



**THE DATASHEET OF  
BB644 E7904**

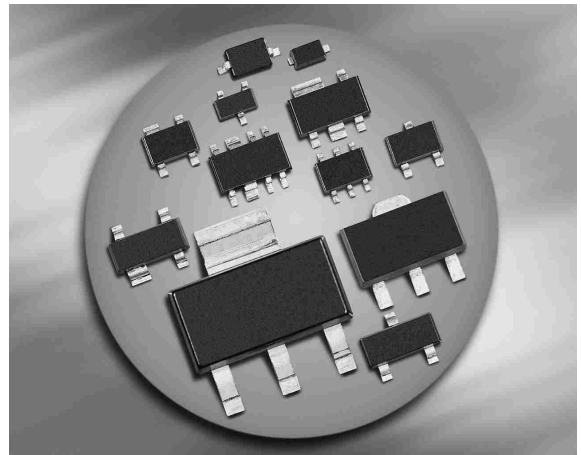


**Silicon Variable Capacitance Diodes**

- For VHF TV-tuners
- High capacitance ratio
- Low series inductance
- Low series resistance
- Excellent uniformity and matching due to "in-line" matching assembly procedure
- Pb-free (RoHS compliant) package



**BB644**  
**BB664/-02V**



| Type      | Package | Configuration | $L_S$ (nH) | Marking  |
|-----------|---------|---------------|------------|----------|
| BB644     | SOD323  | single        | 1.8        | yellow 4 |
| BB664     | SCD80   | single        | 0.6        | 44       |
| BB664-02V | SC79    | single        | 0.6        | 4        |

**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 |                  |

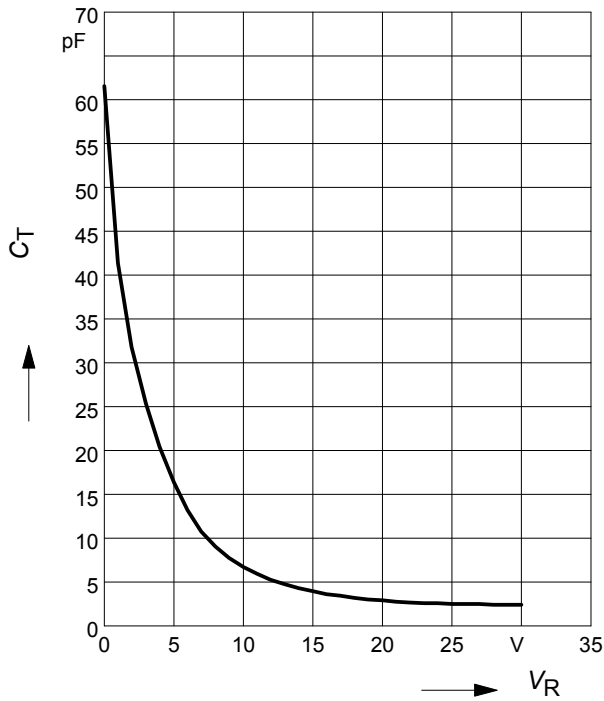
**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter   | Symbol           | Values                   |                              |                              | Unit     |
|---|------------------|--------------------------|------------------------------|------------------------------|----------|
|   |                  | min.                     | typ.                         | max.                         |          |
| <b>DC Characteristics</b>   |                  |                          |                              |                              |          |
| Reverse current<br>$V_R = 30\text{ V}$<br>$V_R = 30\text{ V}, T_A = 85^\circ\text{C}$   | $I_R$            | -<br>-                   | -<br>-                       | 10<br>100                    | nA       |
| <b>AC Characteristics</b>   |                  |                          |                              |                              |          |
| 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>$V_R = 28\text{ V}, f = 1\text{ MHz}$ | $C_T$            | 39<br>29.4<br>2.5<br>2.4 | 41.8<br>31.85<br>2.7<br>2.55 | 44.5<br>34.2<br>2.85<br>2.75 | pF       |
| Capacitance ratio<br>$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$  | $C_{T1}/C_{T28}$ | 15                       | 16.4                         | 17.8                         |          |
| Capacitance ratio<br>$V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$  | $C_{T2}/C_{T25}$ | 11                       | 11.8                         | 12.6                         |          |
| Capacitance matching <sup>1)</sup><br>$V_R = 1 \dots 28\text{ V}, f = 1\text{ MHz}, 7\text{ diodes sequence}$   | $\Delta C_T/C_T$ | -                        | -                            | 2                            | %        |
| Series resistance<br>$V_R = 5\text{ V}, f = 470\text{ MHz}$   | $r_S$            | -                        | 0.6                          | 0.75                         | $\Omega$ |

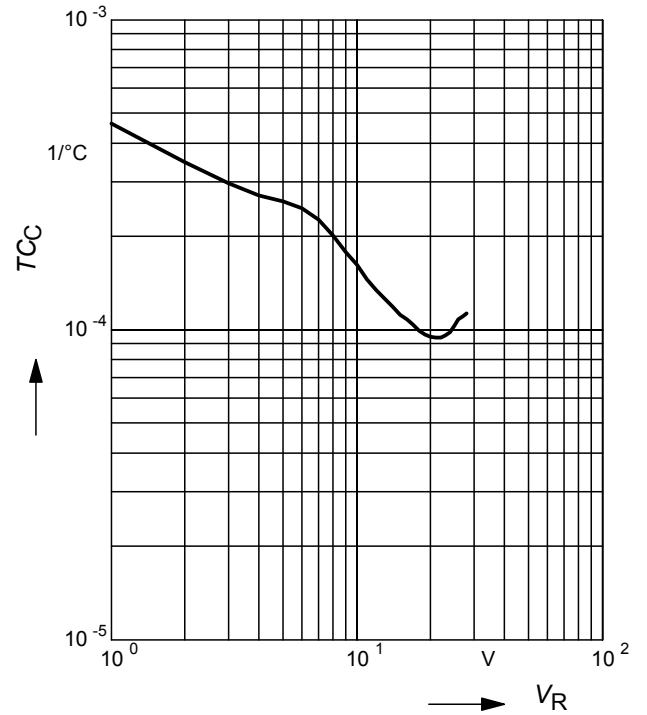
<sup>1</sup>For details please refer to Application Note 047.

