BAP55L

Silicon PIN diode

Rev. 2 — 5 September 2011 | 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 and benefits

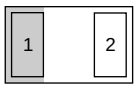
- High speed switching for RF signals
- Low diode capacitance
- Low forward resistance
- Very low series inductance
- For applications up to 3 GHz

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 × 0.6 × 0.5 mm	SOD882

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

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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

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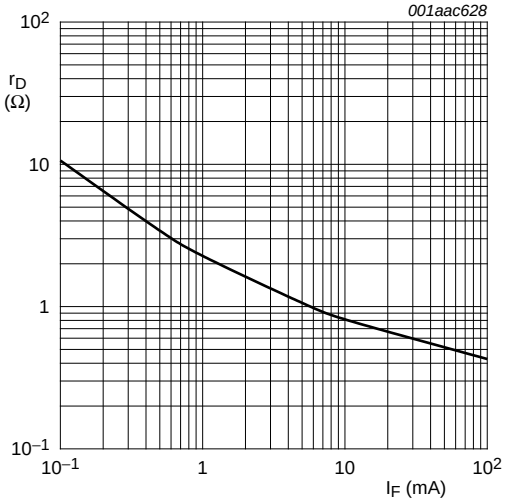
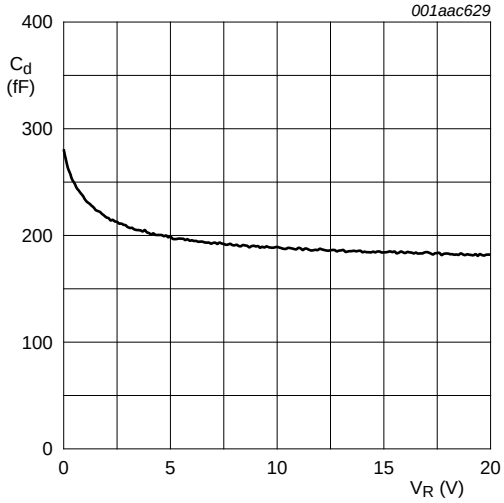


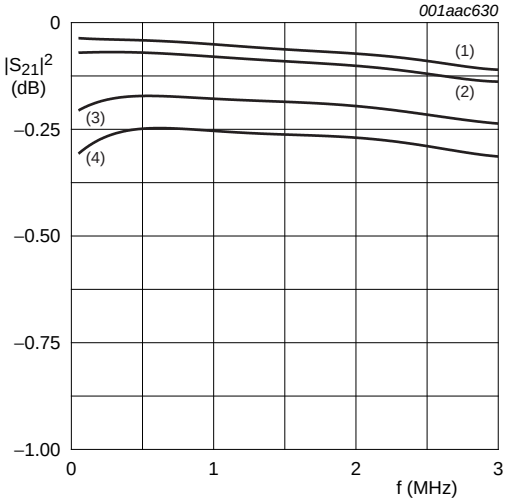
f = 100 MHz; T_j = 25 °C.

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.

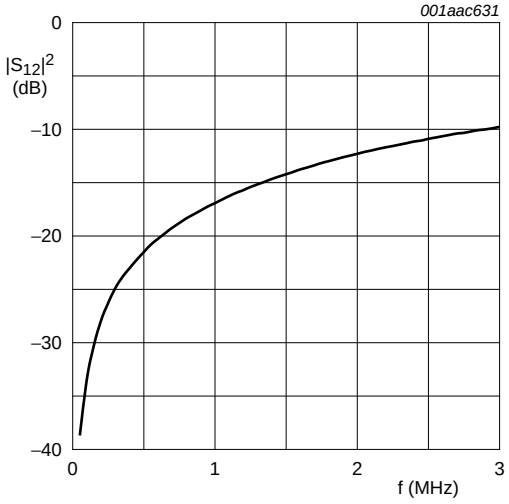
(3) I_F = 1 mA.

(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

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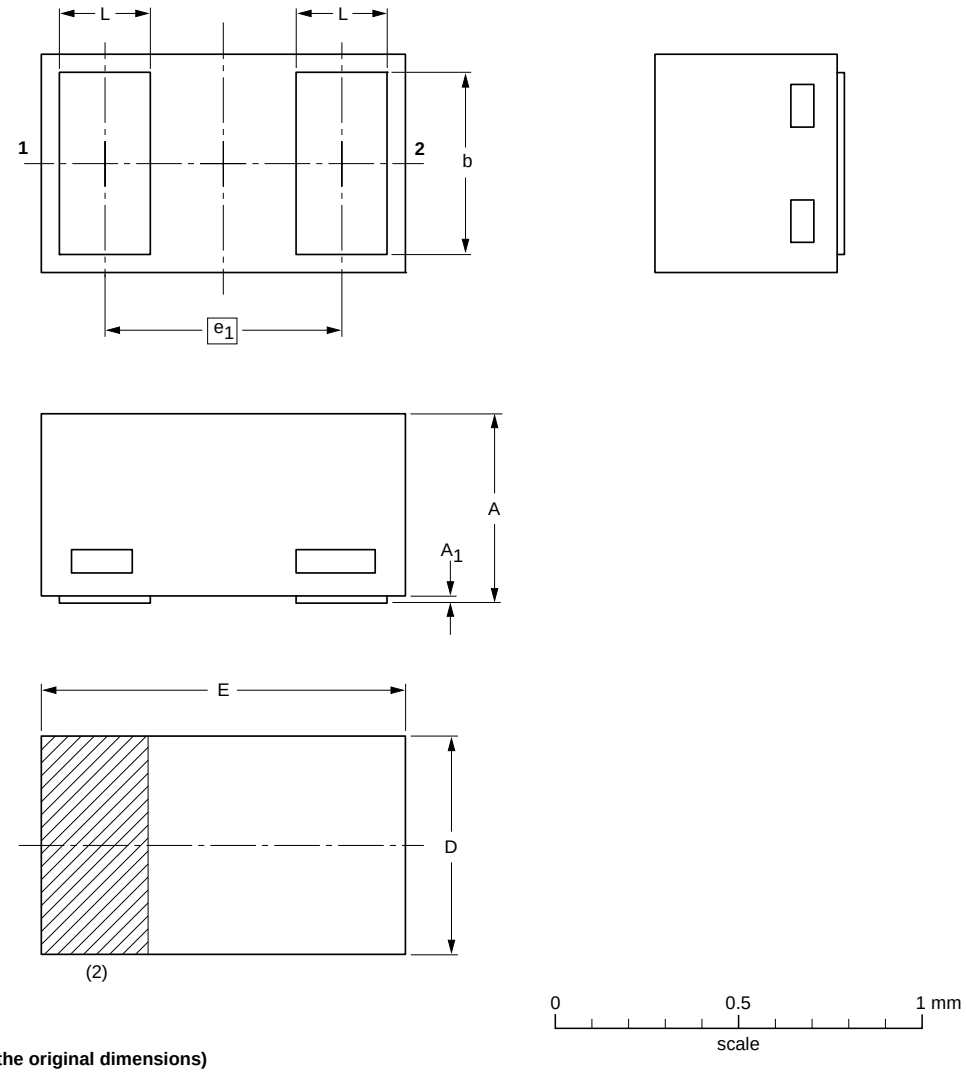
8. Package outline

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

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9. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP55L v.2	20110905	Preliminary data sheet	-	BAP55L v.1
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate.			
BAP55L v.1 (9397 750 14811)	20050405	Preliminary data sheet	-	-

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Document status[1][2]	Product status[3]	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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