



**THE DATASHEET OF  
BAP65LX,315**





# BAP65LX

Silicon PIN diode

Rev. 3 — 11 December 2018

Product data sheet

## 1 Product profile

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### 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

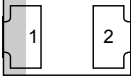

### 1.3 Applications

- 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

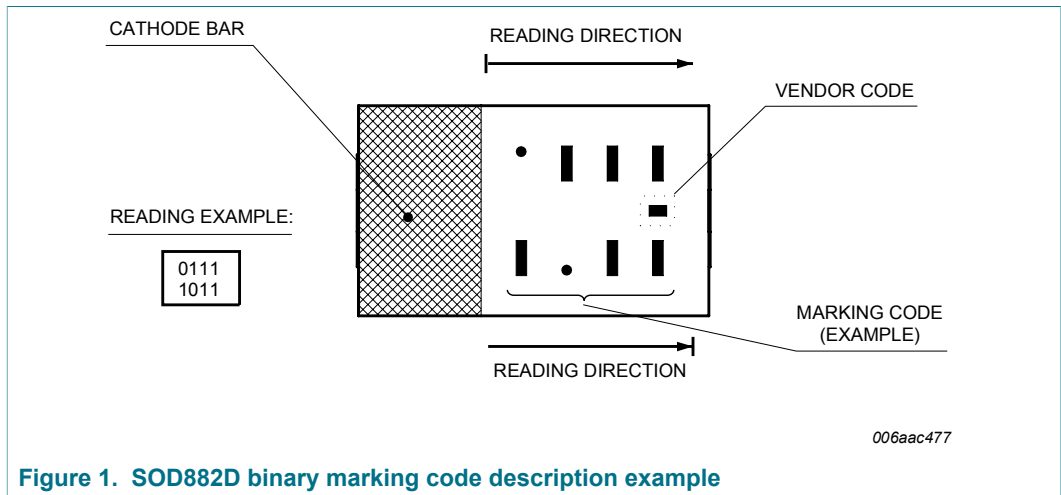
## 4 Marking

Table 3. Marking code

Type number	Marking code <sup>[1]</sup>
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

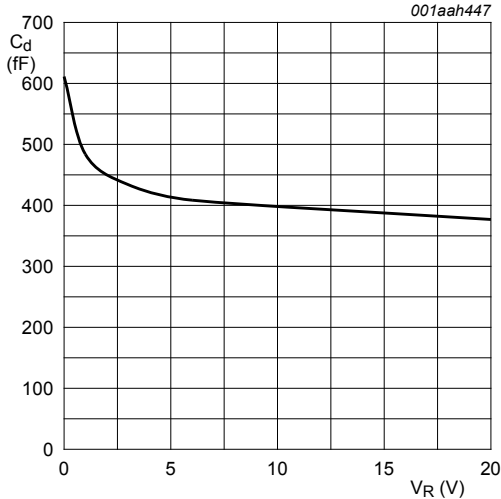
## 7 Characteristics

**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	-	$\Omega$
		$I_F = 5\text{ mA}$	-	0.58	0.95	$\Omega$
		$I_F = 10\text{ mA}$	-	0.49	0.9	$\Omega$
		$I_F = 100\text{ mA}$	-	0.35	-	$\Omega$
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

