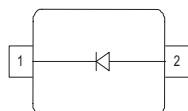
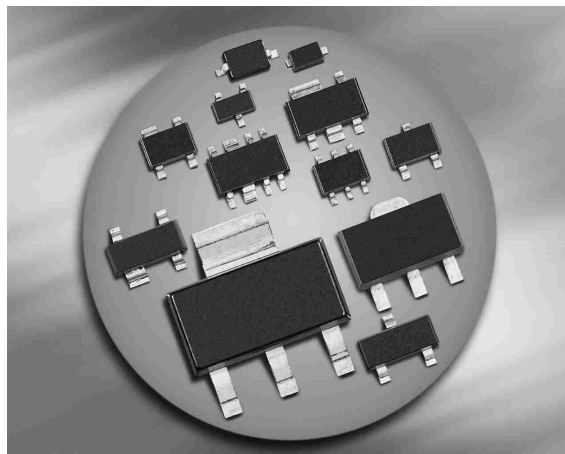


## Silicon PIN Diode

- Series diode for mobile communication in low loss transmit-receiver switches
- Band switch for TV-tuners
- Very low forward resistance (typ.  $0.65 \Omega$  @ 5 mA)
- Low capacitance (typ.  $0.5 \text{ pF}$  @ 0V)
- Fast switching applications
- Pb-free (RoHS compliant) package



**BAR65-02L**  
**BAR65-02V**  
**BAR65-03W**



| Type       | Package  | Configuration    | $L_S(\text{nH})$ | Marking |
|------------|----------|------------------|------------------|---------|
| BAR65-02L* | TSLP-2-1 | single, leadless | 0.4              | NN      |
| BAR65-02V  | SC79     | single           | 0.6              | N       |
| BAR65-03W  | SOD323   | single           | 1.8              | blue M  |

\* Preliminary Data

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

| Parameter                               | Symbol           | Value       | Unit             |
|-----------------------------------------|------------------|-------------|------------------|
| Diode reverse voltage                   | $V_R$            | 30          | V                |
| Forward current                         | $I_F$            | 100         | mA               |
| Total power dissipation                 | $P_{\text{tot}}$ |             | mW               |
| BAR65-02L, $T_S \leq 128^\circ\text{C}$ |                  | 250         |                  |
| BAR65-02V, $T_S \leq 118^\circ\text{C}$ |                  | 250         |                  |
| BAR65-03W, $T_S \leq 113^\circ\text{C}$ |                  | 250         |                  |
| Junction temperature                    | $T_j$            | 150         | $^\circ\text{C}$ |
| Operating temperature range             | $T_{\text{op}}$  | -55 ... 125 |                  |
| Storage temperature                     | $T_{\text{stg}}$ | -55 ... 150 |                  |

**Thermal Resistance**

| Parameter                                | Symbol     | Value | Unit |
|------------------------------------------|------------|-------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |       | K/W  |
| BAR65-02L                                |            | ≤ 90  |      |
| BAR65-02V                                |            | ≤ 130 |      |
| BAR65-03W                                |            | ≤ 145 |      |

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

| Parameter                                | Symbol | Values |      |      | Unit |
|------------------------------------------|--------|--------|------|------|------|
|                                          |        | min.   | typ. | max. |      |
| DC Characteristics                       |        |        |      |      |      |
| Reverse current<br>$V_R = 20\text{ V}$   | $I_R$  | -      | -    | 20   | nA   |
| Forward voltage<br>$I_F = 100\text{ mA}$ | $V_F$  | -      | 0.93 | 1    | V    |

