

BB153

VHF variable capacitance diode

Rev. 4 — 6 September 2011 Product data sheet

1. Product profile

1.1 General description

The BB153 is a variable capacitance diode, fabricated in planar technology and encapsulated in the SOD323 (SC-76) very small SMD plastic package.

The excellent matching performance is achieved by gliding matching and a Direct Matching Assembly (DMA) procedure.

1.2 Features and benefits

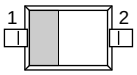
- Excellent linearity
- Excellent matching to 2 % DMA
- Very small SMD plastic package
- $C_{d(28V)}$: 2.6 pF; $C_{d(1V)}$ to $C_{d(28V)}$ ratio: 15
- Very low series resistance.

1.3 Applications

- Electronic tuning in VHF television tuners, band B up to 460 MHz
- Voltage Controlled Oscillators (VCO).

2. Pinning information

Table 1. Pinning

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

[1] The marking bar indicates the cathode.

3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BB153	SC-76	plastic surface mounted package; 2 leads	SOD323

4. Marking

Table 3. Marking

Type number	Marking code
BB153	PC

5. Limiting values

Table 4. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	32	V
V_{RM}	peak reverse voltage	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

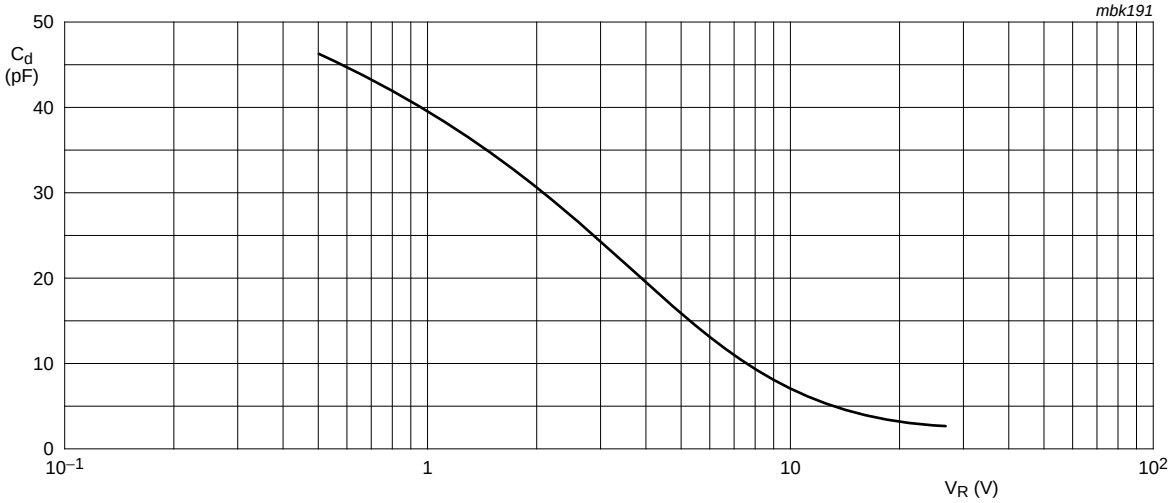
Table 5. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_R	reverse current	see Figure 2				
		V_R = 30 V	-	-	10	nA
		V_R = 30 V; T_j = 85 °C	-	-	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; see Figure 1 and 3				
		V_R = 1 V	34.65	-	42.35	pF
		V_R = 28 V	2.361	2.6	2.754	pF
$\frac{C_{d(1V)}}{C_{d(2V)}}$	capacitance ratio	f = 1 MHz	-	1.3	-	
$\frac{C_{d(1V)}}{C_{d(28V)}}$	capacitance ratio	f = 1 MHz	13.5	15	-	
$\frac{C_{d(25V)}}{C_{d(28V)}}$	capacitance ratio	f = 1 MHz	-	1.08	-	
$\frac{\Delta C_d}{C_d}$	capacitance matching	V_R = 1 V to 28 V; in a sequence of 10 diodes (gliding)	-	-	2	%

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f = 1 MHz; T_j = 25 °C.

