

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

| Parameter                            | Symbol    | Value       | Unit |
|--------------------------------------|-----------|-------------|------|
| Diode reverse voltage                | $V_R$     | 4           | V    |
| Forward current                      | $I_F$     | 110         | mA   |
| Total power dissipation              | $P_{tot}$ |             |      |
| BAT15-02ELS, $T_S \leq 73\text{ °C}$ |           | 100         |      |
| BAT15-02EL, $T_S \leq 76\text{ °C}$  |           | 100         |      |
| BAT15-03W, $T_S \leq 70\text{ °C}$   |           | 100         |      |
| BAT15-04W, $T_S \leq 68\text{ °C}$   |           | 100         |      |
| BAT15-05W, $T_S \leq 65\text{ °C}$   |           | 100         |      |
| BAT15-099, $T_S \leq 48\text{ °C}$   |           | 100         |      |
| BAT15-099R, $T_S \leq 67\text{ °C}$  |           | 100         |      |
| 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> | $R_{thJS}$ |             |      |
| BAT15-02ELS                              |            | $\leq 770$  |      |
| BAT15-02EL                               |            | $\leq 780$  |      |
| 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  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

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

| Parameter                                                      | Symbol       | Values       |              |              | Unit          |
|----------------------------------------------------------------|--------------|--------------|--------------|--------------|---------------|
|                                                                |              | min.         | typ.         | max.         |               |
| DC Characteristics                                             |              |              |              |              |               |
| Breakdown voltage<br>$I_{(BR)} = 100\text{ }\mu\text{A}$       | $V_{(BR)}$   | 4            | -            | -            | V             |
| Reverse current<br>$V_R = 1\text{ V}$                          | $I_R$        | -            | -            | 5            | $\mu\text{A}$ |
| 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 | V             |
| Forward voltage matching <sup>1)</sup><br>$I_F = 10\text{ mA}$ | $\Delta V_F$ | -            | -            | 20           | mV            |

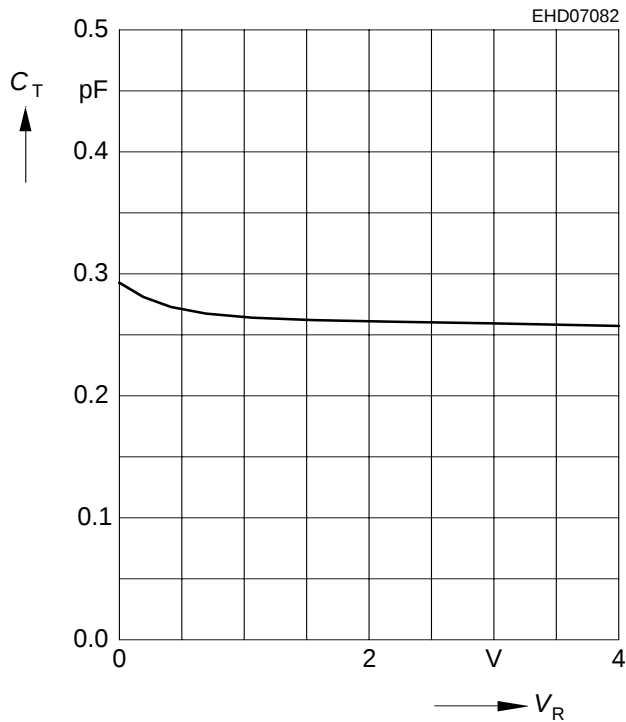
**AC Characteristics**

|                                                                                                                                                                                                  |       |             |             |                     |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|-------------|---------------------|----------|
| Diode capacitance<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , BAT15-02ELS<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , BAT15-099R<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , all others types | $C_T$ | -<br>-<br>- | -<br>-<br>- | 0.23<br>0.5<br>0.35 | 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.

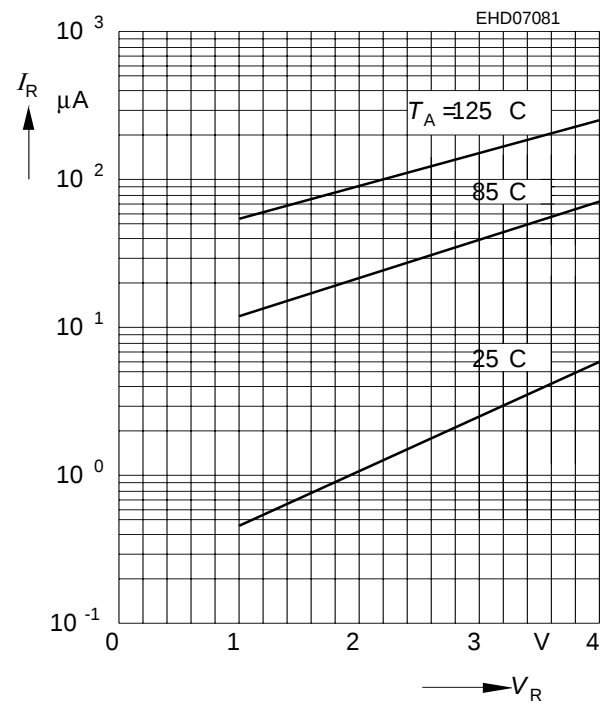
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