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

$f = 1\text{MHz}$

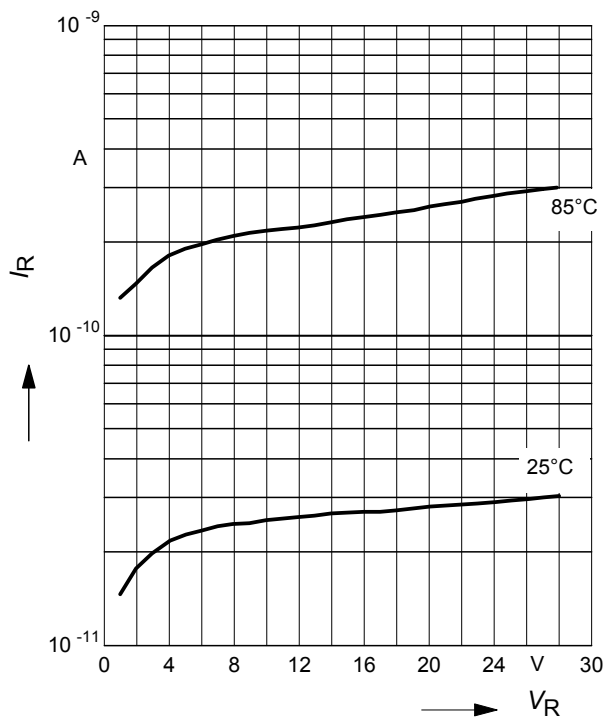


**Temperature coefficient of the diode capacitance  $T_{CC} = f(V_R)$**



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

$T_A = \text{Parameter}$



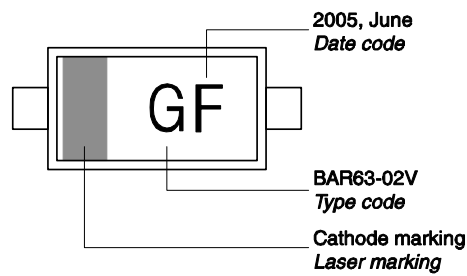
### Package Outline



### Foot Print

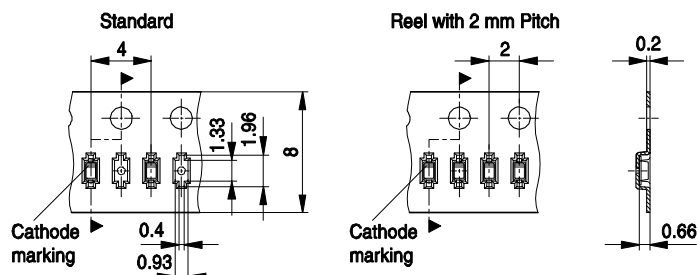


### Marking Layout (Example)



### Standard Packing

Reel  $\varnothing 180$  mm = 3.000 Pieces/Reel  
 Reel  $\varnothing 180$  mm = 8.000 Pieces/Reel (2 mm Pitch)  
 Reel  $\varnothing 330$  mm = 10.000 Pieces/Reel



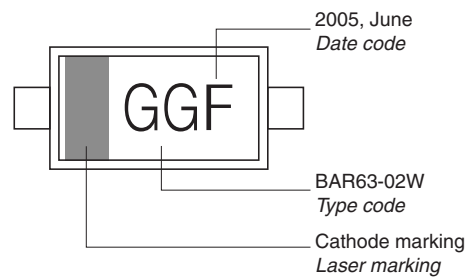
Package Outline



Foot Print



Marking Layout (Example)



Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
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Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

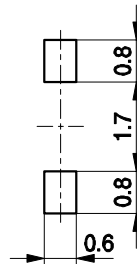
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01    | a    | p    | A    | P    | a    | p    | A    | P    | a    | p    | A    | P    |
| 02    | b    | q    | B    | Q    | b    | q    | B    | Q    | b    | q    | B    | Q    |
| 03    | c    | r    | C    | R    | c    | r    | C    | R    | c    | r    | C    | R    |
| 04    | d    | s    | D    | S    | d    | s    | D    | S    | d    | s    | D    | S    |
| 05    | e    | t    | E    | T    | e    | t    | E    | T    | e    | t    | E    | T    |
| 06    | f    | u    | F    | U    | f    | u    | F    | U    | f    | u    | F    | U    |
| 07    | g    | v    | G    | V    | g    | v    | G    | V    | g    | v    | G    | V    |
| 08    | h    | x    | H    | X    | h    | x    | H    | X    | h    | x    | H    | X    |
| 09    | j    | y    | J    | Y    | j    | y    | J    | Y    | j    | y    | J    | Y    |
| 10    | k    | z    | K    | Z    | k    | z    | K    | Z    | k    | z    | K    | Z    |
| 11    | l    | 2    | L    | 4    | l    | 2    | L    | 4    | l    | 2    | L    | 4    |
| 12    | n    | 3    | N    | 5    | n    | 3    | N    | 5    | n    | 3    | N    | 5    |

1) New Marking Layout for SC75, implemented at October 2005.

Package Outline



Foot Print



Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel



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