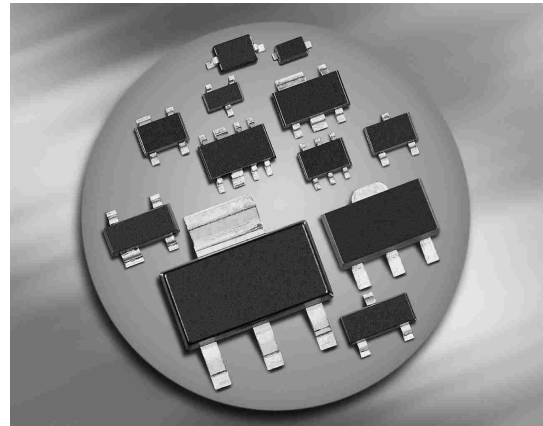
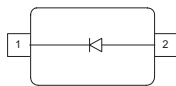
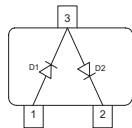
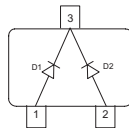
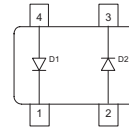
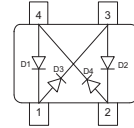


**Silicon Schottky Diodes**

- Low barrier type for DBS mixer applications up to 12 GHz, phase detectors and modulators
- Low noise figure
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101


**BAT15-02LRH**  
**BAT15-03W**

**BAT15-04W**

**BAT15-05W**

**BAT15-099**  
**BAT15-099LRH**

**BAT15-099R**

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

| Type         | Package  | Configuration                | $L_S$ (nH) | Marking |
|--------------|----------|------------------------------|------------|---------|
| BAT15-02LRH  | TSLP-2-7 | single, leadless             | 0.4        | NP      |
| BAT15-03W    | SOD323   | single                       | 1.8        | white P |
| BAT15-04W    | SOT323   | series                       | 1.4        | S8s     |
| BAT15-05W    | SOT323   | common cathode               | 1.4        | S5s     |
| BAT15-07LRH  | TSLP-4-7 | parallel pair, leadless      | 0.4        | NP      |
| BAT15-098LRH | TSLP-4-7 | anti-parallel pair, leadless | 0.4        | B       |
| BAT15-099    | SOT143   | anti-parallel pair           | 2          | S5s     |
| BAT15-099R   | SOT143   | cross-over ring              | 2          | S6s     |
| BAT15-099LRH | TSLP-4-7 | anti-parallel pair, leadless | 0.4        | S5      |

<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                            | $V_R$            | 4           | V                |
| Forward current                                  | $I_F$            | 110         | mA               |
| Total power dissipation                          | $P_{\text{tot}}$ |             | mW               |
| BAT15-02LRH, -099LRH $T_S \leq 76^\circ\text{C}$ |                  | 100         |                  |
| BAT15-03W, $T_S \leq 70^\circ\text{C}$           |                  | 100         |                  |
| BAT15-04W, $T_S \leq 68^\circ\text{C}$           |                  | 100         |                  |
| BAT15-05W, $T_S \leq 65^\circ\text{C}$           |                  | 100         |                  |
| BAT15-099, $T_S \leq 48^\circ\text{C}$           |                  | 100         |                  |
| BAT15-099R, $T_S \leq 67^\circ\text{C}$          |                  | 100         |                  |
| Junction temperature                             | $T_j$            | 150         | $^\circ\text{C}$ |
| Operating temperature range                      | $T_{\text{op}}$  | -55 ... 150 |                  |
| Storage temperature                              | $T_{\text{stg}}$ | -55 ... 150 |                  |

**Thermal Resistance**

| Parameter                                | Symbol            | Value       | Unit |
|--|-------------------|-------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{\text{thJS}}$ |             | K/W  |
| BAT15-02LRH, -099LRH                     |                   | $\leq 780$  |      |
| BAT15-03W                                |                   | $\leq 795$  |      |
| BAT15-04W                                |                   | $\leq 820$  |      |
| BAT15-05W                                |                   | $\leq 850$  |      |
| BAT15-099                                |                   | $\leq 1020$ |      |
| BAT15-099R                               |                   | $\leq 830$  |      |

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

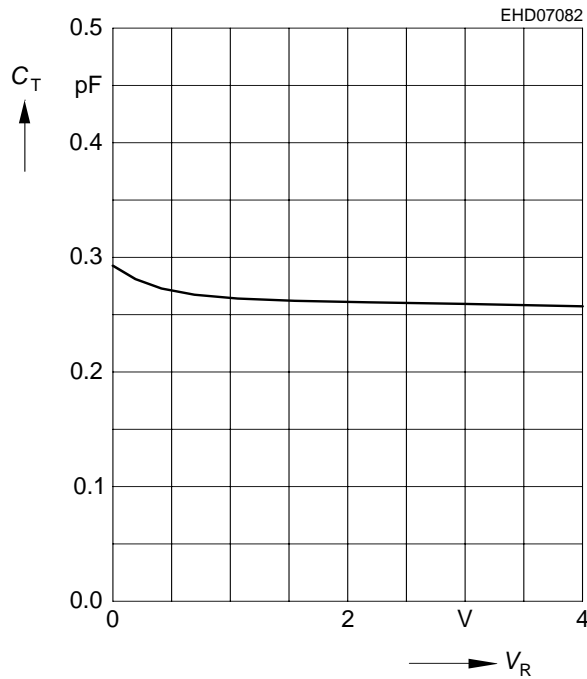
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter  | Symbol       | Values       |              |              | Unit     |
|--|--------------|--------------|--------------|--------------|----------|
|  |              | min.         | typ.         | max.         |          |
| <b>DC Characteristics</b>  |              |              |              |              |          |
| Breakdown voltage<br>$I_{(BR)} = 100 \mu\text{A}$  | $V_{(BR)}$   | 4            | -            | -            | V        |
| Forward voltage<br>$I_F = 1 \text{ mA}$<br>$I_F = 10 \text{ mA}$   | $V_F$        | 0.16<br>0.25 | 0.23<br>0.32 | 0.32<br>0.41 |          |
| Forward voltage matching <sup>1)</sup><br>$I_F = 10 \text{ mA}$  | $\Delta V_F$ | -            | -            | 20           | mV       |
| <b>AC Characteristics</b>  |              |              |              |              |          |
| Diode capacitance<br>$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ , all other types<br>$V_R = 0 \text{ V}$ , $f = 1 \text{ MHz}$ , BAT15-099R | $C_T$        | -<br>-       | -<br>-       | 0.35<br>0.5  | pF       |
| Differential forward resistance<br>$I_F = 10 \text{ mA} / 50 \text{ mA}$   | $R_F$        | -            | 5.5          | -            | $\Omega$ |

