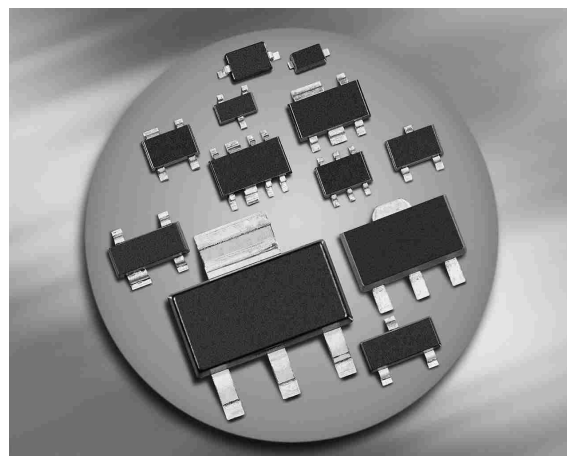


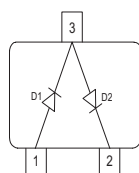
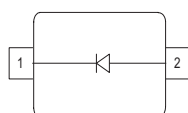
## Silicon PIN Diode

- For low loss RF switches and attenuators
- Very low capacitance at zero volt reverse bias at frequencies above 1 GHz (typ. 0.25 pF)
- Low forward resistance (typ. 1.5  $\Omega$  @ 5mA)
- Low harmonics
- Pb-free (RoHS compliant) package



### BAR67-02V

### BAR67-04



| Type      | Package | Configuration | $L_S$ (nH) | Marking |
|-----------|---------|---------------|------------|---------|
| BAR67-02V | SC79    | single        | 0.6        | T       |
| BAR67-04  | SOT23   | series        | 1.8        | PMs     |

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

| Parameter                                | Symbol    | Value       | Unit             |
|------------------------------------------|-----------|-------------|------------------|
| Diode reverse voltage                    | $V_R$     | 150         | V                |
| Forward current                          | $I_F$     | 200         | mA               |
| Total power dissipation                  | $P_{tot}$ |             | mW               |
| $T_S \leq 118^\circ\text{C}$ , BAR67-02V |           | 250         |                  |
| $T_S \leq 25^\circ\text{C}$ , BAR67-04   |           | 250         |                  |
| Junction temperature                     | $T_j$     | 150         | $^\circ\text{C}$ |
| Operating temperature range              | $T_{op}$  | -55 ... 125 |                  |
| Storage temperature                      | $T_{stg}$ | -55 ... 150 |                  |

### Thermal Resistance

| Parameter                                | Symbol     | Value      | Unit |
|------------------------------------------|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |            | K/W  |
| BAR67-02V                                |            | $\leq 115$ |      |
| BAR67-04                                 |            | $\leq 290$ |      |

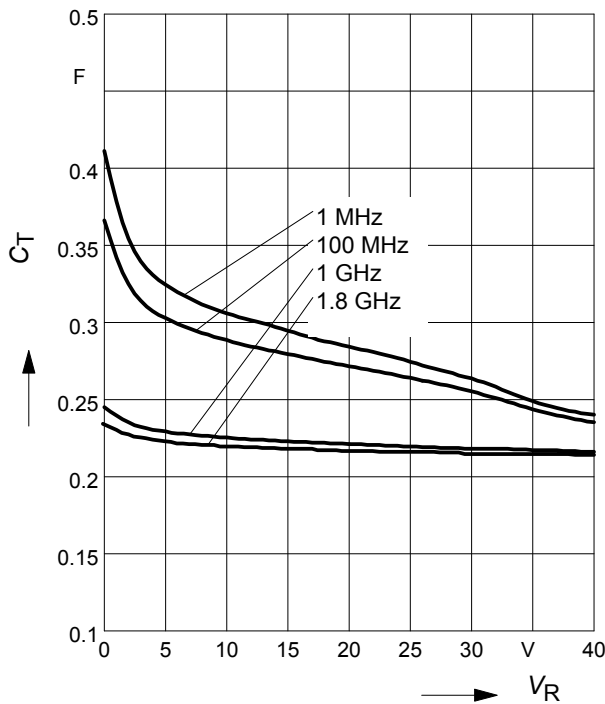
<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

