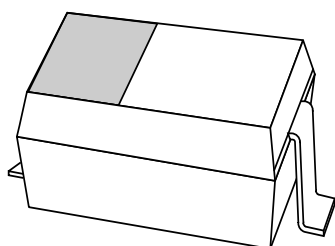


# DATA SHEET



**BB153**

VHF variable capacitance diode

Product specification

1997 Dec 17

## VHF variable capacitance diode

## BB153

## FEATURES

- Excellent linearity
- Excellent matching to 2% DMA
- Very small plastic SMD package
- C28: 2.6 pF; ratio 15
- Very low series resistance.

## DESCRIPTION

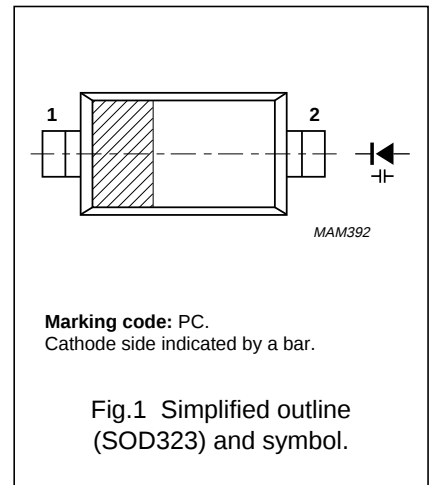
The BB153 is a planar technology variable capacitance diode, in a SOD323 very small plastic SMD package. The excellent matching performance is achieved by gliding matching and a direct matching assembly procedure.

## APPLICATIONS

- Electronic tuning in VHF television tuners, band B up to 460 MHz
- Voltage controlled oscillators (VCO).

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |



## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL    | PARAMETER                      | CONDITIONS                              | MIN. | MAX. | UNIT |
|-----------|--------------------------------|-----------------------------------------|------|------|------|
| $V_R$     | continuous reverse voltage     |                                         | –    | 32   | V    |
| $V_{Rp}$  | peak reverse voltage           | in series with a 10 k $\Omega$ resistor | –    | 35   | V    |
| $I_F$     | continuous forward current     |                                         | –    | 20   | mA   |
| $T_{stg}$ | storage temperature            |                                         | –55  | +150 | °C   |
| $T_j$     | operating junction temperature |                                         | –55  | +125 | °C   |