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

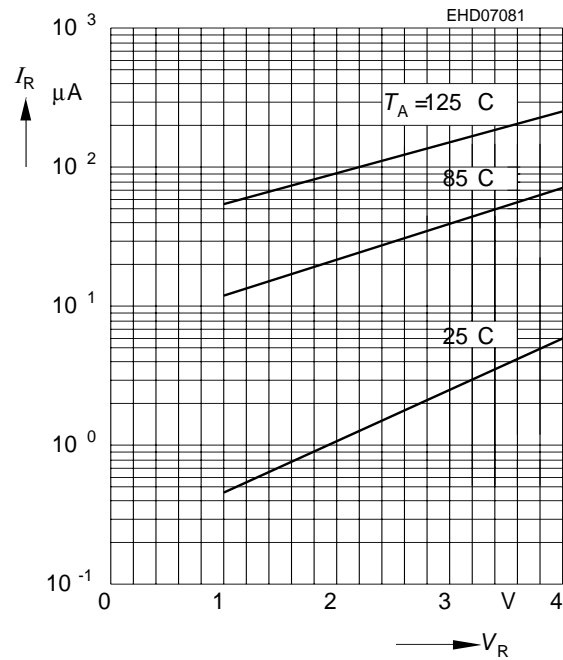
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



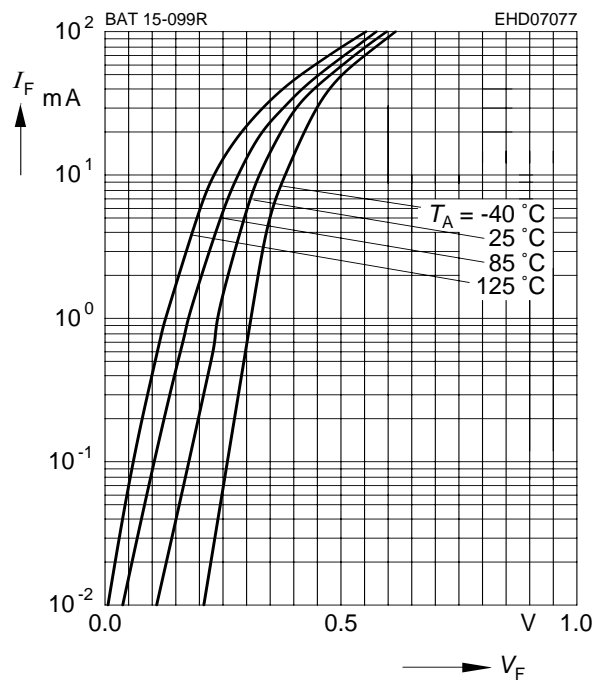
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



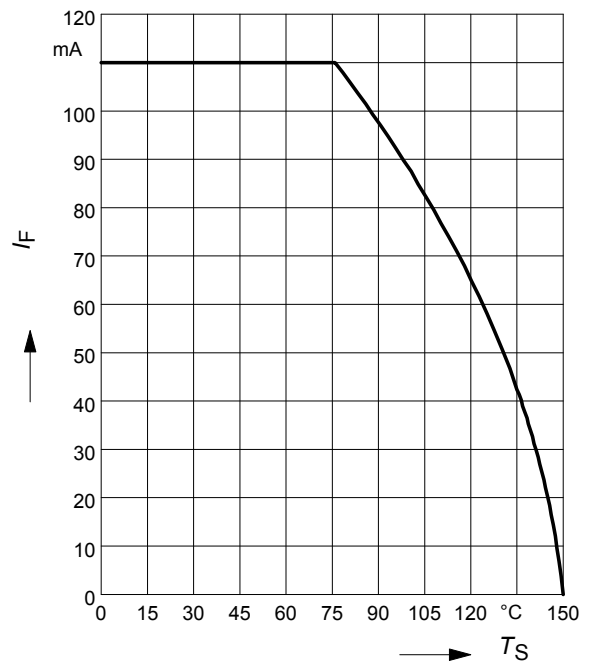
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