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

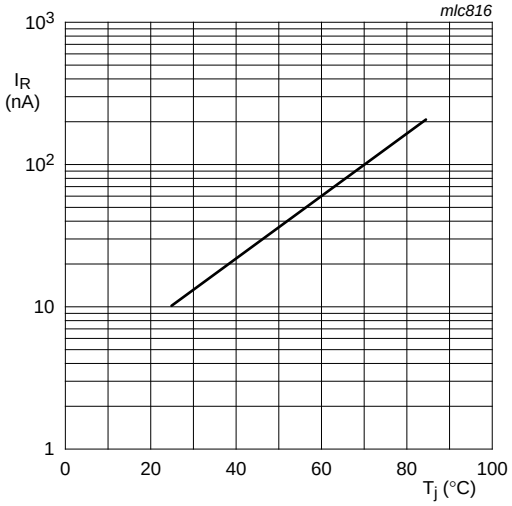
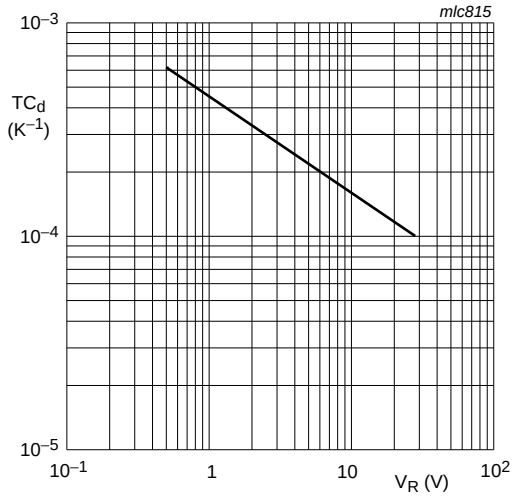


Fig 2. Reverse current as a function of junction temperature; maximum values.



T_j = 0 °C to 85 °C.

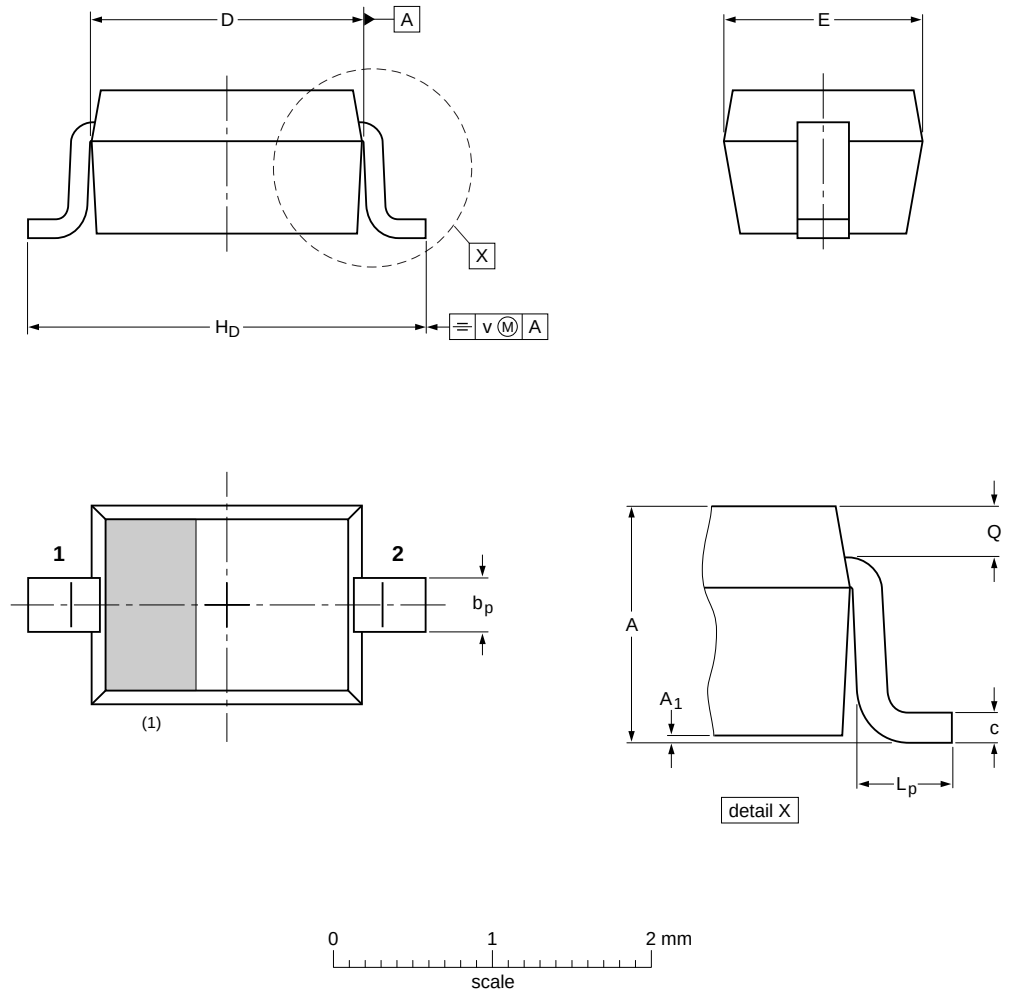
Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

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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).

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8. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB153 v.4	20110906	Product data sheet	-	BB153 v.3
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.			
BB153 v.3 (9397 750 13829)	20041005	Product data sheet	-	BB153 v.2
BB153 v.2 (9397 750 12646)	20040225	Product specification	-	BB153 v.1
BB153 v.1 (9397 750 02654)	19971217	Product specification	-	-

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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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