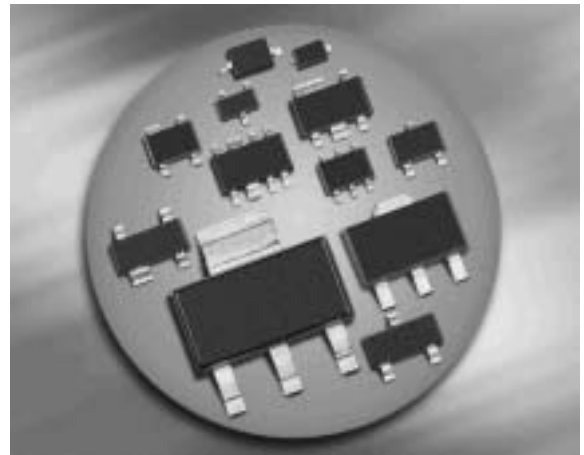
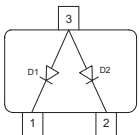


## Silicon Switching Diode

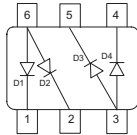
- For high-speed switching applications
- Common anode configuration
- BAW56S / U: For orientation in reel see package information below
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101



### BAW56 BAW56W



### BAW56S BAW56U



| Type   | Package | Configuration       | Marking |
|--------|---------|---------------------|---------|
| BAW56  | SOT23   | common anode        | A1s     |
| BAW56S | SOT363  | double common anode | A1s     |
| BAW56U | SC74    | double common anode | A1s     |
| BAW56W | SOT323  | common anode        | A1s     |

<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               |
| BAW56, $T_S \leq 28^\circ\text{C}$        |           | 330         |                  |
| BAW56S, $T_S \leq 85^\circ\text{C}$       |           | 250         |                  |
| BAW56U, $T_S \leq 90^\circ\text{C}$       |           | 250         |                  |
| BAW56W, $T_S \leq 103^\circ\text{C}$      |           | 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  |
| BAW56                                    |            | 360   |      |
| BAW56S                                   |            | 260   |      |
| BAW56U                                   |            | 240   |      |
| BAW56W                                   |            | 190   |      |

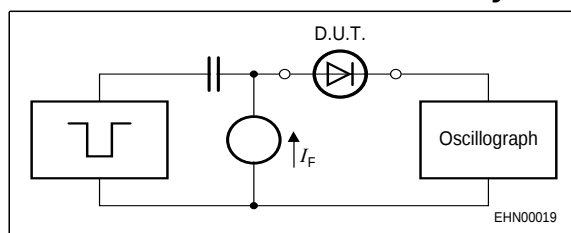
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

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

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

**AC Characteristics**

|                                                                                                                                |          |   |   |   |    |
|--------------------------------------------------------------------------------------------------------------------------------|----------|---|---|---|----|
| Diode capacitance<br>$V_R = 0 \text{ V}, f = 1 \text{ MHz}$                                                                    | $C_T$    | - | - | 2 | 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 |

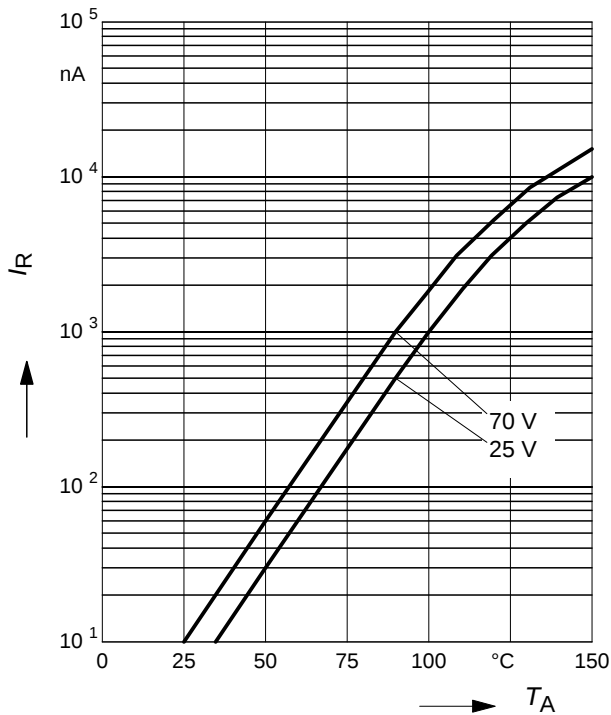
**Test circuit for reverse recovery time**