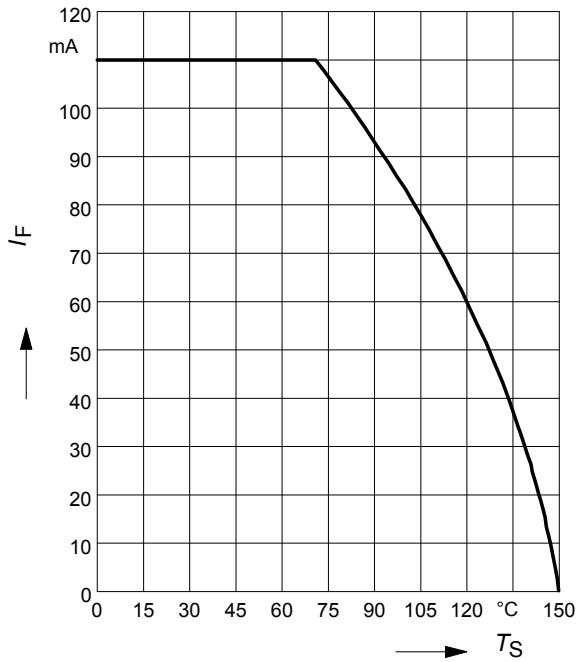
**Forward current  $I_F = f(T_S)$**

BAT15-02LRH, BAT15-099LRH



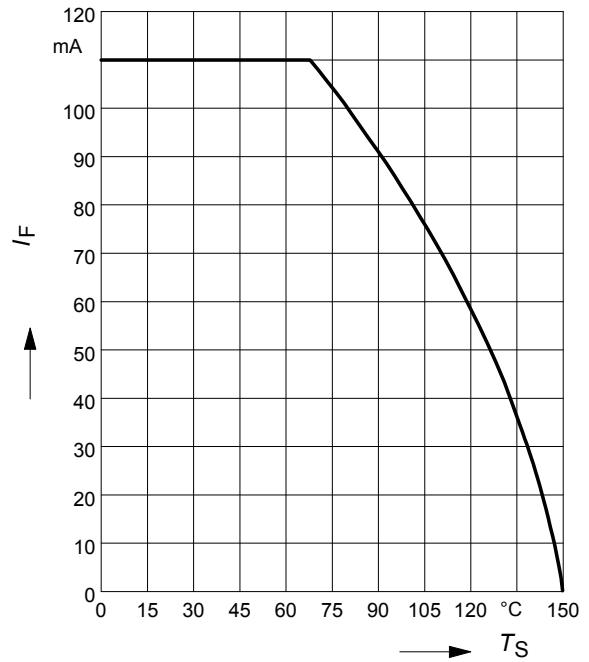
Forward current  $I_F = f(T_S)$

BAT15-03W



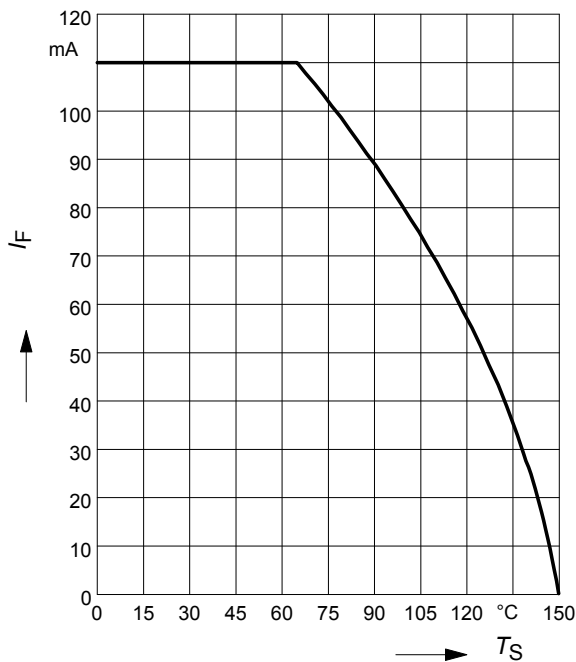
Forward current  $I_F = f(T_S)$

BAT15-04W



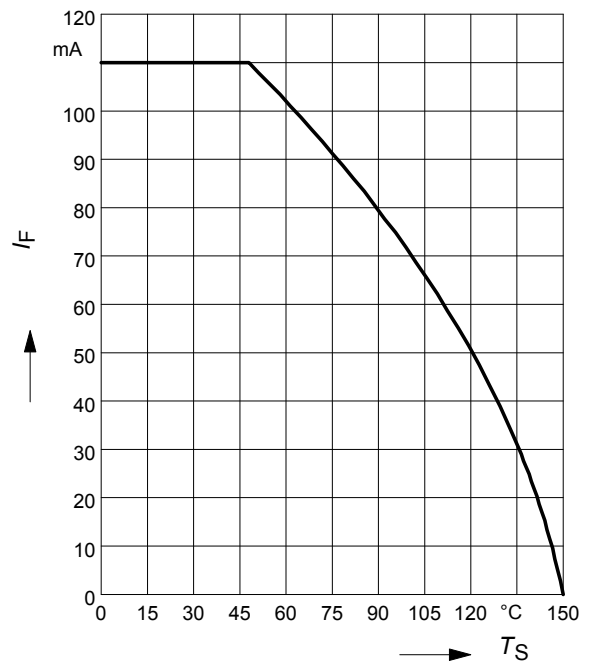
Forward current  $I_F = f(T_S)$

BAT15-05W



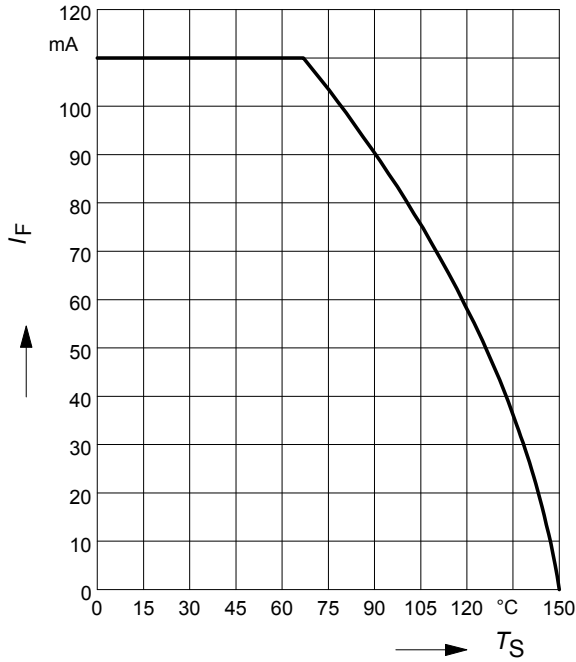
Forward current  $I_F = f(T_S)$

BAT15-099



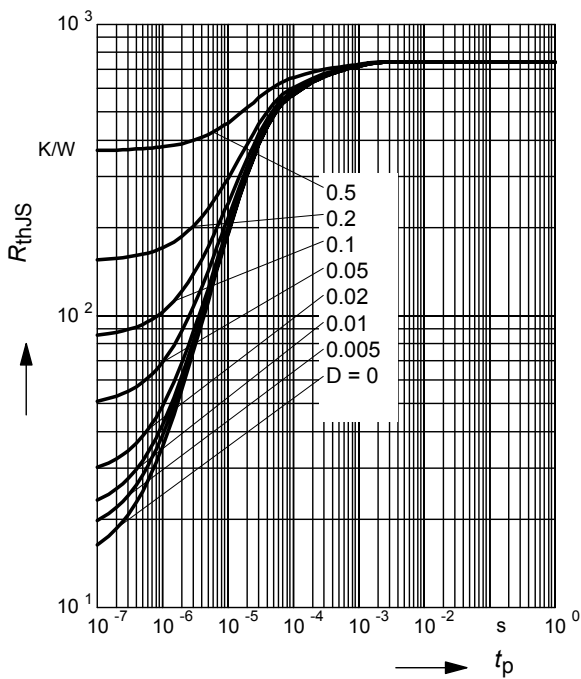
