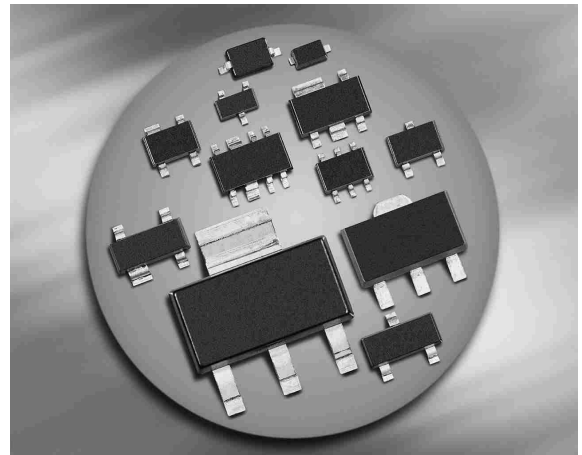
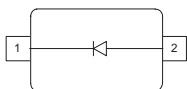


## Silicon Schottky Diode

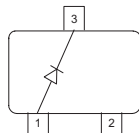
- General-purpose diode for high-speed switching
- Circuit protection
- Voltage clamping
- High-level detecting and mixing
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101<sup>1)</sup>



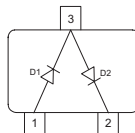
### **BAS140W** **BAS40-02L**



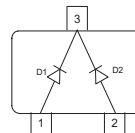
### **BAS40**



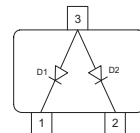
### **BAS40-04**



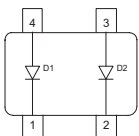
### **BAS40-05** **BAS40-05W**



### **BAS40-06** **BAS40-06W**



### **BAS40-07** **BAS40-07W**



**ESD (Electrostatic discharge) sensitive device, observe handling precaution!**

| Type        | Package  | Configuration    | Marking |
|-------------|----------|------------------|---------|
| BAS140W     | SOD323   | single           | white 4 |
| BAS40       | SOT23    | single           | 43s     |
| BAS40-02L * | TSLP-2-1 | single, leadless | FF      |
| BAS40-04    | SOT23    | series           | 44s     |
| BAS40-05    | SOT23    | common cathode   | 45s     |
| BAS40-05W   | SOT323   | common cathode   | 45s     |
| BAS40-06    | SOT23    | common anode     | 46s     |
| BAS40-06W   | SOT323   | common anode     | 46s     |
| BAS40-07    | SOT143   | parallel pair    | 47s     |
| BAS40-07W   | SOT343   | parallel pair    | 47s     |

<sup>1)</sup> BAS40-02L is not qualified according AEC Q101

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

| Parameter                                                                                                                                                                                                                                                                                                                                       | Symbol    | Value                                                | Unit |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------|------|
| Diode reverse voltage                                                                                                                                                                                                                                                                                                                           | $V_R$     | 40                                                   | V    |
| Forward current                                                                                                                                                                                                                                                                                                                                 | $I_F$     | 120                                                  | mA   |
| Non-repetitive peak surge forward current<br>$t \leq 10\text{ms}$                                                                                                                                                                                                                                                                               | $I_{FSM}$ | 200                                                  |      |
| Total power dissipation<br>BAS140W, $T_S \leq 113\text{°C}$<br>BAS40, BAS40-07, $T_S \leq 81\text{°C}$<br>BAS40-02L, $T_S \leq 127\text{°C}$<br>BAS40-04, BAS40-06, $T_S \leq 56\text{°C}$<br>BAS40-06W, $T_S \leq 106\text{°C}$<br>BAS40-05, $T_S \leq 31\text{°C}$<br>BAS40-05W, $T_S \leq 98\text{°C}$<br>BAS40-07W, $T_S \leq 118\text{°C}$ | $P_{tot}$ | 250<br>250<br>250<br>250<br>250<br>250<br>250<br>250 | mW   |
| Junction temperature                                                                                                                                                                                                                                                                                                                            | $T_j$     | 150                                                  | °C   |
| Operating temperature range                                                                                                                                                                                                                                                                                                                     | $T_{op}$  | -55 ... 150                                          |      |
| Storage temperature                                                                                                                                                                                                                                                                                                                             | $T_{stg}$ | -55 ... 150                                          |      |

#### Thermal Resistance

| Parameter                                                                                                                                                    | Symbol     | Value                                                                                                       | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------|------|
| Junction - soldering point <sup>1)</sup><br>BAS140W<br>BAS40, BAS40-07<br>BAS40-02L<br>BAS40-04, BAS40-06<br>BAS40-06W<br>BAS40-05<br>BAS40-05W<br>BAS40-07W | $R_{thJS}$ | $\leq 150$<br>$\leq 275$<br>$\leq 90$<br>$\leq 375$<br>$\leq 175$<br>$\leq 475$<br>$\leq 205$<br>$\leq 125$ | K/W  |

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

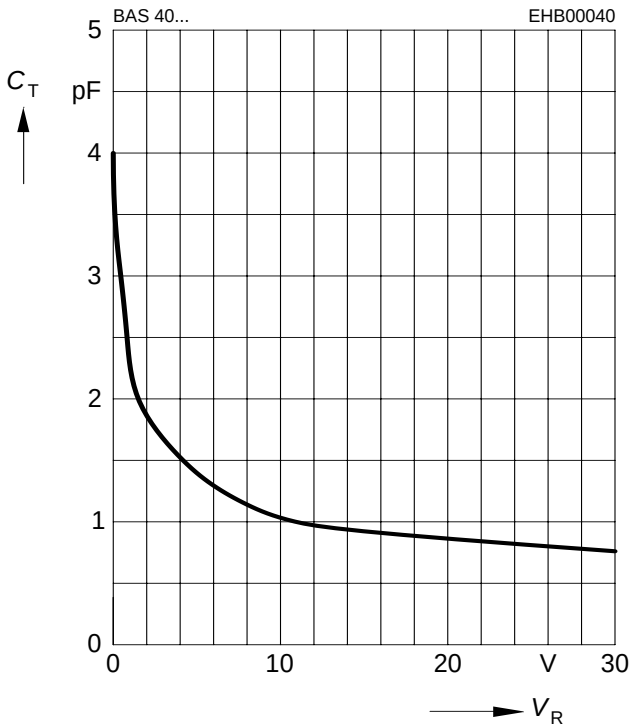
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                 | Symbol       | Values            |                   |                    | Unit          |
|-------------------------------------------------------------------------------------------|--------------|-------------------|-------------------|--------------------|---------------|
|                                                                                           |              | min.              | typ.              | max.               |               |
| DC Characteristics                                                                        |              |                   |                   |                    |               |
| Breakdown voltage<br>$I_{(BR)} = 10\ \mu\text{A}$                                         | $V_{(BR)}$   | 40                | -                 | -                  | V             |
| Reverse current<br>$V_R = 30\ \text{V}$                                                   | $I_R$        | -                 | -                 | 1                  | $\mu\text{A}$ |
| Forward voltage<br>$I_F = 1\ \text{mA}$<br>$I_F = 10\ \text{mA}$<br>$I_F = 40\ \text{mA}$ | $V_F$        | 250<br>350<br>600 | 310<br>450<br>720 | 380<br>500<br>1000 | mV            |
| Forward voltage matching <sup>1)</sup><br>$I_F = 10\ \text{mA}$                           | $\Delta V_F$ | -                 | -                 | 20                 |               |
| AC Characteristics                                                                        |              |                   |                   |                    |               |
| Diode capacitance<br>$V_R = 0$ , $f = 1\ \text{MHz}$                                      | $C_T$        | -                 | 3                 | 5                  | pF            |
| Differential forward resistance<br>$I_F = 10\ \text{mA}$ , $f = 10\ \text{kHz}$           | $R_F$        | -                 | 10                | -                  | $\Omega$      |
| Charge carrier life time<br>$I_F = 25\ \text{mA}$                                         | $\tau_{rr}$  | -                 | -                 | 100                | ps            |

