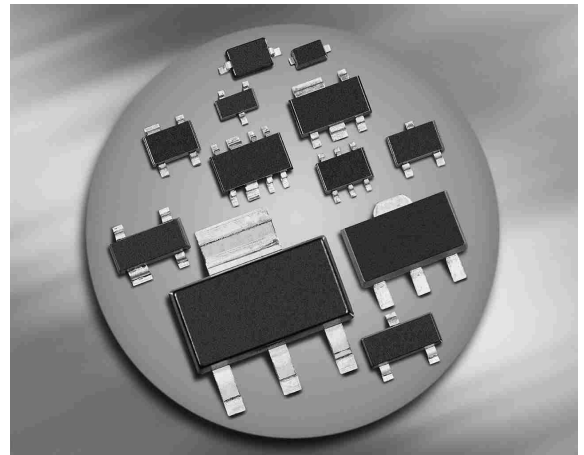
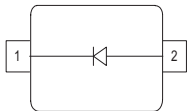


**Silicon Variable Capacitance Diode**

- For VHF TV / VTR tuners
- Pb-free (RoHS compliant) package


**BB640**


| Type  | Package | Configuration | $L_S$ (nH) | Marking |
|-------|---------|---------------|------------|---------|
| BB640 | SOD323  | single        | 1.8        | red S   |

**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>( $R \geq 5\text{k}\Omega$ ) | $V_{RM}$  | 35          |                  |
| Forward current                                      | $I_F$     | 20          | mA               |
| Operating temperature range                          | $T_{op}$  | -55 ... 150 | $^\circ\text{C}$ |
| Storage temperature                                  | $T_{stg}$ | -55 ... 150 |                  |

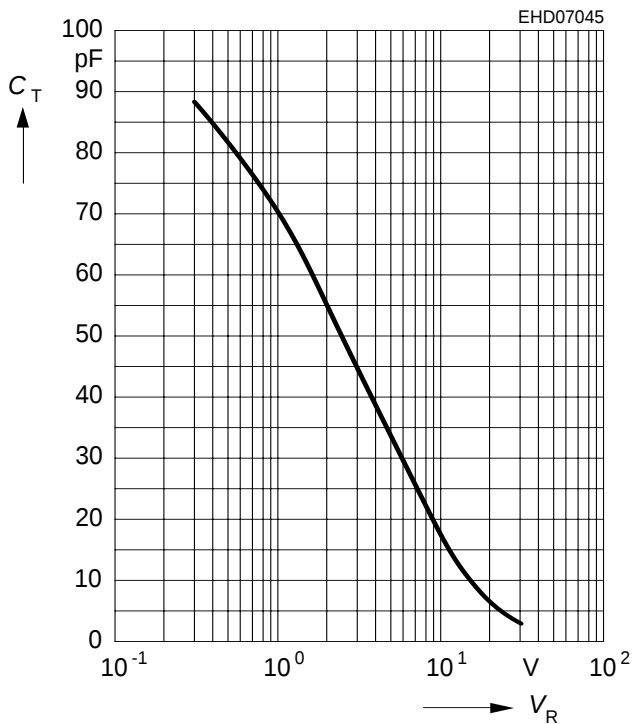
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| 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  |          |
| AC Characteristics                                      |                  |        |      |      |          |
| Diode capacitance                                       | $C_T$            |        |      |      | pF       |
| $V_R = 1\text{ V}, f = 1\text{ MHz}$                    |                  | 62     | 69   | 76   |          |
| $V_R = 2\text{ V}, f = 1\text{ MHz}$                    |                  | 47.5   | 54.5 | 61.5 |          |
| $V_R = 25\text{ V}, f = 1\text{ MHz}$                   |                  | 2.85   | 3.28 | 3.7  |          |
| $V_R = 28\text{ V}, f = 1\text{ MHz}$                   |                  | 2.8    | 3.05 | 3.3  |          |
| Capacitance ratio                                       | $C_{T1}/C_{T28}$ | 19.5   | -    | 25   |          |
| $V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$ |                  |        |      |      |          |
| Capacitance ratio                                       | $C_{T2}/C_{T25}$ | 15     | 16.6 | -    |          |
| $V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$ |                  |        |      |      |          |
| Capacitance matching <sup>1)</sup>                      | $\Delta C_T/C_T$ | -      | -    | 2.5  | %        |
| $V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$ |                  |        |      |      |          |
| Series resistance                                       | $r_S$            | -      | 1.15 | -    | $\Omega$ |
| $C_T = 12\text{ pF}, f = 100\text{ MHz}$                |                  |        |      |      |          |

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

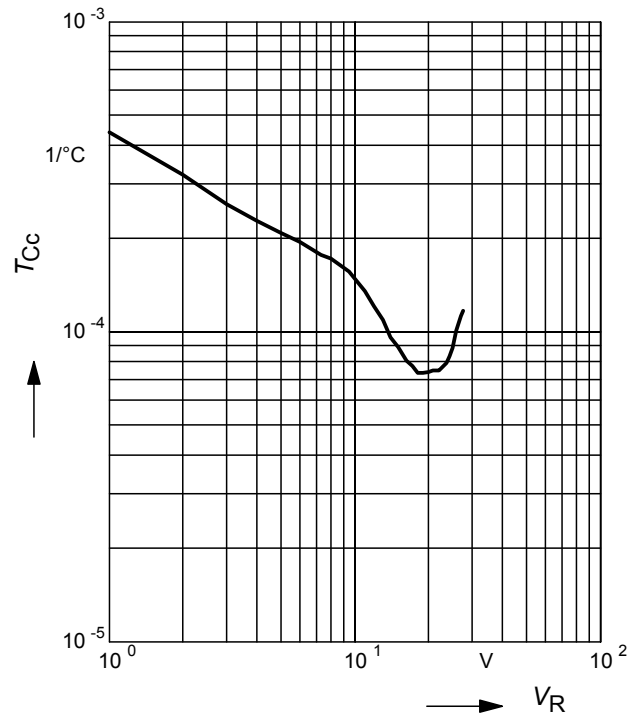
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



