Smart Energy Solutions for the Wireless Home

- Advanced Metering Infrastructure (AMI)
- ZigBee® (IEEE 802.15.4)
- Wireless Local Area Networks (WLAN)
- Industrial and Home Control
- Plug-in Hybrid Electric Vehicles (PHEVs)



Skyworks is committed to supporting designers with leading edge performance products for designs targeted at 450, 900, and 2400 MHz radios. Our key product focus is in the following areas of the radio:

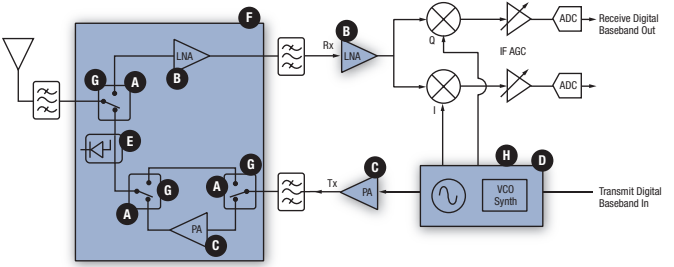
- Power Amplifiers (PAs) and drivers
- Low Noise Amplifiers (LNAs)
- Switches
- Phase Lock Loops (PLLs)
- Voltage Control Oscillators (VCOs)
- Diodes
- Front-End Modules (FEMs)

Description

These solutions are ideal for applications ranging from wireless local area networks (WLAN), automated metering infrastructure (AMI), automated meter reading (AMR), professional mobile radio (PMR), and other ISM band applications.

For complete product specifications and our latest product offering, please visit our Web site at www.skyworksinc.com.

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Switches

A
- AS179-92LF
- AS214-92LF
- SKY13268-344LF
- SKY13309-370LF
- SKY13314-374LF
- SKY13318-321LF
- SKY13270-92LF
- AS193-73LF

PIN Diodes

G
- SMP1345-518
- SMP1340-079LF
- SMP1321-508
- SMP1322-017LF
- SMP1320-079LF
- SMP1340-040LF
- SMP1302-079LF

LNAs

B
- SKY65050-372LF
- SKY65047-360LF
- SKY65045-70LF

Power Drivers/Amplifiers

C
- SKY65009-70LF
- SKY65028-70LF
- SKY65111-348LF
- SKY65006-348LF
- SKY65116
- SKY65131
- SKY65146
- SKY65152
- SKY65037-360LF
- SKY65040-360LF
- SKY65045-70LF
- SKY65132
- SKY65135

Synthesizers/PLLs/VCOs

D
- SKY72300-21
- SKY72300-362
- SKY72301-22
- SKY72310-362
- SKY72302-21
- SKY73120

Varactor Diodes

H
- SMV1413-079LF
- SMV1408-001LF
- SMV1405-079LF
- SMV1247-011LF
- SMV1249-079LF
- SMV1251-001LF
- SMV1253-079LF
- SMV1255-011LF
- SMV1235-079LF
- SMV1763-079LF
- SMV1142-011LF
- SMV1236-004LF
- SMV1233-011LF

Schottky Diodes

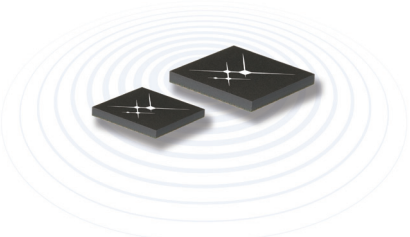
E
- SMS7630-079LF
- SMS7630-061
- SMS7621-079LF
- SMS7621-060
- SMS3926-023LF
- SMS3927-023LF
- SMS3928-023LF
- SMS7630-040LF
- SMS7621-040LF

Tx/Rx Front-End Modules

F
- SKY65326
- SKY65329
- SKY65336
- SKY65337
- SKY65338
- SKY65343-11
- SKY65344-21
- SKY65346-11
- SKY65249
- SKY65352-11
- SKY65266
- SKY65296
- SKY65342

