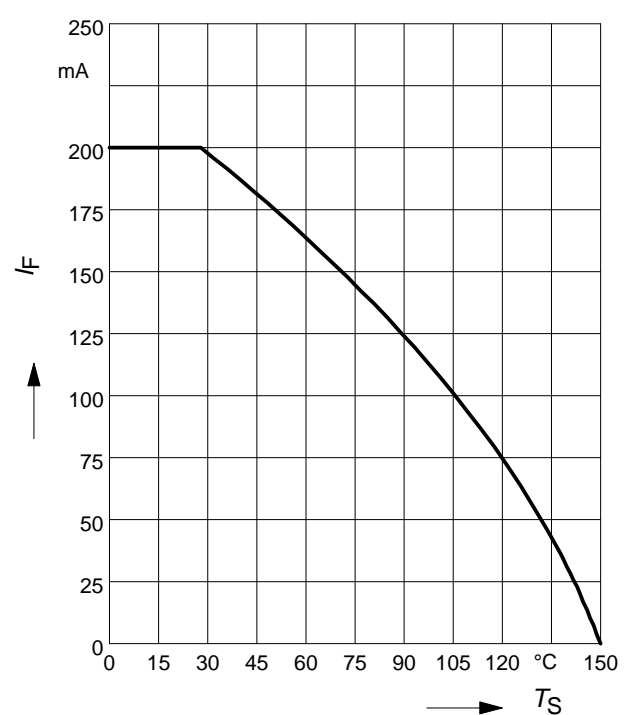
**Forward current**  $I_F = f(V_F)$

$T_A = 25^\circ\text{C}$



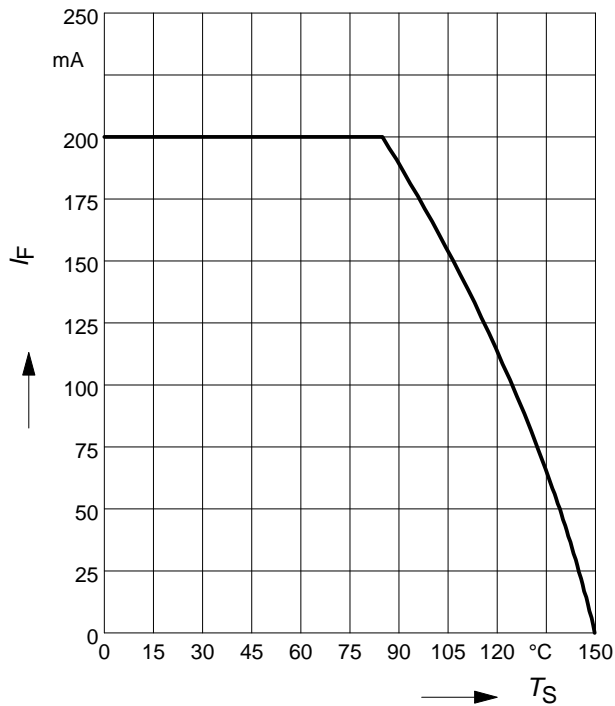
**Forward current**  $I_F = f(T_S)$

BAV99



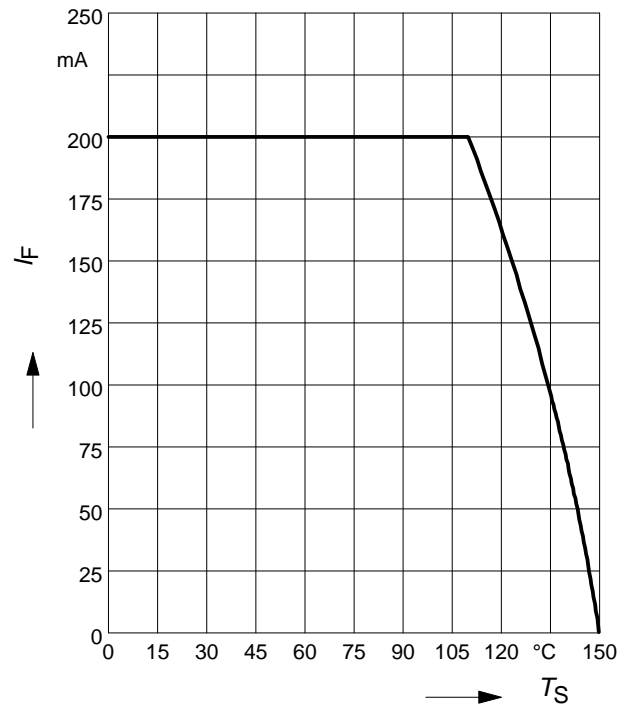
