



# BAP50LX

Silicon PIN diode

Rev. 3 — 26 November 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

- Low diode capacitance
- Low diode forward resistance
- For applications up to 3 GHz

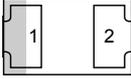
### 1.3 Applications

- General RF applications



## 2 Pinning information

Table 1. Discrete pinning

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

## 3 Ordering information

Table 2. Ordering information

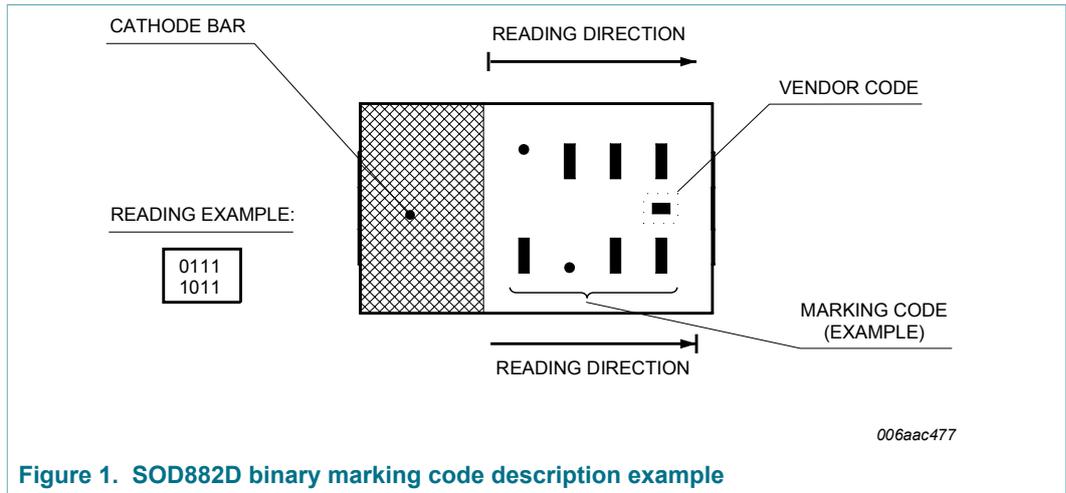
| Type number | Package    |  |         |
|-------------|------------|--|---------|
|             | Name       | Description  | Version |
| BAP50LX     | DFN1006D-2 | leadless ultra small plastic package; 2 terminals; body 1 × 0.6 × 0.4 mm | SOD882D |

## 4 Marking

Table 3. Marking code

| Type number | Marking code |
|-------------|--------------|
| BAP50LX     | 1001<br>0011 |

### 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         | continuous                 | -   | 50   | V    |
| $I_F$     | forward current         | continuous                 | -   | 50   | mA   |
| $P_{tot}$ | total power dissipation | $T_{sp} \leq 90\text{ °C}$ | -   | 150  | mW   |
| $T_{stg}$ | storage temperature     |                            | -65 | +150 | °C   |
| $T_j$     | junction temperature    |                            | -65 | +150 | °C   |