<sup>1)</sup> $\Delta V_F$  is the difference between lowest and highest  $V_F$  in a multiple diode component.

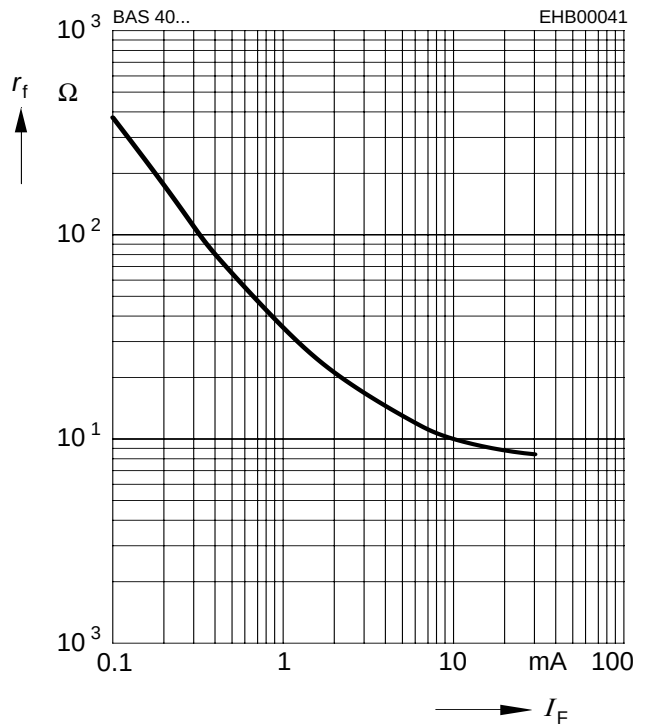
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



