



## Markets

- Satellite television receivers low noise block converters (LNB)
- Cellular telephone infrastructure and handsets
- Wireless local area networks (WLAN)
- Automotive
- Remote meter reading for the Smart Grid
- Test and measurement
- Military communications
- Cable television (CATV)
- Point-to-point microwave radios
- Land mobile radio systems
- Wireless microwave access (WiMAX)
- Passive optical networks (PON)



## PIN, Schottky, Varactor Diodes

Select diodes available from stock for prototype or high volume production

Skyworks Solutions offers a select group of diodes from our diverse diode offering in stock and ready for immediate design into your demanding applications.

Select diodes include the most popular PIN, Schottky and tuning varactor diodes, readily available to ship in 3k reels from stock. These devices provide excellent performance and even better value for applications including low noise block converters (LNB), multiswitches, wireless local area networks (WLAN), cellular telephone networks, cable television (CATV), automotive, test and measurement equipment, land mobile radio and more.

### *PIN Diodes for Switch and Attenuator Applications*

	Features	Markets
<b>Switch PIN Diodes</b>		
SMP1345-040LF	High isolation	General
SMP1340-079LF	Fast switching	General
SMP1321-005LF	High isolation	LNB multiswitch and more
SMP1302-085LF	High power handling	Land mobile radio, WiMAX, more
<b>Attenuator PIN Diode</b>		
SMP1307-027LF	Low distortion, 4 PIN diode configuration	CATV, PON and more

### *Schottky Diodes for Detector and Mixer Applications*

Detector Diodes	Features	Markets
SMS7630-079LF	Lowest barrier height for best sensitivity	WLAN and more
SMS7621-079LF	Excellent sensitivity and low capacitance	General
SMS7621-006LF	Series pair	LNB and more
SMS3922-079LF	Low barrier height with high breakdown voltage	General
SMS3923-011LF	Medium barrier height	General

### *Tuning Varactor Diodes for VCO, Voltage Tuned Filters and Phase Shifter Applications*

	Features	Markets
<b>Hyperabrupt Diodes</b>		
SMV1234-011LF	Low capacitance 6.3 pF @ 1 V, 2 pF @ 6 V, low resistance 0.8 Ω	General
SMV1247-079LF	Low capacitance 7 pF @ 0.3 V, 0.7 pF @ 4.7 V, high Q 1500	General
SMV1249-079LF	Medium capacitance 31 pF @ 0.3 V, 2.6 pF @ 4.7 V	General
SMV1255-079LF	High capacitance 64 pF @ 0.3 V, 5.2 pF @ 4.7 V	General
<b>Abrupt Diode</b>		
SMV1413-079LF	Low resistance 0.35 Ω, high Q 2400 & low capacitance 6.4 pF @ 1 V, 1.75 pF @ 30 V	General



**Innovation to Go™**  
New! Free Designer Kits

Select products and sample/designer kits available for purchase online.

[www.skyworksinc.com](http://www.skyworksinc.com)



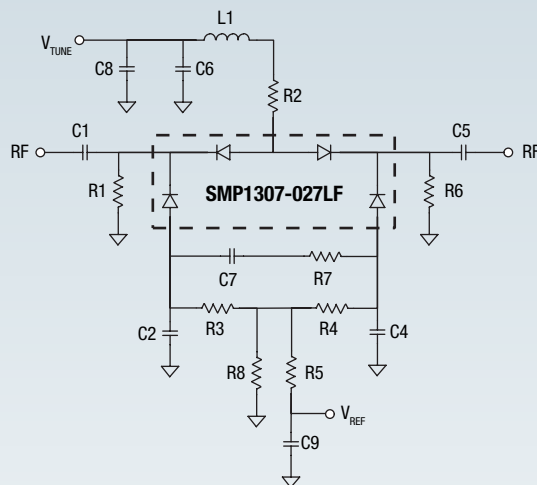
## PIN Diodes

### Features

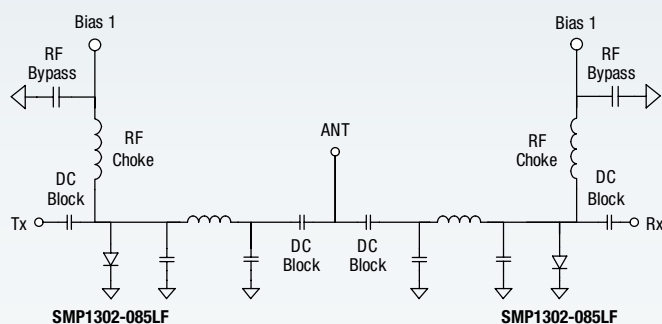
- Low capacitance for high isolation
- Low resistance
- Low distortion

Skyworks select PIN diodes are some of the most widely used PIN diodes in the world, for applications which range from RF switching in satellite television receiver low noise block converters (LNB) to automotive remote garage door openers to cable television automatic level controls.

