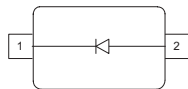
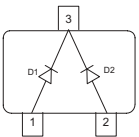


### Silicon Tuning Diode

- High Q hyperabrupt tuning diode
- Designed for low tuning voltage operation
- For VCO's in mobile communications equipment
- Pb-free (RoHS compliant) package <sup>1)</sup>
- Qualified according AEC Q101


**BBY51**
**BBY51-02L**  
**BBY51-02W**  
**BBY51-03W**


| Type      | Package  | Configuration    | $L_S$ (nH) | Marking |
|-----------|----------|------------------|------------|---------|
| BBY51     | SOT23    | common cathode   | 2          | S3s     |
| BBY51-02L | TSLP-2-1 | single, leadless | 0.4        | II      |
| BBY51-02W | SCD80    | single           | 0.6        | II      |
| BBY51-03W | SOD323   | single           | 1.8        | H       |

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

| Parameter                   | Symbol    | Value       | Unit |
|-----------------------------|-----------|-------------|------|
| Diode reverse voltage       | $V_R$     | 7           | V    |
| Forward current             | $I_F$     | 20          | mA   |
| Operating temperature range | $T_{Op}$  | -55 ... 125 | °C   |
| Storage temperature         | $T_{stg}$ | -55 ... 150 |      |

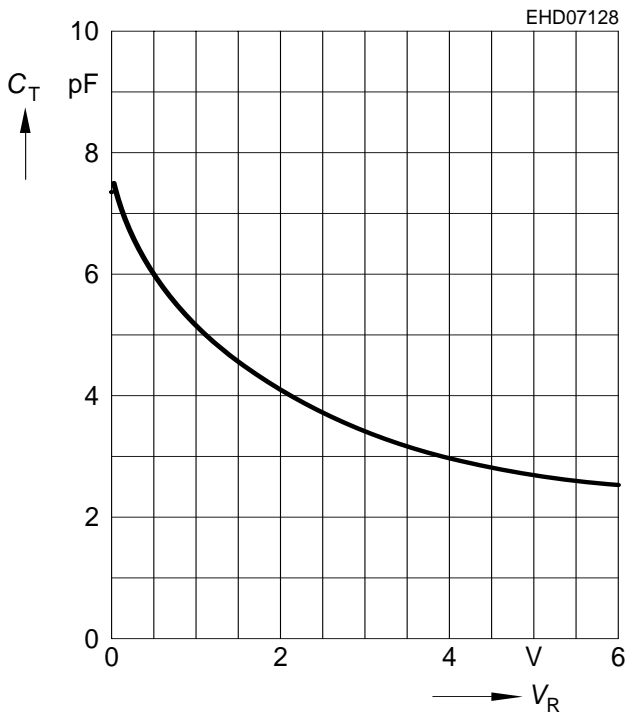
<sup>1</sup>Pb-containing package may be available upon special request

