

# BAP50-03

General purpose PIN diode

Rev. 04 — 11 September 2009

Product data sheet

## 1. Product profile

### 1.1 General description

General purpose PIN diode in a SOD323 small plastic SMD package.

### 1.2 Features

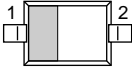

- Low diode capacitance
- Low diode forward resistance

### 1.3 Applications

- General RF application

## 2. Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode		 <i>sym006</i>
2	anode		

## 3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP50-03	SC-76	plastic surface-mounted package; 2 leads	SOD323

## 4. Limiting values

**Table 3. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
<b>Per diode</b>					
$V_R$	reverse voltage		-	50	V
$I_F$	forward current		-	50	mA
$P_{tot}$	total power dissipation	$T_{sp} = 90\text{ °C}$	-	500	mW
$T_{stg}$	storage temperature		-65	+150	°C
$T_j$	junction temperature		-65	+150	°C

## 5. Thermal characteristics

**Table 4. Thermal characteristics**

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to soldering point		85	K/W

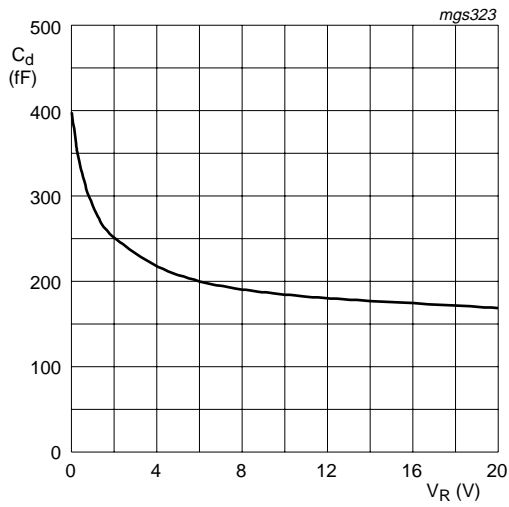
## 6. Characteristics

**Table 5. Characteristics**

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

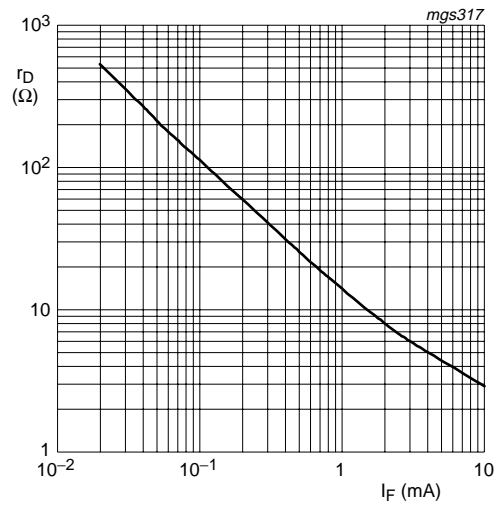
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$V_F$	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V	
$V_R$	reverse voltage	$I_R = 10\text{ }\mu\text{A}$	50	-	-	V	
$I_R$	reverse current	$V_R = 50\text{ V}$	-	-	100	nA	
$C_d$	diode capacitance	$f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a>					
		$V_R = 0\text{ V}$	-	0.4	-	pF	
		$V_R = 1\text{ V}$	-	0.3	0.55	pF	
		$V_R = 5\text{ V}$	-	0.2	0.35	pF	
$r_D$	diode forward resistance	$f = 100\text{ MHz}$ ; see <a href="#">Figure 2</a>					
		$I_F = 0.5\text{ mA}$	[1]	-	25	40	$\Omega$
		$I_F = 1\text{ mA}$	[1]	-	14	25	$\Omega$
		$I_F = 10\text{ mA}$	[1]	-	3	5	$\Omega$

[1] Guaranteed on AQL basis: inspection level S4, AQL 1.0.



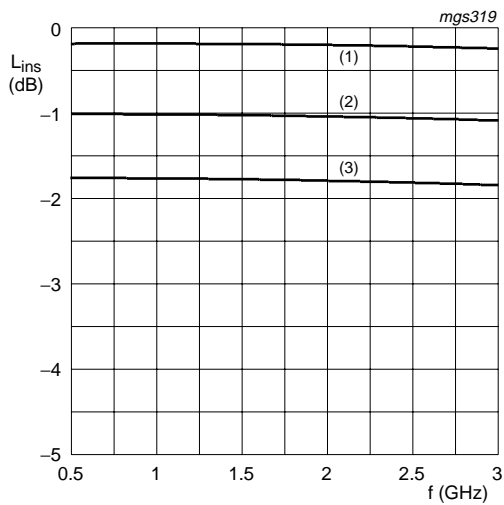
$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

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



$f = 100 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

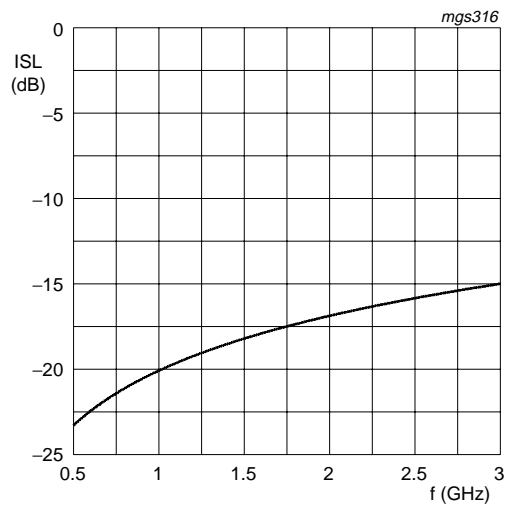
**Fig 2. Diode forward resistance as a function of forward current; typical values**



- (1)  $I_F = 10 \text{ mA}$
  - (2)  $I_F = 1 \text{ mA}$
  - (3)  $I_F = 0.5 \text{ mA}$
- $T_{amb} = 25 \text{ }^\circ\text{C}.$

Diode inserted in series with a 50  $\Omega$  stripline circuit and biased via the analyzer Tee network.