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

| Parameter                                                                                                                                                                                         | Symbol      | Values           |                              |                       | Unit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------|------------------------------|-----------------------|------|
|                                                                                                                                                                                                   |             | min.             | typ.                         | max.                  |      |
| DC Characteristics                                                                                                                                                                                |             |                  |                              |                       |      |
| Breakdown voltage<br>$I_{(BR)} = 5\text{ }\mu\text{A}$                                                                                                                                            | $V_{(BR)}$  | 150              | -                            | -                     | V    |
| Reverse current<br>$V_R = 100\text{ V}$                                                                                                                                                           | $I_R$       | -                | -                            | 20                    | nA   |
| Forward voltage<br>$I_F = 50\text{ mA}$                                                                                                                                                           | $V_F$       | -                | 0.95                         | 1.2                   | V    |
| AC Characteristics                                                                                                                                                                                |             |                  |                              |                       |      |
| Diode capacitance<br>$V_R = 5\text{ V}$ , $f = 1\text{ MHz}$<br>$V_R = 0\text{ V}$ , $f = 100\text{ MHz}$<br>$V_R = 0\text{ V}$ , $f = 1\text{ GHz}$<br>$V_R = 0\text{ V}$ , $f = 1.8\text{ GHz}$ | $C_T$       | -<br>-<br>-<br>- | 0.35<br>0.35<br>0.25<br>0.23 | 0.55<br>0.9<br>-<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>-      | 25<br>4<br>2.5               | -<br>-<br>-           | kΩ   |
| Forward resistance<br>$I_F = 5\text{ mA}$ , $f = 100\text{ MHz}$<br>$I_F = 10\text{ mA}$ , $f = 100\text{ MHz}$                                                                                   | $r_f$       | -<br>-           | 1.5<br>1                     | 1.8<br>-              | Ω    |
| Charge carrier life time<br>$I_F = 10\text{ mA}$ , $I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ ,<br>$R_L = 100\text{ }\Omega$                                                           | $\tau_{rr}$ | -                | 700                          | -                     | ns   |
| I-region width                                                                                                                                                                                    | $W_I$       | -                | 13                           | -                     | μm   |

