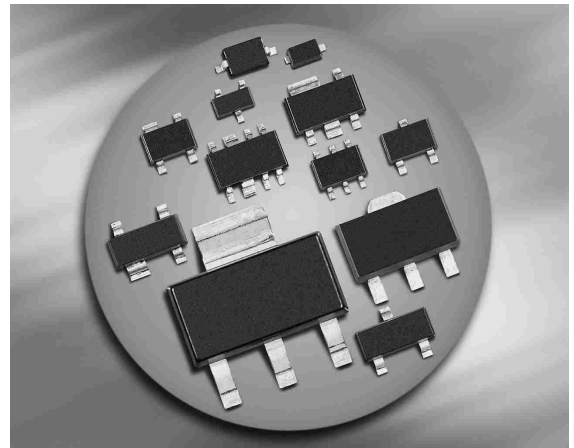
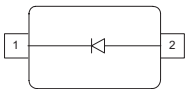


Silicon Variable Capacitance Diode

- For tuning of extended frequency band in VHF TV / VTR tuners
- High capacitance ratio
- Low series inductance
- Low series resistance
- Excellent uniformity and matching due to "in-line" matching assembly procedure


**BB639C
BB659C/-02V**


| Type | Package | Configuration | L_S (nH) | Marking |
|------------|---------|---------------|------------|----------|
| BB639C | SOD323 | single | 1.8 | yellow S |
| BB659C | SCD80 | single | 0.6 | HH |
| BB659C-02V | SC79 | single | 0.6 | H |

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 ($R \geq 5\text{k}\Omega$) | 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 | |

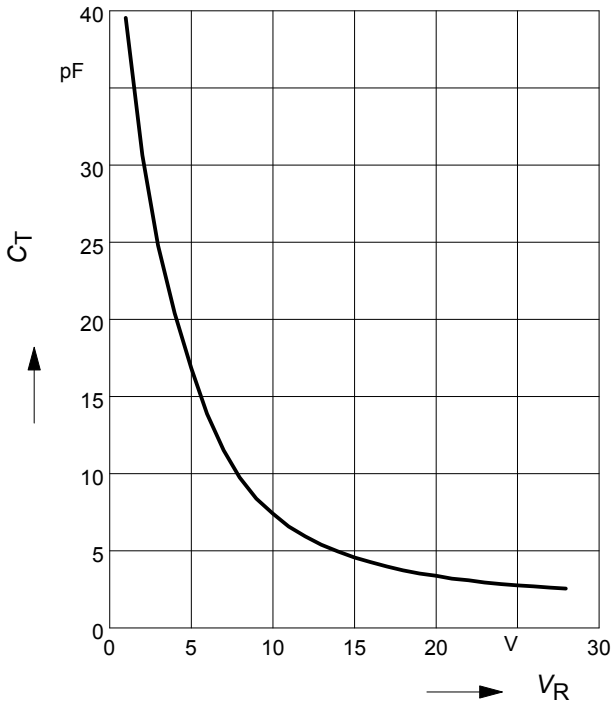
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

| Parameter | Symbol | Values | | | Unit |
|--|------------------|--------|------|------|----------|
| | | min. | typ. | max. | |
| DC Characteristics | | | | | |
| Reverse current | I_R | | | | nA |
| $V_R = 30\text{ V}$ | | - | - | 10 | |
| $V_R = 30\text{ V}, T_A = 85^\circ\text{C}$ | | - | - | 200 | |
| AC Characteristics | | | | | |
| Diode capacitance | C_T | | | | pF |
| $V_R = 1\text{ V}, f = 1\text{ MHz}$ | | 36.5 | 39 | 42 | |
| $V_R = 2\text{ V}, f = 1\text{ MHz}$ | | 27 | 30.2 | 33.2 | |
| $V_R = 25\text{ V}, f = 1\text{ MHz}$ | | 2.5 | 2.72 | 3.05 | |
| $V_R = 28\text{ V}, f = 1\text{ MHz}$ | | 2.4 | 2.55 | 2.75 | |
| Capacitance ratio | C_{T1}/C_{T28} | 14.2 | 15.3 | - | |
| $V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$ | | | | | |
| Capacitance ratio | C_{T2}/C_{T25} | 9.5 | 11.1 | - | |
| $V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$ | | | | | |
| Capacitance matching ¹⁾ | $\Delta C_T/C_T$ | | | | % |
| $V_R = 1\text{ V to } 28\text{ V}, f = 1\text{ MHz}, 7\text{ diodes sequence},$ BB639C | | - | - | 2.5 | |
| $V_R = 1\text{ V to } 28\text{ V}, f = 1\text{ MHz}, 4\text{ diodes sequence},$ BB659C/-02V | | - | 0.3 | 1 | |
| $V_R = 1\text{ V to } 28\text{ V}, f = 1\text{ MHz}, 7\text{ diodes sequence},$ BB659C/-02V | | - | 0.5 | 2 | |
| Series resistance | r_S | - | 0.6 | 0.7 | Ω |
| $V_R = 5\text{ V}, f = 470\text{ MHz}$ | | | | | |

