

BB152

VHF variable capacitance diode

Rev. 4 — 5 September 2011

Product data sheet

1. Product profile

1.1 General description

The BB152 is a variable capacitance diode, fabricated in planar technology and encapsulated in the SOD323 (SC-76) very small SMD plastic 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
- Very small SMD plastic package
- $C_{d(28V)}$: 2.7 pF; $C_{d(1V)}$ to $C_{d(28V)}$ ratio: 22
- Low series resistance.

1.3 Applications

- Electronic tuning in VHF television tuners, band A up to 160 MHz
- Voltage Controlled Oscillators (VCO).

2. Pinning information

Table 1. Pinning

| Pin | Description | Simplified outline ^[1] | Symbol |
|-----|-------------|---|--|
| 1 | cathode |  |  <i>sym008</i> |
| 2 | anode | | |

[1] The marking bar indicates the cathode.

3. Ordering information

Table 2. Ordering information

| Type number | Package | | Version |
|-------------|---------|--|---------|
| | Name | Description | |
| BB152 | SC-76 | plastic surface mounted package; 2 leads | SOD323 |



4. Marking

Table 3. Marking

| Type number | Marking code |
|-------------|--------------|
| BB152 | PB |

5. Limiting values

Table 4. Limiting values

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

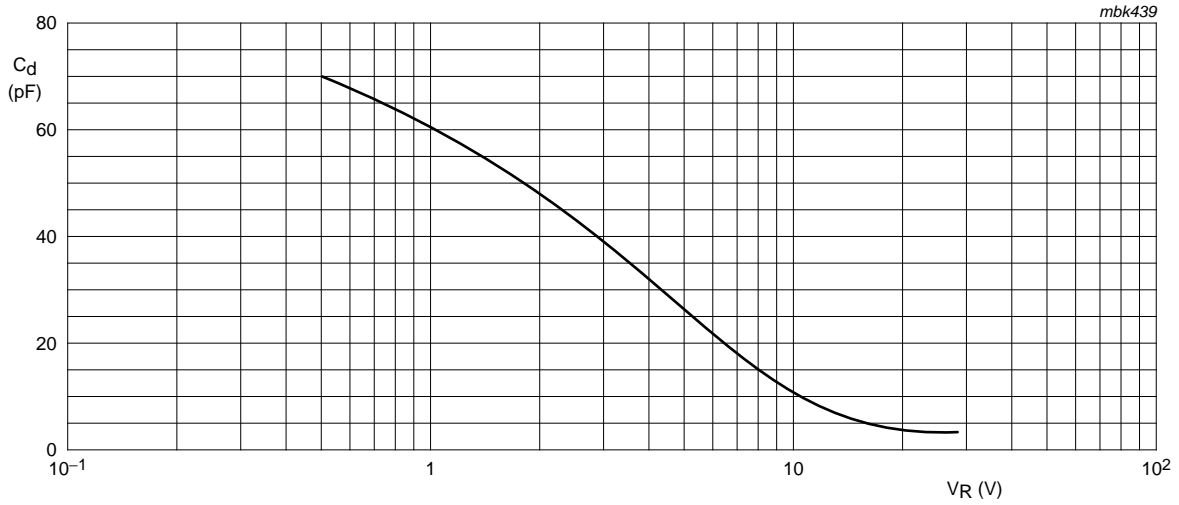
| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|----------------------|---|-----|------|--------------------|
| V_R | reverse voltage | | - | 32 | V |
| V_{RM} | peak reverse voltage | in series with a 10 k Ω resistor | - | 35 | V |
| I_F | forward current | | - | 20 | mA |
| T_{stg} | storage temperature | | -55 | +150 | $^{\circ}\text{C}$ |
| T_j | junction temperature | | -55 | +125 | $^{\circ}\text{C}$ |

