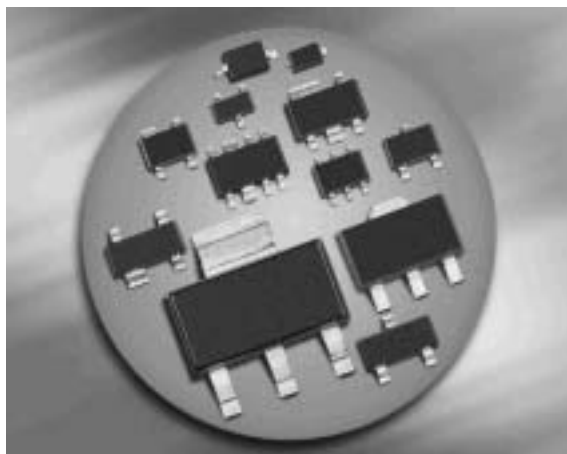
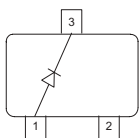


**Silicon Switching Diode**

- For high-speed switching applications
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101


**SMBD914/MMBD914**


| Type            | Package | Configuration | Marking |
|-----------------|---------|---------------|---------|
| SMBD914/MMBD914 | SOT23   | single        | s5D     |

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

| Parameter                                              | Symbol    | Value       | Unit             |
|--------------------------------------------------------|-----------|-------------|------------------|
| Diode reverse voltage                                  | $V_R$     | 100         | V                |
| Peak reverse voltage                                   | $V_{RM}$  | 100         |                  |
| Forward current                                        | $I_F$     | 250         | mA               |
| Non-repetitive peak surge forward current              | $I_{FSM}$ |             | A                |
| $t = 1 \mu\text{s}$                                    |           | 4.5         |                  |
| $t = 1 \text{ s}$                                      |           | 0.5         |                  |
| Total power dissipation<br>$T_S \leq 54^\circ\text{C}$ | $P_{tot}$ | 370         | mW               |
| Junction temperature                                   | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                                    | $T_{stg}$ | -65 ... 150 |                  |

**Thermal Resistance**

| Parameter                                                   | Symbol     | Value      | Unit |
|-------------------------------------------------------------|------------|------------|------|
| Junction - soldering point <sup>2)</sup><br>SMBD914/MMBD914 | $R_{thJS}$ | $\leq 260$ | K/W  |

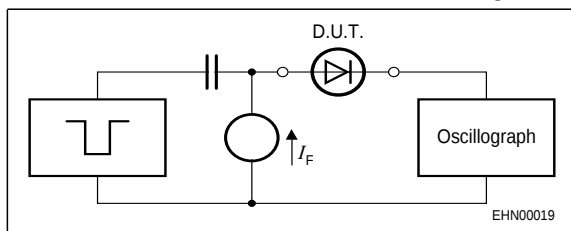
<sup>1)</sup>Pb-containing package may be available upon special request

<sup>2)</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>$I_{(BR)} = 100 \mu\text{A}$                                                                                                                                   | $V_{(BR)}$ | 100                   | -                     | -                                  | V             |
| Reverse current<br>$V_R = 20 \text{ V}$<br>$V_R = 75 \text{ V}$<br>$V_R = 20 \text{ V}, T_A = 150 \text{ }^\circ\text{C}$<br>$V_R = 75 \text{ V}, T_A = 150 \text{ }^\circ\text{C}$ | $I_R$      | -<br>-<br>-<br>-      | -<br>-<br>-<br>-      | 0.025<br>0.1<br>30<br>50           | $\mu\text{A}$ |
| Forward voltage<br>$I_F = 1 \text{ mA}$<br>$I_F = 10 \text{ mA}$<br>$I_F = 50 \text{ mA}$<br>$I_F = 100 \text{ mA}$<br>$I_F = 150 \text{ mA}$                                       | $V_F$      | -<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**

