

## 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> | $R_{thJS}$ |            | K/W  |
| BAS140W                                  |            | $\leq 150$ |      |
| BAS40, BAS40-07                          |            | $\leq 275$ |      |
| BAS40-02L                                |            | $\leq 90$  |      |
| BAS40-04, BAS40-06                       |            | $\leq 375$ |      |
| BAS40-06W                                |            | $\leq 175$ |      |
| BAS40-05                                 |            | $\leq 475$ |      |
| BAS40-05W                                |            | $\leq 205$ |      |
| BAS40-07W                                |            | $\leq 125$ |      |

<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  $I_R = f(T_A)$**

$V_R = \text{Parameter}$



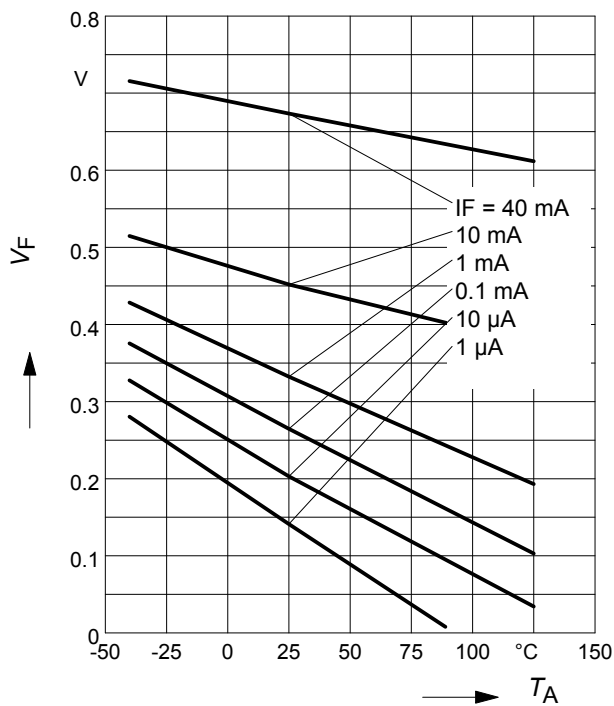
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



