

BB208-02; BB208-03

Low voltage variable capacitance diode

Rev. 01 — 7 April 2004

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

- 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

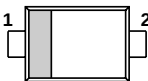
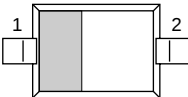
Pin	Description	Simplified outline	Symbol
1	cathode	 Top view	 <i>sym008</i>
2	anode		

Table 2: Discrete pinning: SOD323

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

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	

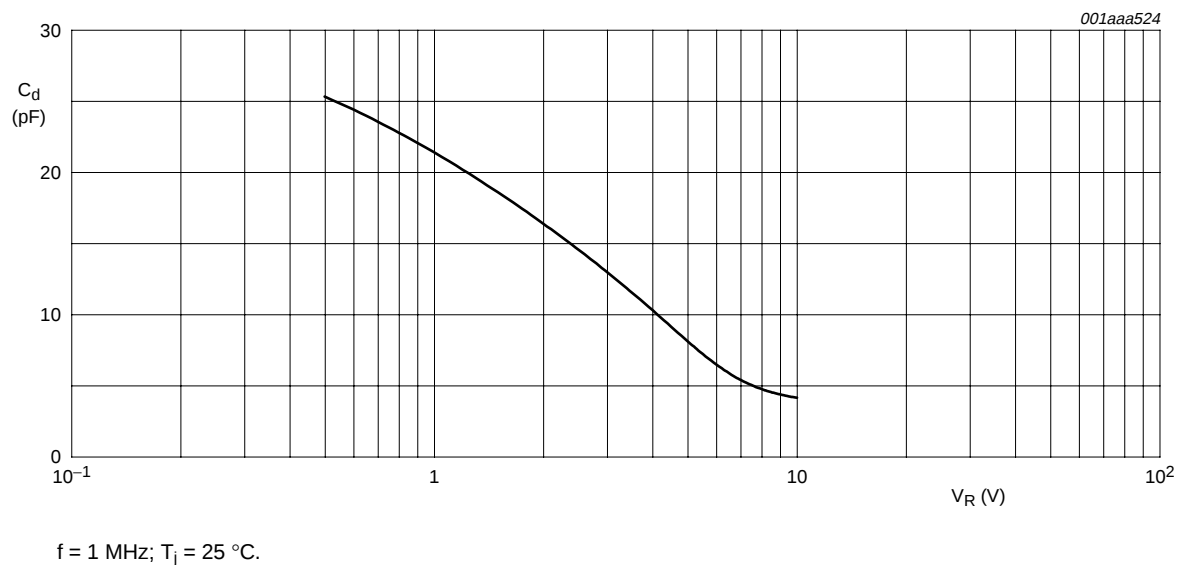


Fig 1. Diode capacitance as a function of reverse voltage; typical values.

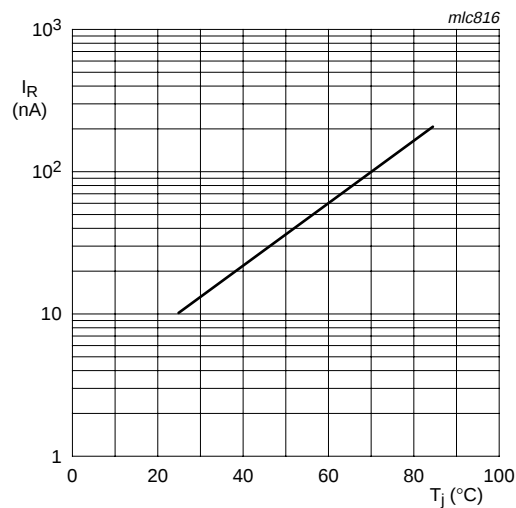


Fig 2. Reverse current as a function of junction temperature; typical values.

