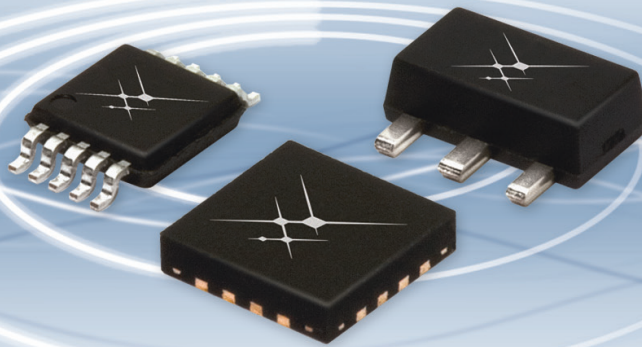




**SKYWORKS®**

BREAKTHROUGH SIMPLICITY®



# Product Selection Guide

Fall 2010

## Skyworks Solutions

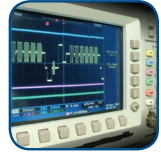
Skyworks Solutions, Inc. is an innovator of high reliability analog and mixed signal semiconductors. Leveraging core technologies, Skyworks offers diverse standard and custom linear products supporting automotive, broadband, cellular infrastructure, energy management, industrial, medical, military and mobile handset applications. The Company's portfolio includes amplifiers, attenuators, detectors, diodes, directional couplers, front-end modules, hybrids, infrastructure RF subsystems, mixers/demodulators, phase shifters, PLLs/synthesizers/VCOs, power dividers/combiners, receivers, switches and technical ceramics.

Headquartered in Woburn, Massachusetts, USA, Skyworks is worldwide with engineering, manufacturing, sales and service facilities throughout Asia, Europe and North America.

New products are continually being introduced at Skyworks. For the latest information, visit our Website at [www.skyworksinc.com](http://www.skyworksinc.com). For additional information, please contact your local sales office or email us at [sales@skyworksinc.com](mailto:sales@skyworksinc.com).

## The Skyworks Advantage

- Broad front-end module and precision analog product portfolio
- Market leadership in key product segments
- Solutions for all air interface standards, including CDMA2000, GSM/GPRS/EDGE, LTE, WCDMA and WLAN
- Engagements with a diverse set of top-tier customers
- Analog, RF and mixed signal design capabilities
- Access to all key process technologies: GaAs HBT, PHEMT, BiCMOS, SiGe, CMOS, RF CMOS and silicon
- World-class manufacturing capabilities and scale
- Unparalleled level of customer service and technical support
- Commitment to technology innovation





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The (Pb)-free symbol or "LF" in the part number denotes lead (Pb)-free, RoHS-compliant package. Tin/lead (SnPb) packaging is not recommended for new designs.

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## PRODUCTS

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



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For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.







Skyworks lead (Pb)-free products are compliant to all applicable materials legislation. For additional information, refer to Skyworks Definition of Lead (Pb)-Free, document number SQ04-0073. Tin/lead (SnPb) packaging is not recommended for new designs.


## AMPLIFIERS


Skyworks Solutions is pleased to offer a broad selection of Power Amplifiers (PAs) and Low Noise Amplifiers (LNAs) for cellular applications and diverse markets such as wireless infrastructure, WLAN, automotive, test & measurement, energy management and other high performance microwave applications. These amplifier solutions leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Cellular Power Amplifiers