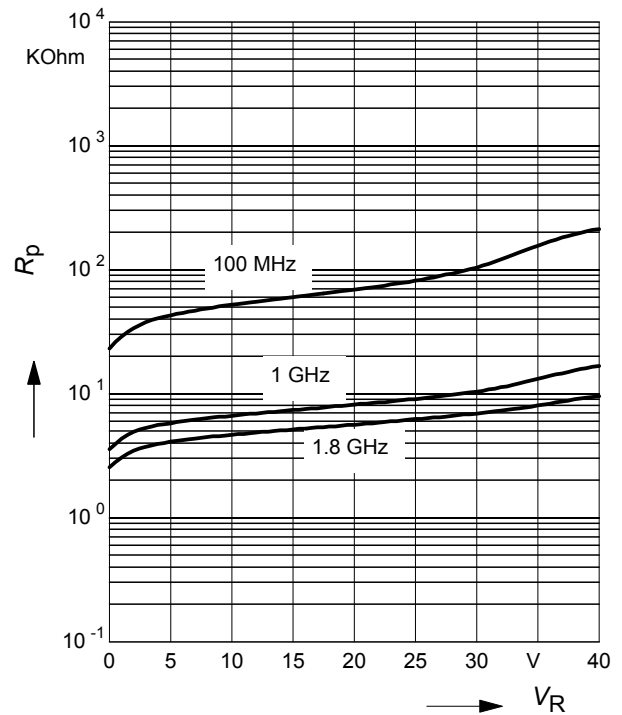
**Diode capacitance  $C_T = f(V_R)$**

$f$  = Parameter



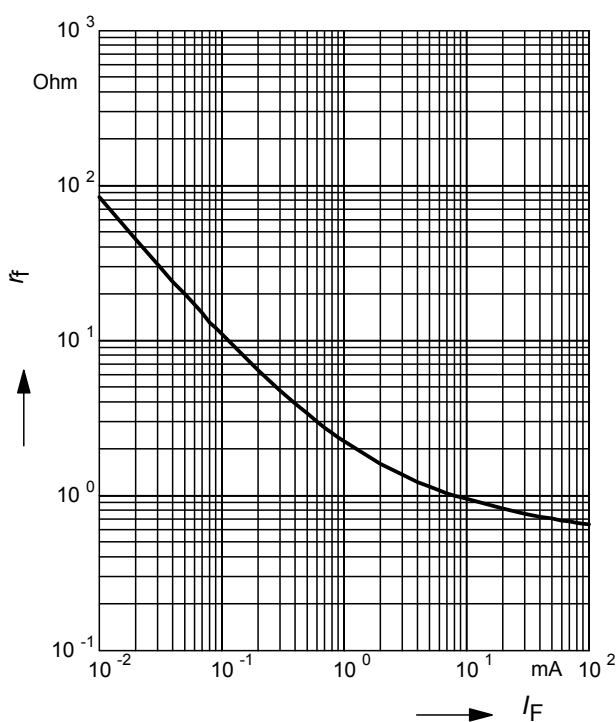
**Reverse parallel resistance  $R_P = f(V_R)$**