Forward current  $I_F = f(T_S)$

BAV99S



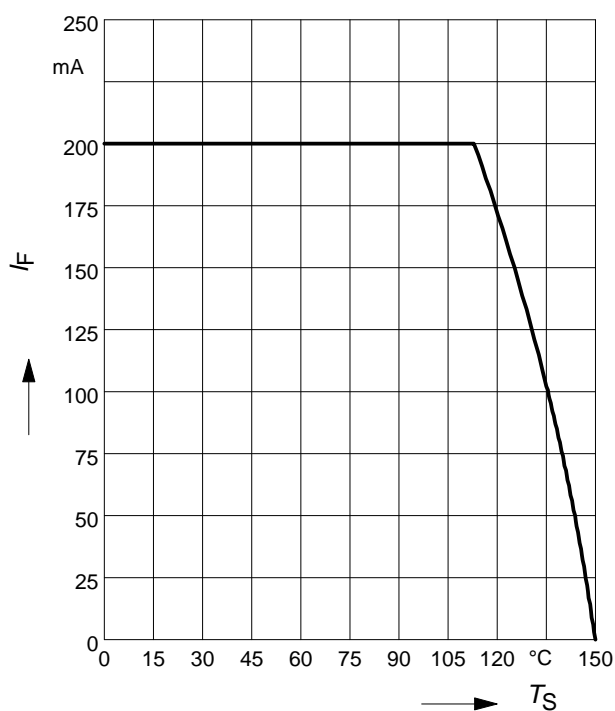
Forward current  $I_F = f(T_S)$

BAV99U



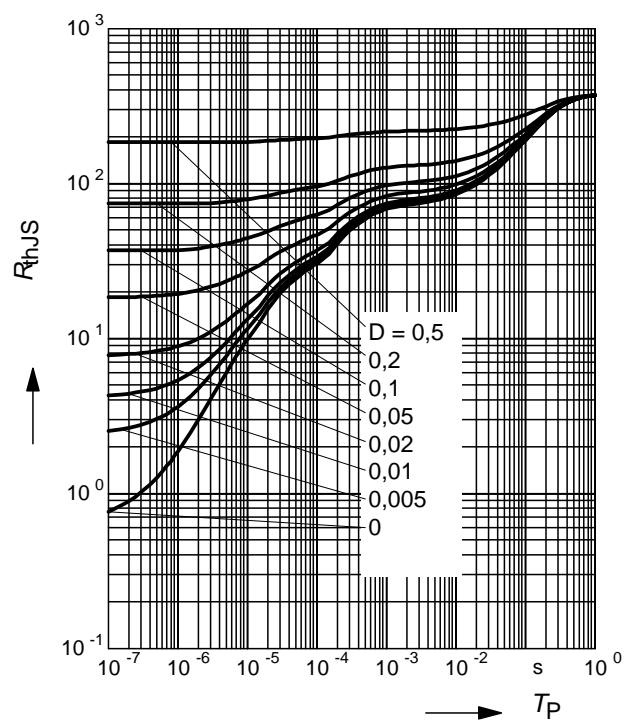
Forward current  $I_F = f(T_S)$

BAV99W



