

# BB181LX

## VHF variable capacitance diode

Rev. 01 — 19 February 2009

Product data sheet

## 1. Product profile

### 1.1 General description

The BB181LX is a planar technology variable capacitance diode in a SOD882T ultra small leadless plastic SMD package.

### 1.2 Features

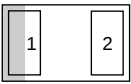
- Excellent linearity
- Ultra small leadless SMD package
- $C_{d(28V)}$  : 1 pF; ratio: 14

### 1.3 Applications

- Voltage Controlled Oscillators (VCO)
- Electronic tuning in satellite tuners
- Tunable coupling

## 2. Pinning information

Table 1. Pinning

| Pin | Description | Simplified outline                                                                                               | Graphic symbol                                                                                  |
|-----|-------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1   | cathode     | <br>Transparent<br>top view | <br>sym008 |
| 2   | anode       |                                                                                                                  |                                                                                                 |

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 2. Ordering information

| Type number | Package |                                                                             |         |
|-------------|---------|-----------------------------------------------------------------------------|---------|
|             | Name    | Description                                                                 | Version |
| BB181LX     | -       | leadless ultra small plastic package; 2 terminals;<br>body 1 × 0.6 × 0.4 mm | SOD882T |

## 4. Marking

Table 3. Marking codes

| Type number | Marking code |
|-------------|--------------|
| BB181LX     | L6           |

## 5. Limiting values

Table 4. Limiting values

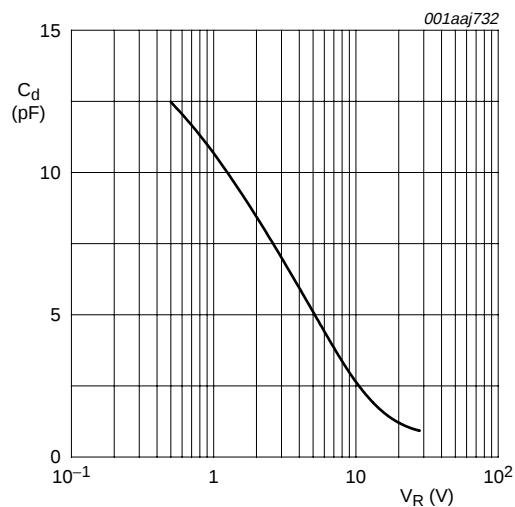
In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol    | Parameter            | Conditions | Min | Max  | Unit |
|-----------|----------------------|------------|-----|------|------|
| $V_R$     | reverse voltage      |            | -   | 32   | V    |
| $I_F$     | forward current      |            | -   | 20   | mA   |
| $T_{stg}$ | storage temperature  |            | -55 | +150 | °C   |
| $T_j$     | junction temperature |            | -55 | +125 | °C   |