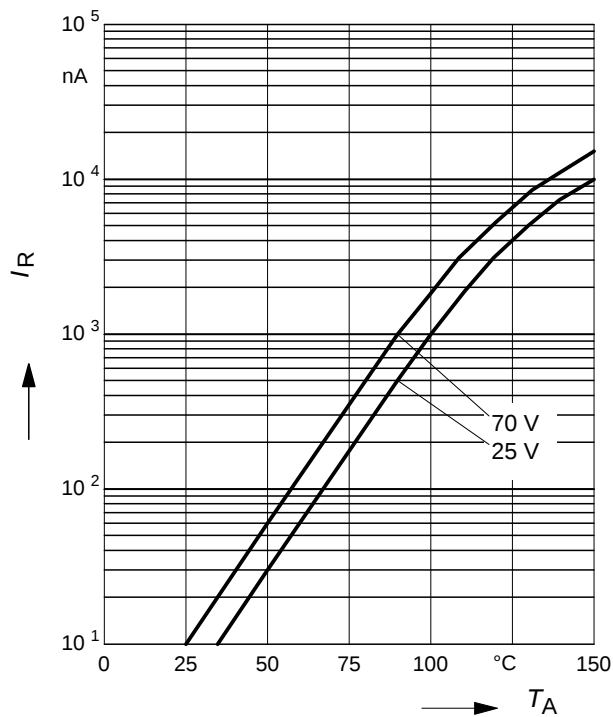


Pulse generator:  $t_p = 100\text{ns}$ ,  $D = 0.05$ ,  $t_r = 0.6\text{ns}$ ,  
 $R_i = 50\Omega$