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

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

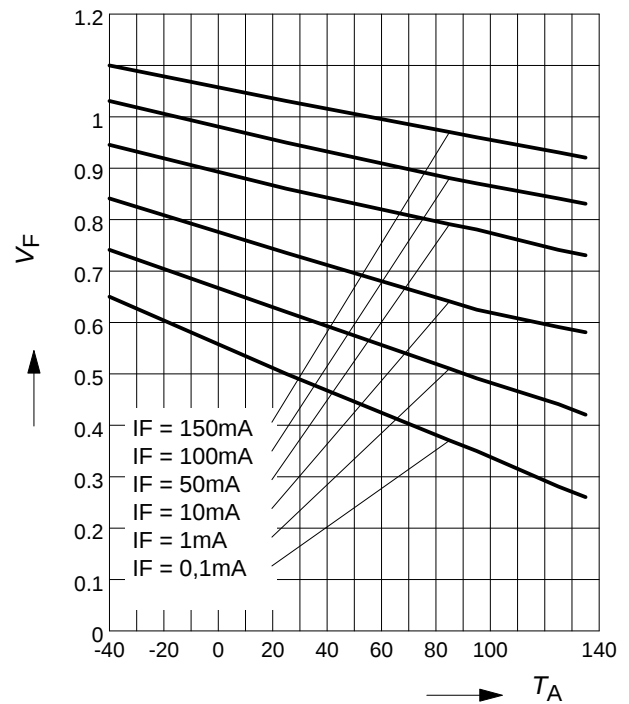
Reverse current  $I_R = f(T_A)$

$V_R = \text{Parameter}$



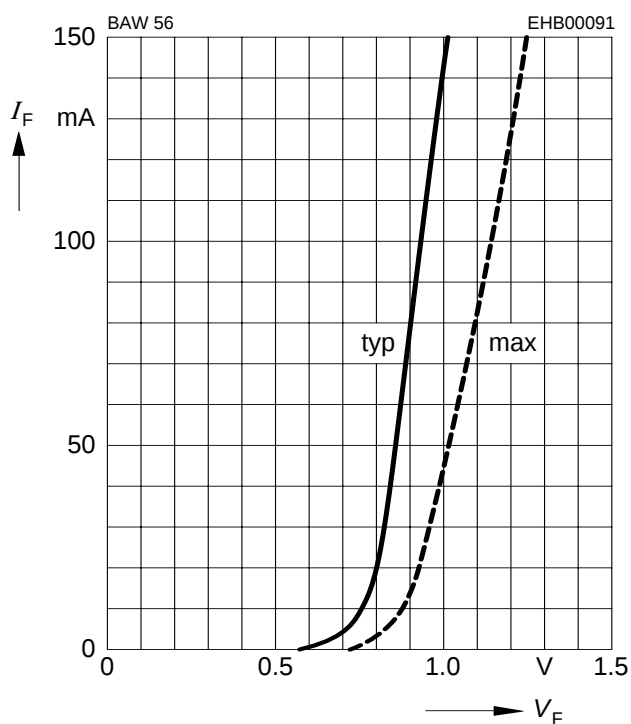
Forward Voltage  $V_F = f(T_A)$

$I_F = \text{Parameter}$



