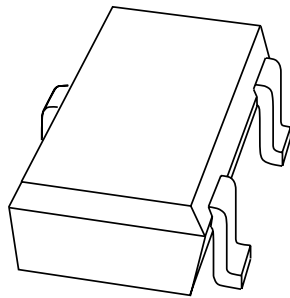


DATA SHEET



BAP64-05W Silicon PIN diode

Product specification

2000 June 15

Silicon PIN diode

BAP64-05W

FEATURES

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

APPLICATIONS

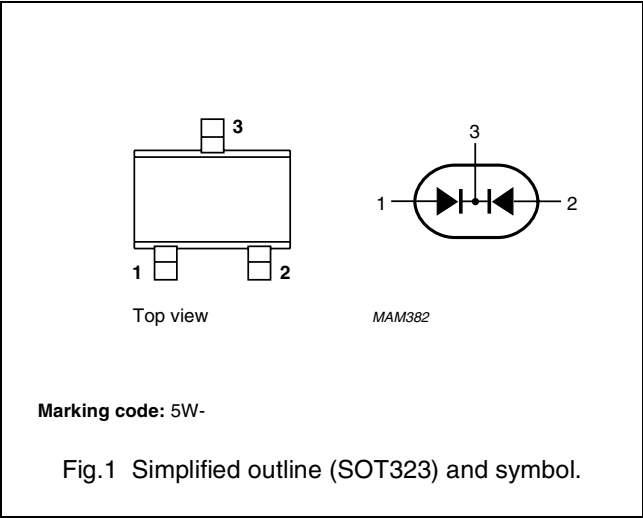
- RF attenuators and switches.

DESCRIPTION

Two planar PIN diodes in common cathode configuration in a SOT323 small plastic SMD package.

PINNING

PIN	DESCRIPTION
1	anode (a1)
2	anode (a2)
3	common cathode



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_R	continuous reverse voltage		–	100	V
I_F	continuous forward current		–	100	mA
P_{tot}	total power dissipation	$T_s = 90\text{ °C}$	–	240	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

Silicon PIN diode

BAP64-05W

ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
Per diode					
V_F	forward voltage	$I_F = 50\text{ mA}$	0.95	1.1	V
I_R	reverse current	$V_R = 100\text{ V}$	–	10	μA
		$V_R = 20\text{ V}$	–	1	μA
C_d	diode capacitance	$V_R = 0; f = 1\text{ MHz}$	0.52	–	pF
		$V_R = 1\text{ V}; f = 1\text{ MHz}$	0.37	–	pF
		$V_R = 20\text{ V}; f = 1\text{ MHz}$	0.23	0.35	pF
r_D	diode forward resistance	$I_F = 0.5\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	20	40	Ω
		$I_F = 1\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	10	20	Ω
		$I_F = 10\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	2	3.8	Ω
		$I_F = 100\text{ mA}; f = 100\text{ MHz}; \text{note 1}$	0.7	1.35	Ω
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 $I_R = 3\text{ mA}$	1.55	–	μs
L_S	series inductance		1.2	–	nH

Note

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

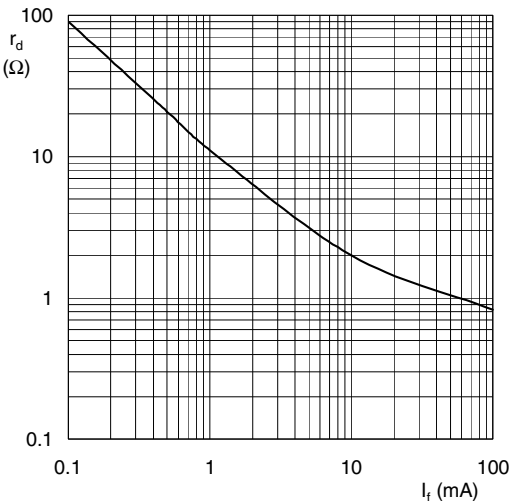
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-s}$	thermal resistance from junction to soldering point	250	K/W

