

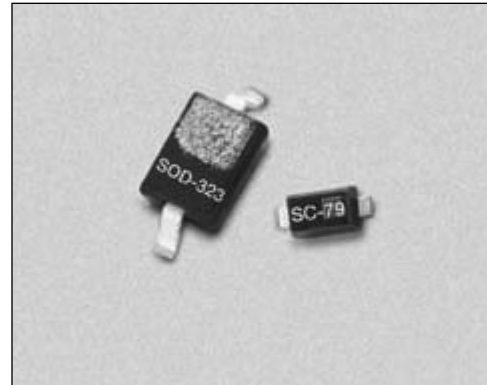
# Abrupt Junction Tuning Varactors



SMV1493–SMV1494

## Features

- High Q
- Low Series Resistance for Low Phase Noise
- Multiple Packages SOD-323 and SC-79
- Designed for High Volume Commercial Applications
- SPICE Models are Available





## Description

The SMV1493 and SMV1494 silicon abrupt junction varactor diodes are designed for use in VCOs requiring tight capacitance tolerances. The low resistance of these varactors makes them appropriate for high Q resonators in wireless system VCOs to frequencies beyond 2.5 GHz.

## Absolute Maximum Ratings

Characteristic	Value
Forward Current ( $I_F$ )	20 mA
Power Dissipation ( $P_D$ )	250 mW
Storage Temperature ( $T_{ST}$ )	-55°C to +150°C
Operating Temperature ( $T_{OP}$ )	-55°C to +125°C

	
Single	Single
SOD-323	SC-79
♦ SMV1493-011	♦ SMV1493-079
♦ SMV1494-011	♦ SMV1494-079
$L_S = 1.5$ nH	$L_S = 0.7$ nH

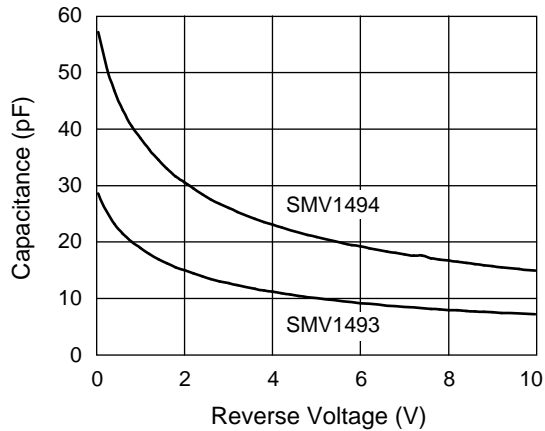
♦ Available through distribution.  
For other packages or configurations, please contact the factory.

## Electrical Specifications at 25°C

Part Number	$C_T @ 1$ V (pF)		$C_T @ 4$ V (pF)		$R_S @ 1$ V 500 MHz ( $\Omega$ )
	Min.	Max.	Min.	Max.	
SMV1493	17.4	20.0	10.0	12.1	0.50
SMV1494	36.3	41.7	20.7	25.3	0.45

Reverse Voltage  $V_R$  ( $I_R = 10$   $\mu$ A): 12 V  
Reverse Current  $I_R$  ( $V_R = 10$  V): 20 nA

Typical Performance Data

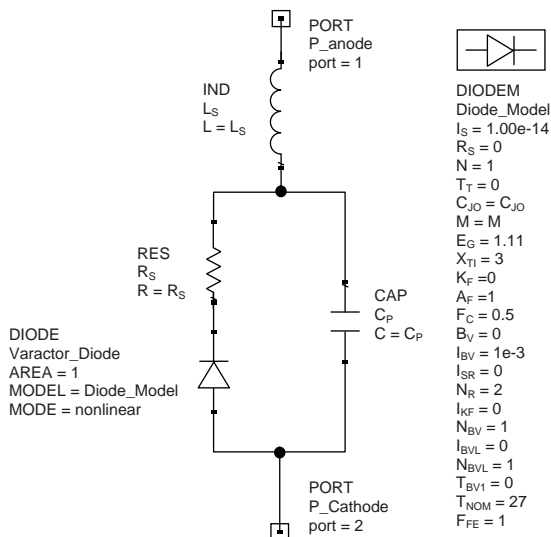


Capacitance vs. Reverse Voltage

Capacitance vs. Reverse Voltage

V <sub>R</sub> (V)	SMV1493	SMV1494
	C <sub>T</sub> (pF)	C <sub>T</sub> (pF)
0.0	28.7	57.8
0.2	25.6	51.5
0.4	23.3	46.9
0.6	21.5	43.4
0.8	20.1	40.5
1.0	19.0	38.4
1.2	17.9	36.3
1.4	17.0	34.6
1.6	16.2	33.0
1.8	15.5	31.6
2.0	15.0	30.6
2.2	14.4	29.5
2.4	13.9	28.5
2.6	13.5	27.6
2.8	13.1	26.7
3.0	12.7	26.1
3.2	12.4	25.3
3.4	12.0	24.7
3.6	11.7	24.1
3.8	11.4	23.5
4.0	11.2	23.1
4.2	10.9	22.6
4.4	10.7	22.1
4.6	10.5	21.7
4.8	10.3	21.3
5.0	10.1	20.9
6.0	9.2	19.2
7.0	8.5	17.9
8.0	8.0	16.7
9.0	7.6	15.7
10.0	7.1	14.7

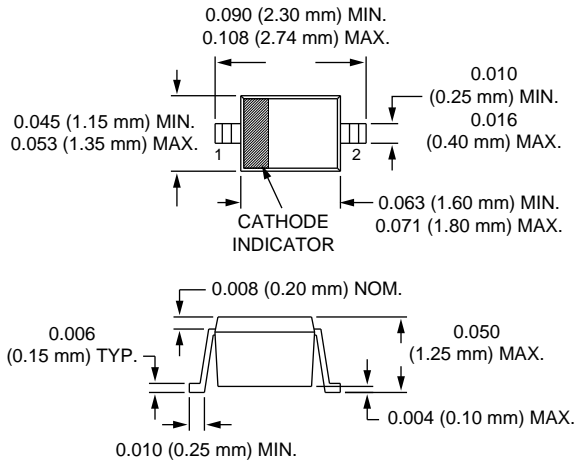
SPICE Model



Part Number	C <sub>J0</sub> (pF)	V <sub>J</sub> (V)	M	C <sub>P</sub> (pF)	R <sub>S</sub> (Ω)
SMV1493	29	0.63	0.47	0	0.50
SMV1494	58	0.63	0.47	0	0.45

1. Values extracted from measured performance.
2. For package inductance (L<sub>S</sub>) refer to package type.
3. For more details refer to the "Varactor SPICE Models for RF VCO Applications" Application Note.

SOD-323



SC-79

