



# BB179B

## UHF variable capacitance diode

Rev. 02 — 5 October 2004

Product data sheet

## 1. Product profile

### 1.1 General description

The BB179B is a variable capacitance diode, fabricated in planar technology and encapsulated in the SOD523 (SC-79) ultra small SMD plastic package. The excellent matching performance is achieved by gliding matching and a Direct Matching Assembly (DMA) procedure.

### 1.2 Features

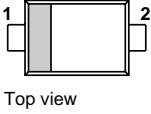

- Excellent linearity
- Excellent matching to 2 % DMA
- Ultra small SMD plastic package
- $C_{d(28V)}$ : 2.1 pF;  $C_{d(1V)}$  to  $C_{d(28V)}$  ratio: 9
- Low series resistance.

### 1.3 Applications

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

## 2. Pinning information

Table 1: Pinning

Pin	Description	Simplified outline <a href="#">[1]</a>	Symbol
1	cathode		
2	anode		

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 2: Ordering information

Type number	Package		Version
	Name	Description	
BB179B	SC-79	plastic surface mounted package; 2 leads	SOD523

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## 4. Marking

**Table 3: Marking**

Type number	Marking code
BB179B	C

## 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 k $\Omega$ resistor	-	35	V
$I_F$	forward current		-	20	mA
$T_{stg}$	storage temperature		-55	+150	$^{\circ}\text{C}$
$T_j$	junction temperature		-55	+125	$^{\circ}\text{C}$

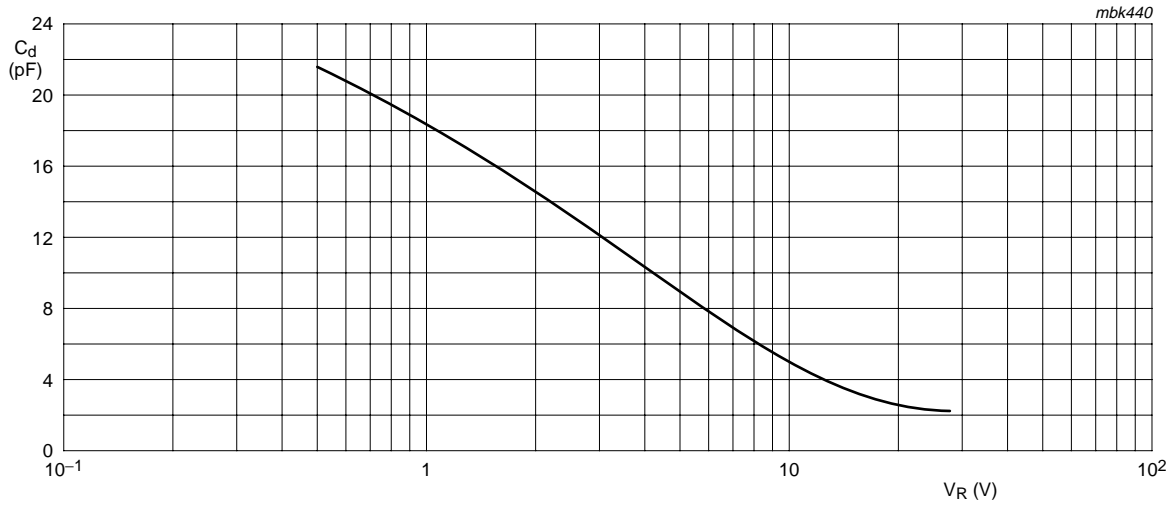
## 6. Characteristics

**Table 5: Characteristics**

$T_j = 25^{\circ}\text{C}$  unless otherwise specified.

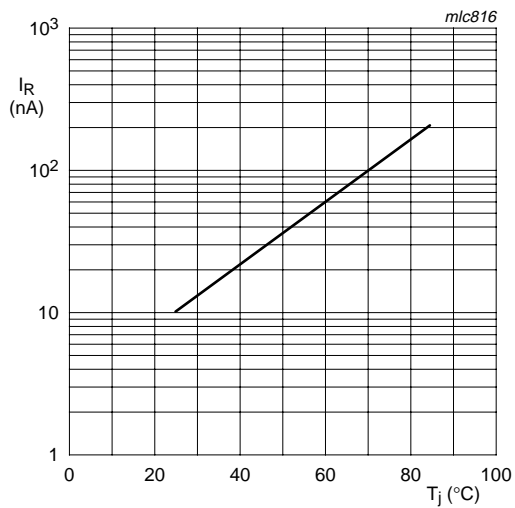
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_R$	reverse current	see <a href="#">Figure 2</a>				
		$V_R = 30\text{ V}$	-	-	10	nA
		$V_R = 30\text{ V}; T_j = 85^{\circ}\text{C}$	-	-	200	nA
$r_s$	diode series resistance	$f = 470\text{ MHz}$	[1]	0.6	0.75	$\Omega$
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and <a href="#">3</a>				
		$V_R = 1\text{ V}$	18.22	-	20	pF
		$V_R = 28\text{ V}$	1.9	2.1	2.25	pF
$\frac{C_{d(1V)}}{C_{d(2V)}}$	capacitance ratio	$f = 1\text{ MHz}$	-	1.27	-	
$\frac{C_{d(1V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	8.45	9	10	
$\frac{C_{d(25V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	-	1.05	-	
$\frac{\Delta C_d}{C_d}$	capacitance matching	$V_R = 1\text{ V to } 28\text{ V}$ ; in a sequence of 10 diodes (gliding)	-	-	2	%