**Forward current  $I_F = f(T_S)$**

BAT15-099R



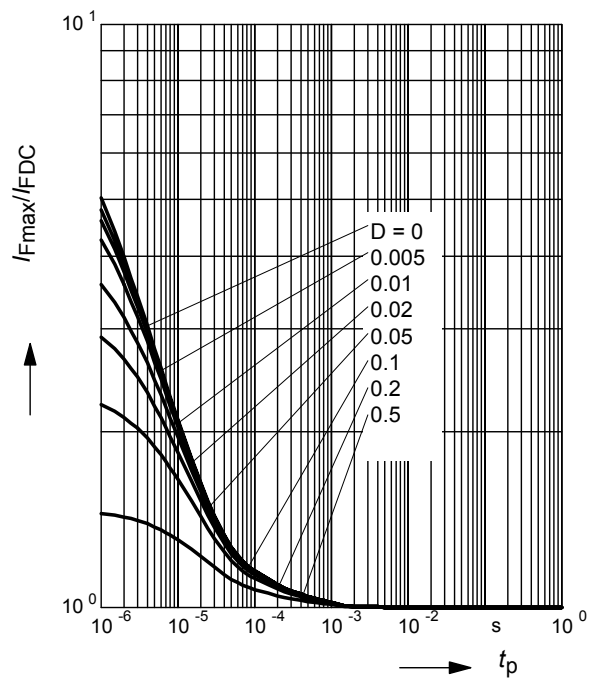
**Permissible Puls Load  $R_{thJS} = f(t_p)$**

BAT15-02LRH, BAT15-099LRH



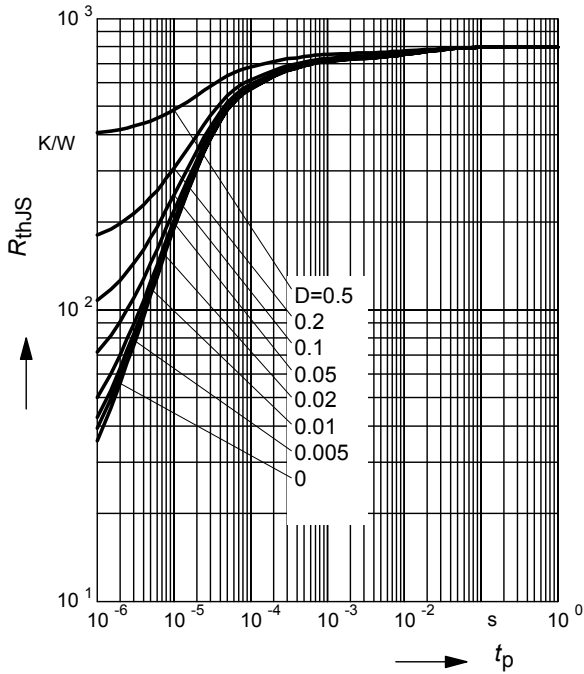
**Permissible Pulse Load**

$I_{Fmax}/I_{FDC} = f(t_p)$  BAT15-02LRH,  
BAT15-099LRH



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

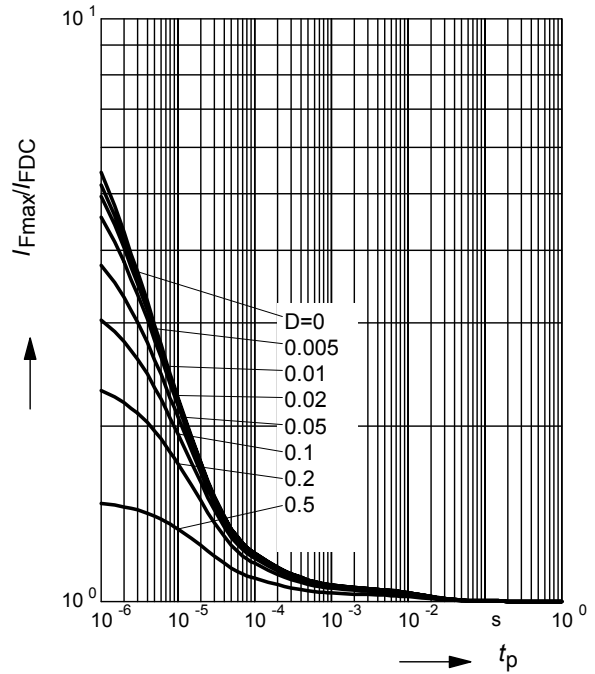
BAT15-03W



Permissible Pulse Load

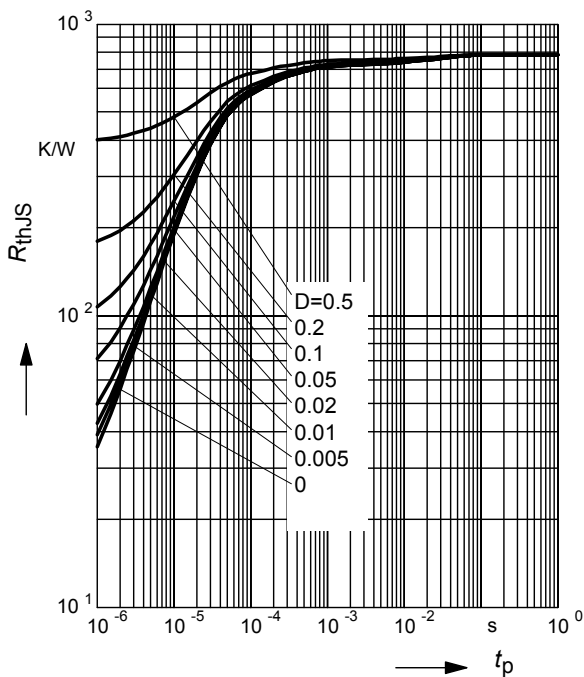
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-03W



