

# BAP1321-02

Silicon PIN diode

Rev. 02 — 3 January 2008

Product data sheet

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NXP Semiconductors

# Silicon PIN diode

# BAP1321-02

## FEATURES

- High voltage, current controlled
- RF resistor for RF attenuators and switches
- Low diode capacitance
- Low diode forward resistance
- Very low series inductance
- For applications up to 3 GHz.

## APPLICATIONS

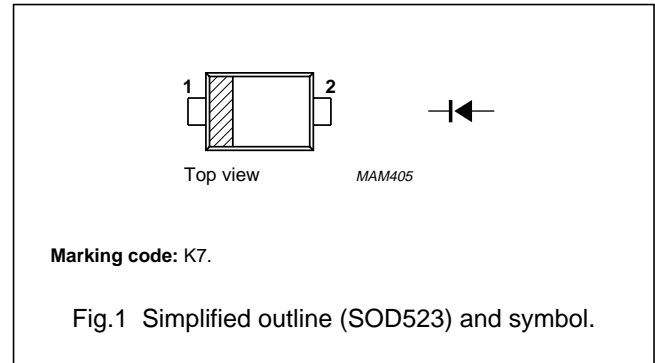
- RF attenuators and switches.

## DESCRIPTION

Planar PIN diode in a SOD523 ultra small SMD plastic package.

## PINNING

PIN	DESCRIPTION
1	cathode
2	anode



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_R$	continuous reverse voltage		–	60	V
$I_F$	continuous forward current		–	100	mA
$P_{tot}$	total power dissipation	$T_s \leq 90\text{ °C}$	–	715	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–65	+150	°C

## Silicon PIN diode

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$V_F$	forward voltage	$I_F = 50\text{ mA}$	0.95	1.1	V
$I_R$	reverse leakage current	$V_R = 60\text{ V}$	–	100	nA
$C_d$	diode capacitance	$V_R = 0; f = 1\text{ MHz}$	0.4	–	pF
		$V_R = 1\text{ V}; f = 1\text{ MHz}$	0.35	0.45	pF
		$V_R = 20\text{ V}; f = 1\text{ MHz}$	0.25	0.32	pF
$r_D$	diode forward resistance	$f = 100\text{ MHz}$ ; note 1			
		$I_F = 0.5\text{ mA}$	3.4	5.0	$\Omega$
		$I_F = 1\text{ mA}$	2.4	3.6	$\Omega$
		$I_F = 10\text{ mA}$	1.2	1.8	$\Omega$
		$I_F = 100\text{ mA}$	0.85	1.3	$\Omega$
$ S_{21} ^2$	isolation	$V_R = 0; f = 900\text{ MHz}$	16.3	–	dB
		$V_R = 0; f = 1800\text{ MHz}$	11.4	–	dB
		$V_R = 0; f = 2450\text{ MHz}$	9.2	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 0.5\text{ mA}; f = 900\text{ MHz}$	0.23	–	dB
		$I_F = 0.5\text{ mA}; f = 1800\text{ MHz}$	0.27	–	dB
		$I_F = 0.5\text{ mA}; f = 2450\text{ MHz}$	0.33	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 1\text{ mA}; f = 900\text{ MHz}$	0.18	–	dB
		$I_F = 1\text{ mA}; f = 1800\text{ MHz}$	0.22	–	dB
		$I_F = 1\text{ mA}; f = 2450\text{ MHz}$	0.27	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 10\text{ mA}; f = 900\text{ MHz}$	0.10	–	dB
		$I_F = 10\text{ mA}; f = 1800\text{ MHz}$	0.16	–	dB
		$I_F = 10\text{ mA}; f = 2450\text{ MHz}$	0.20	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 100\text{ mA}; f = 900\text{ MHz}$	0.08	–	dB
		$I_F = 100\text{ mA}; f = 1800\text{ MHz}$	0.13	–	dB
		$I_F = 100\text{ mA}; f = 2450\text{ MHz}$	0.18	–	dB
$\tau_L$	charge carrier life time	when switched from $I_F = 10\text{ mA}$ to $I_R = 6\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 3\text{ mA}$	0.5	–	$\mu\text{s}$
$L_S$	series inductance	$I_F = 100\text{ mA}; f = 100\text{ MHz}$	0.6	–	nH

