

# BB149

## UHF variable capacitance diode

Rev. 6 — 5 September 2011

Product data sheet

## 1. Product profile

### 1.1 General description

The BB149 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. The unmatched type, BB159 has the same specification.

### 1.2 Features and benefits

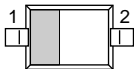

- Excellent linearity
- Excellent matching to 1 % DMA
- Very small SMD plastic package
- $C_{d(28V)}$ : 2.1 pF;  $C_{d(1V)}$  to  $C_{d(28V)}$  ratio: 9
- Low series resistance.

### 1.3 Applications

- Electronic tuning in UHF television tuners
- Voltage Controlled Oscillators (VCO).

## 2. Pinning information

Table 1. Pinning

Pin	Description	Simplified outline <sup>[1]</sup>	Symbol
1	cathode		 <i>sym008</i>
2	anode		

[1] Marking bar indicates the cathode.

## 3. Ordering information

Table 2. Ordering information

Type number	Package		Version
	Name	Description	
BB149	SC-76	plastic surface mounted package; 2 leads	SOD323



## 4. Marking

**Table 3. Marking**

Type number	Marking code
BB149	P9

## 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		-	30	V
$I_F$	forward current		-	20	mA
$T_{stg}$	storage temperature		-55	+150	°C
$T_j$	junction temperature		-55	+125	°C

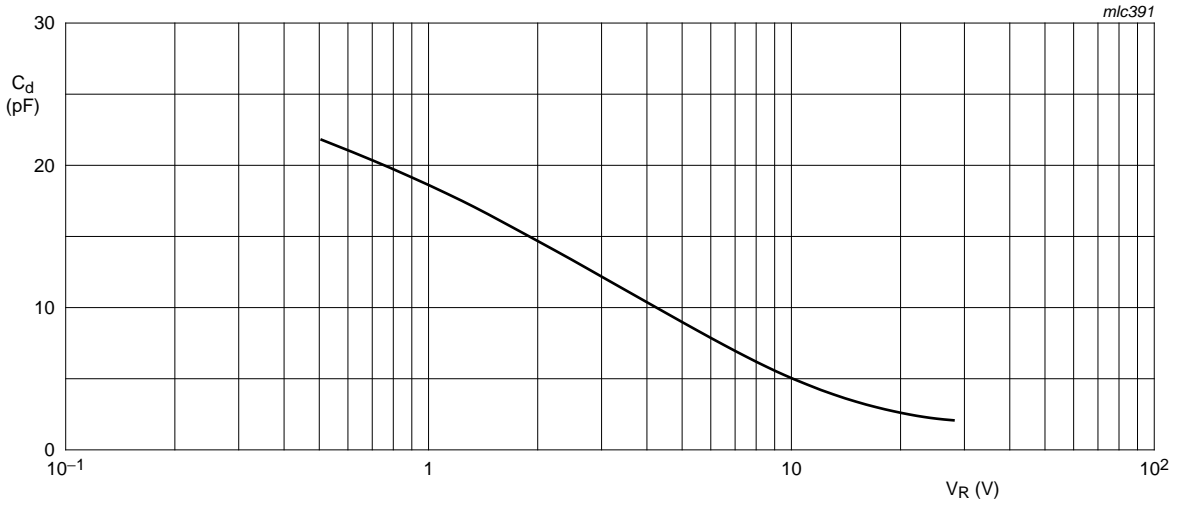
## 6. Characteristics

**Table 5. Characteristics**

*$T_j = 25\text{ °C}$  unless otherwise specified.*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_R$	reverse current	see <a href="#">Figure 2</a>				
		$V_R = 30\text{ V}$	-	-	10	nA
		$V_R = 30\text{ V}; T_j = 85\text{ °C}$	-	-	200	nA
$r_s$	diode series resistance	$f = 470\text{ MHz}$	[1]	-	0.75	$\Omega$
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and <a href="#">3</a>				
		$V_R = 1\text{ V}$	18	-	19.5	pF
		$V_R = 28\text{ V}$	1.9	2.1	2.25	pF
$\frac{C_{d(1V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	8.2	9	10	
$\frac{C_{d(19V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	1.2	-	-	
$\frac{\Delta C_d}{C_d}$	capacitance matching	$V_R = 0.5\text{ V to }28\text{ V}$ ; in a sequence of 10 diodes (gliding)	-	-	2	%

[1]  $V_R$  is the value at which  $C_d = 9\text{ pF}$ .