¹For details please refer to Application Note 047

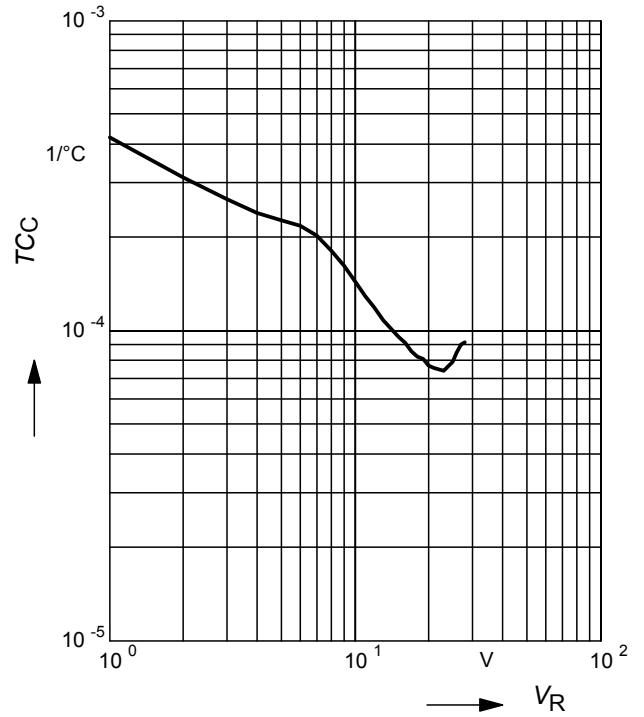
Diode capacitance $C_T = f(V_R)$

$f = 1\text{MHz}$



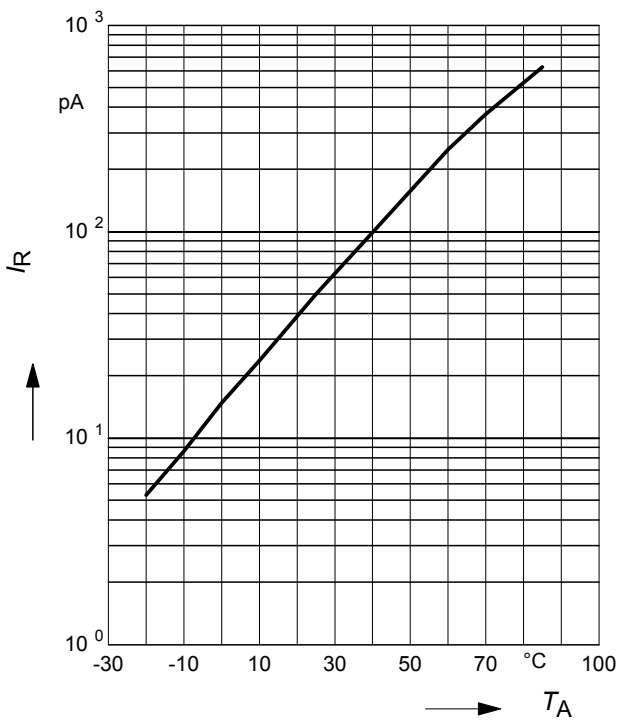
Temperature coefficient of the diode capacitance $T_{CC} = f(V_R)$

