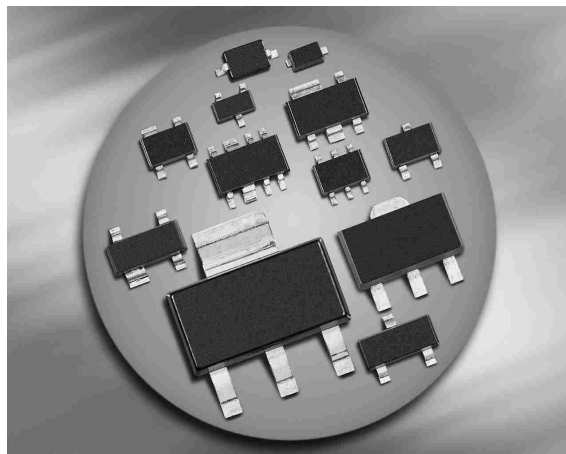
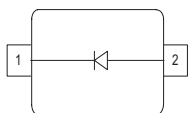


## Silicon Schottky Diodes

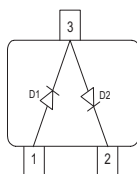
- Low barrier type for DBS mixer applications up to 12 GHz, phase detectors and modulators
- Low noise figure
- Pb-free (RoHS compliant) package



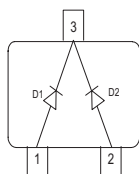
**BAT15-02LRH**  
**BAT15-03W**



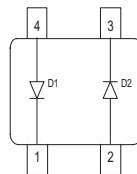
**BAT15-04W**



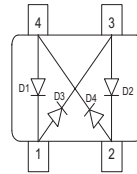
**BAT15-05W**



**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      |

**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

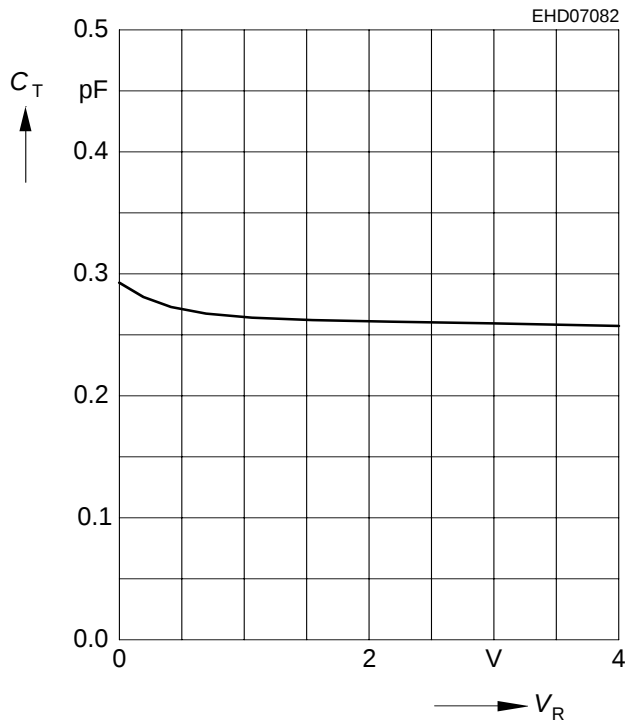
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                                                                  | Symbol       | Values       |              |              | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|------|
|                                                                                                                                            |              | min.         | typ.         | max.         |      |
| DC Characteristics                                                                                                                         |              |              |              |              |      |
| Breakdown voltage<br>$I_{(BR)} = 100 \mu A$                                                                                                | $V_{(BR)}$   | 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           |      |
| AC Characteristics                                                                                                                         |              |              |              |              |      |
| 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          | -            |      |

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

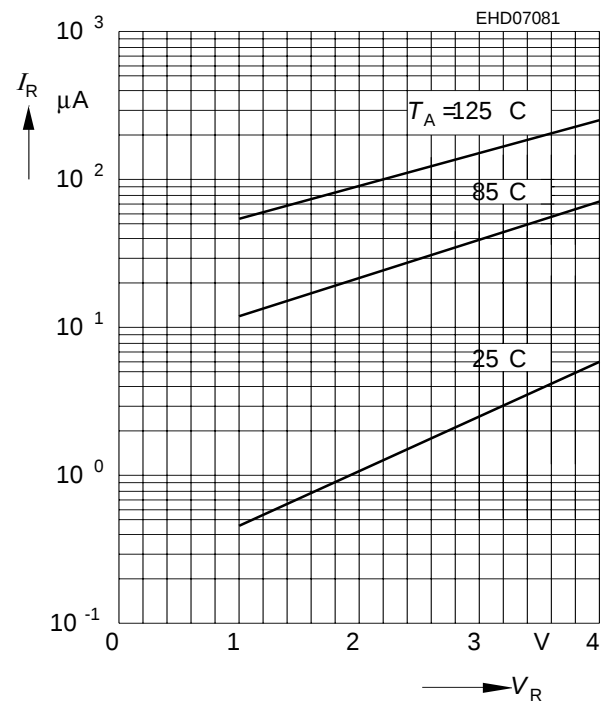
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



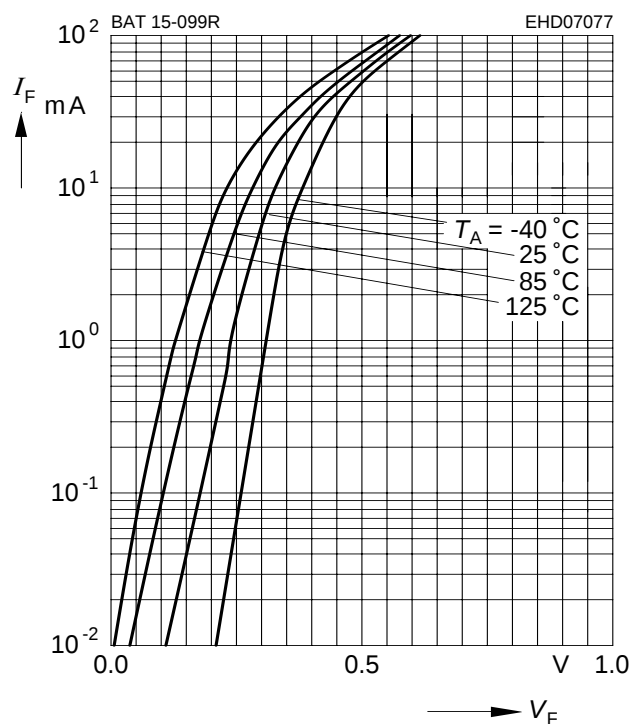
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



