

BAP65-02

Silicon PIN diode

Rev. 04 — 8 January 2008

Product data sheet

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NXP Semiconductors

Silicon PIN diode

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FEATURES

- High voltage, current controlled
- RF resistor for RF switches
- Low diode capacitance
- Low diode forward resistance (low loss)
- Very low series inductance.

APPLICATIONS

- RF attenuators and switches
- Bandswitch for TV tuners
- Series diode for mobile communication transmit/receive switch.

DESCRIPTION

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

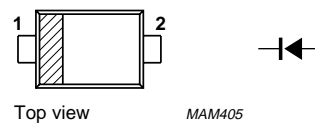
LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage		–	30	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

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



Marking code: K6.

Fig.1 Simplified outline (SOD523) and symbol.

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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	$I_F = 50\text{ mA}$	0.9	1.1	V
I_R	reverse leakage current	$V_R = 20\text{ V}$	–	20	nA
C_d	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}$	0.65	–	pF
		$V_R = 1\text{ V}; f = 1\text{ MHz}$	0.55	0.9	pF
		$V_R = 3\text{ V}; f = 1\text{ MHz}$	0.5	0.8	pF
		$V_R = 20\text{ V}; f = 1\text{ MHz}$	0.375	–	pF
r_D	diode forward resistance	$I_F = 1\text{ mA}; f = 100\text{ MHz}$	1	–	Ω
		$I_F = 5\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	0.65	0.95	Ω
		$I_F = 10\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	0.56	0.9	Ω
		$I_F = 100\text{ mA}; f = 100\text{ MHz}$	0.35	–	Ω
$ S_{21} ^2$	isolation	$V_R = 0; f = 900\text{ MHz}$	10	–	dB
		$V_R = 0; f = 1800\text{ MHz}$	5.8	–	dB
		$V_R = 0; f = 2450\text{ MHz}$	4.4	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 1\text{ mA}; f = 900\text{ MHz}$	0.11	–	dB
		$I_F = 1\text{ mA}; f = 1800\text{ MHz}$	0.13	–	dB
		$I_F = 1\text{ mA}; f = 2450\text{ MHz}$	0.16	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 5\text{ mA}; f = 900\text{ MHz}$	0.08	–	dB
		$I_F = 5\text{ mA}; f = 1800\text{ MHz}$	0.11	–	dB
		$I_F = 5\text{ mA}; f = 2450\text{ MHz}$	0.13	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 10\text{ mA}; f = 900\text{ MHz}$	0.07	–	dB
		$I_F = 10\text{ mA}; f = 1800\text{ MHz}$	0.1	–	dB
		$I_F = 10\text{ mA}; f = 2450\text{ MHz}$	0.13	–	dB
$ S_{21} ^2$	insertion loss	$I_F = 100\text{ mA}; f = 900\text{ MHz}$	0.07	–	dB
		$I_F = 100\text{ mA}; f = 1800\text{ MHz}$	0.1	–	dB
		$I_F = 100\text{ mA}; f = 2450\text{ MHz}$	0.128	–	dB
τ_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 $I_R = 3\text{ mA}$	0.17	–	μs
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.