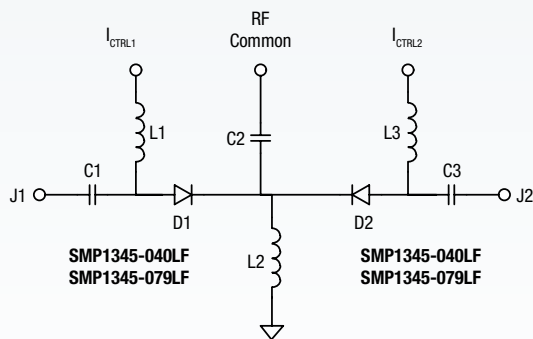
PIN diodes are three layer diodes, comprised of a heavily doped anode (the “P” layer) and a heavily doped cathode (the “N” layer) separated by a virtually undoped intrinsic layer (the “I” layer). Under forward bias, charge carriers from the P and the N layers are forced into the I layer, which reduces its RF impedance. When a reverse bias voltage is applied across the PIN diodes, all free charge carriers are removed from the I layer, thereby causing its RF impedance to increase. This variable RF impedance versus DC or low frequency bias signal allows the diode to be used in RF switching circuits, in which the PIN diode is either heavily forward-biased or reverse biased, or in RF attenuation circuits, in which case the PIN diode is utilized as a continuously-variable RF resistance by controlling the magnitude of the DC bias current through the diode.



Wide Bandwidth PIN Diode Variable Attenuator



High Power SPDT PIN Switch



Wide Bandwidth Single Pole Double Throw Switch

### PIN Diodes for Switch and Attenuator Applications

Product Description	Key Features	Package (mm)	Part Number
High isolation switching PIN diode	Very low capacitance 0.14 pF, isolation 40 dB	0402 1 x 0.6 x 0.46	SMP1345-040LF
Fast switching/high isolation PIN diode	Low capacitance, low series resistance	SC-79 1.6 x 0.8 x 0.6	SMP1340-079LF
High isolation (LNB/multiswitch) PIN diode	Low capacitance, series pair	SOT-23 2.37 x 2.92 x 1.0	SMP1321-005LF
High power shunt PIN diode	Power handling to 50 W CW	QFN 2 x 2 x 0.9	SMP1302-085LF
Low distortion/high IP3 attenuator PIN diode	Low distortion, 4 PIN diode attenuator	SOT-5 2.8 x 2.9 x 1.8	SMP1307-027LF

# Tuning Varactor Diodes

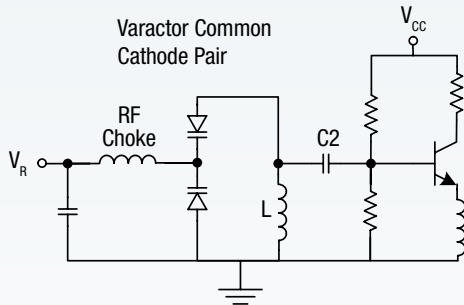
## Features

- Large available change in capacitance for wide bandwidth
- Low resistance for low loss

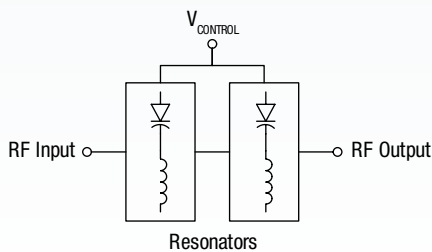
Skyworks series of select silicon tuning varactor diodes are used as the electrical tuning elements in voltage controlled oscillators (VCOs), voltage variable analog phase shifters and voltage tuned filters (VTFs). This family of diodes includes abrupt junction tuning varactors, useful for low loss, narrow band circuits, and hyperabrupt junction varactors, useful for wide bandwidth VCOs and VTFs and wide phase range variable phase shifters.

Tuning varactors are pn junction diodes. The depletion region that forms at the junction of the diode acts as a nearly-ideal insulator, which separates the highly-doped anode from the cathode layer, thus forming a parallel plate capacitor. The thickness of the depletion layer can be increased by applying a reverse bias voltage to the diode.

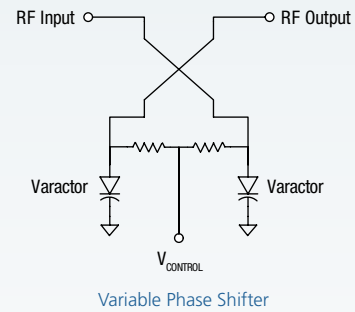
The cathode layer's doping profile is very carefully designed to produce a tightly-controlled capacitance versus reverse bias voltage performance characteristic. The cathode layer of an abrupt junction diode has uniform dopant concentration throughout its thickness, which results in a low series resistance and moderately large change in capacitance versus bias voltage. By contrast, the doping concentration of cathode layer of hyperabrupt varactor diode is designed to change by several orders of magnitude, typically over the depth of a few microns. This non-constant dopant concentration versus depth of the hyperabrupt diode's cathode layer produces a much larger available change in capacitance versus reverse voltage, necessary for wide bandwidth or phase shift range applications.



