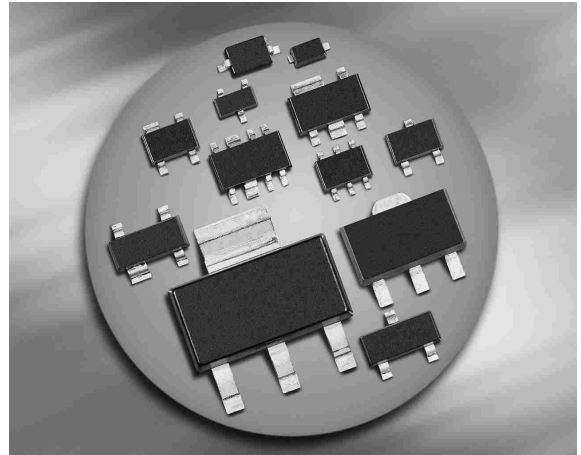
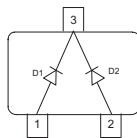
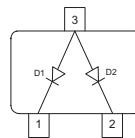


**Silicon PIN Diodes**

- PIN diode for high speed switching of RF signals
- Very low forward resistance (low insertion loss)
- Very low capacitance (high isolation)
- For frequencies up to 3GHz
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101<sup>1)</sup>


**BAR63-02..**  
**BAR63-03W**

**BAR63-04**  
**BAR63-04W**

**BAR63-05**  
**BAR63-05W**

**BAR63-06**  
**BAR63-06W**


| Type       | Package  | Configuration    | $L_s$ (nH) | Marking |
|------------|----------|------------------|------------|---------|
| BAR63-02L* | TSLP-2-1 | single, leadless | 0.4        | G       |
| BAR63-02V  | SC79     | single           | 0.6        | G       |
| BAR63-02W  | SCD80    | single           | 0.6        | GG      |
| BAR63-03W  | SOD323   | single           | 1.8        | white G |
| BAR63-04   | SOT23    | series           | 1.8        | G4s     |
| BAR63-04W  | SOT323   | series           | 1.4        | G4s     |
| BAR63-05   | SOT23    | common cathode   | 1.8        | G5s     |
| BAR63-05W  | SOT323   | common cathode   | 1.4        | G5s     |
| BAR63-06   | SOT23    | common anode     | 1.8        | G6s     |
| BAR63-06W  | SOT323   | common anode     | 1.4        | G6s     |

<sup>1)</sup>BAR63-02L is not qualified according AEC Q101

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

| Parameter                                                                                                                                                                                                                                                                            | Symbol           | Value                           | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------|------|
| Diode reverse voltage                                                                                                                                                                                                                                                                | $V_R$            | 50                              | V    |
| Forward current                                                                                                                                                                                                                                                                      | $I_F$            | 100                             | mA   |
| Total power dissipation<br>BAR63-02L, $T_S \leq 118^\circ\text{C}$<br>BAR63-02V, -02W, BAR63-03W, $T_S \leq 115^\circ\text{C}$<br>BAR63-04...BAR63-06, $T_S \leq 55^\circ\text{C}$<br>BAR63-04S, $T_S \leq 115^\circ\text{C}$<br>BAR63-04W...BAR63-06W, $T_S \leq 105^\circ\text{C}$ | $P_{\text{tot}}$ | 250<br>250<br>250<br>250<br>250 | mW   |
| Junction temperature                                                                                                                                                                                                                                                                 | $T_j$            | 150                             | °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><br>BAR63-02L<br>BAR63-02V, BAR63-02W<br>BAR63-03W<br>BAR63-04...BAR63-06<br>BAR63-04S<br>BAR63-04W...BAR63-06W | $R_{\text{thJS}}$ | $\leq 125$<br>$\leq 140$<br>$\leq 155$<br>$\leq 380$<br>$\leq 180$<br>$\leq 180$ | K/W  |

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

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**DC Characteristics**

|                                                        |                   |    |      |     |    |
|--------------------------------------------------------|-------------------|----|------|-----|----|
| Breakdown voltage<br>$I_{(\text{BR})} = 5 \mu\text{A}$ | $V_{(\text{BR})}$ | 50 | -    | -   | V  |
| Reverse current<br>$V_R = 35 \text{ V}$                | $I_R$             | -  | -    | 10  | nA |
| Forward voltage<br>$I_F = 100 \text{ mA}$              | $V_F$             | -  | 0.95 | 1.2 | V  |

<sup>1)</sup>For calculation of  $R_{\text{thJA}}$  please refer to the Technical Information

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

| Parameter                                                                                                                                                               | Symbol      | Values      |                     |             | Unit          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|---------------------|-------------|---------------|
|                                                                                                                                                                         |             | min.        | typ.                | max.        |               |
| <b>AC Characteristics</b>                                                                                                                                               |             |             |                     |             |               |
| Diode capacitance<br>$V_R = 5\text{ V}$ , $f = 1\text{ MHz}$<br>$V_R = 0\text{ V}$ , 100 MHz ... 1.8 GHz                                                                | $C_T$       | -<br>-      | 0.21<br>0.3         | 0.3<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>- | 500<br>15<br>5      | -<br>-<br>- | k $\Omega$    |
| 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>-      | 1.2<br>1            | 2<br>-      | $\Omega$      |
| Charge carrier life time<br>$I_F = 10\text{ mA}$ , $I_R = 6\text{ mA}$ , measured at $I_R = 3\text{ mA}$ ,<br>$R_L = 100\ \Omega$                                       | $\tau_{rr}$ | -           | 75                  | -           | ns            |
| I-region width                                                                                                                                                          | $W_I$       | -           | 4.5                 | -           | $\mu\text{m}$ |
| 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>- | 0.15<br>0.11<br>0.1 | -<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>- | 17.9<br>12.3<br>10  | -<br>-<br>- |               |
| Series inductance                                                                                                                                                       | $L_S$       | -           | -                   | -           |               |