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

| Parameter  | Symbol          | Values |      |      | Unit     |
|--|-----------------|--------|------|------|----------|
|  |                 | min.   | typ. | max. |          |
| <b>DC Characteristics</b>                              |                 |        |      |      |          |
| Reverse current  | $I_R$           |        |      |      | nA       |
| $V_R = 6\text{ V}$                                     |                 | -      | -    | 10   |          |
| $V_R = 6\text{ V}, T_A = 85^\circ\text{C}$             |                 | -      | -    | 200  |          |
| <b>AC Characteristics</b>                              |                 |        |      |      |          |
| Diode capacitance                                      | $C_T$           |        |      |      | pF       |
| $V_R = 1\text{ V}, f = 1\text{ MHz}$                   |                 | 5.05   | 5.4  | 5.75 |          |
| $V_R = 2\text{ V}, f = 1\text{ MHz}$                   |                 | 3.4    | 4.2  | 5.2  |          |
| $V_R = 3\text{ V}, f = 1\text{ MHz}$                   |                 | 2.7    | 3.5  | 4.6  |          |
| $V_R = 4\text{ V}, f = 1\text{ MHz}$                   |                 | 2.5    | 3.1  | 3.7  |          |
| Capacitance ratio                                      | $C_{T1}/C_{T4}$ | 1.55   | 1.75 | 2.2  |          |
| $V_R = 1\text{ V}, V_R = 4\text{ V}, f = 1\text{ MHz}$ |                 |        |      |      |          |
| Capacitance difference                                 | $C_{1V}-C_{3V}$ | 1.4    | 1.78 | 2.2  | pF       |
| $V_R = 1\text{ V}, V_R = 3\text{ V}, f = 1\text{ MHz}$ |                 |        |      |      |          |
| Capacitance difference                                 | $C_{3V}-C_{4V}$ | 0.3    | 0.5  | 0.7  |          |
| $V_R = 3\text{ V}, V_R = 4\text{ V}, f = 1\text{ MHz}$ |                 |        |      |      |          |
| Series resistance                                      | $r_S$           | -      | 0.37 | -    | $\Omega$ |
| $V_R = 1\text{ V}, f = 1\text{ GHz}$                   |                 |        |      |      |          |