Silicon PIN diode

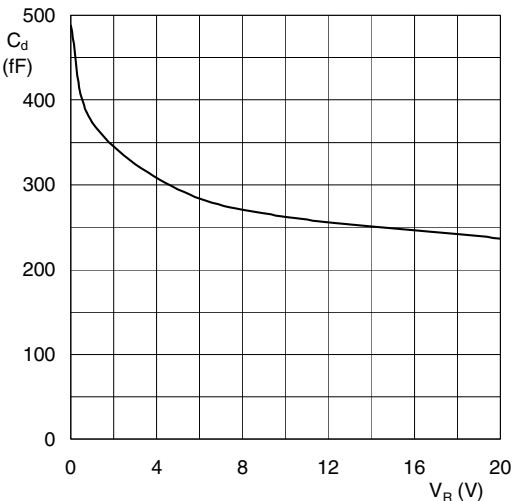
BAP64-05W

GRAPHICAL DATA



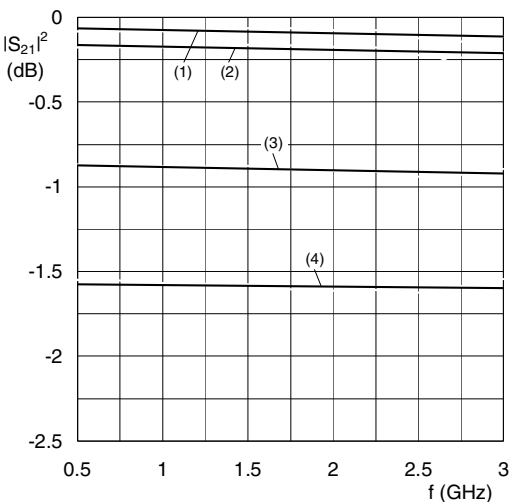
$f = 100\text{ MHz}$; $T_j = 25\text{ }^\circ\text{C}$.

Fig.2 Forward resistance as a function of forward current; typical values.



$f = 1\text{ MHz}$; $T_j = 25\text{ }^\circ\text{C}$.

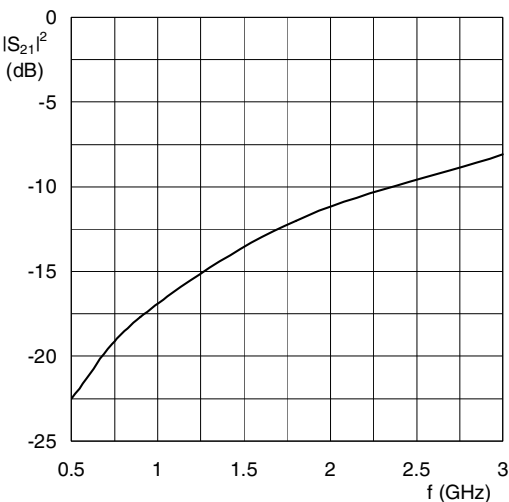
Fig.3 Diode capacitance as a function of reverse voltage; typical values.



- (1) $I_F = 100\text{ mA}$. (3) $I_F = 1\text{ mA}$.
(2) $I_F = 10\text{ mA}$. (4) $I_F = 0.5\text{ mA}$.

Diode inserted in series with a $50\text{ }\Omega$ stripline circuit and biased via the analyzer Tee network.
 $T_{amb} = 25\text{ }^\circ\text{C}$.

Fig.4 Insertion loss ($|S_{21}|^2$) of the diode as a function of frequency; typical values.

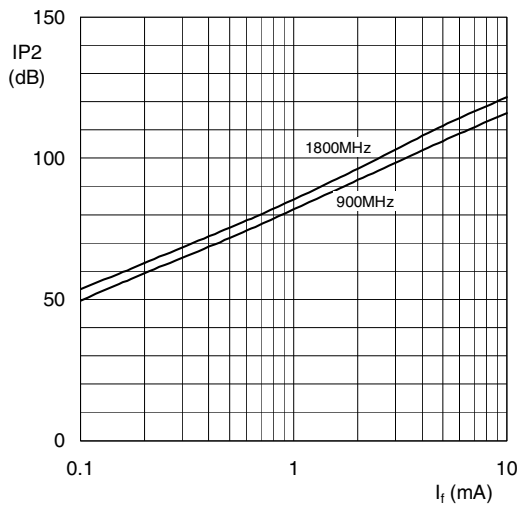


Diode zero biased and inserted in series with a $50\text{ }\Omega$ stripline circuit.
 $T_{amb} = 25\text{ }^\circ\text{C}$.

