

BAP50LX

Silicon PIN diode

Rev. 01 — 17 July 2007

Product data sheet

1. Product profile

1.1 General description

General purpose PIN diode in a SOD882T leadless ultra small plastic SMD package.

1.2 Features


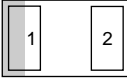
- Low diode capacitance
- Low diode forward resistance
- For applications up to 3 GHz

1.3 Applications

- General RF applications

2. Pinning information

Table 1. Discrete pinning

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

[1] The marking bar indicates the cathode.

3. Ordering information

Table 2. Ordering information

| Type number | Package | | Version |
|-------------|---------|---|---------|
| | Name | Description | |
| BAP50LX | - | leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.4 mm | SOD882T |

4. Marking

Table 3. Marking

| Type number | Marking code |
|-------------|--------------|
| BAP50LX | LB |

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 | $T_{sp} = 90\text{ °C}$ | - | 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

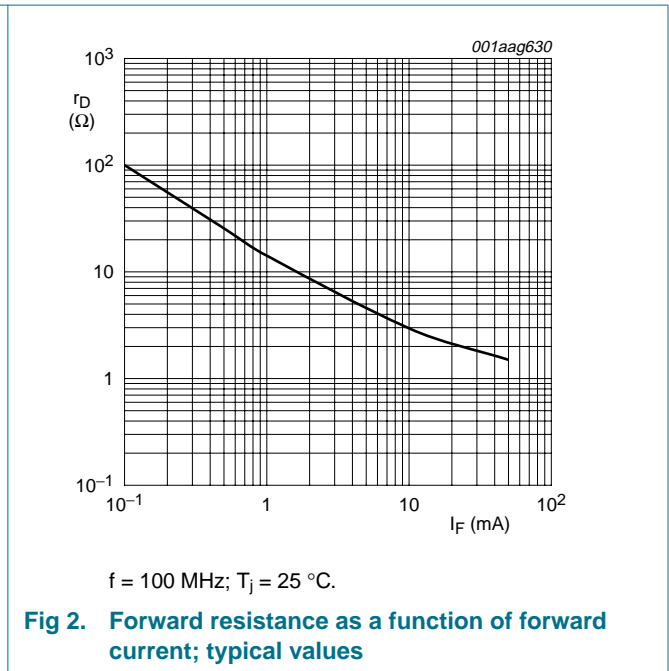
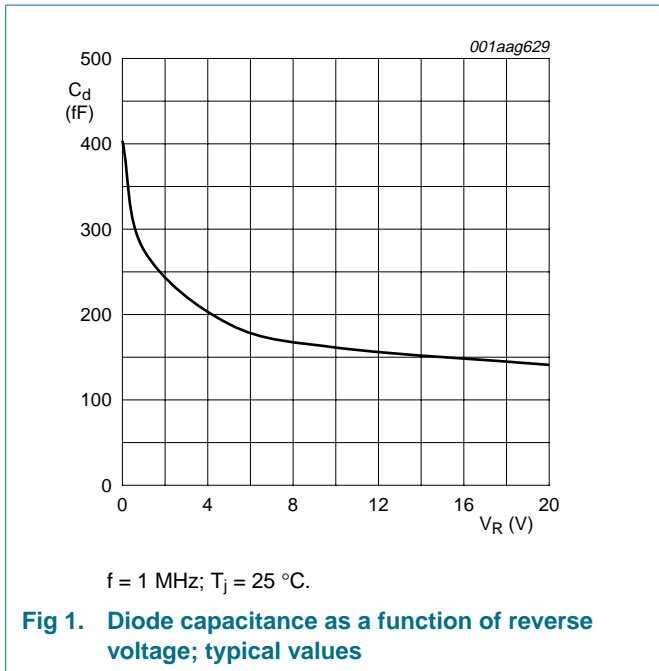
Table 6. Characteristics

