



**THE DATASHEET OF  
BB174X**





# BB174

VHF variable capacitance diode

Rev. 1 — 25 March 2013

Product data sheet

## 1. Product profile

### 1.1 General description

The BB174 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD523 (SC-79) ultra small SMD plastic package.

### 1.2 Features and benefits

- Excellent linearity
- Ultra small SMD plastic package
- $C_{d(28V)} = 2.1 \text{ pF}$ ;  $C_{d(1V)}$  to  $C_{d(28V)}$  ratio = 9
- Low series resistance

### 1.3 Applications

- Voltage Controlled Oscillators (VCO)

## 2. Pinning information

Table 1. Pinning

Pin	Description	Simplified outline	Symbol
1	cathode	<a href="#">[1]</a>	 sym008
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BB174	SC-79	plastic surface-mounted package; 2 leads	SOD523



## 4. Marking

**Table 3. Marking**

Type number	Marking code
BB174	CF

## 5. Limiting values

**Table 4. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	30	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	$^{\circ}\text{C}$
$T_j$	junction temperature		-55	+125	$^{\circ}\text{C}$

## 6. Characteristics

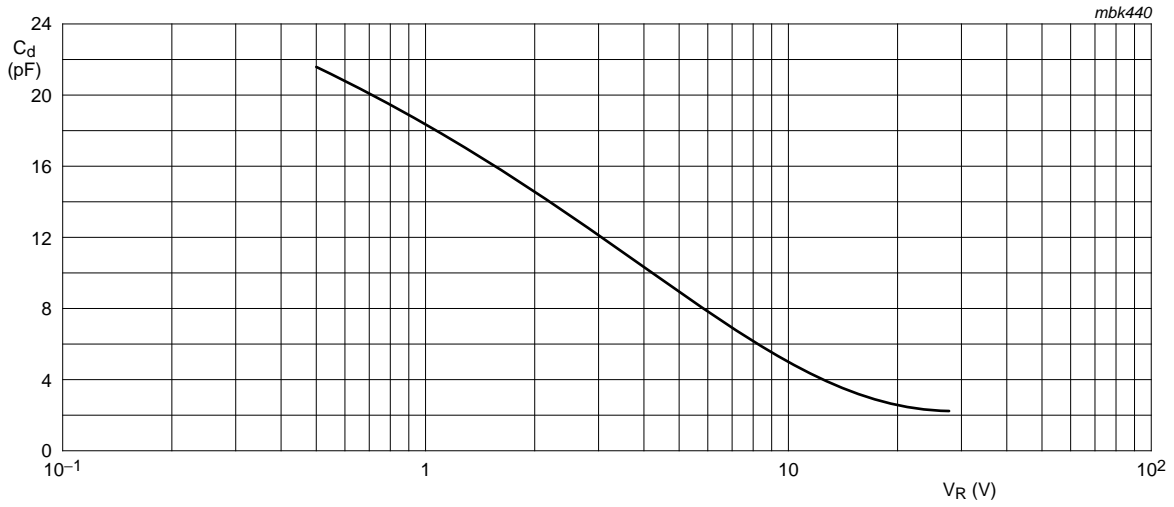
**Table 5. Characteristics**

*$T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$I_R$	reverse current	$V_R = 30\text{ V}$	[1]	-	10	nA	
		$V_R = 30\text{ V}; T_j = 85\text{ }^{\circ}\text{C}$	[1]	-	200	nA	
$r_s$	diode series resistance	$f = 470\text{ MHz}; C_d = 9\text{ pF}$	-	0.6	0.75	$\Omega$	
$C_d$	diode capacitance	$f = 1\text{ MHz}$	[2]				
		$V_R = 1\text{ V}$		18.22	-	21.26	pF
		$V_R = 28\text{ V}$		1.951	2.1	2.225	pF
$C_{d(1V)}/C_{d(2V)}$	diode capacitance ratio (1 V to 2 V)	$f = 1\text{ MHz}$	-	1.27	-		
$C_{d(1V)}/C_{d(28V)}$	diode capacitance ratio (1 V to 28 V)	$f = 1\text{ MHz}$	8.45	9	10.9		
$C_{d(25V)}/C_{d(28V)}$	diode capacitance ratio (25 V to 28 V)	$f = 1\text{ MHz}$	-	1.05	-		

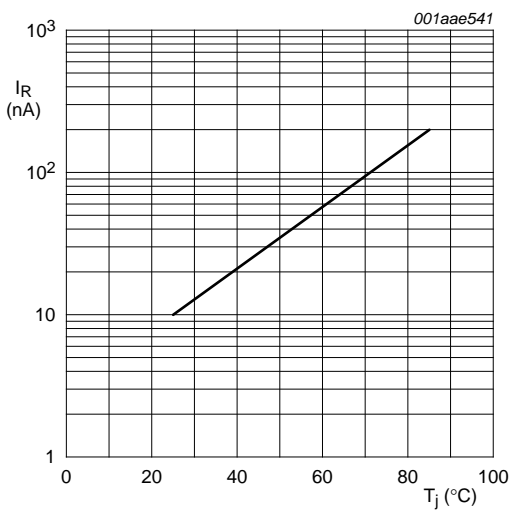
[1] See [Figure 2](#).

