



# BB187

## VHF variable capacitance diode

Rev. 5 — 6 September 2011

Product data sheet

## 1. Product profile

### 1.1 General description

The BB187 is a planar technology variable capacitance diode, in a SOD523 (SC-79) ultra small plastic SMD package. The excellent matching performance is achieved by gliding matching and a Direct Matching Assembly (DMA) procedure.

### 1.2 Features and benefits



- High linearity
- Excellent matching to 2 % DMA
- Ultra small plastic SMD package
- $C_{d(25V)}$ : 2.75 pF;  $C_{d(2V)}$  to  $C_{d(25V)}$  ratio: minimum 11
- Low series resistance.

### 1.3 Applications

- Electronic tuning in VHF television tuners
- Voltage Controlled Oscillators (VCO).

## 2. Pinning information

Table 1. Pinning

| Pin | Description | Simplified outline <sup>[1]</sup>   | Symbol  |
|-----|-------------|---|---|
| 1   | cathode     |  |  |
| 2   | anode       |   |   |

*sym008*

[1] The marking bar indicates the cathode.

## 3. Ordering information

Table 2. Ordering information

| Type number | Package |  |         |
|-------------|---------|--|---------|
|             | Name    | Description                              | Version |
| BB187       | SC-79   | plastic surface mounted package; 2 leads | SOD523  |





## 4. Marking

Table 3. Marking

| Type number | Marking code |
|-------------|--------------|
| BB187       | X            |

## 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    |
| $V_{RM}$  | peak reverse voltage | in series with a 10 k $\Omega$ resistor | -   | 35   | V    |
| $I_F$     | forward current      |   | -   | 20   | mA   |
| $T_{stg}$ | storage temperature  |   | -55 | +150 | °C   |
| $T_j$     | junction temperature |   | -55 | +125 | °C   |

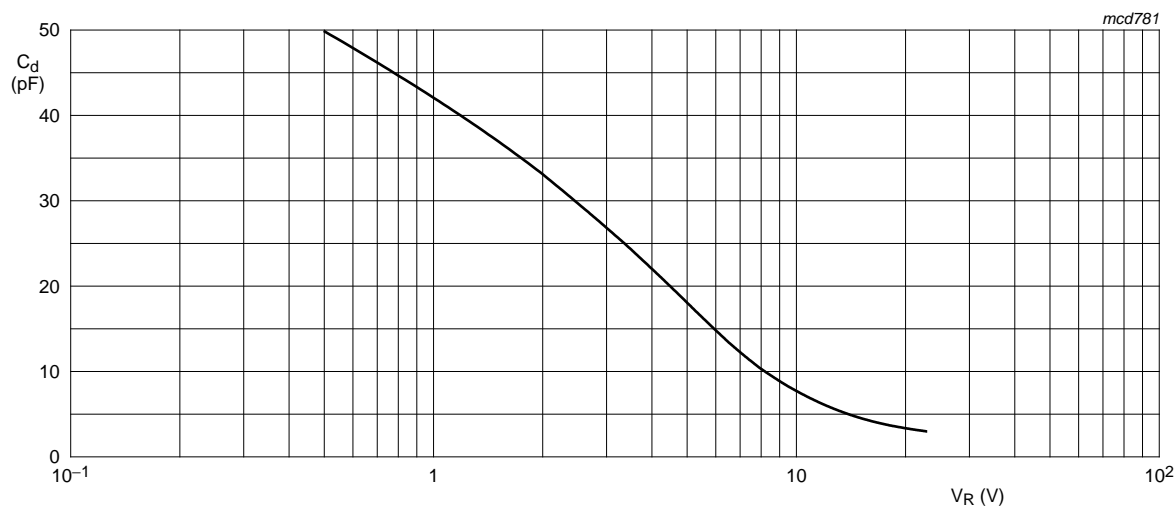
## 6. Characteristics

Table 5. Characteristics

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

| Symbol                         | Parameter               | Conditions   | Min  | Typ  | Max  | Unit     |
|--------------------------------|-------------------------|--|------|------|------|----------|
| $I_R$                          | reverse current         | see <a href="#">Figure 2</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 | $f = 470\text{ MHz}; V_R = 5\text{ V}$   | -    | -    | 0.75 | $\Omega$ |
| $C_d$                          | diode capacitance       | $f = 1\text{ MHz}$ ; see <a href="#">Figure 1</a> and <a href="#">Figure 3</a> |      |      |      |          |
|                                |                         | $V_R = 2\text{ V}$   | 29.3 | -    | 34.2 | pF       |
|                                |                         | $V_R = 25\text{ V}$  | 2.57 | 2.75 | 2.92 | pF       |
| $\frac{C_{d(2V)}}{C_{d(25V)}}$ | capacitance ratio       | $f = 1\text{ MHz}$   | 11   | -    | -    |          |
| $\frac{\Delta C_d}{C_d}$       | capacitance matching    | $V_R = 2\text{ V to } 25\text{ V}$ ; in a sequence of 10 diodes (gliding)      | -    | -    | 2    | %        |





$f = 1$  MHz;  $T_j = 25$  °C.

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

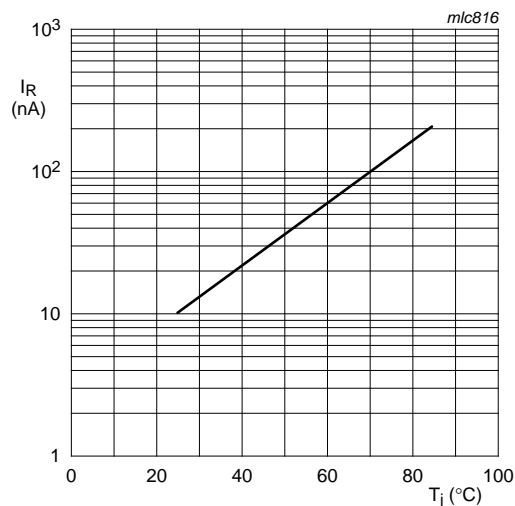


Fig 2. Reverse current as a function of junction temperature; maximum values.

