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
- Low diode capacitance
- Low losses at very low currents
- 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]	
2 a	anode	1 2	+
		Transparent top view	sym006

<sup>[1]</sup> The marking bar indicates the cathode.

# 3. Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP142LX	DFN1006D-2	leadless ultra small plastic package; 2 terminals; body 1 $\times$ 0.6 $\times$ 0.4 mm	SOD882D



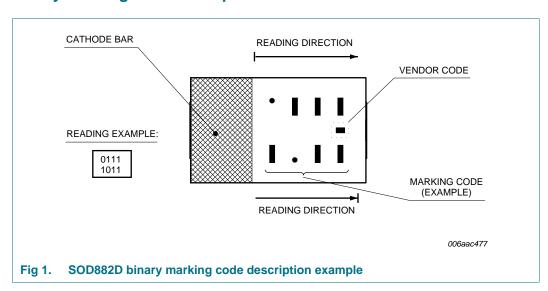
## 4. Marking

Table 3. Marking codes

Type number	Marking code <sup>[1]</sup>
BAP142LX	1001
	0010

<sup>[1]</sup> 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).

		0 , ,	,		
Symbol	Parameter	Conditions	Min	Max	Unit
$V_R$	reverse voltage		-	50	V
I <sub>F</sub>	forward current		-	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>sp</sub> = 90 °C	-	130	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
Tj	junction temperature		-65	+150	°C

### 6. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Тур	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		83	K/W

# 7. Characteristics

Table 6. Characteristics

 $T_{amb} = 25$  °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
$V_{F}$	forward voltage	$I_F = 50 \text{ mA}$	-	0.95	1.1	V
I <sub>R</sub> re	reverse current	V <sub>R</sub> = 20 V	-	-	20	nA
		V <sub>R</sub> = 50 V	-	-	100	nA
C <sub>d</sub>	diode capacitance	see Figure 2; f = 1 MHz;				
		$V_R = 0 V$	-	0.25	-	pF
		V <sub>R</sub> = 1 V	-	0.22	-	pF
		V <sub>R</sub> = 20 V	-	0.16	0.26	pF
$r_D$	diode forward resistance	see Figure 3; f = 100 MHz;				
		I <sub>F</sub> = 0.5 mA	-	3.3	5.0	Ω
		I <sub>F</sub> = 1 mA	-	2.4	3.6	Ω
		I <sub>F</sub> = 10 mA	-	1.0	1.8	Ω
		$I_F = 100 \text{ mA}$	-	0.7	1.3	Ω
ISL	isolation	see <u>Figure 4</u> ; V <sub>R</sub> = 0 V;				
		f = 900 MHz	-	18	-	dB
		f = 1800 MHz	-	13	-	dB
		f = 2450 MHz	-	11	-	dB
L <sub>ins</sub>	insertion loss	see Figure 5; I <sub>F</sub> = 0.5 mA;				
		f = 900 MHz	-	0.24	-	dB
		f = 1800 MHz	-	0.24	-	dB
		f = 2450 MHz	-	0.25	-	dB
L <sub>ins</sub>	insertion loss	see Figure 5; I <sub>F</sub> = 1 mA;				
		f = 900 MHz	-	0.18	-	dB
		f = 1800 MHz	-	0.19	-	dB
		f = 2450 MHz	-	0.25	-	dB
L <sub>ins</sub>	insertion loss	see Figure 5; I <sub>F</sub> = 10 mA;				
		f = 900 MHz	-	0.10	-	dB
		f = 1800 MHz	-	0.11	-	dB
		f = 2450 MHz	-	0.12	-	dB
L <sub>ins</sub>	insertion loss	see Figure 5; I <sub>F</sub> = 100 mA;				
		f = 900 MHz	-	0.07	-	dB
		f = 1800 MHz	-	0.09	-	dB
		f = 2450 MHz	-	0.10	-	dB
$\tau_{L}$	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	-	0.11	-	μS
L <sub>S</sub>	series inductance	I <sub>F</sub> = 100 mA; f = 100 MHz	-	0.4	-	nH

