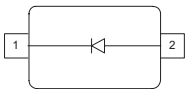


Silicon Variable Capacitance Diode

- 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	

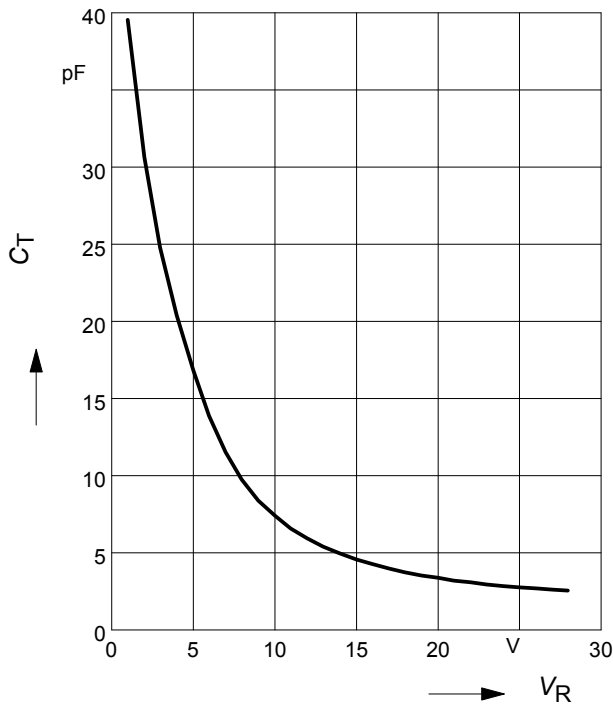
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

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

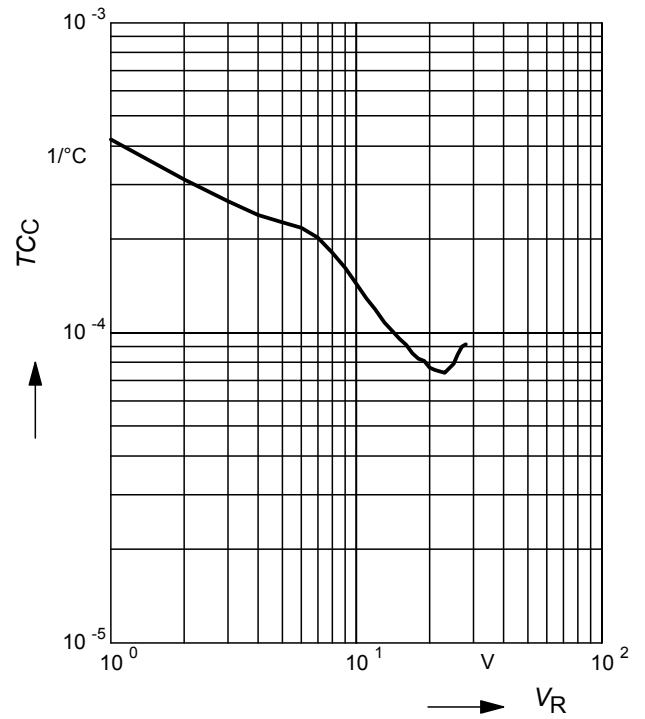
¹For details please refer to Application Note 047

Diode capacitance $C_T = f(V_R)$

$f = 1\text{MHz}$

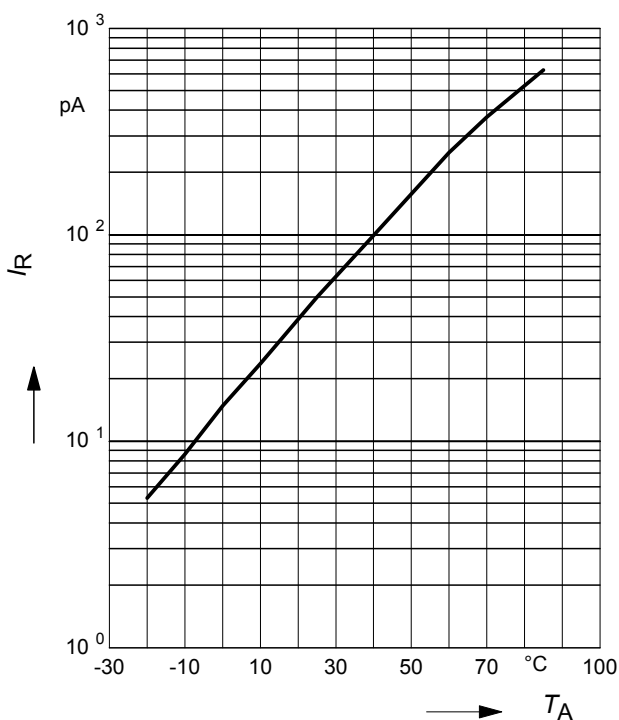


Temperature coefficient of the diode capacitance $T_{CC} = f(V_R)$



Reverse current $I_R = f(T_A)$

$V_R = 28\text{V}$



Reverse current $I_R = f(V_R)$

$T_A = \text{Parameter}$