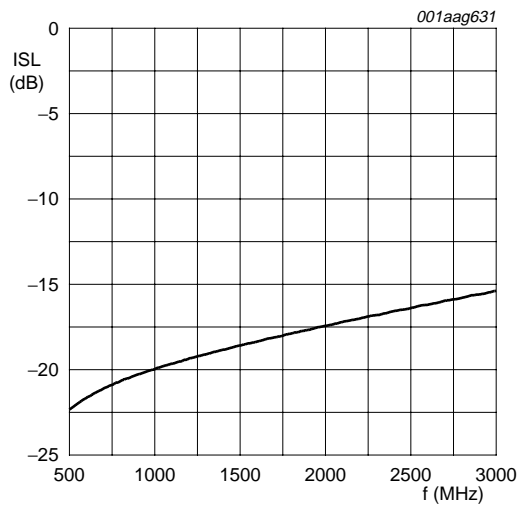
$T_{amb} = 25\text{ °C}$ unless otherwise specified.

| 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 | see Figure 1 ; $f = 1\text{ MHz}$; | | | | |
| | | $V_R = 0\text{ V}$ | - | 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 | see Figure 2 ; $f = 100\text{ MHz}$; | | | | |
| | | $I_F = 0.5\text{ mA}$ | - | 26 | 40 | Ω |
| | | $I_F = 1\text{ mA}$ | - | 14 | 25 | Ω |
| | | $I_F = 10\text{ mA}$ | - | 3 | 5 | Ω |
| ISL | isolation | see Figure 3 ; $V_R = 0\text{ V}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 20.3 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 17.9 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 16.5 | - | dB |

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

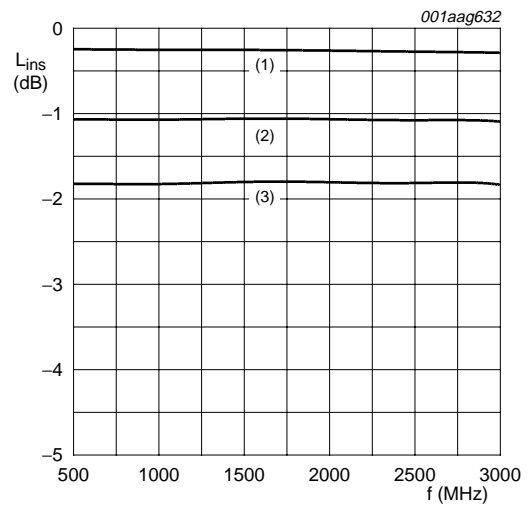
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|--------------------------|--|-----|------|-----|---------------|
| L_{ins} | insertion loss | see Figure 4 ; $I_F = 0.5\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 1.82 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 1.80 | - | dB |
| L_{ins} | insertion loss | see Figure 4 ; $I_F = 1\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 1.07 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 1.06 | - | dB |
| L_{ins} | insertion loss | see Figure 4 ; $I_F = 10\text{ mA}$; | | | | |
| | | $f = 900\text{ MHz}$ | - | 0.25 | - | dB |
| | | $f = 1800\text{ MHz}$ | - | 0.26 | - | dB |
| L_{ins} | insertion loss | see Figure 4 ; $I_F = 10\text{ mA}$; | | | | |
| | | $f = 1800\text{ MHz}$ | - | 0.26 | - | dB |
| | | $f = 2450\text{ MHz}$ | - | 0.27 | - | dB |
| τ_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 |





$T_{amb} = 25\text{ }^{\circ}\text{C}$
 Diode zero biased and inserted in series with a 50 Ω stripline circuit.

Fig 3. Isolation of the diode in off-state as a function of frequency; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}$
 (1) $I_F = 10\text{ mA}$
 (2) $I_F = 1\text{ mA}$
 (3) $I_F = 0.5\text{ mA}$
 Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer Tee network.