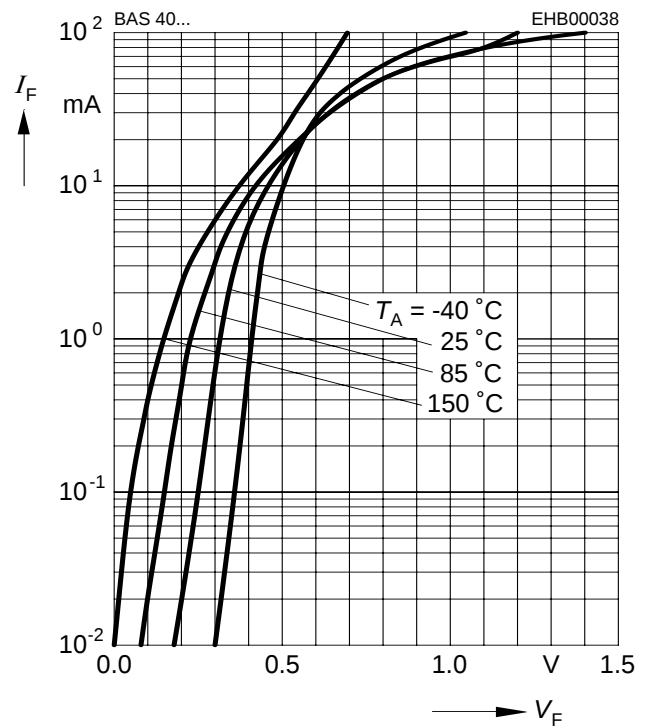
**Forward Voltage  $V_F = f(T_A)$**

$I_F$  = Parameter



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

$T_A$  = Parameter



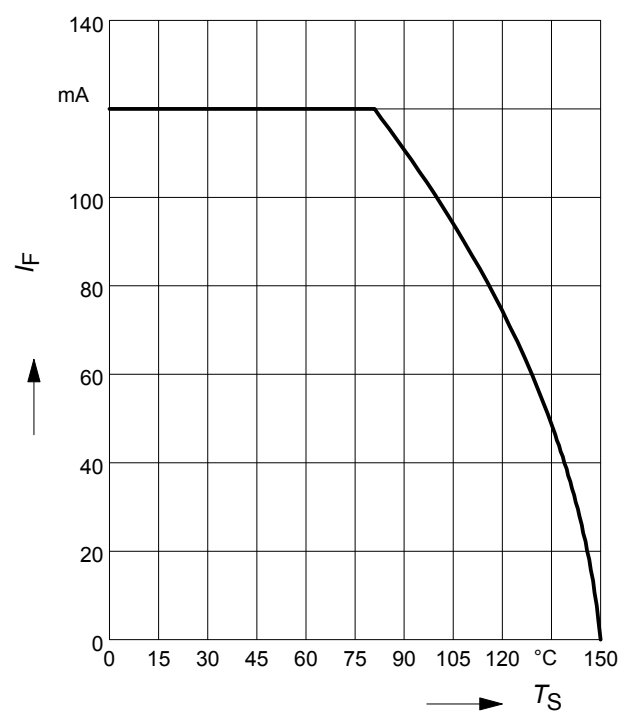
**Forward current  $I_F = f(T_S)$**

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**

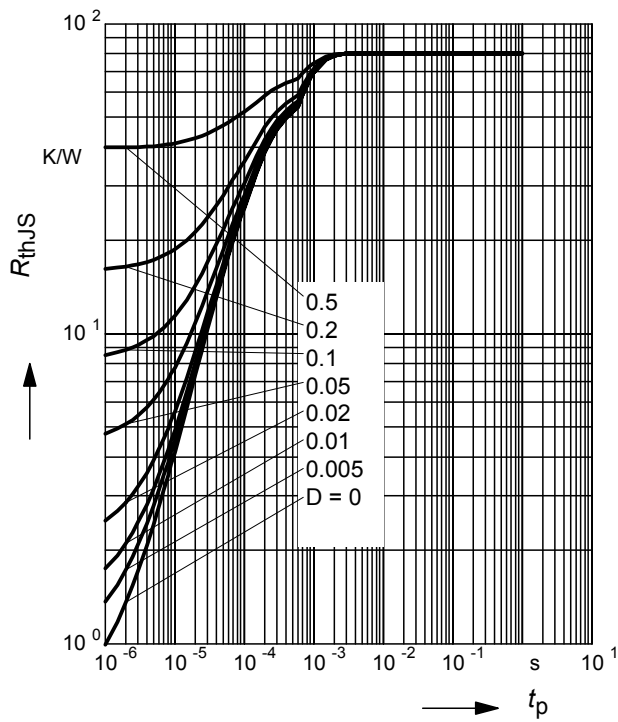
$I_{Fmax}/I_{FDC} = f(t_p)$

BAS140W



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

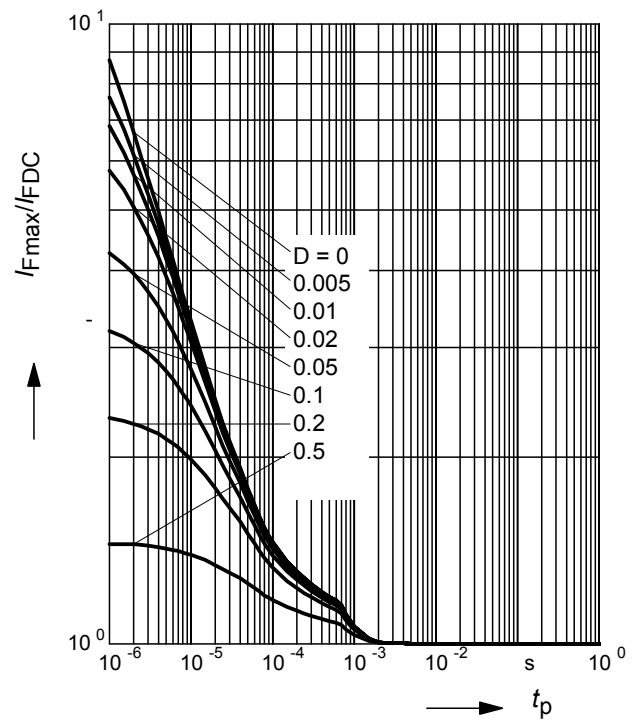
BAS40-02L



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



Technical drawing of a 4-pin connector. The drawing includes a perspective view on the left and two detailed cross-sectional views on the right. The perspective view shows a rectangular body with four pins. The top cross-section shows dimensions: 2.9 ± 0.1 (total width), 1.9 (inner width), 0.2 (pin thickness), 0.8 +0.1/-0.05 (pin height), 1.7 (bottom width), 0.4 +0.1/-0.05 (pin spacing), and 0.25 M B (material and finish). The bottom cross-section shows dimensions: 1 ± 0.1 (total width), 0.1 MAX. (inner width), 0.15 MIN. (pin thickness), 2.4 ± 0.15 (pin height), 10° MAX. (fillet angle), 0.08...0.15 (fillet radius), 0...8° (fillet angle), 1.3 ± 0.1 (pin height), and 0.2 M A (material and finish).