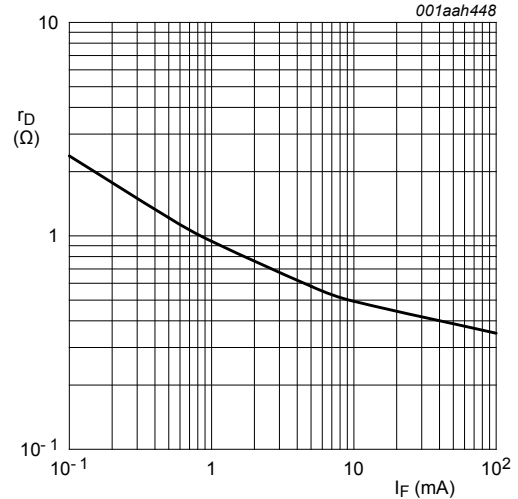
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
L <sub>ins</sub>	insertion loss	I <sub>F</sub> = 10 mA;				
		f = 900 MHz	-	0.06	-	dB
		f = 1800 MHz	-	0.07	-	dB
		f = 2450 MHz	-	0.08	-	dB
		I <sub>F</sub> = 100 mA;				
		f = 900 MHz	-	0.05	-	dB
		f = 1800 MHz	-	0.06	-	dB
f = 2450 MHz	-	0.07	-	dB		
τ <sub>L</sub>	charge carrier life time	when switched from I <sub>F</sub> = 10 mA to I <sub>R</sub> = 6 mA; R <sub>L</sub> = 100 Ω; measured at I <sub>R</sub> = 3 mA	-	0.18	-	μs
L <sub>S</sub>	series inductance	I <sub>F</sub> = 100 mA; f = 100 MHz	-	0.4	-	nH

**8 Graphical data**



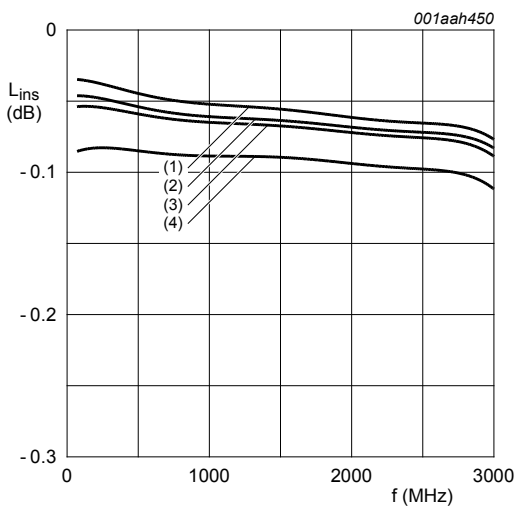
f = 1 MHz; T<sub>j</sub> = 25 °C.

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



f = 100 MHz; T<sub>j</sub> = 25 °C.

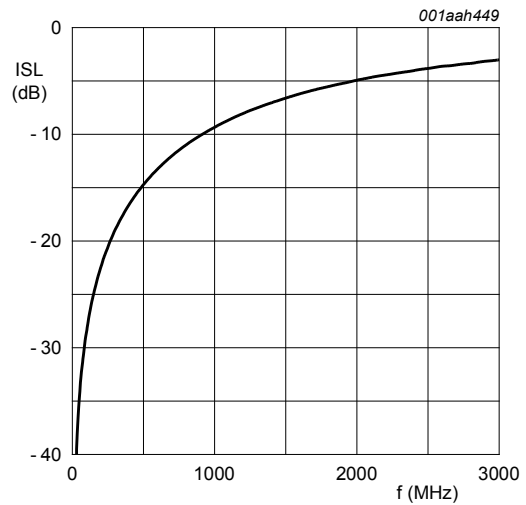
**Figure 3. Forward resistance as a function of forward current (typical values)**



Diode inserted in series with a 50 Ω strip line circuit and biased via the analyzer T-network. T<sub>amb</sub> = 25 °C

- (1) I<sub>F</sub> = 100 mA
- (2) I<sub>F</sub> = 10 mA
- (3) I<sub>F</sub> = 5 mA
- (4) I<sub>F</sub> = 1 mA