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

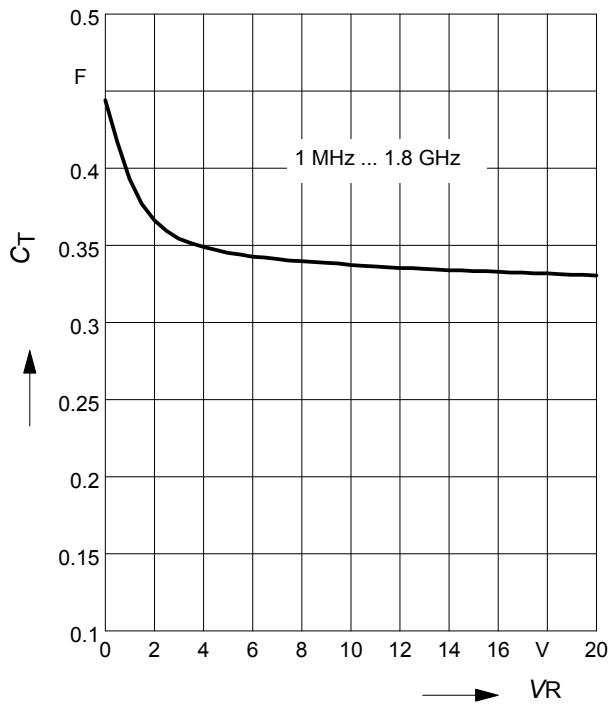
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                                                                                        | Symbol      | Values      |                      |                  | Unit |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|----------------------|------------------|------|
|                                                                                                                                                                  |             | min.        | typ.                 | max.             |      |
| AC Characteristics                                                                                                                                               |             |             |                      |                  |      |
| Diode capacitance<br>$V_R = 1\text{ V}, f = 1\text{ MHz}$<br>$V_R = 3\text{ V}, f = 1\text{ MHz}$<br>$V_R = 0\text{ V}, f = 100\text{ MHz} \dots 1.8\text{ GHz}$ | $C_T$       | -<br>-<br>- | 0.45<br>0.4<br>0.5   | 0.9<br>0.8<br>-  | pF   |
| Reverse parallel resistance<br>$V_R = 0\text{ V}, f = 100\text{ MHz}$<br>$V_R = 0\text{ V}, f = 1\text{ GHz}$<br>$V_R = 0\text{ V}, f = 1.8\text{ GHz}$          | $R_P$       | -<br>-<br>- | 700<br>10<br>5       | -<br>-<br>-      | kΩ   |
| Forward resistance<br>$I_F = 1\text{ mA}, f = 100\text{ MHz}$<br>$I_F = 5\text{ mA}, f = 100\text{ MHz}$<br>$I_F = 10\text{ mA}, f = 100\text{ MHz}$             | $r_f$       | -<br>-<br>- | 1<br>0.65<br>0.56    | -<br>0.95<br>0.9 | Ω    |
| Charge carrier life time<br>$I_F = 10\text{ mA}, I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ ,<br>$R_L = 100\text{ }\Omega$                             | $\tau_{rr}$ | -           | 80                   | -                | ns   |
| I-region width                                                                                                                                                   | $W_I$       | -           | 3.5                  | -                | μm   |
| Insertion loss <sup>1)</sup><br>$I_F = 1\text{ mA}, f = 1.8\text{ GHz}$<br>$I_F = 5\text{ mA}, f = 1.8\text{ GHz}$<br>$I_F = 10\text{ mA}, f = 1.8\text{ GHz}$   | $I_L$       | -<br>-<br>- | 0.08<br>0.06<br>0.05 | -<br>-<br>-      | dB   |
| Isolation <sup>1)</sup><br>$V_R = 0\text{ V}, f = 0.9\text{ GHz}$<br>$V_R = 0\text{ V}, f = 1.8\text{ GHz}$<br>$V_R = 0\text{ V}, f = 2.45\text{ GHz}$           | $I_{SO}$    | -<br>-<br>- | 12<br>7<br>5         | -<br>-<br>-      |      |

