

# BB181

## VHF variable capacitance diode

Rev. 03 — 16 February 2009

Product data sheet

## 1. Product profile

### 1.1 General description

The BB181 is a variable capacitance diode, fabricated in planar technology and encapsulated in the SOD523 (SC-79) ultra small plastic SMD package.

### 1.2 Features




- Excellent linearity
- Ultra small plastic SMD package
- $C_{d(28V)} : 1 \text{ pF}$ ;  $C_{d(0V)}$  to  $C_{d(28V)}$  ratio : 14

### 1.3 Applications

- Electronic tuning in satellite tuners
- Tunable coupling
- Voltage Controlled Oscillators (VCO)

## 2. Pinning information

Table 1. Pinning

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

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BB181	SC-79	plastic surface mounted package; 2 leads	SOD523

## 4. Marking

Table 3. Marking codes

Type number	Marking code
BB181	N

## 5. Limiting values

Table 4. Limiting values

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

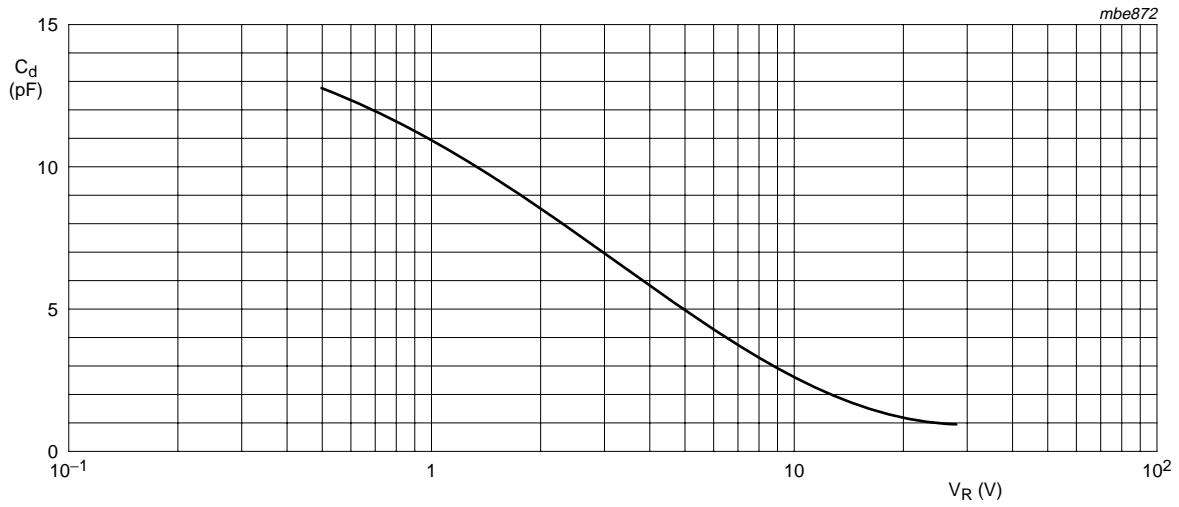
Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	30	V
$I_F$	forward current		-	20	mA
$T_{stg}$	storage temperature		-55	+150	°C
$T_j$	junction temperature		-55	+150	°C

## 6. Characteristics

Table 5. Characteristics

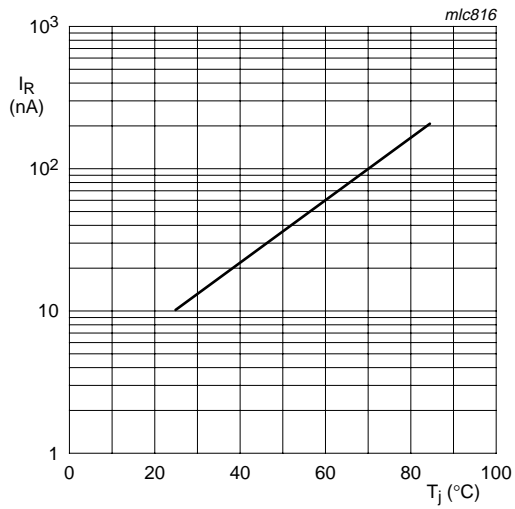
$T_j = 25\text{ °C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_R$	reverse current	see <a href="#">Figure 2</a>				
		$V_R = 30\text{ V}$	-	-	10	nA
		$V_R = 30\text{ V}; T_j = 85\text{ °C}$	-	-	200	nA
$r_s$	diode series resistance	$f = 470\text{ MHz}$ at $C_d = 9\text{ pF}$	-	-	3	$\Omega$
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and <a href="#">Figure 3</a>				
		$V_R = 0.5\text{ V}$	8	-	17	pF
		$V_R = 28\text{ V}$	0.7	-	1.055	pF
$C_{d(0V5)}/C_{d(28V)}$	diode capacitance ratio (0.5 V to 28 V)	$f = 1\text{ MHz}$	12	-	16	