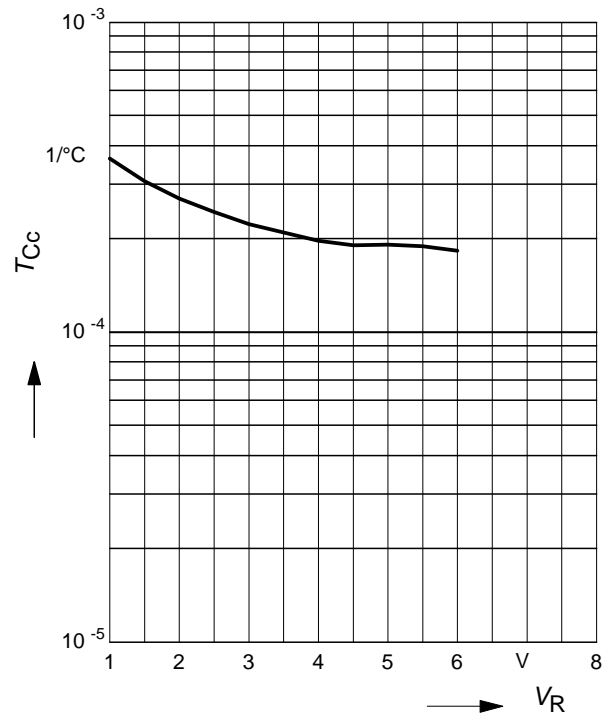
**Diode capacitance**  $C_T = f(V_R)$

$f = 1\text{MHz}$

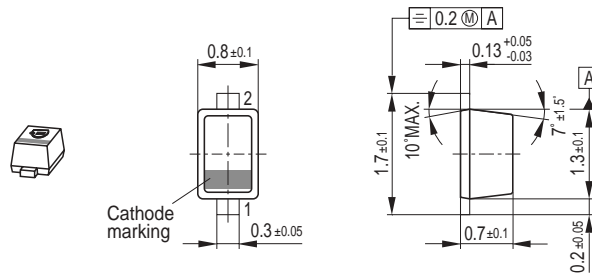


**Temperature coefficient of the diode**

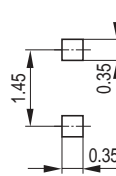
**capacitance**  $T_{Cc} = f(V_R)$



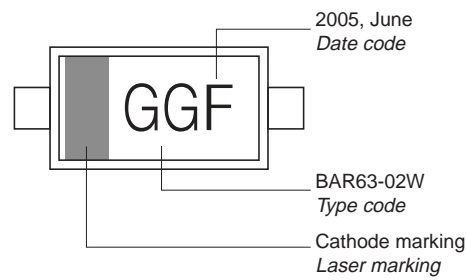
Package Outline



Foot Print

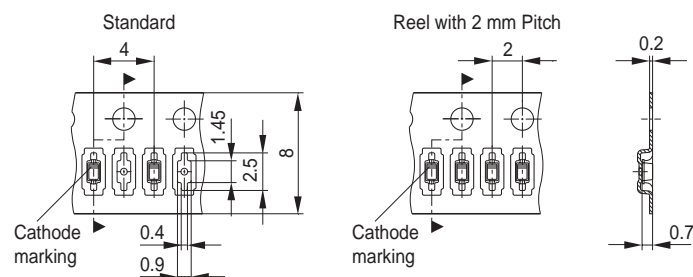


Marking Layout (Example)



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

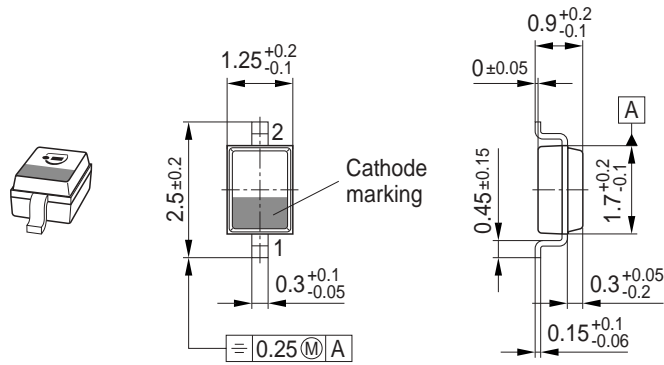


Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

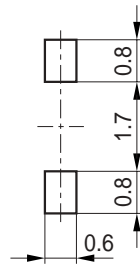
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01    | a    | p    | A    | P    | a    | p    | A    | P    | a    | p    | A    | P    |
| 02    | b    | q    | 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.

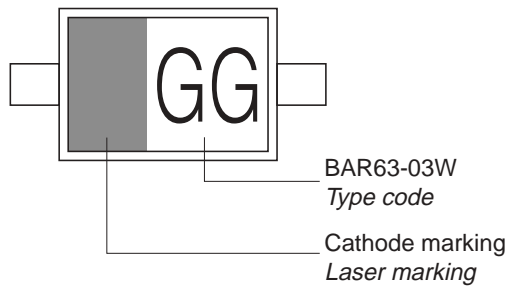
Package Outline



Foot Print

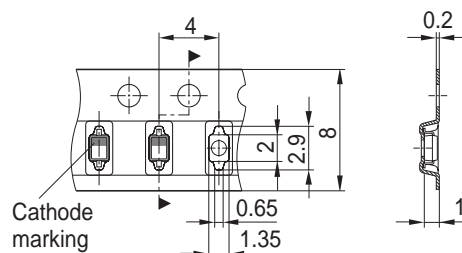


Marking Layout (Example)

