

# VHF variable capacitance diode

## FEATURES

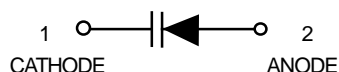
- Excellent linearity
- Ultra small plastic SMD package
- C28: 1 pF; ratio: 14.

## APPLICATIONS

- Electronic tuning in satellite tuners
- Tuneable coupling
- Voltage controlled oscillators (VCO).

## DESCRIPTION

The BB181 is a variable capacitance diode, fabricated in planar technology and encapsulated in the SOD523 (SC-79) ultra small plastic SMD package.


**BB 181**

**SOD523 SC-79**
**MARKING CODE:N**


**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 | +150 | °C   |

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

| SYMBOL                           | PARAMETER               | CONDITIONS   | MIN. | MAX.  | UNIT     |
|----------------------------------|-------------------------|--|------|-------|----------|
| $I_R$                            | reverse current         | $V_R = 30\text{ V}$ ; see Fig.2                              | –    | 10    | nA       |
|                                  |                         | $V_R = 30\text{ V}$ ; $T_j = 85^\circ\text{C}$ ; see Fig.2   | –    | 200   | nA       |
| $r_s$                            | diode series resistance | $f = 470\text{ MHz}$ ; note 1                                | –    | 3     | $\Omega$ |
| $C_d$                            | diode capacitance       | $V_R = 0.5\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 1 and 3 | 8    | 17    | pF       |
|                                  |                         | $V_R = 28\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 1 and 3  | 0.7  | 1.055 | pF       |
| $\frac{C_{d(0.5V)}}{C_{d(28V)}}$ | capacitance ratio       | $f = 1\text{ MHz}$   | 12   | 16    |          |

## Note

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

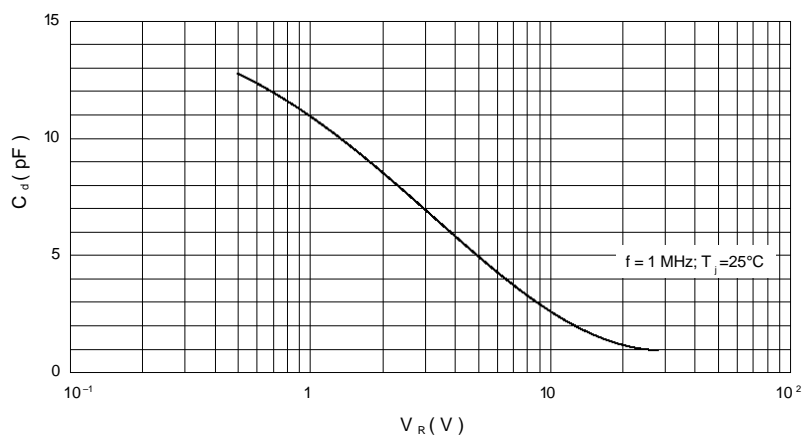
**BB 181**


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

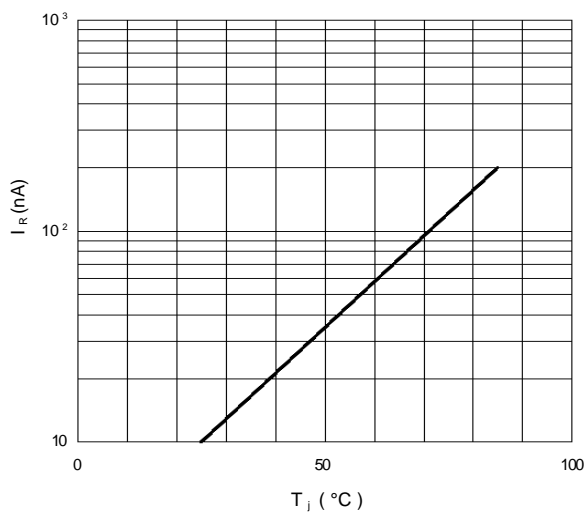


Fig.2 Reverse current as a function of junction temperature; maximum values.

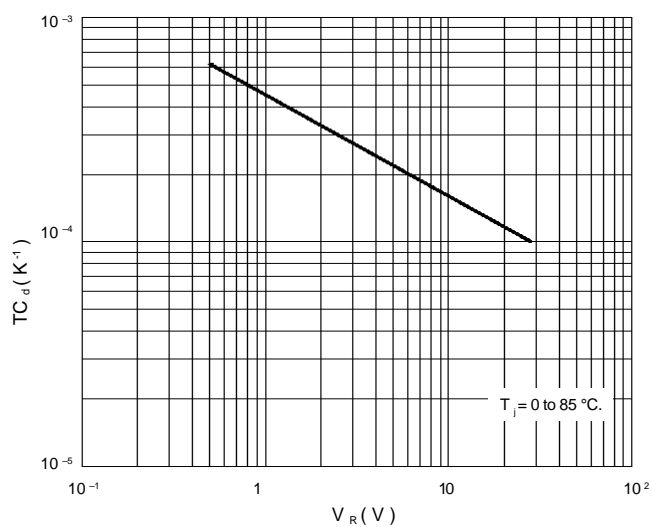


Fig.3 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.