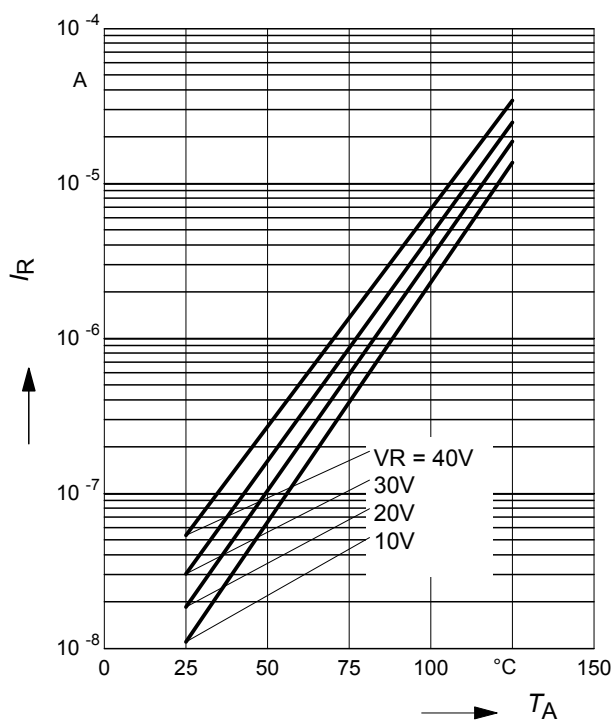
**Forward resistance  $r_f = f(I_F)$**

$f = 10\text{kHz}$



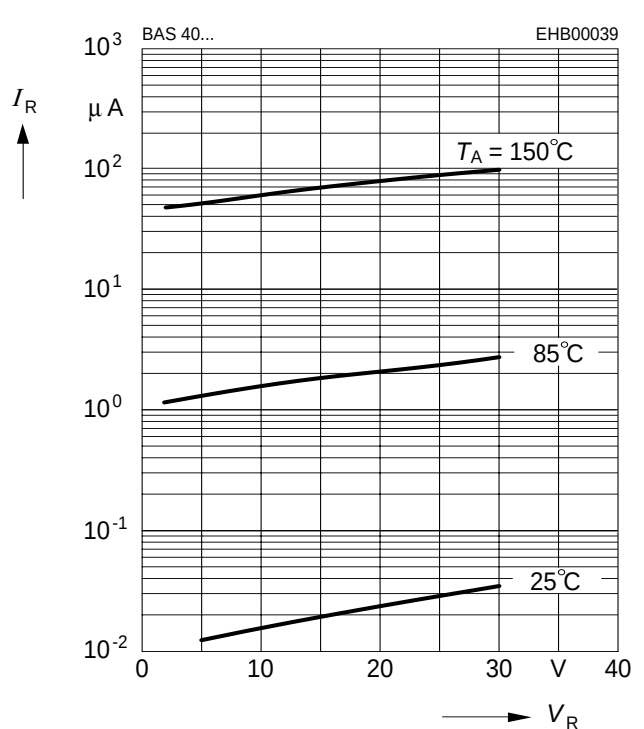
**Reverse current  $I_R = f(T_A)$**

$V_R = \text{Parameter}$



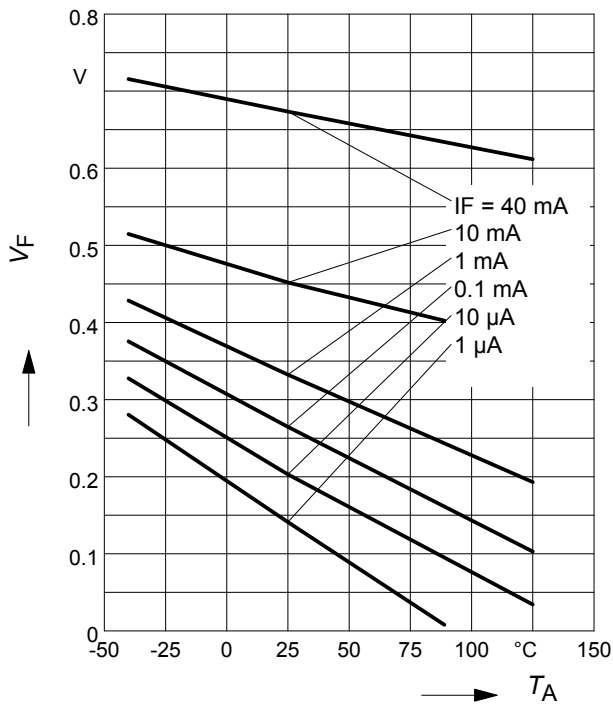
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