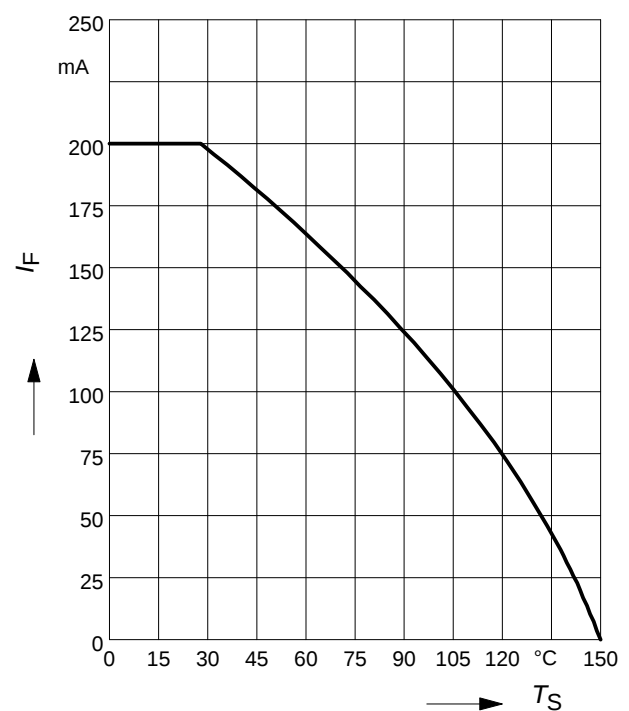
Forward current  $I_F = f(V_F)$

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



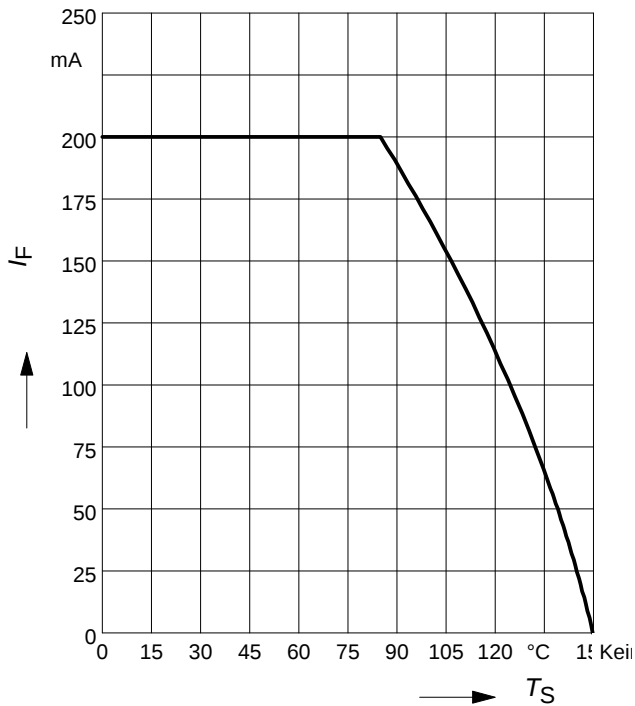
Forward current  $I_F = f(T_S)$

BAW56



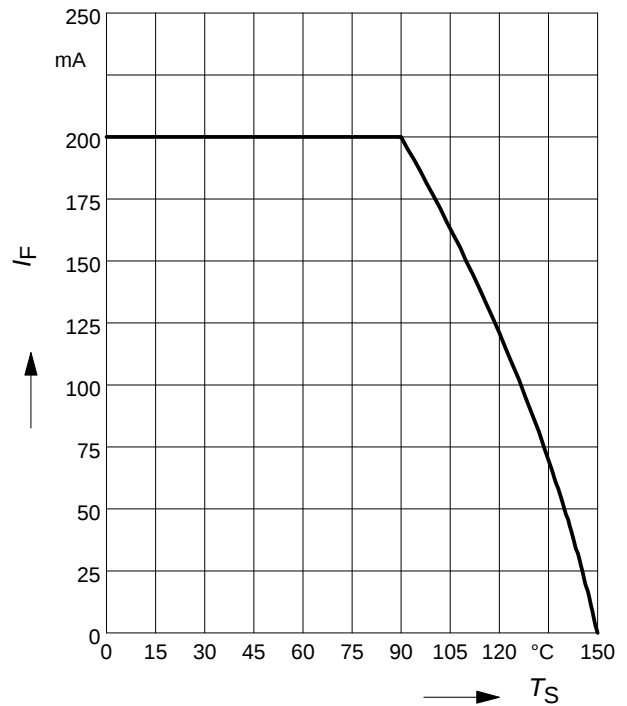
Forward current  $I_F = f(T_S)$

BAW56S