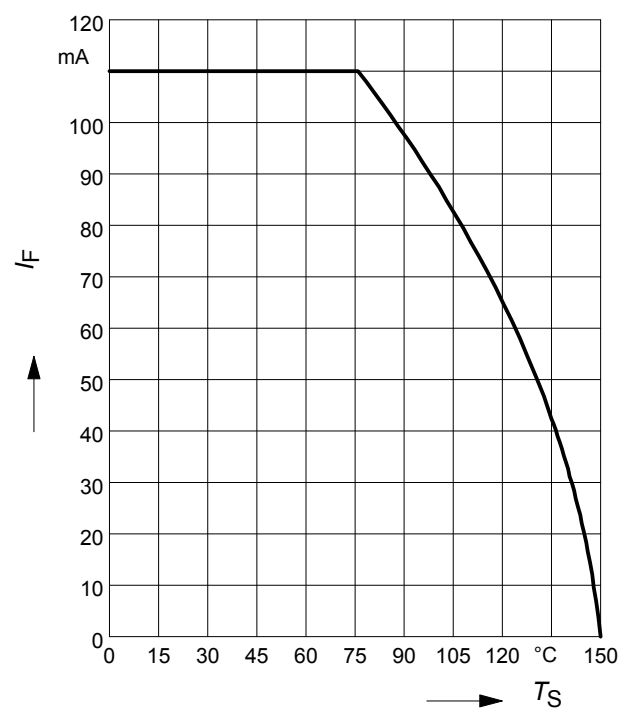
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