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

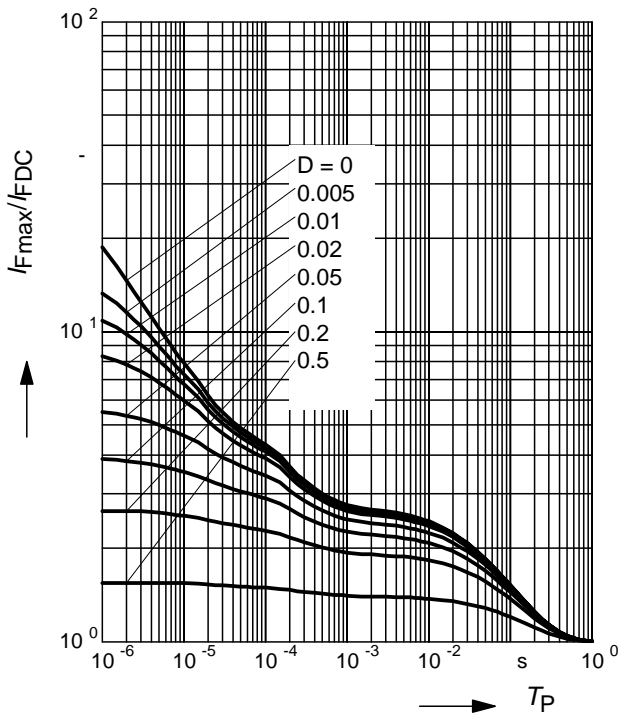
BAV99



### Permissible Pulse Load

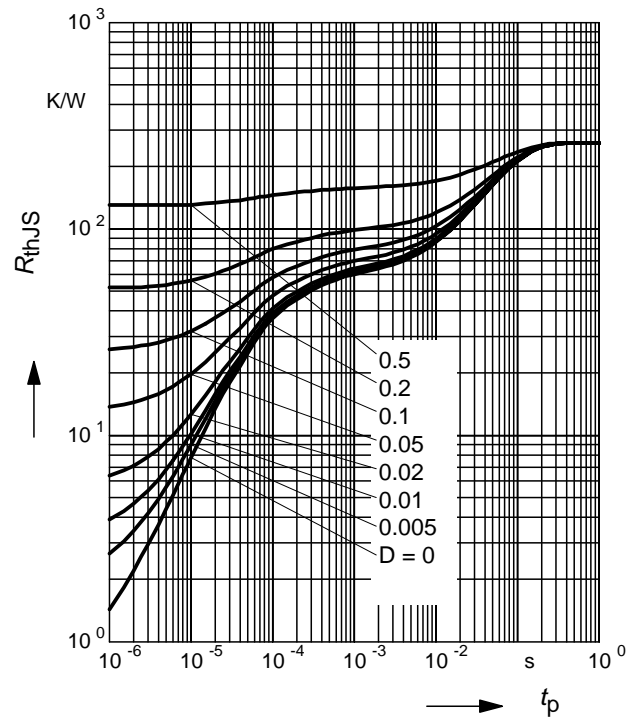
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99