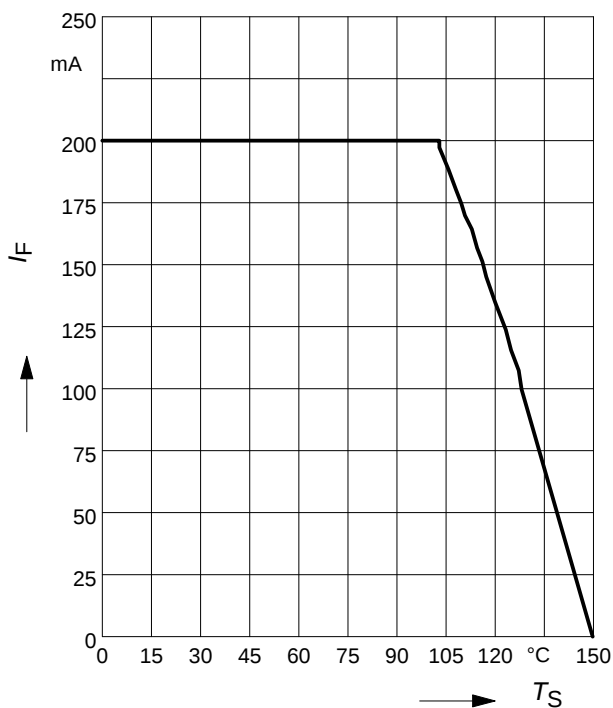
Forward current  $I_F = f(T_S)$

BAW56U



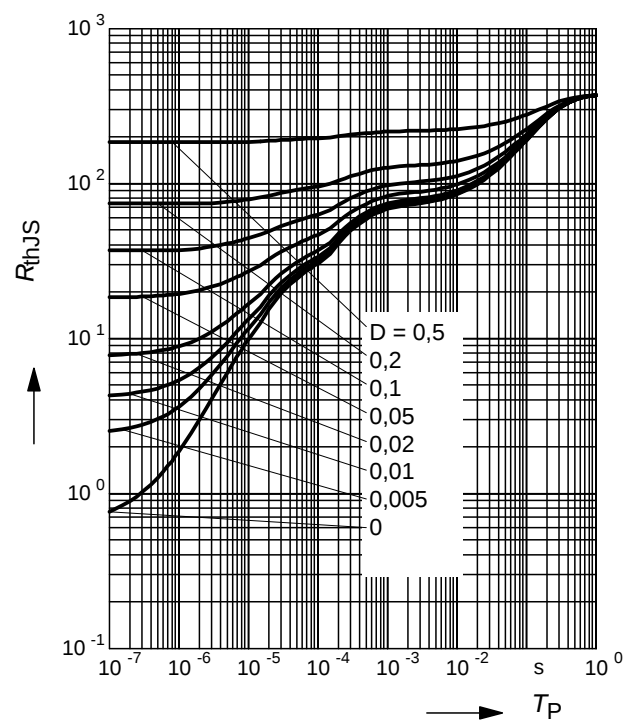
Forward current  $I_F = f(T_S)$

BAW56W



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

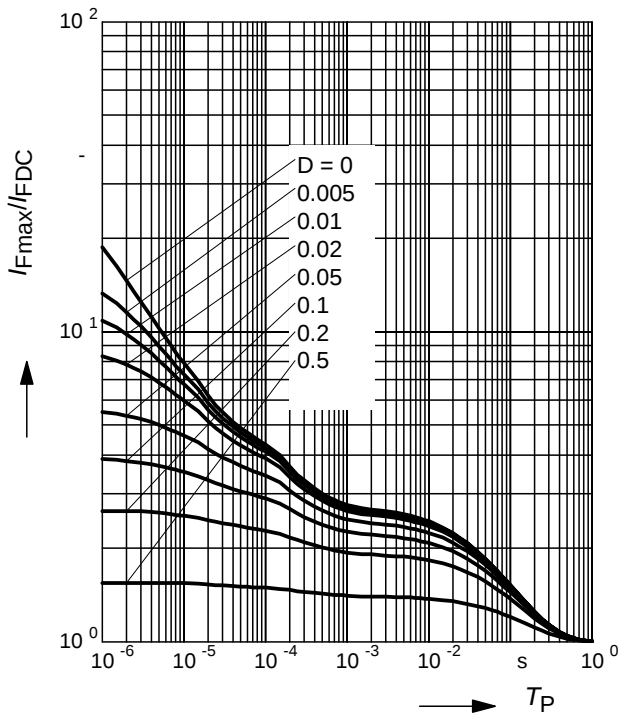
BAW56



### Permissible Pulse Load

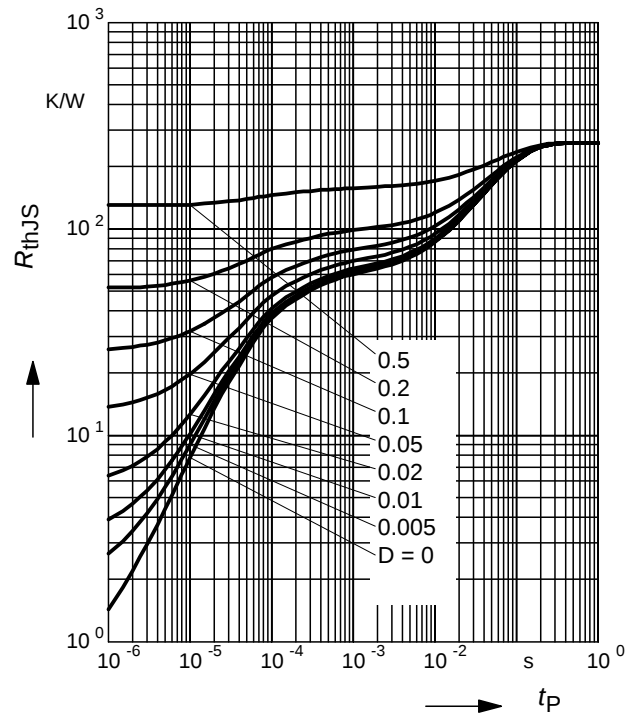