## ELECTRICAL CHARACTERISTICS

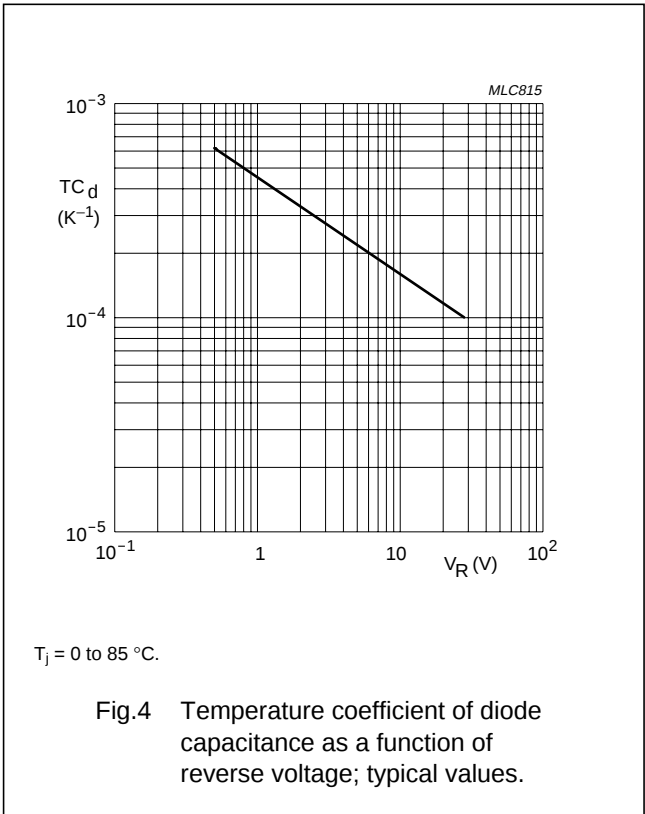
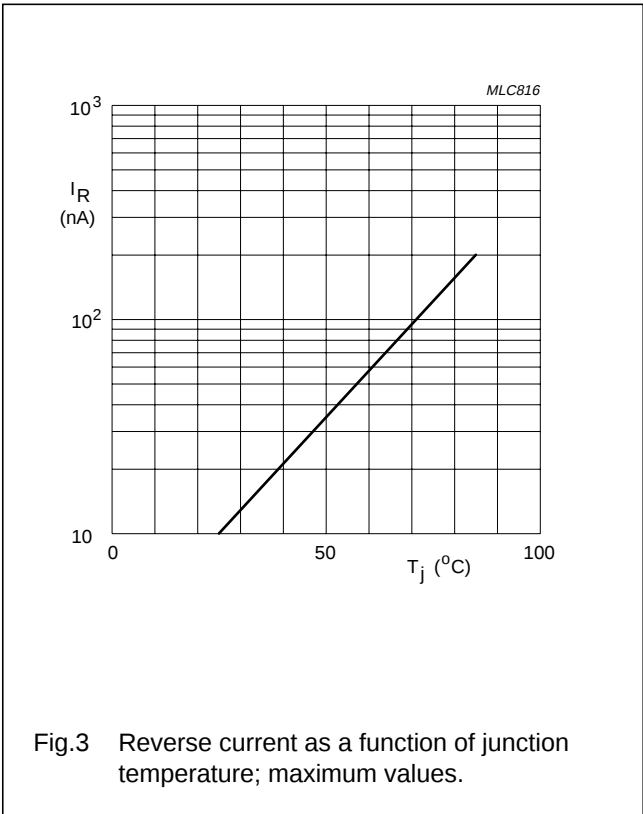
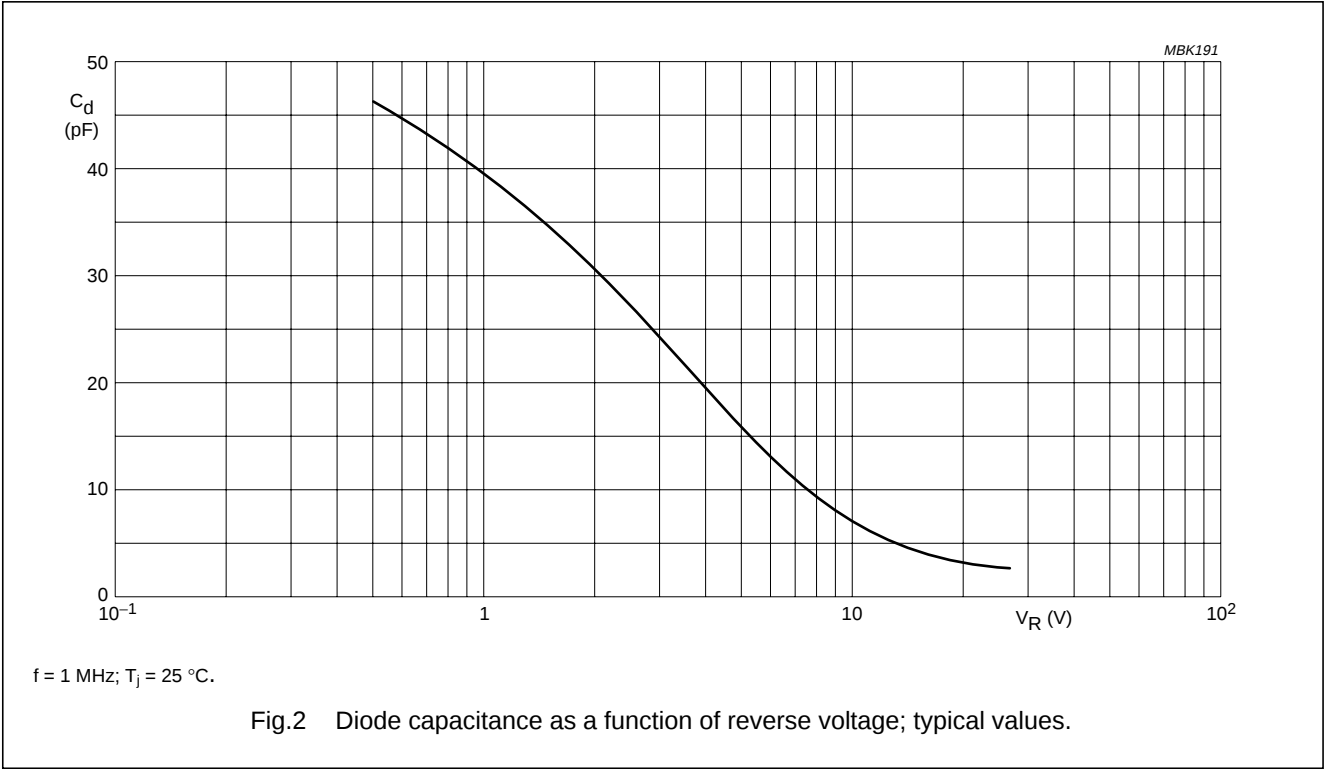
$T_j = 25\text{ °C}$  unless otherwise specified.

