



BB184

UHF low voltage variable capacitance diode

Rev. 02 — 22 April 2004

Product data sheet

1. Product profile

1.1 General description

The BB184 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD523 (SC-79) ultra small SMD plastic package.

1.2 Features

- Very steep CV curve
- $C_{d(1V)}$: 14 pF; $C_{d(10V)}$: 2 pF
- $C_{d(1V)}$ to $C_{d(10V)}$ ratio: typical 7
- Ultra small SMD plastic package.

1.3 Applications

- Voltage Controlled Oscillators (VCO)
- Tuning in low voltage television.

2. Pinning information

Table 1: Discrete pinning

| Pin | Description | Simplified outline | Symbol |
|-----|-------------|--------------------|------------|
| 1 | cathode | Top view | sym008 |
| 2 | anode | | |

3. Ordering information

Table 2: Ordering information

| Type number | Package | | Version |
|-------------|---------|--|---------|
| | Name | Description | |
| BB184 | - | plastic surface mounted package; 2 leads | SOD523 |

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4. Marking

Table 3: Marking

| Type number | Marking code |
|-------------|--------------|
| BB184 | A2 |

5. Limiting values

Table 4: Limiting values

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

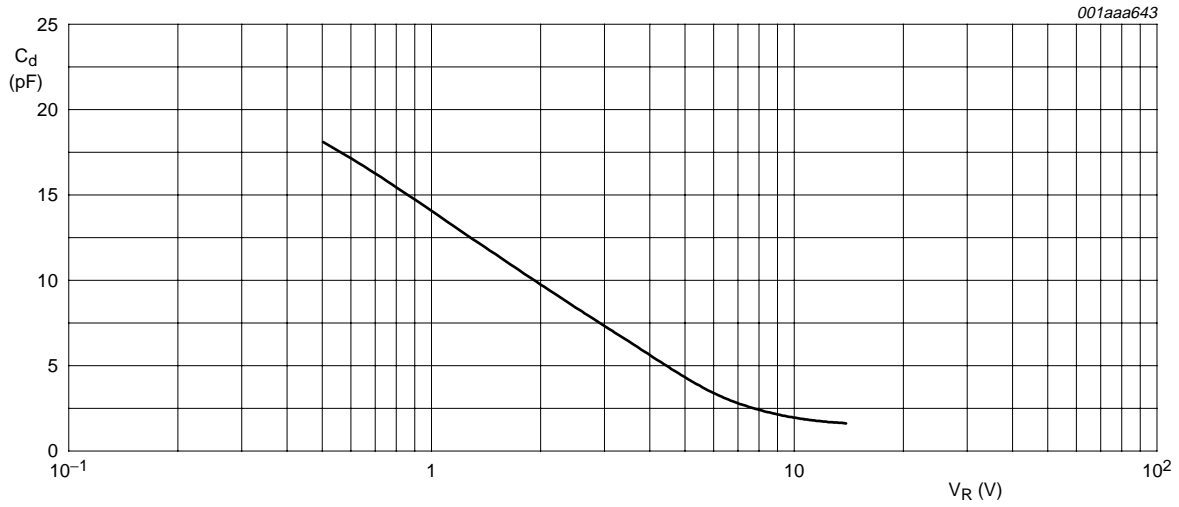
| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|--------------------------------|------------|-----|------|------|
| V_R | continuous reverse voltage | | - | 13 | V |
| I_F | continuous forward current | | - | 10 | mA |
| T_{stg} | storage temperature | | -55 | +150 | °C |
| T_j | operating junction temperature | | -55 | +125 | °C |

6. Characteristics

Table 5: Electrical characteristics

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|-------------------------|---|------|------|------|----------|
| I_R | reverse current | $V_R = 10\text{ V}$; see Figure 2 | - | - | 10 | nA |
| | | $V_R = 10\text{ V}$; $T_j = 85\text{ °C}$; see Figure 2 | - | - | 200 | nA |
| r_s | diode series resistance | $f = 470\text{ MHz}$; $C_d = 9\text{ pF}$ | - | 0.65 | - | Ω |
| C_d | diode capacitance | $f = 1\text{ MHz}$; see Figure 1 and 3 | | | | |
| | | $V_R = 1\text{ V}$ | 12.7 | 14 | 15.3 | pF |
| | | $V_R = 4\text{ V}$ | - | 5.5 | - | pF |
| | | $V_R = 10\text{ V}$ | 1.87 | 2 | 2.13 | pF |
| $\frac{C_{d(1V)}}{C_{d(10V)}}$ | capacitance ratio | $f = 1\text{ MHz}$ | 6 | 7 | - | |
| $\frac{\Delta C_d}{C_d}$ | capacitance matching | $V_R = 1\text{ to }10\text{ V}$; in a sequence of 5 diodes (gliding) | - | - | 2 | % |



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

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

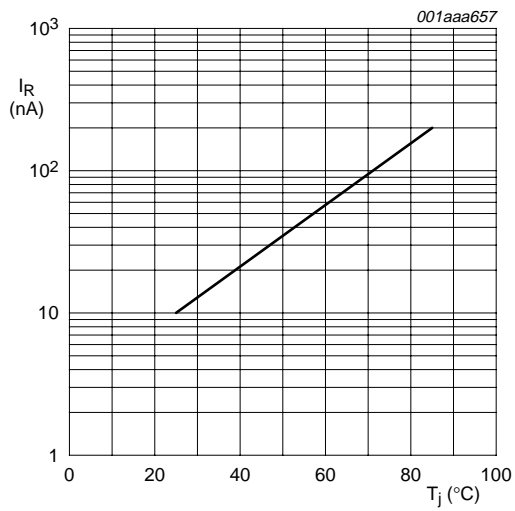


Fig 2. Reverse current as a function of junction temperature; maximum values.

