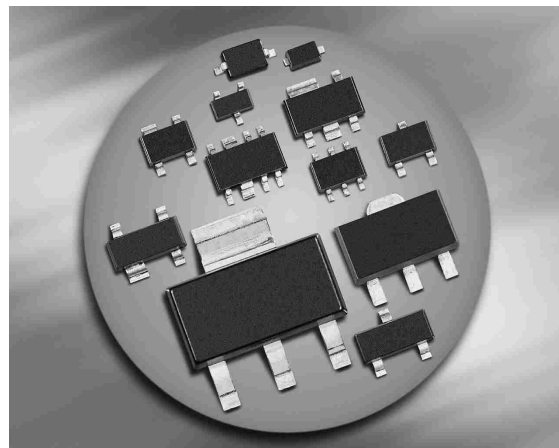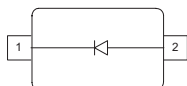**Infineon** technologies

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°C, unless otherwise specified

Parameter	Symbol	Value	Unit
Diode reverse voltage	V_R	30	V
Peak reverse voltage ($R \geq 5k\Omega$)	V_{RM}	35	
Forward current	I_F	20	mA
Operating temperature range	T_{op}	-55 ... 150	°C
Storage temperature	T_{stg}	-55 ... 150	

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Electrical Characteristics at T_A = 25°C, unless otherwise specified

| Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Reverse current	I_R				nA
V_R = 30 V		-	-	10	
V_R = 30 V, T_A = 85 °C		-	-	200	
AC Characteristics					
Diode capacitance	C_T				pF
V_R = 1 V, f = 1 MHz		36	38.3	40	
V_R = 2 V, f = 1 MHz		27.7	29.75	31.8	
V_R = 25 V, f = 1 MHz		2.5	2.85	3.2	
V_R = 28 V, f = 1 MHz		2.4	2.6	2.9	
Capacitance ratio	C_{T1}/C_{T28}	13.5	14.7	-	
V_R = 1 V, V_R = 28 V, f = 1 MHz					
Capacitance ratio	C_{T2}/C_{T25}	9.8	10.4	-	
V_R = 2 V, V_R = 25 V, f = 1 MHz					
Capacitance matching[1)	$\Delta C_T/C_T$				%
V_R = 1 V, V_R = 28 V, f = 1 MHz, **7** diode sequenc BB639		-	-	2.5	
V_R = 1 V, V_R = 28 V, f = 1 MHz, **4** diode sequenc BB659		-	0.3	1	
V_R = 1 V, V_R = 28 V, f = 1 MHz, **7** diode sequenc BB659		-	0.4	2	
Series resistance	r_S	-	0.65	0.7	Ω
V_R = 5 V, f = 470 MHz					

[1]For details please refer to Application Note 047.

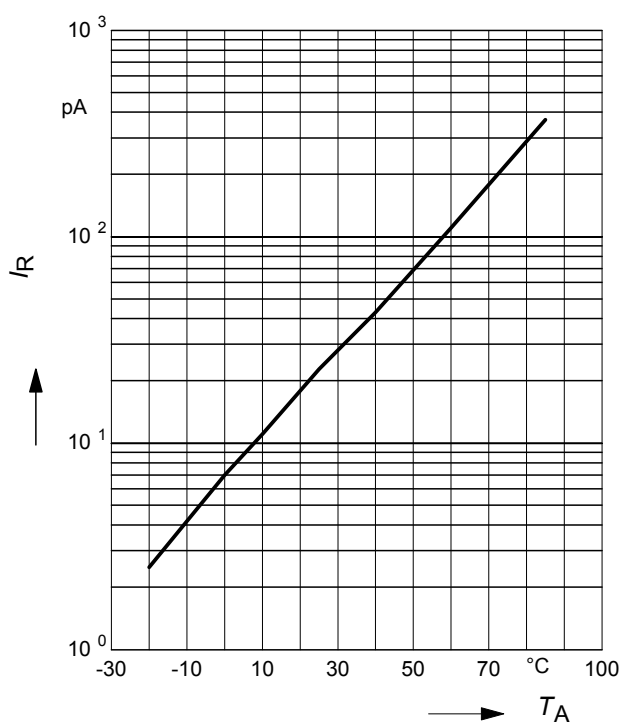**Diode capacitance** $C_T = f\,(V_R)$

f = 1MHz
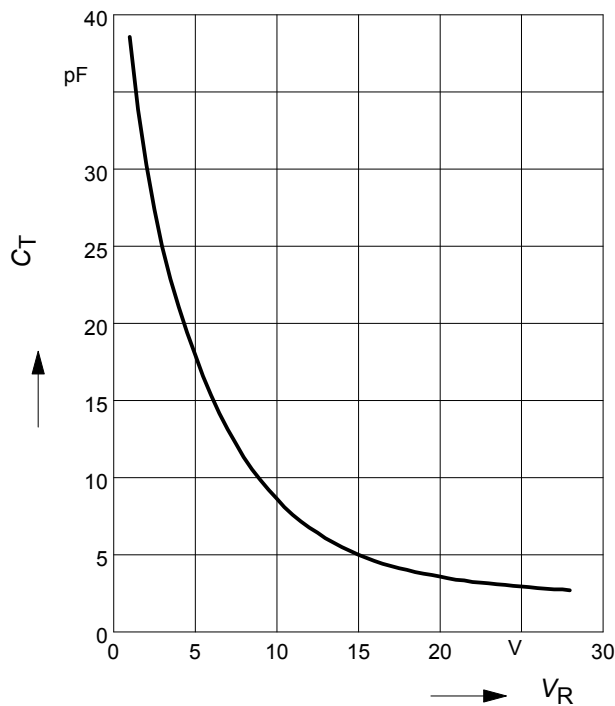
Temperature coefficient of the diode capacitance $T_{Cc} = f\,(V_R)$
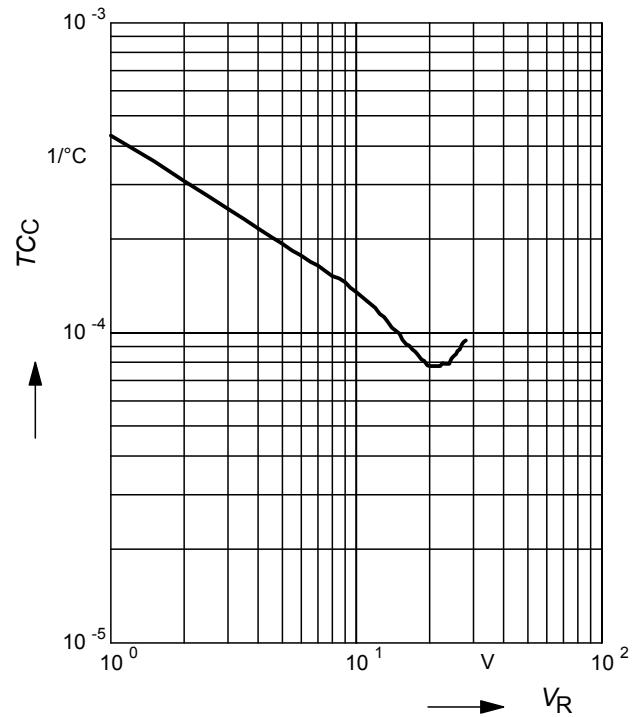
Reverse current $I_R = f\,(T_A)$

V_R = 28V

Reverse current $I_R = f(V_R)$

T_A = Parameter

Nov-07-2002