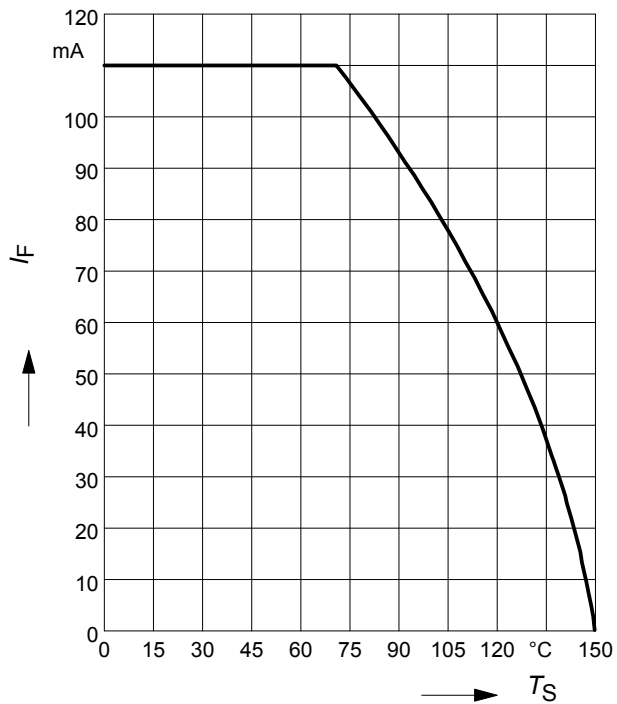
**Forward current  $I_F = f(T_S)$**

BAT15-02LRH, BAT15-099LRH



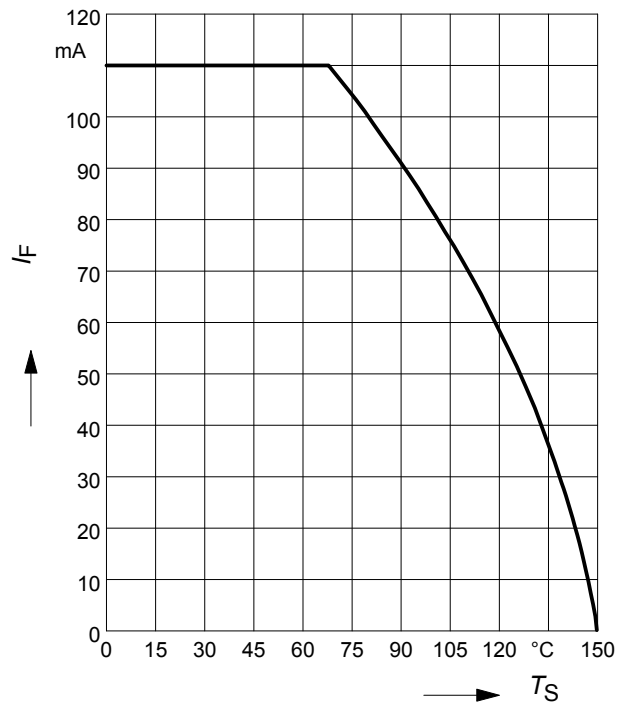
Forward current  $I_F = f(T_S)$

BAT15-03W



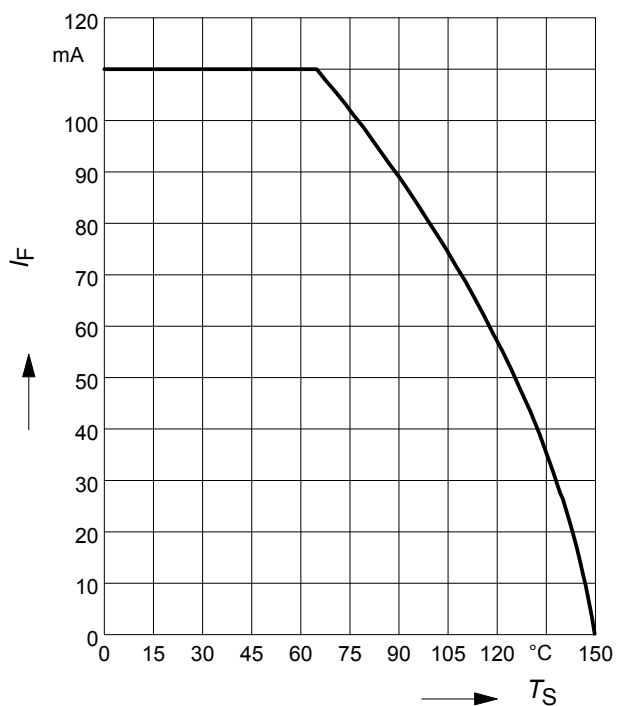
Forward current  $I_F = f(T_S)$

BAT15-04W



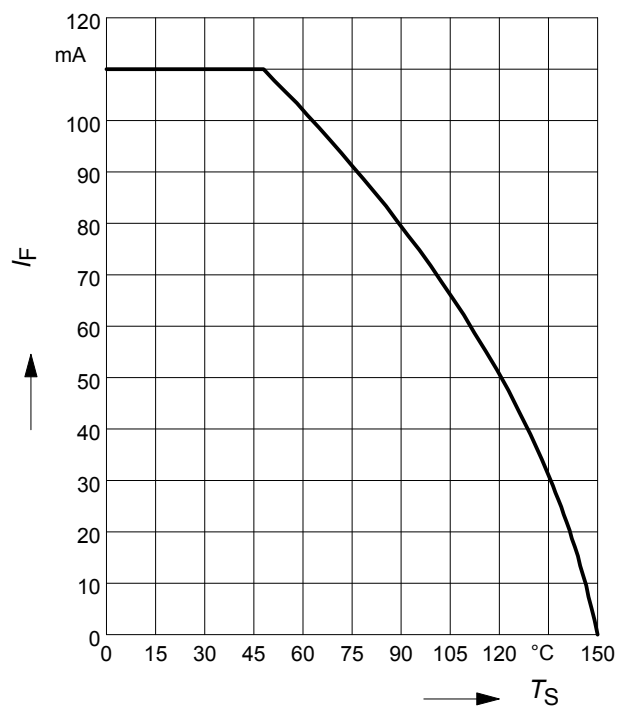
Forward current  $I_F = f(T_S)$

BAT15-05W



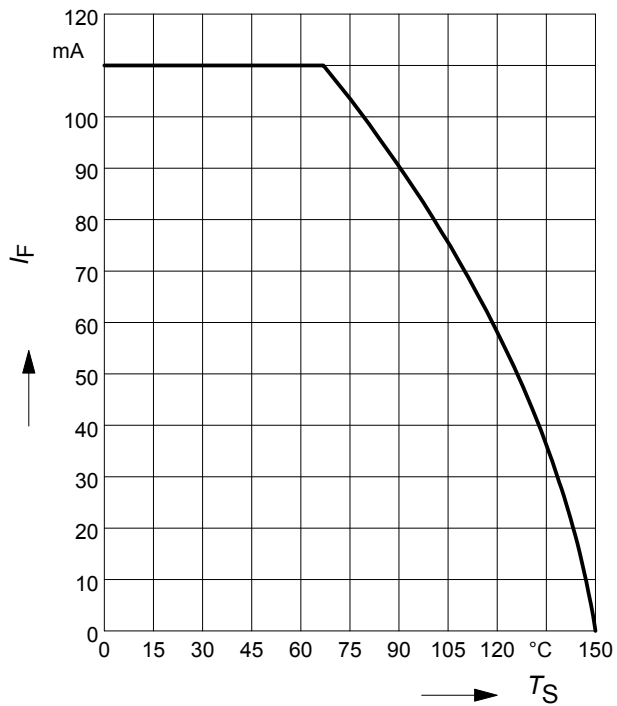
Forward current  $I_F = f(T_S)$

BAT15-099



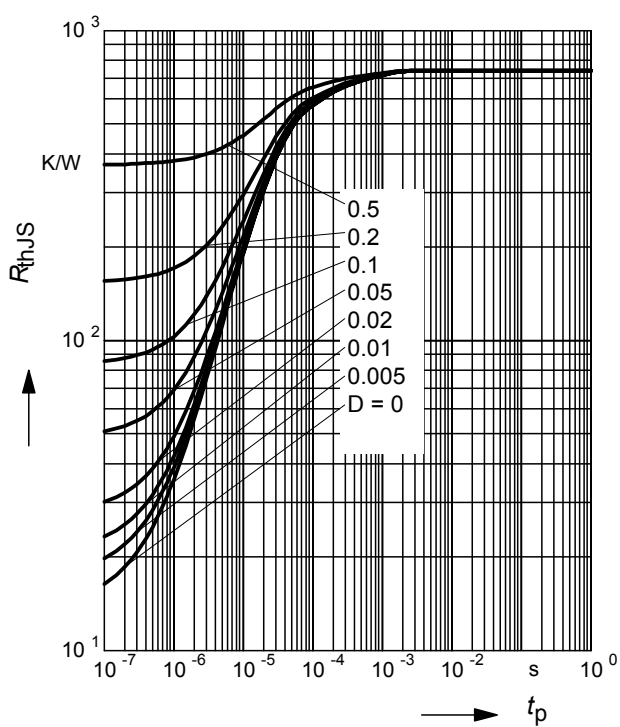
