

# BAP65-02

Silicon PIN diode

Rev. 04 — 8 January 2008

Product data sheet

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NXP Semiconductors

# Silicon PIN diode

# BAP65-02

## 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.

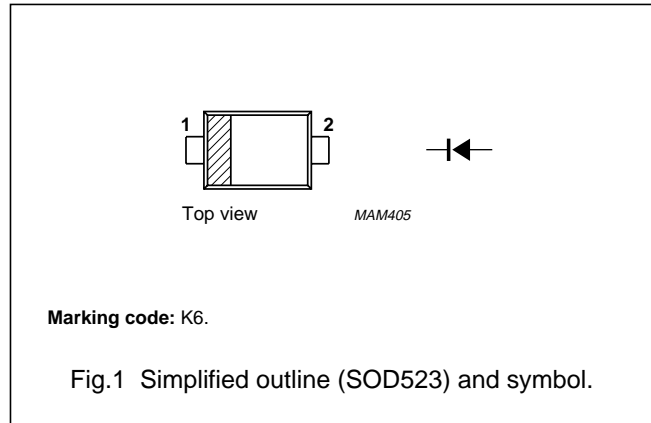
## LIMITING VALUES

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



## Silicon PIN diode

## BAP65-02

**ELECTRICAL CHARACTERISTICS**T<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 50 mA	0.9	1.1	V
I <sub>R</sub>	reverse leakage current	V <sub>R</sub> = 20 V	–	20	nA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 0 V; f = 1 MHz	0.65	–	pF
		V <sub>R</sub> = 1 V; f = 1 MHz	0.55	0.9	pF
		V <sub>R</sub> = 3 V; f = 1 MHz	0.5	0.8	pF
		V <sub>R</sub> = 20 V; f = 1 MHz	0.375	–	pF
r <sub>D</sub>	diode forward resistance	I <sub>F</sub> = 1 mA; f = 100 MHz	1	–	Ω
		I <sub>F</sub> = 5 mA; f = 100 MHz; note 1	0.65	0.95	Ω
		I <sub>F</sub> = 10 mA; f = 100 MHz; note 1	0.56	0.9	Ω
		I <sub>F</sub> = 100 mA; f = 100 MHz	0.35	–	Ω
S <sub>21</sub>   <sup>2</sup>	isolation	V <sub>R</sub> = 0; f = 900 MHz	10	–	dB
		V <sub>R</sub> = 0; f = 1800 MHz	5.8	–	dB
		V <sub>R</sub> = 0; f = 2450 MHz	4.4	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 1 mA; f = 900 MHz	0.11	–	dB
		I <sub>F</sub> = 1 mA; f = 1800 MHz	0.13	–	dB
		I <sub>F</sub> = 1 mA; f = 2450 MHz	0.16	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 5 mA; f = 900 MHz	0.08	–	dB
		I <sub>F</sub> = 5 mA; f = 1800 MHz	0.11	–	dB
		I <sub>F</sub> = 5 mA; f = 2450 MHz	0.13	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 10 mA; f = 900 MHz	0.07	–	dB
		I <sub>F</sub> = 10 mA; f = 1800 MHz	0.1	–	dB
		I <sub>F</sub> = 10 mA; f = 2450 MHz	0.13	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 100 mA; f = 900 MHz	0.07	–	dB
		I <sub>F</sub> = 100 mA; f = 1800 MHz	0.1	–	dB
		I <sub>F</sub> = 100 mA; f = 2450 MHz	0.128	–	dB
τ <sub>L</sub>	charge carrier life time	when switched from I <sub>F</sub> = 10 mA to I <sub>R</sub> = 6 mA; R <sub>L</sub> = 100 Ω; measured at I <sub>R</sub> = 3 mA	0.17	–	μs
L <sub>S</sub>	series inductance	I <sub>F</sub> = 100 mA; f = 100 MHz	0.6	–	nH