#### GSM/GPRS/EDGE PAs

Part Number	Frequency (MHz)	Description	Typical Output Power (dBm) GSM/EDGE	Typical PAE (%)	Supply Voltage (V)	Package (mm)
SKY77318		iPAC™ PAM for Quad-Band GSM/GPRS			2.9–4.8	20-pin MCM 6 x 6 x 1.2
	824–849	GSM850	35.2	58		
	880–915	GSM900	35.2	56		
	1710–1785	DCS1800	33.5	52		
	1850–1910	PCS1900	33.5	52		
SKY77328		iPAC™ PAM for Quad-Band GSM/GPRS			2.9–4.8	20-pin MCM 6 x 6 x 1.2
	824–849	GSM850	35.4	56		
	880–915	GSM900	35.1	56		
	1710–1785	DCS1800	33.2	54		
	1850–1910	PCS1900	32.9	53		
 SKY77336		CoVAC PAM for Quad-Band GSM/GPRS/EDGE			3.0–4.8	16-pad MCM 5 x 5 x 1.0
	824–849	GSM850	35.0	52		
	880–915	GSM900	35.0	52		
	1710–1785	DCS1800	33.0	50		
	1850–1910	PCS1900	33.0	50		
 SKY77340		PAM for Quad-Band GSM/EDGE			2.9–4.8	16-pin MCM 6 x 8 x 1.2
	824–849	GSM850	35.1	54		
	880–915	GSM900	34.9	53		
	1710–1785	DCS1800	33.5	52		
	1850–1910	PCS1900	33.2	52		
 SKY77344		Hybrid PAM for Quad-Band GSM/GPRS/EDGE			3.0–4.8	20-pad MCM 5 x 5 x 0.9
	824–849	GSM850	35.0	52		
	880–915	GSM900	35.0	52		
	1710–1785	DCS1800	33.5	45		
	1850–1910	PCS1900	33.5	45		
 SKY77346		iPAC™ PA Module for Quad-Band GSM/GPRS			2.9–4.8	26-pin MCM 5 x 6 x 0.9
	824–849	GSM850	35.0	52		
	880–915	GSM900	35.0	52		
	1710–1785	DCS1800	33.5	52		
	1850–1910	PCS1900	33.5	52		

 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## AMPLIFIERS

### CMOS Power Amplifiers

Skyworks CMOS power amplifiers AX502 and AX508 allow the use of 0.13  $\mu\text{m}$  Silicon CMOS process technology to integrate all of the functions between transmitter output and transmit/receive switch. The power gain stages, small signal control circuitry and 50 $\Omega$  matching are all realized on a single die.

The AX502 and AX508 PAs amplify low-level radio frequency (RF) signals to the required high-power levels needed for transmission in GSM/GPRS mobile phone handsets or data modules. The device supports quad-band (GSM 850/900/1800/1900) operation. The integrated 50 $\Omega$  input and output matching circuitry, enables direct connection to the transceiver output and the transmit/receive switch input without the use of the external matching components. The power level is regulated via a fully integrated closed-loop power controller which ensures that the GSM power/time mask and switching spectrum may be met with adequate margin to allow robust mass production when subjected to a real world cell phone environment, such as highly elevated VSWR and low supply voltage.


The reliability of Axiom's GSM/GPRS quad-band CMOS power amplifiers has been proven through thousands of hours of life testing, at accelerated operating conditions, including greater than recommended operating temperature, extended duty cycle, load mismatches of greater than VSWR 10:1 at worst case phase angles, and elevated supply voltages.

#### The GSM/GPRS Quad-Band and CMOS Power Amplifiers Include:

- GSM/GPRS Class 12 operation
- Power supply range of 2.9–5.5 V
- RF input range: -2 to 8 dBm
- Fully integrated on chip 50 $\Omega$  matching circuits
- Fully integrated closed-loop power control
- <100 dB/V power control slope
- MSL JEDEC Level 2a, lead (Pb)-free, RoHS-compliant package
- Low profile 5 x 5 x 0.9 mm (AX502) or 5 x 3.5 x 0.9 mm (AX508) micro lead frame package

#### GSM/GPRS Quad-Band CMOS Power Amplifiers








Part Number	Description
AX502	GSM/GPRS Quad-Band Power Amplifier
AX508	GSM/GPRS Quad-Band Power Amplifier