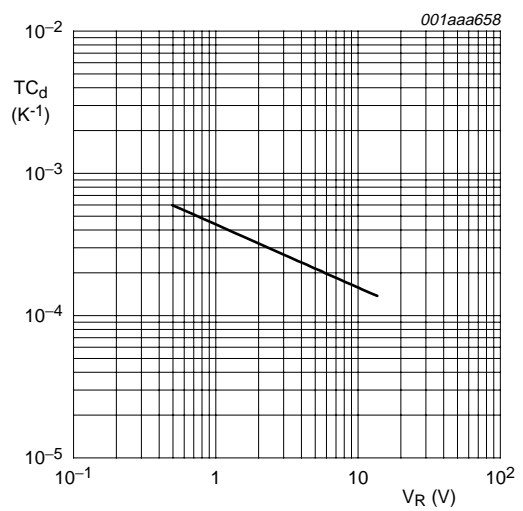


Fig 3. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

7. Package outline

Plastic surface mounted package; 2 leads

SOD523

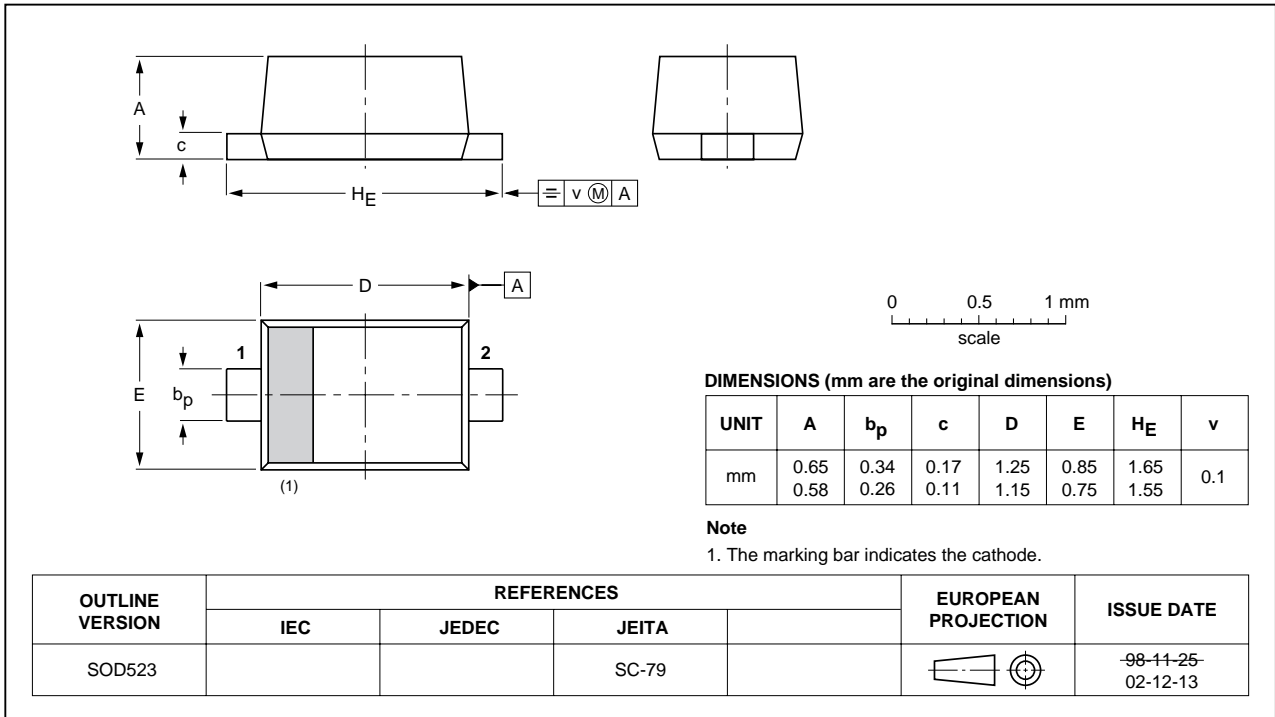


Fig 4. Package outline.

8. Revision history

Table 6: Revision history

| Document ID | Release date | Data sheet status | Change notice | Order number | Supersedes |
|----------------|--|-------------------|---------------|----------------|------------|
| BB184_2 | 20040422 | Product data | - | 9397 750 13004 | BB184_N_1 |
| Modifications: | <ul style="list-style-type: none">The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors | | | | |
| BB184_N_1 | 20040114 | Preliminary data | - | 9397 750 12694 | - |

9. Data sheet status

| Level | Data sheet status ^[1] | Product status ^[2] ^[3] | Definition |
|-------|----------------------------------|--|--|
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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