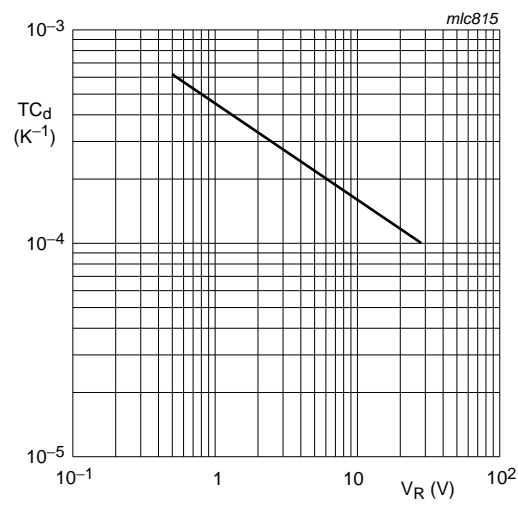


Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.



7. Package outline

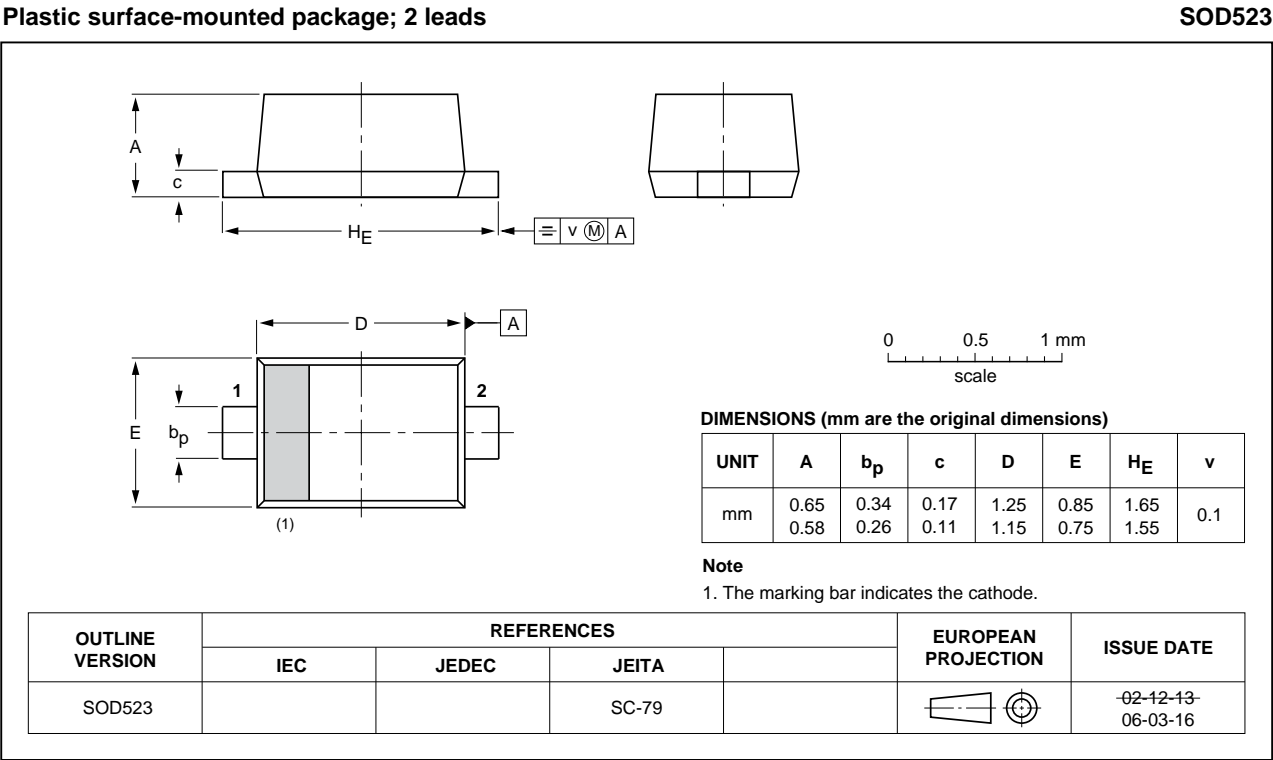


Fig 4. Package outline SOD523 (SC-79).



## 8. Revision history

Table 6. Revision history

| Document ID                   | Release date   | Data sheet status         | Change notice | Supersedes |
|-------------------------------|--|---------------------------|---------------|------------|
| BB187 v.5                     | 20110906   | Product data sheet        | -             | BB187 v.4  |
| Modifications:                | <ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Package outline drawings have been updated to the latest version.</li></ul> |                           |               |            |
| BB187 v.4<br>(9397 750 13835) | 20041103   | Product data sheet        | -             | BB187 v.3  |
| BB187 v.3<br>(9397 750 09385) | 20020220   | Product specification     | -             | BB187 v.2  |
| BB187 v.2<br>(9397 750 06459) | 19991019   | Product specification     | -             | BB187 v.1  |
| BB187 v.1<br>(9397 750 06307) | 19990915   | Preliminary specification | -             | -          |



## 9. Legal information

### 9.1 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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