6. Characteristics

Table 5. Characteristics

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

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------------------------|-------------------------|--|------|------|------|----------|
| I_R | reverse current | see Figure 2 | | | | |
| | | $V_R = 30\text{ V}$ | - | - | 10 | nA |
| | | $V_R = 30\text{ V}; T_j = 85\text{ }^{\circ}\text{C}$ | - | - | 200 | nA |
| r_s | diode series resistance | $f = 100\text{ MHz}; C_d = 30\text{ pF}$ | - | 1 | 1.2 | Ω |
| C_d | diode capacitance | $f = 1\text{ MHz};$ see Figure 1 and 3 | | | | |
| | | $V_R = 1\text{ V}$ | 52 | - | 62 | pF |
| | | $V_R = 28\text{ V}$ | 2.48 | 2.7 | 2.89 | pF |
| $\frac{C_{d(1V)}}{C_{d(2V)}}$ | capacitance ratio | $f = 1\text{ MHz}$ | - | 1.31 | - | |
| $\frac{C_{d(1V)}}{C_{d(28V)}}$ | capacitance ratio | $f = 1\text{ MHz}$ | 20.6 | 22 | - | |
| $\frac{C_{d(25V)}}{C_{d(28V)}}$ | capacitance ratio | $f = 1\text{ MHz}$ | - | 1.05 | - | |
| $\frac{\Delta C_d}{C_d}$ | capacitance matching | $V_R = 1\text{ V to } 28\text{ V};$ in a sequence of 10 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.

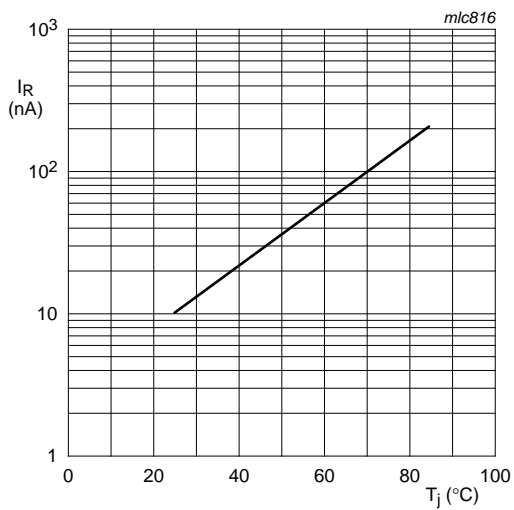
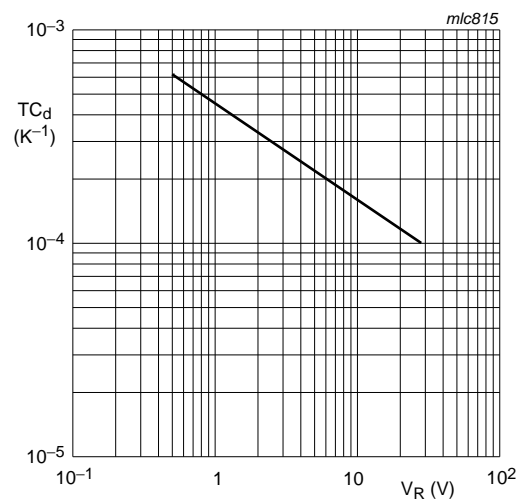


Fig 2. Reverse current as a function of junction temperature; maximum values.