**Note**

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

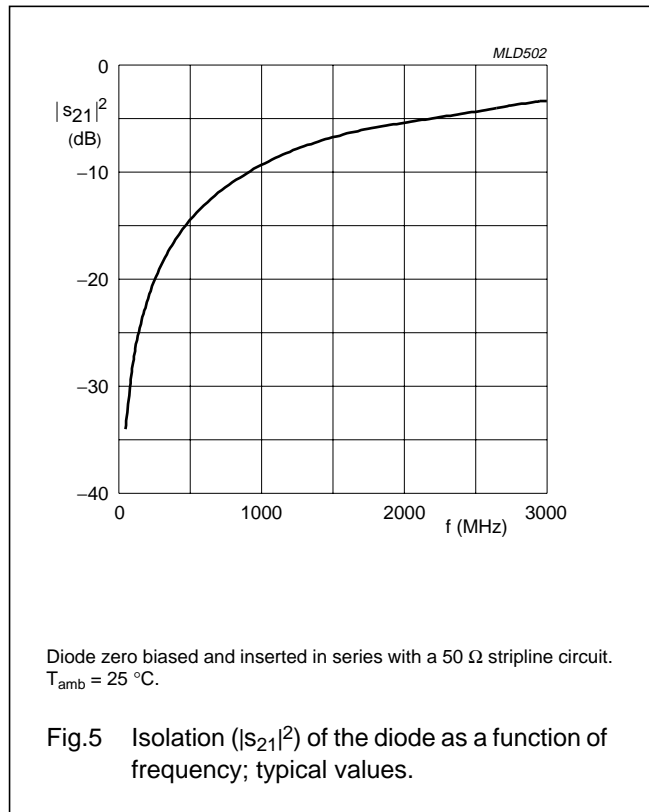
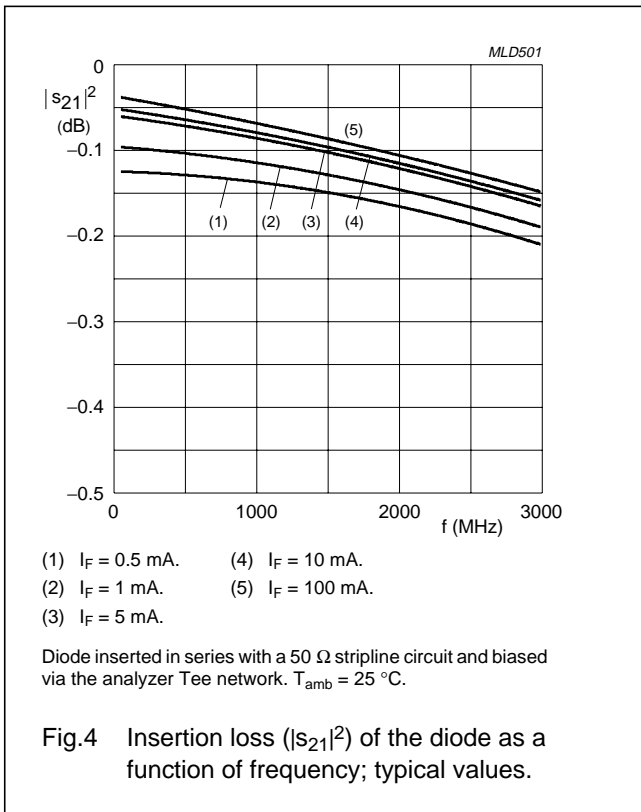
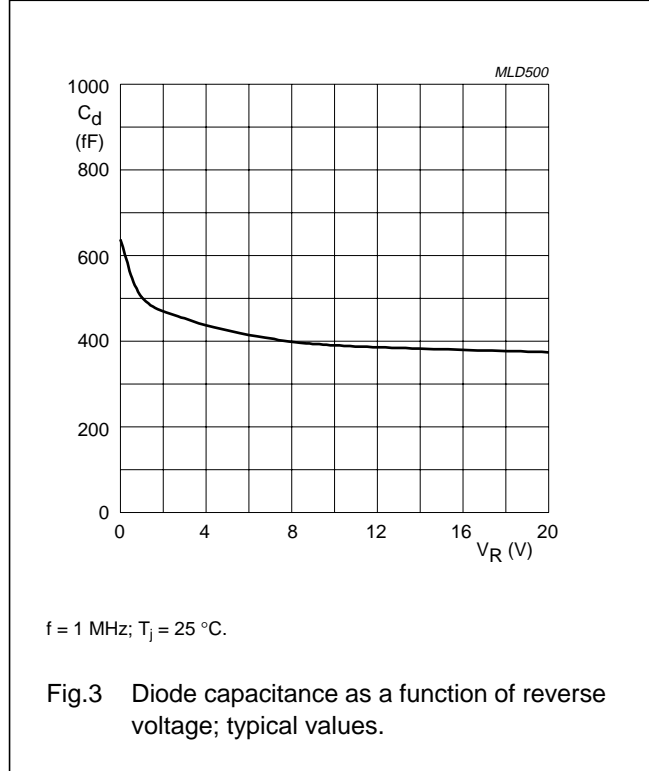
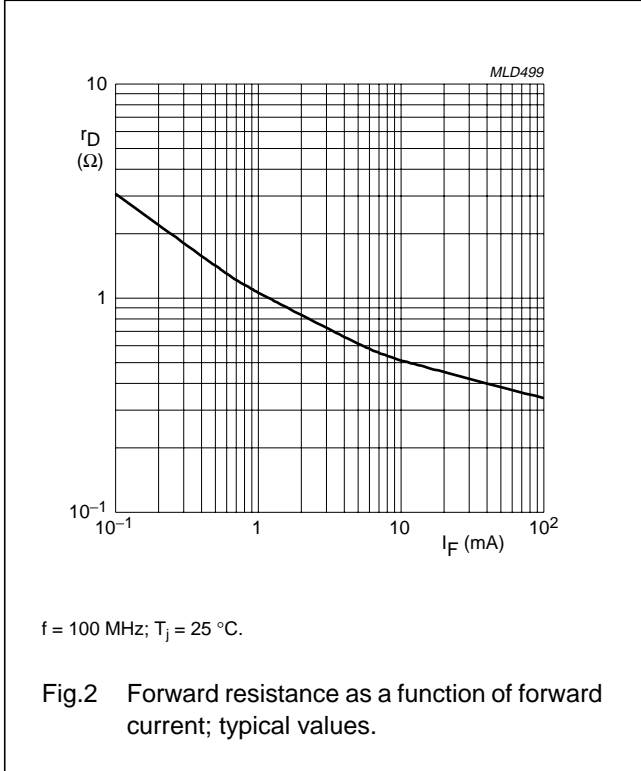
**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
R <sub>th j-s</sub>	thermal resistance from junction to soldering point	85	K/W

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BAP65-02

GRAPHICAL DATA



Silicon PIN diode

BAP65-02

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			<del>02-12-13</del> 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
BAP65-02_N_4	20080108	Product data sheet	-	BAP65-02_3
Modifications:	• 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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