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

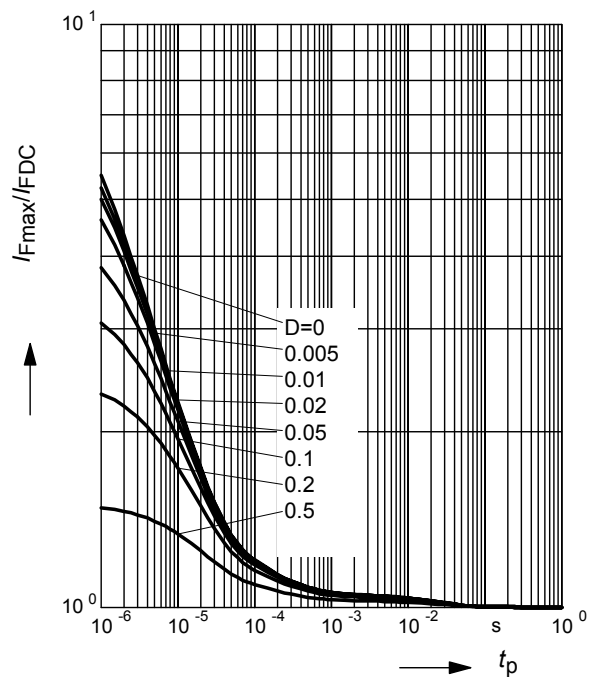
BAT15-04W



Permissible Pulse Load

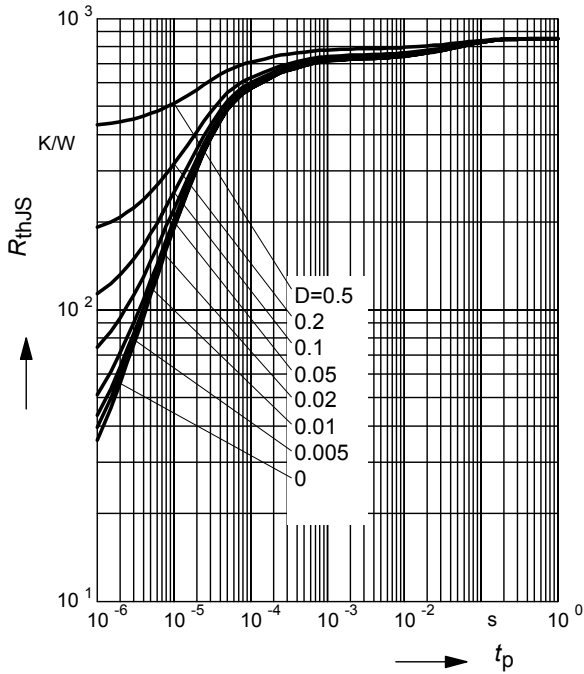
$I_{Fmax} / I_{FDC} = f(t_p)$

BAT15-04W



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

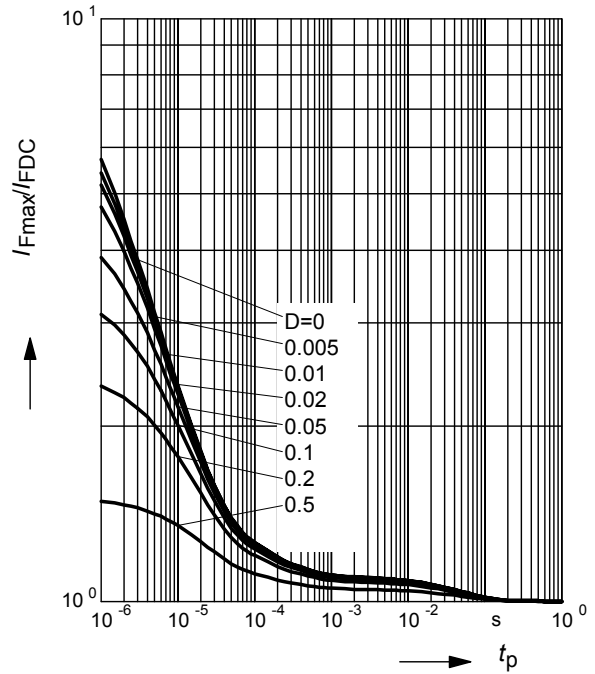
BAT15-05W



Permissible Pulse Load

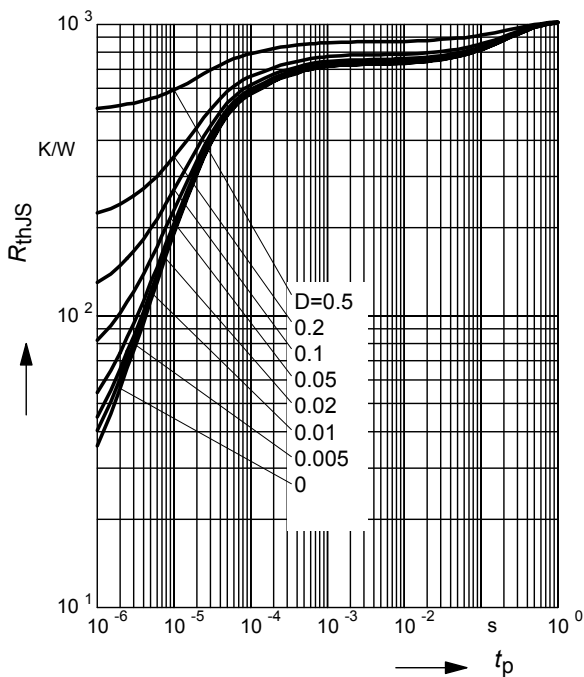
$I_{Fmax}/I_{FDC} = f(t_p)$

BAT15-05W



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

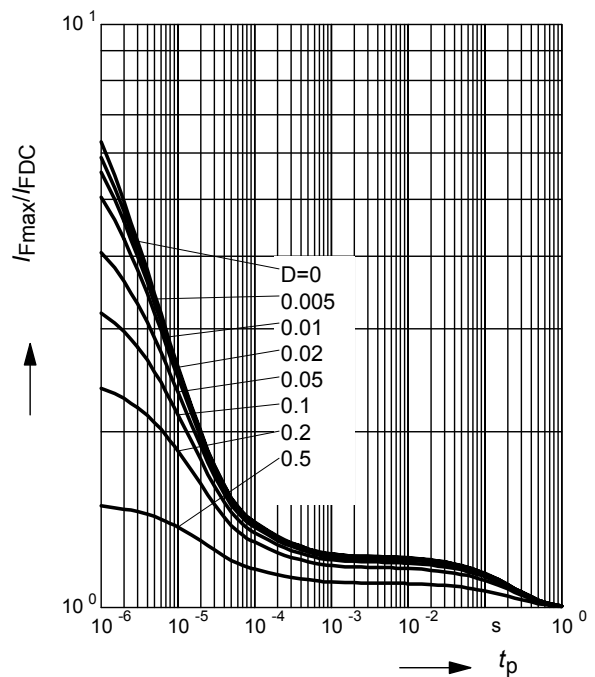
BAT15-099