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

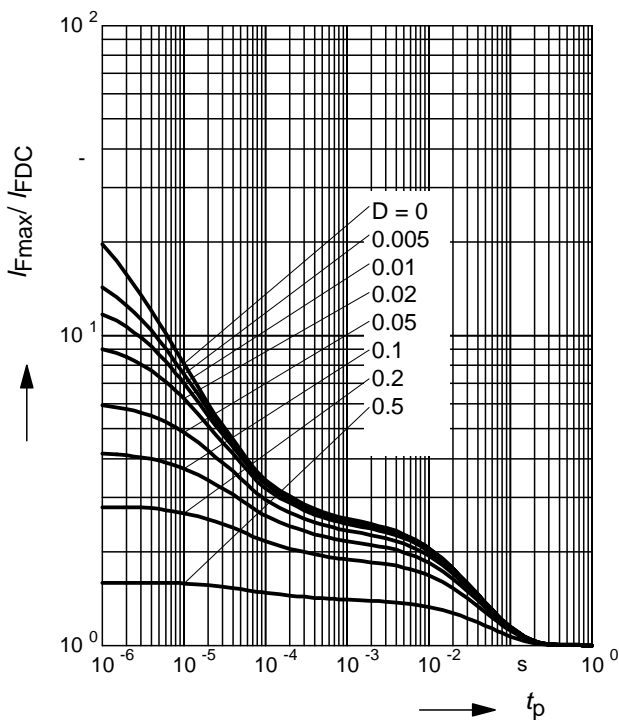
BAV99S



### Permissible Pulse Load

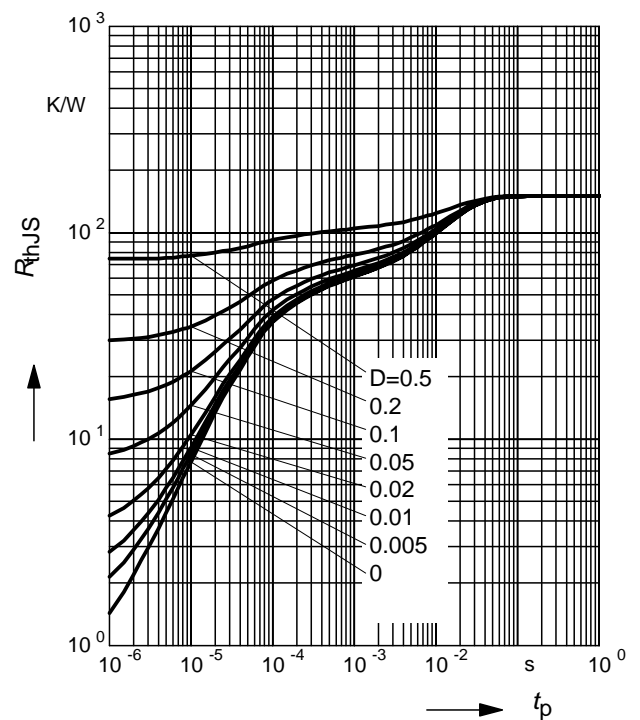
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99S



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

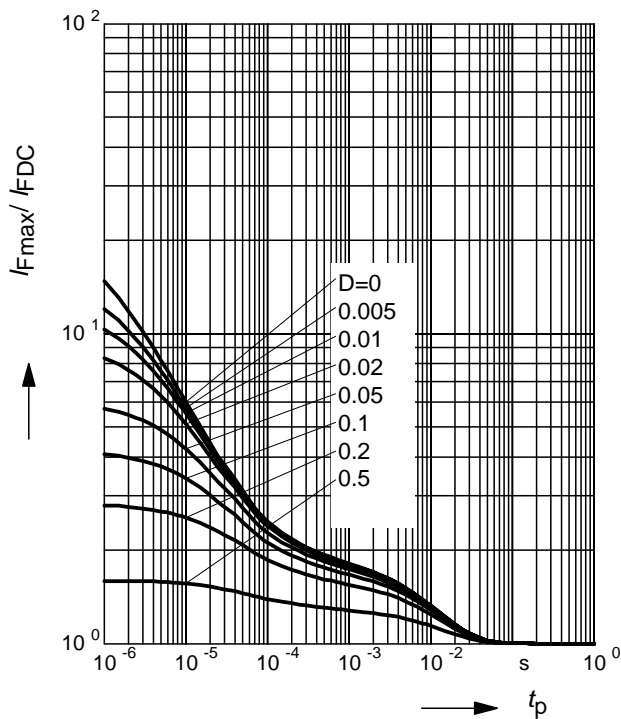
BAV99U



### Permissible Pulse Load

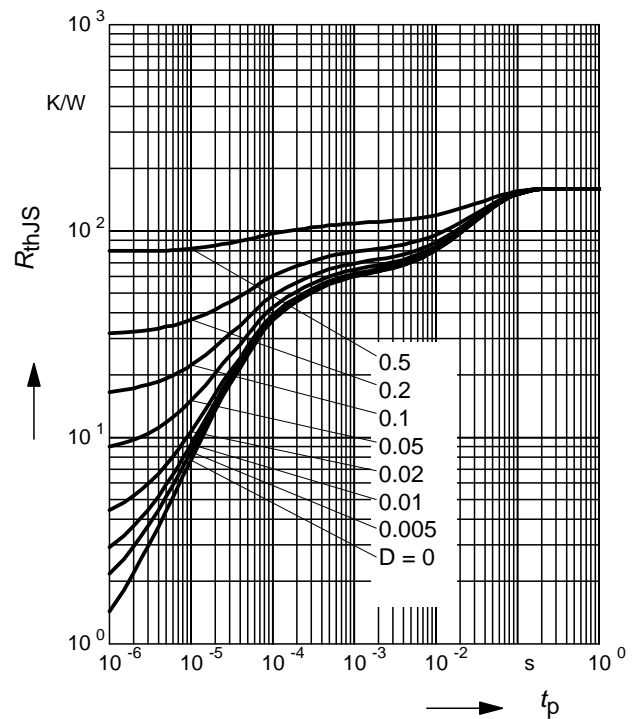
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAV99U