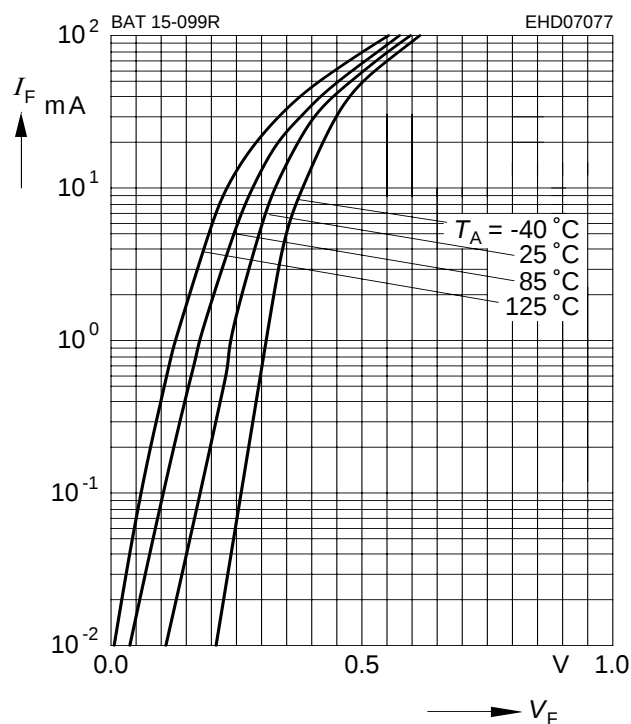
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