Fig.5 Isolation ($|S_{21}|^2$) of the diode as a function of frequency; typical values.

Silicon PIN diode

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$T_{amb} = 25\text{ }^{\circ}\text{C}$; typical values

Fig.6 Second order intercept point as a function of forward current; typical values.

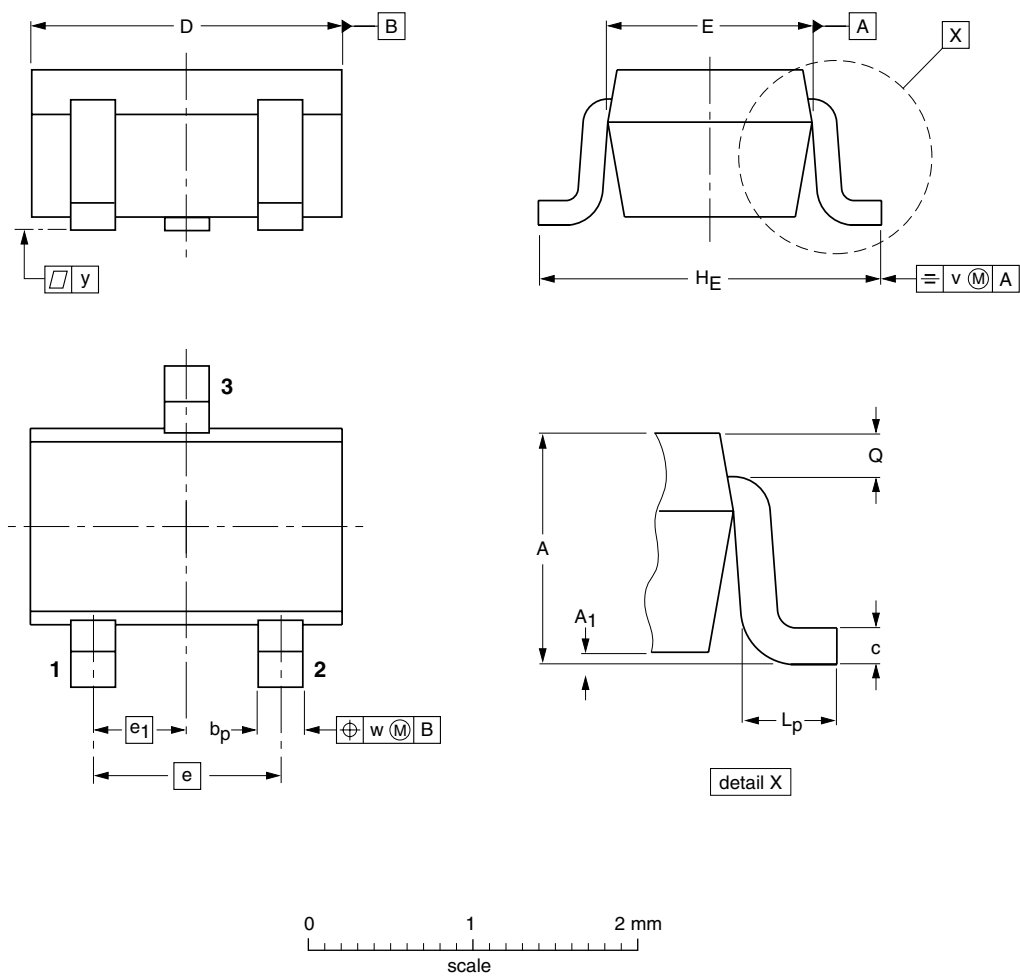
Silicon PIN diode

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT323			SC-70			97-02-28

Silicon PIN diode

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DATA SHEET STATUS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS ⁽¹⁾
Objective specification	Development	This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice.
Preliminary specification	Qualification	This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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Printed in The Netherlands

125004/04/pp8

Date of release: 2000 June 15

Document order number: 9397 nnn nnnnn

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