$T_{CC} = f(V_R)$



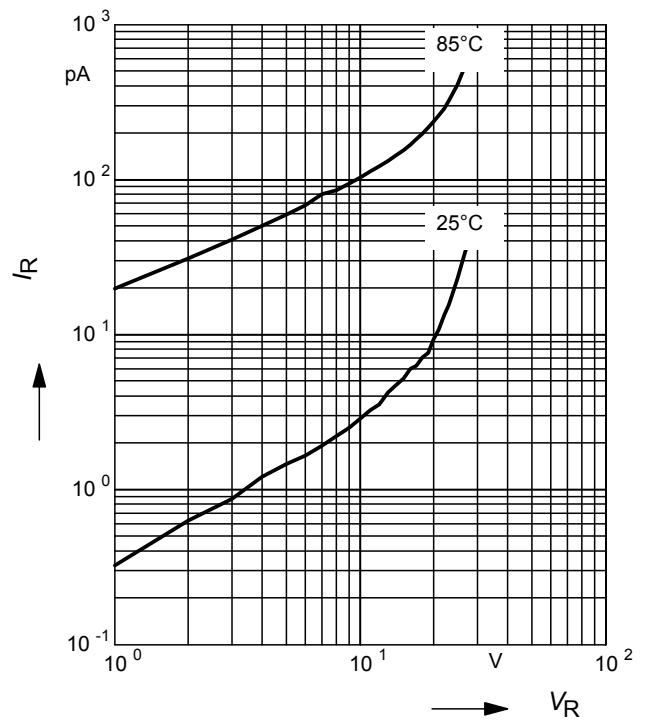
Reverse current $I_R = f(T_A)$

$V_R = 28\text{V}$

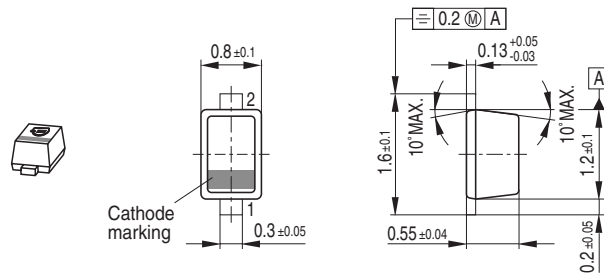


Reverse current $I_R = f(V_R)$

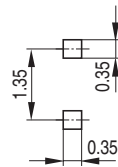
$T_A = \text{Parameter}$



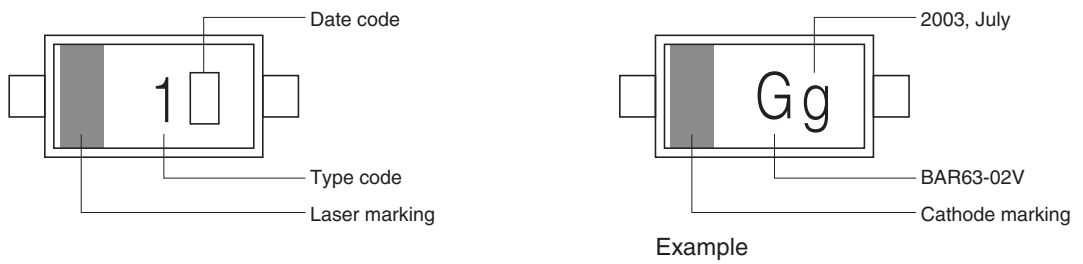
Package Outline



Foot Print

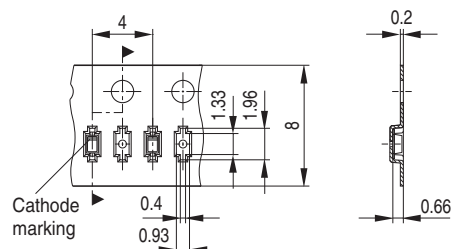


Marking Layout



Packing

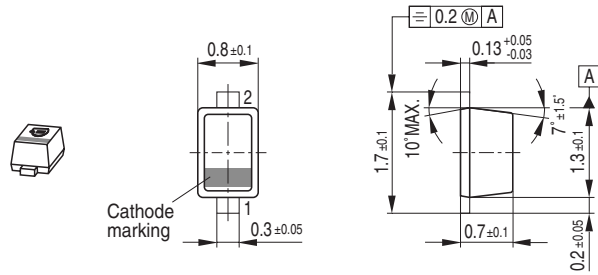
Code E6327: Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Code E6433: Reel \varnothing 330 mm = 10.000 Pieces/Reel