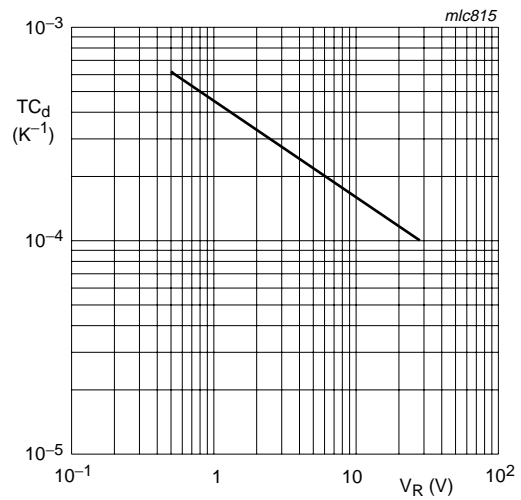


$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

**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. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values**

## 7. Package outline

Plastic surface-mounted package; 2 leads

SOD523

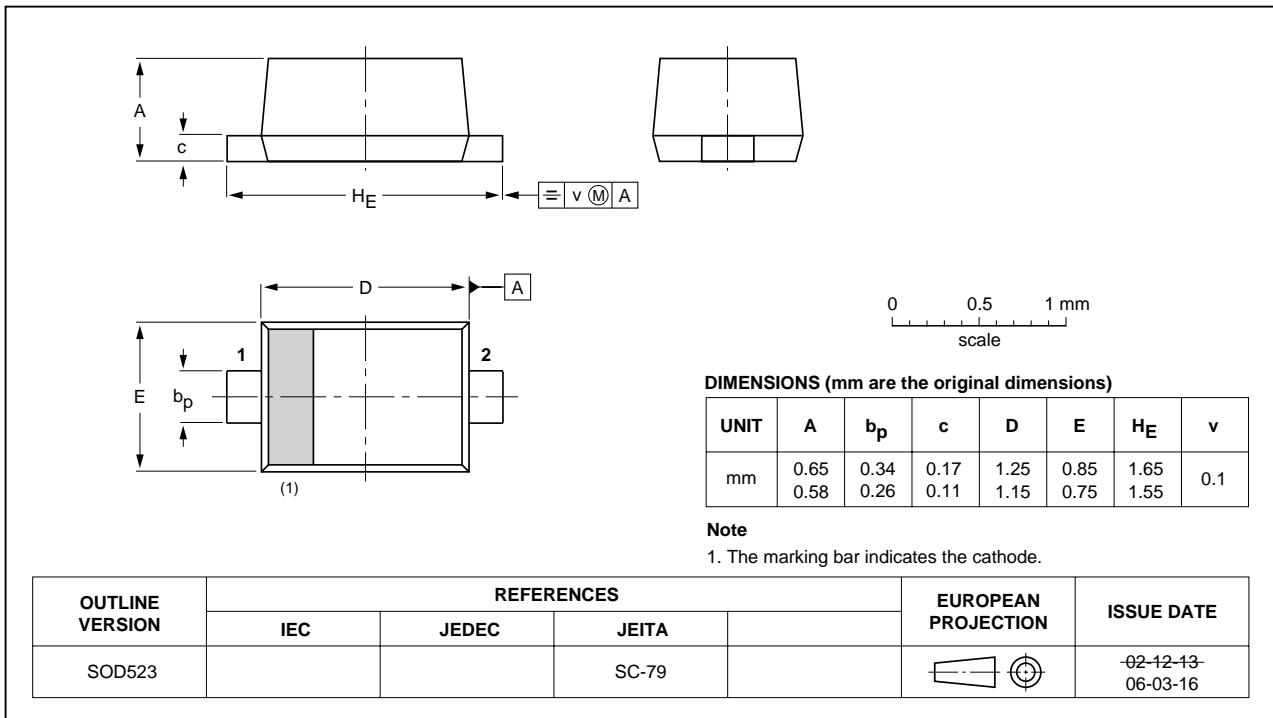


Fig 4. Package outline SOD523 (SC-79)

## 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
BB181_3	20090216	Product data sheet	-	BB181_N_2
Modifications:	<ul style="list-style-type: none"> <li>The format of this data sheet has been redesigned to comply with the new presentation and information standard of NXP semiconductors</li> </ul>			
BB181_N_2	20080102	Product data sheet	-	BB181_1
BB181_1	19981126	Product specification	-	-

## 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.

[1] Please consult the most recently issued document before initiating or completing a design.

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

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