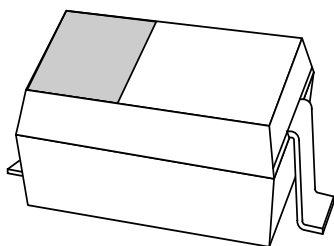


# DATA SHEET



**BB146**

UHF variable capacitance diode

Product specification

1996 Sep 20

# UHF variable capacitance diode

**BB146**

## FEATURES

- Ultra high ratio
- Excellent matching to 1.6% DMA (Direct Matching Assembly)
- Very small plastic SMD package
- C28: 1.9 pF; ratio 20.

## APPLICATIONS

- Electronic tuning in television tuners with extended UHF range
- Voltage controlled oscillators (VCO).

## DESCRIPTION

The BB146 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 very small plastic SMD package.

The excellent matching performance is achieved by gliding matching and a direct matching assembly procedure.

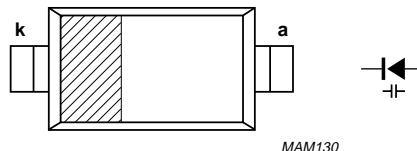
## ELECTRICAL CHARACTERISTICS

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

| SYMBOL                           | PARAMETER               | CONDITIONS  | MIN. | MAX. | UNIT     |
|----------------------------------|-------------------------|---|------|------|----------|
| $I_R$                            | reverse current         | $V_R = 30\text{ V}$ ; see Fig.3   | –    | 10   | nA       |
|                                  |                         | $V_R = 30\text{ V}$ ; $T_j = 85\text{ }^{\circ}\text{C}$ ; see Fig.3    | –    | 200  | nA       |
| $r_s$                            | diode series resistance | $f = 470\text{ MHz}$ ; note 1   | –    | 1.4  | $\Omega$ |
| $C_d$                            | diode capacitance       | $V_R = 0.5\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4            | 35   | 43   | pF       |
|                                  |                         | $V_R = 28\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4             | 1.7  | 2.1  | pF       |
| $\frac{C_{d(0.5V)}}{C_{d(28V)}}$ | capacitance ratio       | $f = 1\text{ MHz}$  | 17.5 | 23   |          |
| $\frac{\Delta C_d}{C_d}$         | capacitance matching    | $V_R = 0.5\text{ to }28\text{ V}$ ; in a sequence of 8 diodes (gliding) | –    | 1.6  | %        |

### Note

1.  $V_R$  is the value at which  $C_d = 9\text{ pF}$ .



**Marking code:** P6.  
Cathode side indicated by a bar.

Fig.1 Simplified outline (SOD323) and symbol.

