

# BB208-02; BB208-03

Low voltage variable capacitance diode

Rev. 2 — 8 September 2011

Product data sheet

## 1. Product profile

### 1.1 General description

The BB208-02 is a planar technology variable capacitance diode in a SOD523 (SC-79) ultra small SMD plastic package.

The BB208-03 is a planar technology variable capacitance diode in a SOD323 (SC-76) very small SMD plastic package.

### 1.2 Features and benefits

- Very small SMD plastic packages
- Very low series resistance
- Excellent CV linearity
- $C_{d(1V)}$ : 21.5 pF;  $C_{d(7.5V)}$ : 4.9 pF
- High ratio.

### 1.3 Applications

- Voltage Controlled Oscillators (VCO)
- Voltage Controlled Crystal Oscillators/Temperature Controlled Crystal Oscillators (VCXO/TCXO).

## 2. Pinning information

Table 1. Discrete pinning: SOD523



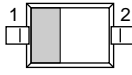

Pin	Description	Simplified outline	Symbol
1	cathode		 <i>sym008</i>
2	anode		

Table 2. Discrete pinning: SOD323

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

### 3. Ordering information

Table 3. Ordering information

Type number	Package		Version
	Name	Description	
BB208-02	-	plastic surface mounted package; 2 leads	SOD523
BB208-03	-	plastic surface mounted package; 2 leads	SOD323

### 4. Marking

Table 4. Marking

Type number	Marking code
BB208-02	A1
BB208-03	A2

### 5. Limiting values

Table 5. Limiting values

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

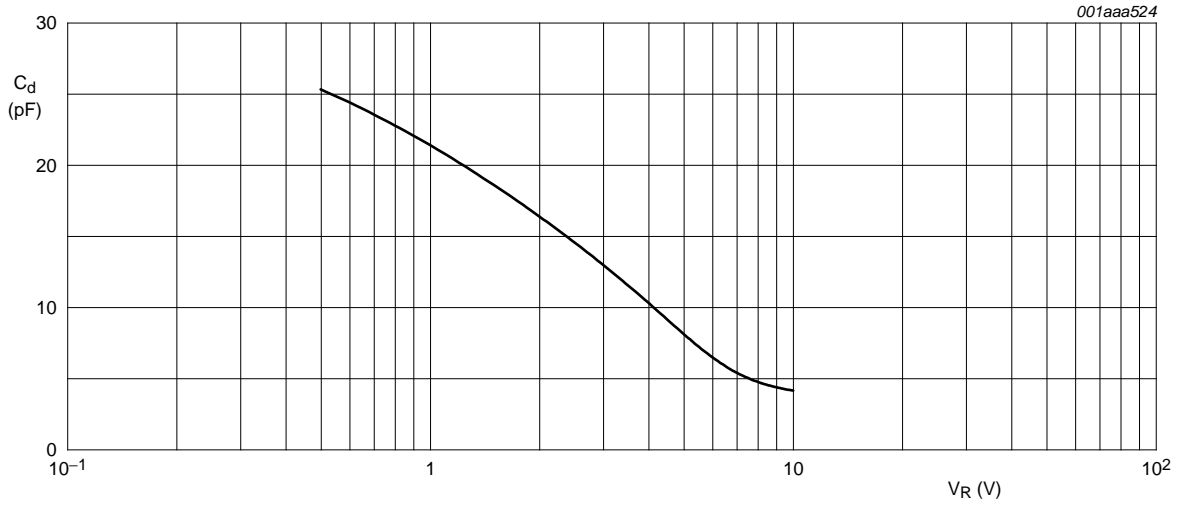
Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	continuous reverse voltage		-	10	V
$I_F$	continuous forward current		-	20	mA
$T_{stg}$	storage temperature		-55	+150	°C
$T_j$	operating junction temperature		-55	+125	°C