Diagram illustrating the marking on the BFP181 package:

- Manufacturer:** infineon
- Date code (YM):** 2005, June
- Pin 1:** Indicated by a line pointing to the first pin on the left.
- Type code:** BFP181

Technical drawing of a mechanical part showing a top view and a side view. The top view shows a rectangular plate with three rectangular slots and three circular holes. Dimensions include a total width of 4, a total height of 8, a slot width of 3.15, a slot height of 2.6, and a hole diameter of 0.2. A side view shows the profile of the plate with a thickness of 1.15.

## Package Outline

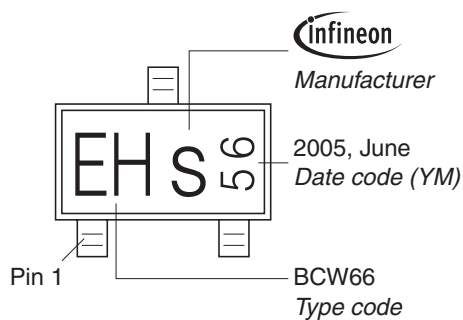


1) Lead width can be 0.6 max. in dambar area

## 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)

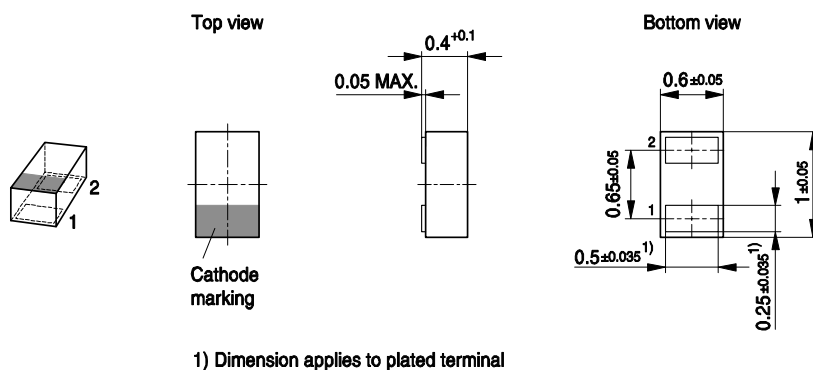


## Standard Packing

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



## Package Outline



## 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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