Fig 4. Insertion loss of the diode as a function of frequency; typical values

8. Package outline

Leadless ultra small plastic package; 2 terminals; body 1 x 0.6 x 0.4 mm

SOD882T

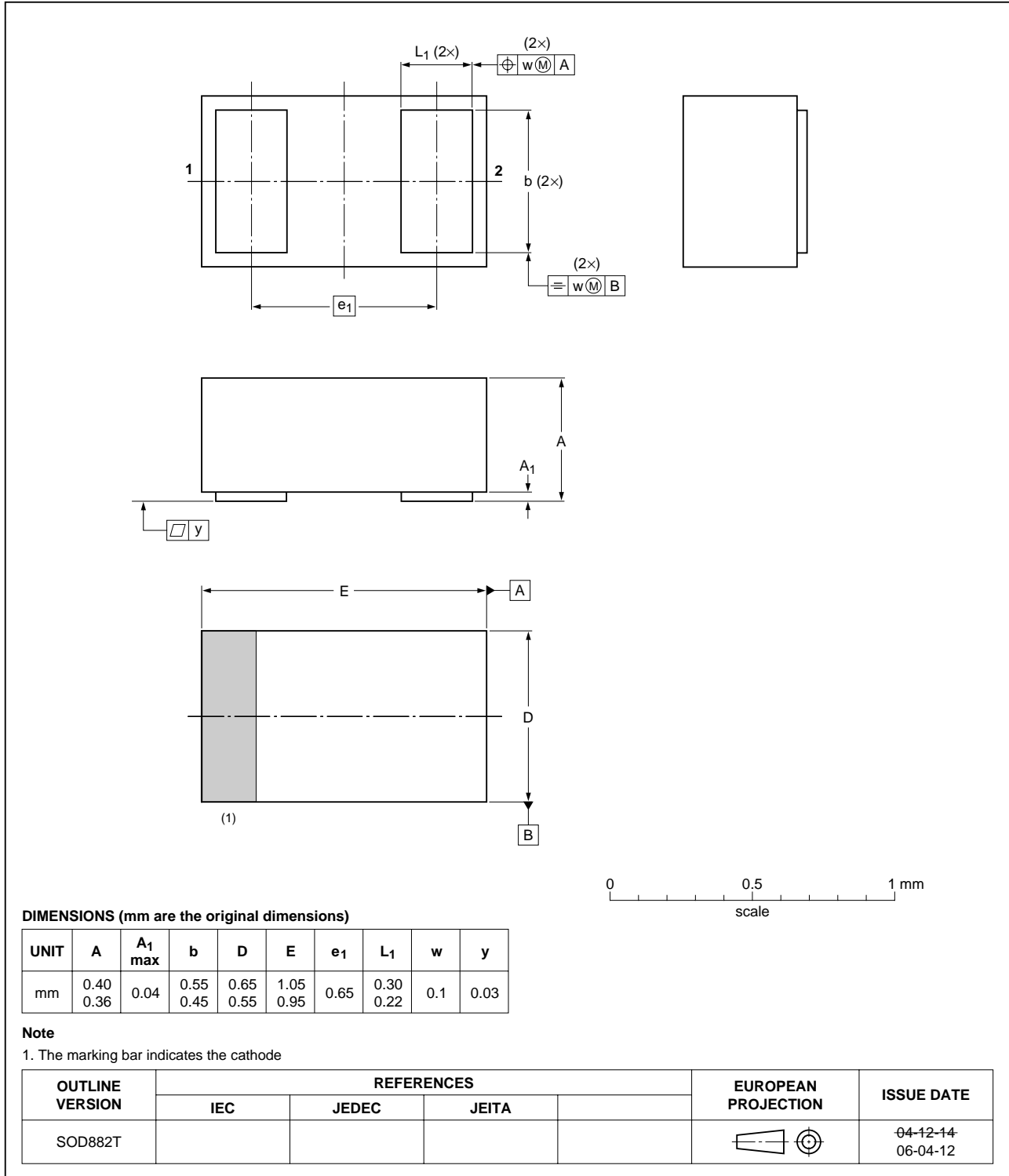


Fig 5. Package outline SOD882T

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 |
|-------------|--------------|--------------------|---------------|------------|
| BAP50LX_1 | 20070717 | 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. |
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| 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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