## LIMITING VALUES

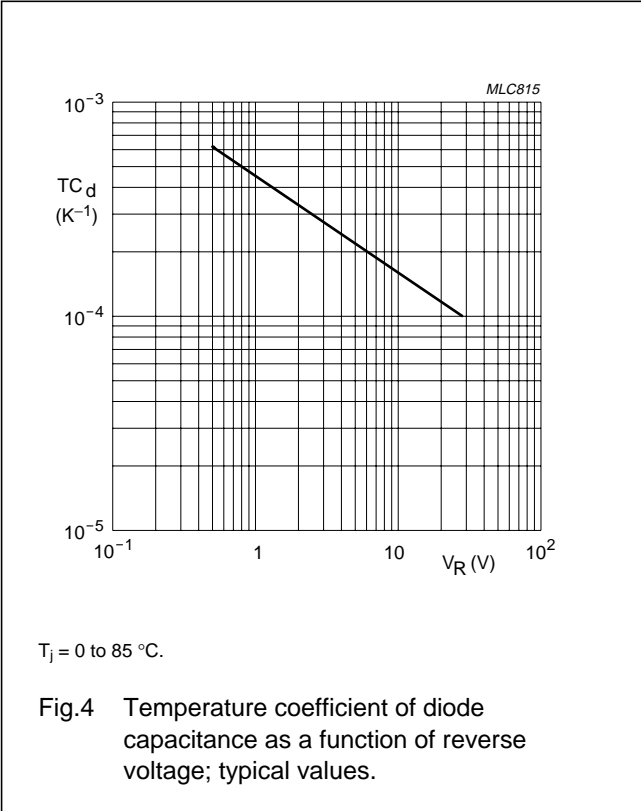
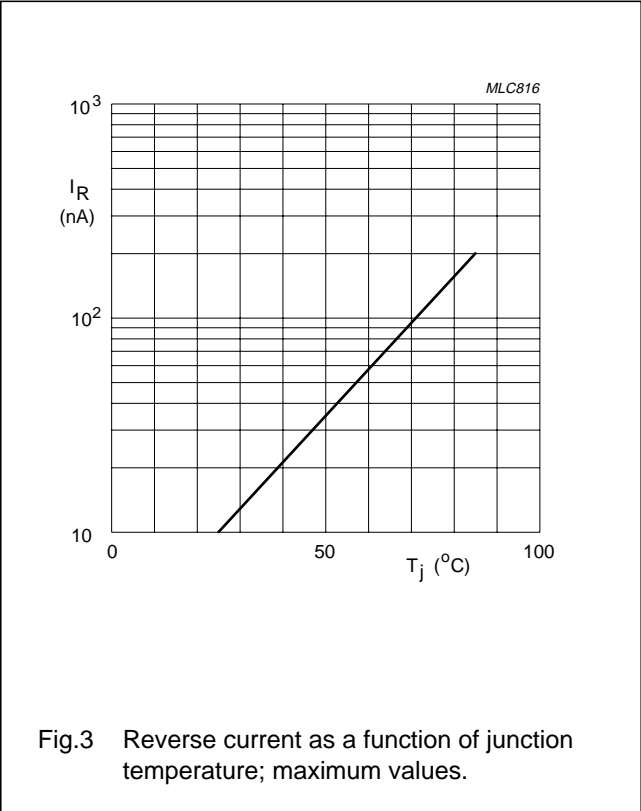
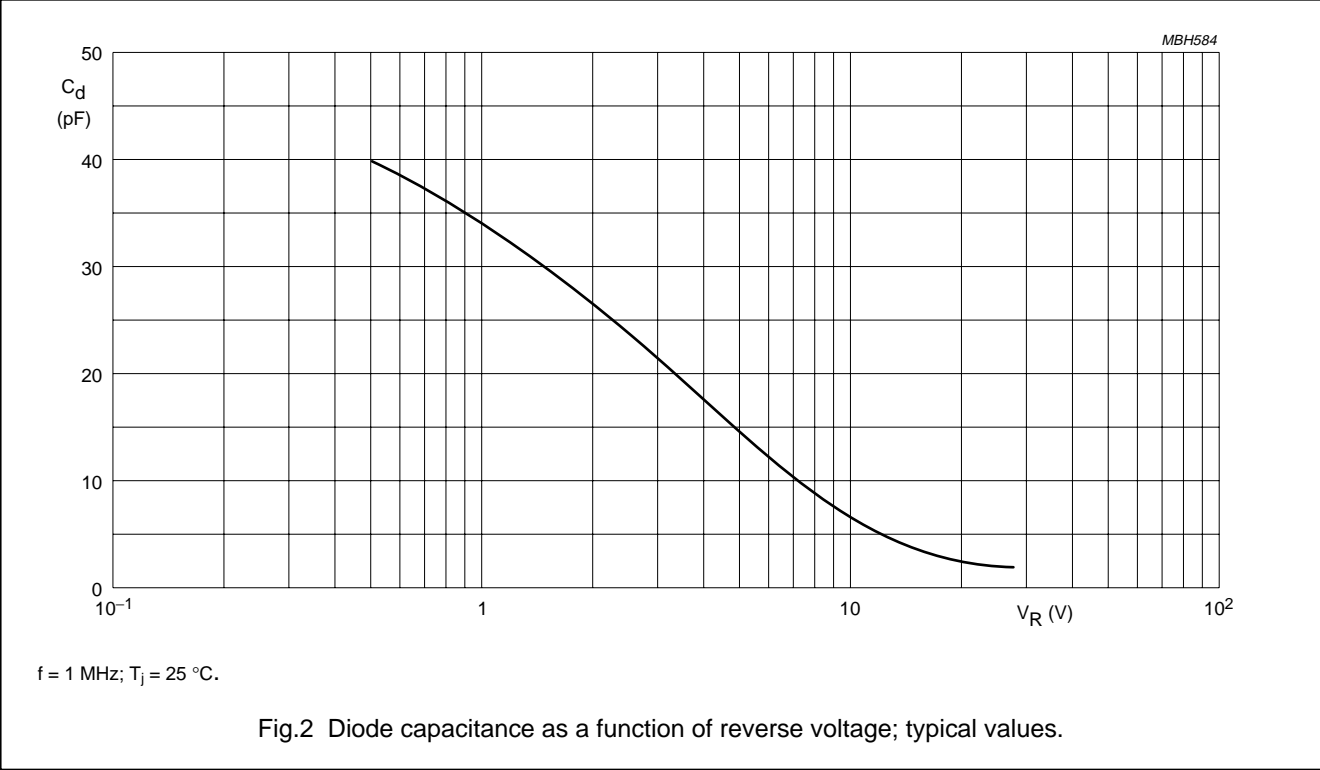
In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL    | PARAMETER                      | MIN. | MAX. | UNIT               |
|-----------|--------------------------------|------|------|--------------------|
| $V_R$     | continuous reverse voltage     | –    | 30   | V                  |
| $I_F$     | continuous forward current     | –    | 20   | mA                 |
| $T_{stg}$ | storage temperature            | –55  | +150 | $^{\circ}\text{C}$ |
| $T_j$     | operating junction temperature | –55  | +125 | $^{\circ}\text{C}$ |