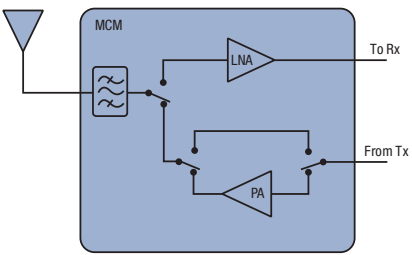
Custom Front-End Modules

Skyworks custom FEMs allow for significant size and cost reduction. In addition, many of Skyworks FEMs are designed to allow for "plug and play" functionality, thus drastically reducing the design time for new products. Customized FEMs can be created depending on transceiver implementation requirements. Various modules are being targeted at 450, 900, and 2400 MHz frequency bands



Possibilities for Integration Include:

- T/R switches
- Power amplifiers
- Low Noise Amplifiers (LNAs)
- Mixers
- Harmonic filters



Front-End Modules

Part Number	Function	P_{Out} (dBm)	Tx Gain (dB)	I_{CC} (mA)	Frequency Band (MHz) 450	900	2400
SKY65338	Tx / Rx Front-End Module	27	32	315	•		
SKY65342	Tx / Rx Front-End Module	29	34	650	•		
SKY65346	Tx / Rx Front-End Module with LNA	26	34	200		•	
SKY65336	Tx / Rx Front-End Module with LNA	20	17	140			•
SKY65337	Tx / Rx Front-End Module	20	17	140			•
SKY65343	Tx / Rx Front-End Module	20	19.5	110			•
SKY65344	Tx / Rx Front-End Module with LNA	20	19.5	110			•
SKY65352	Tx / Rx Front-End Module with LNA	20	19	115			•

Power Amplifiers

- Single and multi-stage amplifiers and drivers
- Covering frequency bands 450, 900, and 2400 MHz
- Gain up to 39.5 dB
- $P_{1\ dB}$ to 35 dBm
- Offered in industry standard plastic packages and as Multi-Chip Modules (MCMs)



Description

Skyworks' product line of power amplifiers offer a wide range of performance options for designers. These amplifiers feature ultrawideband high output power, high gain, and high linearity performance. Power amplifier devices are fabricated using Skyworks' high reliability Heterojunction Bipolar Transistor (HBT) process. The LNA devices utilize Skyworks advanced pseudomorphic high electron mobility transistor (pHEMT) process.

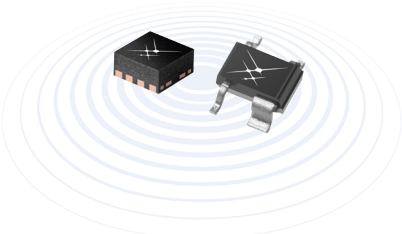
Power Amplifiers

Part Number	Function	Gain (dB)	$P_{1\,dB}$ (dBm)	I_{CQ} (mA)	Package (mm)	Frequency Band (MHz) 450	900	2400
SKY65116	2-Stage Power Amplifier	33.0	33.0	320	MCM 8 x 8	•		
SKY65111	3-Stage Power Amplifier	39.5	29.5	250	QFN 3 x 3		•	
SKY65006	3-Stage Power Amplifier	27.5	23.4	50	QFN 3 x 3			•
SKY65131	2-Stage Power Amplifier	26.0	28.0	150	MCM 4 x 4			•
SKY65037	2-Stage LNA	23-16 dB @ 900 MHz	18.0	60	QFN 2 x 2		•	
SKY65040	2-Stage LNA	23-16 dB @ 2400 MHz	18.0	60	QFN 2 x 2			•
SKY65028	Single Stage Driver	22.0	24.0	125	SOT-89	•	•	•
SKY65009	Single Stage Driver	17.0	25.0	110	SOT-89	•	•	•

Low Noise Amplifiers

Low Noise Amplifiers

- Noise figure down to 0.6 dB
- Gain adjustable 15 to 25 dB
- OIP3 to 34 dBm with adjustable current
- SiGe product with integrated shutdown mode



