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

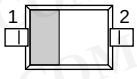
- Voltage Controlled Oscillators (VCO)
- Voltage Controlled Crystal Oscillators/Temperature Controlled Crystal Oscillators (VCXO/TCXO).

2. Pinning information

Table 1. Discrete pinning: SOD523

Pin	Description	Simplified outline	Symbol
1	cathode		 sym008
2	anode		

Table 2. Discrete pinning: SOD323

Pin	Description	Simplified outline	Symbol
1	cathode		 sym008
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).

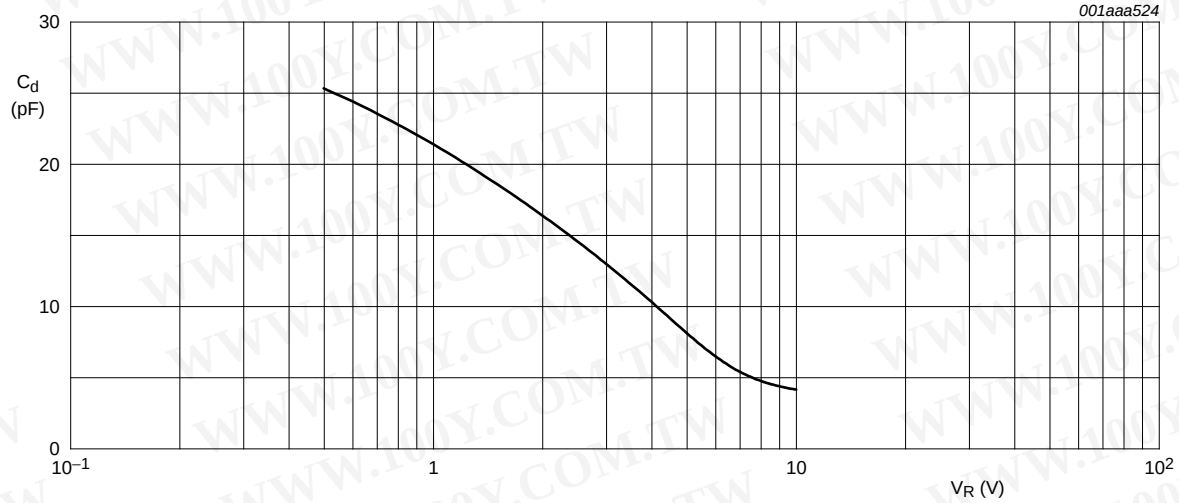
Symbol	Parameter	Conditions	Min	Max	Unit
V_R	continuous reverse voltage		-	10	V
I_F	continuous forward current		-	20	mA
T_{stg}	storage temperature		–55	+150	°C
T_j	operating junction temperature		–55	+125	°C

6. Characteristics

Table 6. Electrical characteristics

T_j = 25 °C unless otherwise specified.

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



f = 1 MHz; T_j = 25 °C.

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

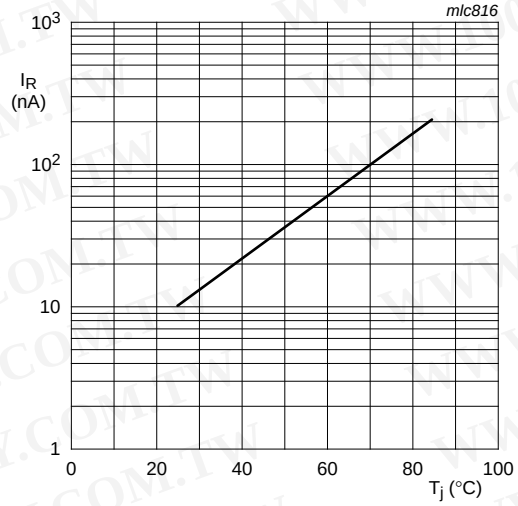


Fig 2. Reverse current as a function of junction temperature; typical values.

