



BAP65LX

Silicon PIN diode

Rev. 3 — 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
- Low diode capacitance
- Low diode forward resistance (low loss)
- Very low series inductance
- RF resistor for RF switches
- AEC-Q101 qualified

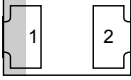

1.3 Applications

- RF attenuators and switches
- Band switch for TV tuners
- Series diode for mobile communication transmit/receive switch



2 Pinning information

Table 1. Discrete pinning

Pin	Description		Simplified outline	Symbol
1	cathode	[1]	 <p>Transparent top view</p>	 <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
BAP65LX	DFN1006D-2	leadless ultra small plastic package; 2 terminals; body 1 × 0.6 × 0.4 mm	SOD882D

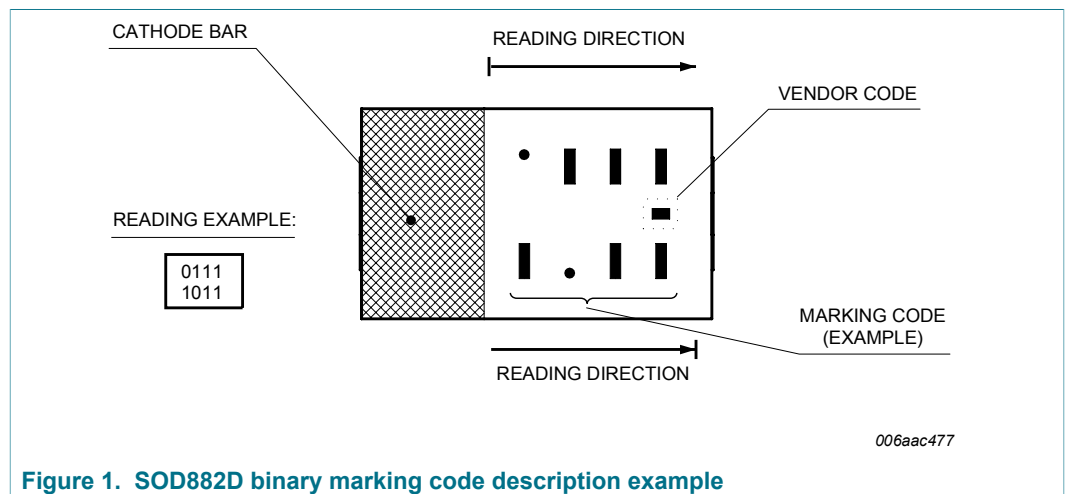
4 Marking

Table 3. Marking code

Type number	Marking code ^[1]
BAP65LX	1001 0110

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

4.1 Binary marking code description



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		-	30	V
I_F	forward current		-	100	mA
P_{tot}	total power dissipation	$T_{sp} \leq 90\text{ °C}$	-	135	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 solder point		78	K/W

