



BAP51LX

Silicon PIN diode

Rev. 3 — 26 November 2018

Product data sheet

1 Product profile

1.1 General description

Planar PIN diode in a SOD882D 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
- AEC-Q101 qualified

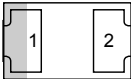
1.3 Applications

- 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
BAP51LX	DFN1006D-2	leadless ultra small plastic package; 2 terminals; body 1 × 0.6 × 0.4 mm	SOD882D

4 Marking code

Table 3. Marking code

Type number	Marking code ^[1]
BAP51LX	1001 0100

[1] For SOD882D binary marking code description, see [Figure 1](#).

4.1 Binary marking code description

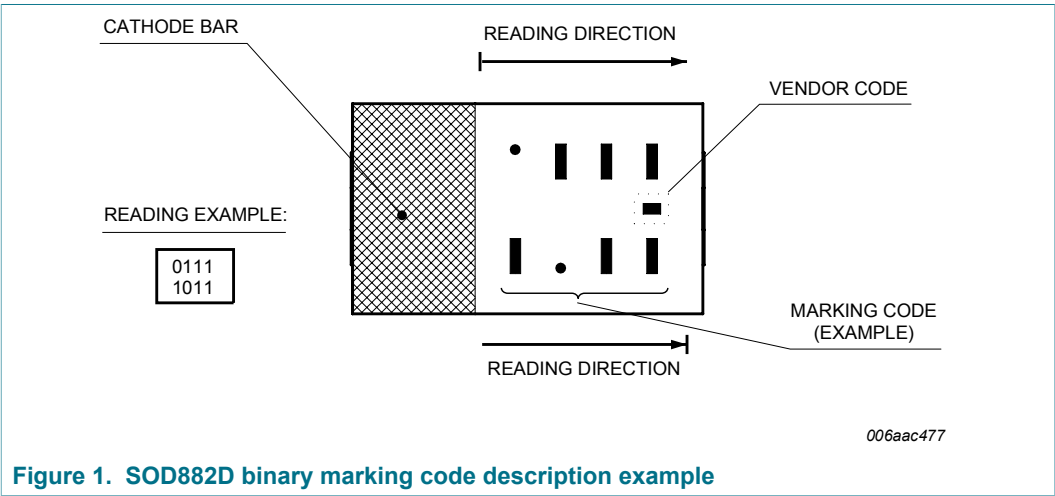


Figure 1. SOD882D binary marking code description example

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		-	60	V
I_F	forward current		-	100	mA
P_{tot}	total power dissipation	$T_{sp} \leq 90\text{ }^{\circ}\text{C}$	-	140	mW
T_{stg}	storage temperature		-65	+150	$^{\circ}\text{C}$
T_j	junction temperature		-65	+150	$^{\circ}\text{C}$