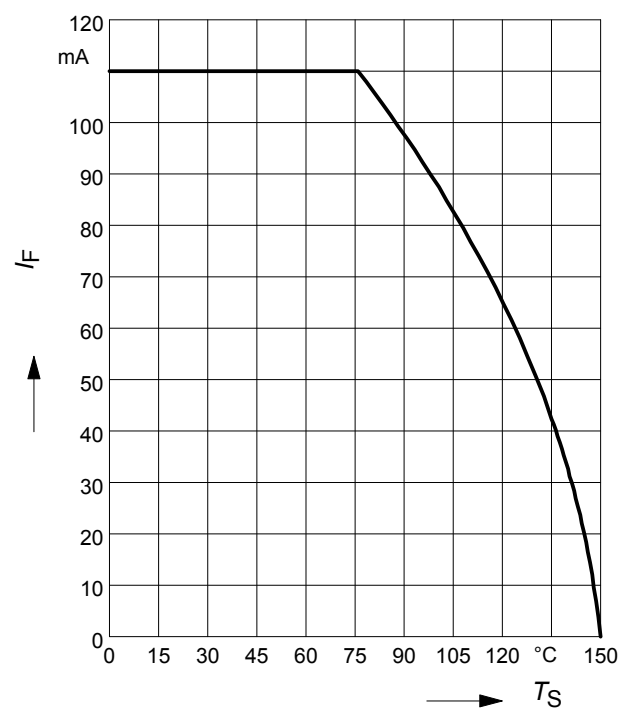
**Forward current  $I_F = f(V_F)$**

$T_A = \text{Parameter}$



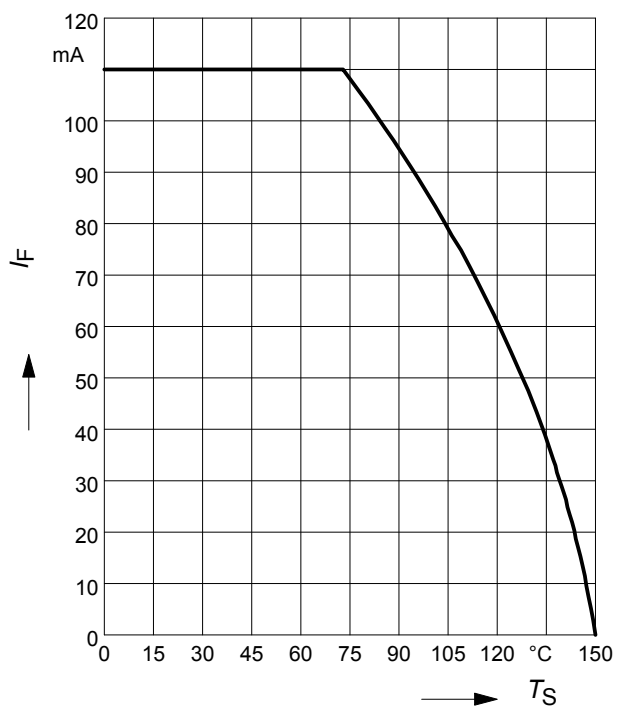
**Forward current  $I_F = f(T_S)$**

BAT15-02EL



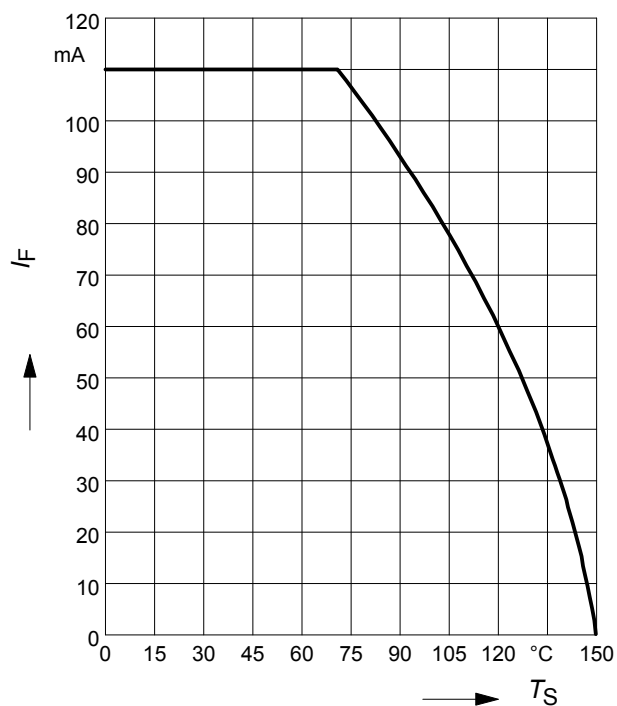
Forward current  $I_F = f(T_S)$

BAT15-02ELS



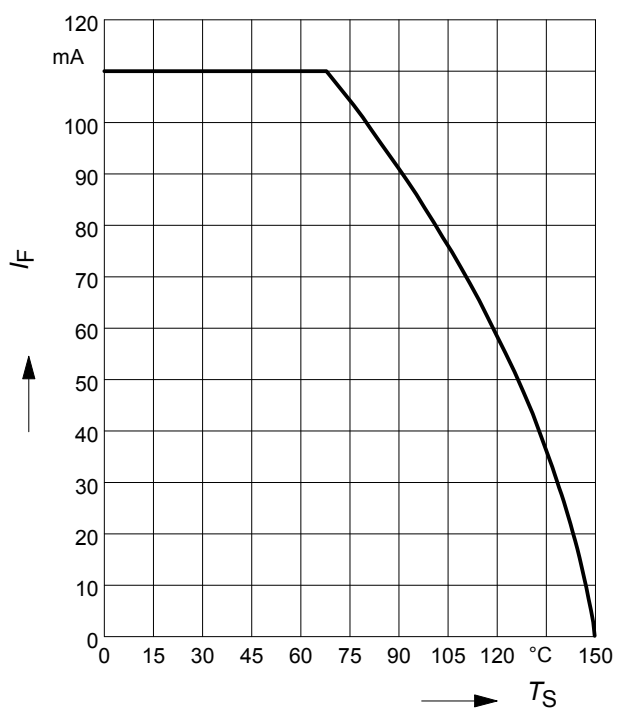
Forward current  $I_F = f(T_S)$

BAT15-03W



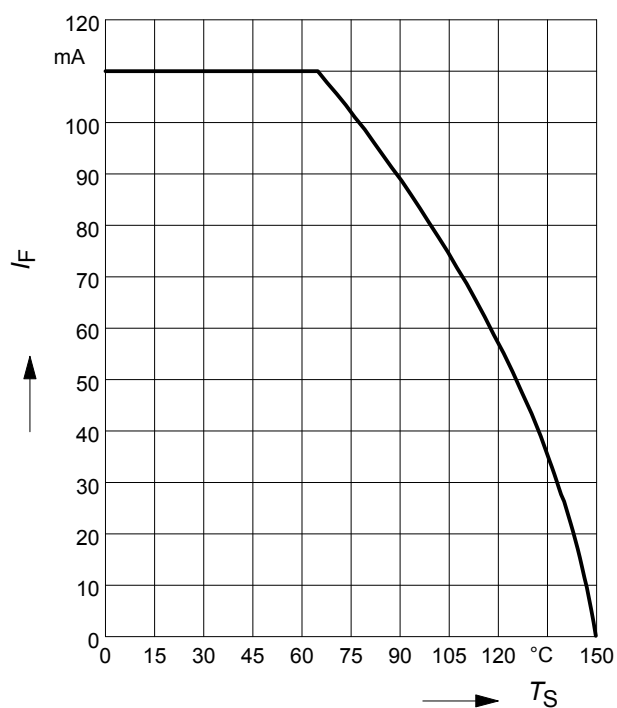
Forward current  $I_F = f(T_S)$

BAT15-04W



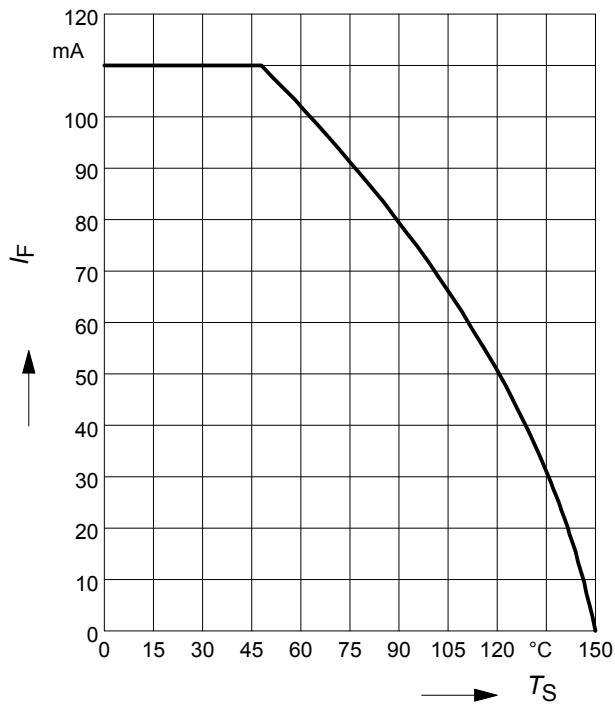