Permissible Pulse Load

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

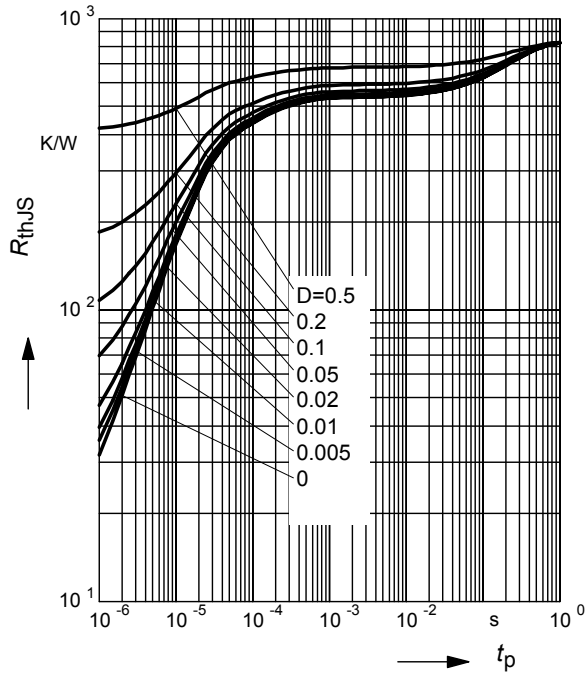
BAT15-099





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

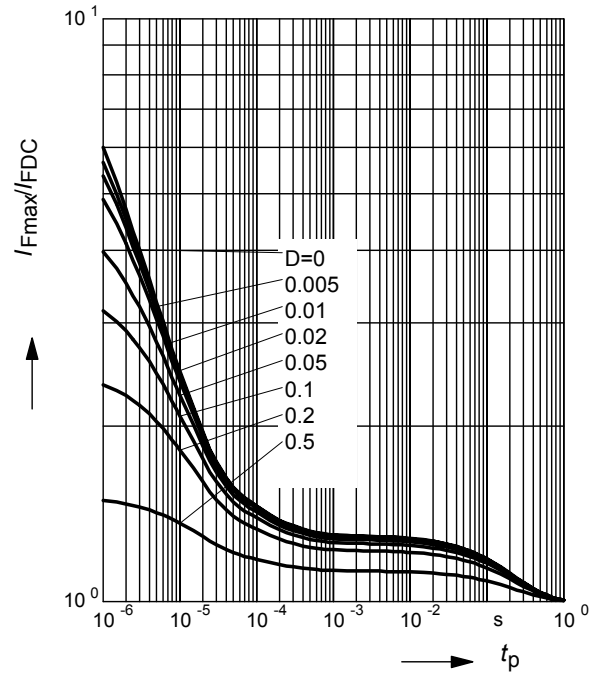
BAT15-099R



**Permissible Pulse Load**

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

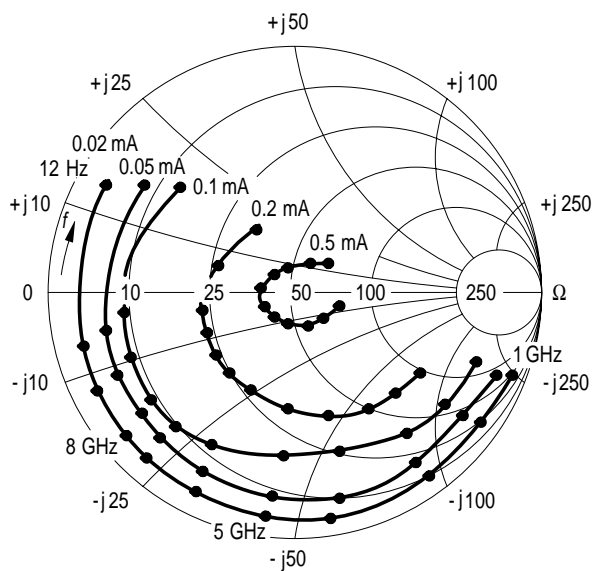
BAT15-099R



**S<sub>11</sub>-Parameters for BAT15-099**

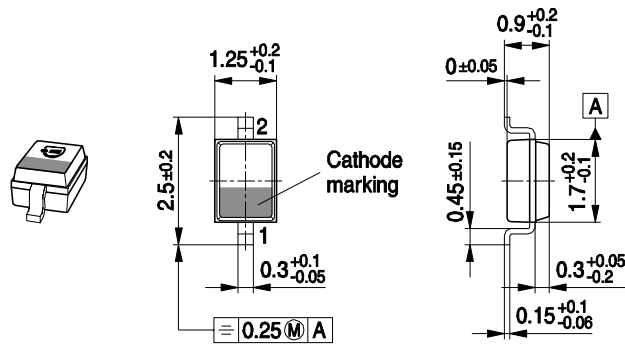
 Typical impedance characteristics (with external bias  $I$  and  $Z_0 = 50\Omega$ )