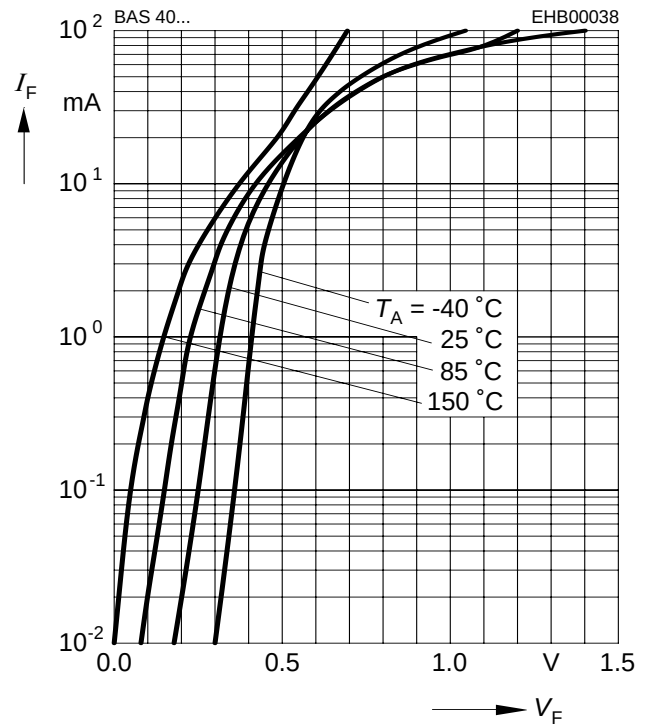
**Forward Voltage  $V_F = f(T_A)$**

$I_F$  = Parameter



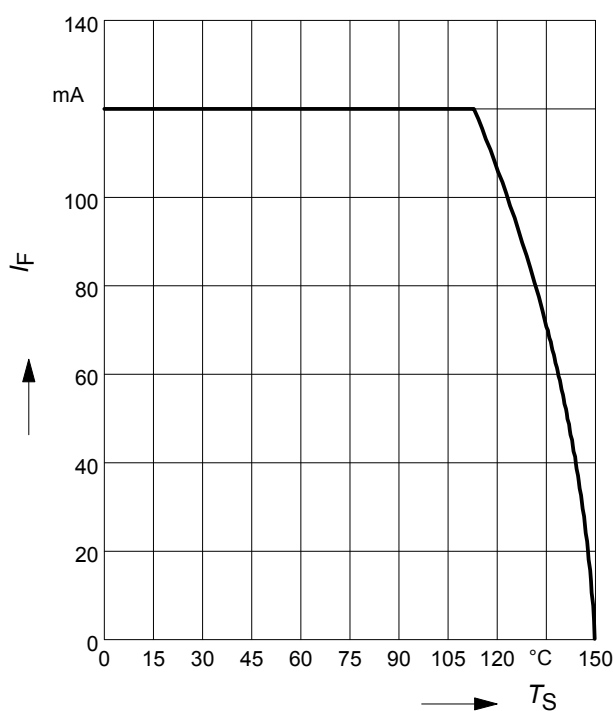
**Forward current  $I_F = f(V_F)$**

$T_A$  = Parameter



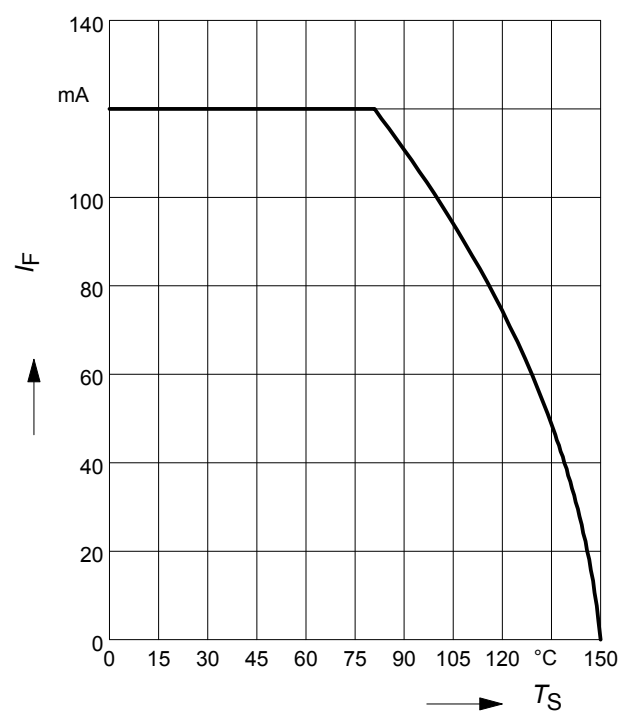
**Forward current  $I_F = f(T_S)$**

BAS140W



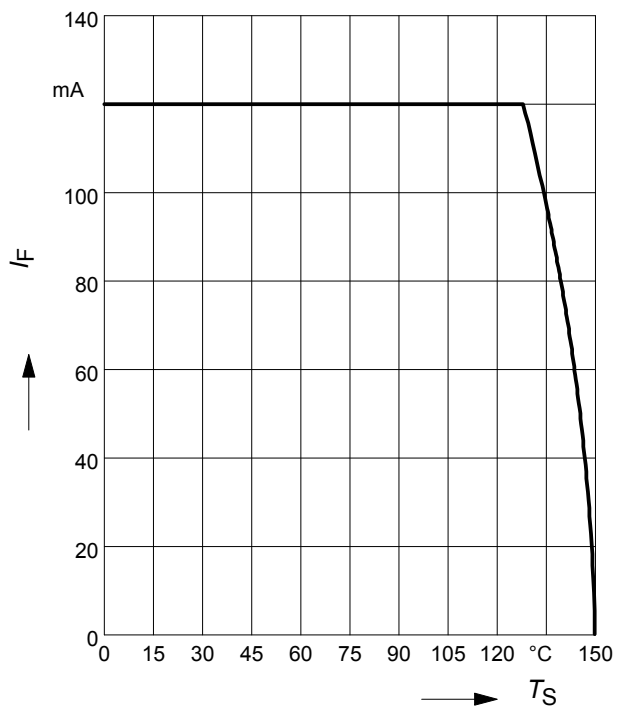
**Forward current  $I_F = f(T_S)$**

BAS40, BAS40-07

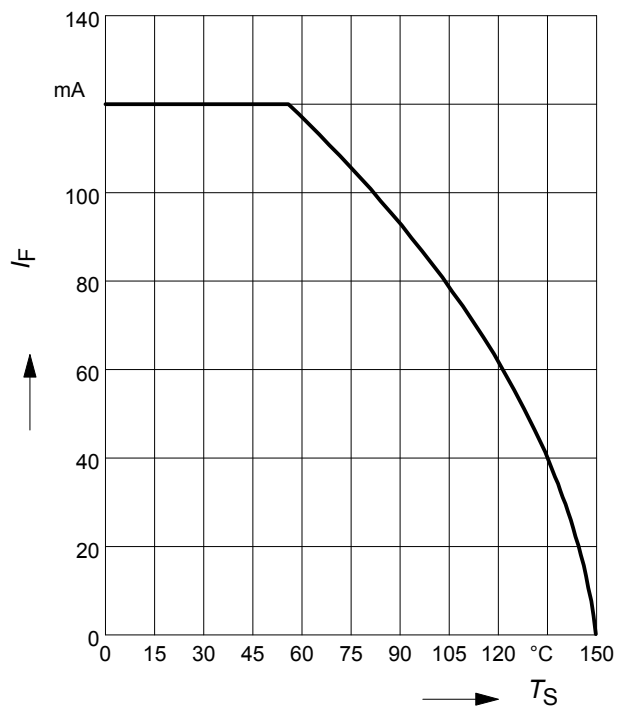


**Forward current  $I_F = f(T_S)$** 

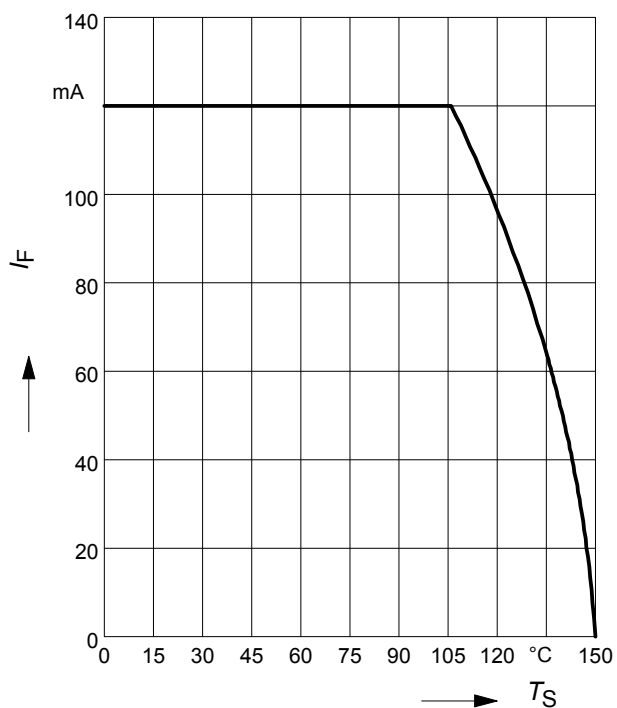