# Forward current $I_F = f(T_S)$

BAT15-099R



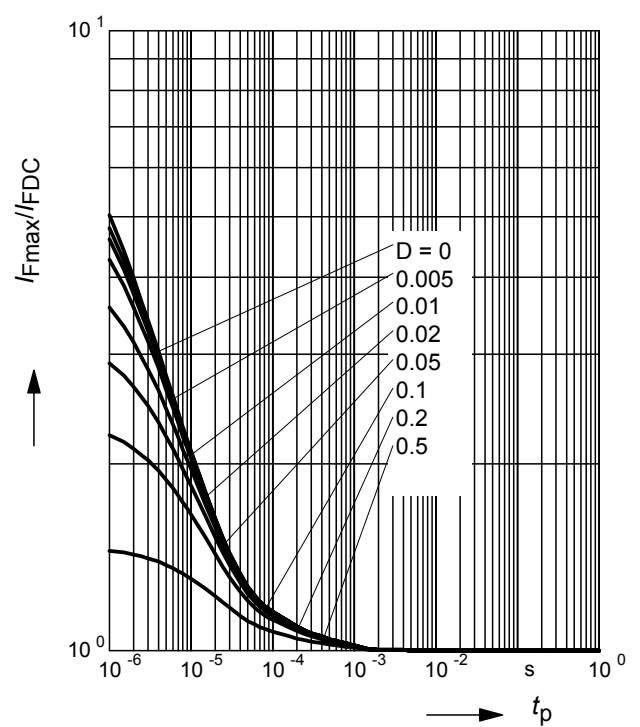
## Permissible Puls Load $R_{thJS} = f(t_p)$

BAT15-02LRH, BAT15-099LRH



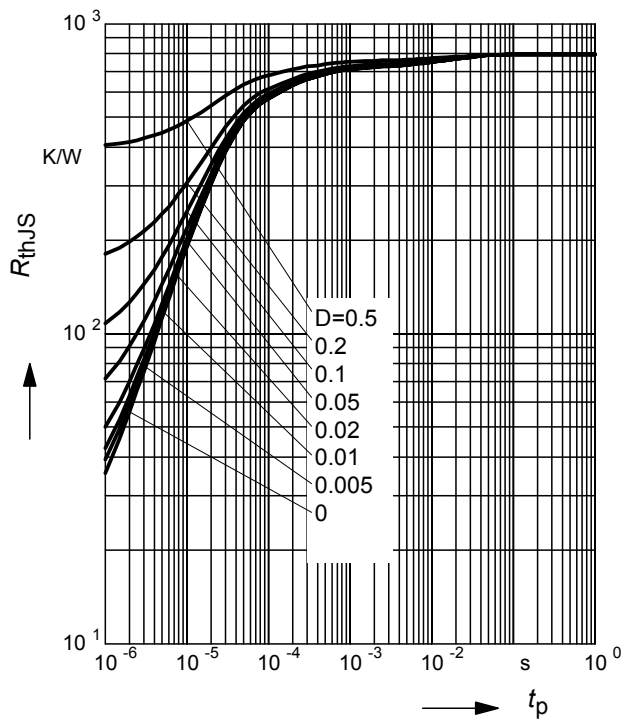
## Permissible Pulse Load

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



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

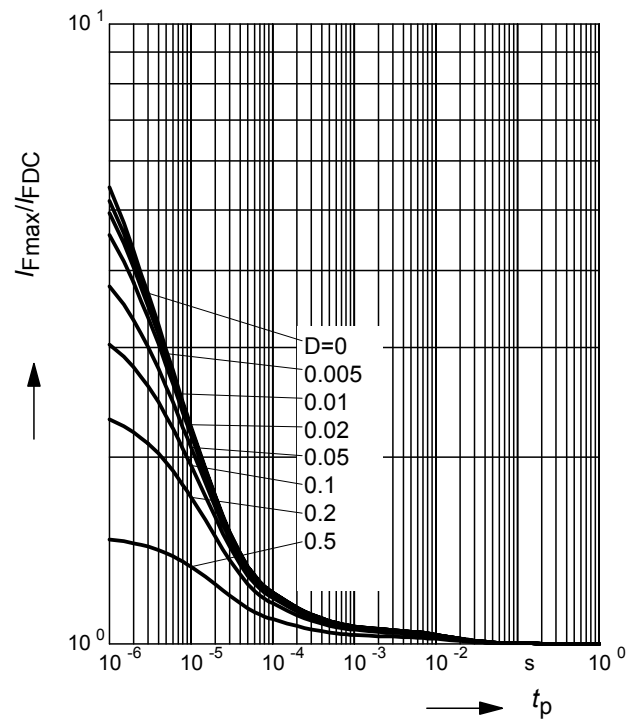
BAT15-03W



### Permissible Pulse Load

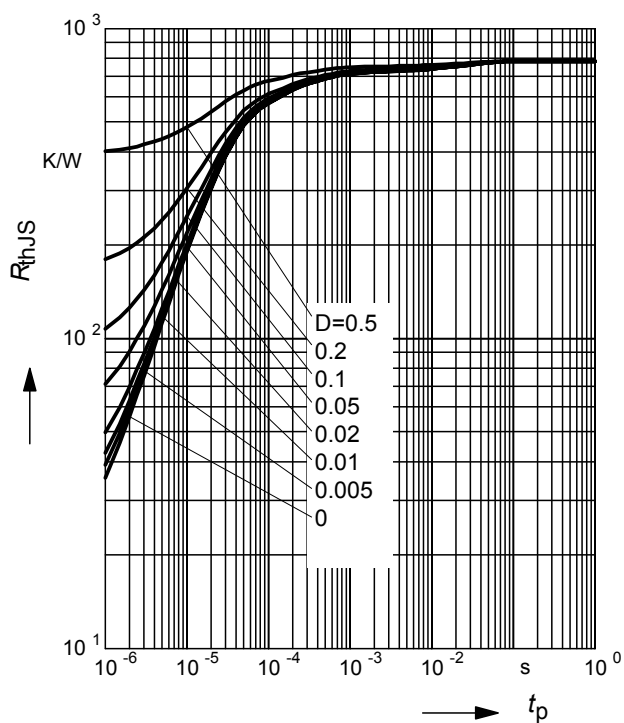
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-03W