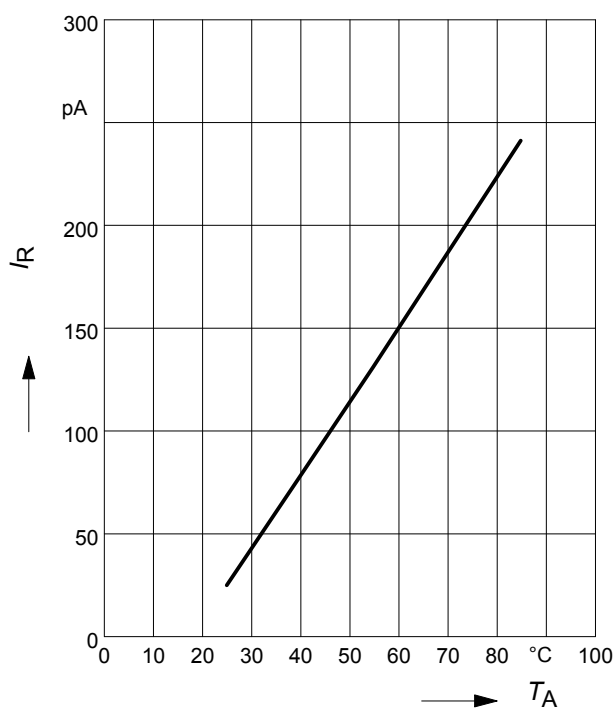
**Temperature coefficient of the diode**

**capacitance  $T_{Cc} = f(V_R)$**



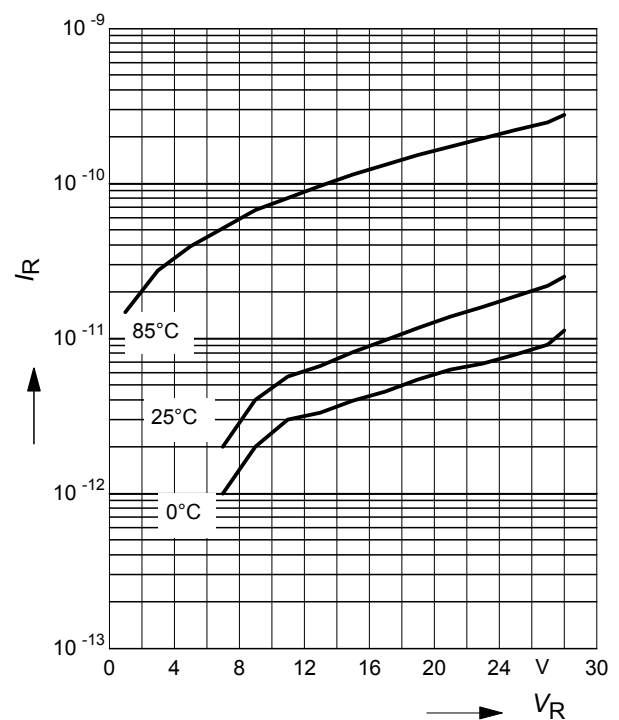
**Reverse current  $I_R = f(T_A)$**

$V_R = 28\text{V}$

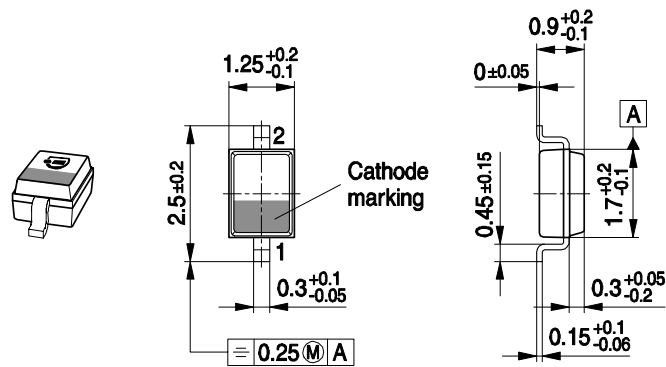


**Reverse current  $I_R = f(V_R)$**

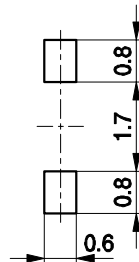
$T_A = \text{Parameter}$



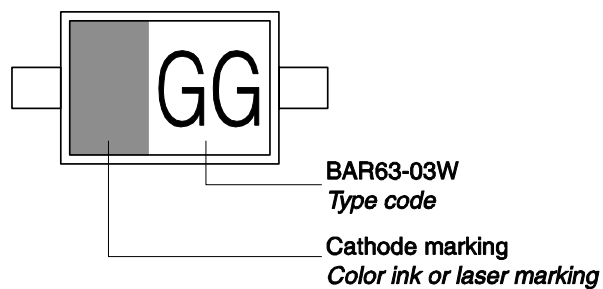
## Package Outline



## Foot Print

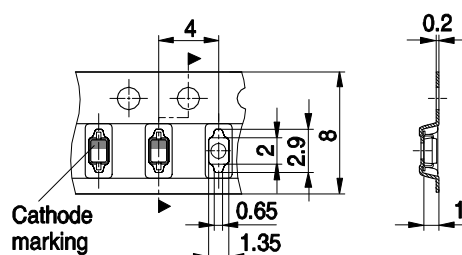


## Marking Layout (Example)



## Standard Packing

Reel  $\varnothing 180$  mm = 3.000 Pieces/Reel  
 Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel



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