Typical Voltage Controlled Oscillator with a Common Cathode Pair of Tuning Varactors



Voltage Tuned Filter



Variable Phase Shifter

## Tuning Varactor Diodes for VCO, Voltage Tuned Filters and Phase Shifter Applications

Product Description	Key Features	Package (mm)	Part Number
Low capacitance tuning varactor diode	Low capacitance 6.3 pF @ 1 V, 2 pF @ 6 V, low resistance 0.8 Ω	☛ SOD-323 2.52 x 1.25 x 1.04	SMV1234-011LF
Low capacitance & high Q tuning varactor diode	Low capacitance 7 pF @ 0.3 V, 0.7 pF @ 4.7 V, high Q 1500	☛ SC-79 1.6 x 1.8 x 0.6	SMV1247-079LF
Medium capacitance & wide tuning range diode	Medium capacitance 31 pF @ 0.3 V, 2.6 pF @ 4.7 V	☛ SC-79 1.6 x 1.8 x 0.6	SMV1249-079LF
High capacitance & wide tuning range diode	High capacitance 64 pF @ 0.3 V, 5.2 pF @ 4.7 V	☛ SC-79 1.6 x 1.8 x 0.6	SMV1255-079LF
Low resistance & high Q abrupt tuning diode	Low resistance 0.35 Ω, high Q 2400 & low capacitance 6.4 pF @ 1 V, 1.75 pF @ 30 V	☛ SC-79 1.6 x 1.8 x 0.6	SMV1413-079LF

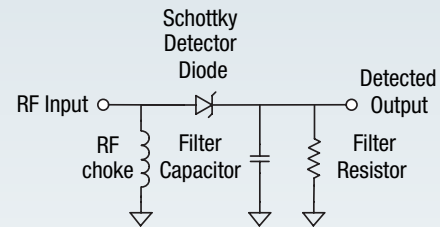
## Schottky Diodes

### Features

- Low capacitance for high frequency operation
- Excellent sensitivity
- High reverse breakdown voltage

Skyworks series of select silicon Schottky diodes are optimized for use as detector and mixer diodes at frequencies from below 10 MHz to higher than 20 GHz. This family of products includes medium, low and zero bias detector (ZBD) barrier height Schottky junctions with low junction capacitance and low series resistance.

Schottky junctions are formed by depositing specific metals on either n-type-doped silicon (low or medium barrier height) or on p-type-doped silicon (ZBD barrier height). The characteristics of the diode are determined by the type of metal deposited on the semiconductor material as well as the type of dopant in the semiconductor layer, among other parameters.



Single Schottky Diode Detector

### Schottky Diodes for Detector and Mixer Applications

Product Description	Key Features	Package (mm)	Part Number
Zero biased detector Schottky diode	Lowest barrier height for best sensitivity	SC-79 1.6 x 1.8 x 0.6	SMS7630-079LF
Detector Schottky diode	Low barrier height and low capacitance	SC-79 1.6 x 1.8 x 0.6	SMS7621-079LF
Series pair detector Schottky diode	Low barrier height and low capacitance, for voltage doubler detectors	SOT-23 2.37 x 2.92 x 1.0	SMS7621-006LF
Low barrier detector Schottky diode	Low barrier height with breakdown voltage >8 V	SC-79 1.6 x 1.8 x 0.6	SMS3922-079LF
Detector or mixer Schottky diode	Medium barrier height with voltage breakdown >20 V	SOT-23 2.37 x 2.92 x 1.0	SMS3923-011LF



Through our Green Initiative™, we are committed to manufacturing products that comply with global government directives and industry requirements.

Skyworks is continuously innovating RF, analog and mixed-signal ICs. For the latest product introductions and information about Skyworks, visit our Web site at [www.skyworksinc.com](http://www.skyworksinc.com)

For additional information on our broad overall product portfolio, please contact your local sales office or email us at [sales@skyworksinc.com](mailto:sales@skyworksinc.com).

### Skyworks Solutions, Inc.

20 Sylvan Road, Woburn, MA 01801  
 USA: (781) 376-3000 • Asia: 886 2 2735 0399 x 990  
 Europe: 33 (0)1 41443660 • Fax: (781) 376-3100  
 Email: [sales@skyworksinc.com](mailto:sales@skyworksinc.com) • [www.skyworksinc.com](http://www.skyworksinc.com)