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

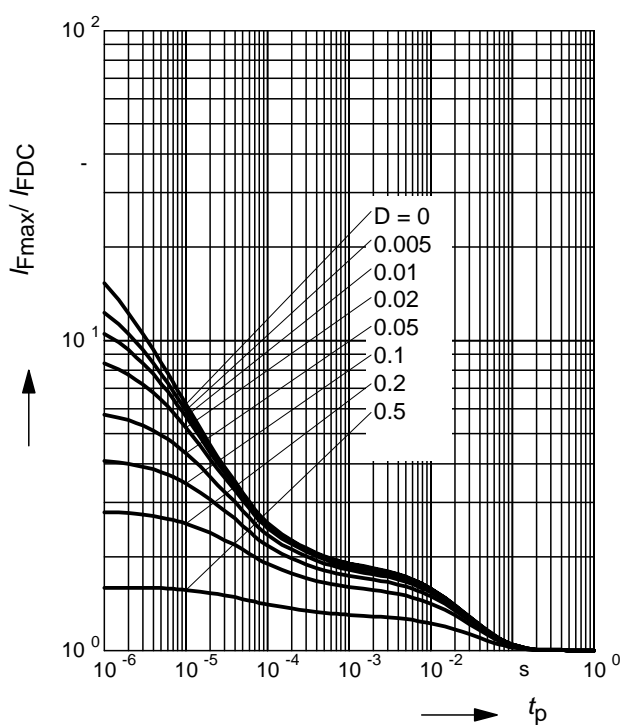
BAV99W



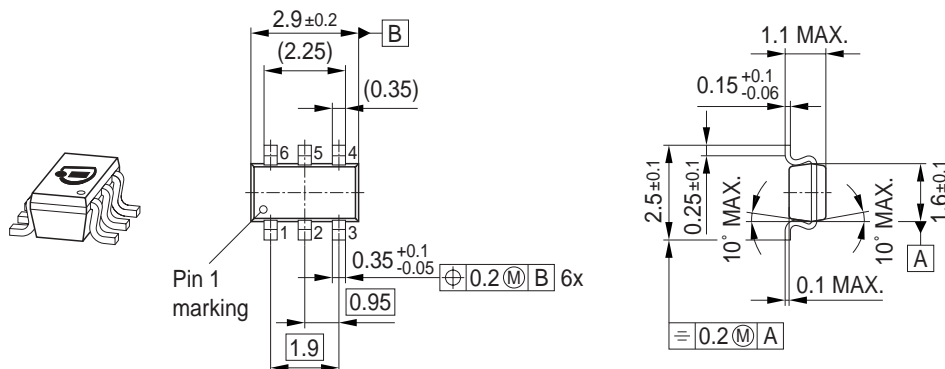
### Permissible Pulse Load

$$I_{Fmax}/I_{FDC} = f(t_p)$$

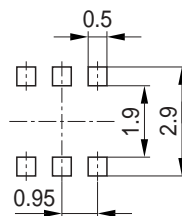
BAV99W



## Package Outline

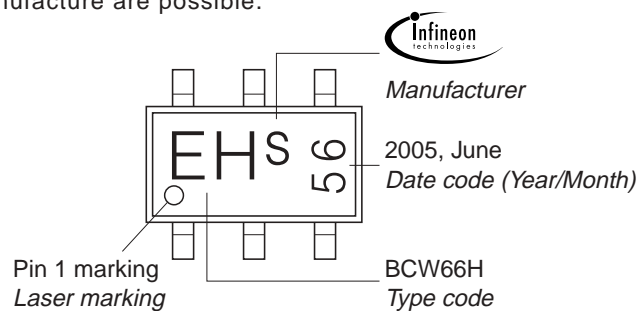


## Foot Print



## Marking Layout (Example)

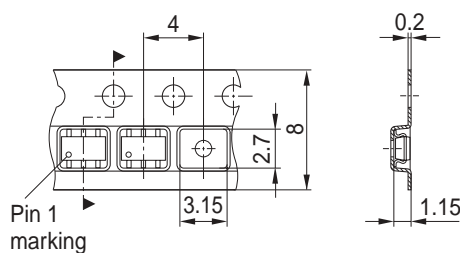
Small variations in positioning of Date code, Type code and Manufacture are possible.