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAW56



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

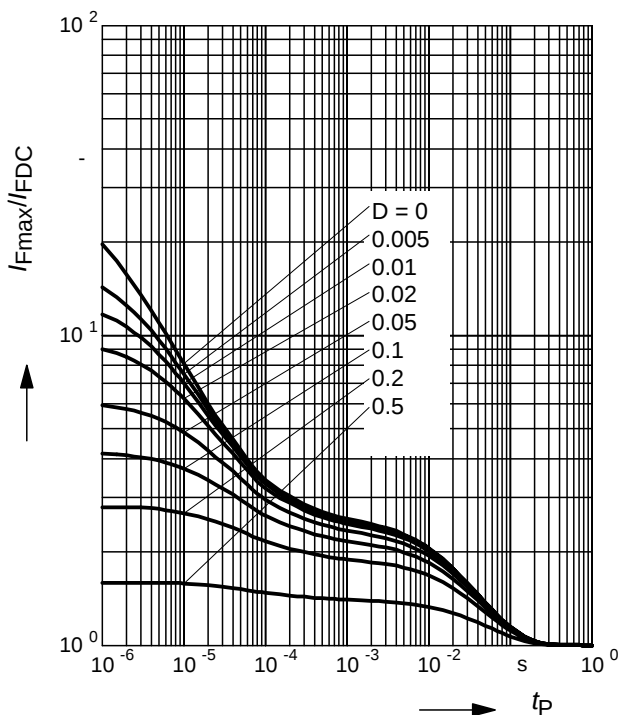
BAW56S



### Permissible Pulse Load

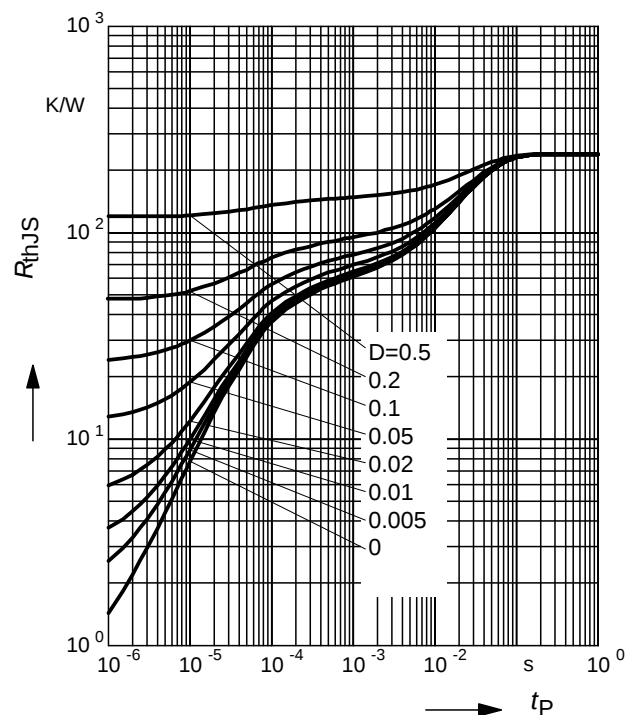
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAW56S