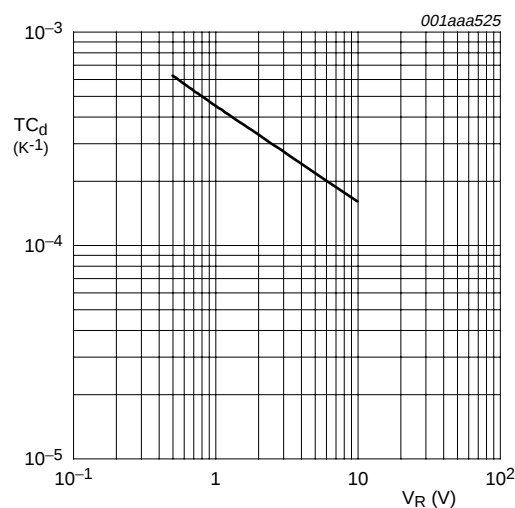


Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

7. Package outline

Plastic surface mounted package; 2 leads

SOD523

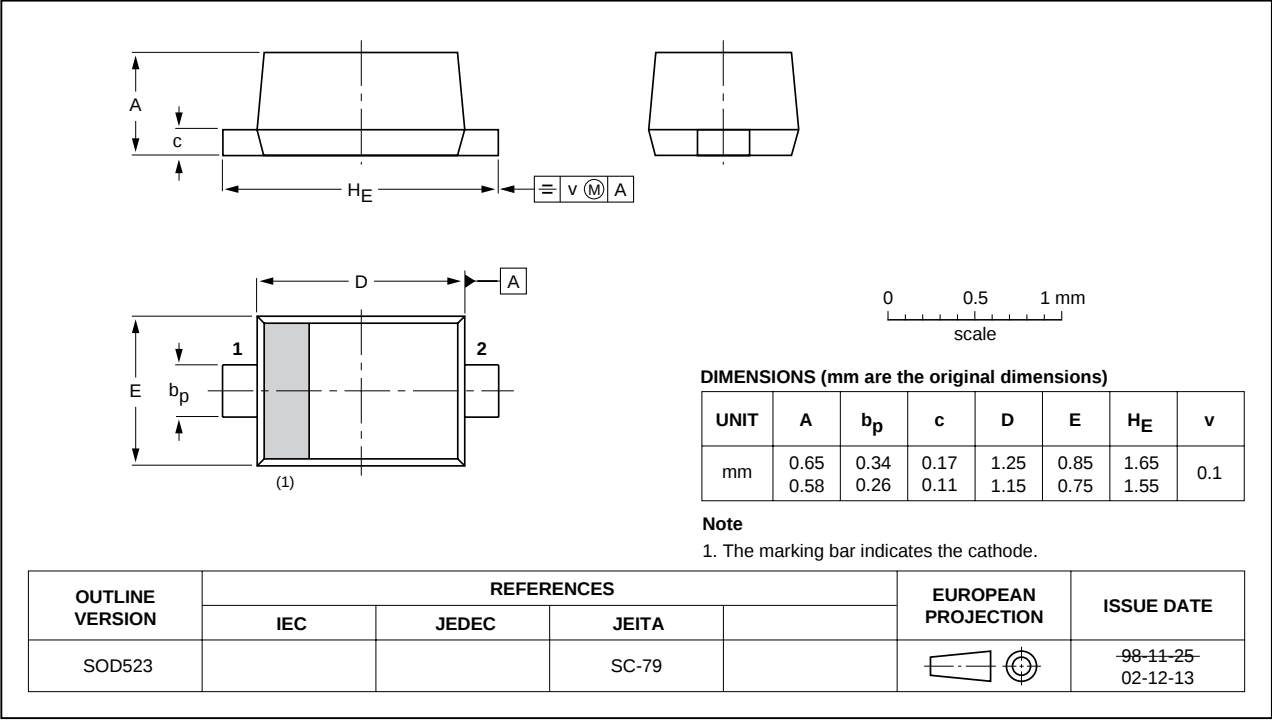
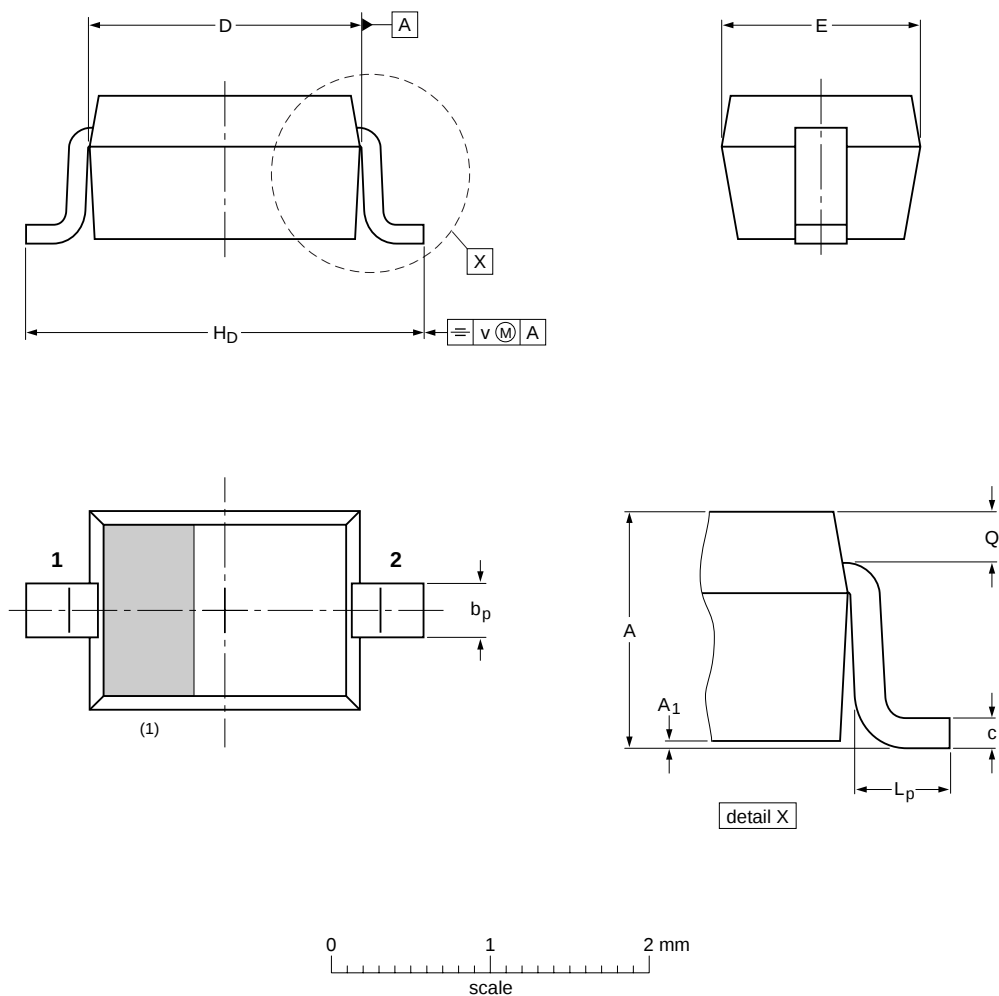


Fig 4. Package outline (BB208-02).

Plastic surface mounted package; 2 leads

SOD323



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

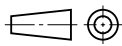
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			-99-09-13- 03-12-17

Fig 5. Package outline (BB208-03).



8. Revision history

Table 7: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
BB208-02_BB208-03_1	20040407	Product data	-	9397 750 12696	-

9. Data sheet status

Level	Data sheet status ^[1]	Product status ^[2] ^[3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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