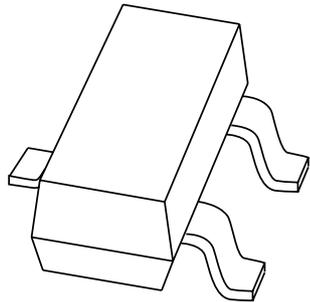


# DATA SHEET



## **BAP1321-04** Silicon PIN diode

Product specification

2001 Apr 17

# Silicon PIN diode

# BAP1321-04

## 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

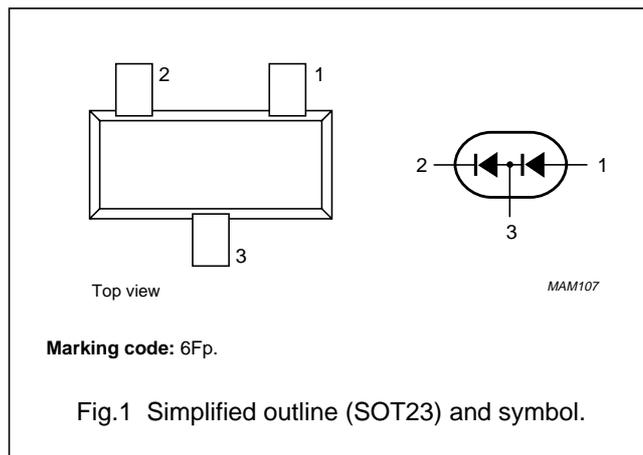
- RF attenuators and switches.

## DESCRIPTION

Two planar PIN diodes in series configuration in a SOT23 small SMD plastic package.

## PINNING

PIN	DESCRIPTION
1	anode
2	cathode
3	common connection



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per diode</b>					
$V_R$	continuous reverse voltage		–	60	V
$I_F$	continuous forward current		–	100	mA
$P_{tot}$	total power dissipation	$T_s \leq 90\text{ °C}$	–	250	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<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
<b>Per diode</b>					
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 50 mA	0.95	1.1	V
I <sub>R</sub>	reverse leakage current	V <sub>R</sub> = 60 V	–	100	nA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 0; f = 1 MHz	0.42	–	pF
		V <sub>R</sub> = 1 V; f = 1 MHz	0.375	0.45	pF
		V <sub>R</sub> = 20 V; f = 1 MHz	0.275	0.325	pF
r <sub>D</sub>	diode forward resistance	f = 100 MHz; note 1			
		I <sub>F</sub> = 0.5 mA	3.4	5.0	Ω
		I <sub>F</sub> = 1 mA	2.4	3.6	Ω
		I <sub>F</sub> = 10 mA	1.2	1.8	Ω
S <sub>21</sub>   <sup>2</sup>	isolation	V <sub>R</sub> = 0; f = 900 MHz	15.7	–	dB
		V <sub>R</sub> = 0; f = 1800 MHz	10.5	–	dB
		V <sub>R</sub> = 0; f = 2450 MHz	7.9	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 0.5 mA; f = 900 MHz	0.27	–	dB
		I <sub>F</sub> = 0.5 mA; f = 1800 MHz	0.35	–	dB
		I <sub>F</sub> = 0.5 mA; f = 2450 MHz	0.43	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 1 mA; f = 900 MHz	0.21	–	dB
		I <sub>F</sub> = 1 mA; f = 1800 MHz	0.29	–	dB
		I <sub>F</sub> = 1 mA; f = 2450 MHz	0.37	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 10 mA; f = 900 MHz	0.14	–	dB
		I <sub>F</sub> = 10 mA; f = 1800 MHz	0.21	–	dB
		I <sub>F</sub> = 10 mA; f = 2450 MHz	0.29	–	dB
S <sub>21</sub>   <sup>2</sup>	insertion loss	I <sub>F</sub> = 100 mA; f = 900 MHz	0.10	–	dB
		I <sub>F</sub> = 100 mA; f = 1800 MHz	0.18	–	dB
		I <sub>F</sub> = 100 mA; f = 2450 MHz	0.26	–	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	0.5	–	μs
L <sub>S</sub>	series inductance	I <sub>F</sub> = 100 mA; f = 100 MHz	1.4	–	nH