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

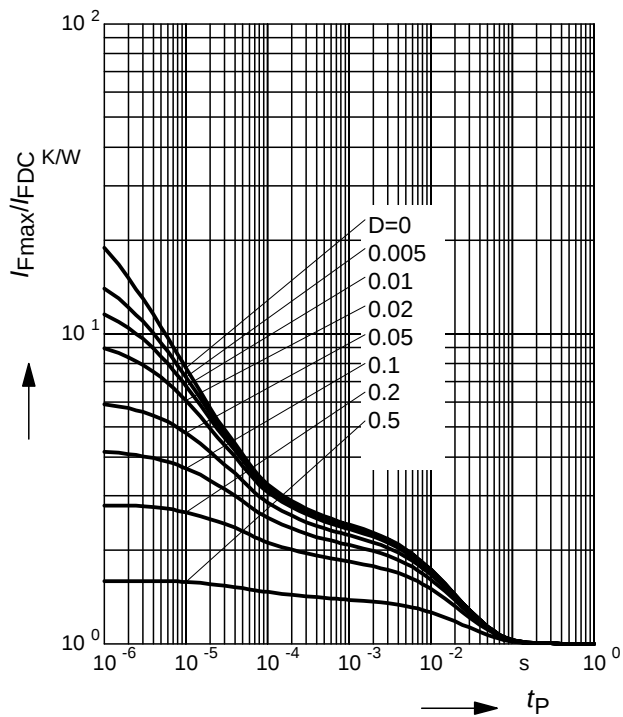
BAW56U



### Permissible Pulse Load

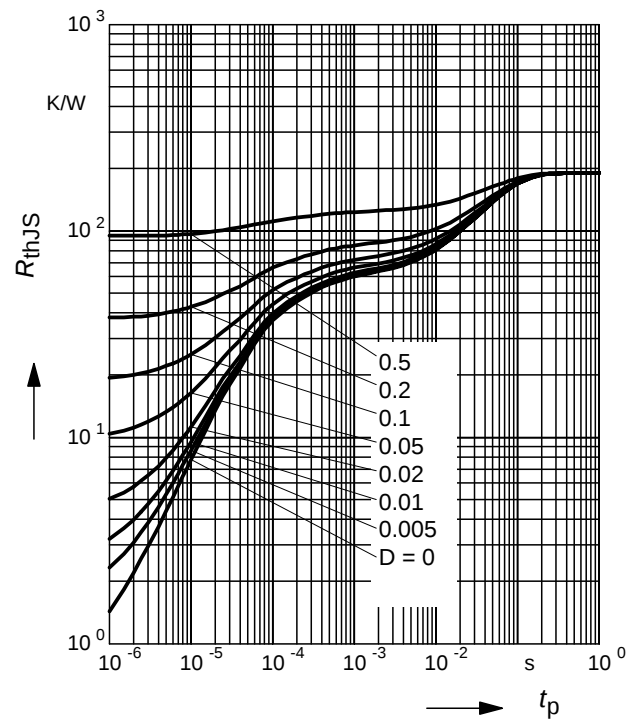
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAW56U