<sup>1)</sup>BAR65-02L in series configuration,  $Z = 50\text{ }\Omega$

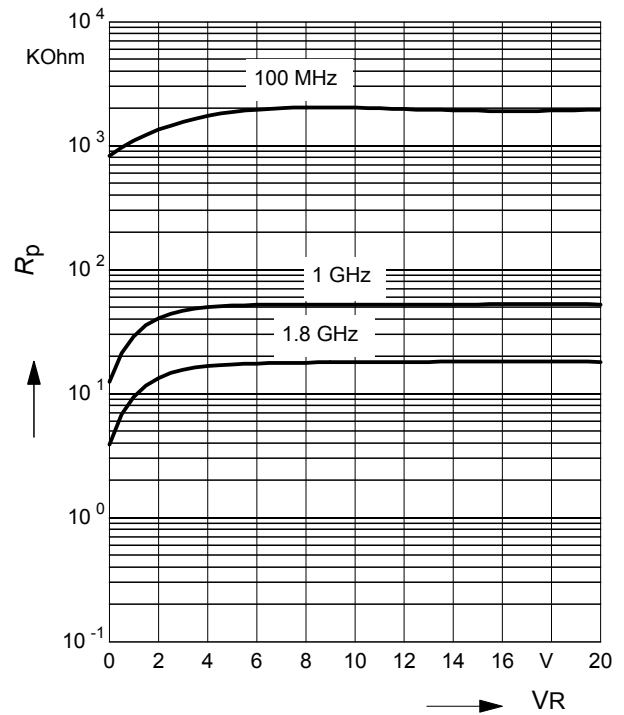
**Diode capacitance  $C_T = f(V_R)$**

$f$  = Parameter



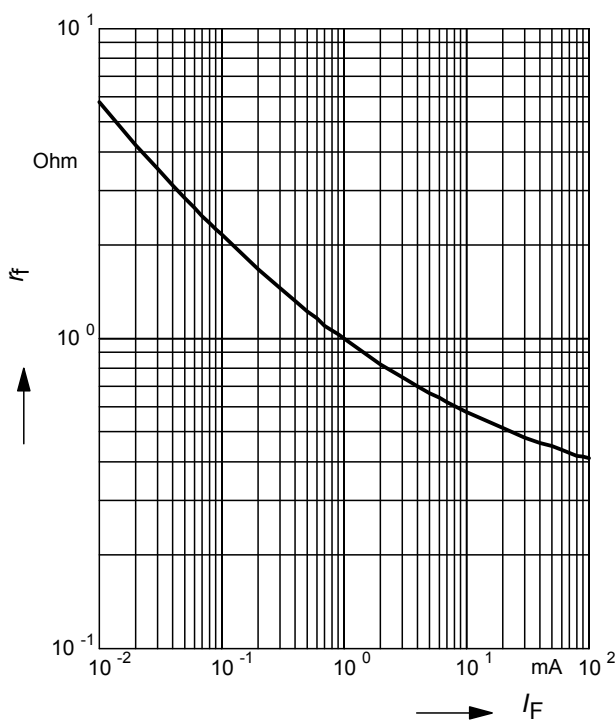
**Reverse parallel resistance  $R_P = f(V_R)$**