$f$  = Parameter



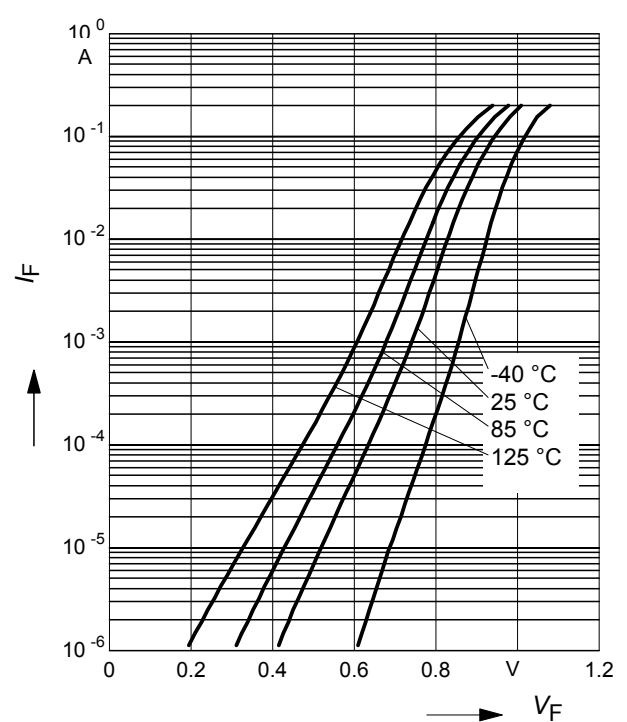
**Forward resistance  $r_f = f(I_F)$**

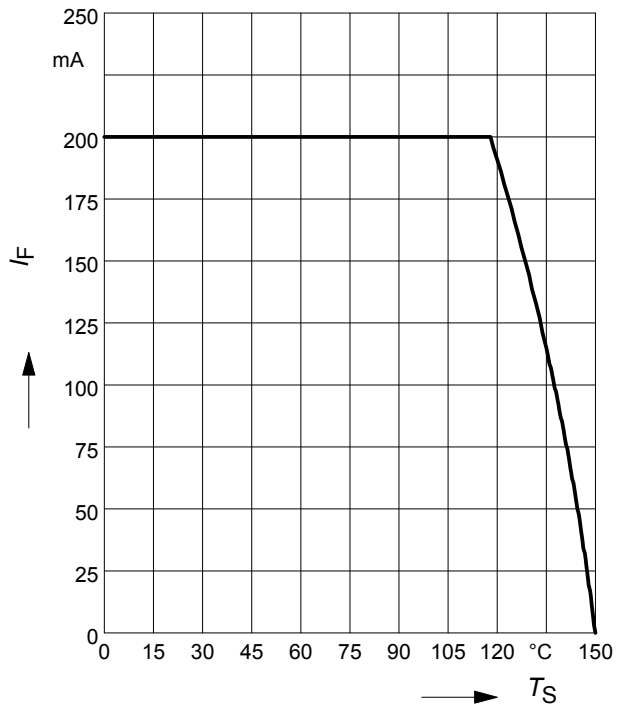
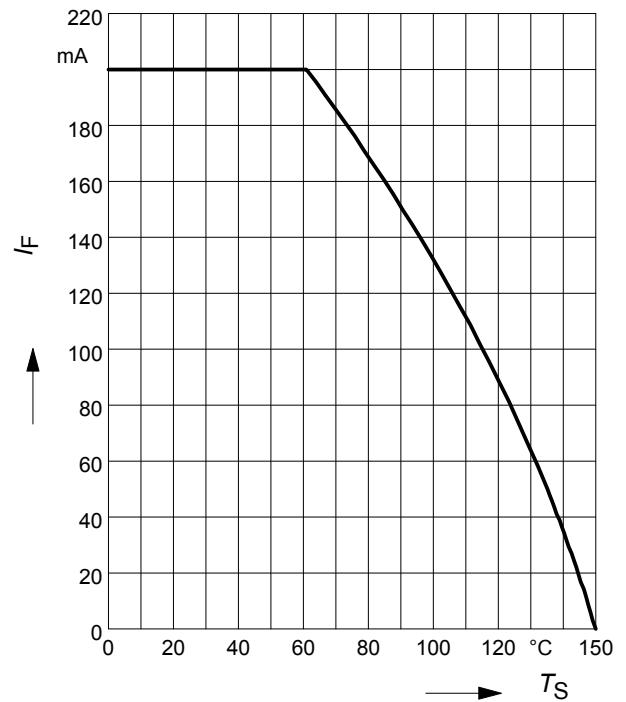
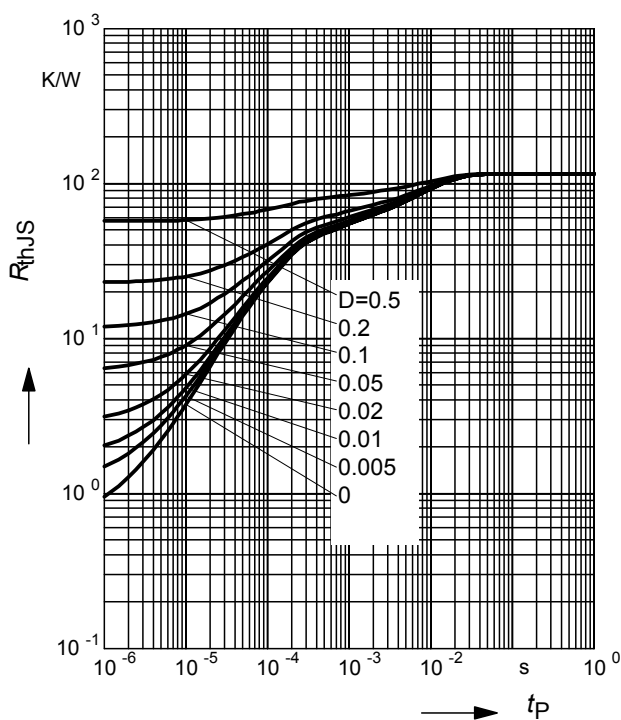
$f$  = 100MHz