**Note**

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

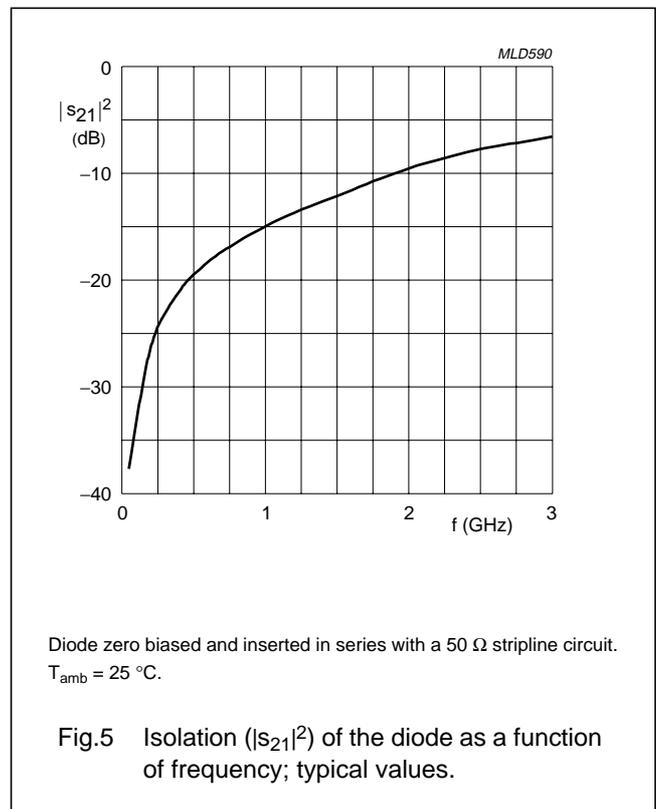
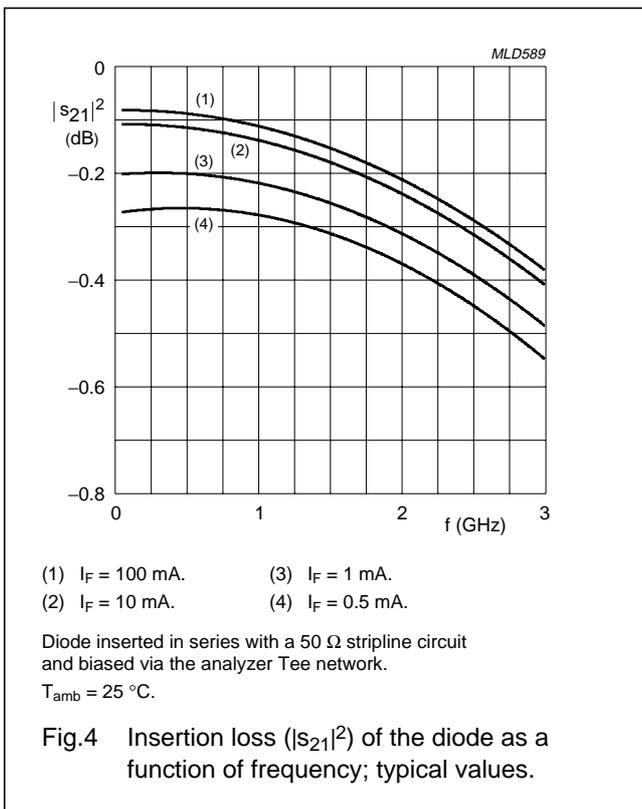
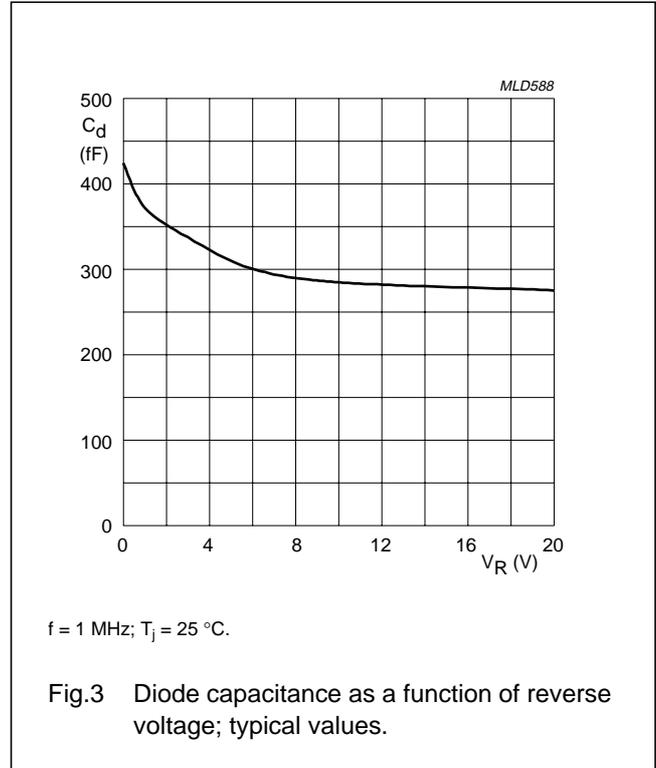
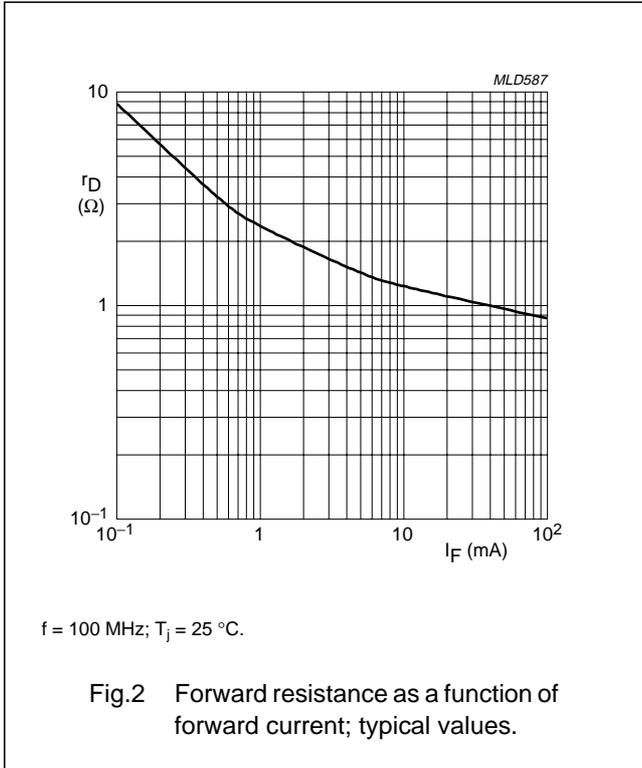
**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
R <sub>th j-s</sub>	thermal resistance from junction to soldering point	220	K/W