<sup>1)</sup>BAR63-02L in series configuration,  $Z = 50\ \Omega$

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

$f = 1\text{MHz} - 1.8\text{GHz}$



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

$f = \text{Parameter}$



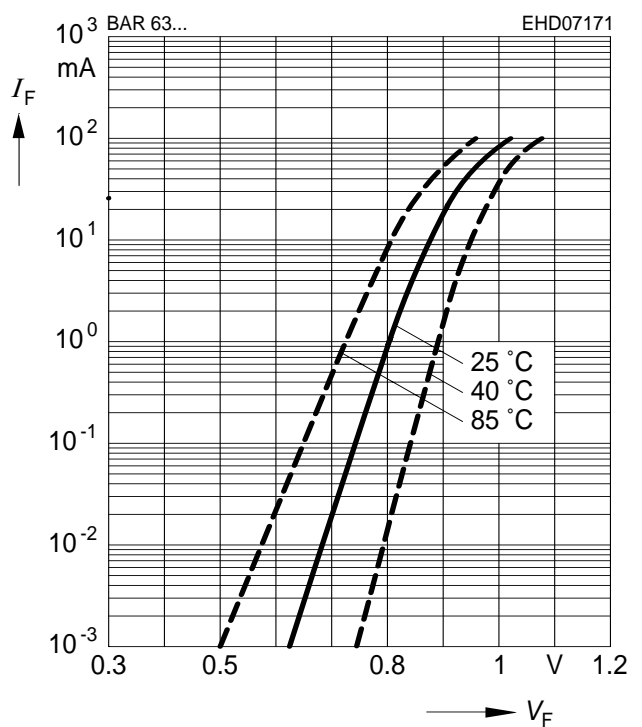
**Forward resistance  $r_f = f(I_F)$**

$f = 100\text{MHz}$



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

$T_A = \text{Parameter}$



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

BAR63-04...BAR63-06



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

BAR63-02V, BAR63-02W



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

BAR63-03W



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

BAR63-04W...BAR63-06W



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

BAR63-04...BAR63-06



**Permissible Pulse Load**

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

BAR63-04...BAR63-06



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

BAR63-02V, BAR63-02W



**Permissible Pulse Load**

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

BAR63-02V, BAR63-02W



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

BAR63-03W



**Permissible Pulse Load**

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

BAR63-03W



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

BAR63-04W...BAR63-06W



**Permissible Pulse Load**

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

BAR63-04W...BAR63-06W



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

$I_F =$  Parameter

BAR63-02L in series configuration,  $Z = 50\Omega$



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

$V_R =$  Parameter

BAR63-02L in series configuration,  $Z = 50\Omega$





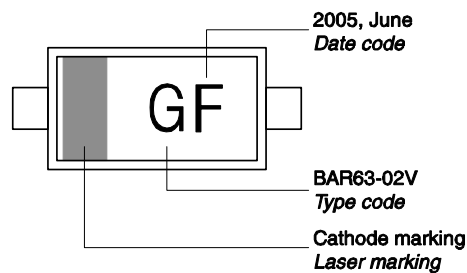
### Package Outline



### 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



Package Outline



Foot Print

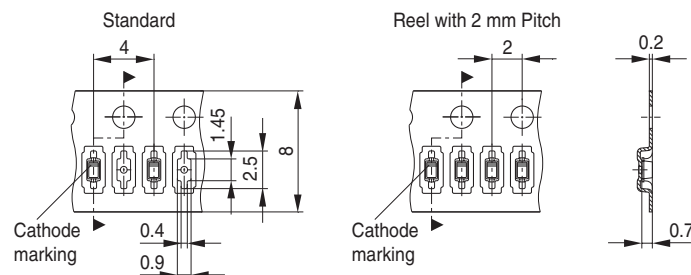


Marking Layout (Example)



Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 180 mm = 8.000 Pieces/Reel (2 mm Pitch)  
 Reel  $\varnothing$ 330 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 ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



Package Outline



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

Foot Print



Marking Layout (Example)



Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 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



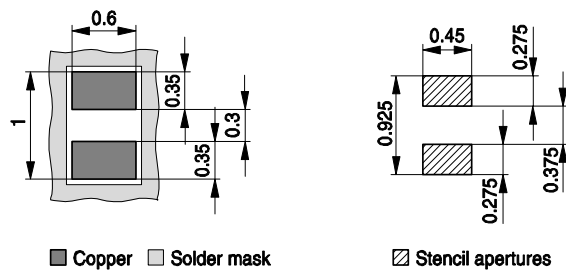
### Package Outline



1) Dimension applies to plated terminal

### Foot Print

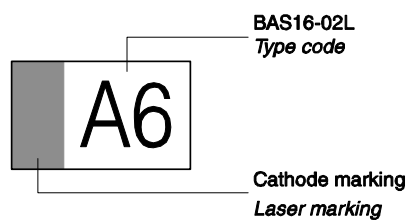
For board assembly information please refer to Infineon website "Packages"



■ Copper □ Solder mask

▨ Stencil apertures

### Marking Layout (Example)



### Standard Packing

Reel  $\varnothing$ 180 mm = 15.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 50.000 Pieces/Reel (optional)