Forward current  $I_F = f(T_S)$

BAT15-05W



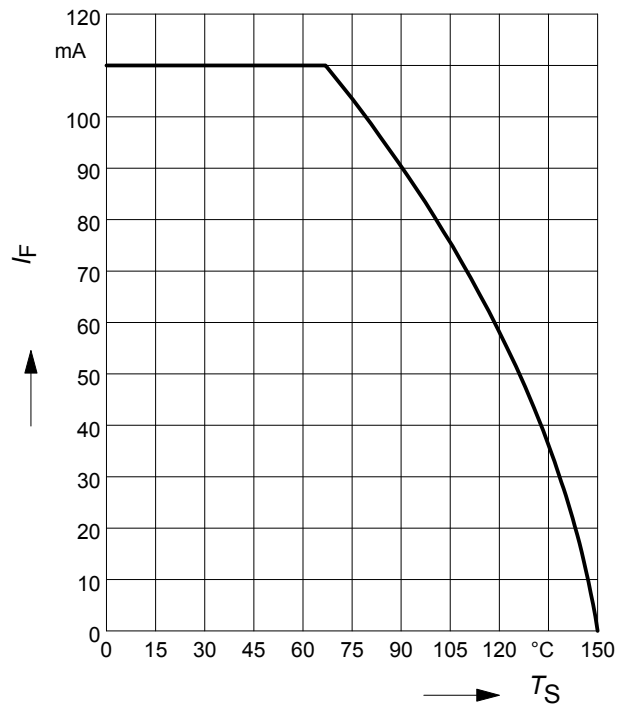
### Forward current $I_F = f(T_S)$

BAT15-099



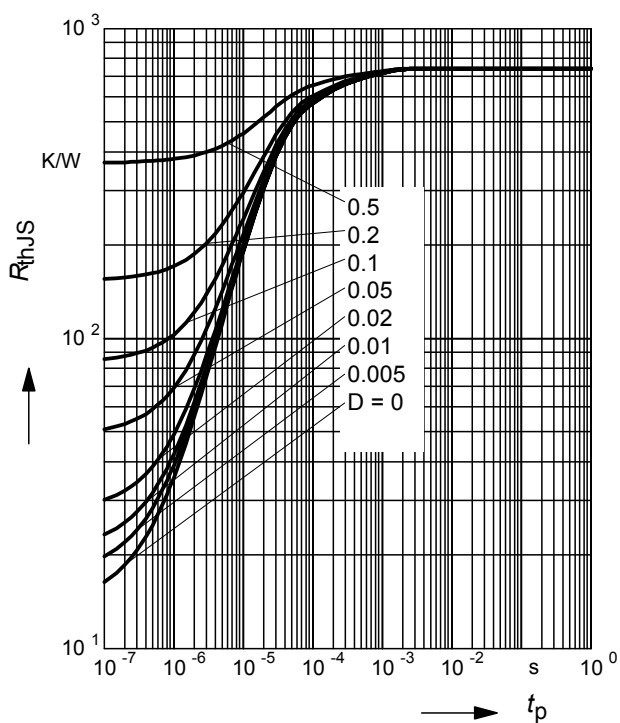
### Forward current $I_F = f(T_S)$

BAT15-099R



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

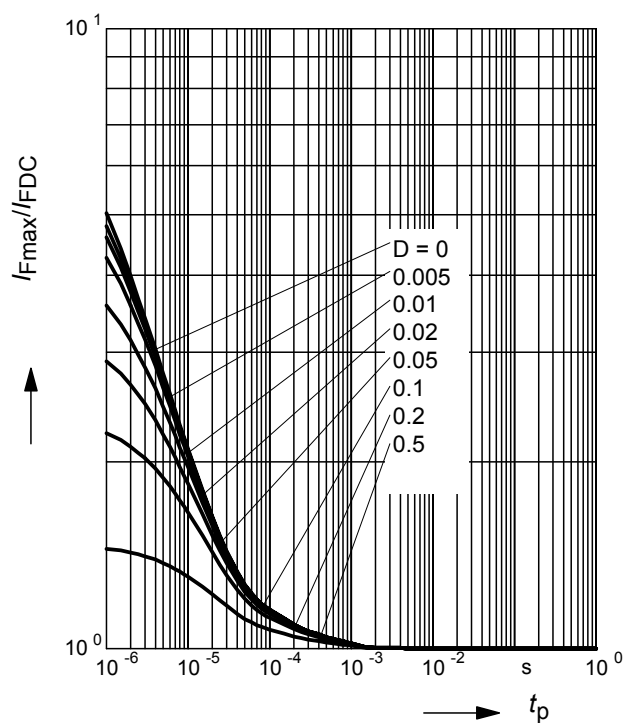
BAT15-02EL



### Permissible Pulse Load

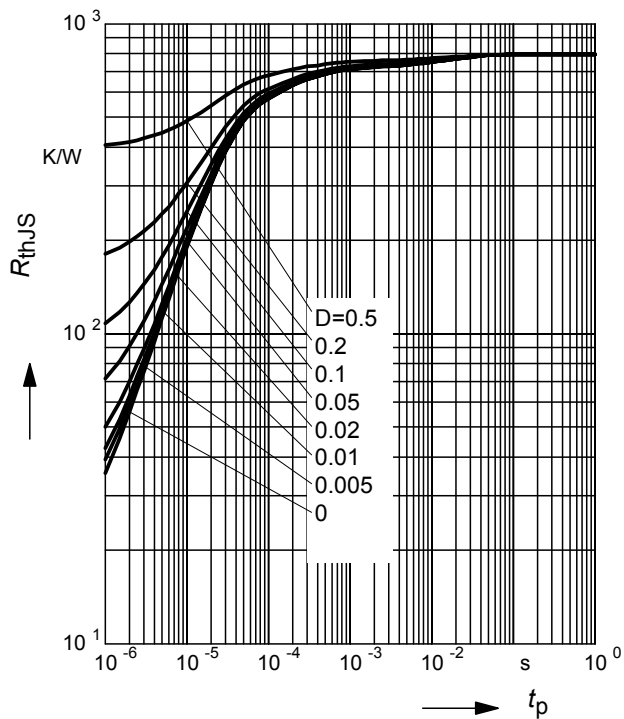
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-02EL