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

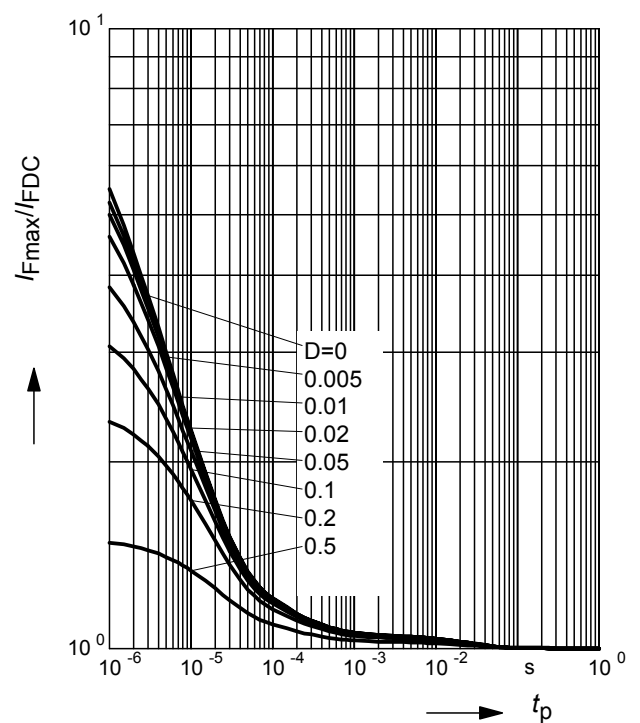
BAT15-04W



### Permissible Pulse Load

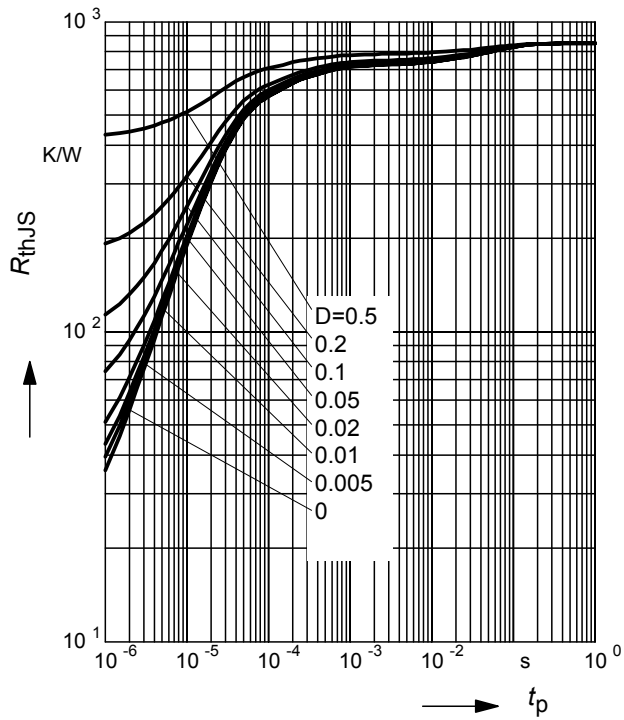
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-04W



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

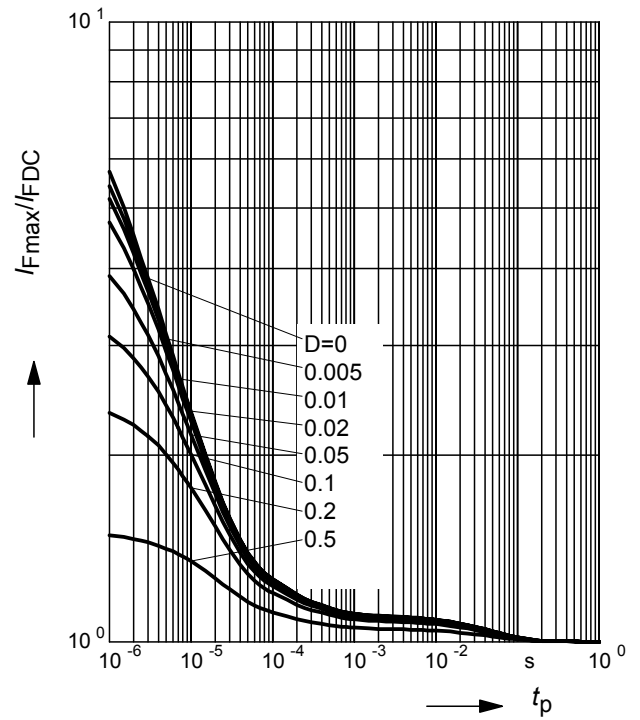
BAT15-05W



### Permissible Pulse Load

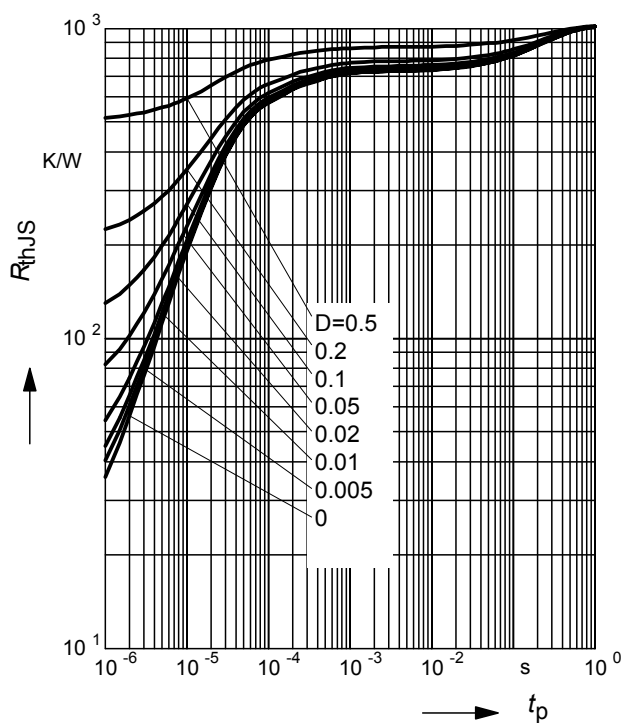
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-05W