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

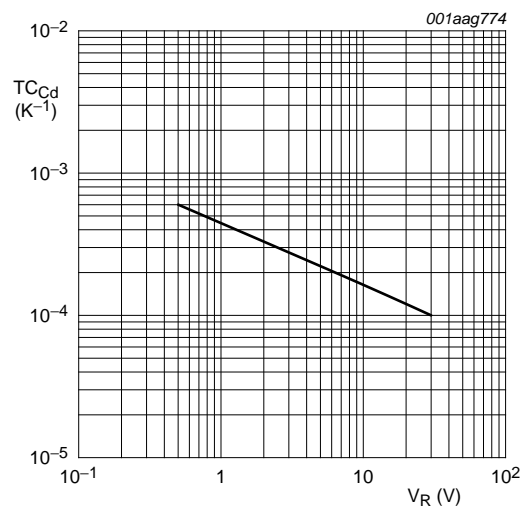


$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

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



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



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

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

## 7. Package outline

Plastic surface-mounted package; 2 leads

SOD523

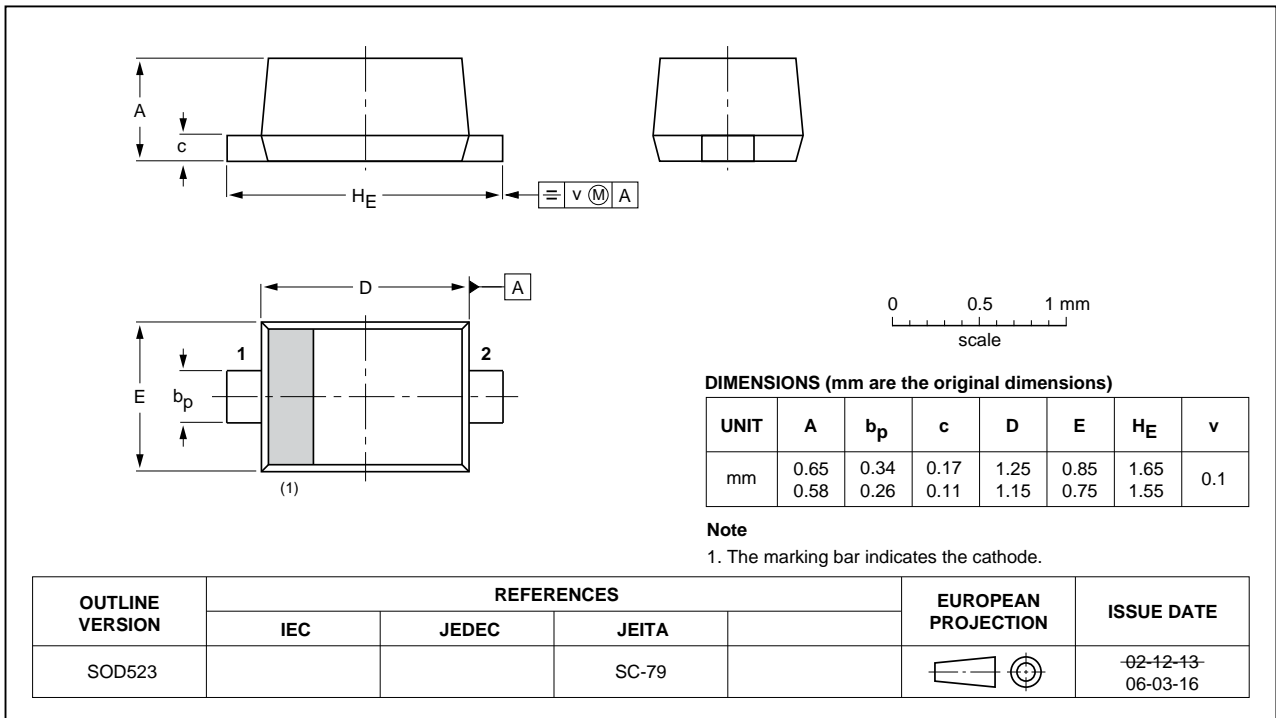


Fig 4. Package outline SOD523 (SC-79)

## 8. Abbreviations

Table 6. Abbreviations

Acronym	Description
SMD	Surface Mounted Device
VHF	Very High Frequency

## 9. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB174 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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