Low Noise Discrete pHEMT Transistors

- Noise figure as low as 0.6 dB
- Unconditional-stability matching available for popular applications

Description

Skyworks' new low noise amplifier (LNA) products meet the demanding ultra low noise figure and high linearity needs of today's receiver designs. Fabricated from Skyworks' advanced pseudomorphic high electron mobility transistor (pHEMT) process, these discrete and multi-stage amplifiers are able to achieve noise figures to 0.6 dB with OIP3 performance up to 34 dBm. SiGe LNA features an integrated shutdown. Supported applications include cellular infrastructure (GSM, CDMA, WCDMA and LTE), GPS, ISM, and satellite radio (SDARS) receivers.

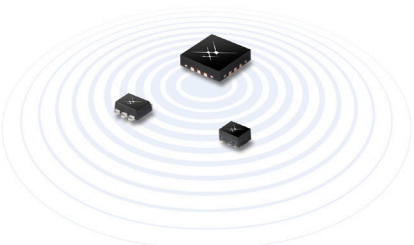
For complete product specifications and our latest product offering, please visit our Web site at www.skyworksinc.com

Low Noise Amplifiers

Part Number	Function	Gain (dB)	NF (dB)	Icc (mA)	$IP_{1\,dB}$	Package (mm)	Frequency Band (MHz) 450	900	2400
SKY65050-372LF	LNA Discrete, 250–6000 MHz	16 dB @ 900 MHz	0.60	10	-9	SC-70 4L	•	•	•
SKY65047	LNA with Shutdown Mode	16.5 dB @ 915 MHz	0.85	7.8	-7	QFN 2 x 2	•	•	•
SKY65405-11	LNA with Shutdown Mode	14	1.00	12	-3	QFN 1.5 X 1.5			•

Switches

Features



- Wide variety of switch offerings including SPST, SPDT, SP3T, SP4T, DPDT
- Wide variety of package options from 1.1 x 1.1 mm to 20-lead QFNs, and several low profile 0.45 mm typ. height
- Individual switch features include low loss, high isolation, high power handling, high linearity, low supply voltage, and more
- All available switches are lead (Pb)-free and RoHS-compliant. Some products are available Green™.

Description

Skyworks offers switch solutions for all RF applications. These high quality parts can be found in handsets, mobile infrastructure, WLAN systems, GPS systems, automobiles, radar, and much more. Most of the products are fabricated in our GaAs pHEMT and GaAs MESFET facilities. All switches are packaged in industry-standard, plastic surface-mount packages.

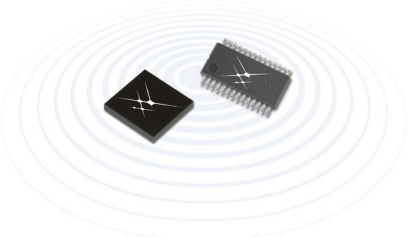
Switches

Part Number	Function	Insertion Loss (dB)	Isolation (dB)	$P_{1\,dB}$	Input IP3 (dBm)	Package (mm)	Frequency Band (MHz) 450	900	2400
SKY13268-344LF	SPDT Switch, Low Loss	0.30	25	30	50	SOT-666 1.5 x 1.2	•	•	•
SKY13309-370LF	SP3T Switch, Low Loss	0.50	25	29	–	QFN-8 2 x 2	•	•	•
SKY13314-374LF	SPDT Switch, Low Loss	0.25	25	31	48	QFN-6 1.5 x 1.5	•	•	•
AS179-92LF	SPDT Switch, Low Loss	0.30	25	30	48	SC-88 2.2 x 2	•	•	•
AS214-92LF	SPDT Switch, Low Loss	0.30	30	20	40	SC-88 2.2 x 2	•	•	•
SKY13318-321LF	DPDT Switch, Low Loss	0.90	22	34	57	QFN12L 3 x 3 x 0.75	•	•	•
SKY13270-92LF	SPDT Switch, Low Loss	0.35	24	>37	56	SC-88	•	•	•
AS193-73LF	SPDT Switch, Low Loss	0.35	24	37	55	SOT-6	•	•	•

