

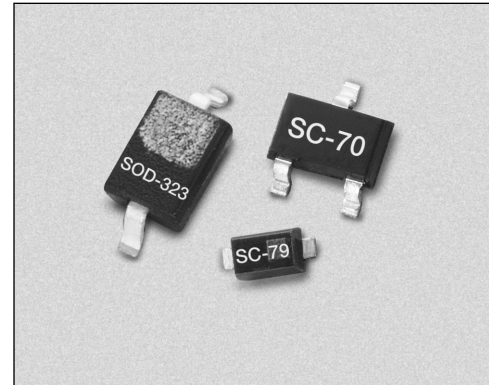
# Hyperabrupt Junction Tuning Varactors



## SMV1129 and SMV1139

### Features

- High Q
- Low Series Resistance for Low Phase Noise
- Multiple Packages SOD-323, SC-79 and SC-70
- Designed for High Volume Commercial Applications
- SPICE Models are Available






### Description

The SMV1129 and SMV1139 silicon hyperabrupt junction varactor diodes are designed for use in VCOs requiring low resistance. 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	Common Anode
SOD-323	SC-79	SC-70
◆ SMV1129-011	◆ SMV1129-079	◆ SMV1129-073
◆ SMV1139-011	◆ SMV1139-079	
$L_S = 1.5$ nH	$L_S = 0.7$ nH	$L_S = 1.4$ nH

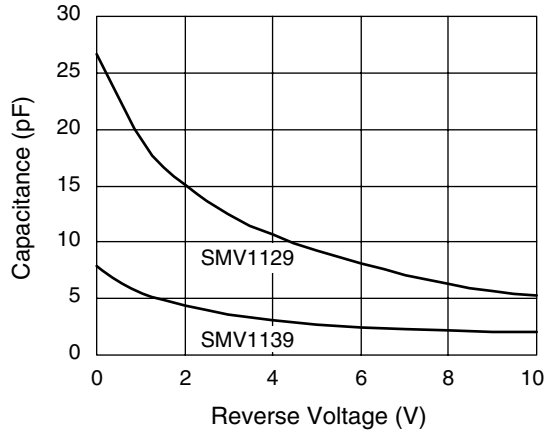
◆ Available through distribution.  
For other packages or configurations, please contact the factory.

### Electrical Specifications at 25°C

Part Number	$C_T @ 1$ V (pF)			$\frac{C_T @ 1}{C_T @ 3}$ V (Ratio)		$\frac{C_T @ 1}{C_T @ 6}$ V (Ratio)		$R_S @ 1$ V 500 MHz ( $\Omega$ )
	Min.	Typ.	Max.	Min.	Typ.	Min.	Typ.	Max.
SMV1129	17.50	19.0	20.50	1.4	1.53	2.0	2.5	0.4
SMV1139	4.95	5.4	5.85	1.4	1.53	2.0	2.5	0.6

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

Typical Performance Data

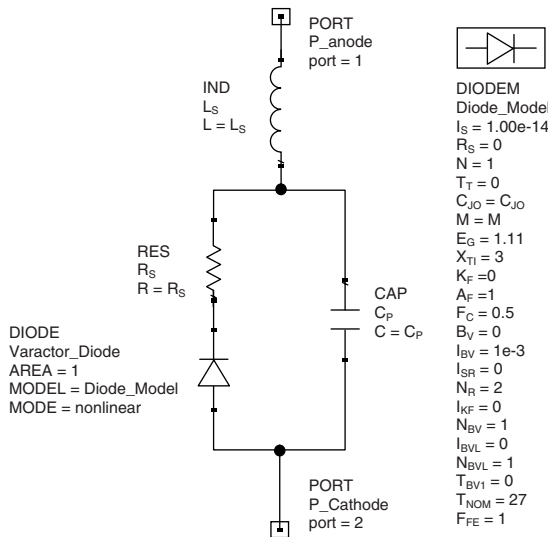


Capacitance vs. Reverse Voltage

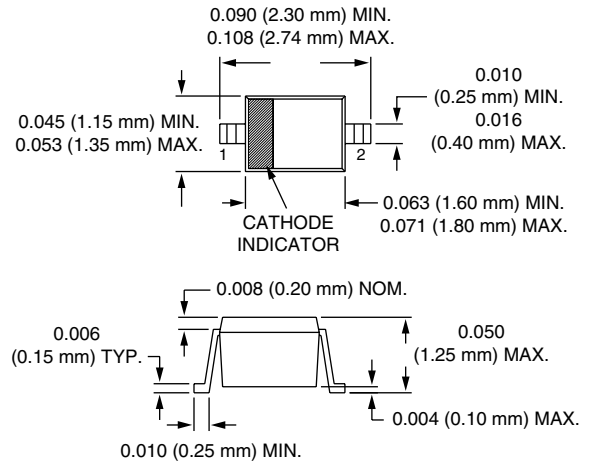
Capacitance vs. Reverse Voltage

V <sub>R</sub> (V)	SMV1129	SMV1139
	C <sub>T</sub> (pF)	C <sub>T</sub> (pF)
0	27.5	8.0
1	18.9	5.5
2	15.0	4.4
3	12.5	3.7
4	10.7	3.1
5	9.3	2.7
6	8.1	2.5
7	7.1	2.3
8	6.3	2.2
9	5.7	2.1
10	5.2	2.0
11	4.9	2.0
12	4.7	1.9

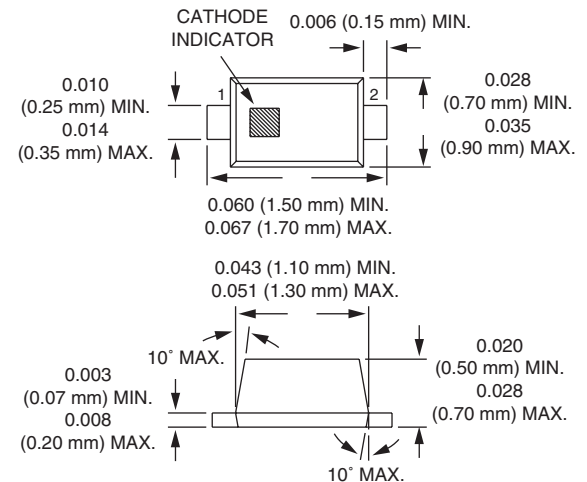
SPICE Model



SOD-323



SC-79



Part Number	C <sub>J0</sub> (pF)	V <sub>J</sub> (V)	M	C <sub>P</sub> (pF)	R <sub>S</sub> (Ω)
SMV1129	27.5	2.8	1.10	0	0.40
SMV1139	8.0	1.2	0.65	0	0.60

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.

SC-70