| SYMBOL                          | PARAMETER               | CONDITIONS                                                              | MIN.  | TYP. | MAX.  | UNIT     |
|---------------------------------|-------------------------|-------------------------------------------------------------------------|-------|------|-------|----------|
| $I_R$                           | reverse current         | $V_R = 30\text{ V}$ ; see Fig.3                                         | –     | –    | 10    | nA       |
|                                 |                         | $V_R = 30\text{ V}$ ; $T_j = 85\text{ °C}$ ; see Fig.3                  | –     | –    | 200   | nA       |
| $r_s$                           | diode series resistance | $f = 100\text{ MHz}$ ; $V_R$ is the value at which $C_d = 30\text{ pF}$ | –     | 0.65 | 0.8   | $\Omega$ |
| $C_d$                           | diode capacitance       | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4              | 34.65 | –    | 42.35 | pF       |
|                                 |                         | $V_R = 28\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4             | 2.361 | –    | 2.754 | pF       |
| $\frac{C_{d(1V)}}{C_{d(2V)}}$   | capacitance ratio       | $f = 1\text{ MHz}$                                                      | –     | 1.3  | –     |          |
| $\frac{C_{d(1V)}}{C_{d(28V)}}$  | capacitance ratio       | $f = 1\text{ MHz}$                                                      | 13.5  | –    | –     |          |
| $\frac{C_{d(25V)}}{C_{d(28V)}}$ | capacitance ratio       | $f = 1\text{ MHz}$                                                      | –     | 1.08 | –     |          |
| $\frac{\Delta C_d}{C_d}$        | capacitance matching    | $V_R = 1\text{ to }28\text{ V}$ ; in a sequence of 15 diodes (gliding)  | –     | –    | 2     | %        |

