

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).

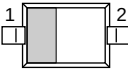
2. Pinning information

Table 1. Discrete pinning: SOD523

Pin	Description	Simplified outline	Symbol
1	cathode		
2	anode		

sym008

Table 2. Discrete pinning: SOD323

Pin	Description	Simplified outline	Symbol
1	cathode		
2	anode		

sym008



3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
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).

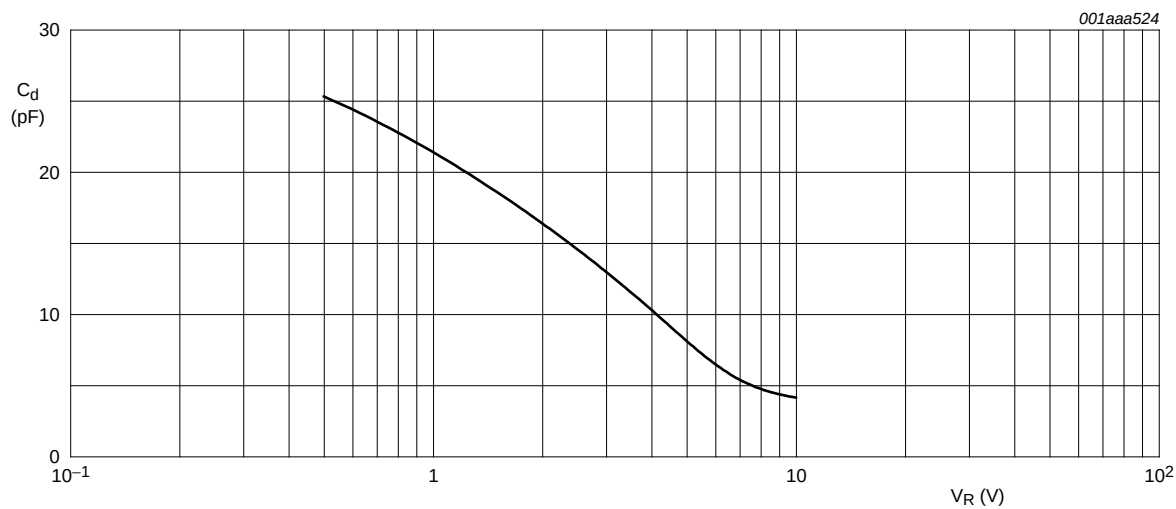
Symbol	Parameter	Conditions	Min	Max	Unit
V_R	continuous reverse voltage		-	10	V
I_F	continuous forward current		-	20	mA
T_{stg}	storage temperature		-55	+150	°C
T_j	operating junction temperature		-55	+125	°C

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 Figure 2	-	-	10	nA
		$V_R = 10\text{ V}$; $T_j = 85\text{ °C}$; see Figure 2	-	-	200	nA
r_s	diode series resistance	$f = 100\text{ MHz}$; $V_R = 3\text{ V}$	-	0.35	0.5	Ω
C_d	diode capacitance	$f = 1\text{ MHz}$; see Figure 1 and Figure 3				
		$V_R = 1\text{ V}$	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	



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

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

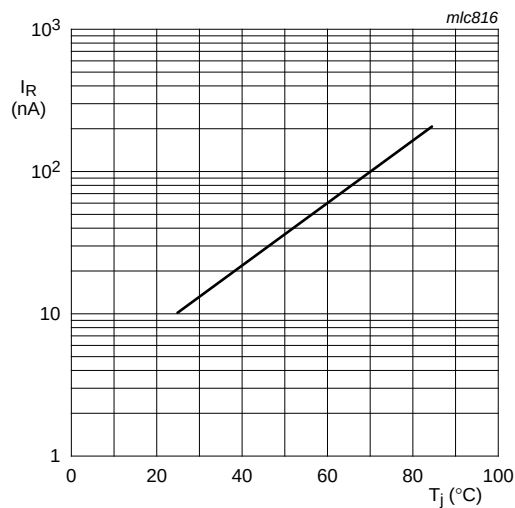


Fig 2. Reverse current as a function of junction temperature; typical values.

