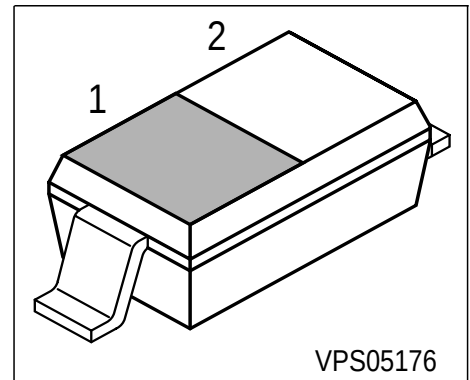


## Silicon Tuning Diode

- For VHF 2-Band-hyperband-TV-tuners
- Very high capacitance ratio
- Low series resistance
- Extremely small plastic SMD package
- Excellent uniformity and matching due to "in-line" matching assembly procedure



| Type  | Marking | Pin Configuration |       | Package |
|-------|---------|-------------------|-------|---------|
| BB669 | 1       | 1 = C             | 2 = A | SOD323  |

### Maximum Ratings

| Parameter                                  | Symbol    | Value      | Unit |
|--------------------------------------------|-----------|------------|------|
| Diode reverse voltage                      | $V_R$     | 30         | V    |
| Peak reverse voltage ( $R \geq 5k\Omega$ ) | $V_{RM}$  | 35         |      |
| Forward current                            | $I_F$     | 20         | mA   |
| Operating temperature range                | $T_{op}$  | -55... 150 | °C   |
| Storage temperature                        | $T_{stg}$ | -55... 150 |      |

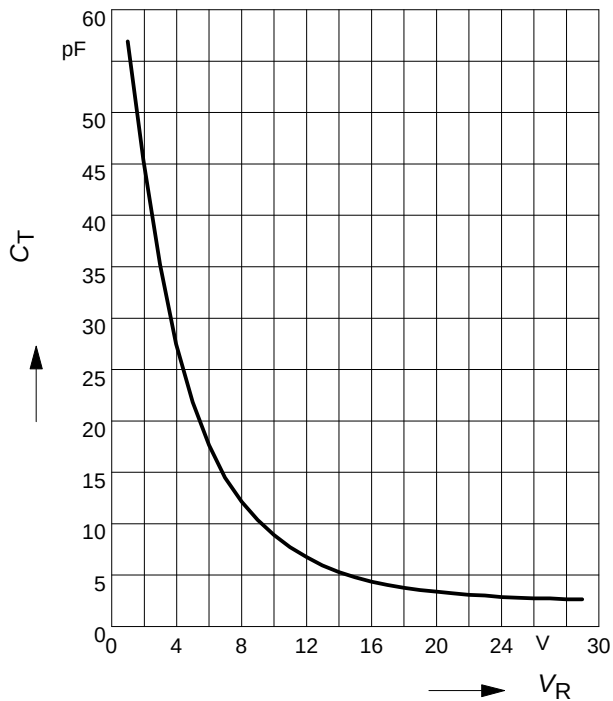
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

| Parameter                                                                                                                                                                           | Symbol           | Values                   |                            |                          | Unit     |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------|----------------------------|--------------------------|----------|---|
|                                                                                                                                                                                     |                  | min.                     | typ.                       | max.                     |          |   |
| DC characteristics                                                                                                                                                                  |                  |                          |                            |                          |          |   |
| Reverse current<br>$V_R = 30\text{ V}$                                                                                                                                              | $I_R$            | -                        | -                          | 10                       | nA       |   |
| Reverse current<br>$V_R = 30\text{ V}, T_A = 85\text{ }^{\circ}\text{C}$                                                                                                            | $I_R$            | -                        | -                          | 200                      |          |   |
| AC characteristics                                                                                                                                                                  |                  |                          |                            |                          |          |   |
| Diode capacitance<br>$V_R = 1\text{ V}, f = 1\text{ MHz}$<br>$V_R = 2\text{ V}, f = 1\text{ MHz}$<br>$V_R = 25\text{ V}, f = 1\text{ MHz}$<br>$V_R = 28\text{ V}, f = 1\text{ MHz}$ | $C_T$            | 51<br>39.6<br>2.6<br>2.5 | 56.5<br>43.4<br>2.8<br>2.7 | 61.5<br>47.2<br>3<br>2.9 | pF       |   |
| Capacitance ratio<br>$V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$                                                                                                        | $C_{T2}/C_{T25}$ | 14.5                     | 15.5                       | 17                       |          | - |
| Capacitance ratio<br>$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$                                                                                                        | $C_{T1}/C_{T28}$ | 18                       | 20.9                       | 23.3                     |          |   |
| Capacitance ratio <sup>1)</sup><br>$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$                                                                                          | $\Delta C_T/C_T$ | -                        | -                          | 2                        |          | % |
| Series resistance<br>$V_R = 8\text{ V}, f = 470\text{ MHz}$                                                                                                                         | $r_s$            | -                        | 0.85                       | -                        | $\Omega$ |   |
| Series inductance                                                                                                                                                                   | $L_s$            | -                        | 1.8                        | -                        | nH       |   |

1) In-line matching. For details please refer to Application Note 047

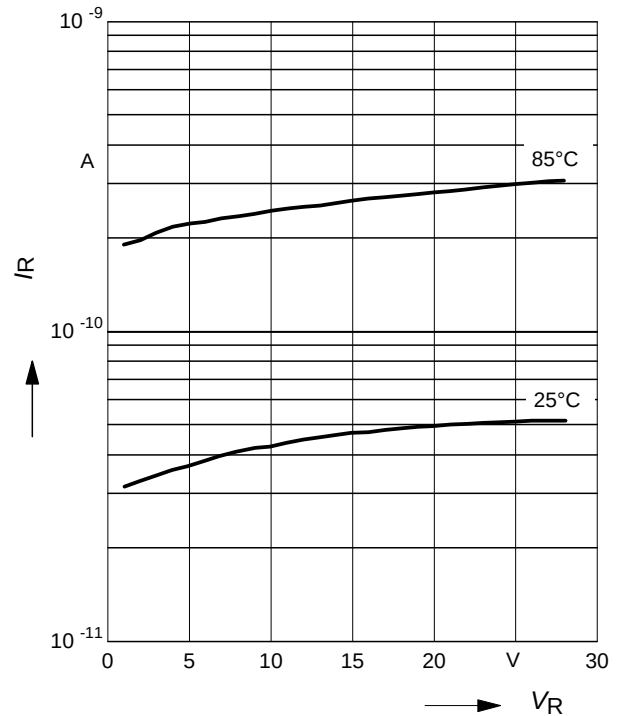
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



**Temperature coefficient of the diode capacitance  $T_{Cc} = f(V_R)$**