$f$  = Parameter



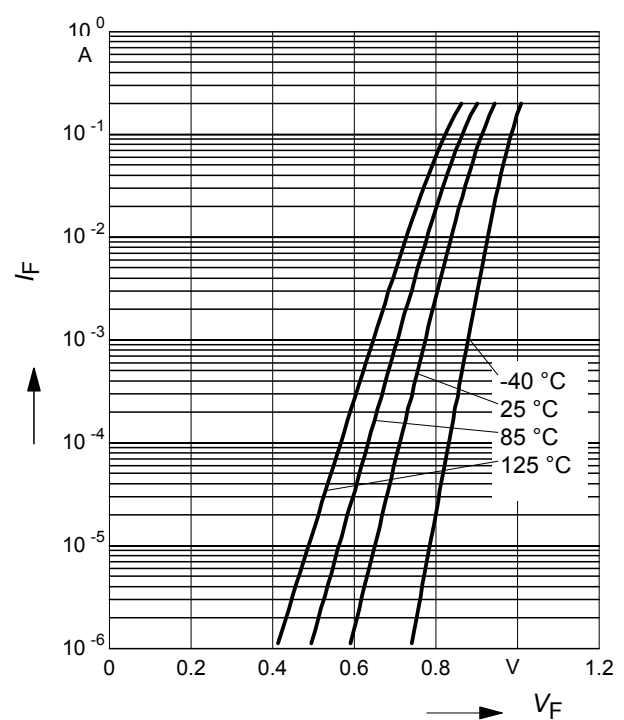
**Forward resistance  $r_f = f(I_F)$**

$f$  = 100MHz



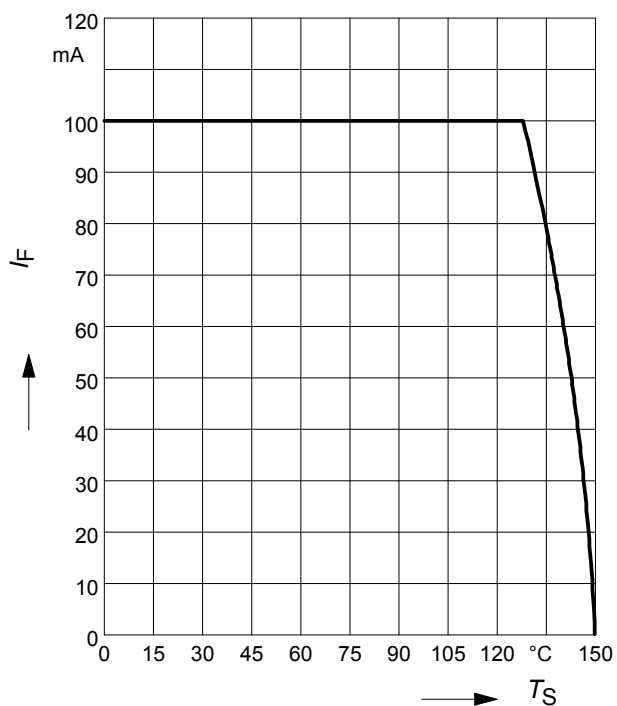
**Forward current  $I_F = f(V_F)$**

$T_A$  = Parameter



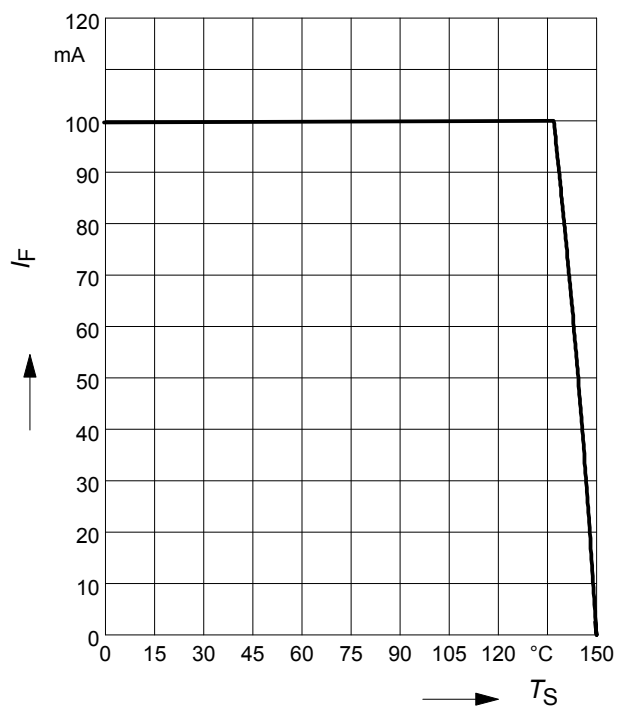
**Forward current  $I_F = f(T_S)$**

BAR65-02L



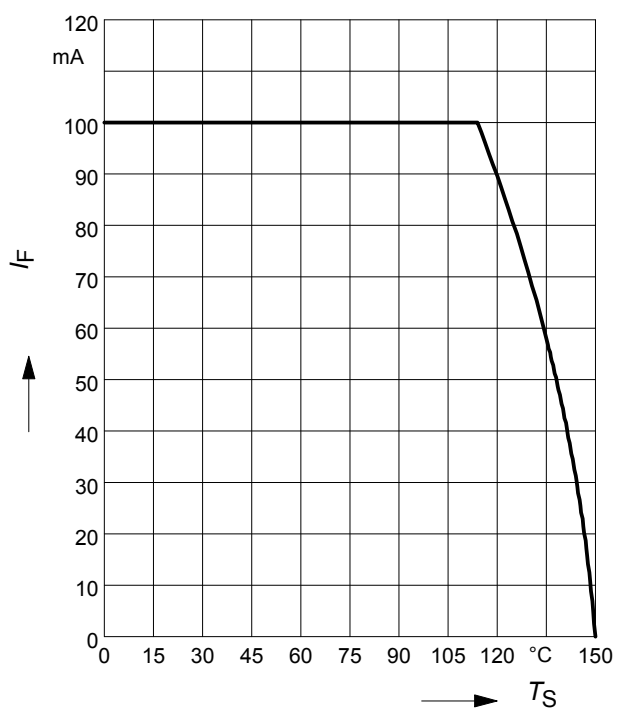
