



# BB172

## VHF variable capacitance diode

Rev. 2 — 3 December 2013

Product data sheet

## 1. Product profile

### 1.1 General description

The BB172 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 (SC-76) very small SMD plastic package.

### 1.2 Features and benefits

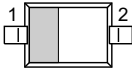

- Excellent linearity
- Very small SMD plastic package
- $C_{d(28V)} = 2.6 \text{ pF}$ ;  $C_{d(1V)}$  to  $C_{d(28V)}$  ratio = 15
- Low series resistance

### 1.3 Applications

- Voltage Controlled Oscillators (VCO)

## 2. Pinning information

Table 1. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode		 <i>sym008</i>
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

### 3.1 Package information

Table 2. Package information

Type number	Package		
	Name	Description	Version
BB172	SC-76	plastic surface-mounted package; 2 leads	SOD323



### 3.2 Ordering information

Table 3. Ordering options

Type number	Orderable part number	Package	Packing method	Minimum order quantity
BB172	BB172X	SC-76	tape and reel	3000

## 4. Marking

Table 4. Marking

Type number	Marking code
BB172	4K

## 5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	32	V
		peak value in series with a 10 k $\Omega$ resistor	-	35	V
$I_F$	forward current		-	20	mA
$T_{stg}$	storage temperature		-55	+150	°C
$T_j$	junction temperature		-55	+125	°C

## 6. Characteristics

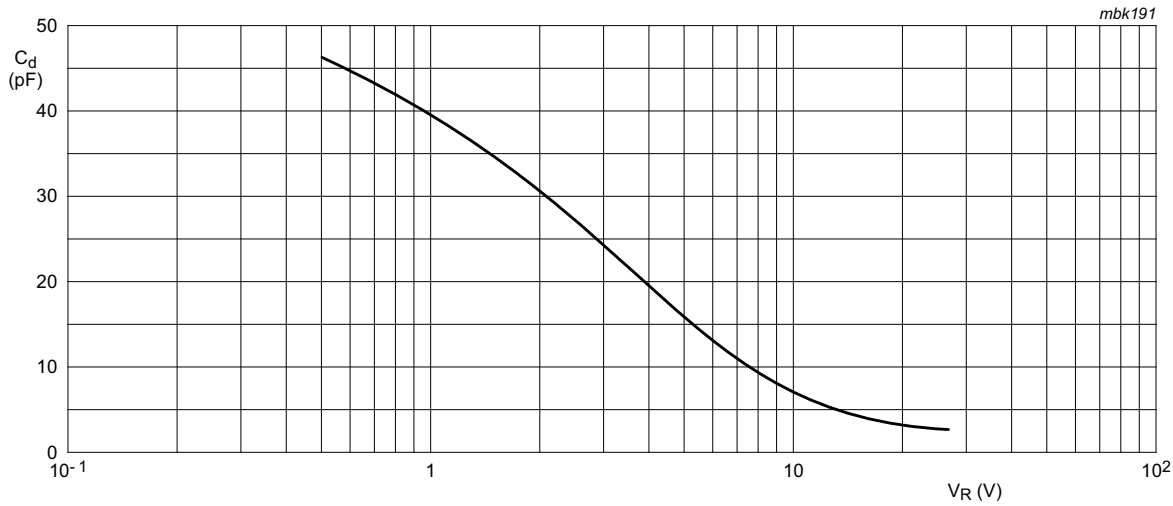
Table 6. Characteristics

$T_j = 25\text{ °C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_R$	reverse current	$V_R = 30\text{ V}$	[1] -	-	10	nA
		$V_R = 30\text{ V}; T_j = 85\text{ °C}$	[1] -	-	200	nA
$r_s$	diode series resistance	$f = 100\text{ MHz}; C_d = 30\text{ pF}$	-	0.65	0.8	$\Omega$
$C_d$	diode capacitance	$f = 1\text{ MHz}$	[2]			
		$V_R = 1\text{ V}$	34.65	-	42.35	pF
		$V_R = 28\text{ V}$	2.361	2.6	2.754	pF
$C_{d(1V)}/C_{d(2V)}$	diode capacitance ratio (1 V to 2 V)	$f = 1\text{ MHz}$	-	1.3	-	
$C_{d(1V)}/C_{d(28V)}$	diode capacitance ratio (1 V to 28 V)	$f = 1\text{ MHz}$	13.5	15	-	
$C_{d(25V)}/C_{d(28V)}$	diode capacitance ratio (25 V to 28 V)	$f = 1\text{ MHz}$	-	1.08	-	

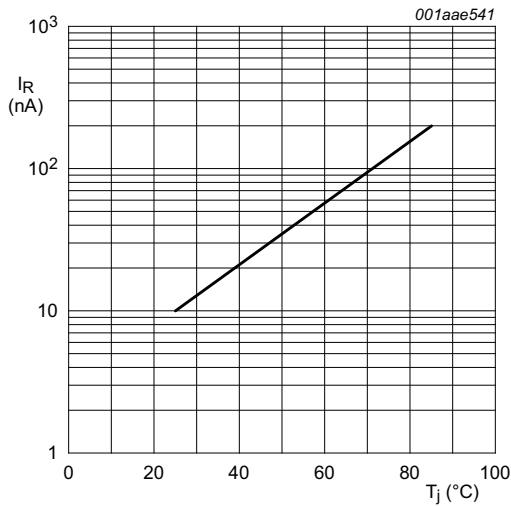
[1] See [Figure 2](#).

[2] See [Figure 1](#) and [Figure 3](#).