BAS40-02L


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

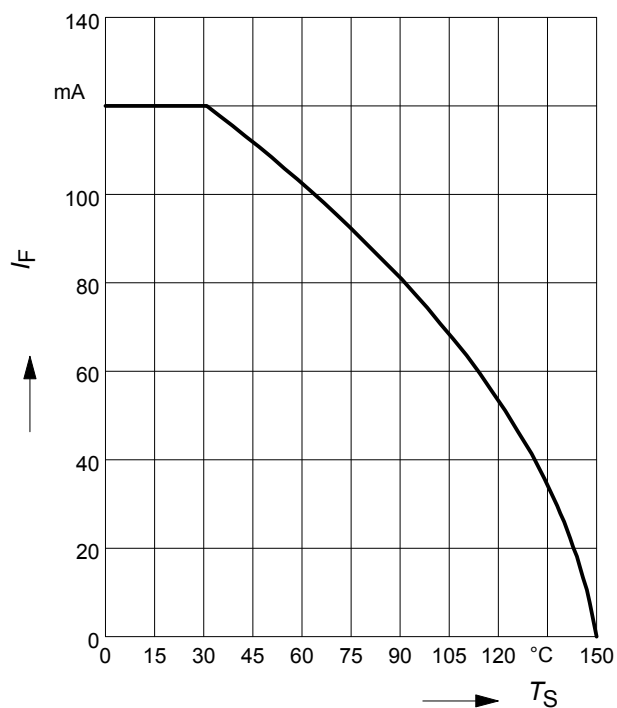
BAS40-04, BAS40-06


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

BAS40-06W

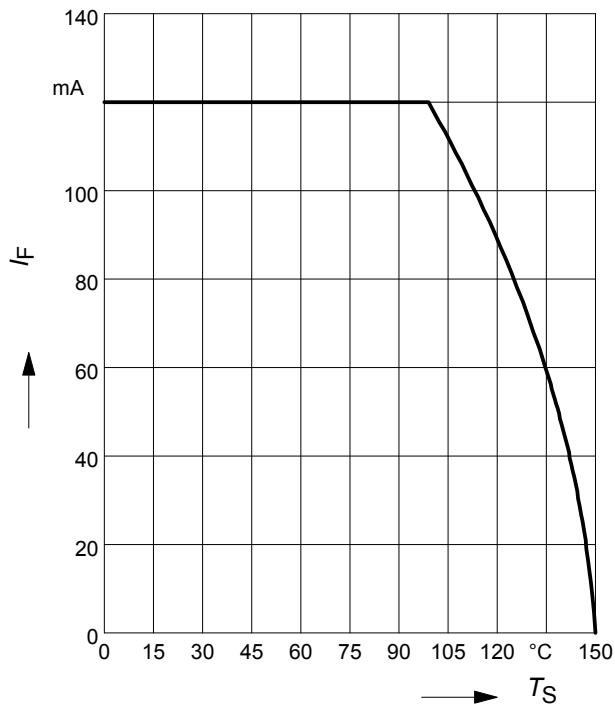

**Forward current  $I_F = f(T_S)$** 

BAS40-05



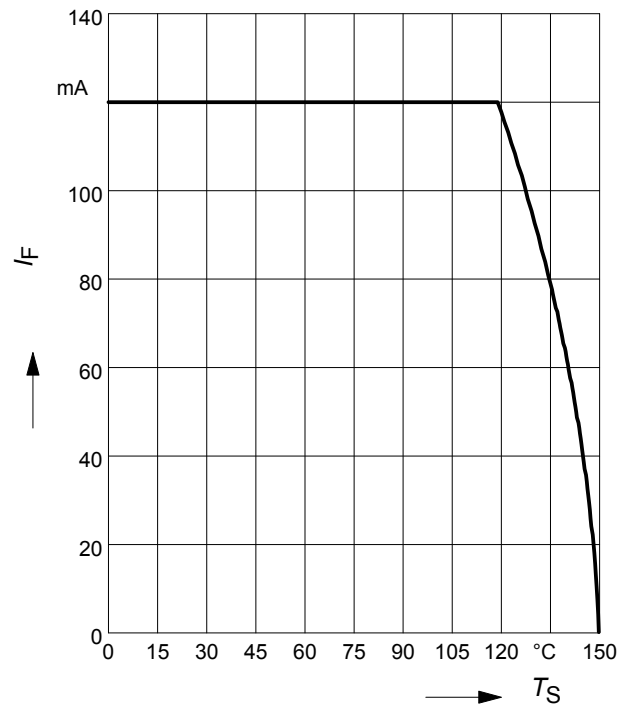
**Forward current  $I_F = f(T_S)$**

BAS40-05W



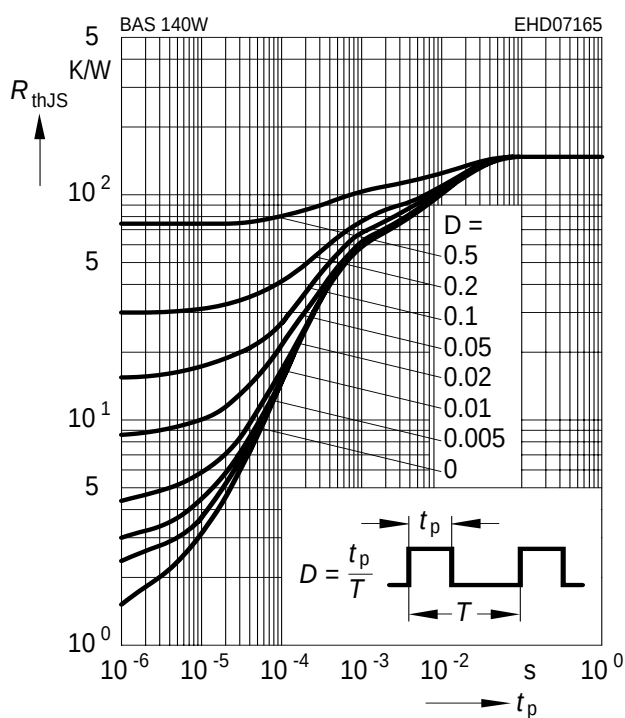
**Forward current  $I_F = f(T_S)$**

BAS40-07W



