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BB172

VHF variable capacitance diode

Rev. 2 — 3 December 2013 Product data sheet

1. Product profile

1.1 General description

The BB172 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 (SC-76) very small SMD plastic package.

1.2 Features and benefits

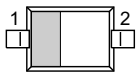
- Excellent linearity
- Very small SMD plastic package
- $C_{d(28V)}$ = 2.6 pF; $C_{d(1V)}$ to $C_{d(28V)}$ ratio = 15
- Low series resistance

1.3 Applications

- Voltage Controlled Oscillators (VCO)

2. Pinning information

Table 1. Pinning

Pin	Description		Simplified outline	Symbol
1	cathode	[1]		 sym008
2	anode			

[1] The marking bar indicates the cathode.

3. Ordering information

3.1 Package information

Table 2. Package information

Type number	Package		
	Name	Description	Version
BB172	SC-76	plastic surface-mounted package; 2 leads	SOD323

3.2 Ordering information

Table 3. Ordering options

Type number	Orderable part number	Package	Packing method	Minimum order quantity
BB172	BB172X	SC-76	tape and reel	3000

4. Marking

Table 4. Marking

Type number	Marking code
BB172	4K

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	reverse voltage		-	32	V
		peak value in series with a 10 kΩ resistor	-	35	V
I_F	forward current		-	20	mA
T_{stg}	storage temperature		−55	+150	°C
T_j	junction temperature		−55	+125	°C

6. Characteristics

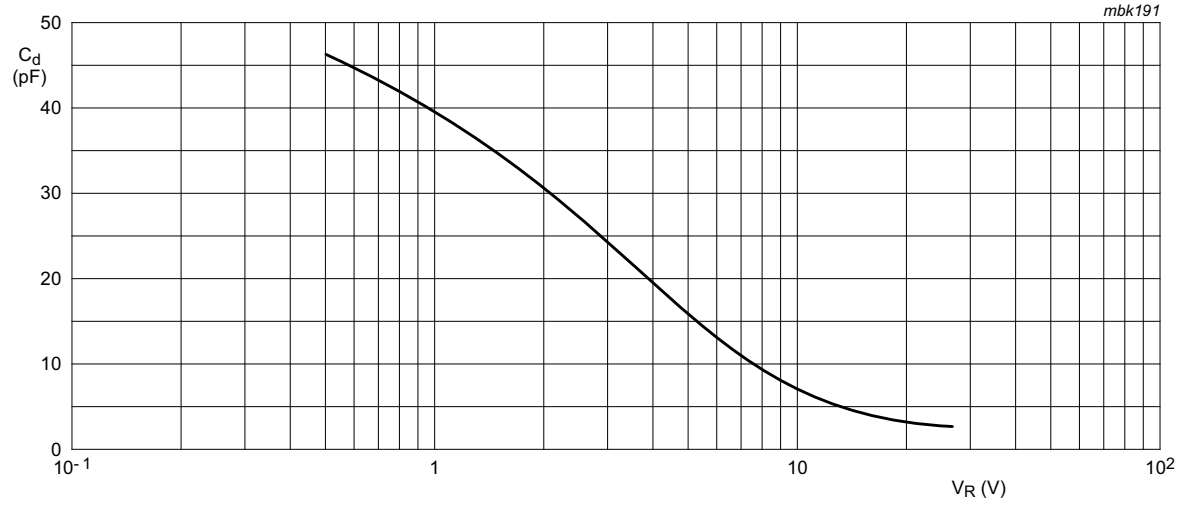
Table 6. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_R	reverse current	V_R = 30 V	[1]	-	-	10	nA
		V_R = 30 V; T_j = 85 °C	[1]	-	-	200	nA
r_s	diode series resistance	f = 100 MHz; C_d = 30 pF		-	0.65	0.8	Ω
C_d	diode capacitance	f = 1 MHz	[2]				
		V_R = 1 V		34.65	-	42.35	pF
		V_R = 28 V		2.361	2.6	2.754	pF
$C_{d(1V)}/C_{d(2V)}$	diode capacitance ratio (1 V to 2 V)	f = 1 MHz		-	1.3	-	
$C_{d(1V)}/C_{d(28V)}$	diode capacitance ratio (1 V to 28 V)	f = 1 MHz		13.5	15	-	
$C_{d(25V)}/C_{d(28V)}$	diode capacitance ratio (25 V to 28 V)	f = 1 MHz		-	1.08	-	

[1] See Figure 2.

[2] See Figure 1 and Figure 3.



f = 1 MHz; T_j = 25 °C.

