



# BAP50-02

General purpose PIN diode

Rev. 02 — 3 January 2008

Product data sheet

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NXP Semiconductors

# General purpose PIN diode

# BAP50-02

### FEATURES

- Low diode capacitance
- Low diode forward resistance.

### APPLICATIONS

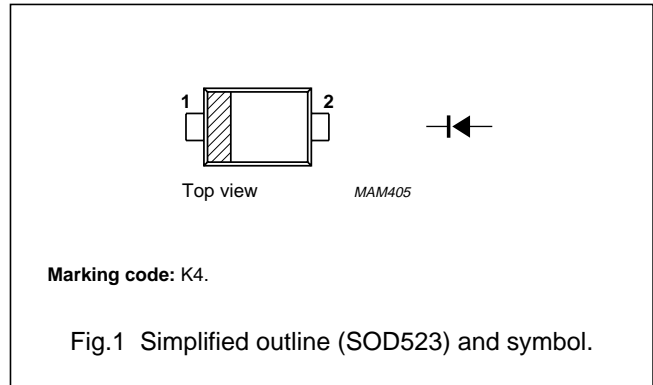
- General RF applications.

### DESCRIPTION

General purpose PIN diode in a SOD523 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		–	50	V
$I_F$	continuous forward current		–	50	mA
$P_{tot}$	total power dissipation	$T_s = 90\text{ °C}$	–	715	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–65	+150	°C

## General purpose PIN diode

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**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$  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	$V_R = 0$ ; $f = 1\text{ MHz}$	–	0.4	–	pF
		$V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$	–	0.3	0.55	pF
		$V_R = 5\text{ V}$ ; $f = 1\text{ MHz}$	–	0.22	0.35	pF
$r_D$	diode forward resistance	$I_F = 0.5\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	25	40	$\Omega$
		$I_F = 1\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	14	25	$\Omega$
		$I_F = 10\text{ mA}$ ; $f = 100\text{ MHz}$ ; note 1	–	3	5	$\Omega$
$ S_{21} ^2$	isolation	$V_R = 0$ ; $f = 900\text{ MHz}$	–	20.4	–	dB
		$V_R = 0$ ; $f = 1800\text{ MHz}$	–	17.3	–	dB
		$V_R = 0$ ; $f = 2450\text{ MHz}$	–	15.5	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 0.5\text{ mA}$ ; $f = 900\text{ MHz}$	–	1.74	–	dB
		$I_F = 0.5\text{ mA}$ ; $f = 1800\text{ MHz}$	–	1.79	–	dB
		$I_F = 0.5\text{ mA}$ ; $f = 2450\text{ MHz}$	–	1.88	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 1\text{ mA}$ ; $f = 900\text{ MHz}$	–	1.03	–	dB
		$I_F = 1\text{ mA}$ ; $f = 1800\text{ MHz}$	–	1.09	–	dB
		$I_F = 1\text{ mA}$ ; $f = 2450\text{ MHz}$	–	1.15	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 10\text{ mA}$ ; $f = 900\text{ MHz}$	–	0.26	–	dB
		$I_F = 10\text{ mA}$ ; $f = 1800\text{ MHz}$	–	0.32	–	dB
		$I_F = 10\text{ mA}$ ; $f = 2450\text{ MHz}$	–	0.34	–	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 $I_R = 3\text{ mA}$	–	1.05	–	$\mu\text{s}$
$L_S$	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.