6 Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		66	K/W

7 Characteristics

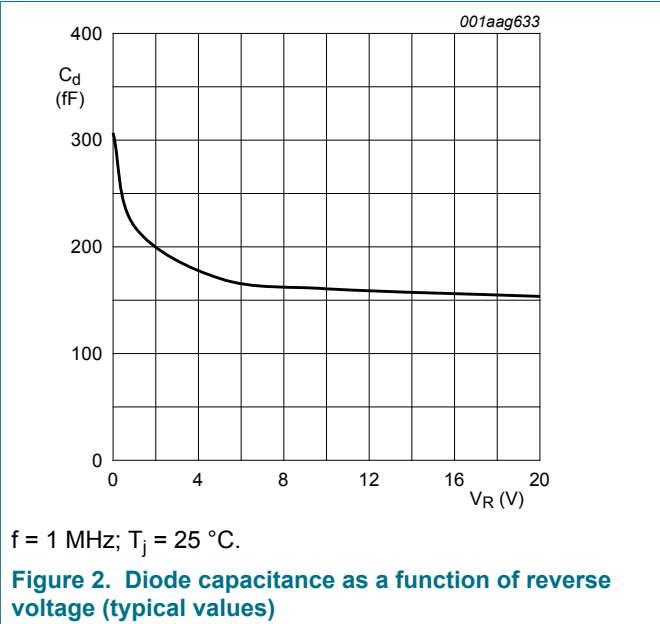
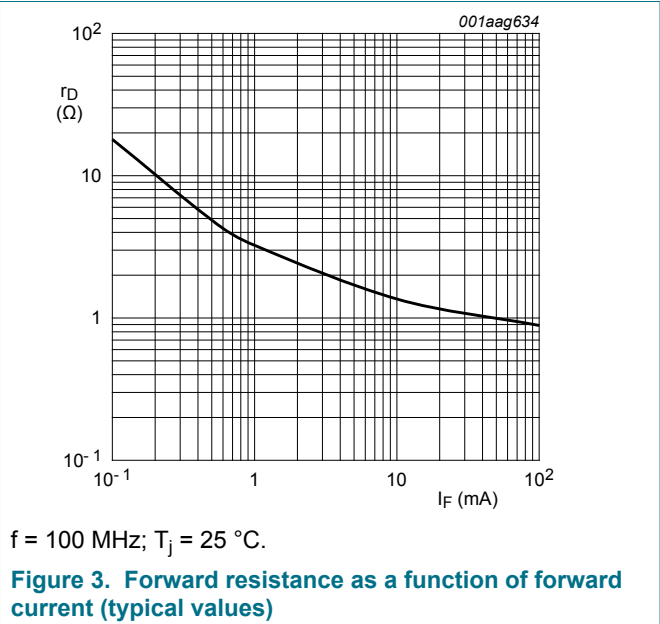
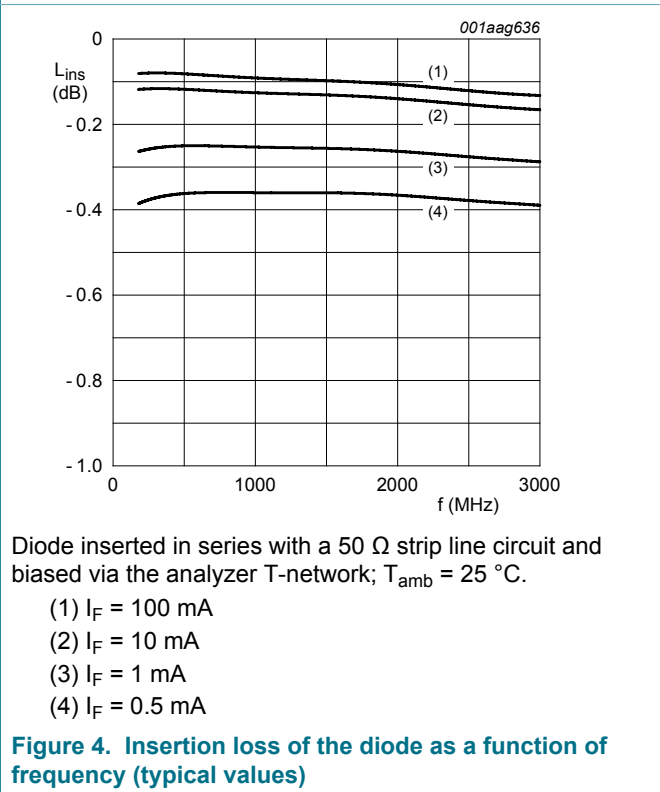
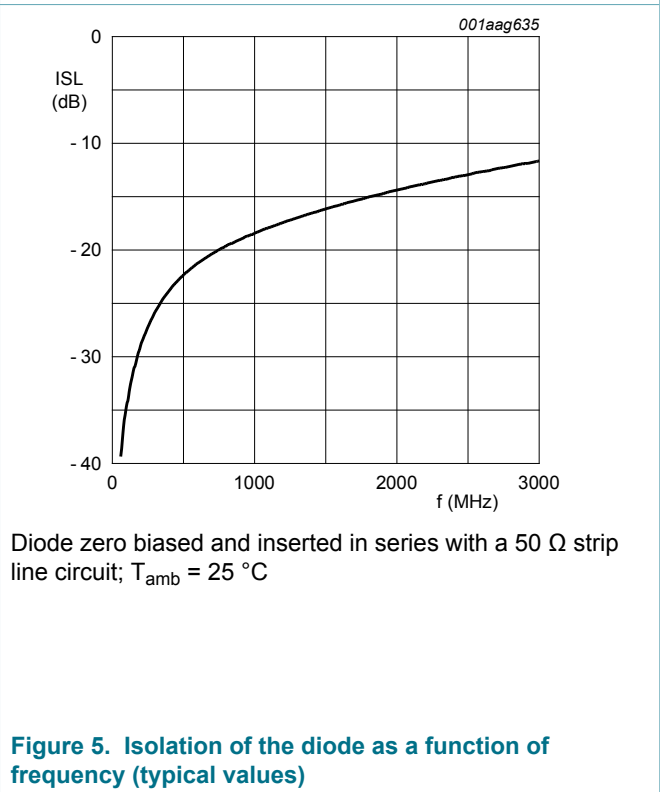
Table 6. Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified.