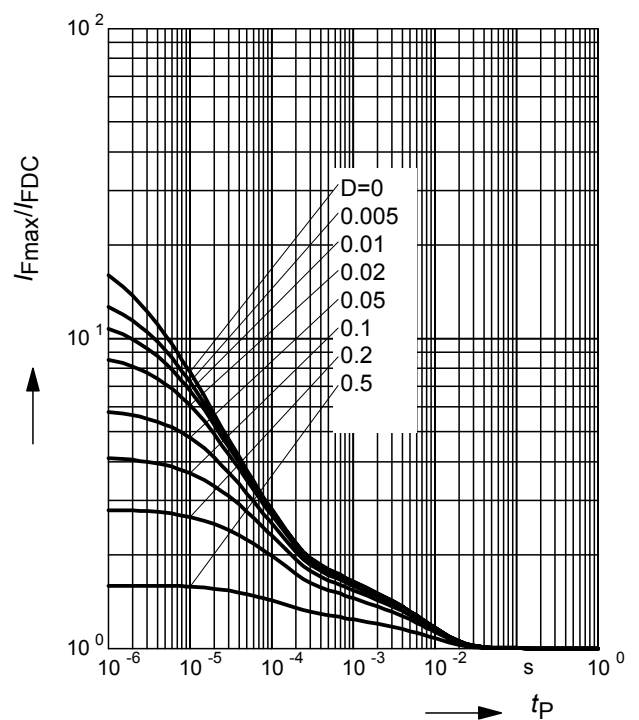
**Forward current  $I_F = f(V_F)$**

$T_A$  = Parameter



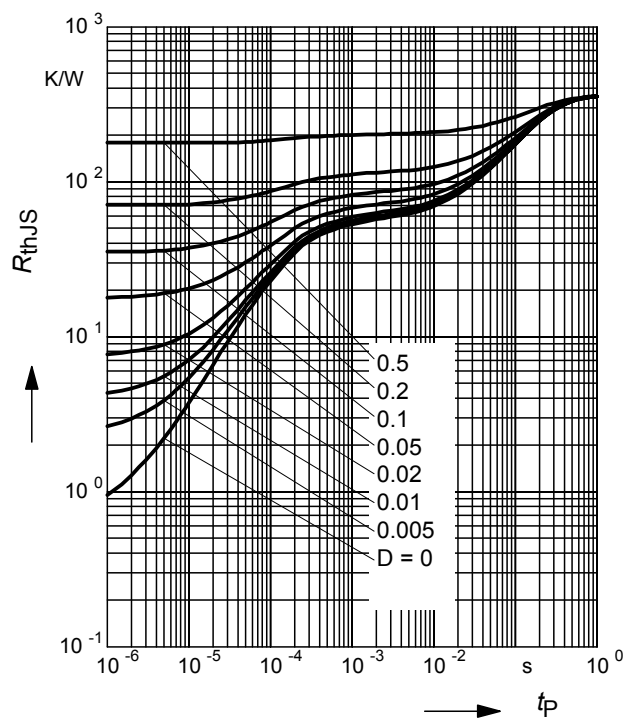
**Forward current  $I_F = f(T_S)$** 
**BAR67-02V**

**Forward current  $I_F = f(T_S)$** 
**BAR67-04**

**Permissible Puls Load  $R_{thJS} = f(t_p)$** 
**BAR67-02V**

**Permissible Pulse Load**

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

**BAR67-02V**


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

BAR67-04



2005, June  
Date code

GF

BAR63-02V  
Type code

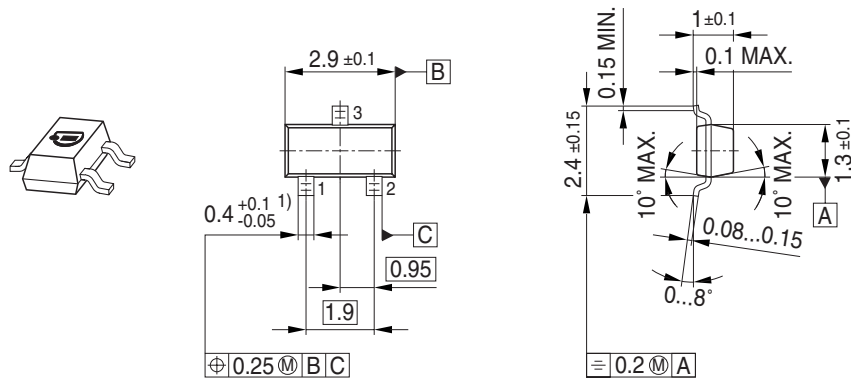
Cathode marking  
Laser marking

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

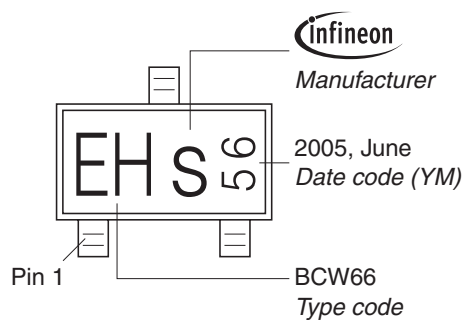


1) Lead width can be 0.6 max. in dambar area

## Foot Print

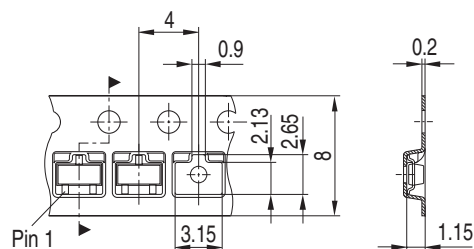


## Marking Layout (Example)



## Standard Packing

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



**Edition 2009-11-16**

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

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