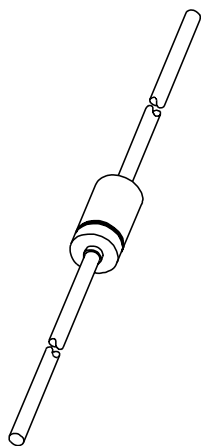


# DATA SHEET



**BB405B**

**UHF variable capacitance diode**

Product specification  
Supersedes data of April 1992  
File under Discrete Semiconductors, SC01

1996 May 03

## UHF variable capacitance diode

## BB405B

## FEATURES

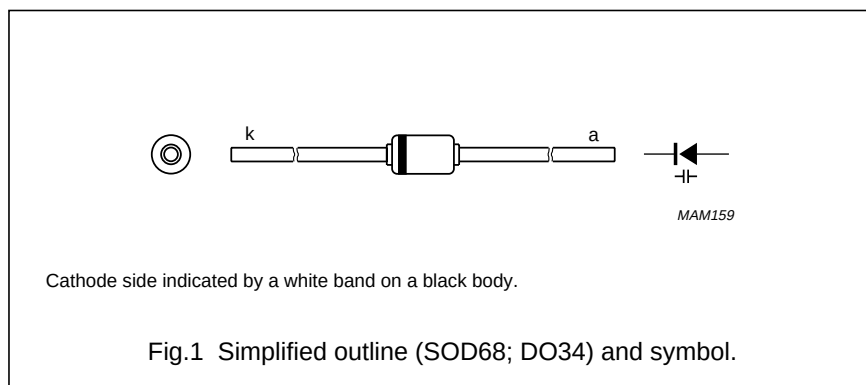
- Excellent linearity
- Matched to 3%
- Hermetically sealed leaded glass SOD68 (DO-34) package
- C28: 2 pF; ratio: 8.3
- Low series resistance.

## APPLICATIONS

- Electronic tuning in UHF television tuners
- VCO.

## DESCRIPTION

The BB405B is a variable capacitance diode, fabricated in planar technology, and encapsulated in the hermetically sealed leaded glass SOD68 (DO-34) package.



## 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 | °C   |
| $T_j$     | operating junction temperature | –55  | +100 | °C   |

## ELECTRICAL CHARACTERISTICS

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

| SYMBOL                         | PARAMETER               | CONDITIONS                                                  | MIN. | TYP. | MAX. | UNIT     |
|--------------------------------|-------------------------|-------------------------------------------------------------|------|------|------|----------|
| $I_R$                          | reverse current         | $V_R = 28\text{ V}$ ; see Fig.3                             | –    | –    | 10   | nA       |
|                                |                         | $V_R = 28\text{ V}$ ; $T_j = 85\text{ °C}$ ; see Fig.3      | –    | –    | 200  | nA       |
| $r_s$                          | diode series resistance | $f = 470\text{ MHz}$ ; note 1                               | –    | –    | 0.75 | $\Omega$ |
| $C_d$                          | diode capacitance       | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4  | –    | –    | 18   | pF       |
|                                |                         | $V_R = 3\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4  | –    | 11   | –    | pF       |
|                                |                         | $V_R = 28\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 2 and 4 | 1.8  | –    | 2.2  | pF       |
| $\frac{C_{d(1V)}}{C_{d(28V)}}$ | capacitance ratio       | $f = 1\text{ MHz}$                                          | 7.6  | –    | –    |          |
| $\frac{\Delta C_d}{C_d}$       | capacitance matching    | $V_R = 0.5\text{ to }28\text{ V}$                           | –    | –    | 3    | %        |