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

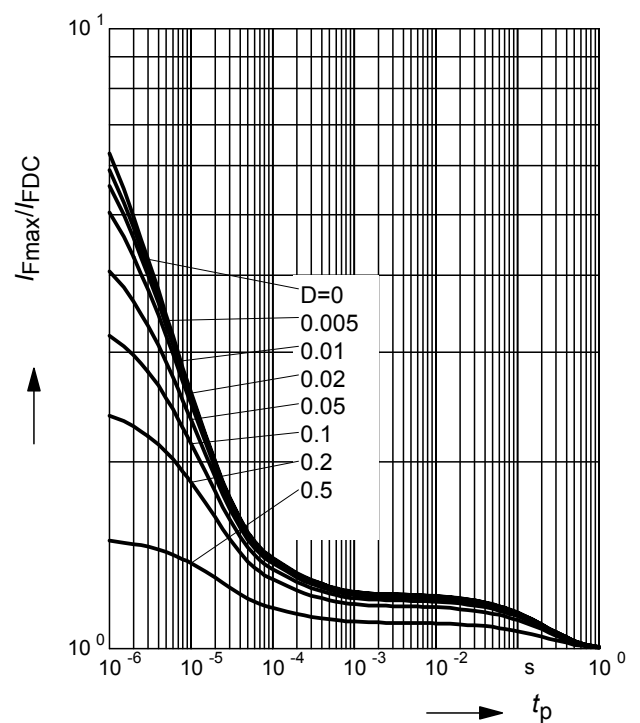
BAT15-099



### Permissible Pulse Load

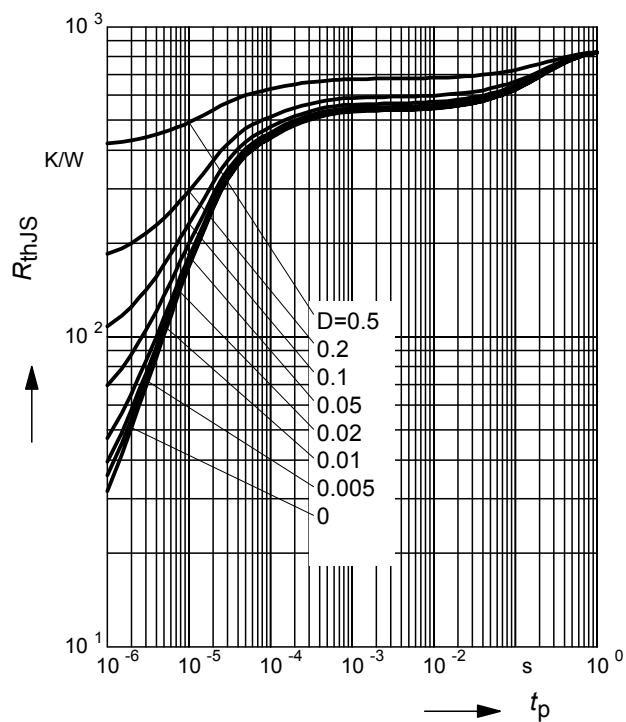
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-099