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

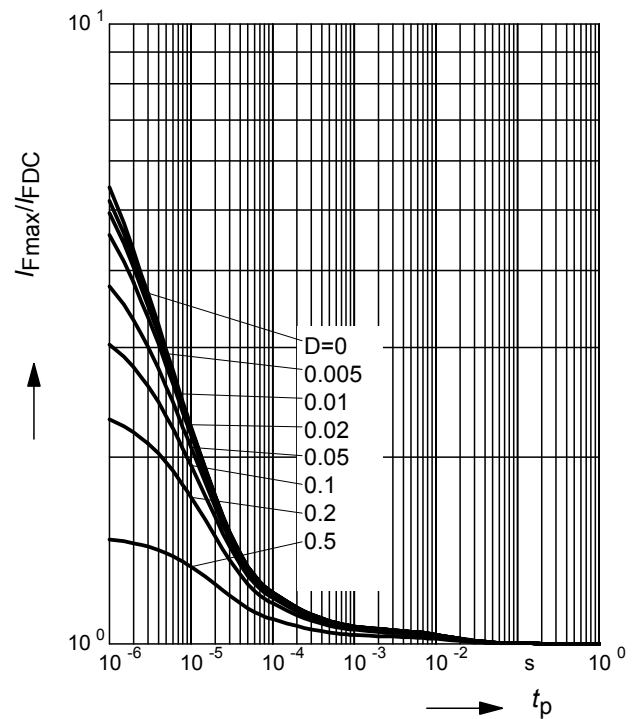
BAT15-03W



### Permissible Pulse Load

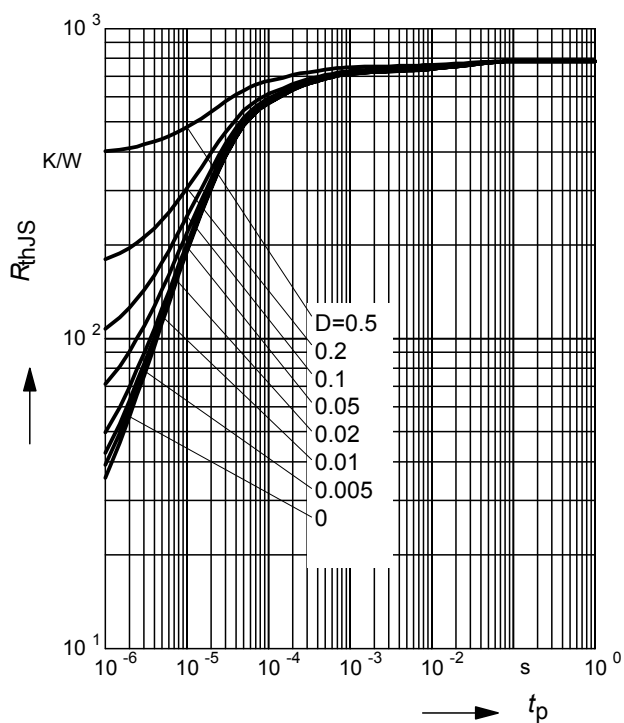
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-03W



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

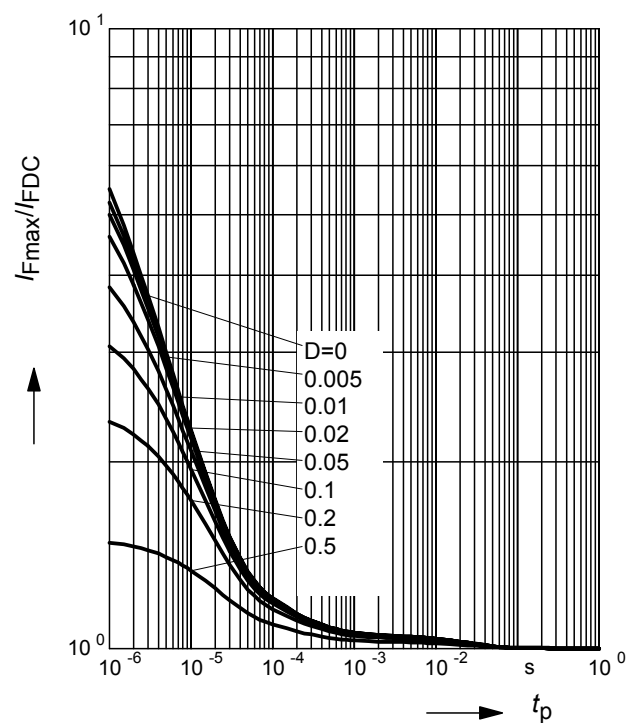
BAT15-04W



### Permissible Pulse Load

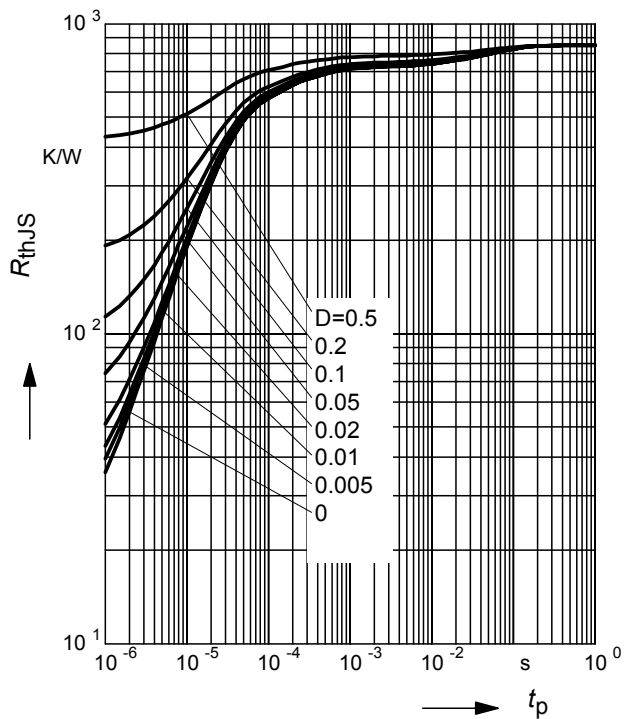
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-04W