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## AMPLIFIERS


### Cellular Power Amplifiers


#### LTE PAs

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Typical Linear LTE Power (dBm)	Supply Voltage (V)	Package (mm)
 SKY77441	2300–2620	Multi-Mode/Multi-Band PA Module for LTE FDD Band VII (2500–2570 MHz) and LTE TDD Bands 38/40 (2300–2620 MHz)	36.0	29	27.5	3.0–4.6	16-pad MCM 4 x 4 x 0.85
 SKY77449	777–798	PA Modules for LTE/E-UTRA Band XIII/Band XIV (777–798 MHz)	36.0	29	27.5	3.0–4.6	16-pad MCM 4 x 4 x 0.85
 SKY77453	698–716	PA Modules for LTE/E-UTRA Band XII/Band XVII (698–716 MHz)	36.0	28	27.5	3.0–4.6	16-pad MCM 4 x 4 x 0.85
 SKY77706	2500–2570	PA Module for LTE FDD Band VII (2500–2570 MHz)	28.5	–	28.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9
 SKY77707	698–716	PA Module for LTE/EUTRAN Bands XII/XVII (698–716 MHz)	36.0	–	28.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9
 SKY77708	777–798	PA Module for LTE/EUTRAN Bands XIII/XIV (777–798 MHz)	36.0	–	28.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9
 SKY77709	2300–2400	PA Module for LTE FDD Band VII (2300–2400 MHz)	36.0	–	28.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9

#### TD-SCDMA PAs

Part Number	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77161	PAM for TD-SCDMA	41	27.5	3.2–4.2	10-pin MCM 4 x 4 x 1.2
 SKY77198-12	PAM for TD-SCDMA	36.0	26.0	3.2–4.2	10-pad MCM 3 x 3 x 0.85

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## AMPLIFIERS


### Cellular Power Amplifiers


#### CDMA PAs—PCS Band

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
CX77112	1850–1910	PAM for CDMA/PCS	40.0	28.5	3.2–4.2	10-pin MCM 4 x 4 x 1.5
SKY77149	1850–1910	System Smart® PAM for CDMA/PCS	40.0	28.0	3.2–4.2	8-pin MCM 3 x 3 x 1.2
 SKY77176	1850–1910	PAM for CDMA/PCS	40.0	28.0	3.2–4.2	12-pin MCM 3 x 5 x 1.0
SKY77418	1850–1910	LIPA® Module for CDMA/PCS	38.0	28.0	3.2–4.2	16-pin MCM 4 x 4 x 1.5

#### CDMA PAs—Cell Band

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
CX77105	824–849	PAM for Dual-Mode CDMA AMPS	40.0 55.0	29.0 29.0	3.2–4.2	10-pin MCM 4 x 4 x 1.5
SKY77162	824–849	System Smart® PAM for CDMA AMPS	40.0 55.0	28.5 28.5	3.2–4.2	8-pin MCM 3 x 3 x 1.2
SKY77163-12	824–849	AutoSmart™ PAM for CDMA AMPS	40.0 55.0	28.0 27.0	3.2–4.2	8-pin MCM 3 x 3 x 1.2
 SKY77176	1850–1910	PAM for CDMA/PCS	40.0	28.0	3.2–4.2	12-pin MCM 3 x 5 x 1.0

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## AMPLIFIERS

### Cellular Power Amplifiers



#### CDMA PAs—Other Bands


Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
CX77144	887–925	PAM for J-CDMA	40.0	27.5	3.2–4.2	10-pin MCM 4 x 4 x 1.5
SKY77155	1750–1780/ 1710–1785	System Smart® PAM for CDMA PCS/WCDMA	40.0/38.0	29.0/29.0	3.2–4.2	8-pin MCM 3 x 3 x 1.2
SKY77166	450–460	PAM for CDMA2000	37.0	29.0	3.1–4.6	10-pad MCM 4 x 4 x 1.5