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

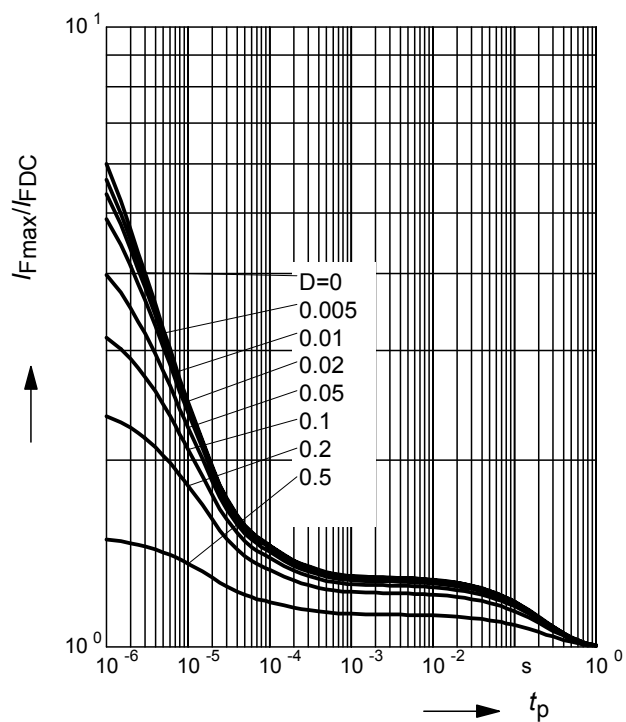
BAT15-099R



### Permissible Pulse Load

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

BAT15-099R

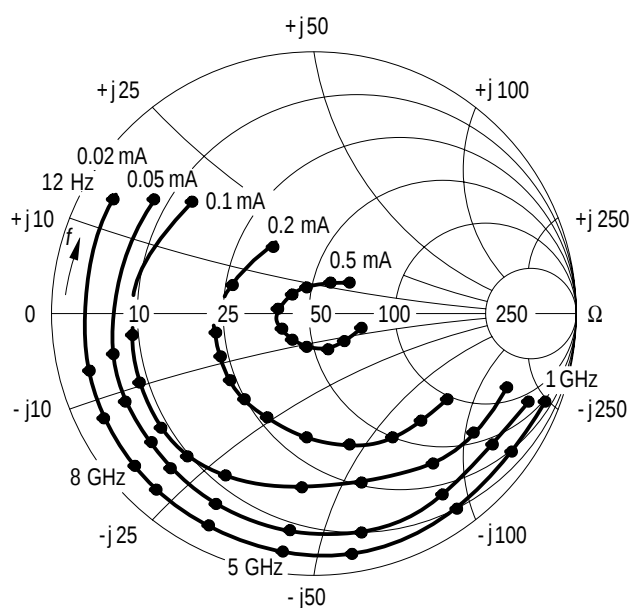


# **S<sub>11</sub>-Parameters for BAT15-099**

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

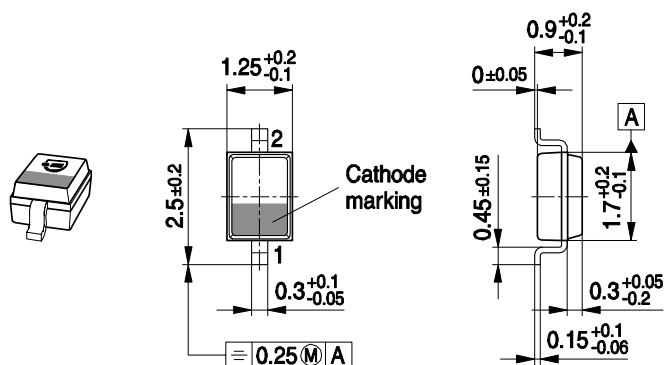
| $f$ | $I = 0.02 \text{ mA}$ |        | $I = 0.05 \text{ mA}$ |        | $I = 0.1 \text{ mA}$ |        | $I = 0.2 \text{ mA}$ |        | $I = 0.5 \text{ mA}$ |        |
|-----|-----------------------|--------|-----------------------|--------|----------------------|--------|----------------------|--------|----------------------|--------|
| GHz | 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**

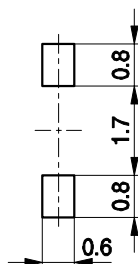


EHD07083

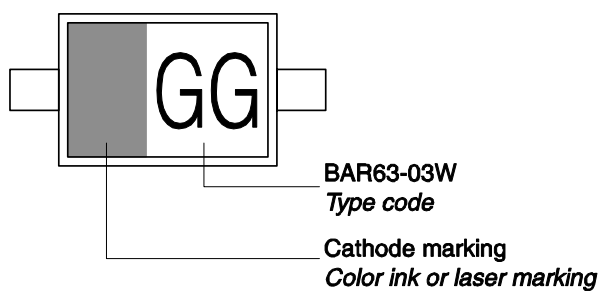
## Package Outline



## Foot Print

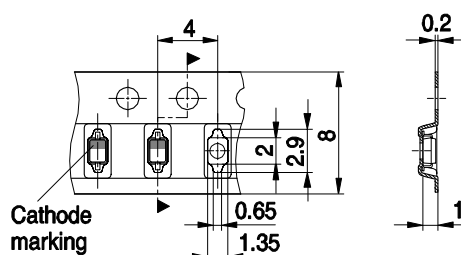


## Marking Layout (Example)

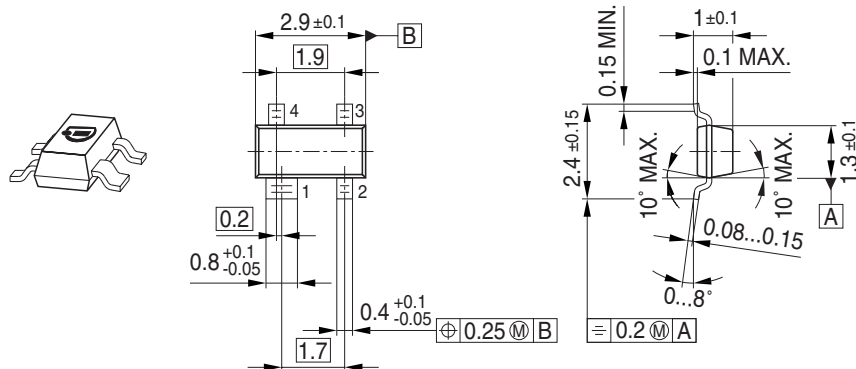


## Standard Packing

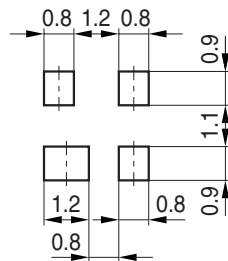
Reel  $\varnothing 180 \text{ mm}$  = 3.000 Pieces/Reel  
 Reel  $\varnothing 330 \text{ mm}$  = 10.000 Pieces/Reel



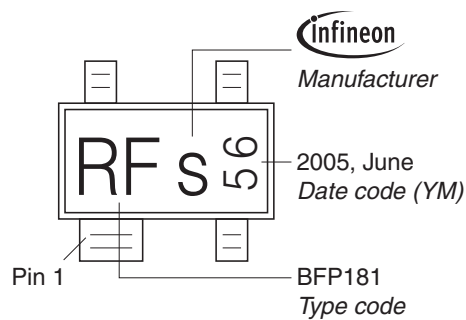
## Package Outline



## Foot Print

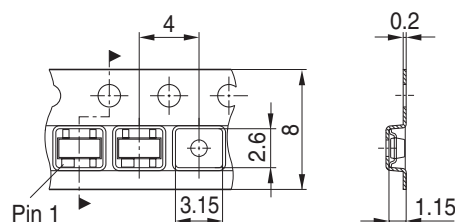


## Marking Layout (Example)

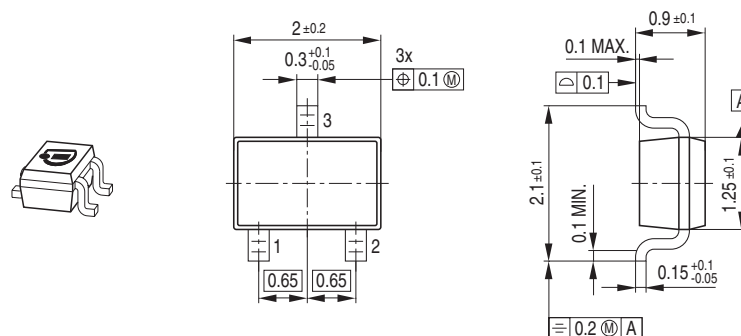


## Standard Packing

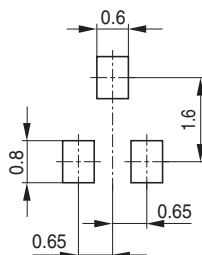
Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