## 6 Thermal characteristics

**Table 5. Thermal characteristics**

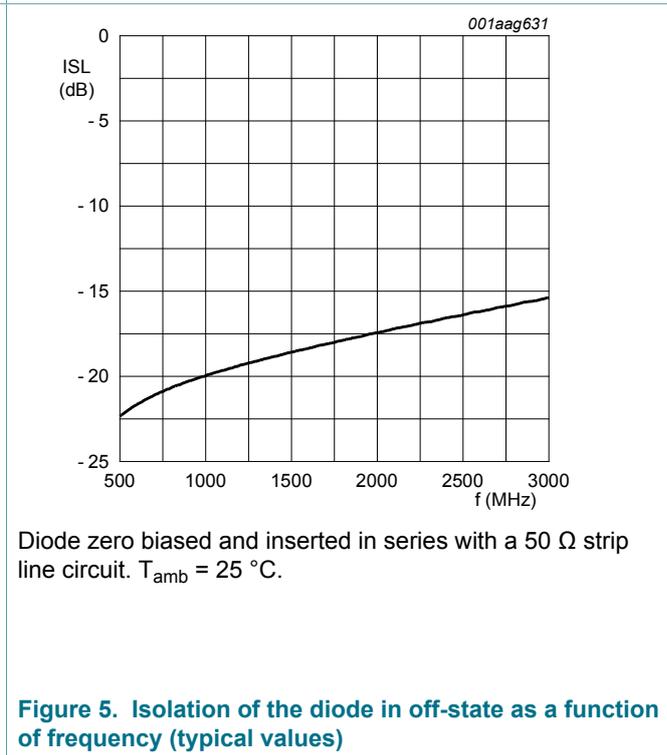
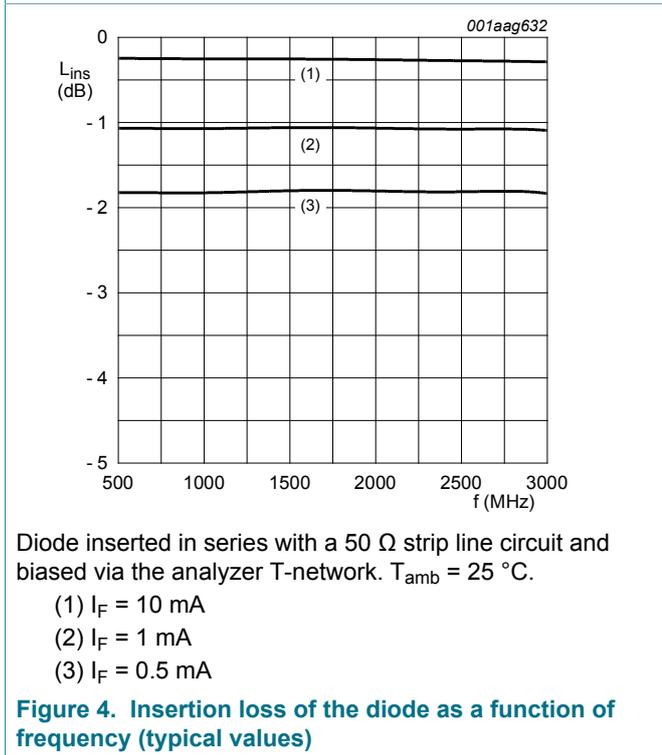
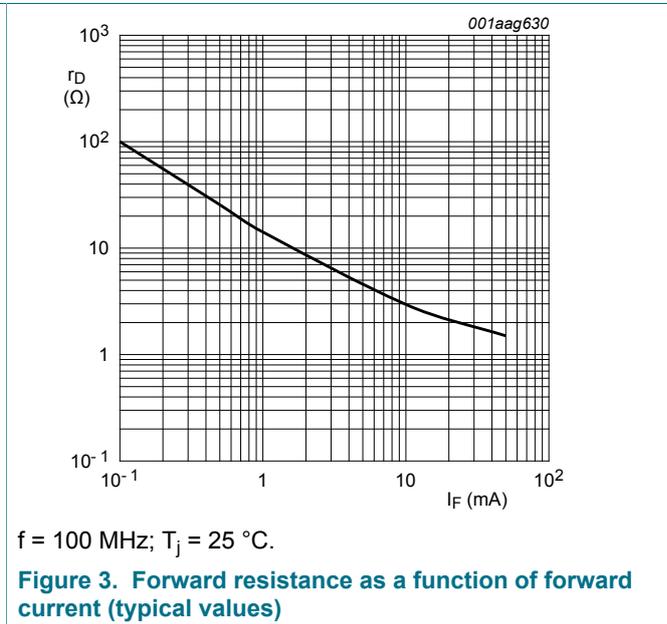
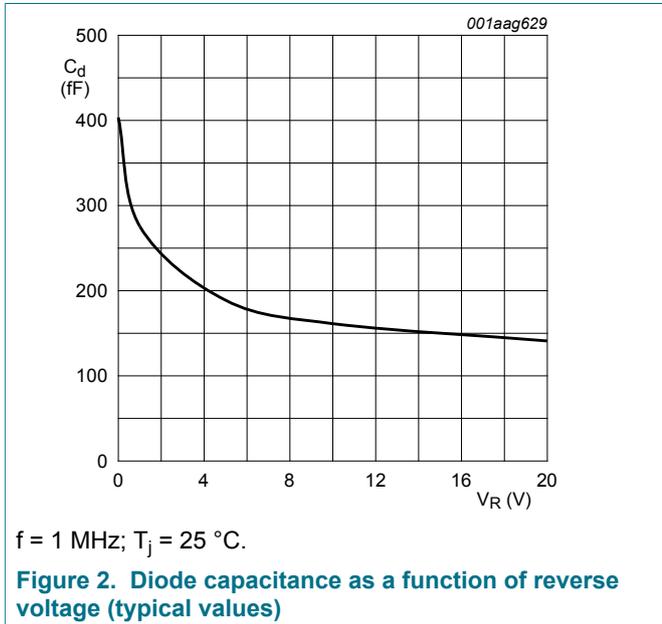
| Symbol         | Parameter  | Conditions | Typ | Unit |
|----------------|--|------------|-----|------|
| $R_{th(j-sp)}$ | thermal resistance from junction to solder point |            | 53  | K/W  |