#### WCDMA PAs—Single Band Modules—Band 1

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77170	1920–1980	PAM for WCDMA/HSDPA	37.0	28.0	3.2–4.2	10-pin MCM 4 x 4 x 1.15
SKY77173	1920–1980	AutoSmart™ PAM for WCDMA	41.0	28.0	3.2–4.2	8-pin MCM 3 x 3 x 1.15
SKY77174	1920–1980	PAM for WCDMA/HSDPA	38.0	28.5	3.1–4.6	10-pin MCM 4 x 4 x 1.1
 SKY77182	1920–1980	PAM for WCDMA/HSDPA	39.0	29.0	3.1–4.6	8-pin MCM 3 x 3 x 1.1
 SKY77185	1920–1980	PAM for WCDMA/HSDPA	40.0	27.0	3.4–6.0	10-pin MCM 3 x 3
 SKY77186	1920–1980	PAM for WCDMA/HSDPA	40.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.85
 SKY77701	1920–1980	PAM for CDMA/WCDMA/HSDPA/HSUPA/ HSPA+/LTE	39.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9

#### WCDMA PAs—Single Band Modules—Band 2

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77178	1850–1910	AutoSmart™ PAM for WCDMA/HSDPA	40.0/37.5	26.5/27.5	3.2–4.2	8-pin MCM 3 x 3 x 1.2
 SKY77187	1850–1910	PAM for WCDMA/HSDPA	40.0	27.5	3.2–4.2	10-pin MCM 3 x 3 x 0.85
 SKY77702	1850–1910	PAE for WCDMA/HSDPA/HSUPA/HSPA+/LTE	39.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9



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## AMPLIFIERS

### Cellular Power Amplifiers




#### WCDMA PAs—Single Band Modules—Band 4

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77177	1710–1755	AutoSmart™ PAM for WCDMA	40.0	28.0	3.2–4.2	8-pin MCM 3 x 3 x 1.2
 SKY77191	1710–1785	PA Module WCDMA/HSDPA	40.0	27.5	3.2–4.2	10-pad MCM 3 x 3 x 0.85
 SKY77703	1710–1785	PAM for for CDMA/WCDMA/HSDPA/HSUPA/HSPA+/LTE	39.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9

#### WCDMA PAs—Single Band Modules—Band 5 & 6

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77175	824–849 1850–1910	Dual-Band PAM for WCDMA	40.0 40.0	30.2 29.1	3.1–4.6	14-pin MCM 3 x 6 x 1.0
SKY77179	824–849	AutoSmart™ PAM for WCDMA HSDPA	41.0 38.0	28.0 28.0	3.2–4.2	8-pin MCM 3 x 3 x 1.2
 SKY77188	824–849	PAM for WCDMA/HSDPA	42.0	28.0	3.2–4.2	10-pad MCM 3 x 3 x 0.85
 SKY77704	824–849	PAM for CDMA / WCDMA/HSDPA/HSUPA/HSPA+/LTE	39.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9


#### WCDMA PAs—Single Band Modules—Band 8


Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77181	880–915	PAM for WCDMA/HSDPA	36.0	30.0	3.1–4.6	8-pin MCM 3 x 3 x 1.1
 SKY77189	880–915	PAM for WCDMA/HSDPA	42.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.85
 SKY77705	880–915	PAM for WCDMA/HSDPA/HSUPA/HSPA+/LTE	39.0	27.0	3.2–4.2	10-pad MCM 3 x 3 x 0.9


#### WCDMA PAs—Single Band Modules—Other Bands

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77155	1750–1780/ 1710–1785	System Smart® PAM for CDMA PCS/WCDMA	40.0/38.0	29.0/29.0	3.2–4.2	8-pin MCM 3 x 3 x 1.15

#### WCDMA PAs—Multi-Band Modules—Band 1 & 8

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77195	1920–1980 880–915	PA Module WCDMA/HSDPA	40.0	27.0	3.2–4.2	10-pad MCM 5 x 4 x 0.85


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## AMPLIFIERS

### Cellular Power Amplifiers





#### WCDMA PAs—Multi-Band Modules—Band 2 & 5


Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77196	1850–1910 824–849	PA Module WCDMA/HSDPA	40	27	3.2–4.2	14-pin MCM 5 x 4 x 0.85


#### WCDMA PAs—Multi-Band Modules—Band 1 & 5

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77197	824–849 1920–1980	PA Module WCDMA/HSDPA	40	27	3.2–4.2	14-pad MCM 5 x 4 x 0.85