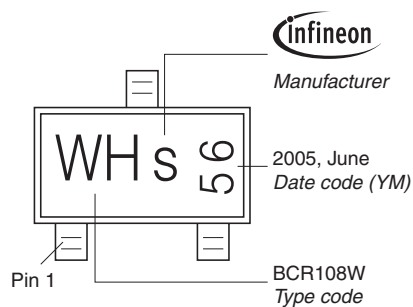
## Package Outline



## Foot Print

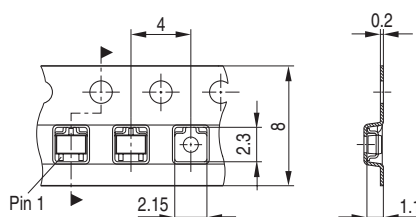


## Marking Layout (Example)

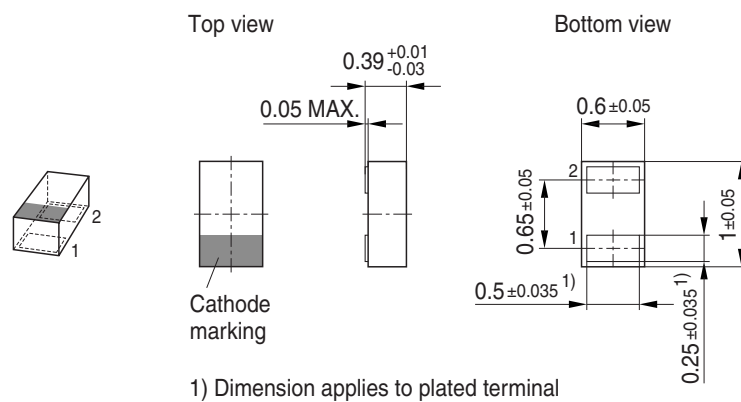


## Standard Packing

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

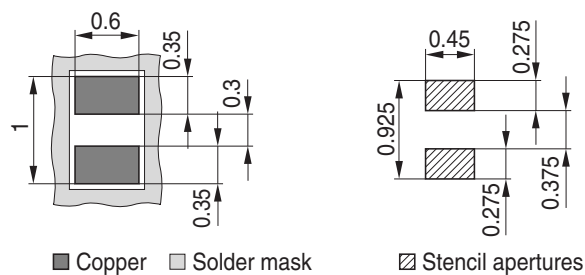


## Package Outline

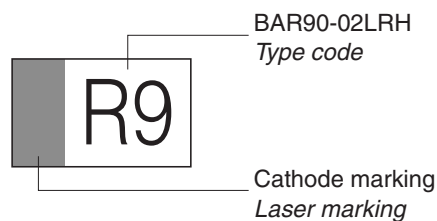


## Foot Print

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

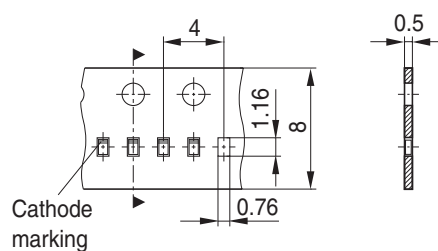


## Marking Layout (Example)

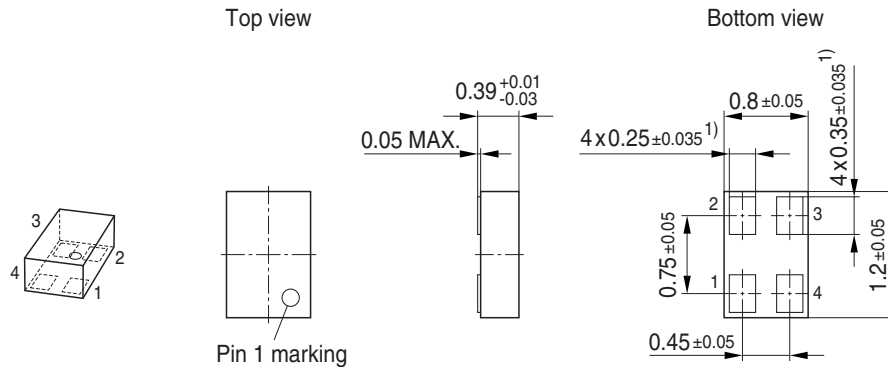


## Standard Packing

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



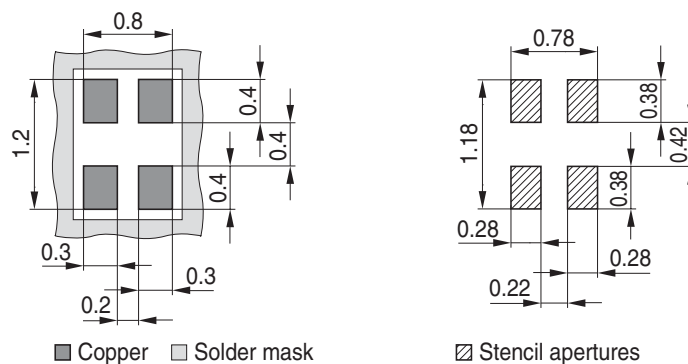
## Package Outline



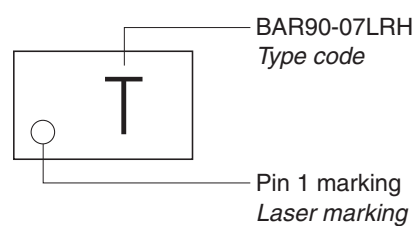
1) Dimension applies to plated terminal

## Foot Print

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

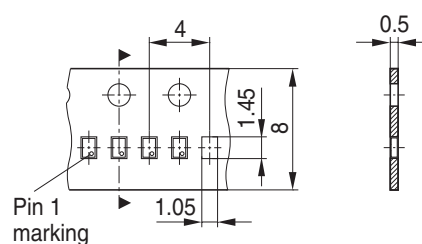


## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



**Edition 2009-11-16**

**Published by  
Infineon Technologies AG  
81726 Munich, Germany**

**© 2009 Infineon Technologies AG  
All Rights Reserved.**

## **Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

## **Information**

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([<www.infineon.com>](http://www.infineon.com)).

## **Warnings**

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.