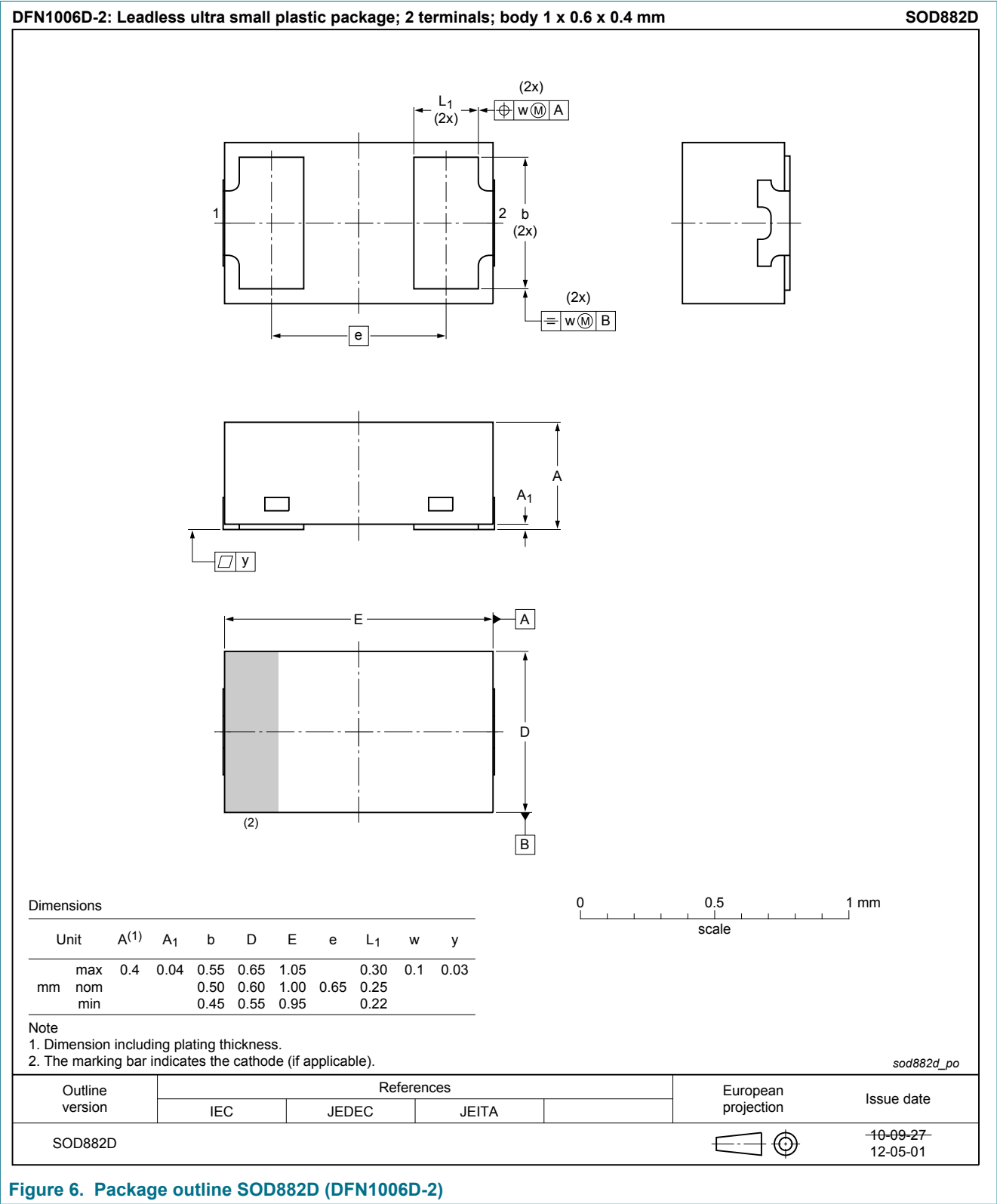
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V
I_R	reverse current	$V_R = 50\text{ V}$	-	-	100	nA
C_d	diode capacitance	$f = 1\text{ MHz}$ (see Figure 2)				
		$V_R = 0\text{ V}$	-	0.30	-	pF
		$V_R = 1\text{ V}$	-	0.22	0.40	pF
		$V_R = 5\text{ V}$	-	0.17	0.30	pF
r_D	diode forward resistance	$f = 100\text{ MHz}$ (see Figure 3)				
		$I_F = 0.5\text{ mA}$	-	4.9	9	Ω
		$I_F = 1\text{ mA}$	-	3.2	6.5	Ω
		$I_F = 10\text{ mA}$	-	1.4	2.5	Ω
		$I_F = 100\text{ mA}$	-	0.9	1.5	Ω
ISL	isolation	$V_R = 0\text{ V}$ (see Figure 5)				
		$f = 900\text{ MHz}$	-	19	-	dB
		$f = 1800\text{ MHz}$	-	15	-	dB
		$f = 2450\text{ MHz}$	-	13	-	dB
L_{ins}	insertion loss	(See Figure 4)				
		$I_F = 0.5\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.36	-	dB
		$f = 1800\text{ MHz}$	-	0.36	-	dB
		$f = 2450\text{ MHz}$	-	0.38	-	dB
		$I_F = 1\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.25	-	dB
		$f = 1800\text{ MHz}$	-	0.26	-	dB
		$f = 2450\text{ MHz}$	-	0.27	-	dB
		$I_F = 10\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.12	-	dB
		$f = 1800\text{ MHz}$	-	0.14	-	dB
		$f = 2450\text{ MHz}$	-	0.15	-	dB
		$I_F = 100\text{ mA}$				
		$f = 900\text{ MHz}$	-	0.09	-	dB
		$f = 1800\text{ MHz}$	-	0.10	-	dB
		$f = 2450\text{ MHz}$	-	0.12	-	dB

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
τ_L	charge carrier life time	when switched from $I_F = 10$ mA to $I_R = 6$ mA; $R_L = 100\ \Omega$; measured at $I_R = 3$ mA	-	0.55	-	μs
L_S	series inductance	$I_F = 100$ mA; $f = 100$ MHz	-	0.4	-	nH

8 Graphical data



9 Package outline



10 Abbreviations

Table 7. Abbreviations

Acronym	Description
PIN	P-type, intrinsic, N-type
SMD	surface-mounted device
RF	radio frequency

11 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP51LX v.3	20181126	Product data sheet	-	BAP51LX v.2
Modifications:	<ul style="list-style-type: none">• Section 1.2 "Features and benefits" has been updated.• The "Legal information" pages have been updated.			
BAP51LX v.2	20130806	Product data sheet	-	BAP51LX v.1
BAP51LX v.1	20070626	Product data sheet	-	-

12 Legal information

12.1 Data sheet status

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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