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

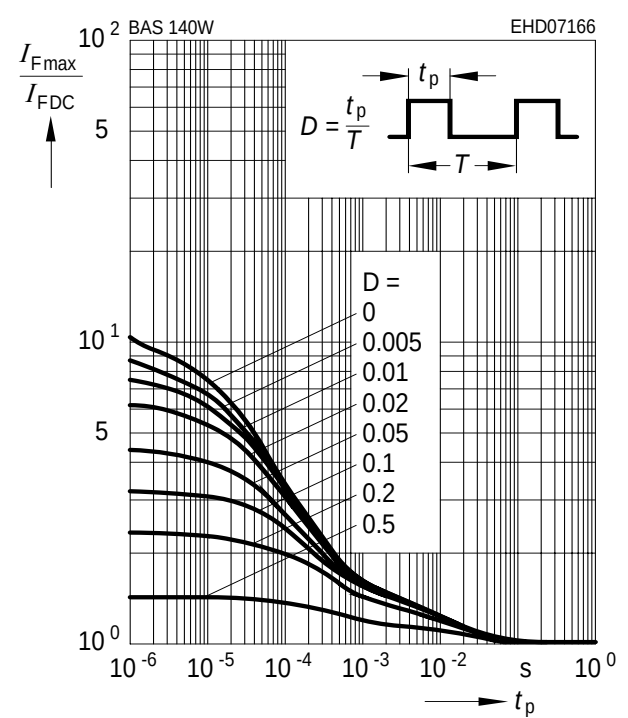
BAS140W



**Permissible Pulse Load**

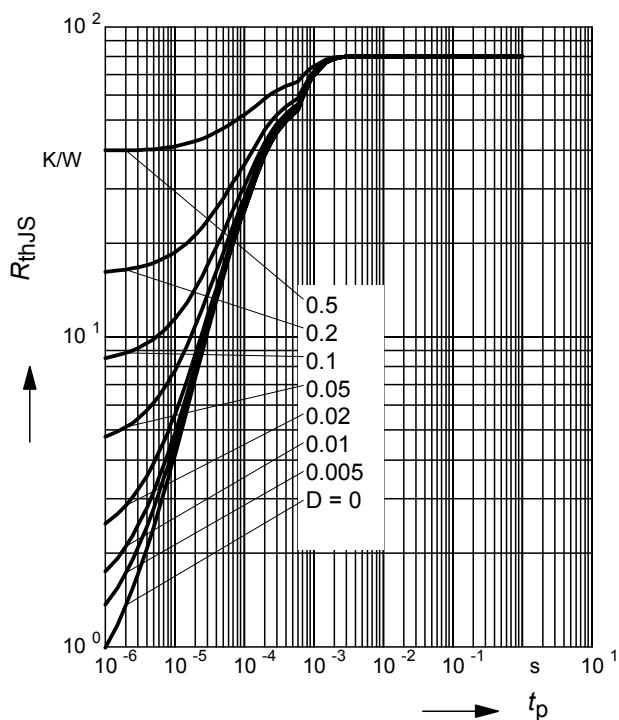
$I_{Fmax}/I_{FDC} = f(t_p)$

BAS140W



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

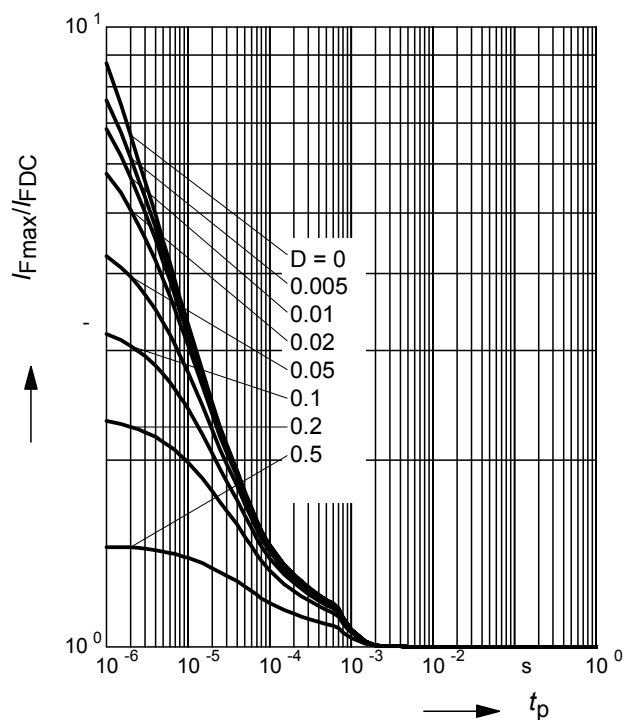
BAS40-02L



**Permissible Pulse Load**

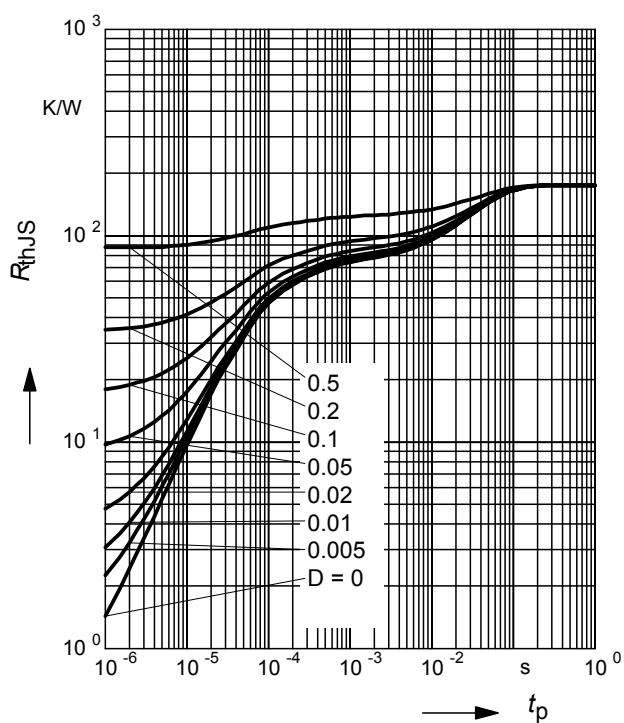
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAS40-02L



