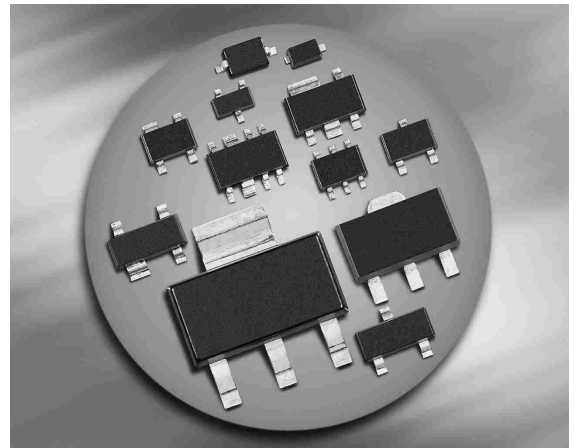
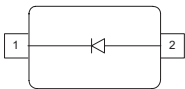


Silicon Variable Capacitance Diodes

- 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


BB639
BB659


Type	Package	Configuration	L_S (nH)	Marking
BB639	SOD323	single	1.8	yellow S
BB659	SCD80	single	0.6	DE

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	°C
Storage temperature	T_{stg}	-55 ... 150	

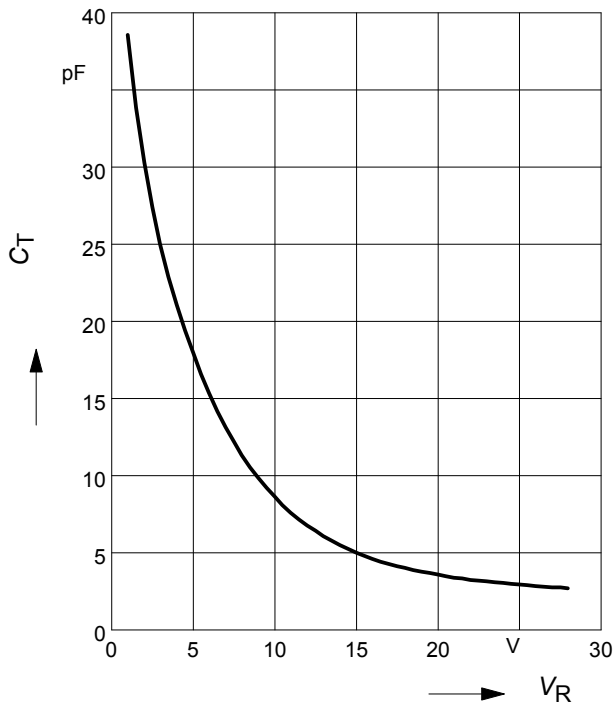
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

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	38.3	40	
$V_R = 2\text{ V}, f = 1\text{ MHz}$		27.7	29.75	31.8	
$V_R = 25\text{ V}, f = 1\text{ MHz}$		2.5	2.85	3.2	
$V_R = 28\text{ V}, f = 1\text{ MHz}$		2.4	2.6	2.9	
Capacitance ratio	C_{T1}/C_{T28}	13.5	14.7	-	
$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$					
Capacitance ratio	C_{T2}/C_{T25}	9.8	10.4	-	
$V_R = 2\text{ V}, V_R = 25\text{ V}, f = 1\text{ MHz}$					
Capacitance matching ¹⁾	$\Delta C_T/C_T$				%
$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$, 7 diode sequence BB639		-	-	2.5	
$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$, 4 diode sequence BB659		-	0.3	1	
$V_R = 1\text{ V}, V_R = 28\text{ V}, f = 1\text{ MHz}$, 7 diode sequence BB659		-	0.4	2	
Series resistance	r_S	-	0.65	0.7	Ω
$V_R = 5\text{ V}, f = 470\text{ MHz}$					

¹For details please refer to Application Note 047.