**Note**

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

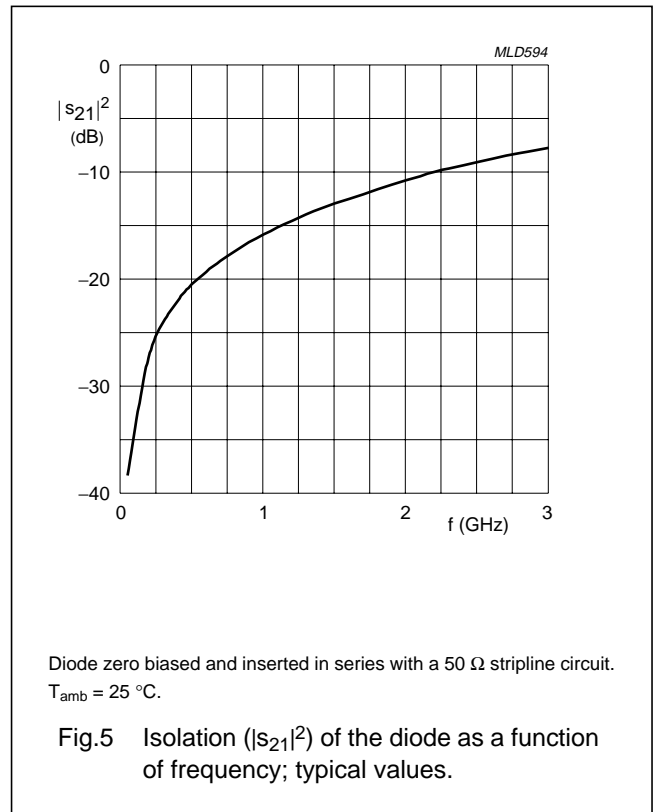
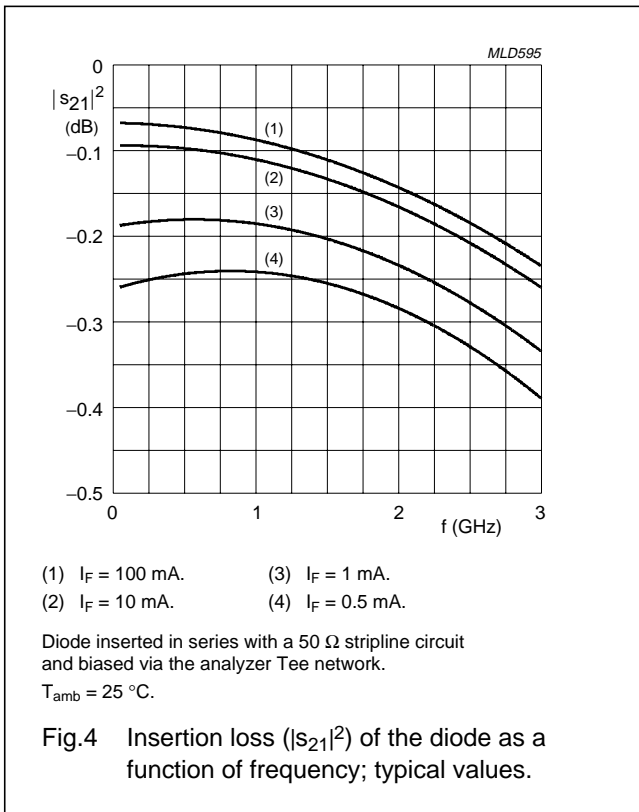
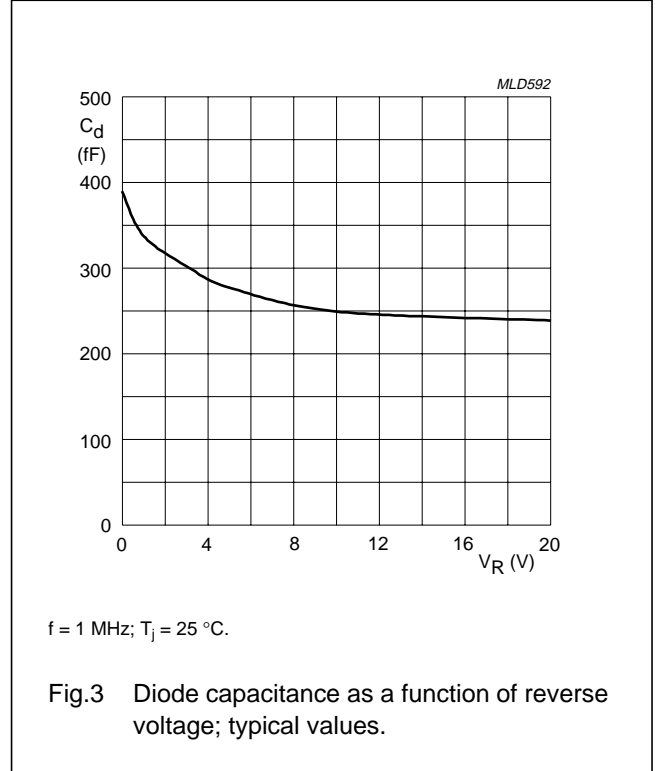
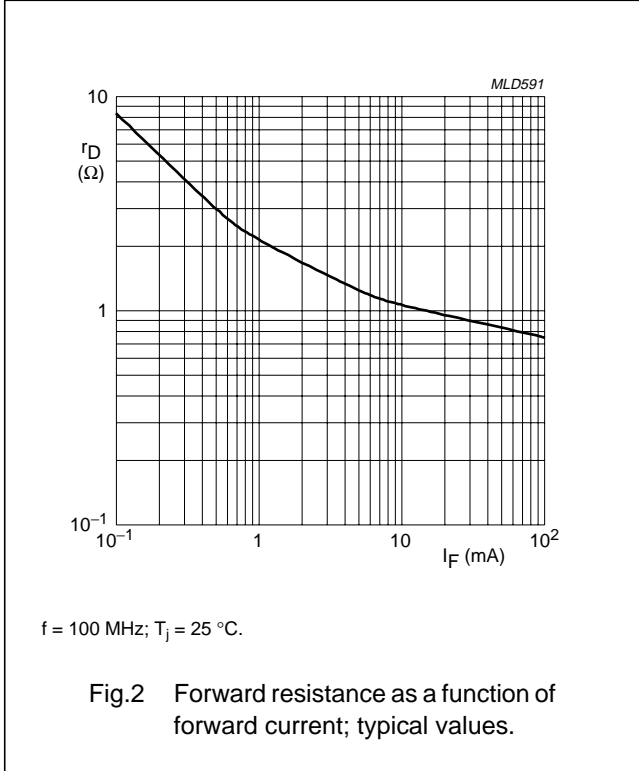
**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	85	K/W

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GRAPHICAL DATA



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PACKAGE OUTLINE

Plastic surface-mounted package; 2 leads

SOD523

**DIMENSIONS (mm are the original dimensions)**

UNIT	A	bp	c	D	E	HE	v
mm	0.65 0.58	0.34 0.26	0.17 0.11	1.25 1.15	0.85 0.75	1.65 1.55	0.1

**Note**  
1. The marking bar indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD523			SC-79			02-12-13 06-03-16

## Legal information

### 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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## Revision history

### Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP1321-02_N_2	20080103	Product data sheet	-	BAP1321-02_1
Modifications:	• Package outline drawing on page 5 changed			
BAP1321-02_1 (9397 750 08131)	20010417	Product specification	-	-

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