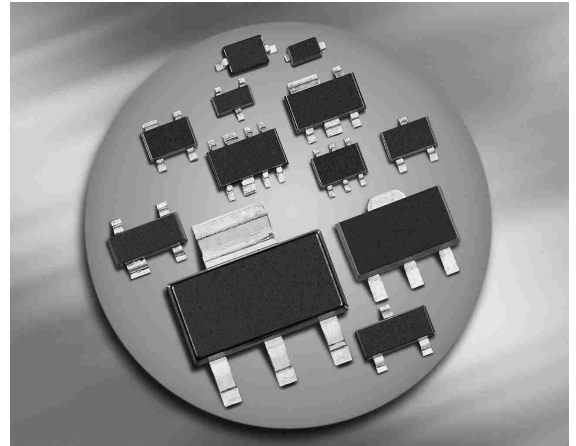
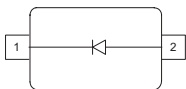


### Silicon Tuning Diode

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



**BB669**  
**BB689**  
**BB689-02V**



| Type      | Package | Configuration | $L_S$ (nH) | Marking |
|-----------|---------|---------------|------------|---------|
| BB669     | SOD323  | single        | 1.8        | 1       |
| BB689     | SCD80   | single        | 0.6        | EE      |
| BB689-02V | SC79    | Single        | 0.6        | E       |

**Maximum Ratings** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                            | Symbol    | Value       | Unit             |
|------------------------------------------------------|-----------|-------------|------------------|
| Diode reverse voltage                                | $V_R$     | 30          | V                |
| Peak reverse voltage<br>( $R \leq 5\text{k}\Omega$ ) | $V_{RM}$  | 35          |                  |
| Forward current                                      | $I_F$     | 20          | mA               |
| Operating temperature range                          | $T_{op}$  | -55 ... 150 | $^\circ\text{C}$ |
| 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                                       | $I_R$  |        |      |      | nA   |
| $V_R = 30\text{ V}$                                   |        | -      | -    | 10   |      |
| $V_R = 30\text{ V}, T_A = 85\text{ }^{\circ}\text{C}$ |        | -      | -    | 200  |      |

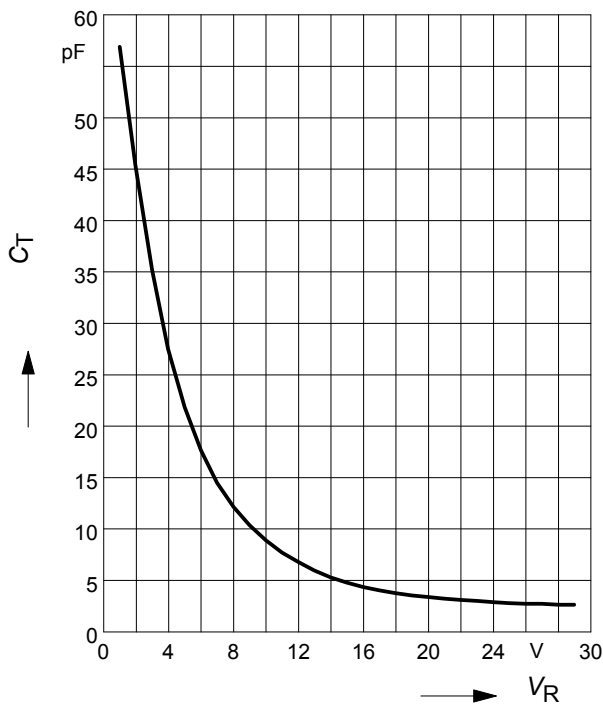
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                                                                                                                           | Symbol           | Values                   |                            |                          | Unit     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------|----------------------------|--------------------------|----------|
|                                                                                                                                                                                     |                  | min.                     | typ.                       | max.                     |          |
| 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>$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$                                                                                                        | $C_{T1}/C_{T28}$ | 18                       | 20.9                       | 23.2                     | -        |
| 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 matching <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                       | -                        | $\Omega$ |

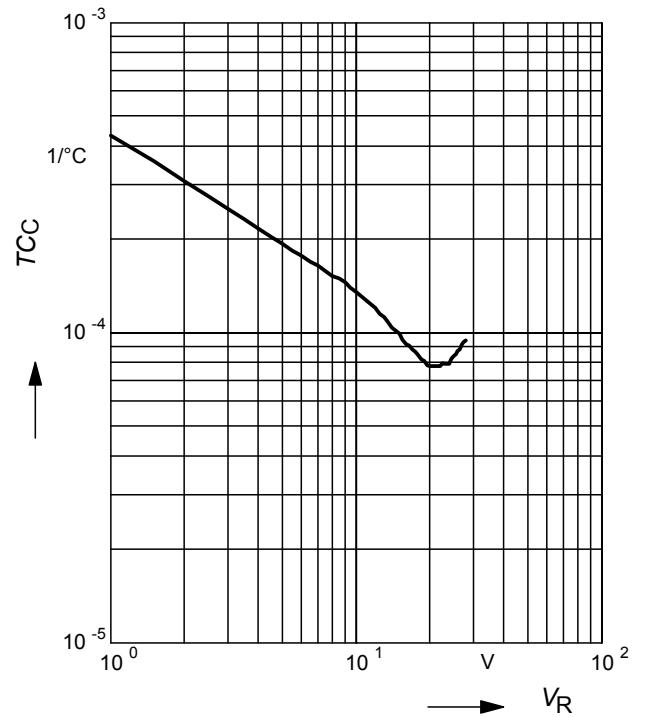
<sup>1</sup>For details please refer to Application Note 047

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

$f = 1\text{MHz}$



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



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

$T_A = \text{Parameter}$