$f = 1$  MHz;  $T_j = 25$  °C.

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

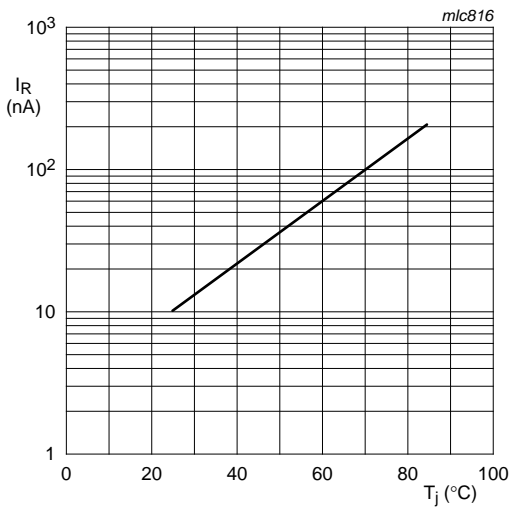
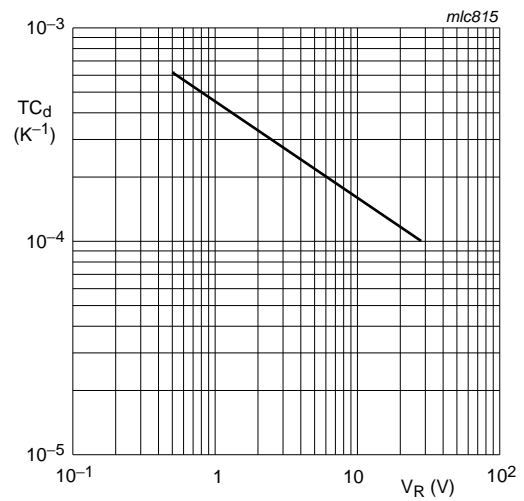


Fig 2. Reverse current as a function of junction temperature; maximum values.



$T_j = 0$  °C to 85 °C.