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

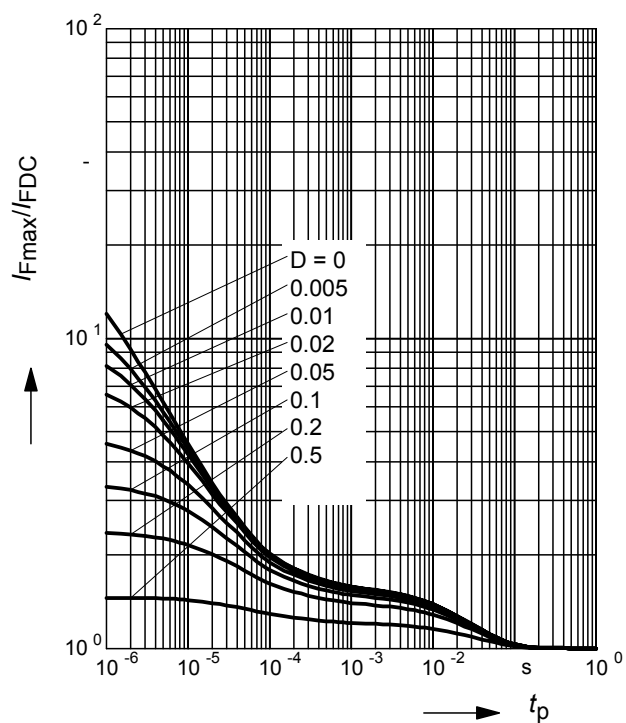
BAS40-06W



**Permissible Pulse Load**

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

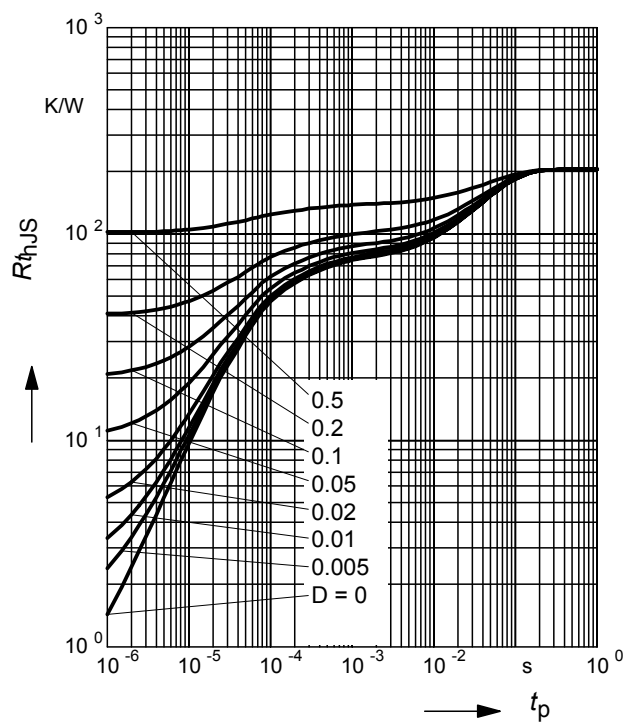
BAS40-06W





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

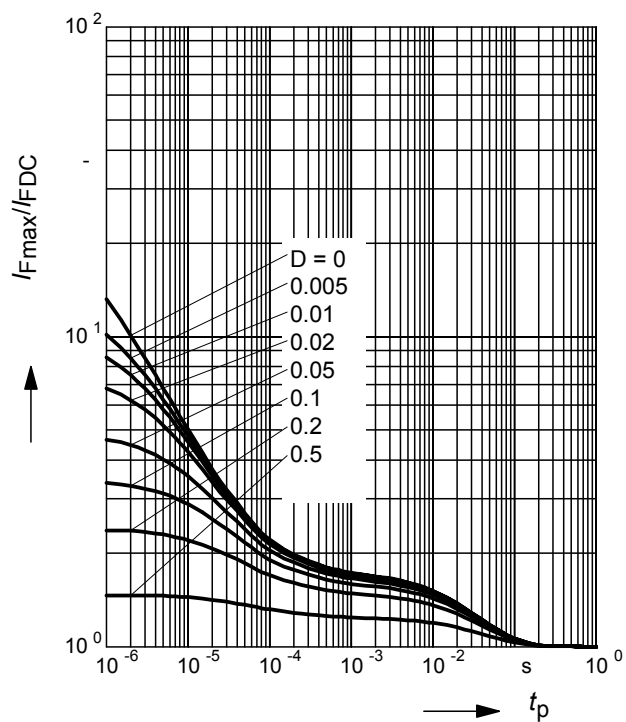
BAS40-05W



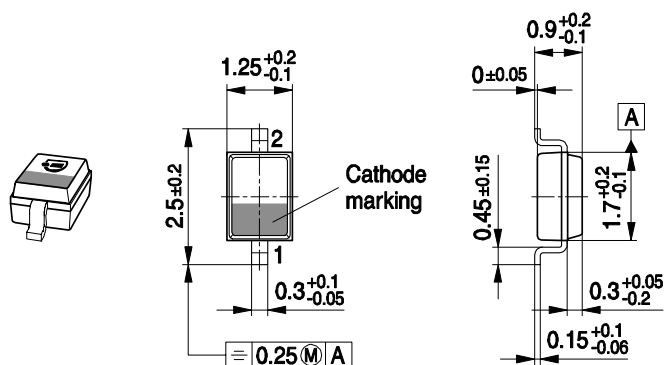
### Permissible Pulse Load

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

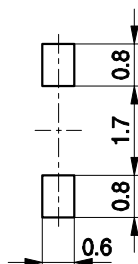
BAS40-05W



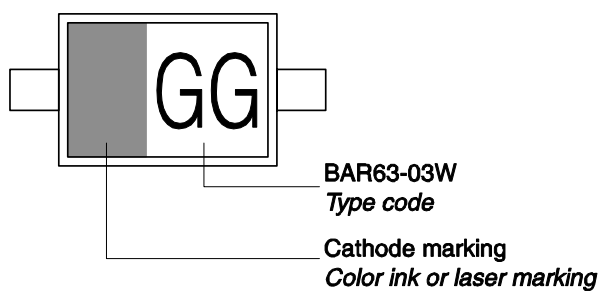
## Package Outline



## Foot Print

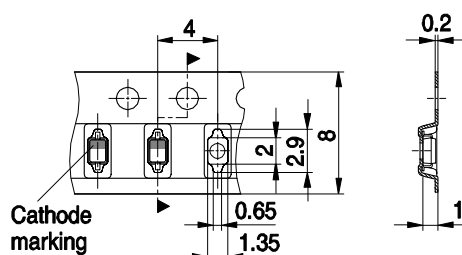


## Marking Layout (Example)

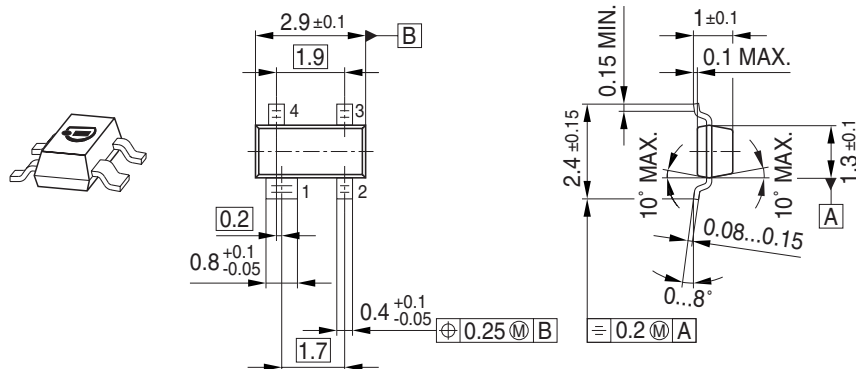


## Standard Packing

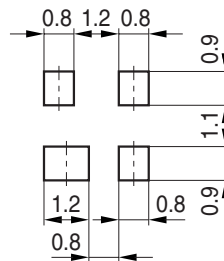
Reel  $\varnothing 180 \text{ mm}$  = 3.000 Pieces/Reel  
 Reel  $\varnothing 330 \text{ mm}$  = 10.000 Pieces/Reel



