

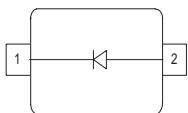


**THE DATASHEET OF
BB689 E7902**



Silicon Tuning Diode

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


BB669
BB689
BB689-02V


| Type | Package | Configuration | L_S (nH) | Marking |
|-----------|---------|---------------|------------|---------|
| BB669 | SOD323 | single | 1.8 | red 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 ($R \leq 5\text{k}\Omega$) | 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 | I_R | | | | nA |
| $V_R = 30\text{ V}$ | | - | - | 10 | |
| $V_R = 30\text{ V}, T_A = 85^\circ\text{C}$ | | - | - | 200 | |

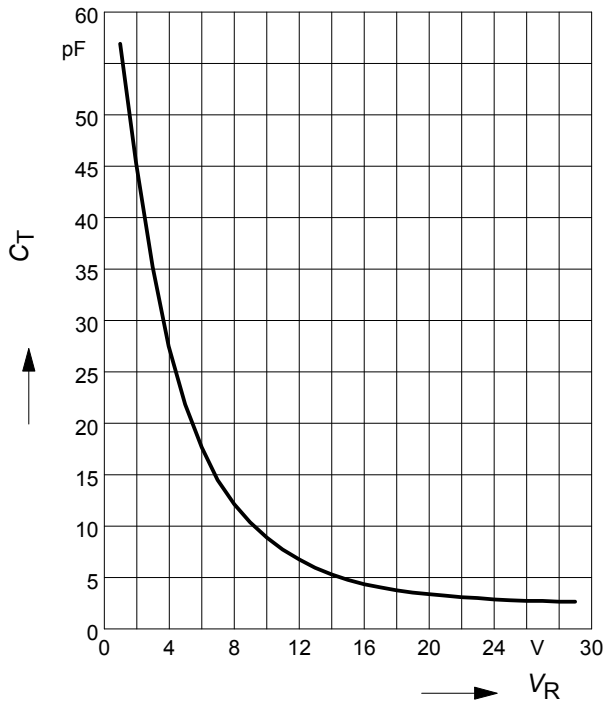
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|---|------------------|--------|------|------|----------|
| | | min. | typ. | max. | |
| AC Characteristics | | | | | |
| Diode capacitance | C_T | | | | pF |
| $V_R = 1\text{ V}, f = 1\text{ MHz}$ | | 51 | 56.5 | 61.5 | |
| $V_R = 2\text{ V}, f = 1\text{ MHz}$ | | 39.6 | 43.4 | 47.2 | |
| $V_R = 25\text{ V}, f = 1\text{ MHz}$ | | 2.6 | 2.8 | 3 | |
| $V_R = 28\text{ V}, f = 1\text{ MHz}$ | | 2.5 | 2.7 | 2.9 | |
| Capacitance ratio | C_{T1}/C_{T28} | 18 | 20.9 | 23.2 | - |
| $V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$ | | | | | |
| Capacitance ratio | C_{T2}/C_{T25} | 14.5 | 15.5 | 17 | |
| $V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$ | | | | | |
| Capacitance matching ¹⁾ | $\Delta C_T/C_T$ | - | - | 2 | % |
| $V_R = 1 \dots 28\text{ V}, f = 1\text{ MHz}, 7\text{ diodes sequence}$ | | | | | |
| Series resistance | r_S | - | 0.85 | 1.2 | Ω |
| $V_R = 8\text{ V}, f = 470\text{ MHz}$ | | | | | |
| Series inductance | L_S | - | 0.6 | - | nH |