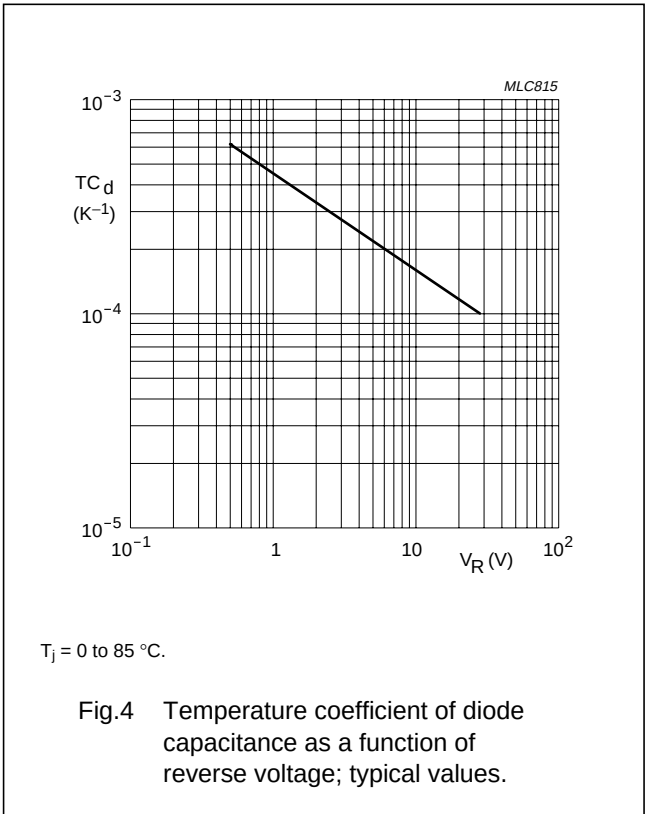
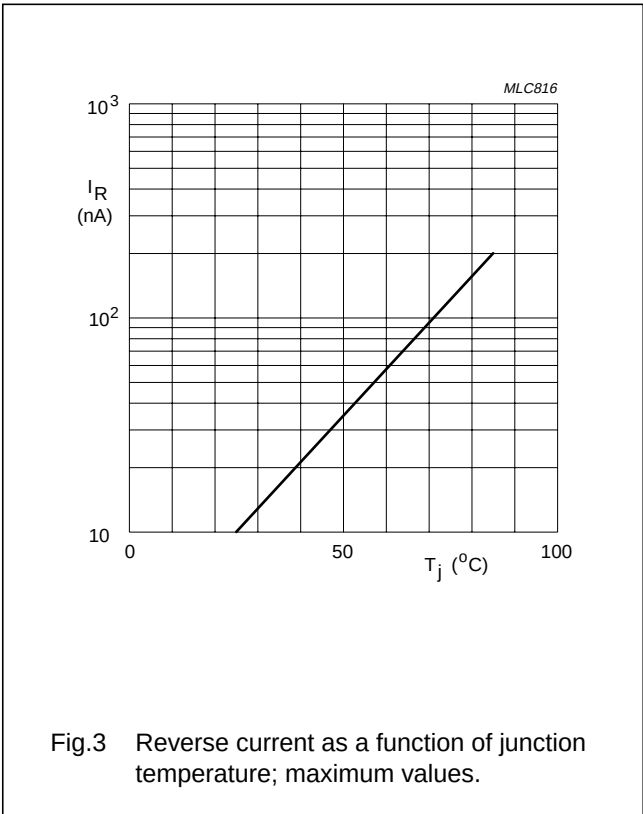
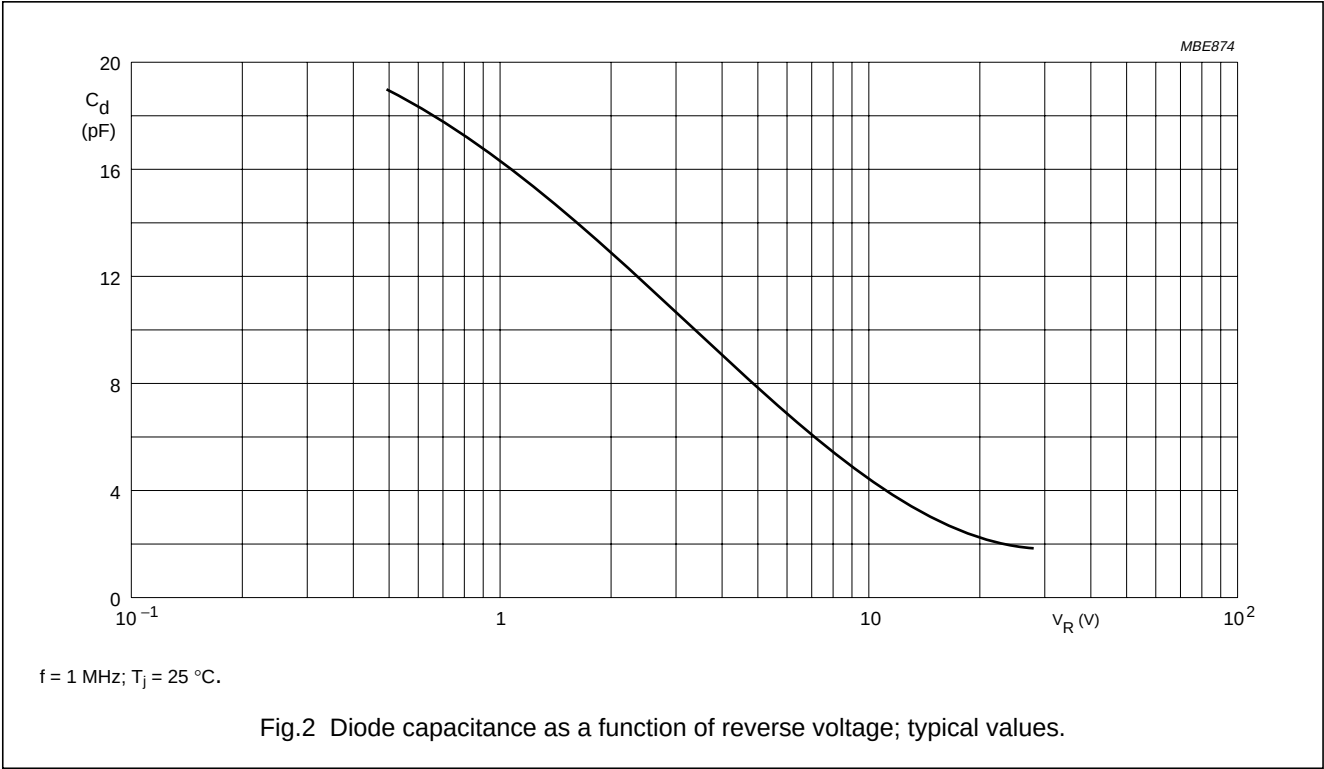
## Note