VHF variable capacitance diode

BB153

GRAPHICAL DATA



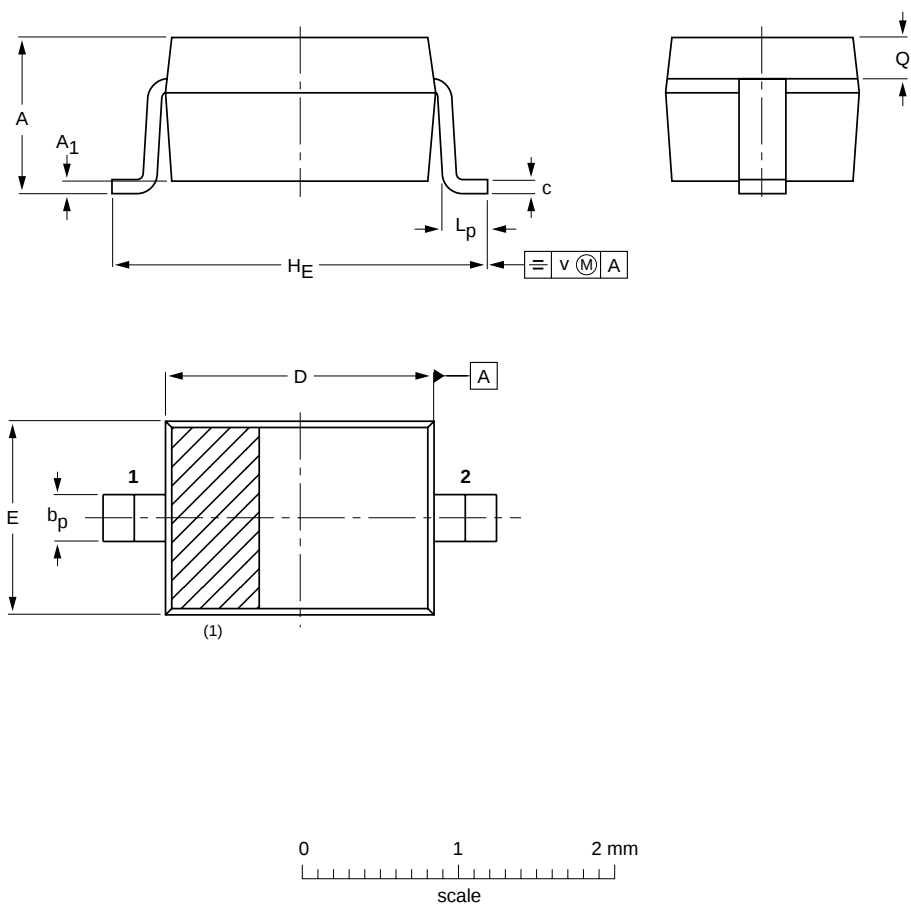
VHF variable capacitance diode

BB153

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max. | b <sub>p</sub> | c            | D          | E            | H <sub>E</sub> | L <sub>p</sub> | Q            | v   |
|------|------------|------------------------|----------------|--------------|------------|--------------|----------------|----------------|--------------|-----|
| mm   | 1.1<br>0.8 | + 0.05<br>- 0.05       | 0.40<br>0.25   | 0.25<br>0.10 | 1.8<br>1.6 | 1.35<br>1.15 | 2.7<br>2.3     | 0.45<br>0.15   | 0.25<br>0.15 | 0.2 |

Note  
1. The marking bar indicates the cathode.

| OUTLINE<br>VERSION | REFERENCES |       |      |  | EUROPEAN<br>PROJECTION | ISSUE DATE |
|--------------------|------------|-------|------|--|------------------------|------------|
|                    | IEC        | JEDEC | EIAJ |  |                        |            |
| SOD323             |            |       |      |  |                        | 98-09-14   |

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VHF variable capacitance diode

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BB153

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**DEFINITIONS**

| <b>Data sheet status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Objective specification                                                                                                                                                                                                                                                                                                                                                                                                                                   | This data sheet contains target or goal specifications for product development.       |
| Preliminary specification                                                                                                                                                                                                                                                                                                                                                                                                                                 | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification                                                                                                                                                                                                                                                                                                                                                                                                                                     | This data sheet contains final product specifications.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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VHF variable capacitance diode

BB153

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**NOTES**

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VHF variable capacitance diode

BB153

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**NOTES**

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