#### Multimode Multiband (MMMB)

Part Number	Frequency (MHz)	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77601		Multiband Multimode Power Amplifier Module			3.0-4.5	34-pin MCM 6 x 8 x 0.9
	824–849	GSM850/WCDMA B5	55	33.5		
	880–915	GSM900/WCDMA B8	55	33.5		
	1710–1785	DCS1800	50	33.5		
	1850–1910	PCS1900/WCDMA B2	50	33.5		
	1920–1980	WCDMA B1	–	–		
 SKY77602		Multiband Multimode Power Amplifier Module			TBD	22-pad 5 x 7 x 0.9
	824–849	WCDMA B5	TBD	TBD		
	880–915	WCDMA B8	TBD	TBD		
	1710–1785	WCDMA B3	TBD	TBD		
	1850–1910	WCDMA B2	TBD	TBD		
	1920–1980	WCDMA B1	TBD	TBD		
 SKY77604		Multiband Multimode Power Amplifier Module			TBD	34-pad MCM 6 x 8 x 0.9
	824–849	GSM850/WCDMA B5	TBD	TBD		
	880–915	GSM900/WCDMA B8	TBD	TBD		
	1710–1785	DCS1800	TBD	TBD		
	1850–1910	PCS1900/WCDMA B2	TBD	TBD		
	1920–1980	WCDMA B1	TBD	TBD		
 SKY77605		Multiband Multimode Power Amplifier Module			TBD	24-pad 5 x 7 x 0.9
	824–849	GSM850/WCDMA B5	TBD	TBD		
	880–915	GSM900/WCDMA B8	TBD	TBD		
	1710–1785	DCS1800	TBD	TBD		
	1850–1910	PCS1900/WCDMA B2	TBD	TBD		
	1920–1980	WCDMA B1	TBD	TBD		

 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## AMPLIFIERS

### Power Amplifiers for WLAN and ISM


Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	P <sub>1</sub> dB (dBm)	PAE (%)	V <sub>CC</sub> (V)	Quiescent Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65006-348LF	2.4–2.5	2.45	27.0	–	24.0	29	3.3	53	–	16-pin QFN 3 x 3
SKY65008	0.25–2.7	2.45	18.5	33	20.0	–	3.3 or 5	76	–	3-pin MCM 4 x 4
SKY65111-348LF	0.6–1.1	0.915	40.0	36	29.5	50	3.5	250	6.5	16-pin QFN 3 x 3
SKY65116	0.39–0.50	0.445	35.0	43	32.5	42	3.6	330	6.0	12-pin MCM 8 x 8
SKY65131	2.4–2.5	2.442	26.0	–	28.0	38	3.3	150	–	16-pin MCM 4 x 4
SKY65132	2.4–2.5	2.442	33.0	–	30.0	29	3.3	330	–	20-pin MCM 6 x 6
SKY65135-21	2.4–2.5	2.442	33.5	44	33.5	36	5.0	405	5.0	20-pin MCM 6 x 6
SKY65135-31	2.4–2.5	2.442	32.0	–	32.5	–	5.0	465	5.0	20-pin MCM 6 x 6
SKY65146-21	0.806–0.849	0.815	38.7	37	35.6	51	3.5	329	–	28-pin MCM 10 x 14
SKY65152-11	2.4–2.5	2.442	32.0	42	33.0	33	5.0	490	5.0	20-pin MCM 6 x 6
SKY65137-11	4.9–5.9	5.75	26.0	–	32.0	29	5.0	420	6.0	20-pin MCM 6 x 6
SKY65165-11	2.4–2.5	2.442	32.5	–	31	–	5	220	5.0	16-pin QFN 3 x 3

### Low Noise Amplifiers (LNAs) for WLAN/ISM/WiMAX

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	OP <sub>1</sub> dB (dBm)	V <sub>DD</sub> (V)	Supply Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65404-21	4.9–5.9	5.4	13	–	–	2.8–5.0	–	1	6-pin QFN 1.5 x 1.5
SKY65405-11	2.4–2.5	2.45	14	–	–	2.8–5.0	12	1	6-pin QFN 1.5 x 1.5