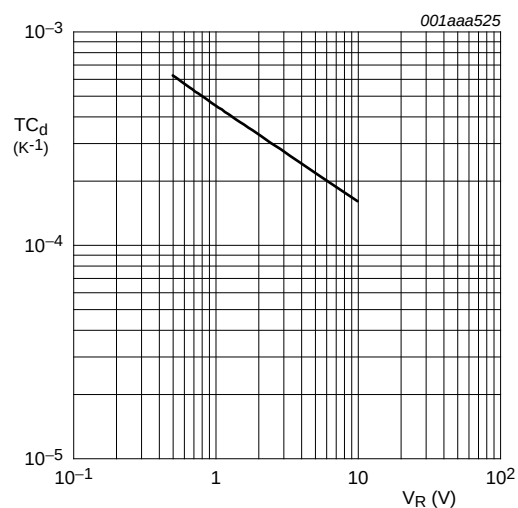


Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

7. Package outline

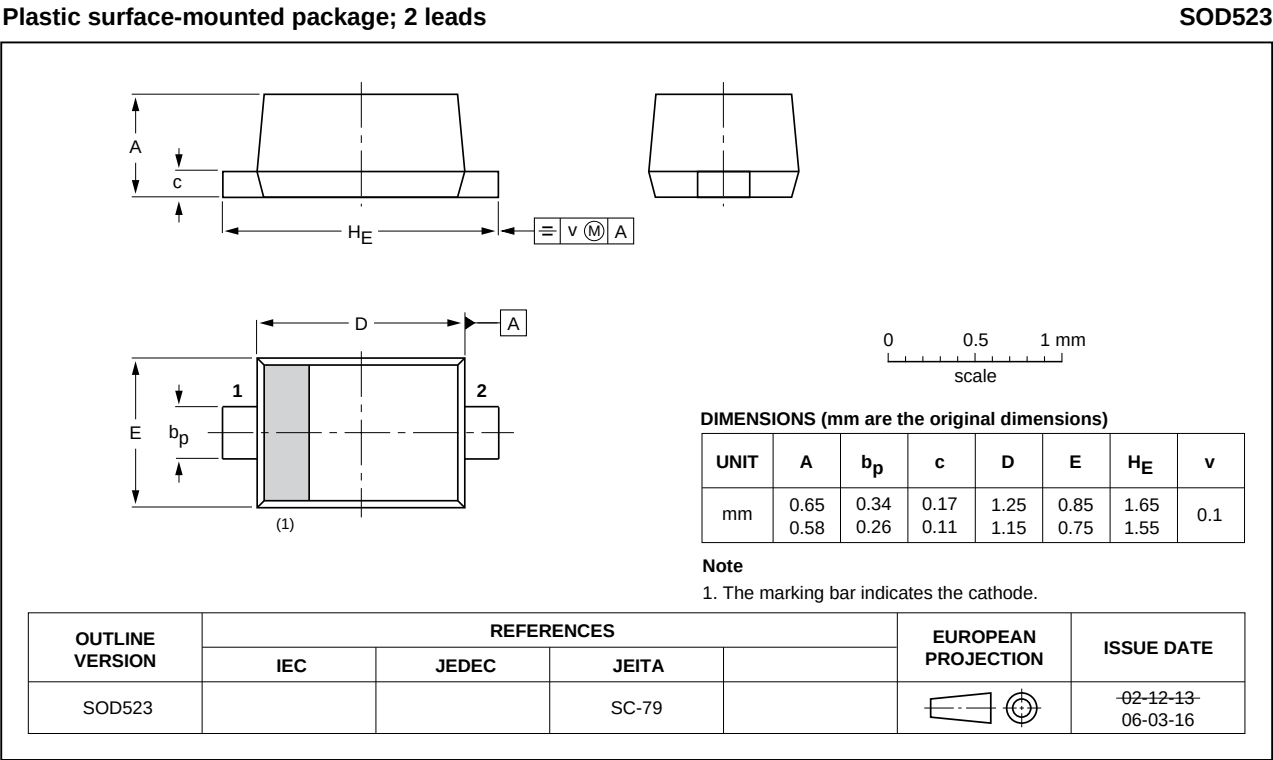
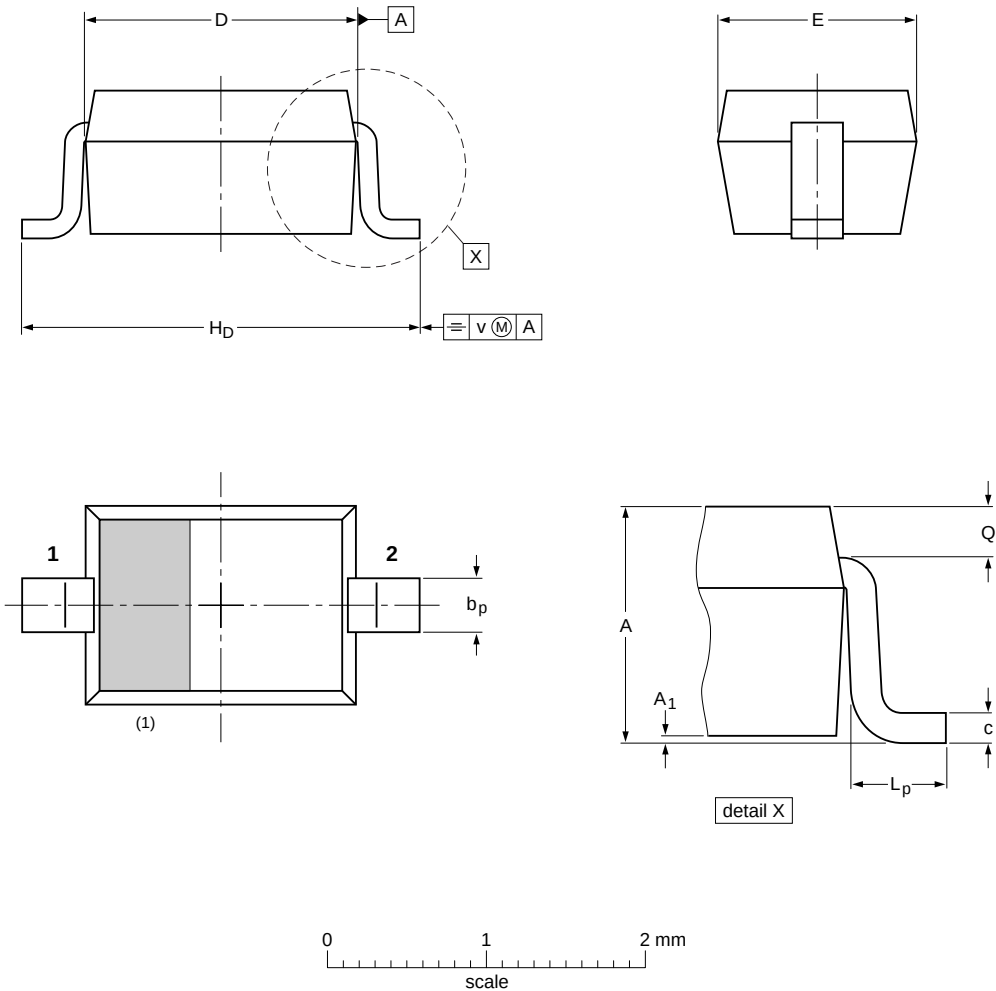


Fig 4. Package outline (BB208-02).

Plastic surface-mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	H _D	L _p	Q	v
mm	1.1 0.8	0.05	0.40 0.25	0.25 0.10	1.8 1.6	1.35 1.15	2.7 2.3	0.45 0.15	0.25 0.15	0.2

Note
1. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			-03-12-17- 06-03-16

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:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Package outline drawings have been updated to the latest version.			
BB208-02_BB208-03 v.1 (9397 750 12696)	20040407	Product data	-	-

9. Legal information

9.1 Data sheet status

Document status ^{[1][2]}	Product status ^[3]	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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