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

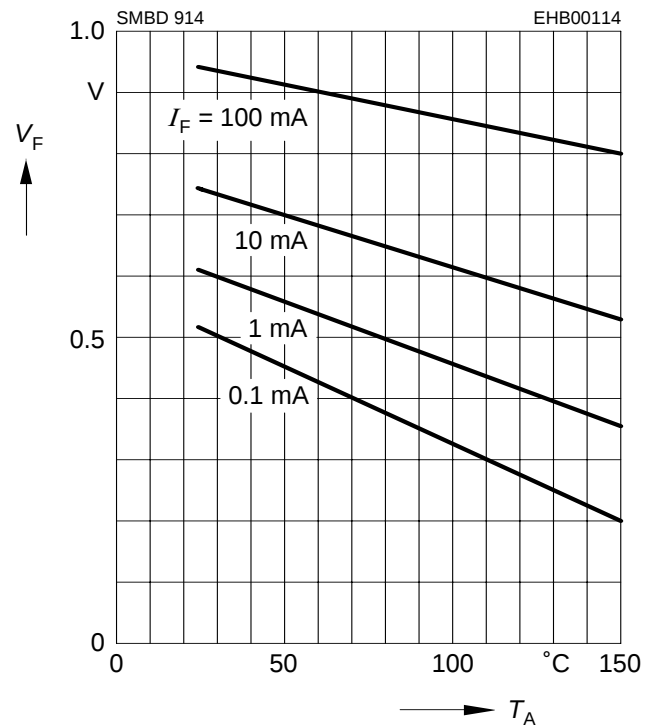
**Reverse current  $I_R = f(T_A)$**

$V_R$  = Parameter



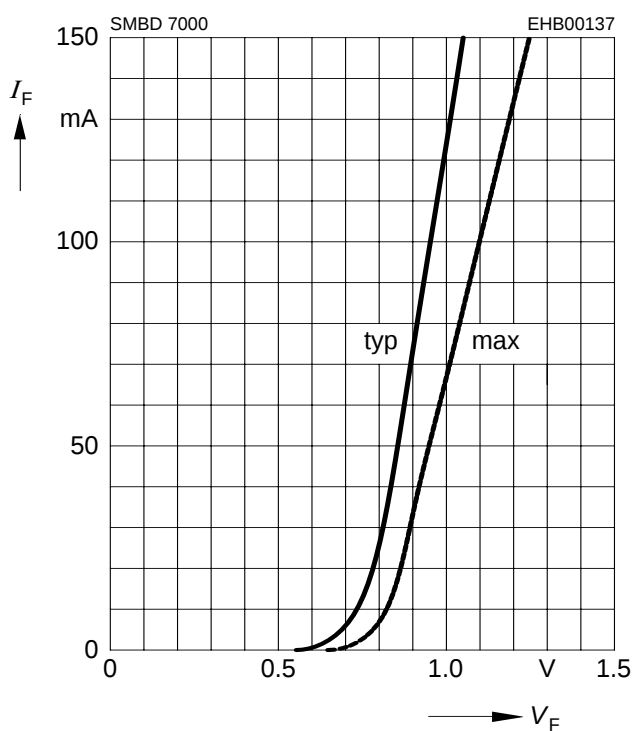
**Forward Voltage  $V_F = f(T_A)$**

$I_F$  = Parameter



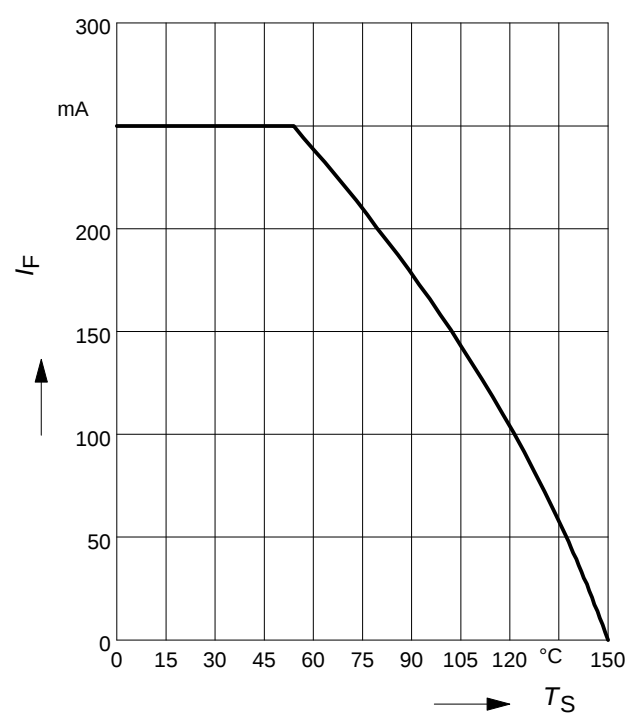
**Forward current  $I_F = f(V_F)$**

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

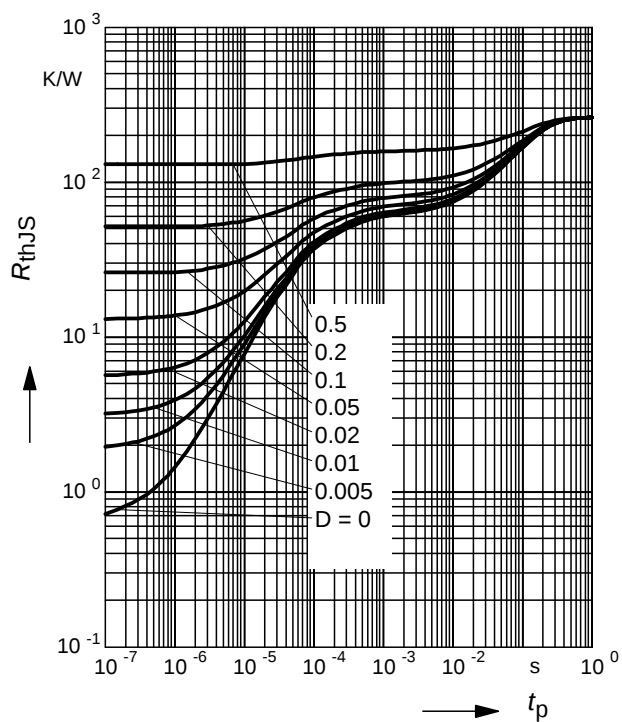


**Forward current  $I_F = f(T_S)$**

SMBD914/MMBD914

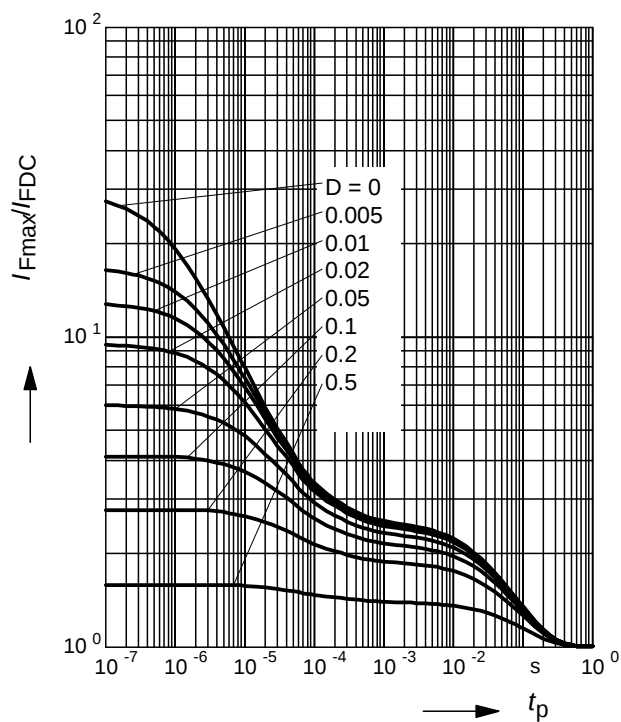