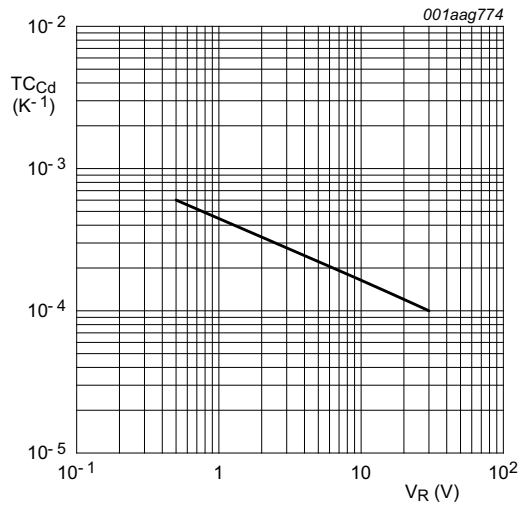


$f = 1 \text{ MHz}$ ;  $T_j = 25^\circ\text{C}$ .

**Fig 1.** Diode capacitance as a function of reverse voltage; typical values.



**Fig 2.** Reverse current as a function of junction temperature; maximum values.



$T_j = 0^\circ\text{C}$  to  $85^\circ\text{C}$ .

**Fig 3.** Diode capacitance temperature coefficient as a function of reverse voltage; typical values.

7. Package outline

Plastic surface-mounted package; 2 leads

SOD323

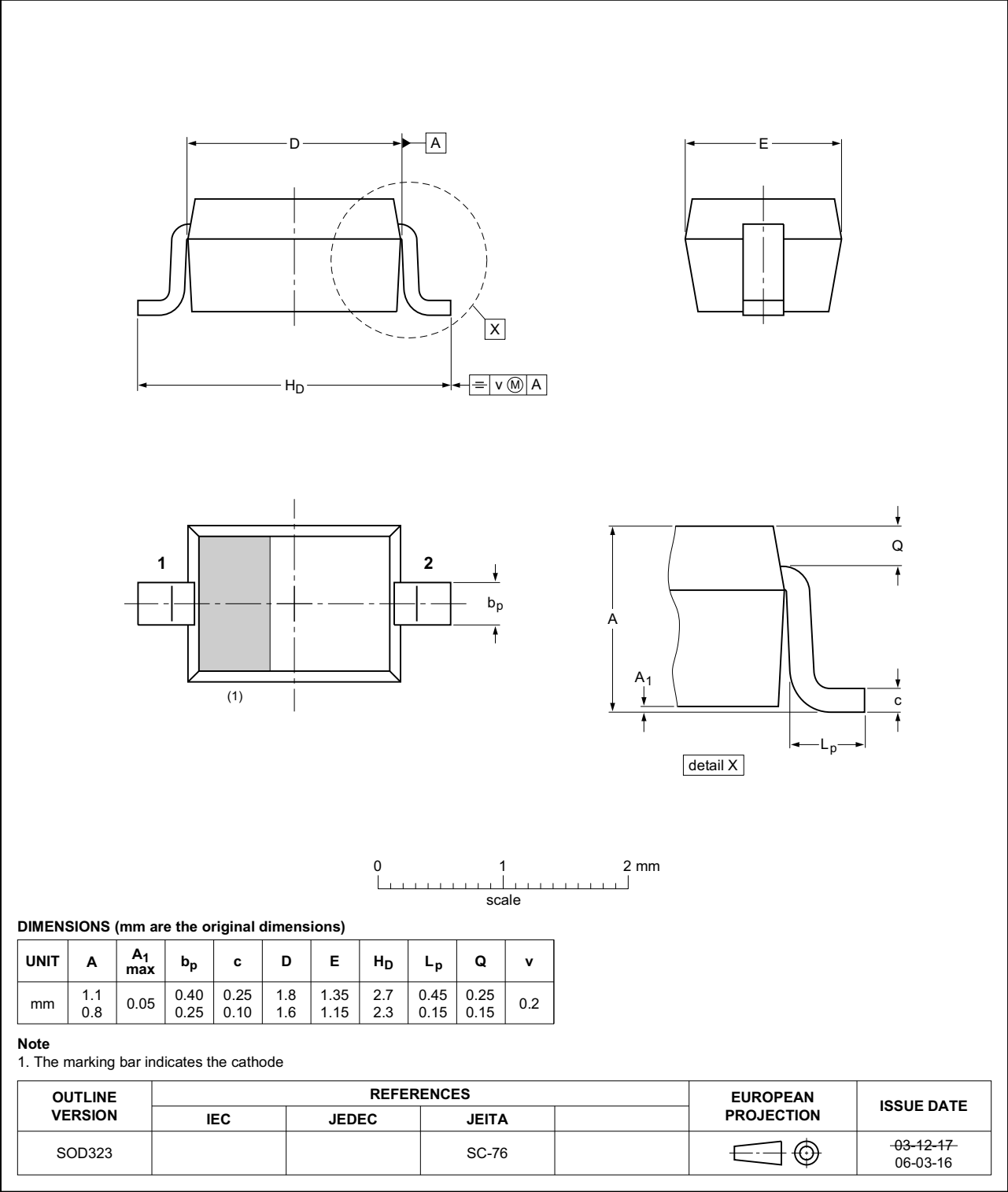


Fig 4. Package outline SOD323 (SC-76)

## 8. Abbreviations

Table 7. Abbreviations

Acronym	Description
SMD	Surface Mounted Device
VHF	Very High Frequency

## 9. Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB172 v.2	20131203	Product data sheet	-	BB172 v.1
Modifications	• <a href="#">Section 3 on page 1</a> : additional ordering information has been added			
BB172 v.1	20130325	Product data sheet	-	-

## 10. Legal information

### 10.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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[2] The term 'short data sheet' is explained in section "Definitions".

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