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

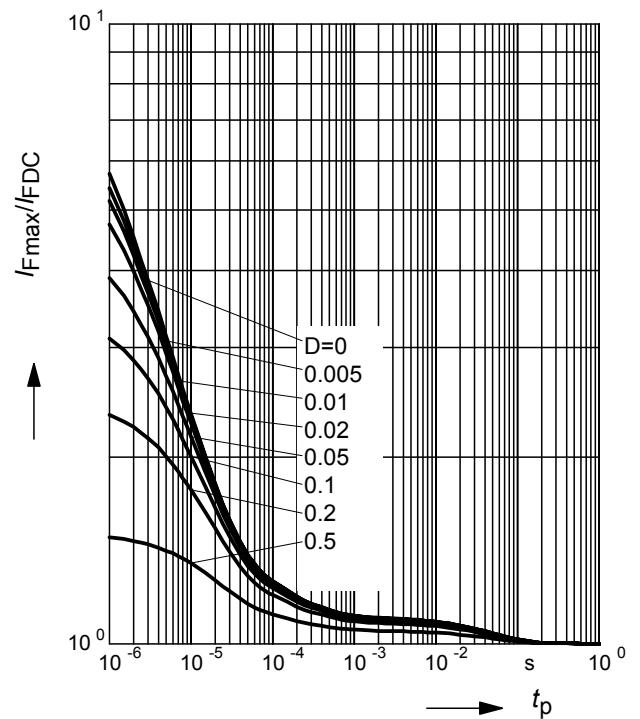
BAT15-05W



### Permissible Pulse Load

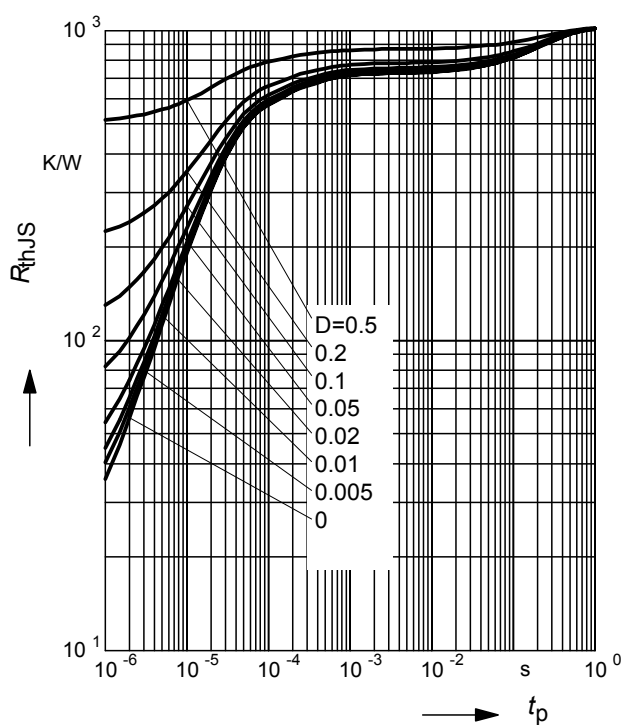
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-05W



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

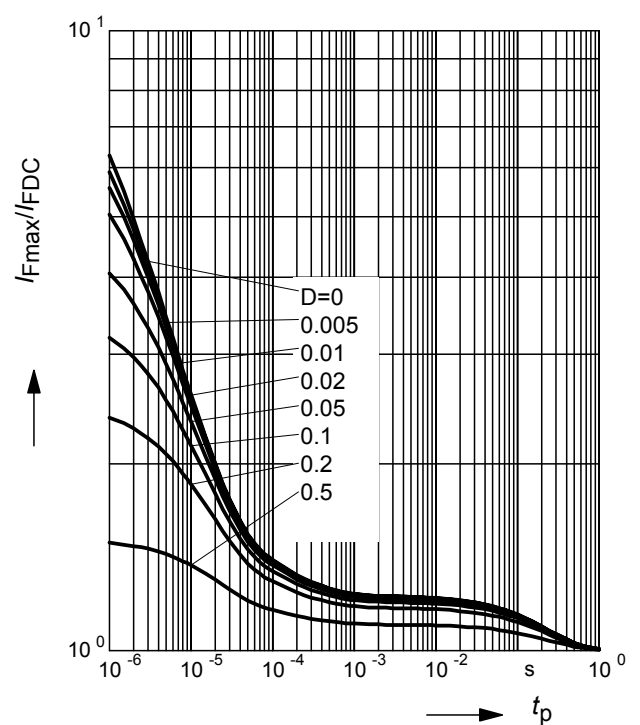
BAT15-099



### Permissible Pulse Load

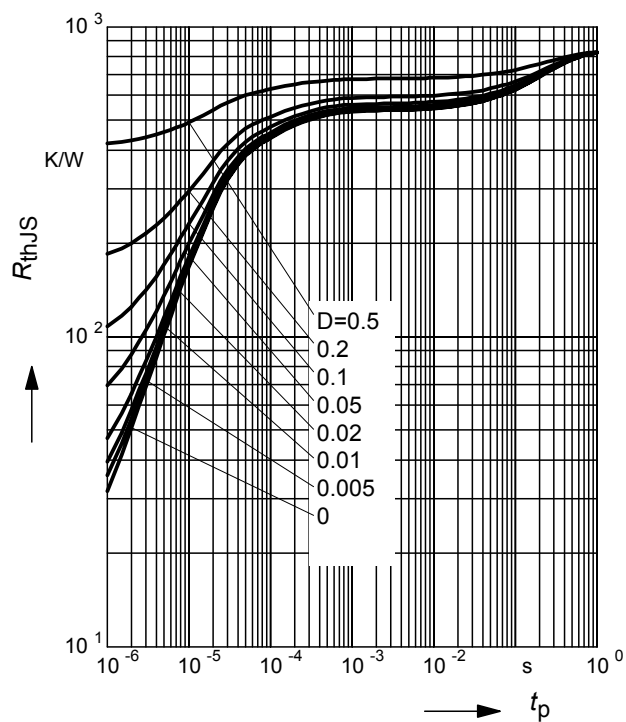
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAT15-099