### 6. Characteristics

Table 6. Electrical characteristics

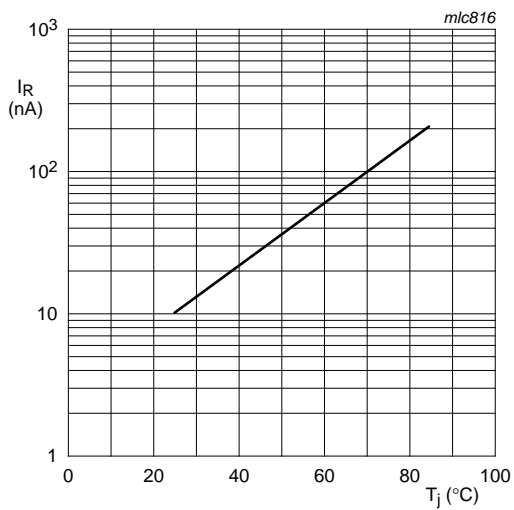
$T_j = 25\text{ °C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_R$	reverse current	$V_R = 10\text{ V}$ ; see <a href="#">Figure 2</a>	-	-	10	nA
		$V_R = 10\text{ V}$ ; $T_j = 85\text{ °C}$ ; see <a href="#">Figure 2</a>	-	-	200	nA
$r_s$	diode series resistance	$f = 100\text{ MHz}$ ; $V_R = 3\text{ V}$	-	0.35	0.5	$\Omega$
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and <a href="#">Figure 3</a>				
		$V_R = 1\text{ V}$	19.9	-	23.2	pF
		$V_R = 4\text{ V}$	-	10.1	-	pF
		$V_R = 7.5\text{ V}$	4.5	-	5.4	pF
$\frac{C_{d(1V)}}{C_{d(4V)}}$	capacitance ratio	$f = 1\text{ MHz}$	2.0	-	-	
$\frac{C_{d(1V)}}{C_{d(7.5V)}}$	capacitance ratio	$f = 1\text{ MHz}$	3.7	-	5.2	

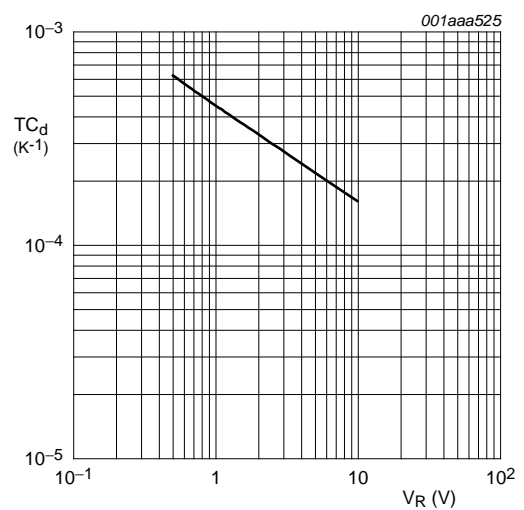


$f = 1$  MHz;  $T_j = 25$  °C.

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



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



**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

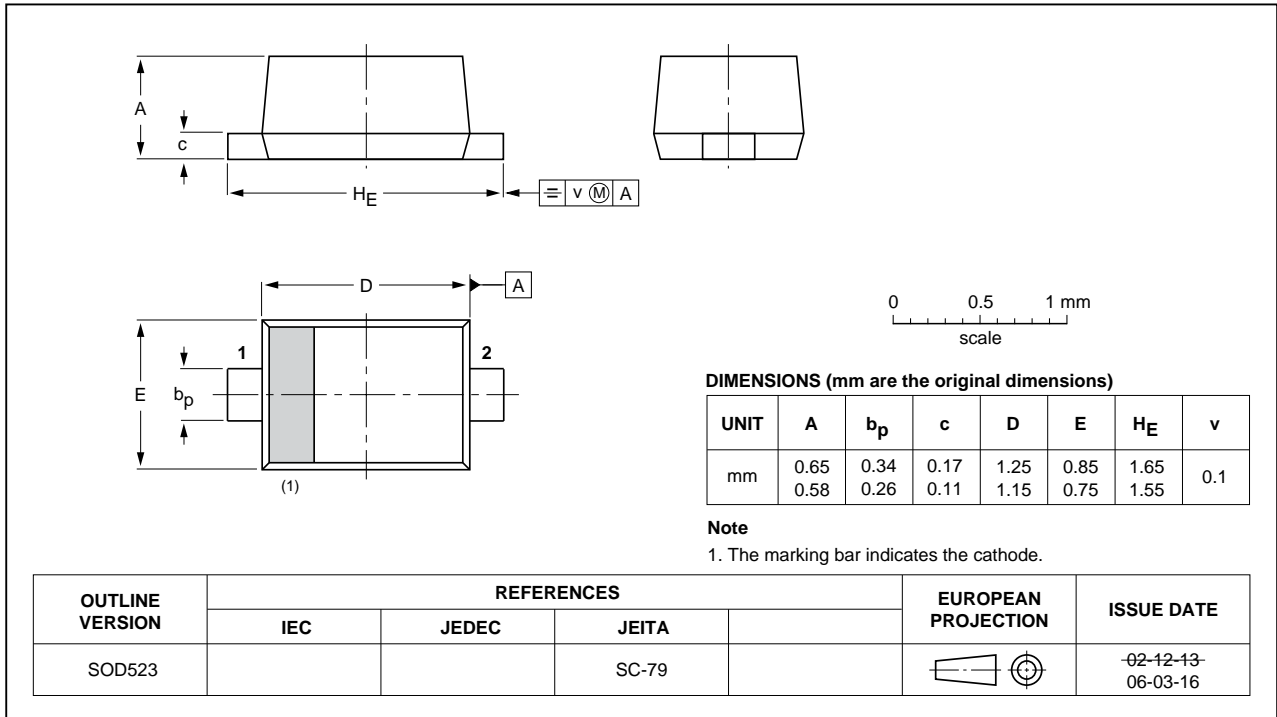


Fig 4. Package outline (BB208-02).

