

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

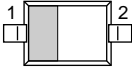

- Low diode capacitance
- Low diode forward resistance

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
Per diode					
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

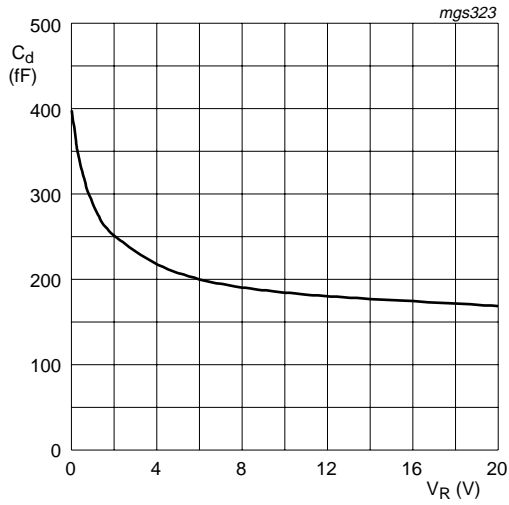
6. Characteristics

Table 5. Characteristics

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

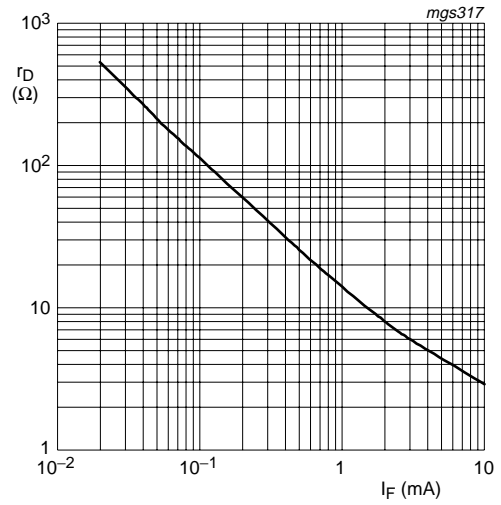
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
V_F	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V	
V_R	reverse voltage	$I_R = 10\text{ }\mu\text{A}$	50	-	-	V	
I_R	reverse current	$V_R = 50\text{ V}$	-	-	100	nA	
C_d	diode capacitance	$f = 1\text{ MHz}$; see Figure 1					
		$V_R = 0\text{ V}$	-	0.4	-	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 Figure 2					
		$I_F = 0.5\text{ mA}$	[1]	-	25	40	Ω
		$I_F = 1\text{ mA}$	[1]	-	14	25	Ω
		$I_F = 10\text{ mA}$	[1]	-	3	5	Ω

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



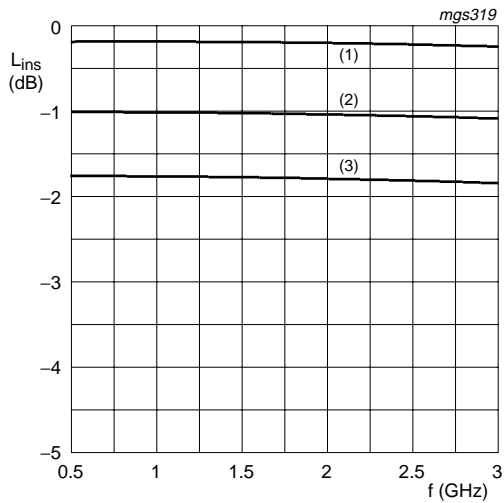
$f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

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



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

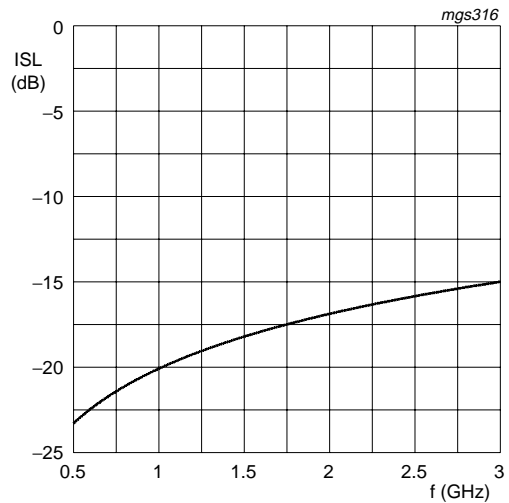
Fig 2. Diode forward resistance as a function of forward current; typical values