## 6. Characteristics

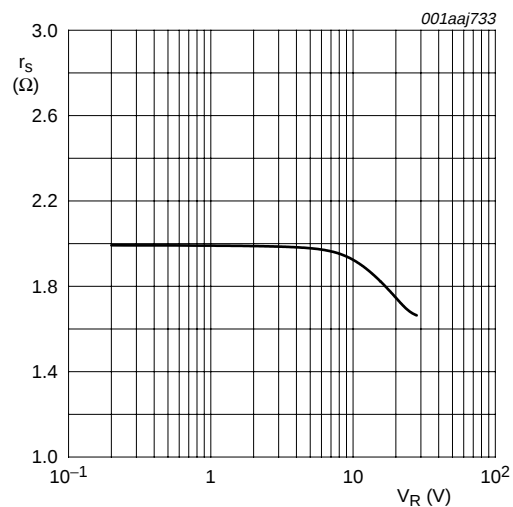
Table 5. Characteristics

| Symbol                  | Parameter                               | Conditions                                                                        | Min | Typ | Max   | Unit     |
|-------------------------|-----------------------------------------|-----------------------------------------------------------------------------------|-----|-----|-------|----------|
| $I_R$                   | reverse current                         | see <a href="#">Figure 3</a>                                                      |     |     |       |          |
|                         |                                         | $V_R = 30\text{ V}$                                                               | -   | -   | 10    | nA       |
|                         |                                         | $V_R = 30\text{ V}; T_j = 85\text{ °C}$                                           | -   | -   | 200   | nA       |
| $r_s$                   | diode series resistance                 | $f = 470\text{ MHz}$ at $C_d = 9\text{ pF}$ ;<br>see <a href="#">Figure 2</a>     | -   | 2.0 | -     | $\Omega$ |
| $C_d$                   | diode capacitance                       | $f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and<br><a href="#">Figure 4</a> |     |     |       |          |
|                         |                                         | $V_R = 0.5\text{ V}$                                                              | 8   | -   | 17    | pF       |
|                         |                                         | $V_R = 28\text{ V}$                                                               | 0.7 | -   | 1.055 | pF       |
| $C_{d(0V5)}/C_{d(28V)}$ | diode capacitance ratio (0.5 V to 28 V) | $f = 1\text{ MHz}$                                                                | 12  | -   | 16    |          |



$f = 1 \text{ MHz}$ ;  $T_j = 25 \text{ }^\circ\text{C}$ .

Fig 1. Diode capacitance as a function of reverse voltage; typical values



$f = 470 \text{ MHz}$ ;  $T_j = 25 \text{ }^\circ\text{C}$ .

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

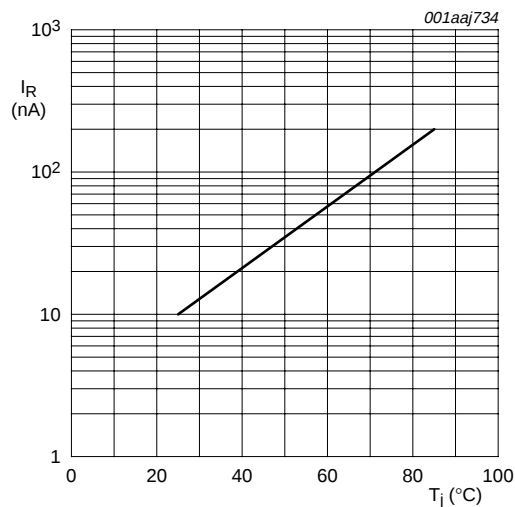
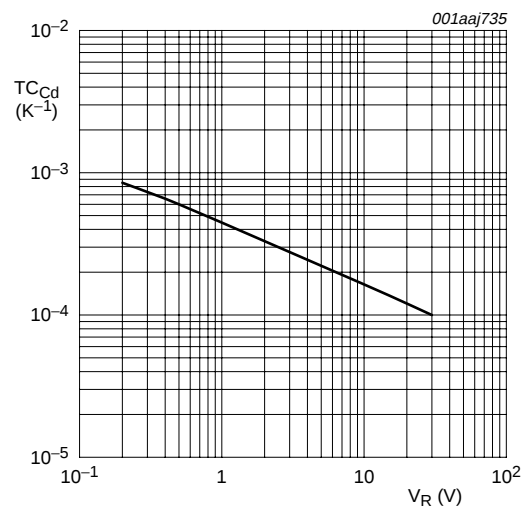


Fig 3. Reverse current as a function of junction temperature; maximum values



$T_j = 0 \text{ }^\circ\text{C}$  to  $85 \text{ }^\circ\text{C}$ .