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

## 7. Package outline

Plastic surface-mounted package; 2 leads

SOD323

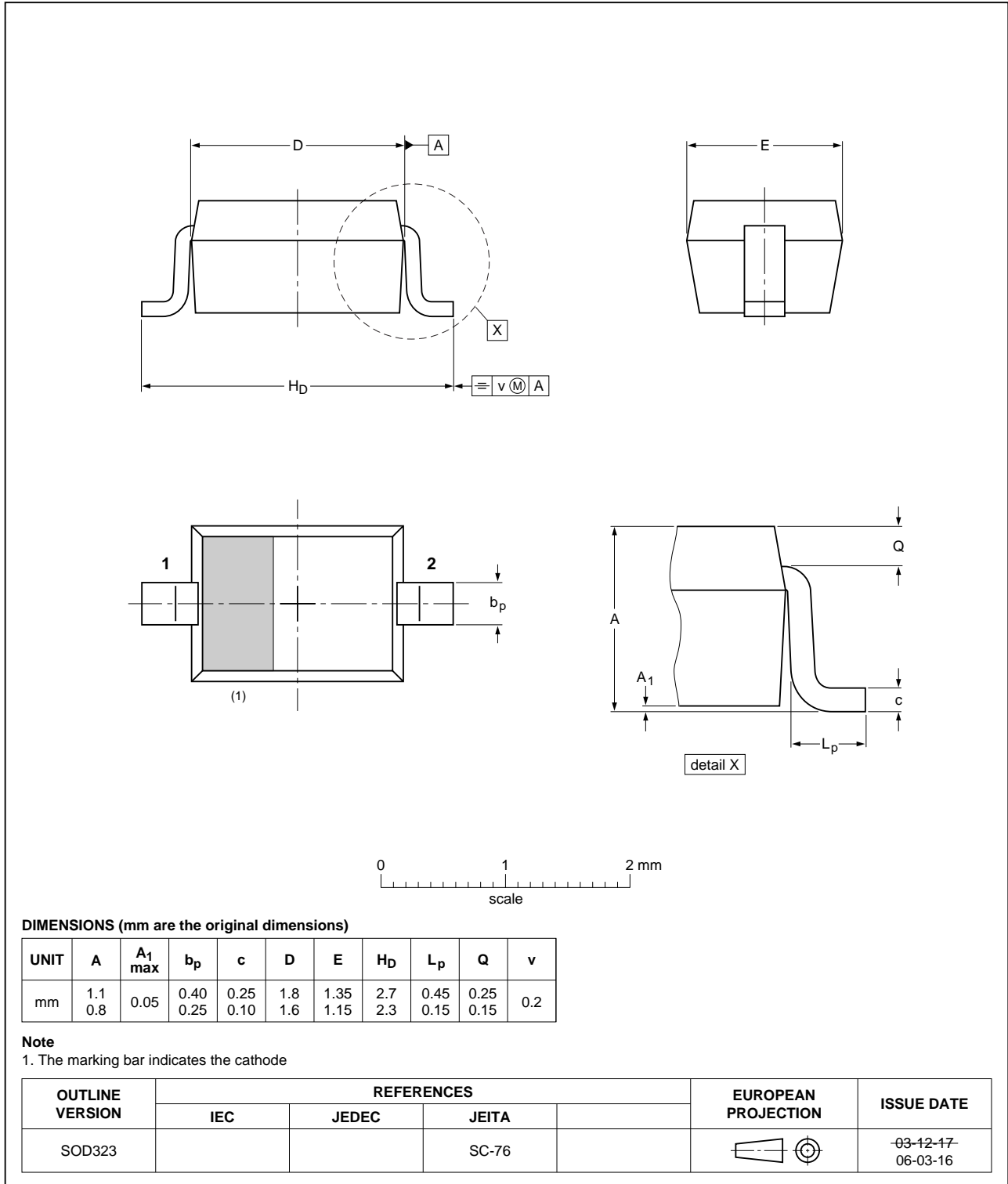


Fig 4. Package outline SOD323 (SC-76).

## 8. Revision history

**Table 6. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB149 v.6	20110905	Product data sheet	-	BB149 v.5
Modifications:		<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul>		
BB149 v.5 (9397 750 13825)	20041004	Product data sheet	-	BB149 v.4
BB149 v.4 (9397 750 12653)	20040301	Product specification	-	BB149 v.3
BB149 v.3 (9397 750 04378)	19980915	Product specification	-	BB149 v.2
BB149 v.2	19960503	n.a.	-	BB149 v.1
BB149 v.1	19941209	n.a.	-	-

## 9. Legal information

### 9.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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## 11. Contents

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<b>1</b>	<b>Product profile</b> . . . . .	<b>1</b>
1.1	General description . . . . .	1
1.2	Features and benefits . . . . .	1
1.3	Applications . . . . .	1
<b>2</b>	<b>Pinning information</b> . . . . .	<b>1</b>
<b>3</b>	<b>Ordering information</b> . . . . .	<b>1</b>
<b>4</b>	<b>Marking</b> . . . . .	<b>2</b>
<b>5</b>	<b>Limiting values</b> . . . . .	<b>2</b>
<b>6</b>	<b>Characteristics</b> . . . . .	<b>2</b>
<b>7</b>	<b>Package outline</b> . . . . .	<b>4</b>
<b>8</b>	<b>Revision history</b> . . . . .	<b>5</b>
<b>9</b>	<b>Legal information</b> . . . . .	<b>6</b>
9.1	Data sheet status . . . . .	6
9.2	Definitions . . . . .	6
9.3	Disclaimers . . . . .	6
9.4	Trademarks . . . . .	7
<b>10</b>	<b>Contact information</b> . . . . .	<b>7</b>
<b>11</b>	<b>Contents</b> . . . . .	<b>8</b>

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Date of release: 5 September 2011

Document identifier: BB149



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