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

UHF variable capacitance diode

BB405B

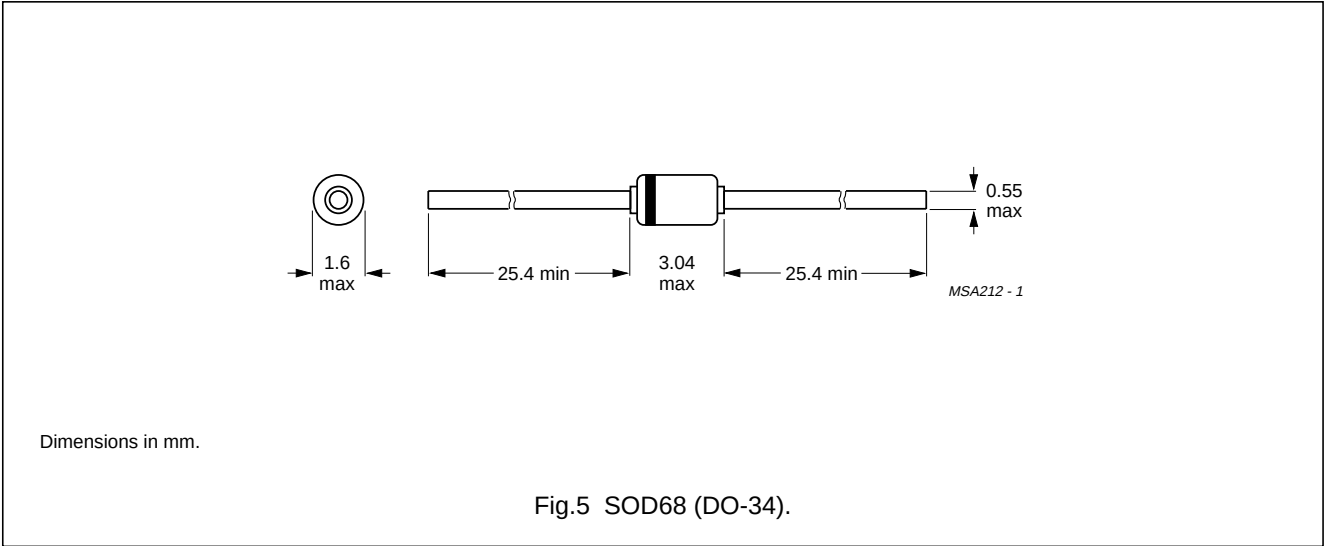
GRAPHICAL DATA



UHF variable capacitance diode

BB405B

PACKAGE OUTLINE



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.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

LIFE SUPPORT APPLICATIONS

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