



BAP64LX

Silicon PIN diode

Rev. 6 — 11 December 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 voltage, current controlled RF resistor for RF attenuators and switches
- Low diode capacitance
- Low forward resistance
- Very low series inductance
- For applications up to 3 GHz
- AEC-Q101 qualified

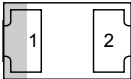
1.3 Applications

- RF attenuators and switches



2 Pinning information

Table 1. Discrete pinning

Pin	Description	Simplified outline	Symbol
1	cathode	 Transparent top view	 <i>sym006</i>
2	anode		

[1] The marking bar indicates the cathode.

3 Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP64LX	DFN1006D-2	leadless ultra small plastic package; 2 terminals; body 1 x 0.6 x 0.4 mm	SOD882D

4 Marking

Table 3. Marking codes

Type number	Marking code ^[1]
BAP64LX	1111 1111

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

4.1 Binary marking code description

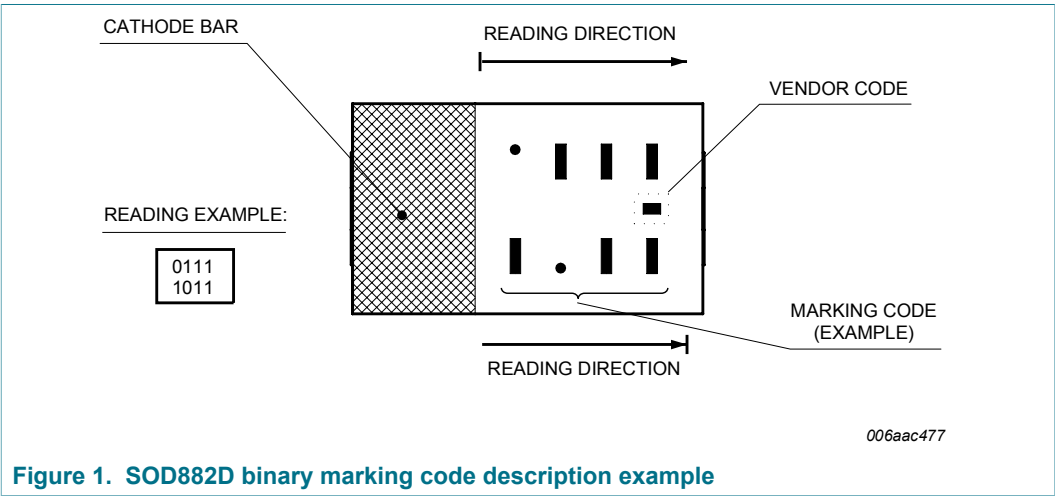


Figure 1. SOD882D binary marking code description example

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	$T_{sp} \leq 90\text{ }^{\circ}\text{C}$	-	150	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		56	K/W