**Fig 3. Insertion loss of the diode as a function of frequency; typical values**



$T_{amb} = 25 \text{ }^\circ\text{C}.$

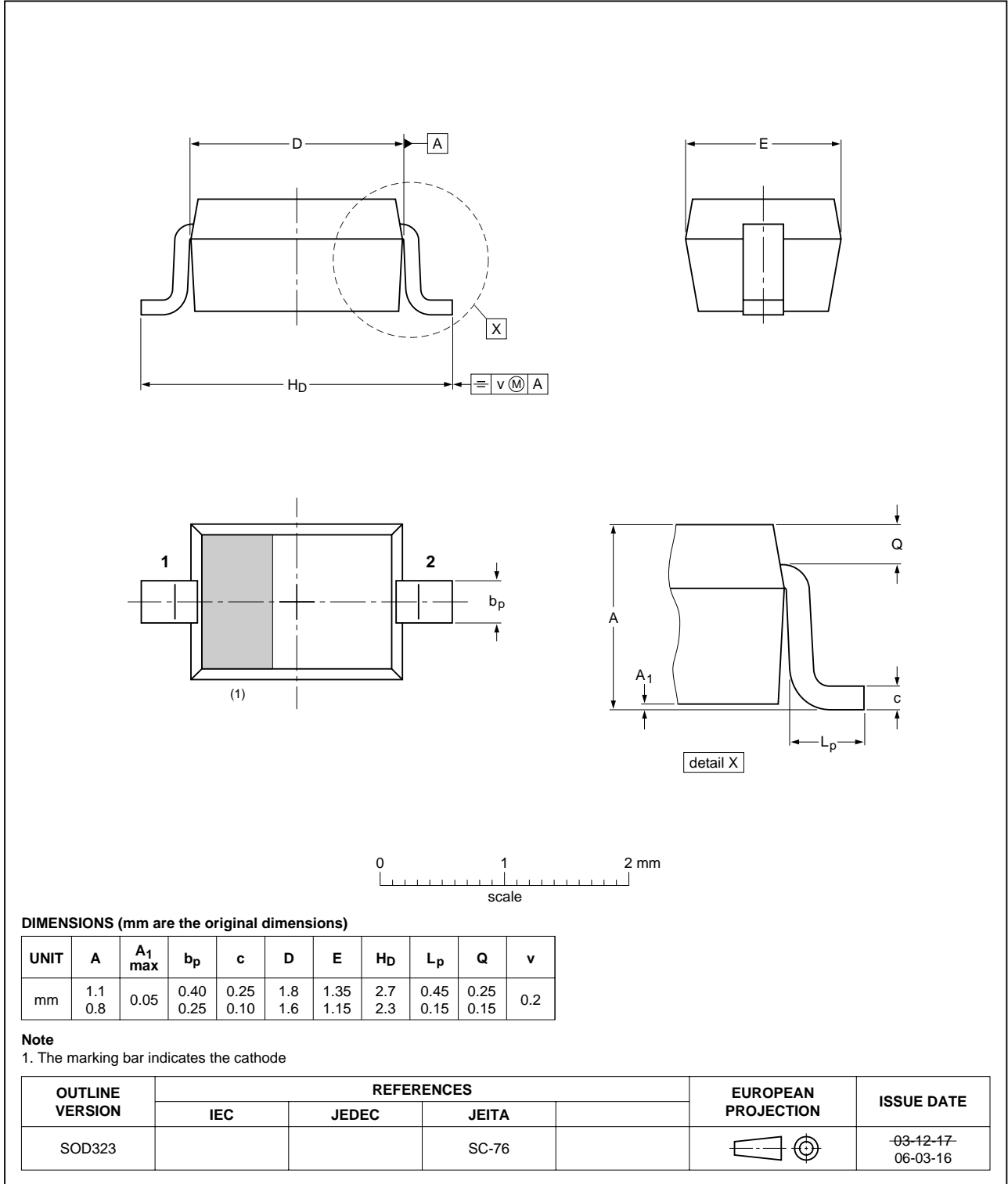
Diode zero biased and inserted in series with a 50  $\Omega$  stripline circuit.

**Fig 4. Isolation of the diode as a function of frequency; typical values**

**7. Package outline**

Plastic surface-mounted package; 2 leads

SOD323



**Fig 5. Package outline SOD323**

## 8. Abbreviations

**Table 6. Abbreviations**

Acronym	Description
AQL	Acceptable Quality Level
PIN	P-type, Intrinsic, N-type
SMD	Surface Mounted Device
RF	Radio Frequency
S4	Special inspection level 4

## 9. Revision history

**Table 7. Revision history**

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP50-03_4	20090911	Product data sheet	-	BAP50-03_3
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></ul>			
BAP50-03_3	20040211	Product data sheet		BAP50-03_2
BAP50-03_2	19990510	Product data sheet		BAP50-03_N_1
BAP50-03_N_1	19990201	Preliminary data sheet		-

## 10. Legal information

### 10.1 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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