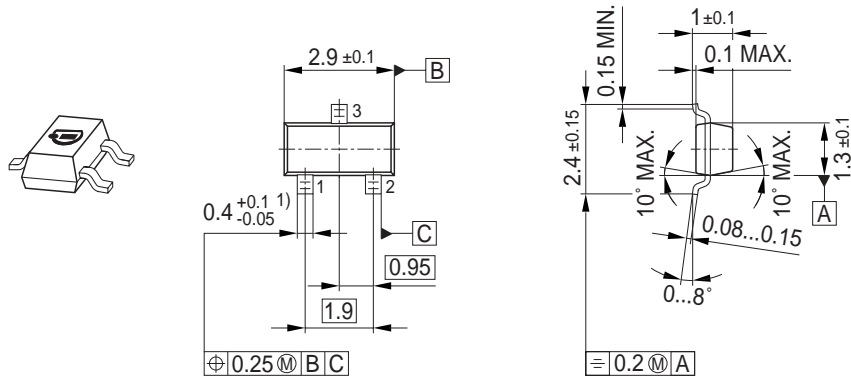


Standard Packing

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

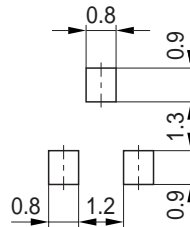


Package Outline

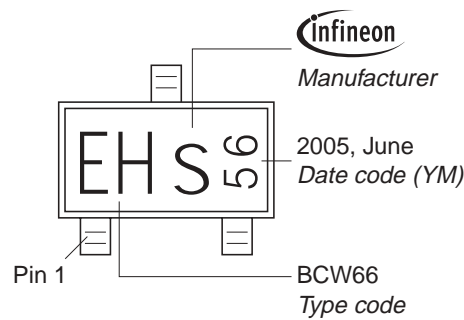


1) Lead width can be 0.6 max. in dambar area

Foot Print

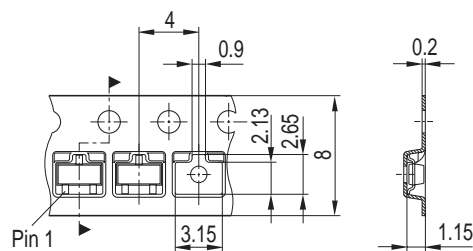


Marking Layout (Example)

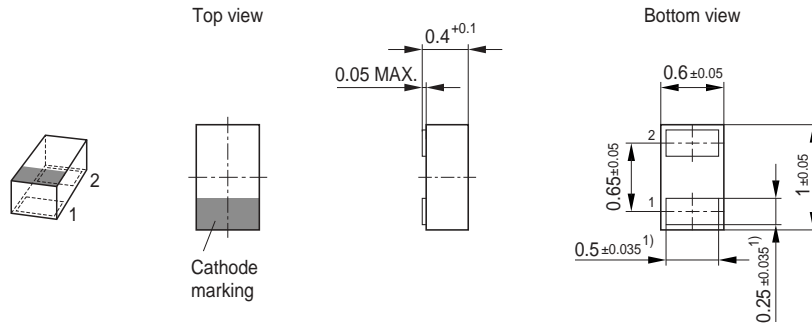


Standard Packing

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



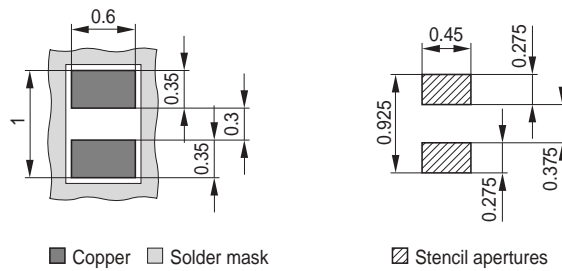
### Package Outline



1) Dimension applies to plated terminal

### Foot Print

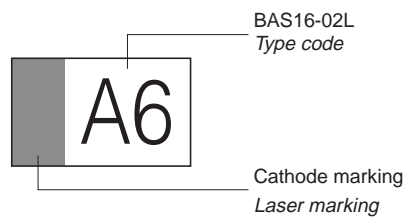
For board assembly information please refer to Infineon website "Packages"



■ Copper □ Solder mask

▨ Stencil apertures

### Marking Layout (Example)

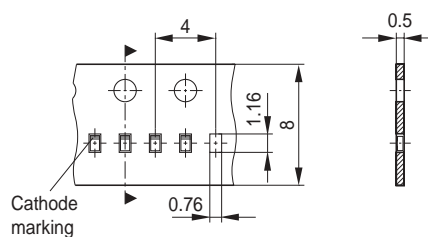


BAS16-02L  
Type code

Cathode marking  
Laser marking

### Standard Packing

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





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