**Forward current  $I_F = f(T_S)$**

BAR65-02V



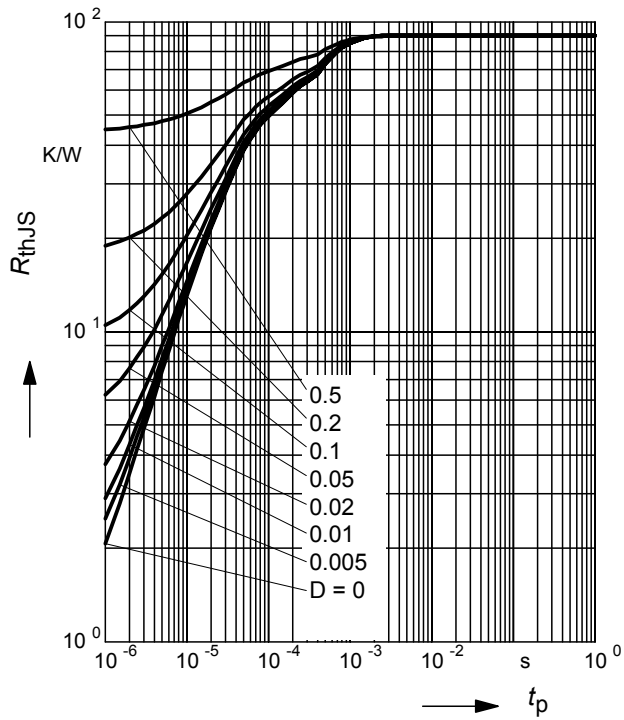
**Forward current  $I_F = f(T_S)$**

BAR65-03W



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

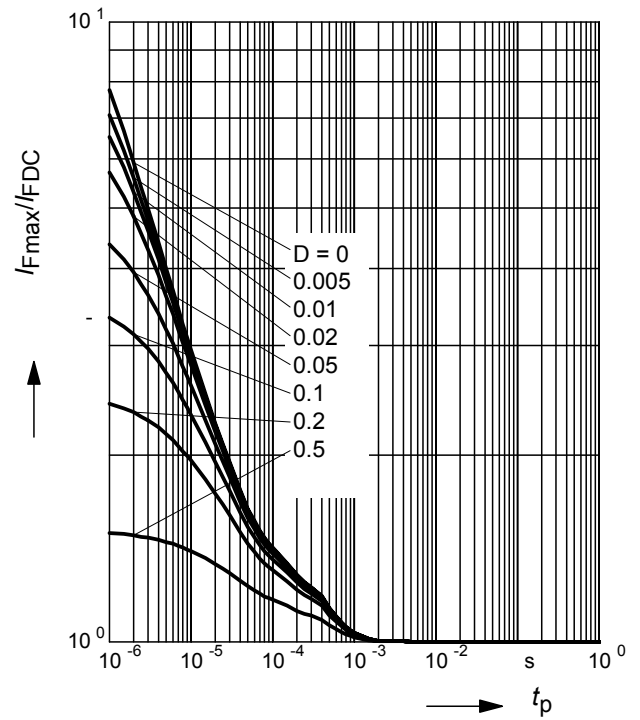
BAR65-02L



### Permissible Pulse Load

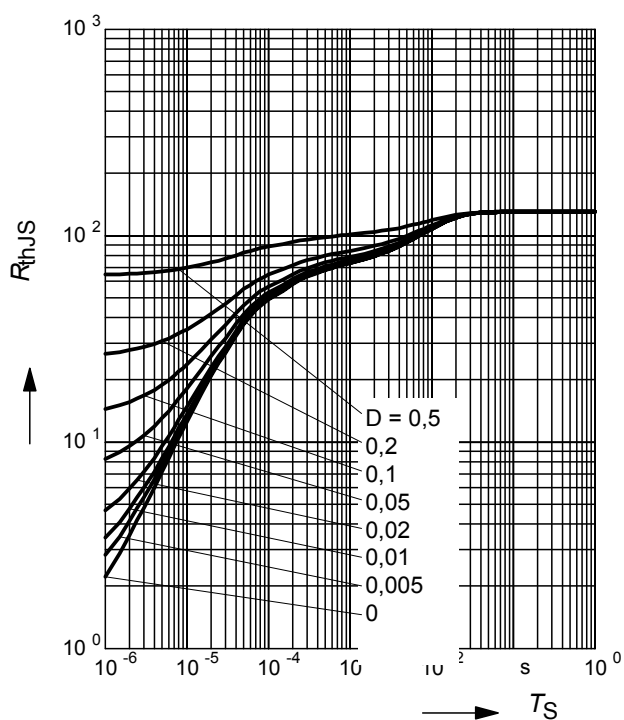
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAR65-02L