Synthesizers

Features

- Wide frequency range 100–6100 MHz
- Single and dual fractional-N synthesizers
- Supports (G)FSK, (G)MSK, FM, and PSK direct modulation
- Excellent phase noise performance (-91 dBc/Hz @ 1800 MHz)



Description

Skyworks direct digital modulation fractional-N frequency synthesizers provide ultra-fine frequency resolution, fast switching speed, and low phase-noise performance. The device are available in QFN 4 x 4 mm and EP-TSSOP 9.7 x 6.4 mm package. These devices are ideally for Automated Meter Reading (AMR), 2.5G and 3G wireless infrastructure, broadband wireless access, low bit rate wireless telemetry, instrumentation, L-band receivers and satellite communications applications.

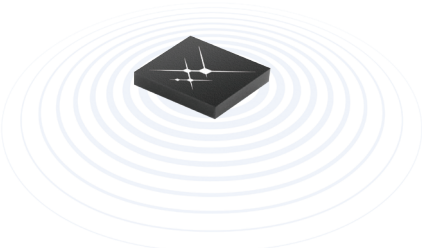
Synthesizers

Part Number	Function	Phase Noise (dBc/Hz)	Direct Modulation	I_{DD} (mA)	Package (mm)	Frequency Band (MHz) 450	900	2400
SKY72300-362	Dual Frac-N Synthesizer	-91	FSK, FM, GMSK	12.5	QFN 4 x 4	•	•	
SKY72302	Dual Frac-N Synthesizer	-80	FSK, FM, GMSK	18.0	TSSOP 9. 7 x 6.4	•	•	•
SKY72310	Single Frac-N Synthesizer	-91	FSK, FM, GMSK	12.5	QFN 4 x 4	•	•	

Voltage Controlled Oscillators

Features

- Frequency range 890–960 MHz
- Low cost CMOS-based oscillators
- Integrated band select technology
- Excellent phase noise performance: -110 dBc/Hz @25 kHz offset



Description

Skyworks SKY73120-11 Voltage-Controlled Oscillator (VCO) is a high performance signal source for high dynamic range transceivers. With a wide frequency operating range from 890 to 960 MHz, and 0 dBm output power and low phase noise (–110dBc/Hz @ 25 kHz offset), the SKY73120-11 is an ideal solution for ISM band base station transceivers, RFID transceivers, and 2G/3G base station transceivers applications. This device is packaged in a MCM 6 x 6 mm lead (Pb)-free, RoHS-compliant package.

Voltage Controlled Oscillators

Part Number	Function	Phase Noise (dBc/Hz)	Output Power (dBm)	I_{DD} (mA)	Package (mm)	Frequency Band (MHz) 450	900	2400
SKY73120	CMOS VCO	-110 @ 25 kHz Offset	0	26	MCM 6 x 6		•	

Varactor Diodes

Features

- Types available:
  - Hyperabrupt junction tuning
  - Abrupt junction tuning
- Available configurations:
  - Single
  - Common cathode
  - Common anode



Description

Skyworks offers over 100 packaged varactor diodes for RF applications, in a wide variety of capacitance versus voltage curves. These quality products are fabricated in our Silicon facilities and plastic surface mount packages. Many diodes are also available as bare die or in ceramic packaging.

