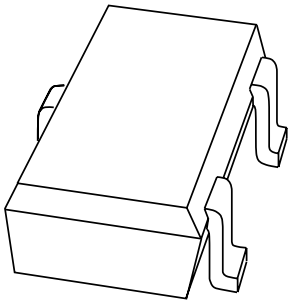
DATA SHEET



BAP51-04W
General purpose PIN diode

Preliminary specification

2002 Feb 19

Philips
Semiconductors

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General purpose PIN diode BAP51-04W

FEATURES

- Two elements in series configuration in a small SMD plastic package
- Low diode capacitance
- Low diode forward resistance.

APPLICATIONS

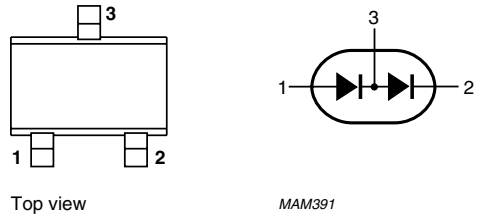
- General RF applications.

DESCRIPTION

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

PINNING

PIN	DESCRIPTION
1	anode
2	cathode
3	common connection



Marking code: W6-

Fig.1 Simplified outline (SOT323) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_R	continuous reverse voltage		–	50	V
I_F	continuous forward current		–	50	mA
P_{tot}	total power dissipation	T_s = 90 °C	–	240	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per diode						
V_F	forward voltage	I_F = 50 mA	–	0.95	1.1	V
V_R	reverse voltage	I_R = 10 μA	50	–	–	V
I_R	reverse current	V_R = 50 V	–	–	100	nA
C_d	diode capacitance	V_R = 0; f = 1 MHz	–	0.4	–	pF
		V_R = 1 V; f = 1 MHz	–	0.3	0.55	pF
		V_R = 5 V; f = 1 MHz	–	0.2	0.35	pF
r_D	diode forward resistance	I_F = 0.5 mA; f = 100 MHz; note 1	–	5.5	9	Ω
		I_F = 1 mA; f = 100 MHz; note 1	–	3.6	6.5	Ω
		I_F = 10 mA; f = 100 MHz; note 1	–	1.5	2.5	Ω
τ_L	charge carrier life time	when switched from I_F = 10 mA to I_R = 6 mA; R_L = 100 Ω; measured at I_R = 3 mA	–	550	–	ns
L_S	series inductance	I_F = 10 mA; f = 100 MHz	–	1.6	–	nH

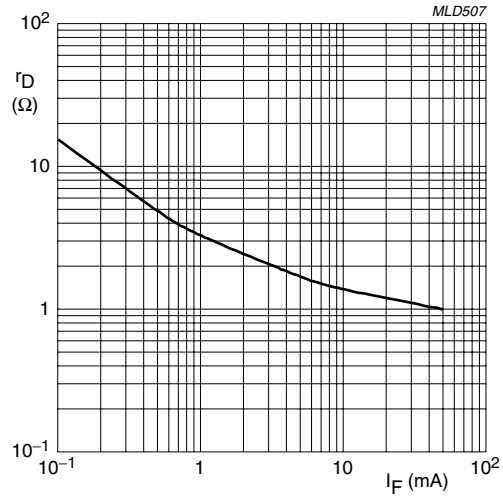
Note

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

THERMAL CHARACTERISTICS

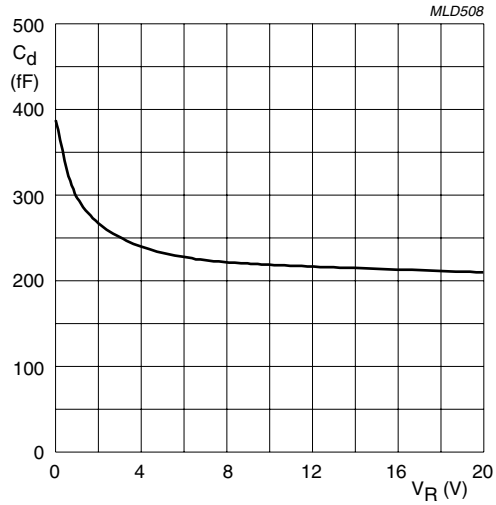
SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	250	K/W

GRAPHICAL DATA



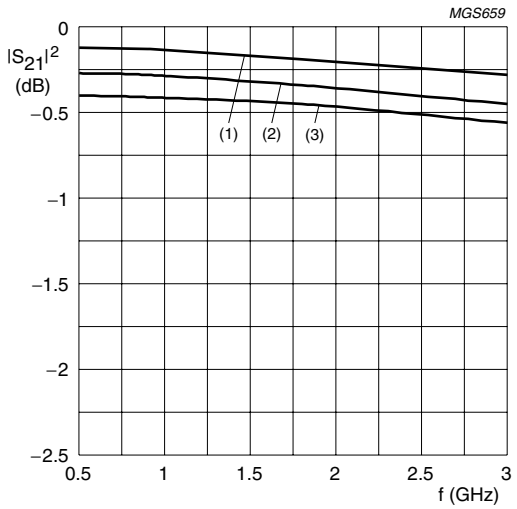
f = 100 MHz; T_j = 25 °C.