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

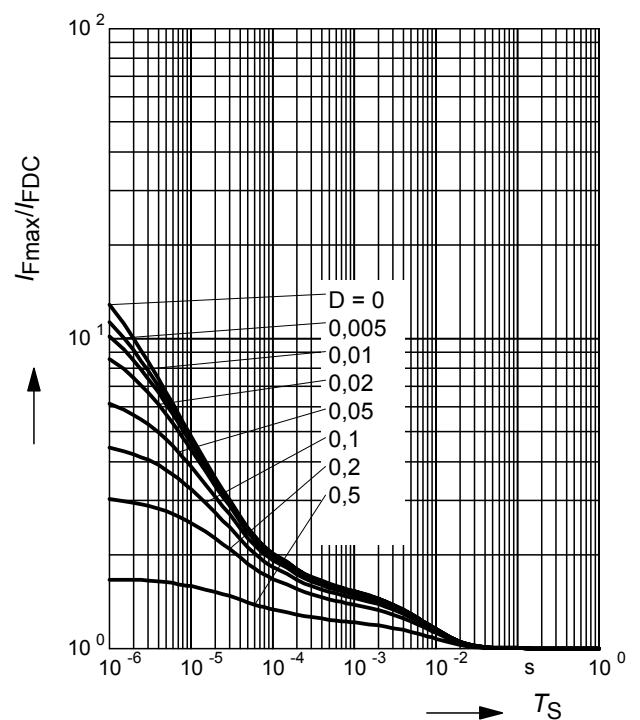
BAR65-02V



### Permissible Pulse Load

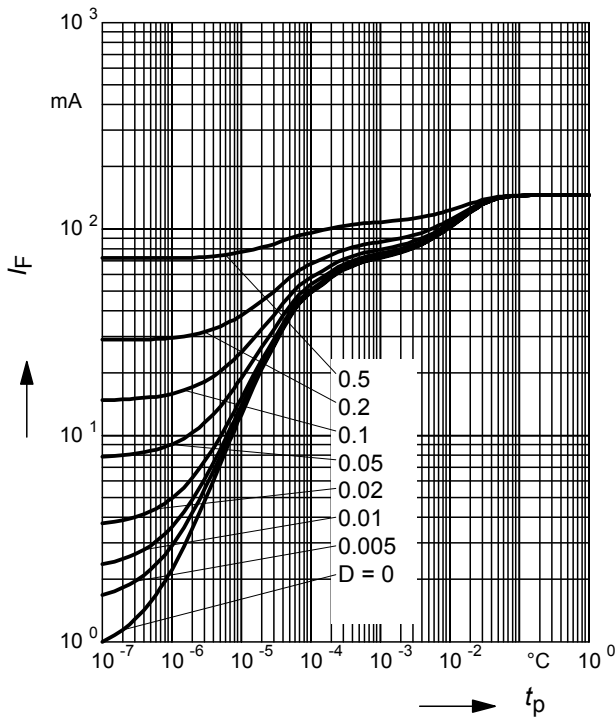
$$I_{Fmax}/I_{FDC} = f(t_p)$$

BAR65-02V



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

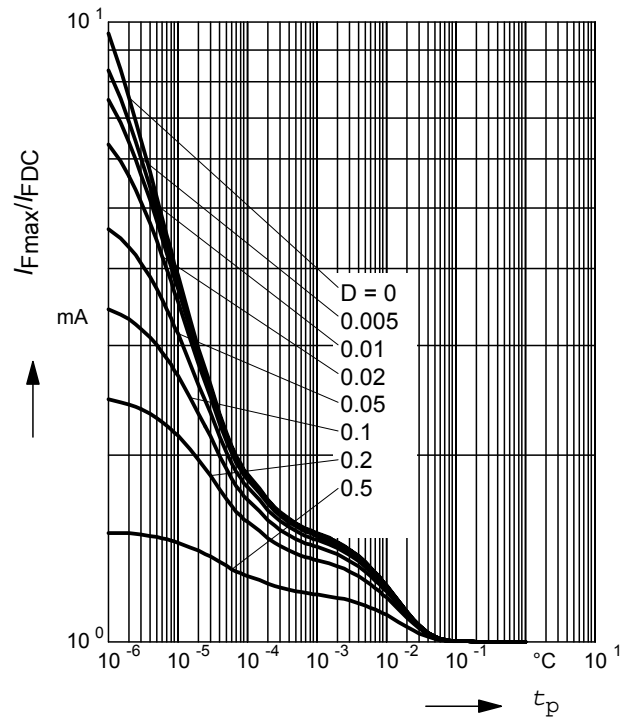
BAR65-03W



### Permissible Pulse Load

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

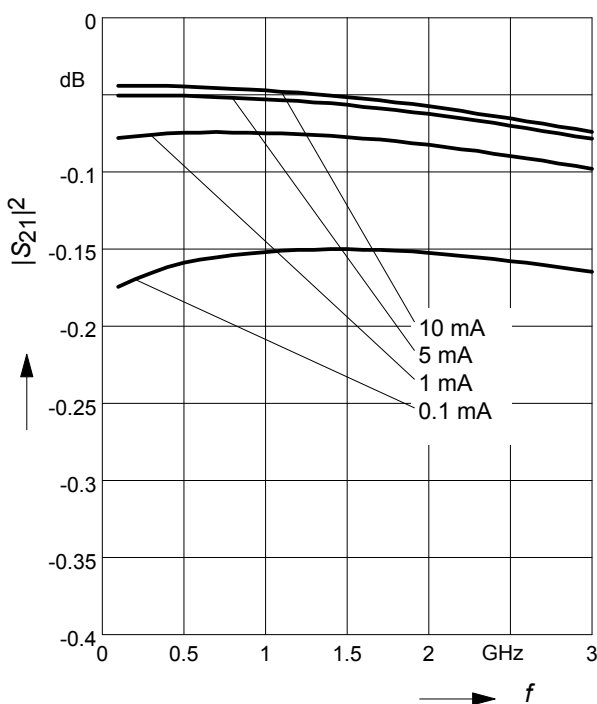