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

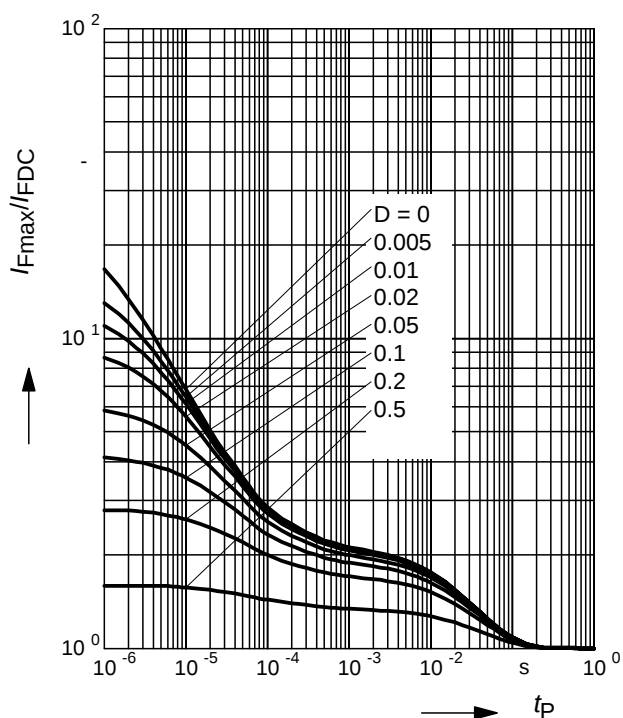
BAW56W



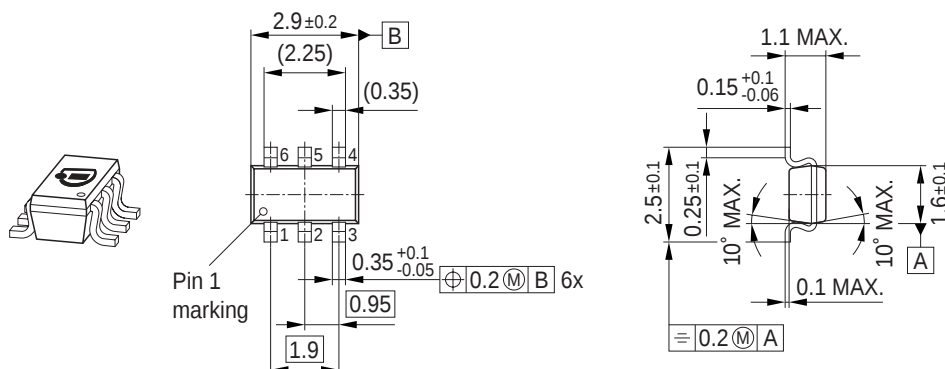
### Permissible Pulse Load

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

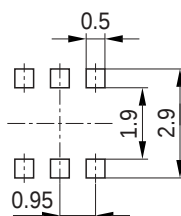
BAW56W



## Package Outline

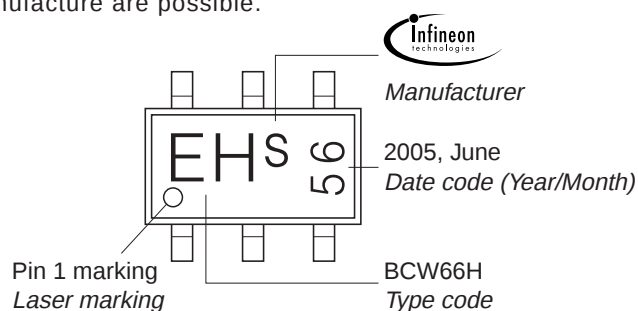


## Foot Print



## Marking Layout (Example)

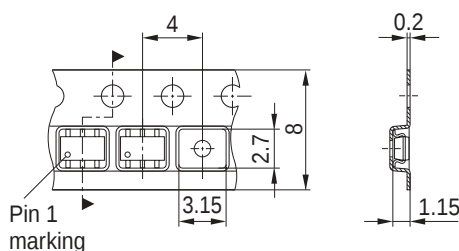
Small variations in positioning of Date code, Type code and Manufacture are possible.



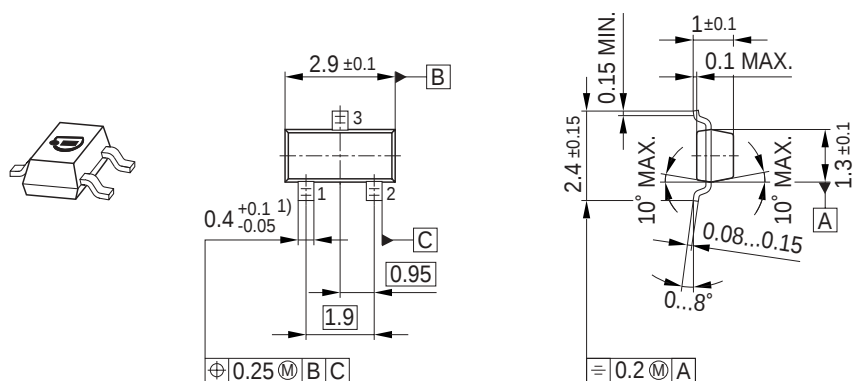
## Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.