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



f = 100 MHz; T_j = 25 °C.

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



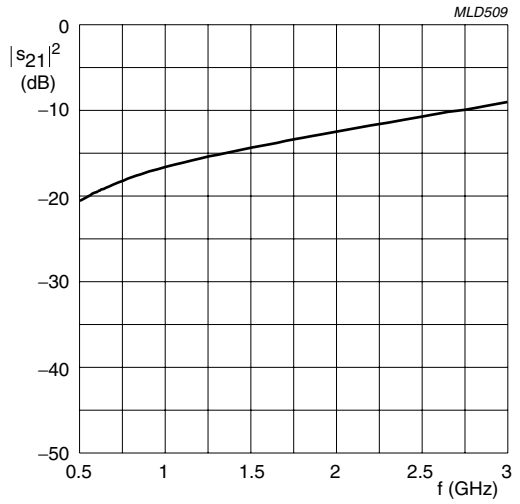
(1) I_F = 10 mA.

(2) I_F = 1 mA

(3) I_F = 0.5 mA

Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer Tee network. T_{amb} = 25 °C.

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

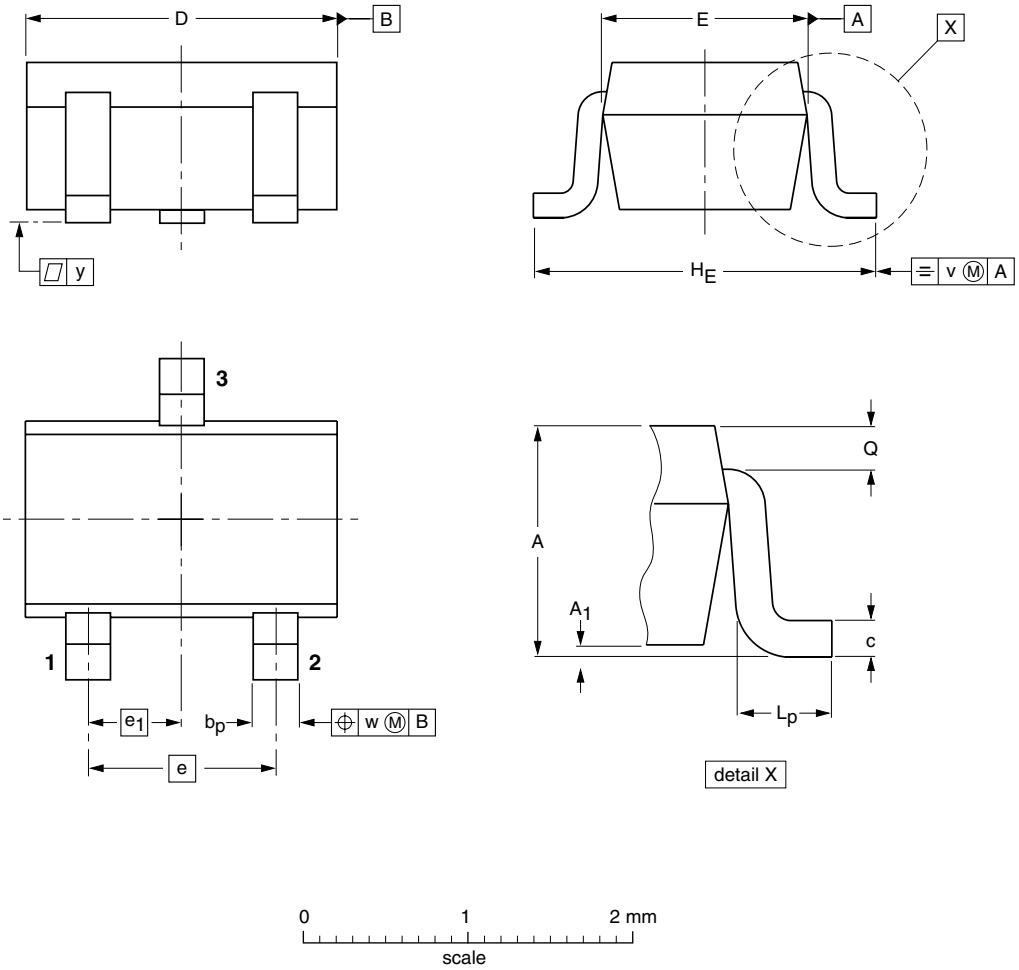


Diode zero biased and inserted in series with a 50 Ω stripline circuit. T_{amb} = 25 °C.

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

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

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	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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