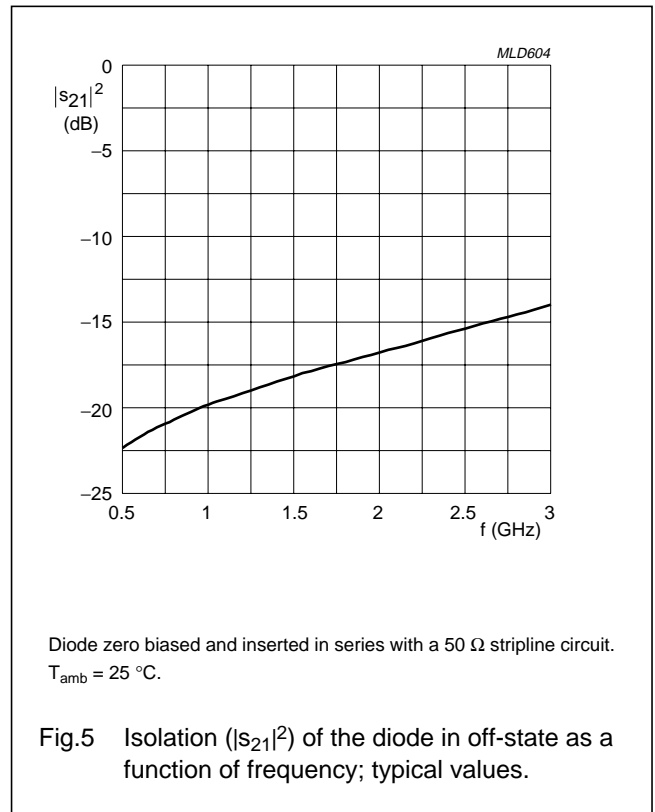
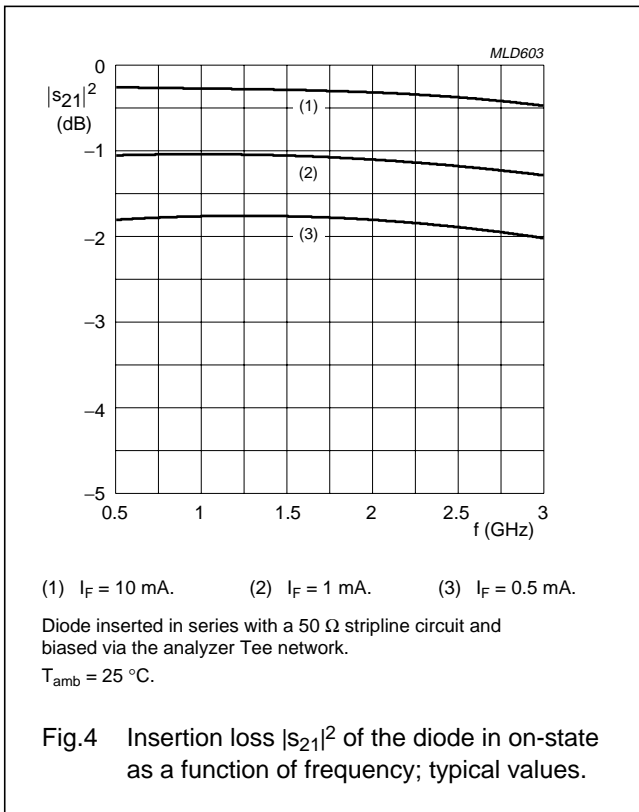
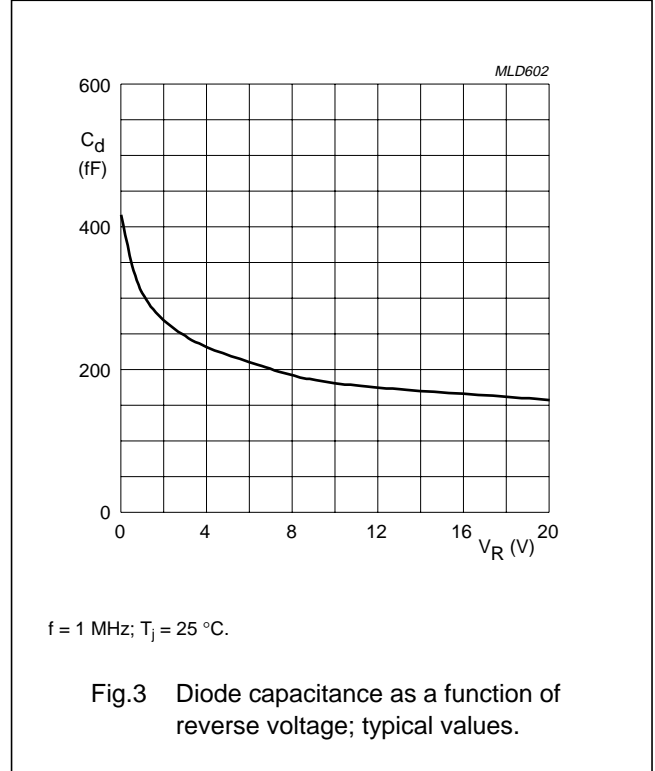
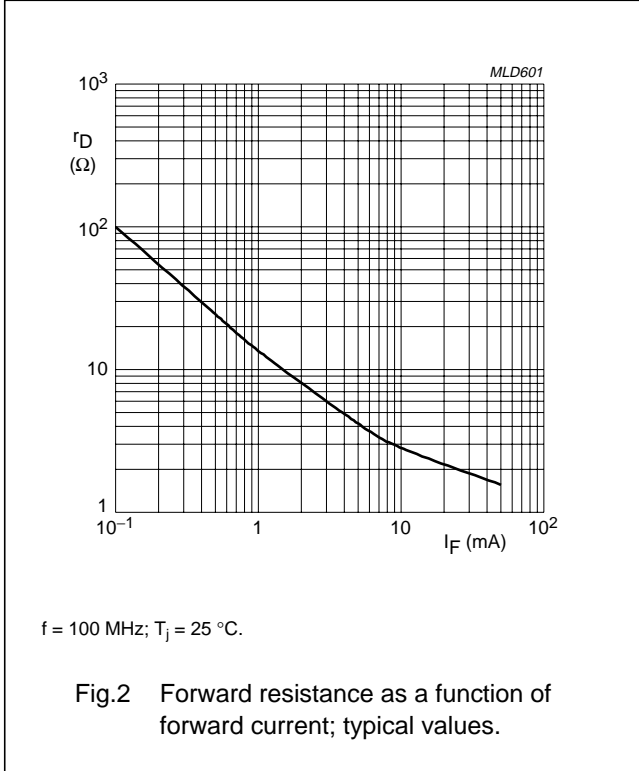
**THERMAL CHARACTERISTICS**

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

General purpose PIN diode

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GRAPHICAL DATA



General purpose PIN diode

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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	0.34	0.17	1.25	0.85	1.65	0.1
	0.58	0.26	0.11	1.15	0.75	1.55	

**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

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### 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
BAP50-02_N_2	20080103	Product data sheet	-	BAP50-02_1
Modifications:	<ul style="list-style-type: none"> <li>Package outline drawing on page 5 changed</li> </ul>			
BAP50-02_1 (9397 750 08113)	20010417	Product specification	-	-

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