| $f$<br>GHz | $I = 0.02 \text{ mA}$ |        | $I = 0.05 \text{ mA}$ |        | $I = 0.1 \text{ mA}$ |        | $I = 0.2 \text{ mA}$ |        | $I = 0.5 \text{ mA}$ |        |
|------------|-----------------------|--------|-----------------------|--------|----------------------|--------|----------------------|--------|----------------------|--------|
|            | MAG                   | ANG    | MAG                   | ANG    | MAG                  | ANG    | MAG                  | ANG    | MAG                  | ANG    |
| 1          | 0.94                  | -16.4  | 0.84                  | -16.6  | 0.77                 | -16.4  | 0.59                 | -17.2  | 0.19                 | -16.7  |
| 2          | 0.93                  | -33.8  | 0.88                  | -33.8  | 0.77                 | -34.5  | 0.58                 | -35.2  | 0.15                 | -36.1  |
| 3          | 0.92                  | -53.8  | 0.86                  | -54.5  | 0.75                 | -54.1  | 0.58                 | -56.1  | 0.13                 | -64.8  |
| 4          | 0.91                  | -74.3  | 0.84                  | -75.3  | 0.72                 | -76.4  | 0.51                 | -78.4  | 0.11                 | -104.8 |
| 5          | 0.91                  | -96.6  | 0.84                  | -97.6  | 0.72                 | -99.1  | 0.53                 | -102.3 | 0.15                 | -135.7 |
| 6          | 0.91                  | -115.4 | 0.84                  | -116.7 | 0.73                 | -118.7 | 0.53                 | -122.9 | 0.18                 | -160.9 |
| 7          | 0.91                  | -131   | 0.84                  | -132.3 | 0.73                 | -134.1 | 0.54                 | -138.1 | 0.2                  | -168.8 |
| 8          | 0.91                  | -143   | 0.84                  | -144.5 | 0.73                 | -146.8 | 0.55                 | -150.5 | 0.81                 | 179.4  |
| 9          | 0.91                  | -155.6 | 0.83                  | -150.2 | 0.71                 | -159.7 | 0.53                 | -163.9 | 0.18                 | 179.4  |
| 10         | 0.9                   | -167.3 | 0.83                  | -169.7 | 0.71                 | -178.8 | 0.51                 | -175.8 | 0.14                 | 151.2  |
| 11         | 0.89                  | 175.5  | 0.8                   | 172.6  | 0.7                  | 170    | 0.45                 | 164.9  | 0.09                 | 105.5  |
| 12         | 0.88                  | 175.5  | 0.76                  | 146.5  | 0.62                 | 142.8  | 0.39                 | 134.2  | 0.14                 | 43.6   |

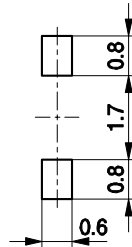
**S<sub>11</sub> = ( $f, I$ ) BAT15-099**


EHD07083

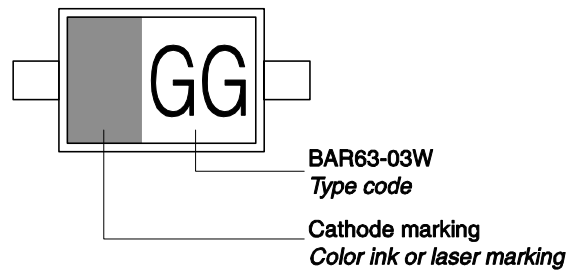
Package Outline



Foot Print

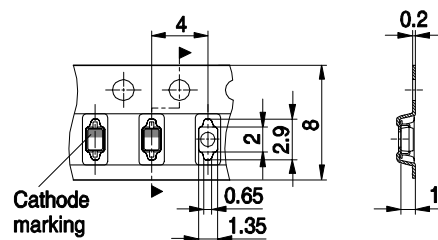


Marking Layout (Example)

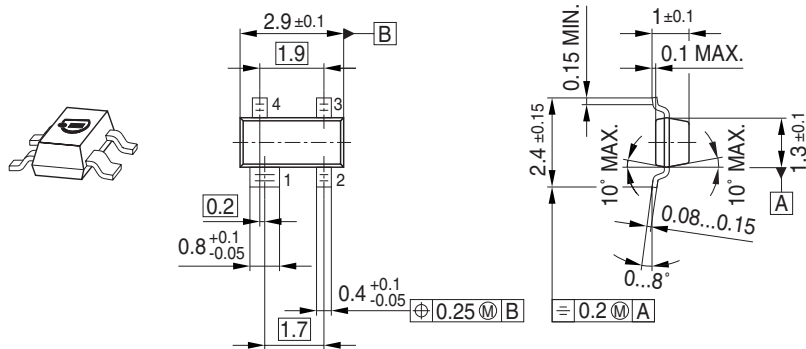


Standard Packing

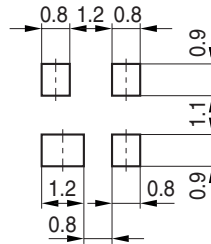
Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



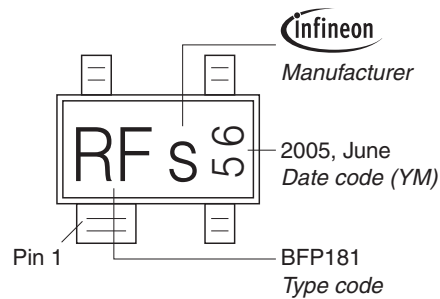
Package Outline



Foot Print

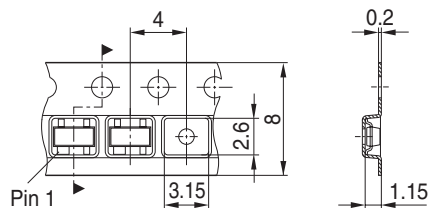


Marking Layout (Example)