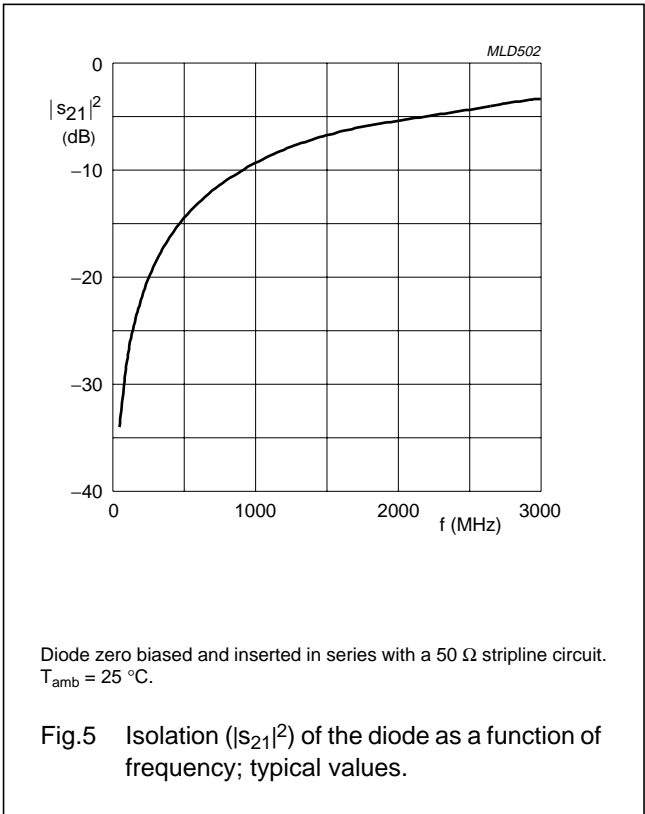
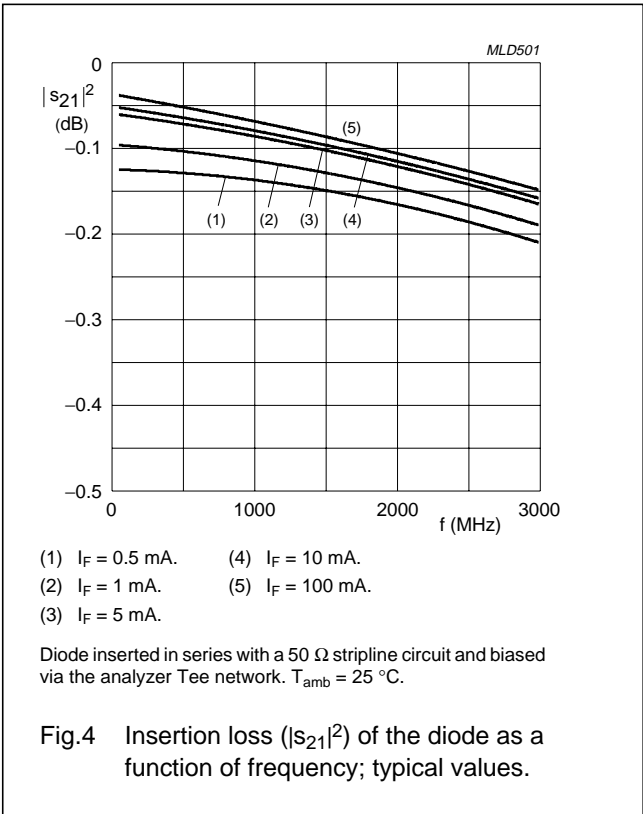
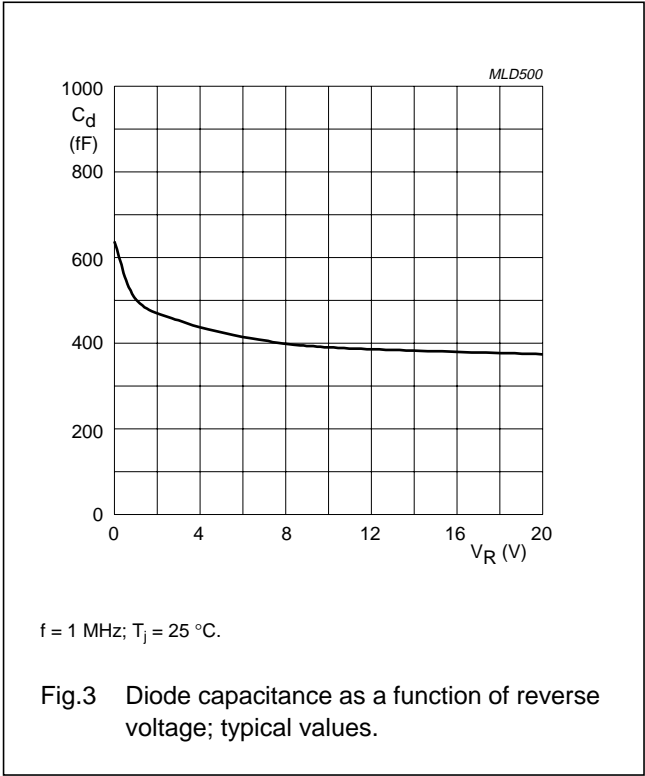
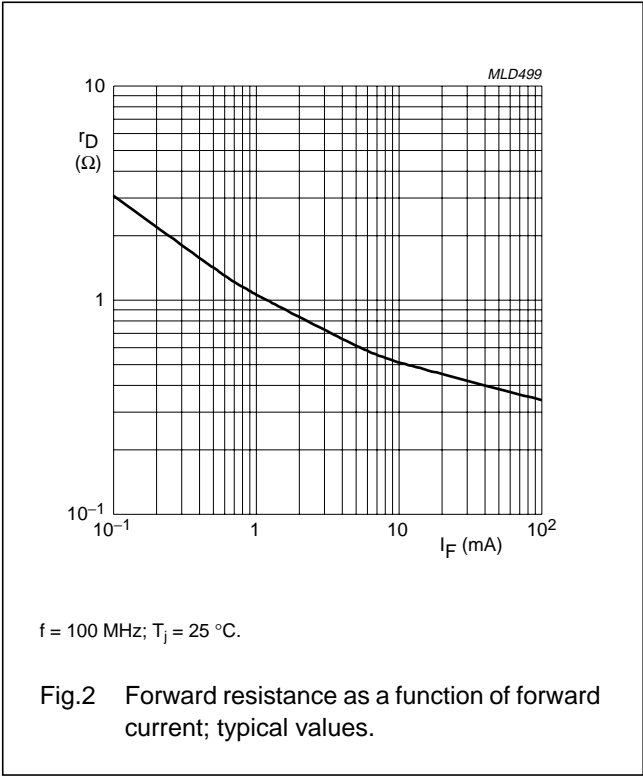
THERMAL CHARACTERISTICS

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

0 0.5 1 mm
scale

DIMENSIONS (mm are the original dimensions)

UNIT	A	b _p	c	D	E	H _E	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 ^{[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".

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Revision history

Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP65-02_N_4	20080108	Product data sheet	-	BAP65-02_3
Modifications: <ul style="list-style-type: none">• Package outline drawing on page 5 changed				
BAP65-02_3 (9397 750 08364)	20010511	Product specification	-	BAP65-02_2
BAP65-02_2 (9397 750 08237)	20010507	Product specification	-	BAP65-02_1
BAP65-02_1 (9397 750 07724)	20001220	Product specification	-	-

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