Plastic surface-mounted package; 2 leads

SOD323

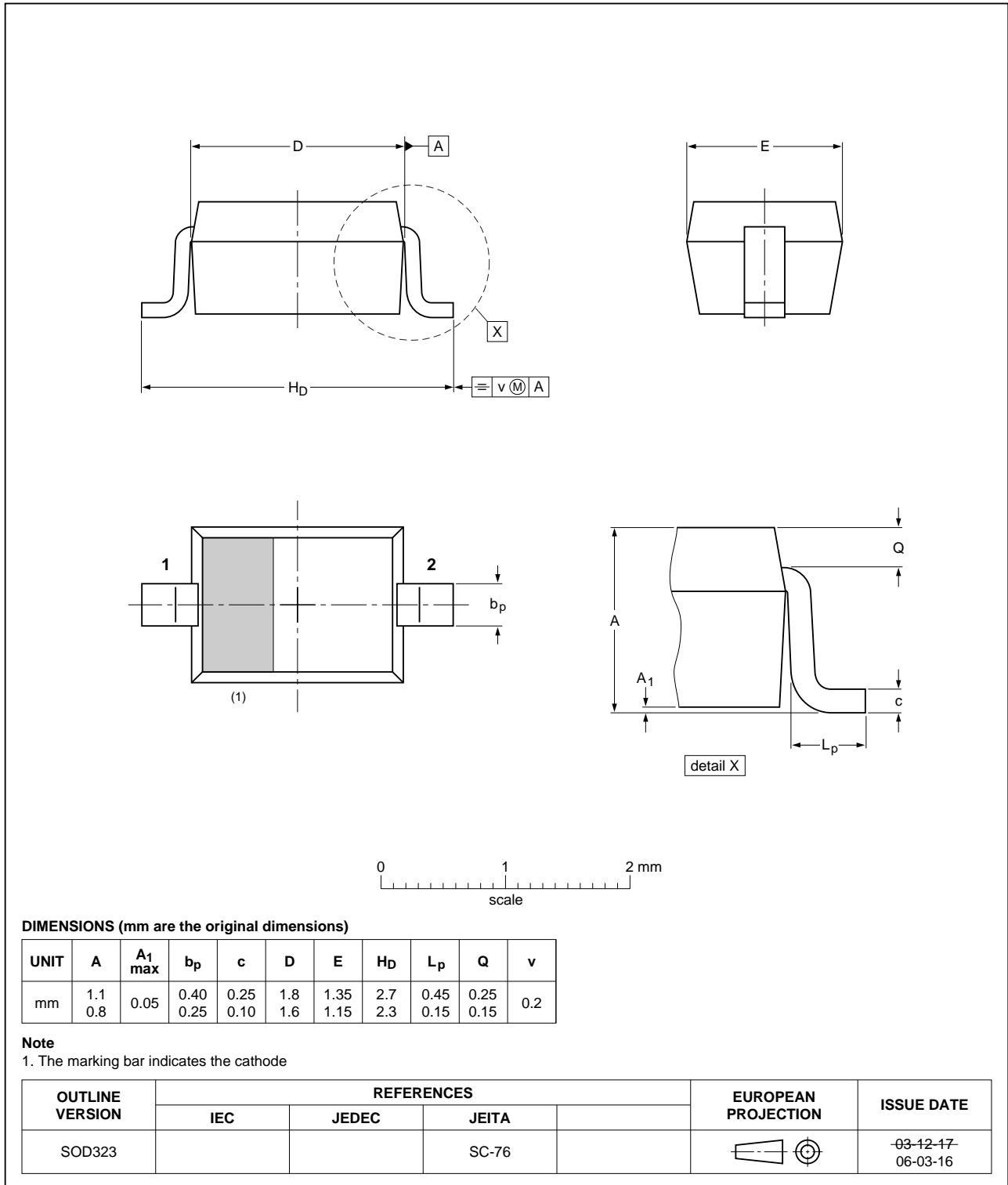


Fig 5. Package outline (BB208-03).

## 8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB208-02_BB208-03 v.2	20110908	Product data sheet	-	BB208-02_BB208-03 v.1
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul>		
BB208-02_BB208-03 v.1 (9397 750 12696)	20040407	Product data	-	-

## 9. Legal information

### 9.1 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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