- (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 Ω 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 Ω 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

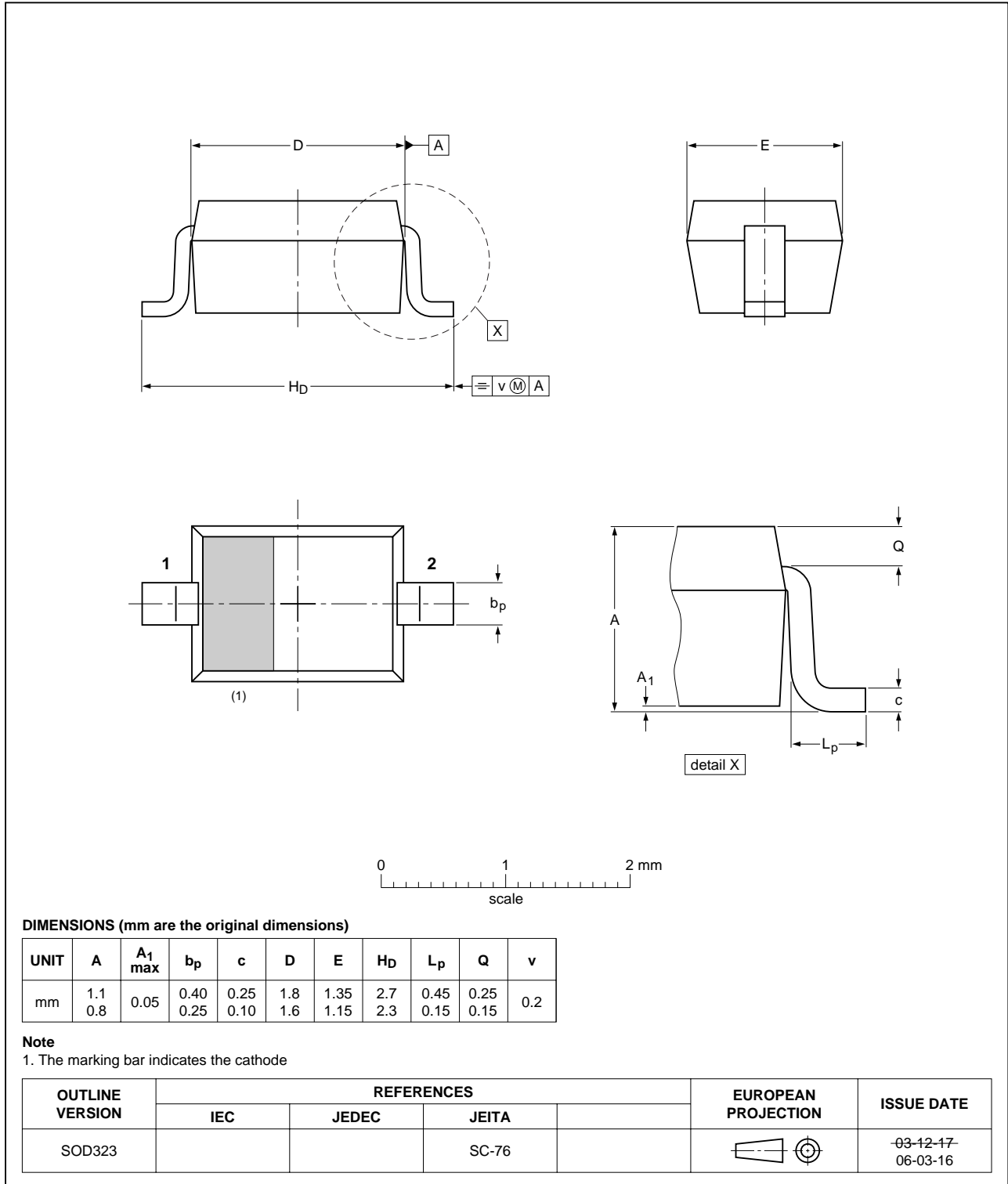


Fig 5. Package outline SOD323

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">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.			
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 ^{[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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Date of release: 11 September 2009

Document identifier: BAP50-03_4