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

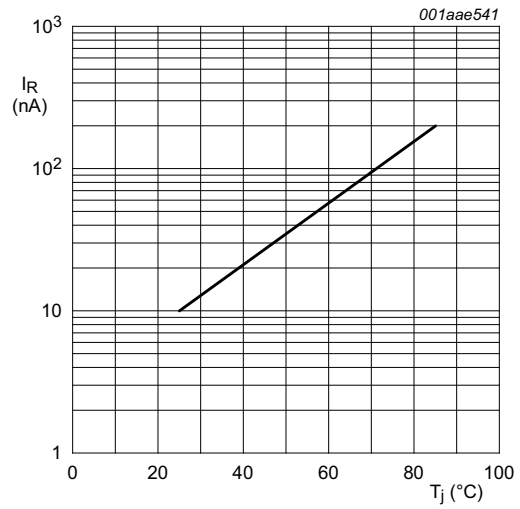
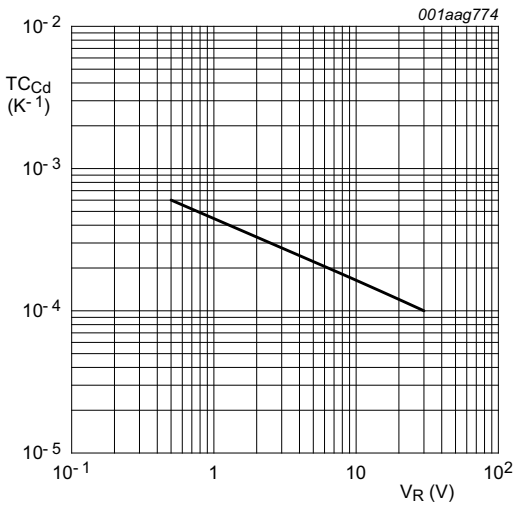


Fig 2. Reverse current as a function of junction temperature; maximum values.

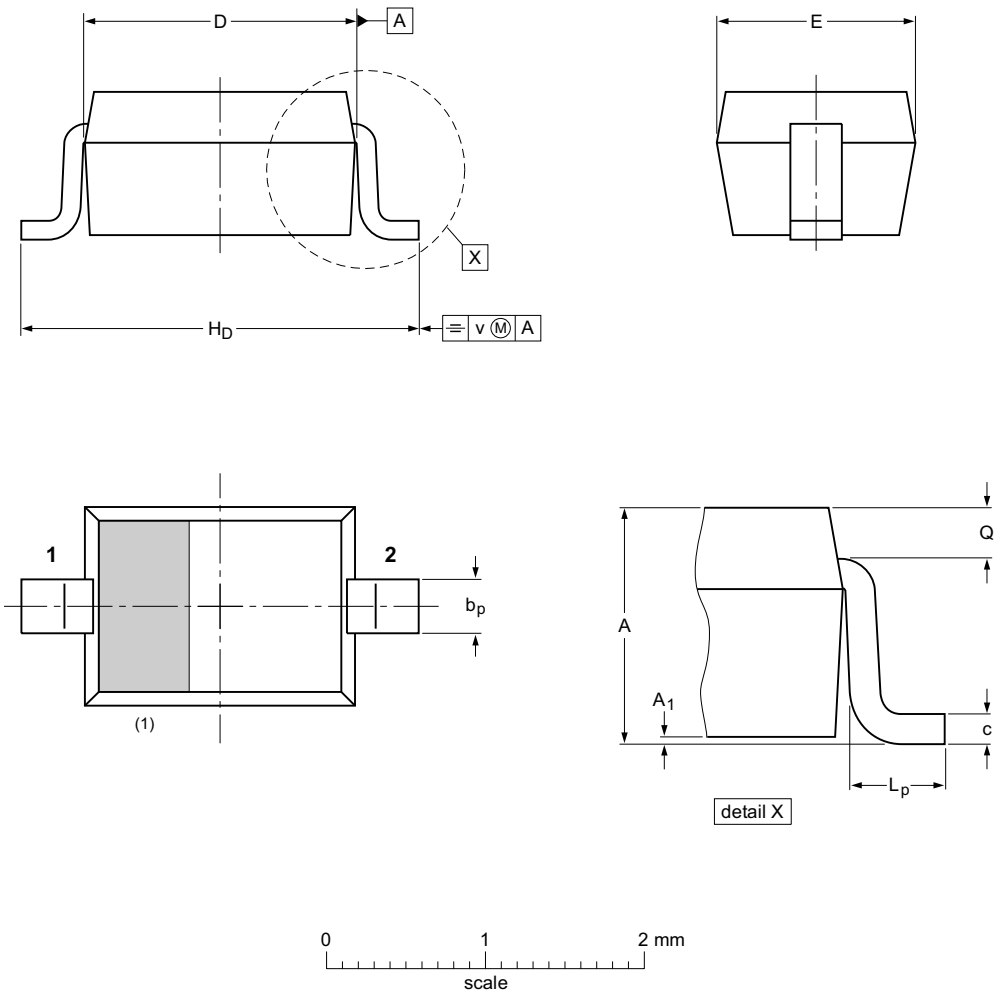


T_j = 0 °C to 85 °C.

Fig 3. Diode capacitance temperature coefficient as a function of reverse voltage; typical values.

7. Package outline

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 4. Package outline SOD323 (SC-76)

8. Abbreviations

Table 7. Abbreviations

Acronym	Description
SMD	Surface Mounted Device
VHF	Very High Frequency

9. Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB172 v.2	20131203	Product data sheet	-	BB172 v.1
Modifications	• Section 3 on page 1: additional ordering information has been added			
BB172 v.1	20130325	Product data sheet	-	-

10. Legal information

10.1 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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12. Contents

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