BAR65-03W



### Insertion loss $I_L = -|S_{21}|^2 = f(f)$

$I_F$  = Parameter

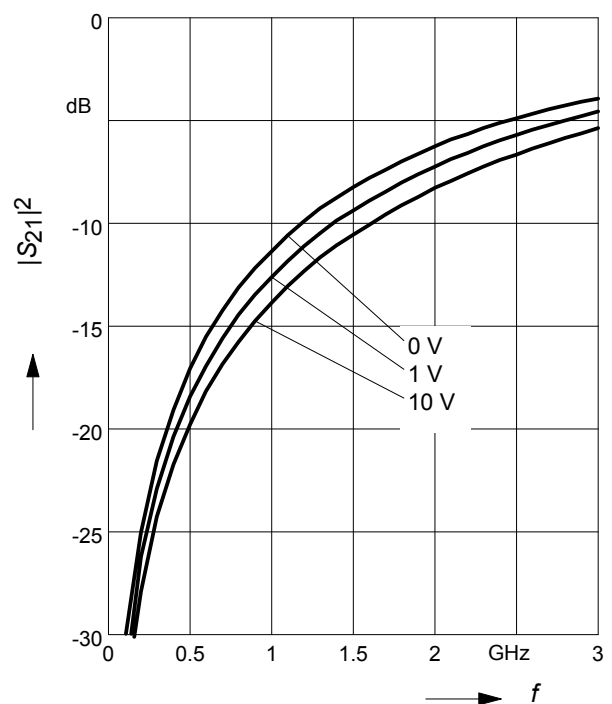
BAR65-02L in series configuration,  $Z = 50\Omega$



### Isolation $I_{SO} = -|S_{21}|^2 = f(f)$

$V_R$  = Parameter

BAR65-02L in series configuration  $Z = 50\Omega$



## Package Outline



## Foot Print



## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)  
 Reel ø330 mm = 10.000 Pieces/Reel