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

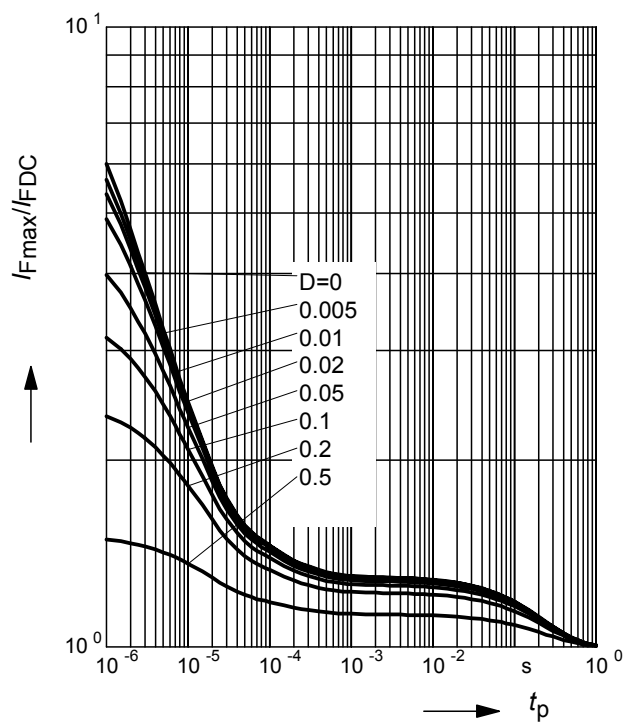
BAT15-099R



### Permissible Pulse Load

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

BAT15-099R

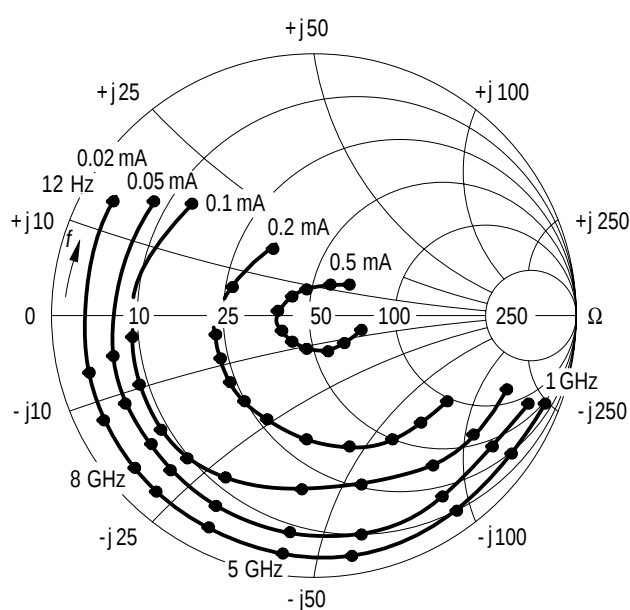


# $S_{11}$ -Parameters for BAT15-099

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   |

$S_{11} = (f, I)$  BAT15-099

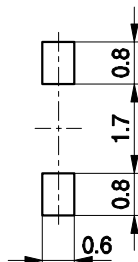


EHD07083

## Package Outline



## Foot Print



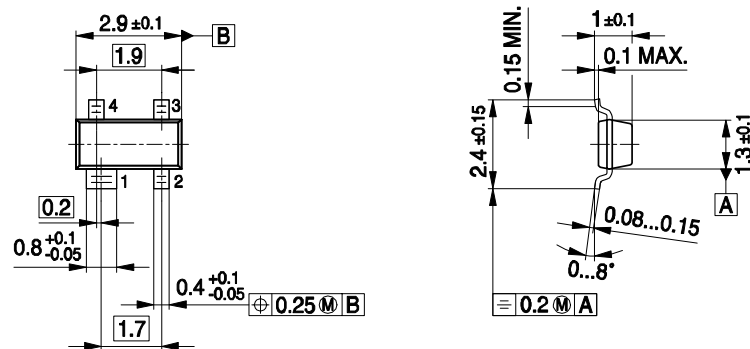
## Marking Layout (Example)



## Standard Packing

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





SOT143-PO V09

SOT143-FPR V09

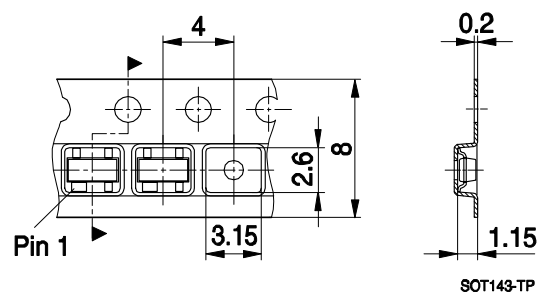
2013, June  
Date code (YYMM)

Type code

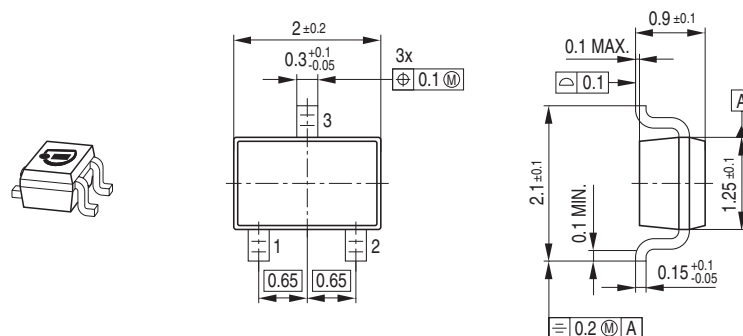
Pin 1

infineon  
Manufacturer

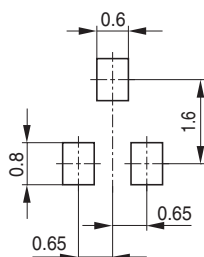
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