UHF variable capacitance diode

BB146

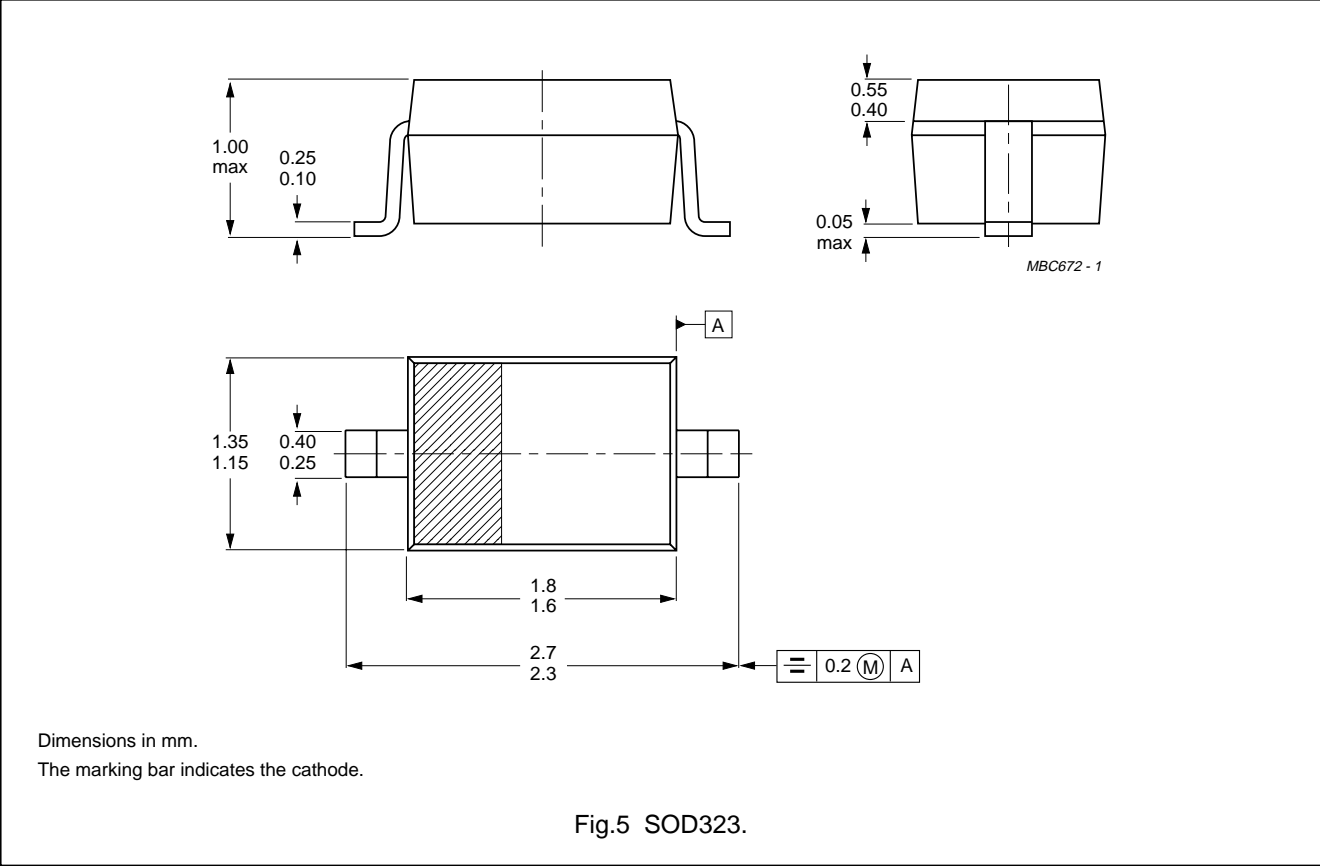
GRAPHICAL DATA



UHF variable capacitance diode

BB146

PACKAGE OUTLINE



DEFINITIONS

| Data sheet status   |   |
|---|---|
| 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.                                |
| Limiting values   |   |
| 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. |   |
| Application information   |   |
| Where application information is given, it is advisory and does not form part of the specification.   |   |

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.