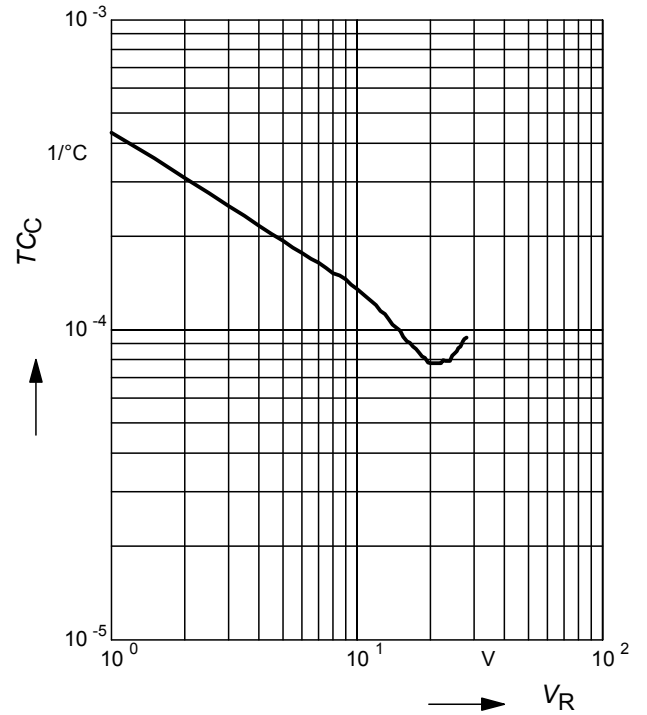
¹For details please refer to Application Note 047

Diode capacitance $C_T = f(V_R)$

$f = 1\text{MHz}$

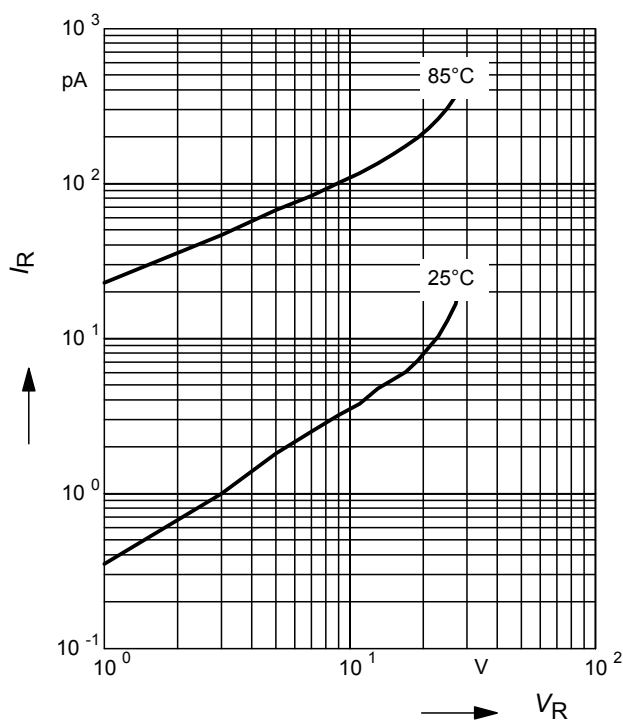


Temperature coefficient of the diode capacitance $T_{CC} = f(V_R)$



Reverse current $I_R = f(V_R)$

$T_A = \text{Parameter}$



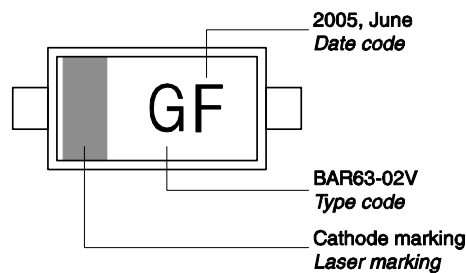
Package Outline



Foot Print

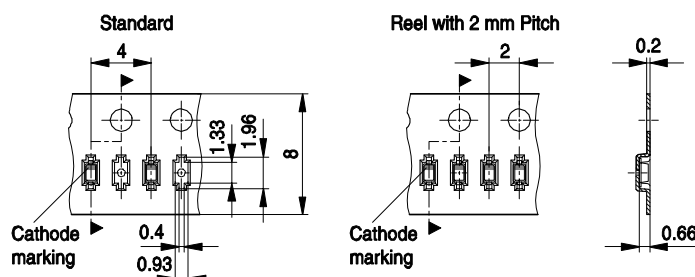


Marking Layout (Example)



Standard Packing

- Reel ø180 mm = 3.000 Pieces/Reel
- Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)
- Reel ø330 mm = 10.000 Pieces/Reel



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



Date Code marking for discrete packages with one digit (SCD80, SC79, SC75¹⁾) CES-Code

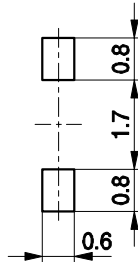
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01 | a | p | A | P | a | p | A | P | a | p | A | P |
| 02 | b | q | B | Q | b | q | B | Q | b | q | B | Q |
| 03 | 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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