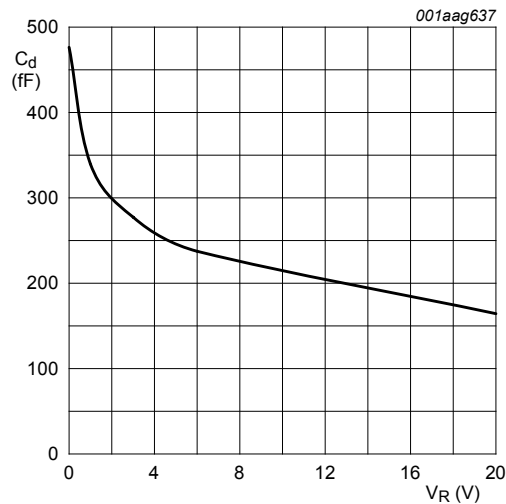
7 Characteristics

Table 6. Characteristics

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

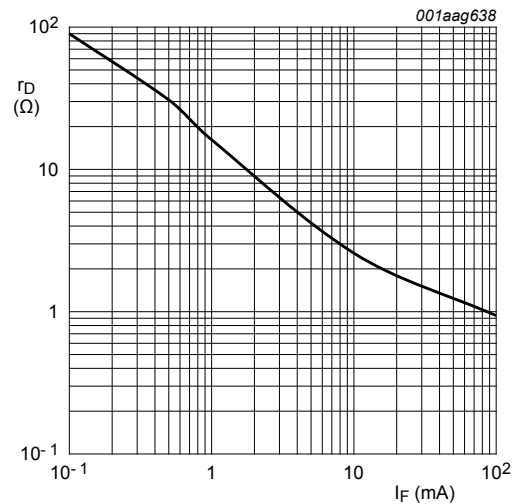
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 100\text{ mA}$	-	0.95	1.1	V
I_R	reverse current	$V_R = 60\text{ V}$	-	-	100	nA
C_d	diode capacitance	see Figure 2 ; $f = 1\text{ MHz}$;				
		$V_R = 0\text{ V}$	-	0.48	-	pF
		$V_R = 1\text{ V}$	-	0.34	-	pF
		$V_R = 20\text{ V}$	-	0.17	0.30	pF
r_D	diode forward resistance	see Figure 3 ; $f = 100\text{ MHz}$;				
		$I_F = 0.5\text{ mA}$	-	31	50	Ω
		$I_F = 1\text{ mA}$	-	16	26	Ω
		$I_F = 10\text{ mA}$	-	2.6	4.4	Ω
ISL	isolation	see Figure 4 ; $V_R = 0\text{ V}$;				
		$f = 900\text{ MHz}$	-	22	-	dB
		$f = 1800\text{ MHz}$	-	16	-	dB
		$f = 2450\text{ MHz}$	-	14	-	dB
L_{ins}	insertion loss	see Figure 5 ; $I_F = 0.5\text{ mA}$;				
		$f = 900\text{ MHz}$	-	2.15	-	dB
		$f = 1800\text{ MHz}$	-	2.13	-	dB
		$f = 2450\text{ MHz}$	-	2.14	-	dB
L_{ins}	insertion loss	see Figure 5 ; $I_F = 1\text{ mA}$;				
		$f = 900\text{ MHz}$	-	1.21	-	dB
		$f = 1800\text{ MHz}$	-	1.21	-	dB
		$f = 2450\text{ MHz}$	-	1.22	-	dB
L_{ins}	insertion loss	see Figure 5 ; $I_F = 10\text{ mA}$;				
		$f = 900\text{ MHz}$	-	0.22	-	dB
		$f = 1800\text{ MHz}$	-	0.23	-	dB
		$f = 2450\text{ MHz}$	-	0.24	-	dB
L_{ins}	insertion loss	see Figure 5 ; $I_F = 100\text{ mA}$;				
		$f = 900\text{ MHz}$	-	0.09	-	dB
		$f = 1800\text{ MHz}$	-	0.1	-	dB
		$f = 2450\text{ MHz}$	-	0.11	-	dB
T_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 $I_R = 3\text{ mA}$	-	1.0	-	μs
L_S	series inductance	$I_F = 100\text{ mA}$; $f = 100\text{ MHz}$	-	0.4	-	nH

7.1 Graphics



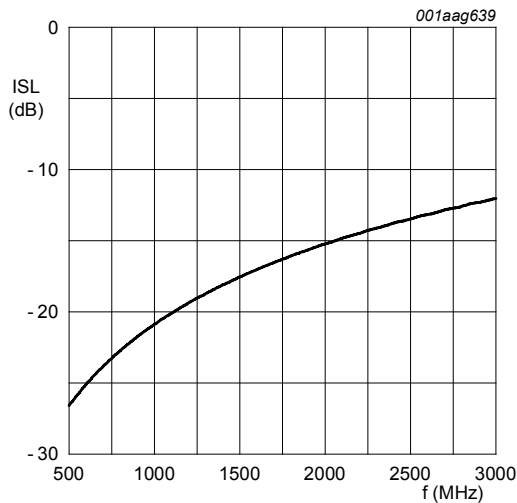
$f = 1\text{ MHz}$; $T_j = 25\text{ }^\circ\text{C}$.

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



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

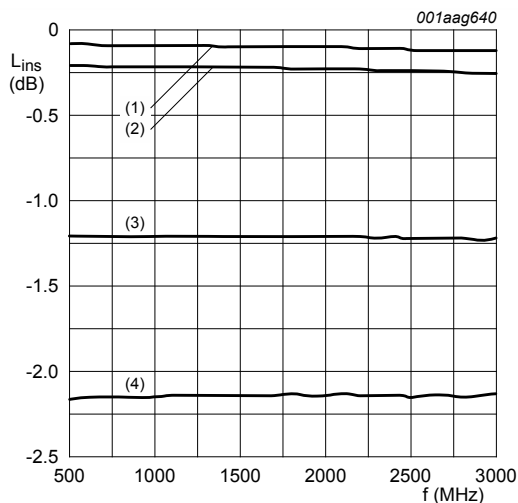
Figure 3. Forward resistance as a function of forward current; typical values