## 7 Characteristics

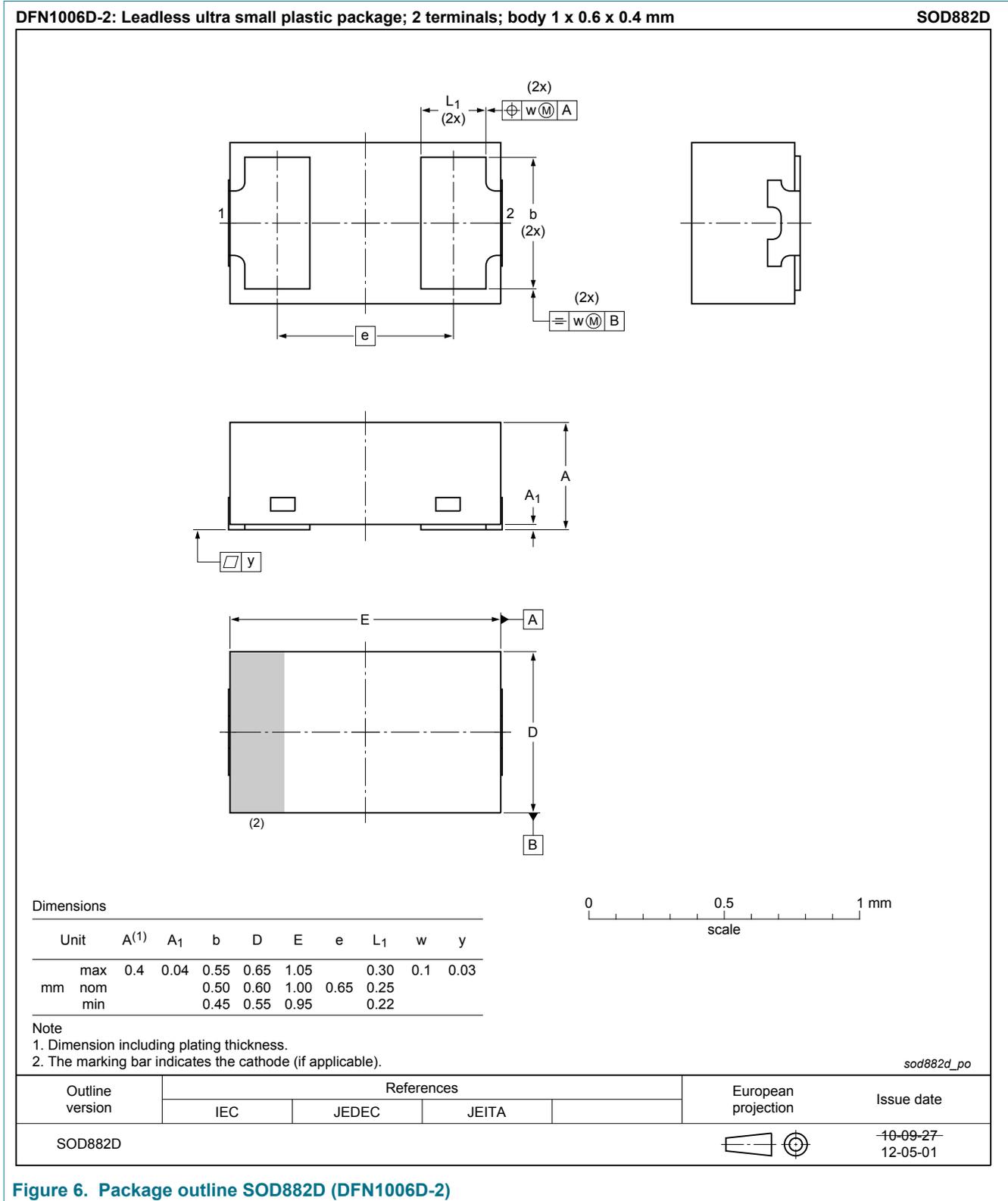
**Table 6. Characteristics**
 $T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| Symbol    | Parameter                | Conditions   | Min | Typ  | Max  | Unit          |
|-----------|--------------------------|--|-----|------|------|---------------|
| $V_F$     | forward voltage          | $I_F = 50\text{ mA}$   | -   | 0.95 | 1.1  | V             |
| $V_R$     | reverse voltage          | $I_R = 10\text{ }\mu\text{A}$  | 50  | -    | -    | V             |
| $I_R$     | reverse current          | $V_R = 50\text{ V}$  | -   | -    | 100  | nA            |
| $C_d$     | diode capacitance        | f = 1 MHz (see <a href="#">Figure 2</a> )  |     |      |      |               |
|           |                          | $V_R = 0\text{ V}$   | -   | 0.40 | -    | pF            |
|           |                          | $V_R = 1\text{ V}$   | -   | 0.28 | 0.55 | pF            |
|           |                          | $V_R = 5\text{ V}$   | -   | 0.19 | 0.35 | pF            |
| $r_D$     | diode forward resistance | f = 100 MHz (see <a href="#">Figure 3</a> )  |     |      |      |               |
|           |                          | $I_F = 0.5\text{ mA}$  | -   | 26   | 40   | $\Omega$      |
|           |                          | $I_F = 1\text{ mA}$  | -   | 14   | 25   | $\Omega$      |
|           |                          | $I_F = 10\text{ mA}$   | -   | 3    | 5    | $\Omega$      |
| ISL       | isolation                | $V_R = 0\text{ V}$ (see <a href="#">Figure 5</a> )   |     |      |      |               |
|           |                          | f = 900 MHz  | -   | 20.3 | -    | dB            |
|           |                          | f = 1800 MHz   | -   | 17.9 | -    | dB            |
|           |                          | f = 2450 MHz   | -   | 16.5 | -    | dB            |
| $L_{ins}$ | insertion loss           | (See <a href="#">Figure 4</a> )  |     |      |      |               |