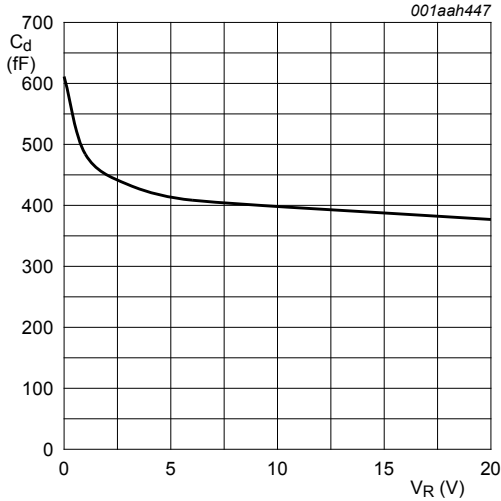
7 Characteristics

Table 6. Characteristics
 $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 50\text{ mA}$	-	0.9	1.1	V
I_R	reverse current	$V_R = 20\text{ V}$	-	-	20	nA
C_d	diode capacitance	$f = 1\text{ MHz}$ (Figure 2)				
		$V_R = 0\text{ V}$	-	0.61	-	pF
		$V_R = 1\text{ V}$	-	0.48	0.85	pF
		$V_R = 3\text{ V}$	-	0.43	0.7	pF
		$V_R = 20\text{ V}$	-	0.37	-	pF
r_D	diode forward resistance	$f = 100\text{ MHz}$ (Figure 3)				
		$I_F = 1\text{ mA}$	-	0.94	-	Ω
		$I_F = 5\text{ mA}$	-	0.58	0.95	Ω
		$I_F = 10\text{ mA}$	-	0.49	0.9	Ω
		$I_F = 100\text{ mA}$	-	0.35	-	Ω
ISL	isolation	$V_R = 0\text{ V}$ (Figure 5)				
		$f = 900\text{ MHz}$	-	10	-	dB
		$f = 1800\text{ MHz}$	-	5.5	-	dB
		$f = 2450\text{ MHz}$	-	3.9	-	dB
L_{ins}	insertion loss	See Figure 4.				
		$I_F = 1\text{ mA};$				
		$f = 900\text{ MHz}$	-	0.09	-	dB
		$f = 1800\text{ MHz}$	-	0.09	-	dB
		$f = 2450\text{ MHz}$	-	0.10	-	dB
		$I_F = 5\text{ mA};$				
		$f = 900\text{ MHz}$	-	0.06	-	dB
		$f = 1800\text{ MHz}$	-	0.07	-	dB
		$f = 2450\text{ MHz}$	-	0.08	-	dB

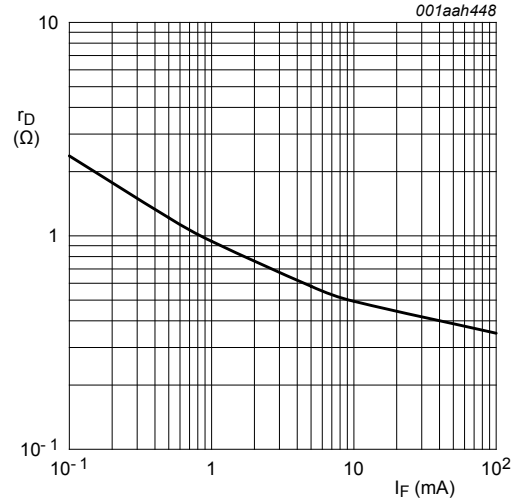
Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
L _{ins}	insertion loss	I _F = 10 mA;					
		f = 900 MHz	-	0.06	-	dB	
		f = 1800 MHz	-	0.07	-	dB	
		f = 2450 MHz	-	0.08	-	dB	
		I _F = 100 mA;					
		f = 900 MHz	-	0.05	-	dB	
		f = 1800 MHz	-	0.06	-	dB	
f = 2450 MHz	-	0.07	-	dB			
τ _L	charge carrier life time	when switched from I _F = 10 mA to I _R = 6 mA; R _L = 100 Ω; measured at I _R = 3 mA	-	0.18	-	μs	
L _S	series inductance	I _F = 100 mA; f = 100 MHz	-	0.4	-	nH	

8 Graphical data



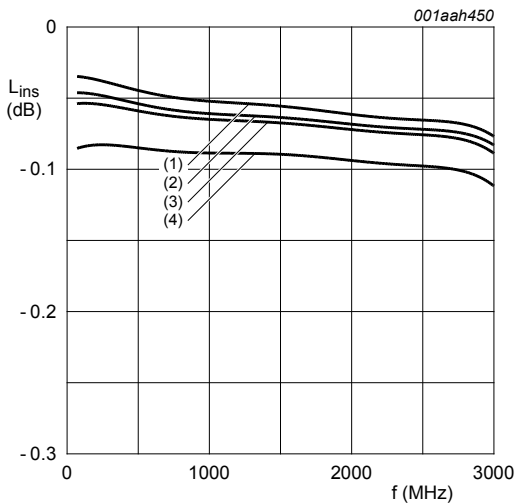
f = 1 MHz; T_j = 25 °C.

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



f = 100 MHz; T_j = 25 °C.

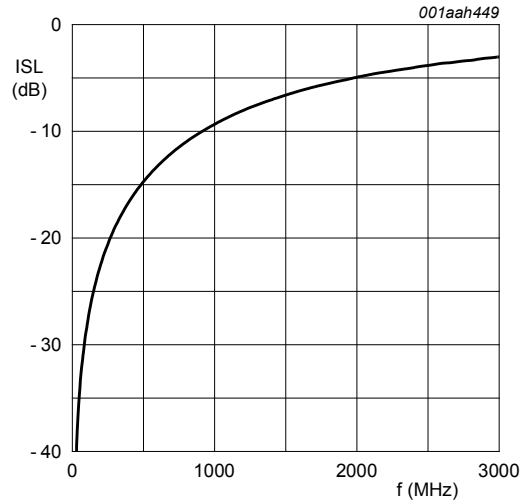
Figure 3. Forward resistance as a function of forward current (typical values)