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

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

7. Package outline

Plastic surface-mounted package; 2 leads

SOD323

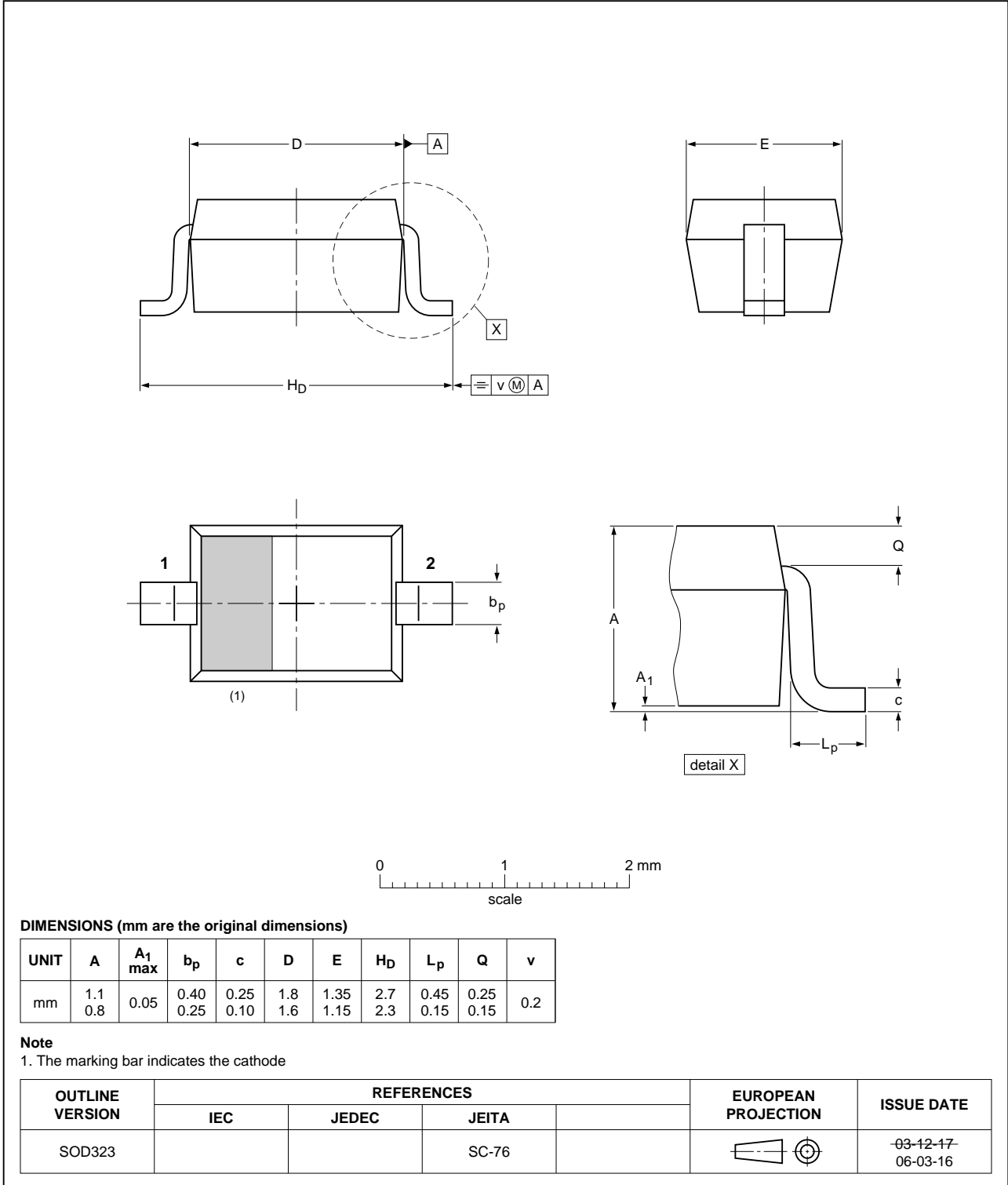


Fig 4. Package outline SOD323 (SC-76).

8. Revision history

Table 6. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-------------------------------|--------------|--|---------------|------------|
| BB152 v.4 | 20110905 | Product data sheet | - | BB152 v.3 |
| Modifications: | | <ul style="list-style-type: none">• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.• Legal texts have been adapted to the new company name where appropriate.• Package outline drawings have been updated to the latest version. | | |
| BB152 v.3 (9397 750 13828) | 20041005 | Product data sheet | - | BB152 v.2 |
| BB152 v.2 (9397 750 12645) | 20040225 | Product specification | - | BB152 v.1 |
| BB152 v.1 (9397 750 04275) | 19980909 | Product specification | - | - |

9. Legal information

9.1 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. |
| 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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