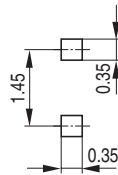
Data Code marking for discrete packages with one digit (SCD80, SC79) CES-Code

| 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 |

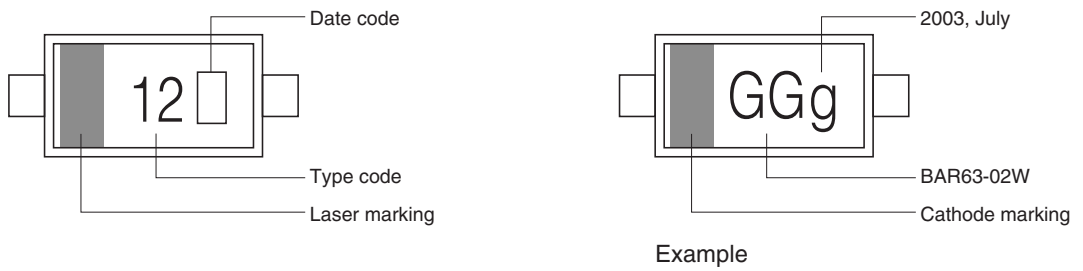
Package Outline



Foot Print

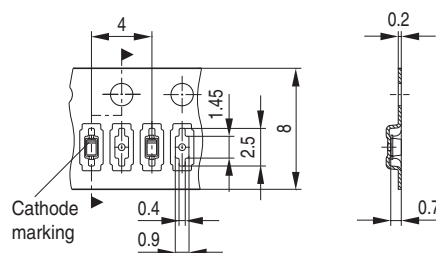


Marking Layout



Packing

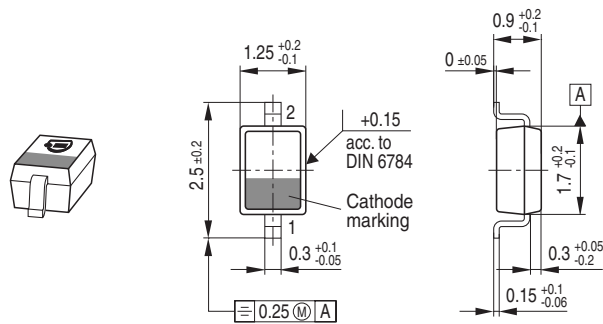
Code E6327: Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Code E6433: Reel \varnothing 330 mm = 10.000 Pieces/Reel



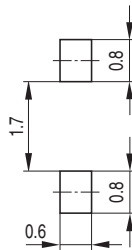
Data Code marking for discrete packages with one digit (SCD80, SC79) CES-Code

| 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 |

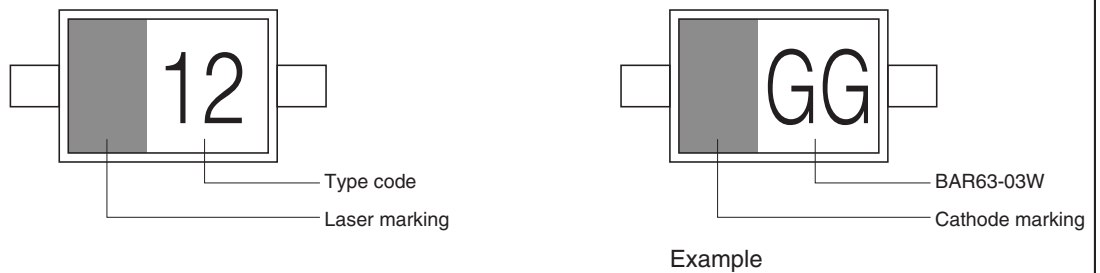
Package Outline



Foot Print

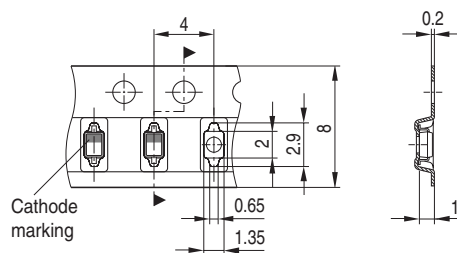


Marking Layout



Packing

Code E6327: Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Code E6433: Reel \varnothing 330 mm = 10.000 Pieces/Reel



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