|           |                          | $I_F = 0.5\text{ mA};$   |     |      |      |               |
|           |                          | f = 900 MHz  | -   | 1.82 | -    | dB            |
|           |                          | f = 1800 MHz   | -   | 1.80 | -    | dB            |
|           |                          | f = 2450 MHz   | -   | 1.81 | -    | dB            |
|           |                          | $I_F = 1\text{ mA};$   |     |      |      |               |
|           |                          | f = 900 MHz  | -   | 1.07 | -    | dB            |
|           |                          | f = 1800 MHz   | -   | 1.06 | -    | dB            |
|           |                          | f = 2450 MHz   | -   | 1.08 | -    | dB            |
|           |                          | $I_F = 10\text{ mA};$  |     |      |      |               |
|           |                          | f = 900 MHz  | -   | 0.25 | -    | dB            |
|           |                          | f = 1800 MHz   | -   | 0.26 | -    | dB            |
|           |                          | f = 2450 MHz   | -   | 0.27 | -    | dB            |
| $\tau_L$  | 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  | -    | $\mu\text{s}$ |
| $L_S$     | series inductance        | $I_F = 100\text{ mA}$ ; f = 100 MHz  | -   | 0.4  | -    | nH            |

**8 Graphical data**



**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  |
|----------------|---|--------------------|---------------|-------------|
| BAP50LX v.3    | 20181126  | Product data sheet | -             | BAP50LX 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><li>• Crossreferences to graphics are repaired</li></ul> |                    |               |             |
| BAP50LX v.2    | 20130807  | Product data sheet | -             | BAP50LX v.1 |
| BAP50LX v.1    | 20070717  | 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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Date of release: 26 November 2018  
Document identifier: BAP50LX