Permissible Puls Load  $R_{thJS} = f(t_p)$

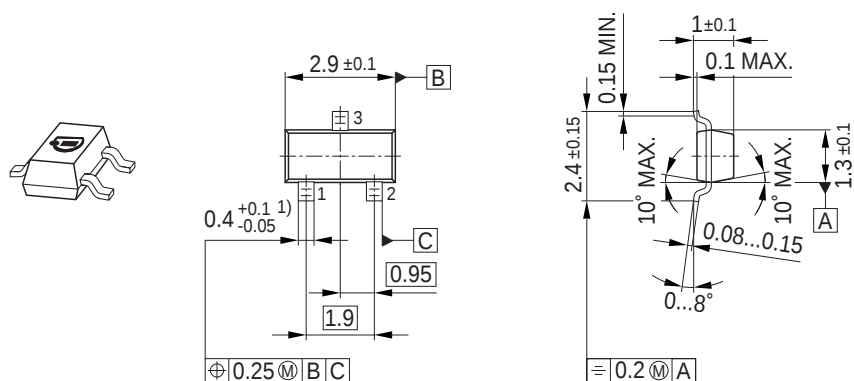


Permissible Pulse Load

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

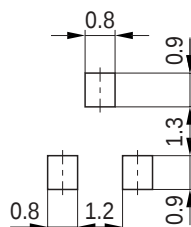


## Package Outline

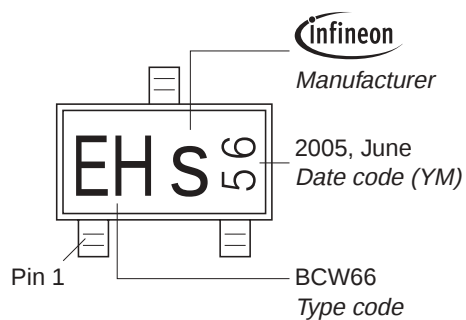


1) Lead width can be 0.6 max. in dambar area

## Foot Print

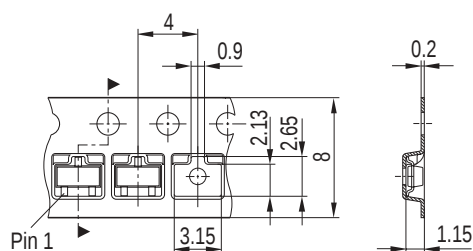


## Marking Layout (Example)



## Standard Packing

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



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