## Standard Packing

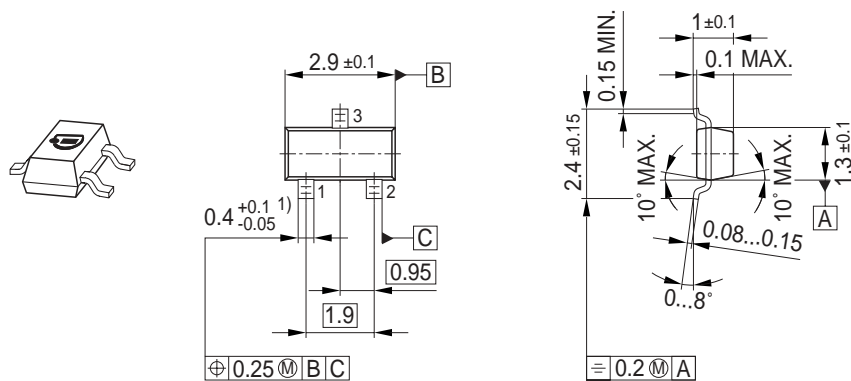
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



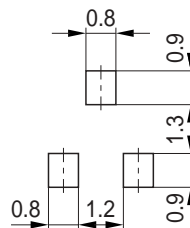


## Package Outline

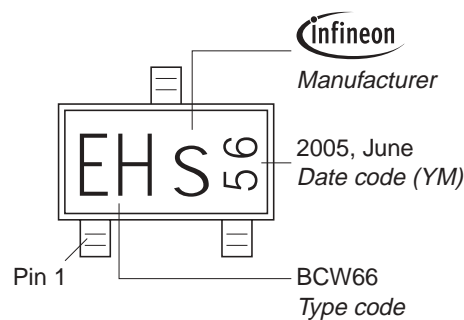


1) Lead width can be 0.6 max. in dambar area

## Foot Print

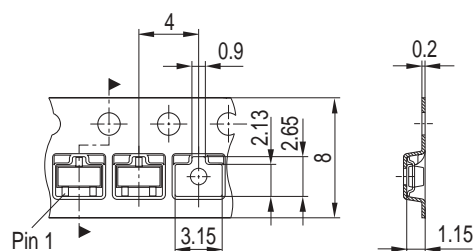


## Marking Layout (Example)

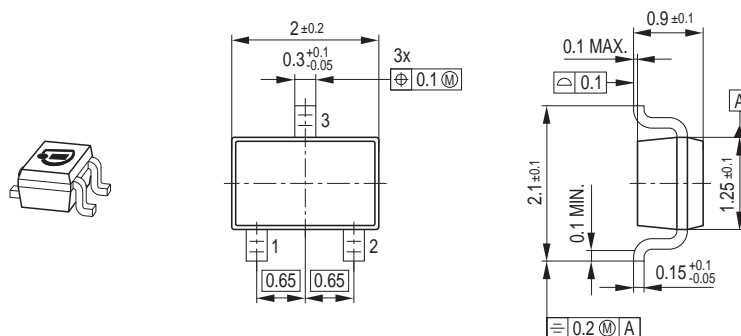


## Standard Packing

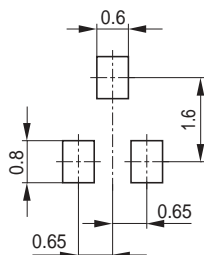
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