Fig 4. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values

7. Package outline

Leadless ultra small plastic package; 2 terminals; body 1 x 0.6 x 0.4 mm SOD882T

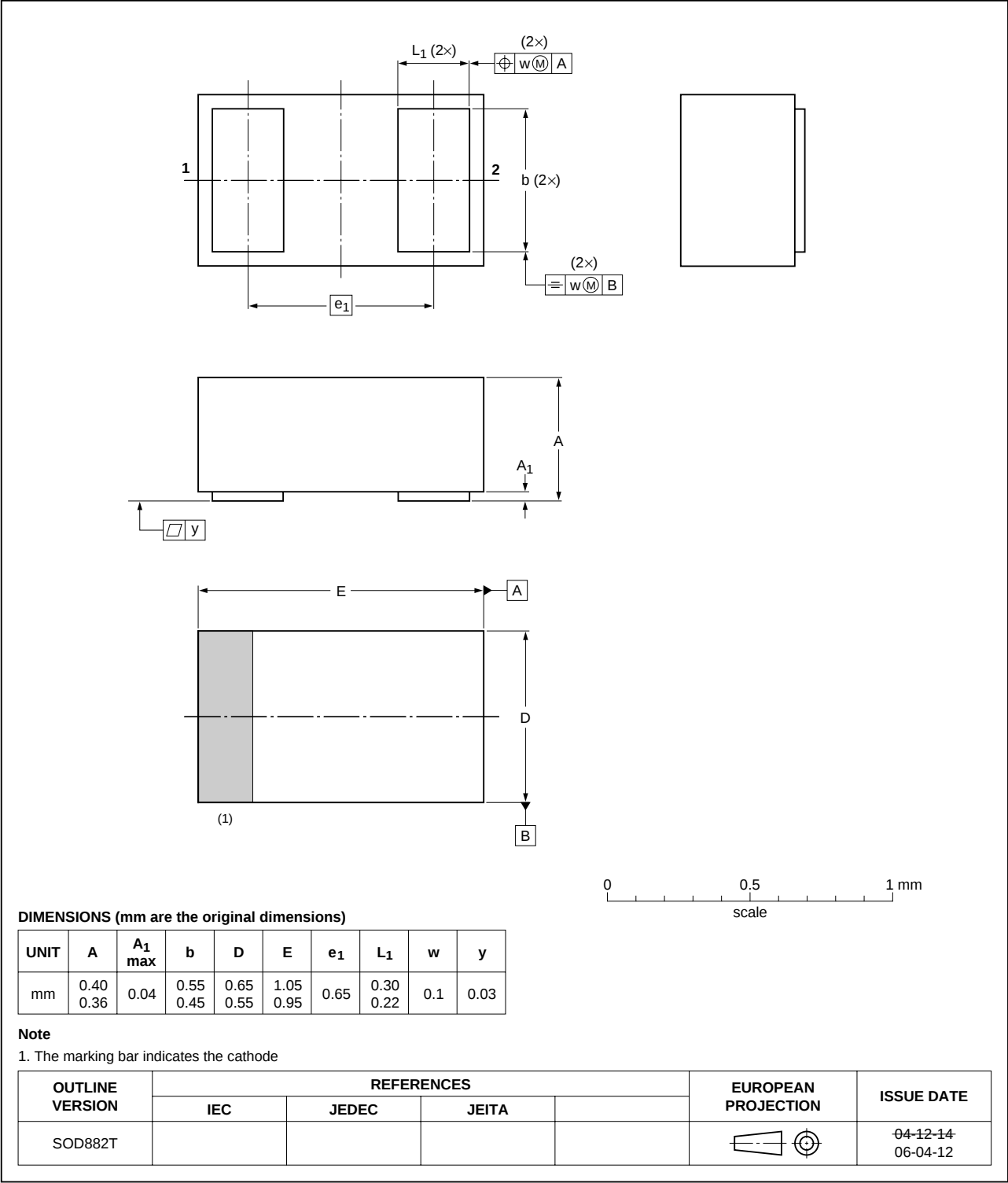


Fig 5. Package outline SOD882T

## 8. Abbreviations

Table 6. Abbreviations

| Acronym | Description            |
|---------|------------------------|
| SMD     | Surface Mounted Device |
| VHF     | Very High Frequency    |

## 9. Revision history

Table 7. Revision history

| Document ID | Release date | Data sheet status  | Change notice | Supersedes |
|-------------|--------------|--------------------|---------------|------------|
| BB181LX_1   | 20090219     | Product data sheet | -             | -          |

## 10. Legal information

### 10.1 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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