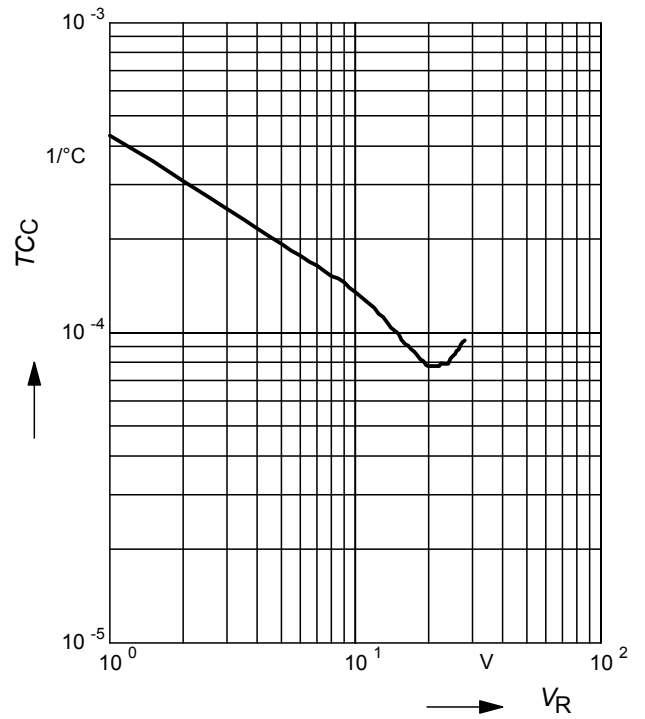
Diode capacitance $C_T = f(V_R)$

$f = 1\text{MHz}$



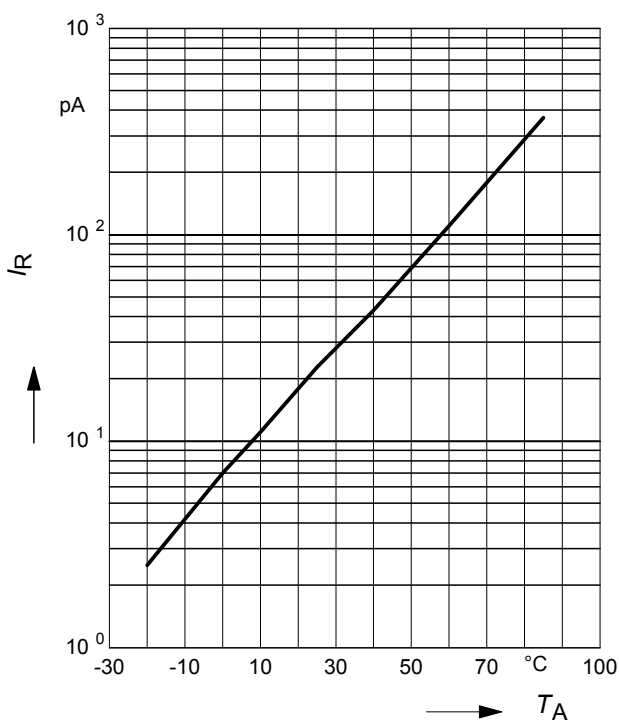
Temperature coefficient of the diode capacitance $T_{CC} = f(V_R)$

$T_{CC} = f(V_R)$



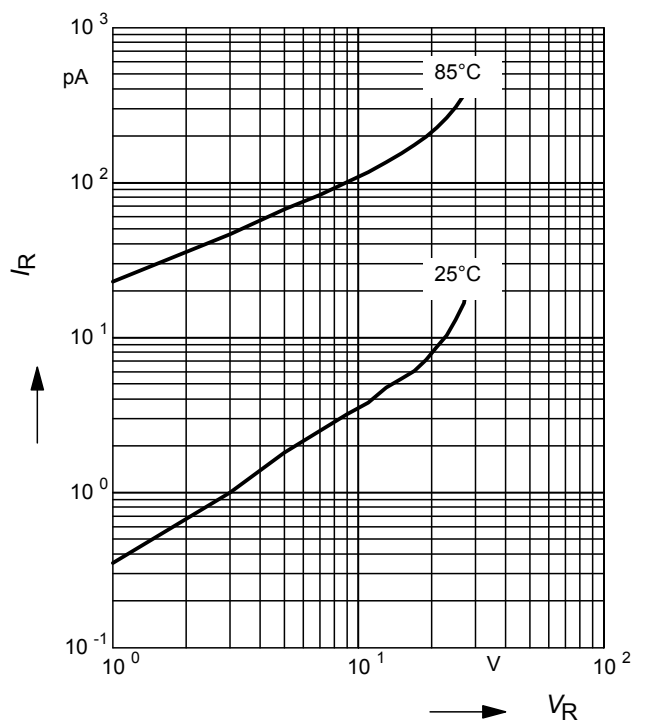
Reverse current $I_R = f(T_A)$

$V_R = 28\text{V}$



Reverse current $I_R = f(V_R)$

$T_A = \text{Parameter}$





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