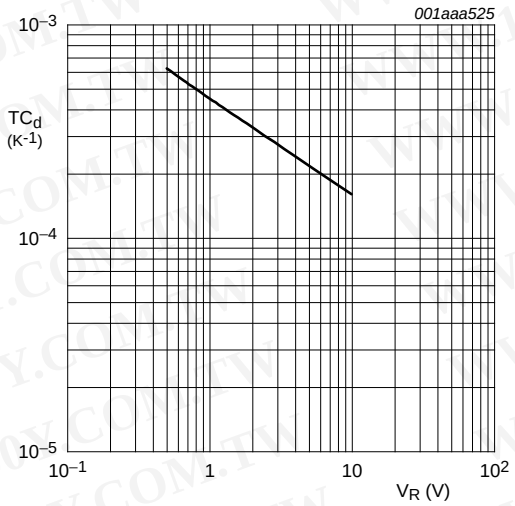
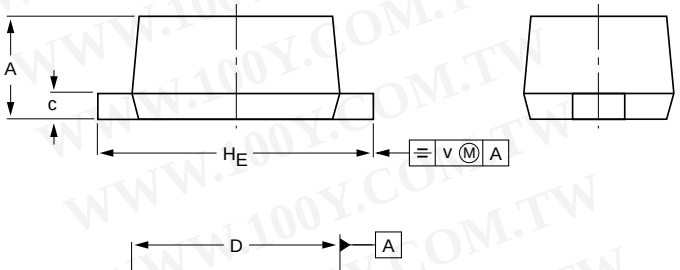
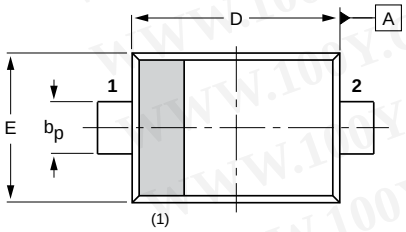


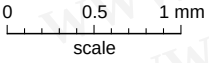
Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

7. Package outline

Plastic surface-mounted package; 2 leads **SOD523**







DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	H_E	v
mm	0.65 0.58	0.34 0.26	0.17 0.11	1.25 1.15	0.85 0.75	1.65 1.55	0.1

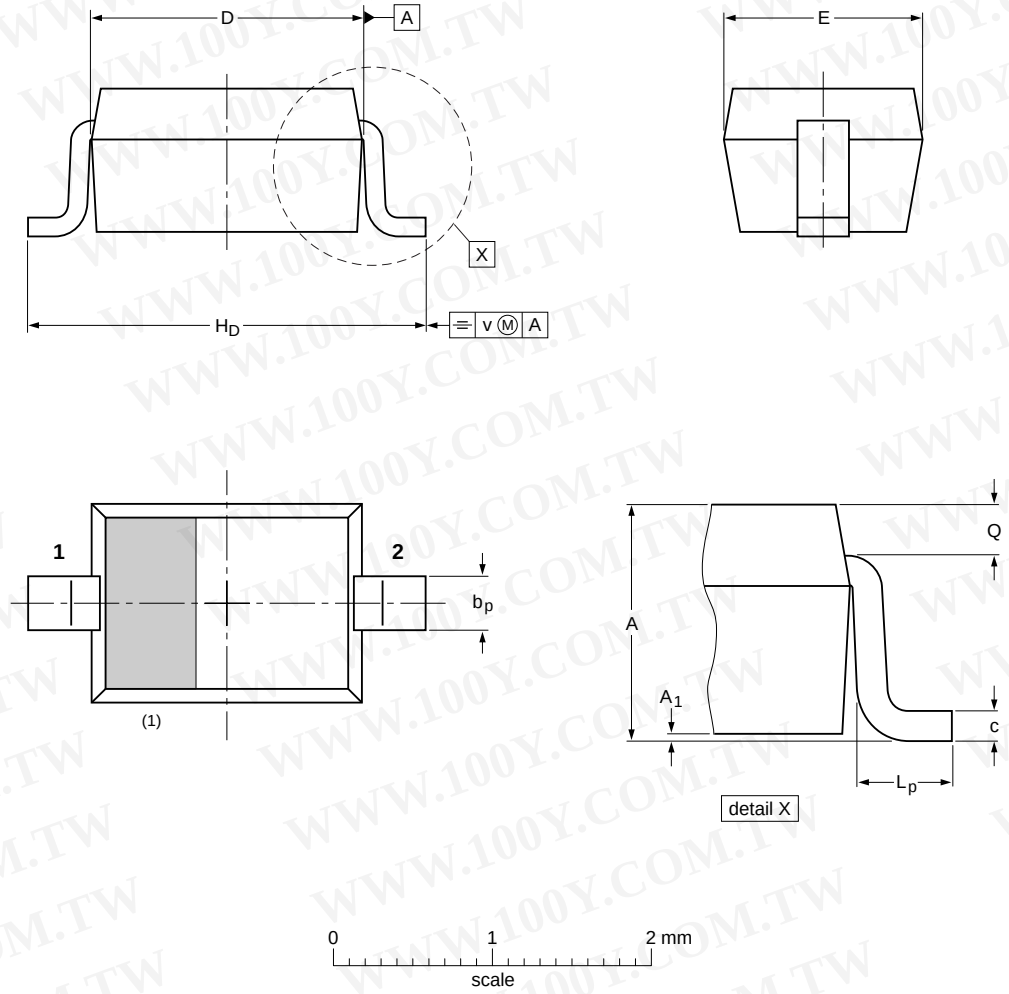
Note

1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD523			SC-79			~~02-12-13~~ 06-03-16

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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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11. Contents

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