Varactor Diodes

Part Number	Function	Capacitance (C_T)	Capacitance Ratio (C_R)	Series Resistance (R_S)/ Quality Factor	Package (mm)	Frequency Band (MHz) 450	900	2400
SMV1405-079LF	VCO Tuning	1.8 pF @ 1 V	C_{T0}/C_{T30} = 4.1	Q @ 4 V 50 MHz = 3200	SC-79 1.6 x 0.8	•	•	•
SMV1408-001LF	VCO Tuning	2.9 pF @ 1 V	C_{T0}/C_{T30} = 4.1	Q @ 4 V 50 MHz = 2900	SOT-23 2.9 x 2.35	•	•	•
SMV1413-079LF	VCO Tuning	6.4 pF @ 1 V	C_{T0}/C_{T30} = 4.2	Q @ 4 V 50 MHz = 2400	SC-79 1.6 x 0.8	•	•	•
SMV1247-011LF	VCO Tuning	7 pF @ 0.3 V	$C_{T0.3}/C_{T4.7}$ = 10	Q @ 3 V 50 MHz = 1500	SOD-323 2.5 x 1.25	•	•	•
SMV1249-079LF	VCO Tuning	31 pF @ 0.3 V	$C_{T0.3}/C_{T4.7}$ = 12.1	R_S @ 3 V 500 MHz = 2.2 Ω	SC-79 1.6 x 0.8	•	•	•
SMV1251-001LF	VCO Tuning	42 pF @ 0.3 V	$C_{T0.3}/C_{T4.7}$ = 12.2	R_S @ 3 V 500 MHz = 1.6 Ω	SOT-23 2.9 x 2.35	•	•	•
SMV1253-079LF	VCO Tuning	53 pF @ 0.3 V	$C_{T0.3}/C_{T4.7}$ = 12.3	R_S @ 3 V 500 MHz = 1.4 Ω	SC-79 1.6 x 0.8	•	•	•
SMV1255-011LF	VCO Tuning	64 pF @ 0.3 V	$C_{T0.3}/C_{T4.7}$ = 12.3	R_S @ 3 V 500 MHz = 1.3 Ω	SOD-323 2.5 x 1.25	•	•	•
SMV1233-011LF	VCO Tuning	3.3 pF @ 1 V	C_{T1}/C_{T3} = 1.5	R_S @ 3 V 500 MHz = 1.2 Ω	SOD-323 2.5 x 1.25	•	•	•
SMV1763-079LF	VCO Tuning	5.2 pF @ 1 V	$C_{T0.5}/C_{T2.5}$ = 2.5	R_S @ 1 V 500 MHz = 0.7 Ω	SC-79 1.6 x 0.8	•	•	•
SMV1142-011LF	VCO Tuning	8.2 pF @ 1 V	C_{T1}/C_{T3} = 1.5	R_S @ 3 V 500 MHz = 0.7 Ω	SOD-323 2.5 x 1.25	•	•	•
SMV1235-079LF	VCO Tuning	11.5 pF @ 1 V	C_{T1}/C_{T3} = 1.8	R_S @ 3 V 500 MHz = 0.6 Ω	SC-79 1.6 x 0.8	•	•	•
SMV1236-004LF	VCO Tuning	17 pF @ 1 V	C_{T1}/C_{T3} = 1.6	R_S @ 3 V 500 MHz = 0.5 Ω	SOT-23 2.9 x 2.35	•	•	•

PIN Diodes

Features



- PIN diodes
  - Available as:
    - Very low capacitance
    - Fast switching speed
    - Low resistance and capacitance
    - Low resistance
    - Large signal switching
    - Low distortion attenuator
    - Very low distortion attenuator
  - Available configurations:
    - Single
    - Ring
    - Common cathode
    - Common anode
    - Anti-parallel
    - Low and ultra-low inductance
    - π network
    - Series pair

Description

Skyworks offers over 70 packaged PIN diodes for all RF applications. These parts can be found in handsets, mobile infrastructure, WLAN systems, GPS systems, automobiles, radar, and much more. These products are fabricated in our Silicon facilities and packaged in industry-standard, RoHS-compliant, plastic surface mount packages. Many diodes are also available as bare die, beam-lead, or in ceramic packaging.