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

- (1) I_F = 100 mA
- (2) I_F = 10 mA
- (3) I_F = 5 mA
- (4) I_F = 1 mA

Figure 4. Insertion loss of the diode in on-state as a function of frequency (typical values)



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

Figure 5. Isolation of the diode in off-state as a function of frequency (typical values)

9 Package outline

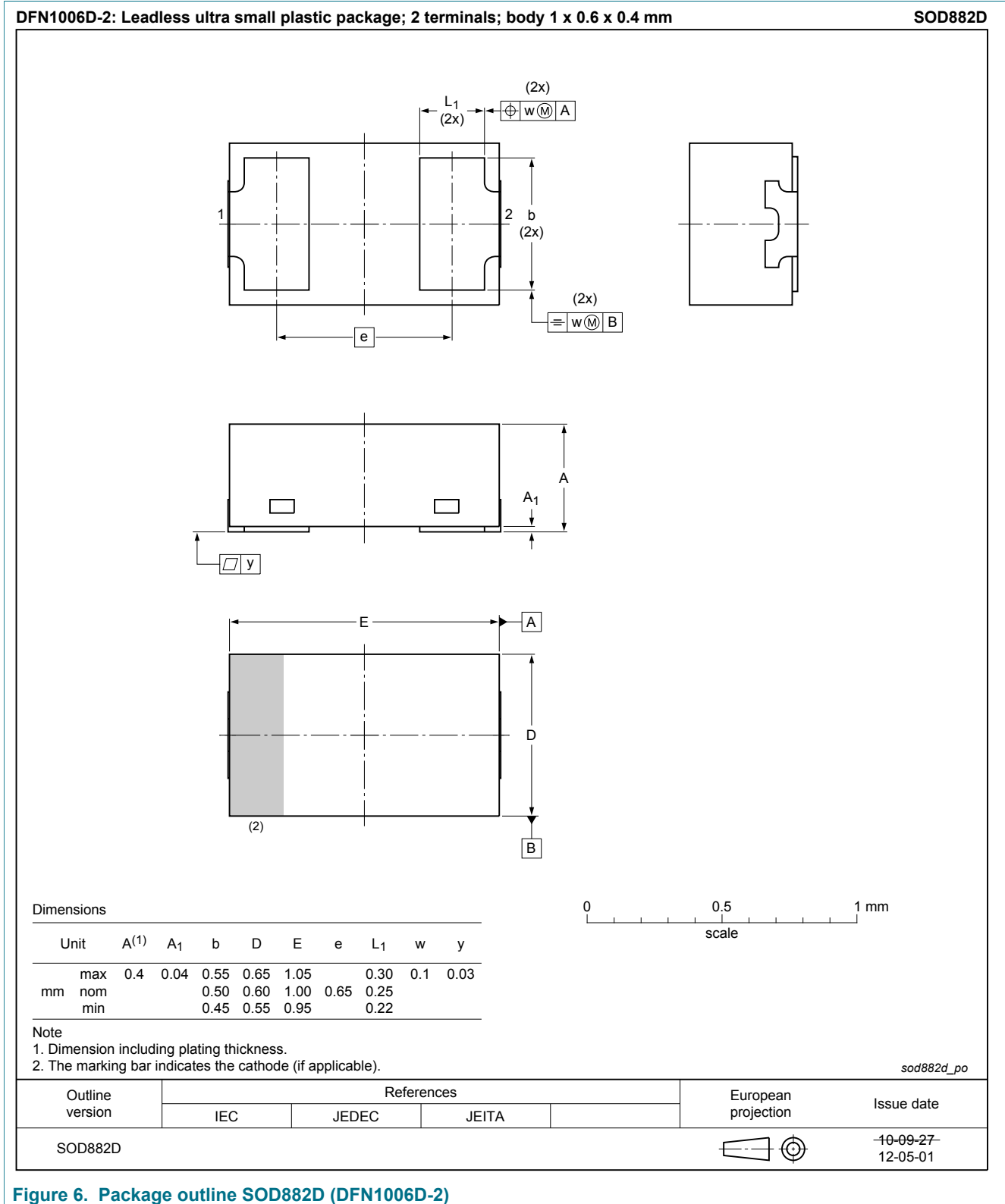


Figure 6. Package outline SOD882D (DFN1006D-2)

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
BAP65LX v.3	20181211	Product data sheet	-	BAP65LX 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.			
BAP65LX v.2	20130807	Product data sheet	-	BAP65LX v.1
BAP65LX v.1	20071211	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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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