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

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

Figure 4. Isolation of the diode as a function of frequency; typical values



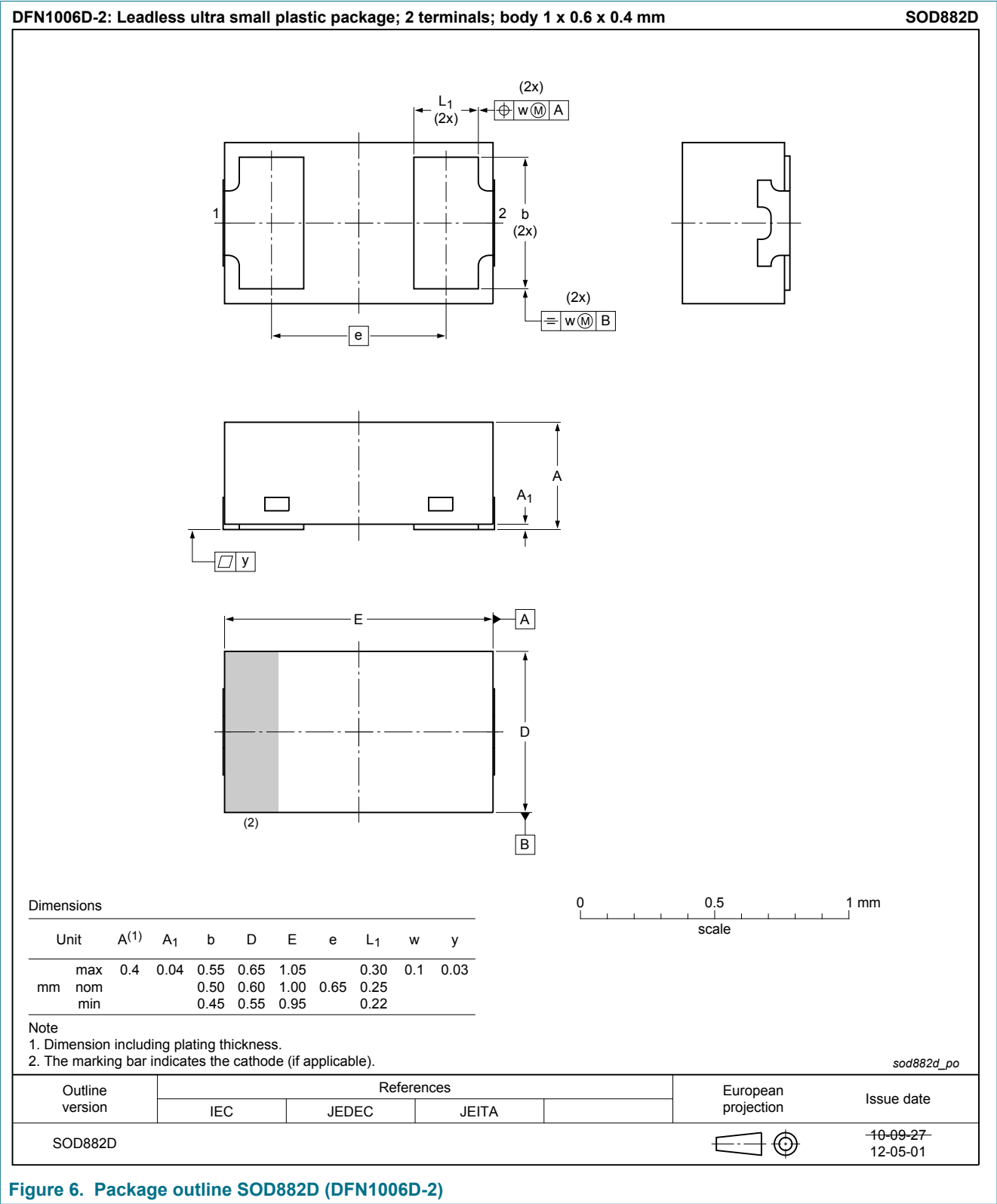
$T_{amb} = 25\text{ }^\circ\text{C}$

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

Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer Tee network

Figure 5. Insertion loss of the diode as a function of frequency; typical values

8 Package outline



9 Abbreviations

Table 7. Abbreviations

Acronym	Description
AQL	acceptable quality level
PIN	P-type, intrinsic, N-type
SMD	surface mounted device
S4	special inspection level 4

10 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP64LX v.6	20181211	Product data sheet	-	BAP64LX v.5
Modifications:	- changed max value off V_R at limiting values - changed I_R conditions at characteristics - adapted the layout of the data sheet			
BAP64LX v.5	20150512	Product data sheet	-	BAP64LX v.4
Modifications:	AEC-Q101 qualified			
BAP64LX v.4	20140416	Product data sheet	-	BAP64LX v.3
BAP64LX v.3	20140211	Product data sheet	-	BAP64LX v.2
BAP64LX v.2	20130807	Product data sheet	-	BAP64LX v.1
BAP64LX v.1	20070629	Product data sheet	-	-

11 Legal information

11.1 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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