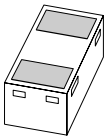


BAP55L

Silicon PIN diode

Rev. 01 — 5 April 2005 Preliminary data sheet

1. Product profile

1.1 General description

Planar PIN diode in a SOD882 leadless ultra small plastic SMD package.

1.2 Features

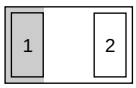
- High speed switching for RF signals
- Low diode capacitance
- Low forward resistance
- Very low series inductance
- For applications up to 3 GHz

1.3 Applications

- RF attenuators and switches

2. Pinning information

Table 1: Discrete pinning

Pin	Description	Simplified outline	Symbol
1	cathode [1]	 Transparent top view	 sym006
2	anode		

[1] The marking bar indicates the cathode.

3. Ordering information

Table 2: Ordering information

Type number	Package		
	Name	Description	Version
BAP55L	-	leadless ultra small plastic package; 2 terminals; body $1.0 \times 0.6 \times 0.5$ mm	SOD882

PHILIPS

4. Marking

Table 3: Marking

Type number	Marking code
BAP55L	E6

5. Limiting values

Table 4: Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	50	V
I_F	forward current		-	100	mA
P_{tot}	total power dissipation	T_s = 90 °C	-	500	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

6. Thermal characteristics

Table 5: Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to soldering point		100	K/W

7. Characteristics

Table 6: Characteristics

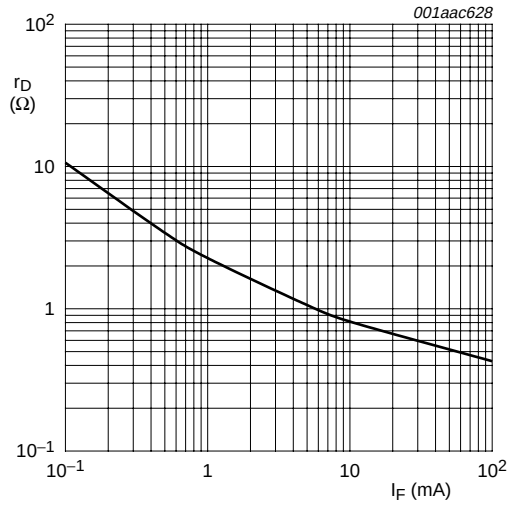
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	I_F = 50 mA	-	0.95	1.1	V
I_R	reverse current	V_R = 20 V	-	-	10	nA
		V_R = 50 V	-	-	0.1	µA
C_d	diode capacitance	f = 1 MHz; Figure 2				
		V_R = 0 V	-	0.27	-	pF
		V_R = 1 V	-	0.23	-	pF
		V_R = 20 V	-	0.18	0.28	pF
r_D	diode forward resistance	f = 100 MHz; Figure 1				
		I_F = 0.5 mA	-	3.4	4.5	Ω
		I_F = 1 mA	-	2.3	3.3	Ω
		I_F = 10 mA	-	0.8	1.2	Ω
		I_F = 100 mA	-	0.4	0.7	Ω

Table 6: Characteristics *...continued*

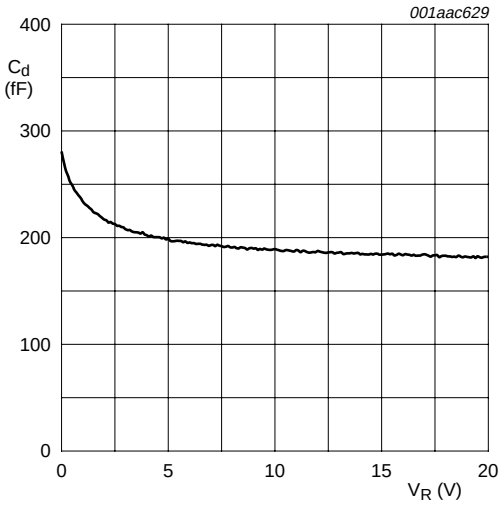
T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$\|s_{12}\|^2$	isolation	V_R = 0 V; Figure 4				
		f = 900 MHz	-	17.6	-	dB
		f = 1800 MHz	-	13	-	dB
		f = 2450 MHz	-	11.1	-	dB
$\|s_{21}\|^2$	insertion loss	I_F = 0.5 mA; Figure 3				
		f = 900 MHz	-	0.25	-	dB
		f = 1800 MHz	-	0.27	-	dB
		f = 2450 MHz	-	0.29	-	dB
		I_F = 1 mA; Figure 3				
		f = 900 MHz	-	0.17	-	dB
		f = 1800 MHz	-	0.19	-	dB
		f = 2450 MHz	-	0.21	-	dB
		I_F = 10 mA; Figure 3				
		f = 900 MHz	-	0.07	-	dB
		f = 1800 MHz	-	0.09	-	dB
		f = 2450 MHz	-	0.12	-	dB
		I_F = 100 mA; Figure 3				
		f = 900 MHz	-	0.05	-	dB
		f = 1800 MHz	-	0.07	-	dB
		f = 2450 MHz	-	0.09	-	dB
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	-	0.28	-	µs
L_S	series inductance		-	0.6	-	nH



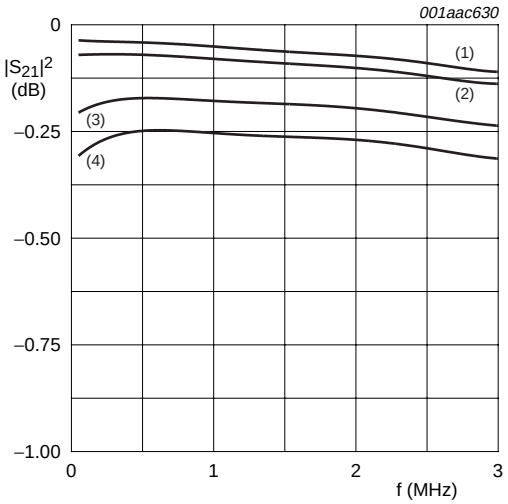
f = 100 MHz; T_j = 25 °C.