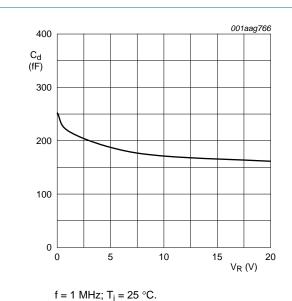
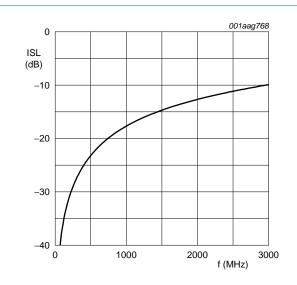


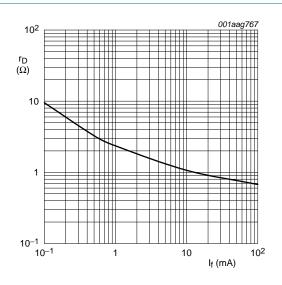
Fig 2. Diode capacitance as a function of reverse voltage; typical values



T<sub>amb</sub> = 25 °C

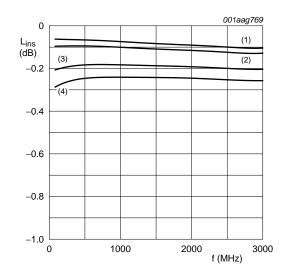
Diode zero biased and inserted in series with a 50  $\Omega$  stripline circuit





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

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



T<sub>amb</sub> = 25 °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  $\Omega$  stripline circuit and biased via the analyzer Tee network

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

## 8. Package outline

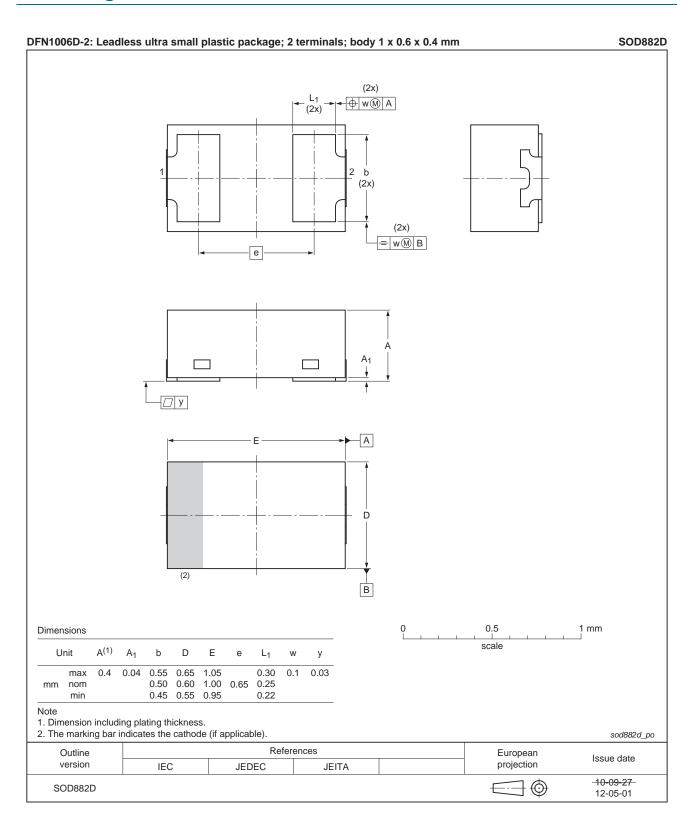


Fig 6. Package outline SOD882D (DFN1006D-2)

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## 9. Abbreviations

Table 7. Abbreviations

Acronym	Description
PIN	P-type, Intrinsic, N-type
SMD	Surface Mounted Device
RF	Radio Frequency

# 10. Revision history

### Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes		
BAP142LX v.2	20130806	Product data sheet	-	BAP142LX v.1		
Modifications:	<ul> <li>Section 1.1 on page 1: Changed package to SOD882D</li> <li>Table 1 on page 1: Changed simplified outline to SOD882D</li> </ul>					
	Table 2 on page 1: Changed package to SOD882D					
	<ul> <li>Section 4 on page 2: Update 'Marking' section</li> </ul>					
	<ul> <li>Section 8 o</li> </ul>	n page 5: Changed packag	e to SOD882D			
BAP142LX v.1	20070730	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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