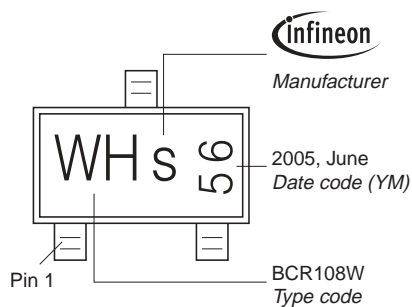
## Package Outline



## Foot Print

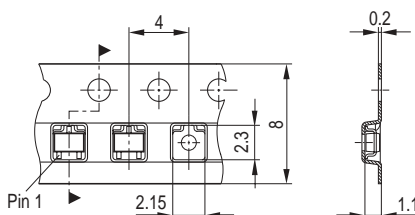


## Marking Layout (Example)

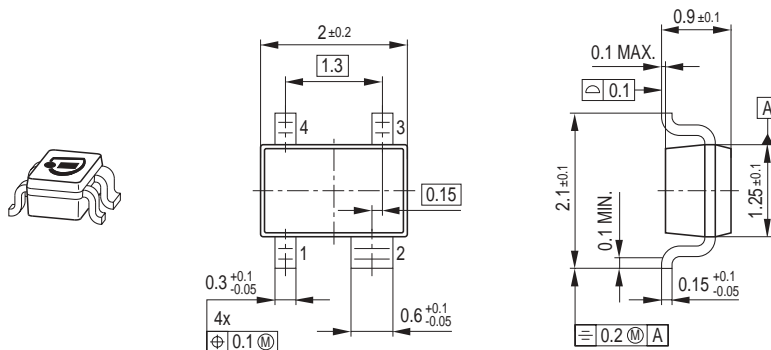


## Standard Packing

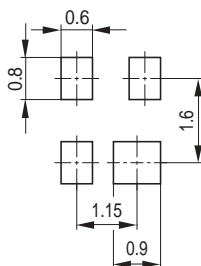
Reel  $\varnothing 180$  mm = 3.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel



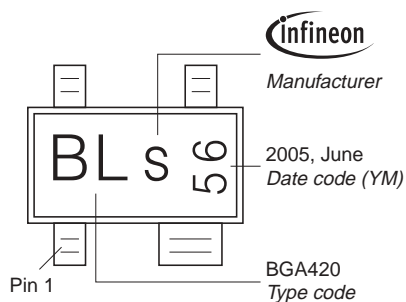
## Package Outline



## Foot Print

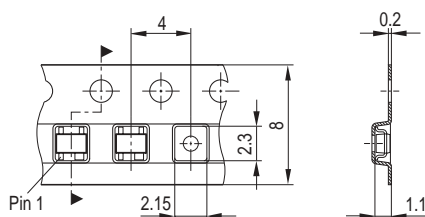


## Marking Layout (Example)

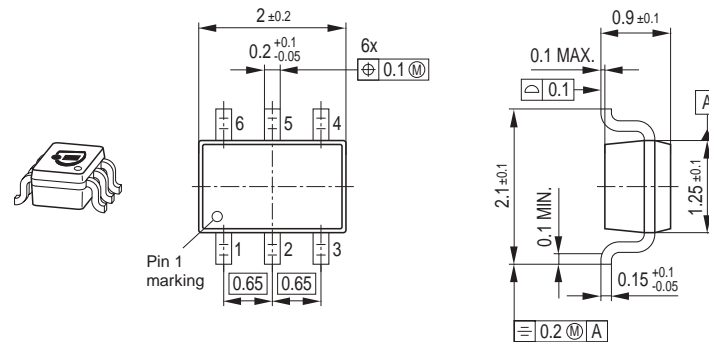


## Standard Packing

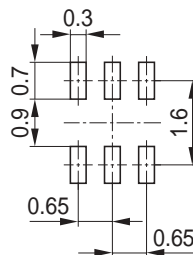
Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



## Package Outline

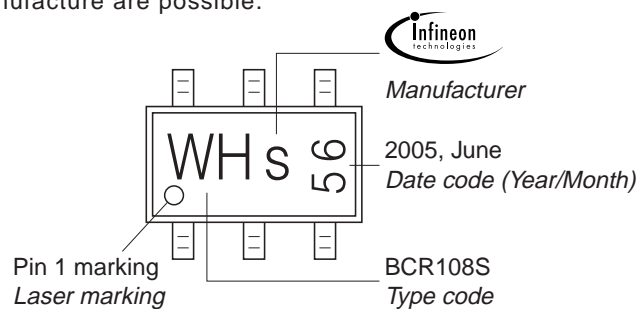


## Foot Print



## Marking Layout (Example)

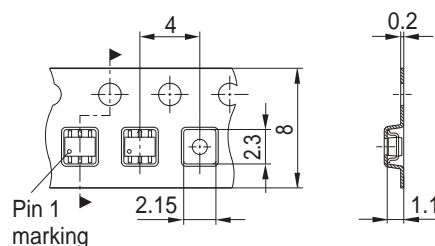
Small variations in positioning of  
Date code, Type code and Manufacture are possible.



## 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.



Edition 2006-02-01

Published by

Infineon Technologies AG

81726 München, Germany

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