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

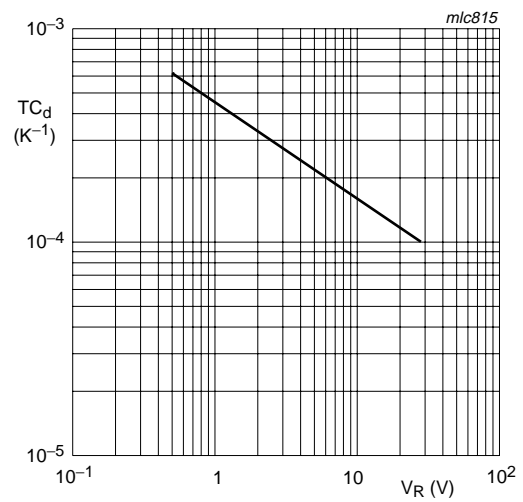


$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

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



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



$T_j = 0 \text{ }^\circ\text{C to } 85 \text{ }^\circ\text{C}.$

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

**7. Package outline**

Plastic surface mounted package; 2 leads

SOD523

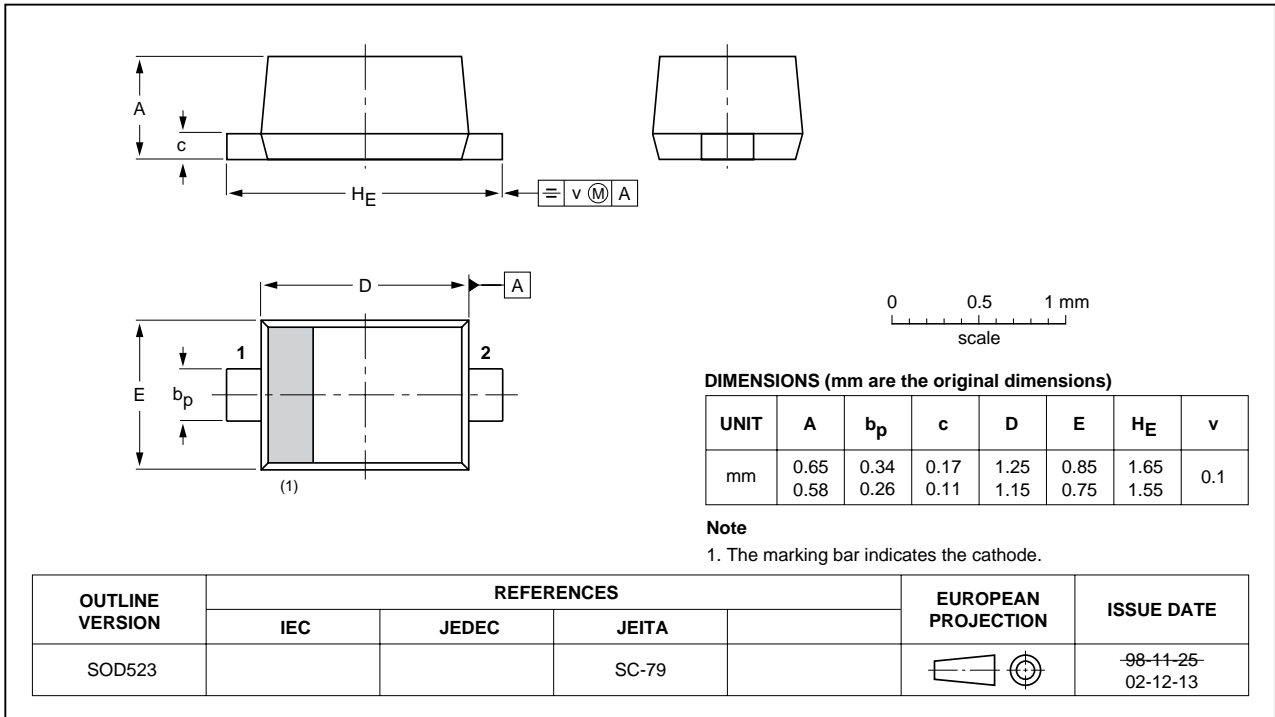


Fig 4. Package outline SOD523 (SC-79).

## 8. Revision history

**Table 6: Revision history**

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
BB179B_2	20041005	Product data sheet	-	9397 750 13833	BB179B_1
Modifications:	<ul style="list-style-type: none"> <li>The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors</li> <li><a href="#">Table 5 “Characteristics”</a>: <math>\Delta C_d/C_d</math> conditions changed from sequence of 15 diodes to sequence of 10 diodes</li> <li><a href="#">Table 5 “Characteristics”</a>: added typical value of 2.1 pF for <math>C_{d(28V)}</math></li> <li><a href="#">Table 5 “Characteristics”</a>: added typical value of 9 for <math>C_{d(1V)}</math> to <math>C_{d(28V)}</math> ratio.</li> </ul>				
BB179B_1	19971113	Product specification	-	9397 750 02984	-

## 9. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2]</sup> <sup>[3]</sup>	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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