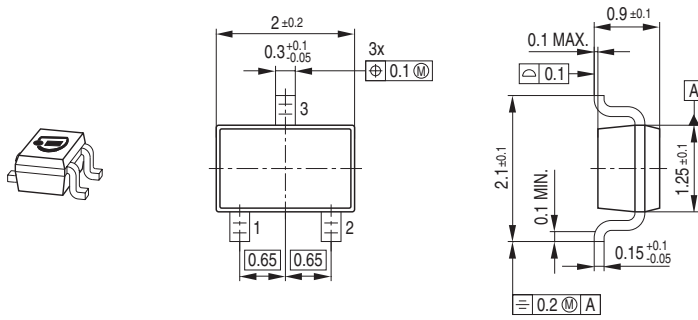


Standard Packing

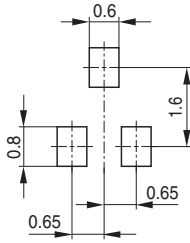
Reel  $\phi$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\phi$ 330 mm = 10.000 Pieces/Reel



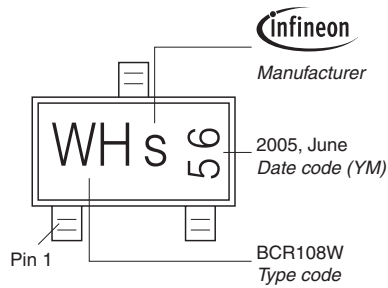
Package Outline



Foot Print

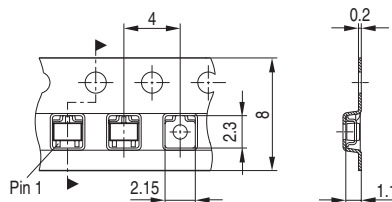


Marking Layout (Example)

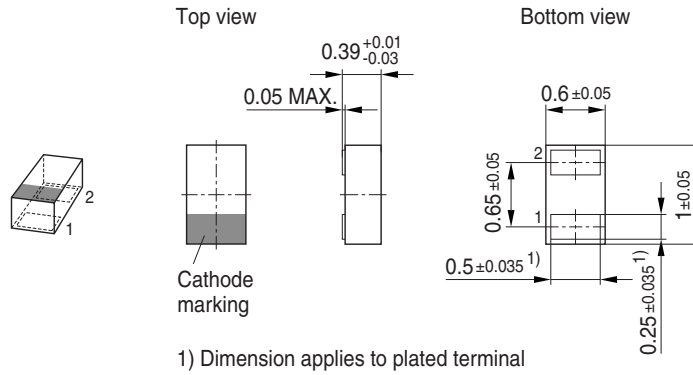


Standard Packing

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

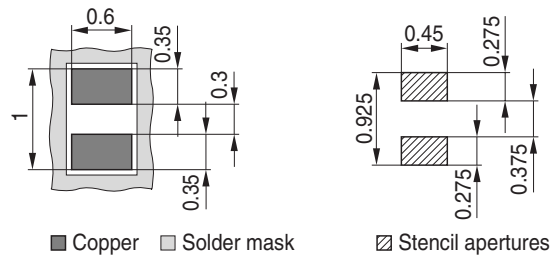


### Package Outline

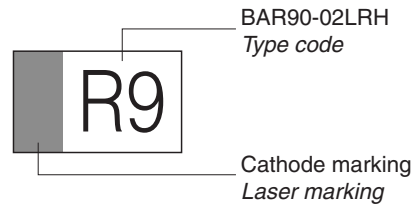


### Foot Print

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

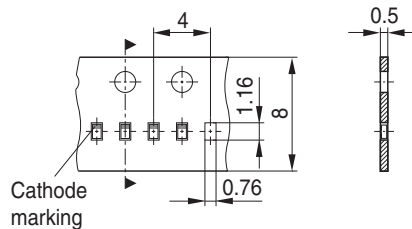


### Marking Layout (Example)

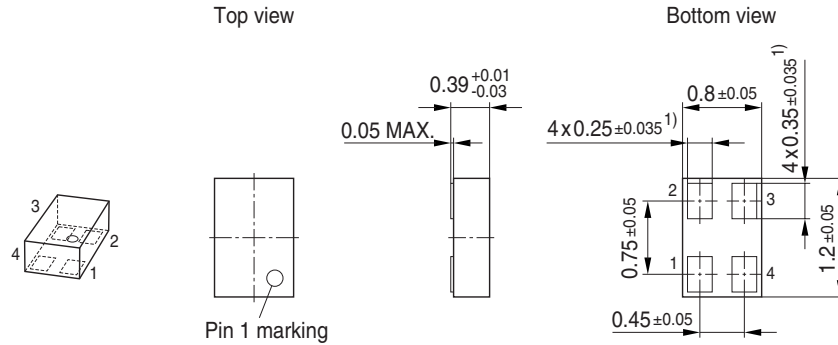


### Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel  
 Reel ø330 mm = 50.000 Pieces/Reel (optional)



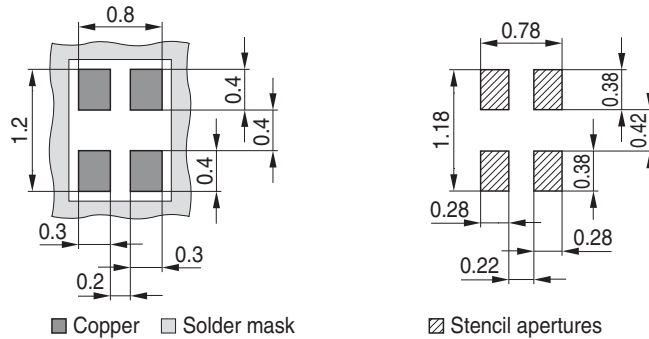
Package Outline



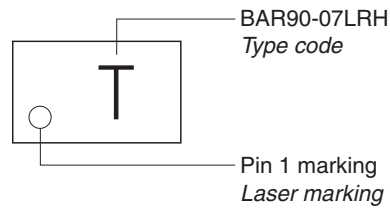
1) Dimension applies to plated terminal

Foot Print

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

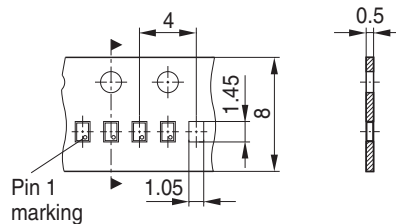


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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