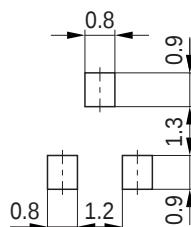


## Package Outline

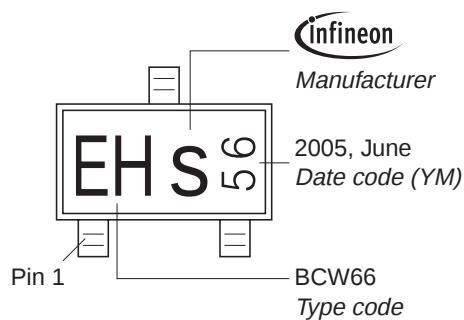


1) Lead width can be 0.6 max. in dambar area

## Foot Print

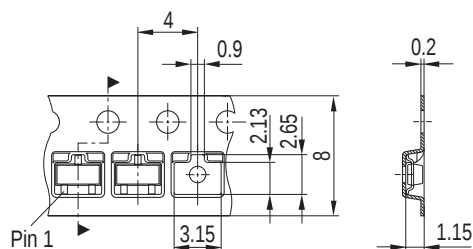


## Marking Layout (Example)

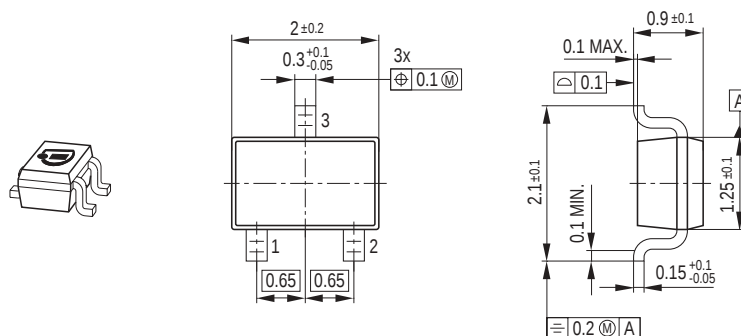


## Standard Packing

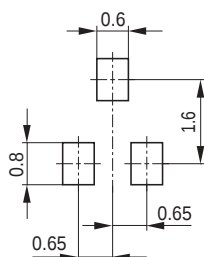
Reel ø180 mm = 3.000 Pieces/Reel  
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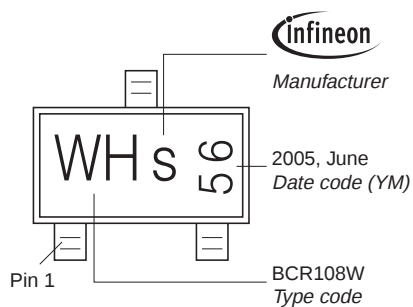
## Package Outline



## Foot Print

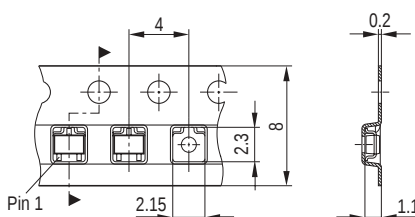


## Marking Layout (Example)

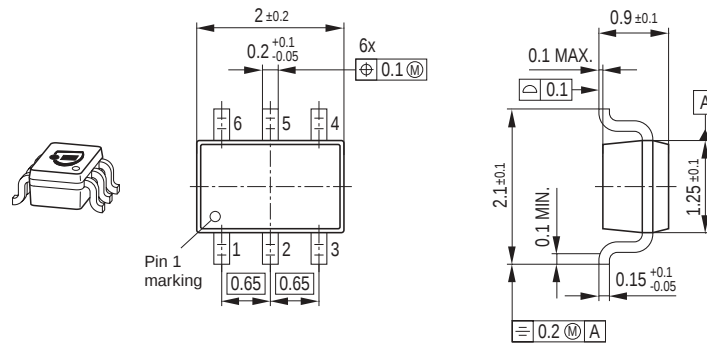


## Standard Packing

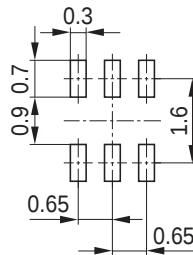
Reel  $\varnothing 180$  mm = 3.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel



## Package Outline

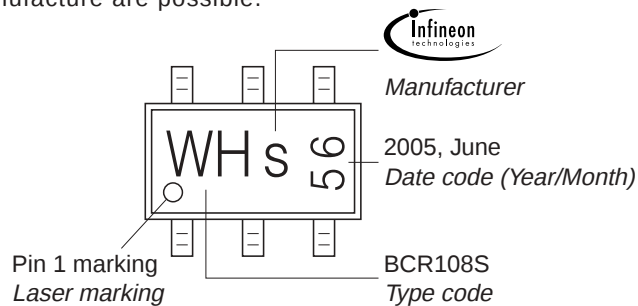


## Foot Print



## Marking Layout (Example)

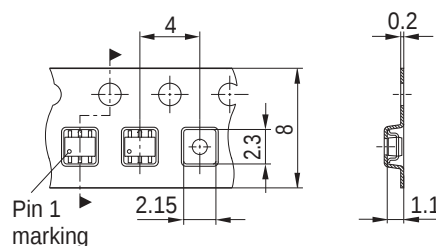
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Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



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