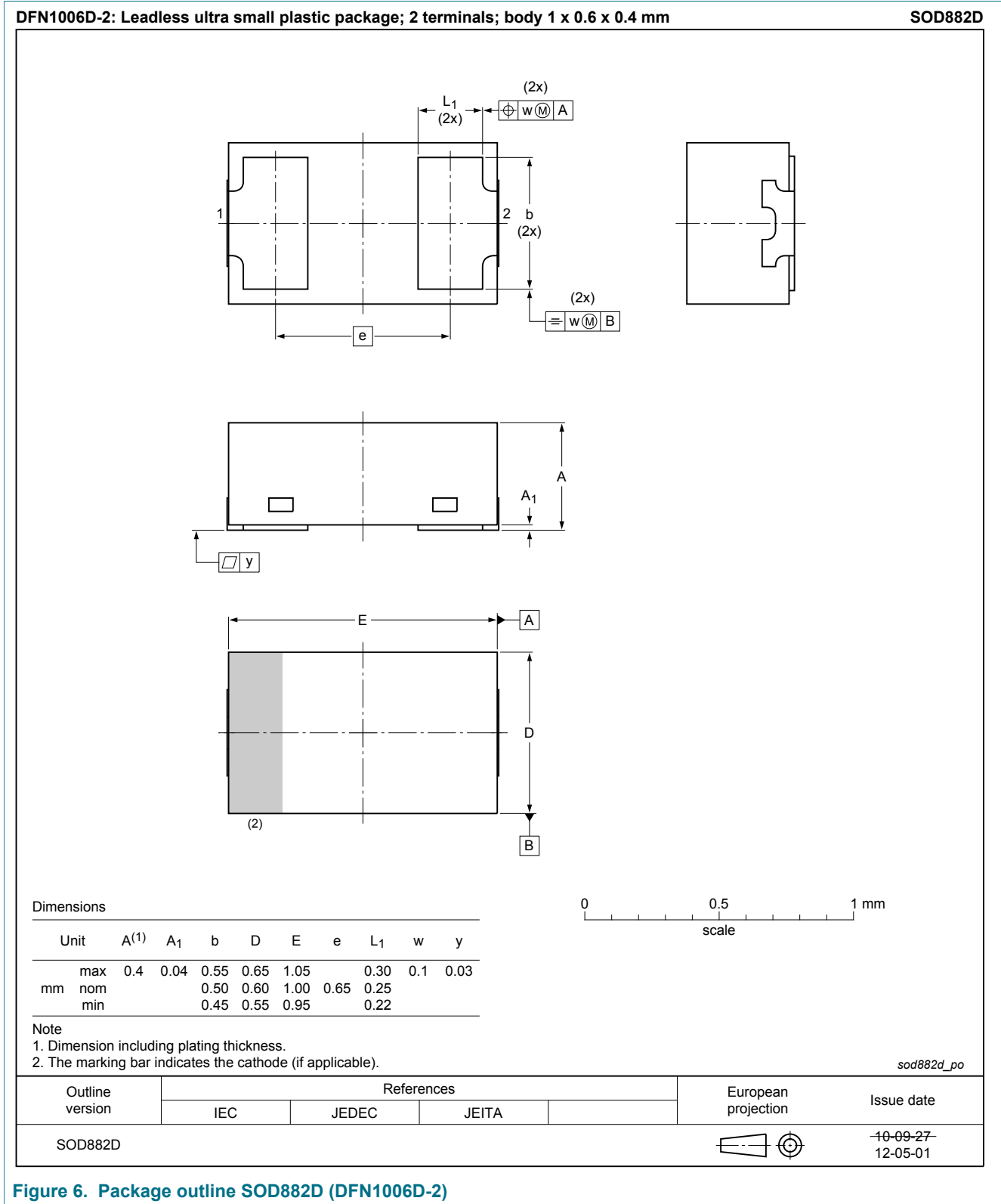
**Figure 4. Insertion loss of the diode in on-state as a function of frequency (typical values)**



Diode zero biased and inserted in series with a 50 Ω strip line circuit. T<sub>amb</sub> = 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"><li>• <a href="#">Section 1.2</a> "Features and benefits" has been updated.</li><li>• The "Legal information" pages have been updated.</li></ul>			
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 <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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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