Fig 1. Forward resistance as a function of forward current; typical values



f = 1 MHz; T_j = 25 °C.

Fig 2. Diode capacitance as a function of reverse voltage; typical values



(1) I_F = 100 mA.

(2) I_F = 10 mA.

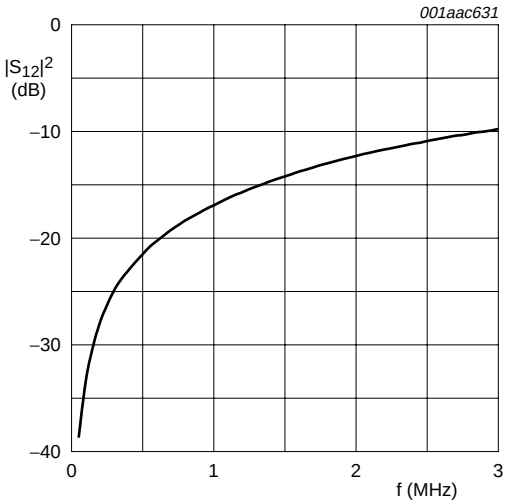
(3) I_F = 1 mA.

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



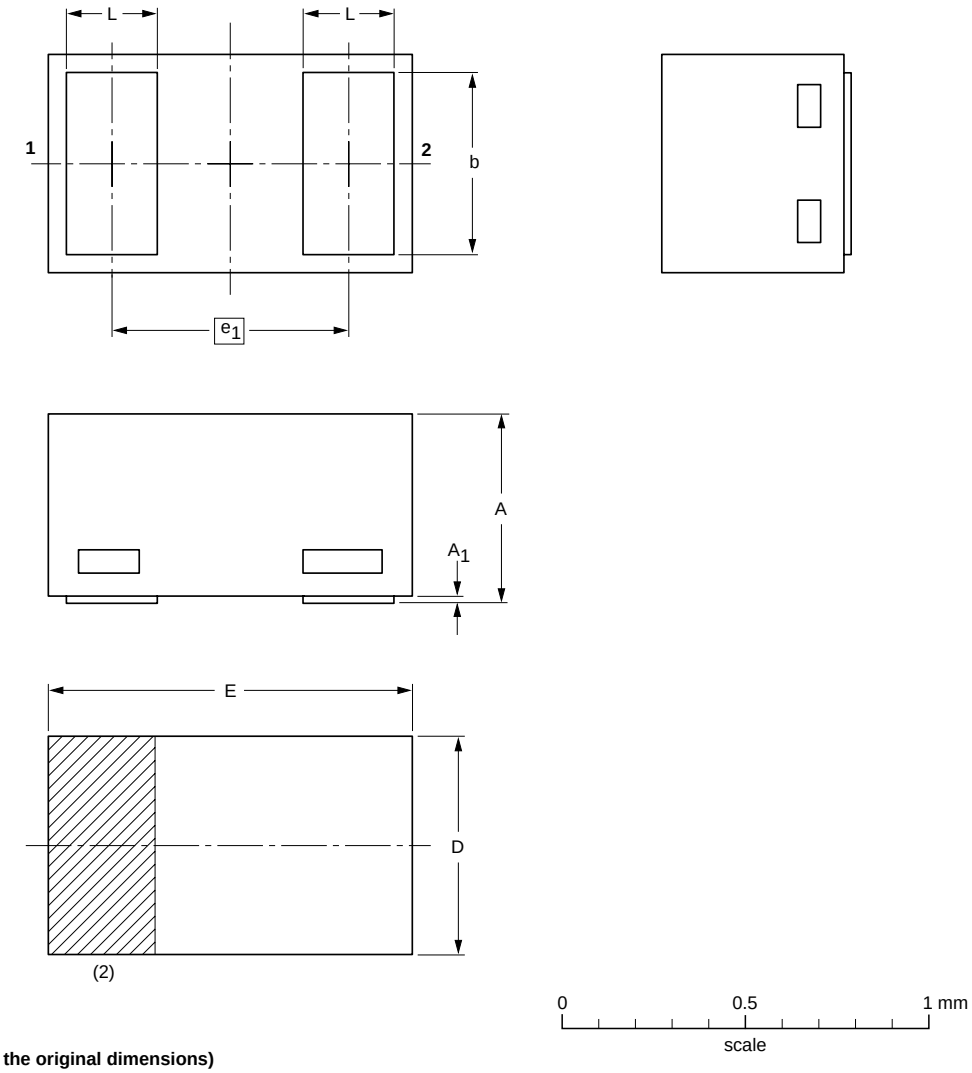
Diode zero biased and inserted in series with a 50 Ω stripline circuit.

T_{amb} = 25 °C.

Fig 4. Isolation ($|s_{12}|^2$) of the diode as a function of frequency; typical values

8. Package outline

Leadless ultra small plastic package; 2 terminals; body 1.0 x 0.6 x 0.5 mm **SOD882**



DIMENSIONS (mm are the original dimensions)

UNIT	A(1)	A_1 max.	b	D	E	e_1	L
mm	0.50 0.46	0.03	0.55 0.47	0.62 0.55	1.02 0.95	0.65	0.30 0.22

Notes

1. Including plating thickness
2. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD882						~~03-04-16~~ 03-04-17

Fig 5. Package outline SOD882

9. Revision history

Table 7: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BAP55L_1	20050405	Preliminary data sheet	-	9397 750 14811	-

10. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	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.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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14. Contents

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