PIN Diodes

Part Number	Function	Voltage Breakdown (V_B)	Capacitance (C_T)	Series Resistance (R_S)	Package (mm)	Frequency Band (MHz) 450	900	2400
SMP1345-518	Antenna Switch	50 V @ 10 µA	0.18 pF @ 5 V	R_S @ 10 mA = 1.5 Ω	LGA 1.2 x 1.4	•	•	•
SMP1340-040LF	TR Switch	50 V @ 10 uA	0.20 pF @ 5 V	R_S @ 10 mA = 0.9 Ω	0402 1.0 x 0.60	•	•	•
SMP1340-079LF	Antenna Switch	50 V @ 10 µA	0.20 pF @ 5 V	R_S @ 10 mA = 0.9 Ω	SC-79 1.6 x 0.8	•	•	•
SMP1321-508	Antenna Switch	100 V @ 10 µA	0.25 pF @ 30 V	R_S @ 10 mA = 2.0 Ω	LGA 1.2 x 1.4	•	•	•
SMP1322-017LF	TR Switch	50 V @ 10 µA	1.0 pF @ 30 V	R_S @ 10 mA = 0.5 Ω	SOT-143 2.37 x 2.92	•	•	•
SMP1320-079LF	TR Switch	50 V @ 10 µA	0.30 pF @ 30 V	R_S @ 10 mA = 0.9 Ω	SC-79 1.6 x 0.8	•	•	•
SMP1302-079LF	Attenuator Switch	200 V @ 10 uA	0.30 pF @ 30 V	R_S @ 10 mA = 3.0 Ω	SC-79 1.6 x 0.8	•	•	•

Schottky Diodes

Features

- Schottky diodes
  - Available as:
    - General purpose
    - Low capacitance and high voltage
    - Mixer and detector
  - Available configurations:
    - Single
    - Common cathode
    - Series pair
    - Unconnected pair
- Schottky quad mixer diodes
  - Applications: double balanced mixers, modulators, frequency multipliers
  - Available configurations
    - Ring quad
    - Crossover ring quad
    - Bridge quad
    - Ring octoquad
    - Crossover ring octoquad



Skyworks offers over 40 packaged Schottky diodes for RF applications. These quality products are fabricated in our Silicon facilities and packaged in industry standard, RoHS-compliant, plastic surface mount packages. The quad mixers are also available on film frame or chip on board. Others are available as bare die, beam-lead, or in ceramic packaging.

Schottky Diodes

Part Number	Function	Voltage Breakdown (V_B)	Capacitance (C_T)	Forward Voltage (V_F)	Package (mm)	Frequency Band (MHz) 450	900	2400
SMS7630-040LF	Detector	1 V @ 10 µA	0.30 pF @ 0.15 V	V_F @ 0.1 mA = 60–120 mV	SC-79 1.6 x 0.8	•	•	•
SMS7630-079LF	Detector	1 V @ 10 µA	0.30 pF @ 0.15 V	V_F @ 0.1 mA = 60–120 mV	0402 1.0 x 0.6	•	•	•
SMS7630-061	Detector	1 V @ 10 µA	0.30 pF @ 0.15 V	V_F @ 0.1 mA = 60–120 mV	0201 0.60 x 0.30	•	•	•
SMS7621-040LF	Detector/Mixer	2 V @ 10 µA	0.18 pF @ 0.15 V	V_F @ 1.0 mA = 260–320 mV	0402 1.0 x 0.6	•	•	•
SMS7621-079LF	Detector/Mixer	2 V @ 10 µA	0.18 pF @ 0.15 V	V_F @ 1.0 mA = 260–320 mV	SC-79 1.6 x 0.8	•	•	•
SMS7621-060	Detector/Mixer	2 V @ 10 µA	0.18 pF @ 0.15 V	V_F @ 1.0 mA = 260–320 mV	0201 0.60 x 0.30	•	•	•
SMS3926-023LF	Low Drive Mixer	2 V @ 10 µA	0.30 pF @ 0 V	V_F @ 1.0 mA = 200–270 mV	SOT-143 2.37 x 2.92	•	•	•
SMS3927-023LF	Medium Drive Mixer	2 V @ 10 µA	0.30 pF @ 0 V	V_F @ 1.0 mA = 310–370 mV	SOT-143 2.37 x 2.92	•	•	•
SMS3928-023LF	High Drive Mixer	4 V @ 10 µA	0.30 pF @ 0 V	V_F @ 1.0 mA = 520–580 mV	SOT-143 2.37 x 2.92	•	•	•