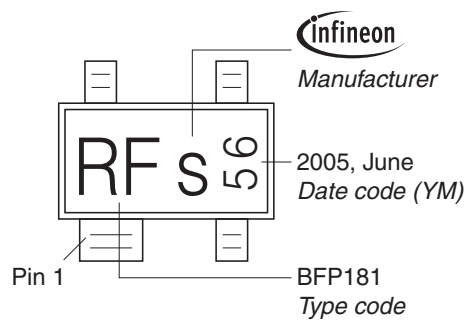
## Package Outline



## Foot Print

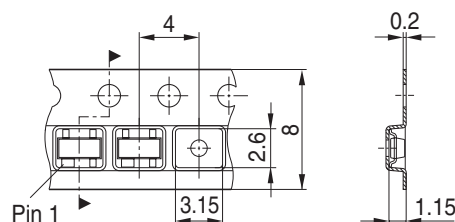


## Marking Layout (Example)

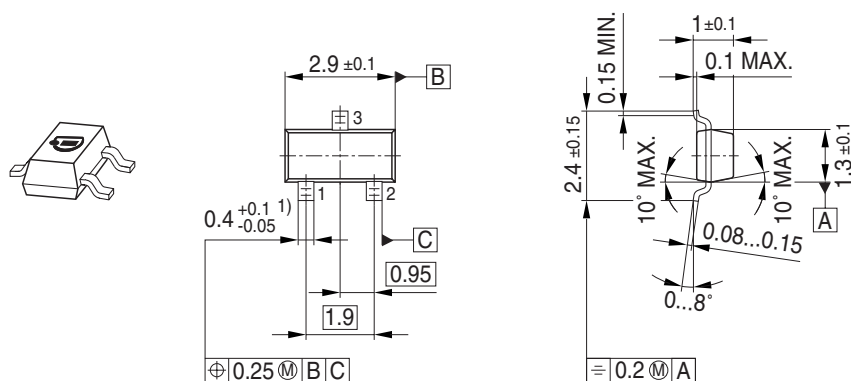


## Standard Packing

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

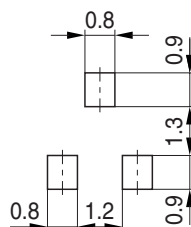


## Package Outline

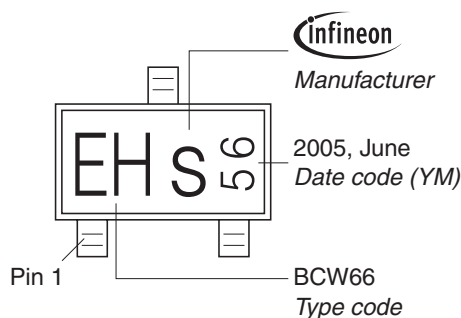


1) Lead width can be 0.6 max. in dambar area

## Foot Print

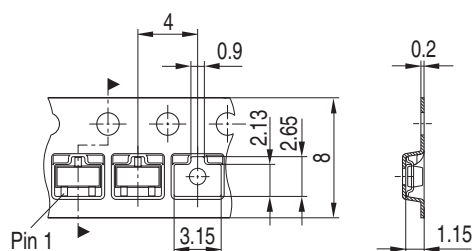


## Marking Layout (Example)

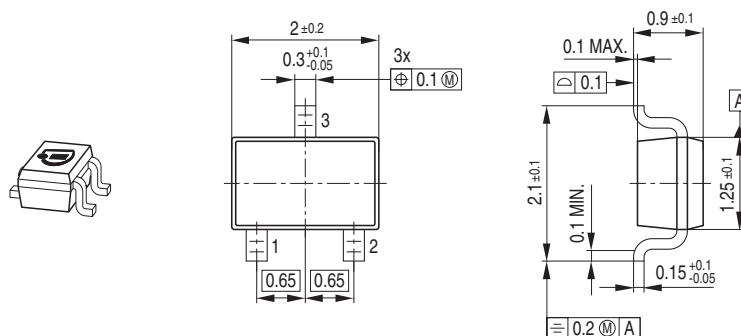


## Standard Packing

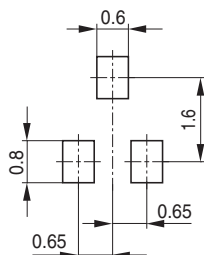
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



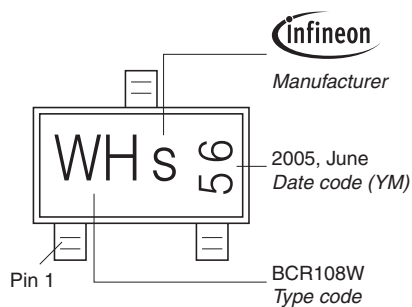
## Package Outline



## Foot Print

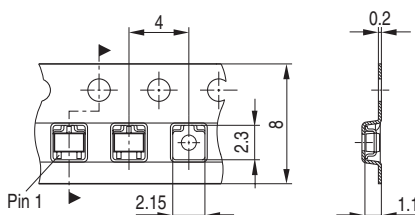


## Marking Layout (Example)

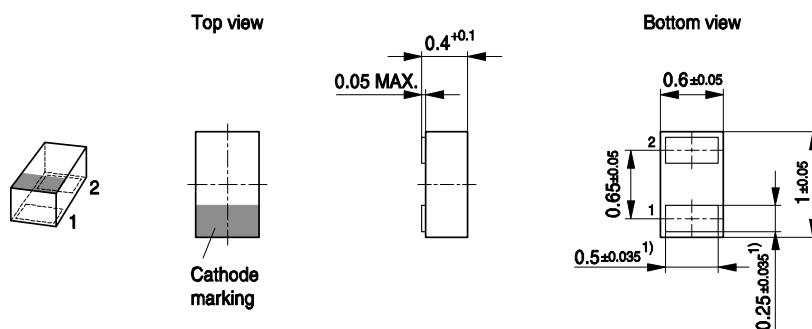


## Standard Packing

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



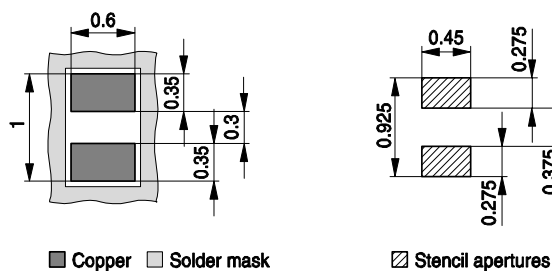
## Package Outline



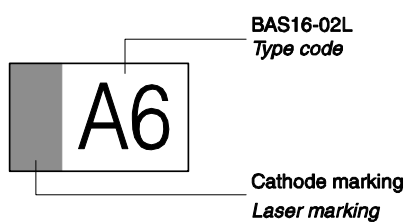
1) Dimension applies to plated terminal

## Foot Print

For board assembly information please refer to Infineon website "Packages"



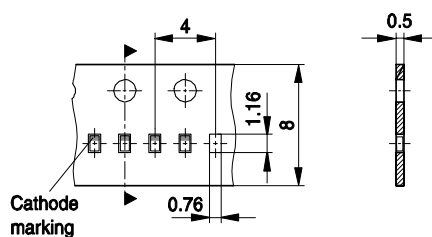
## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel

Reel ø330 mm = 50.000 Pieces/Reel (optional)



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