Silicon PIN diode

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GRAPHICAL DATA



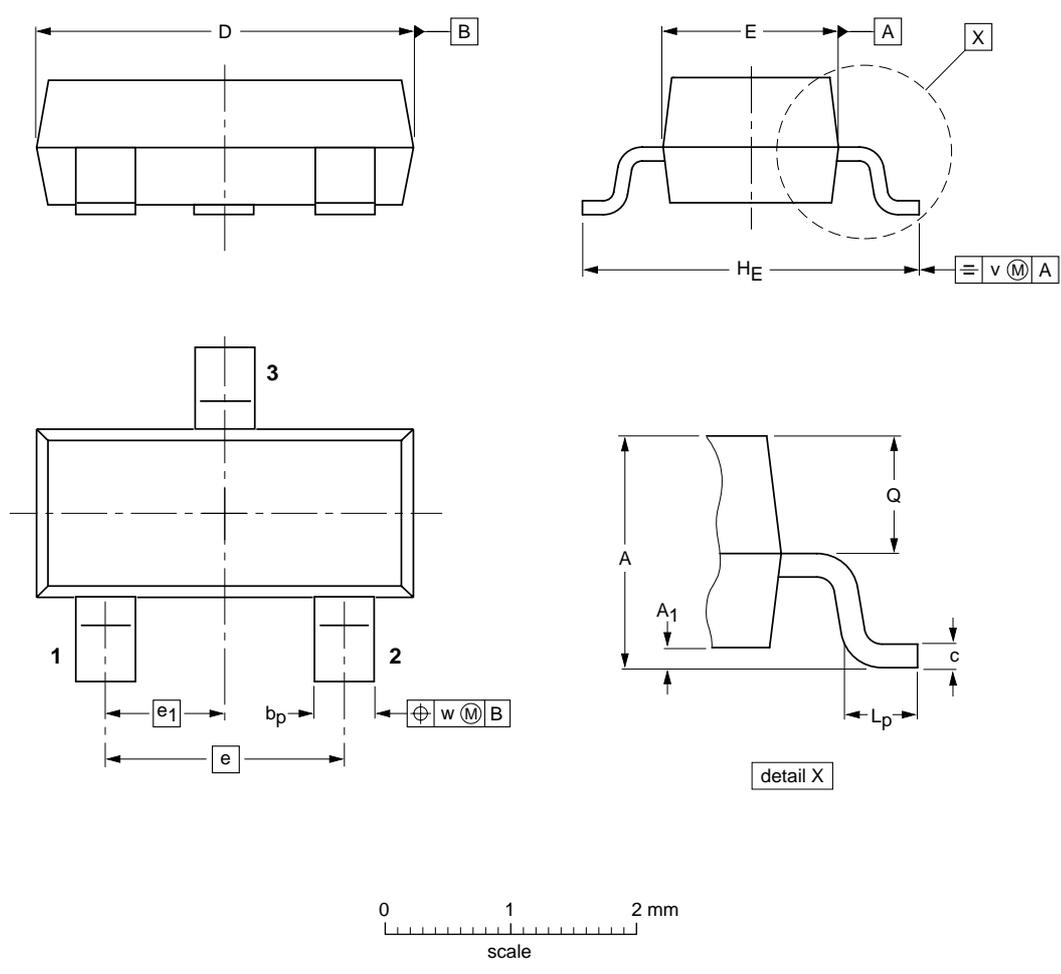
Silicon PIN diode

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				97-02-28- 99-09-13

## Silicon PIN diode

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## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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Silicon PIN diode

BAP1321-04

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