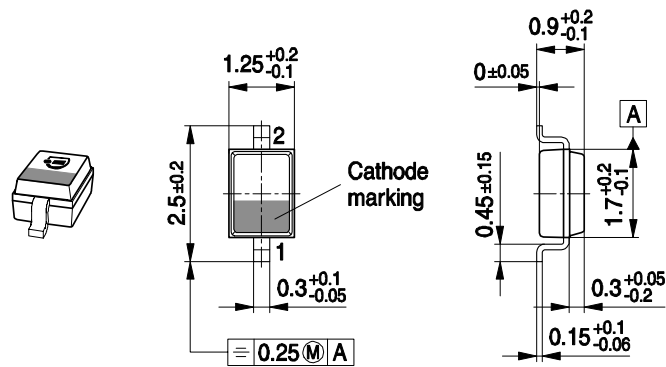


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

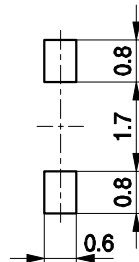
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01    | a    | p    | A    | P    | a    | p    | A    | P    | a    | p    | A    | P    |
| 02    | b    | q    | B    | Q    | b    | q    | B    | Q    | b    | q    | B    | Q    |
| 03    | c    | r    | C    | R    | c    | r    | C    | R    | c    | r    | C    | R    |
| 04    | d    | s    | D    | S    | d    | s    | D    | S    | d    | s    | D    | S    |
| 05    | e    | t    | E    | T    | e    | t    | E    | T    | e    | t    | E    | T    |
| 06    | f    | u    | F    | U    | f    | u    | F    | U    | f    | u    | F    | U    |
| 07    | g    | v    | G    | V    | g    | v    | G    | V    | g    | v    | G    | V    |
| 08    | h    | x    | H    | X    | h    | x    | H    | X    | h    | x    | H    | X    |
| 09    | j    | y    | J    | Y    | j    | y    | J    | Y    | j    | y    | J    | Y    |
| 10    | k    | z    | K    | Z    | k    | z    | K    | Z    | k    | z    | K    | Z    |
| 11    | l    | 2    | L    | 4    | l    | 2    | L    | 4    | l    | 2    | L    | 4    |
| 12    | n    | 3    | N    | 5    | n    | 3    | N    | 5    | n    | 3    | N    | 5    |

1) New Marking Layout for SC75, implemented at October 2005.

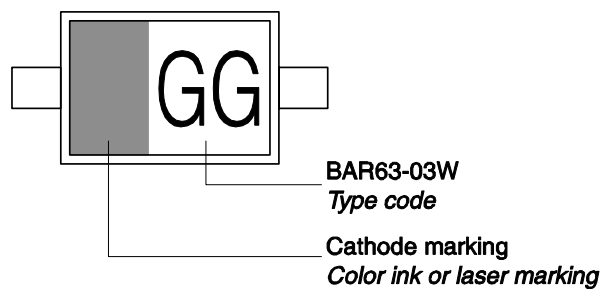
## Package Outline



## Foot Print

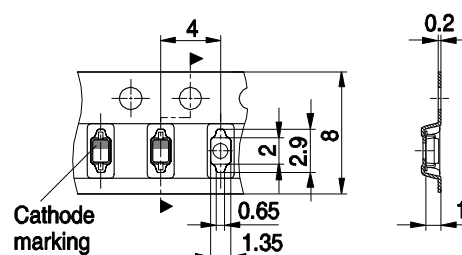


## Marking Layout (Example)

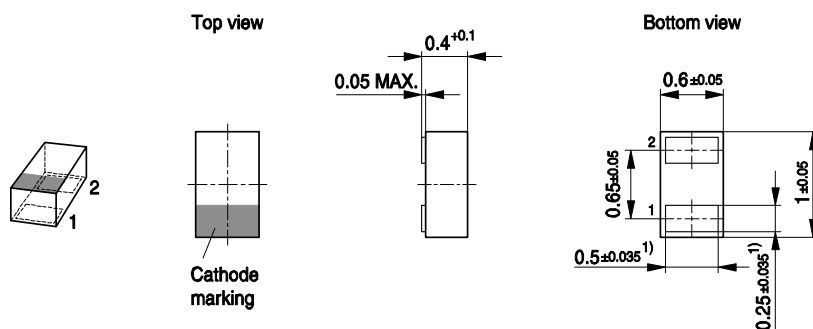


## Standard Packing

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

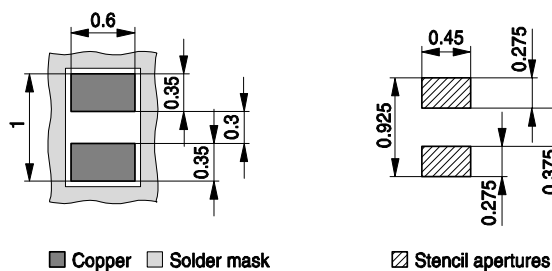


## Package Outline

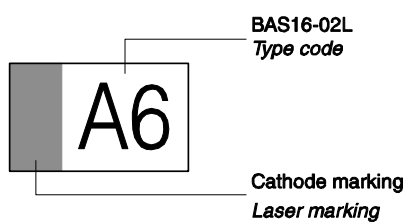


## Foot Print

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



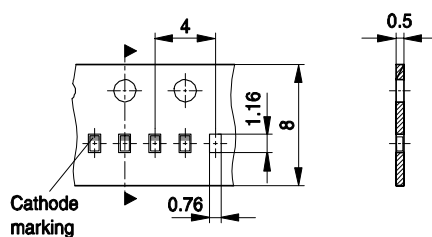
## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel

Reel ø330 mm = 50.000 Pieces/Reel (optional)



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