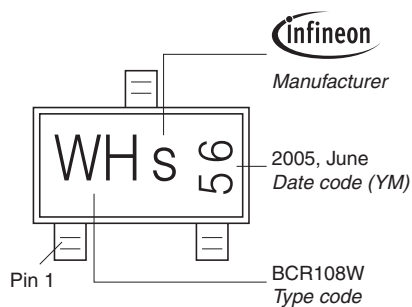
## Package Outline



## Foot Print

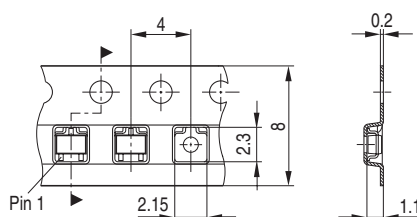


## Marking Layout (Example)

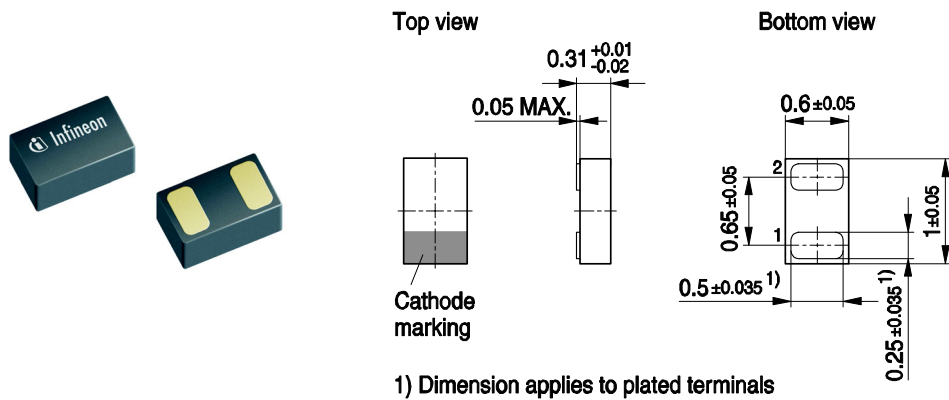


## Standard Packing

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



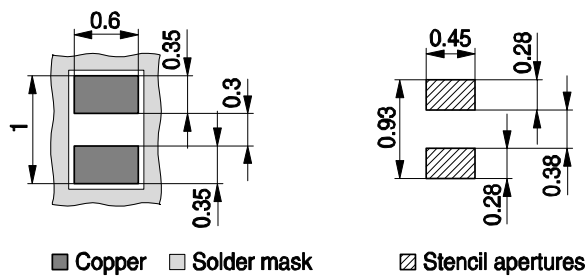
## Package Outline



TSLP-2-19, -20-PO V01

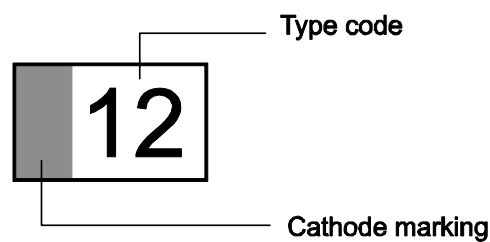
## Foot Print

For board assembly information please refer to Infineon website „Packages“



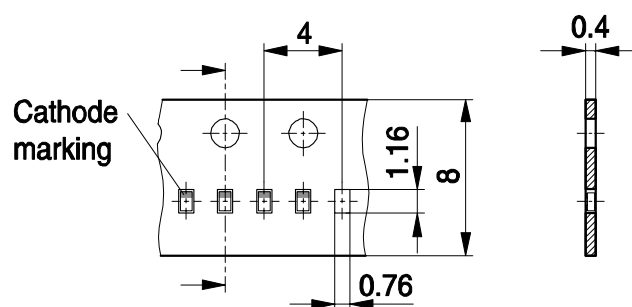
TSLP-2-19, -20-FP V01

## Marking layout (Example)



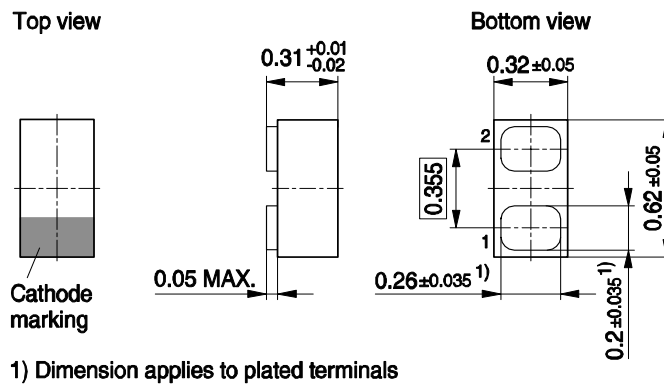
## Standard Packing

Reel Ø 180 mm: 15.000 Pieces / Reel  
Reels/Box: 1



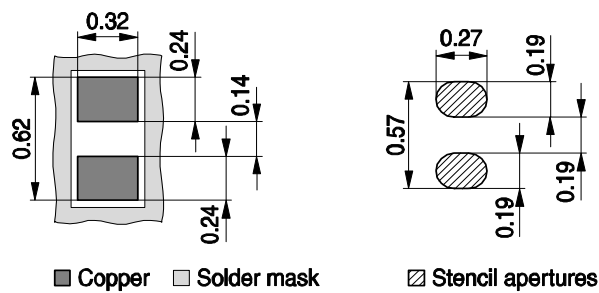
TSLP-2-19, -20-TP V02

## Package Outline

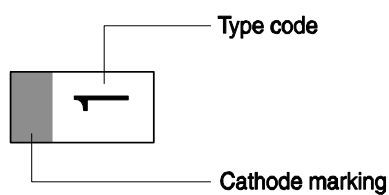


## Foot Print

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

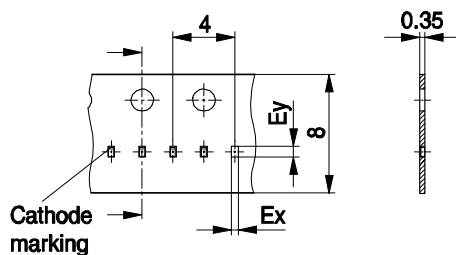


## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



| Tape type     | Ex   | Ey   |
|---------------|------|------|
| Punched Tape  | 0.43 | 0.73 |
| Embossed Tape | 0.37 | 0.67 |

Deliveries can be both tape types (no selection possible).  
Specification allows identical processing (pick & place) by users.

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