### Receive Module for WLAN/ISM/WiMAX

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Rx Gain (dB)	Rx NF (dB)	Rx OIP3	Tx IL (dB)	Tx P <sub>1</sub> dB	V <sub>CC</sub> (V)	Quiescent Current Typ. (mA)	Package (mm)
SKY65507-11	4.9–5.9	5.4	13	2	20	0.8	31	2.8–5	12	8-pin QFN 2 x 2

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## AMPLIFIERS


### Wireless Infrastructure Power Amplifiers


#### High Gain Linear PA Modules

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	P <sub>1</sub> dB (dBm)	V <sub>CC</sub> (V)	Quiescent Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65120	2.110–2.170	2.14	24.6	48.0	33.5	5	447	8.4	20-pin MCM 6 x 6
SKY65124	1.930–1.990	1.96	24.0	45.0	33.0	5	550	6.3	20-pin MCM 6 x 6
SKY65126-21	0.800–0.900	0.85	30.0	48.0	32.5	5	285	4.5	20-pin MCM 6 x 6
SKY65127	0.700–0.800	0.75	36.5	44.0	32.5	5	264	4.4	20-pin MCM

#### Ultralinear PA Drivers






Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	OP <sub>1</sub> dB (dBm)	V <sub>CC</sub> (V)	V <sub>DD</sub> (V)	Quiescent Current Typ. (mA)	Supply Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65004	0.25–2.7	1.96	16.0	42.0	25.0	3.3 or 5	–	125	–	5.5	3-pin MCM 4 x 4
SKY65008	0.25–2.7	1.96	20.0	33.0	21.0	3.3	–	76	–	3.0	3-pin MCM 4 x 4
 SKY65009-70LF	0.25–2.5	1.96	12.0	42.0	27.0	3.3 or 5	–	100	–	4.3	4-pin SOT-89 2.4 x 4.5
 SKY65028-70LF	0.25–2.7	1.96	16.0	42.0	25.0	3.3 or 5	–	125	–	5.5	4-pin SOT-89 2.4 x 4.5
 SKY65038-70LF	0.25–6.0	1.00	15.0	40.0	21.5	–	5	–	150	2.0	4-pin SOT-89 2.4 x 4.5
 SKY65045-70LF	0.39–1.5	0.8975	14.0	37.5	25.0	5	–	46	–	1.8	4-pin SOT-89 2.4 x 4.5
SKY65112-84LF	0.40–2.3	0.94	18.0	39.0	27.0	5	–	260	–	–	SOIC-8 Exposed Paddle 5.99 x 4.73
SKY65113-84LF	0.40–2.3	0.94	20.0	40.0	30.0	5	–	450	–	–	SOIC-8 Exposed Paddle 5.99 x 4.73
SKY65080-70LF	1.5–2.5	1.85	15.0	40.5	21.0	5	–	66	100	2.3	4-pin SOT-89 2.4 x 4.5
SKY65081-70LF	2.0–3.0	2.60	14.3	43.9	22.3	5	–	55	75	2.0	4-pin SOT-89 2.4 x 4.5
SKY65162-70LF	0.4–2.7	0.915 1.960 2.400 2.600	20.0 15.0 13.2 12.5	46.5 47.0 43.6 44.3	28.5 28.3 28.2 28.8	5 5 5 5	–	180 180 180 180	400 400 400 400	3.9 3.8 3.6 5.4	4-pin SOT-89 2.4 x 4.5
SKY65161-70LF	0.4–2.7	0.92	19.4	39	26.5	5	–	139	239	5.0	4-pin SOT-89 2.4 x 4.5

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## AMPLIFIERS


### General Purpose Amplifiers


Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	P <sub>1</sub> dB (dBm)	Quiescent Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
 SKY65013-70LF	LF-7	2	12.5	29	12.5	40	5.5	4-pin SOT-89 2.4 x 4.5
SKY65013-92LF	LF-12	2	12.5	29	12.5	40	5.8	6-pin SC-88 2.1 x 2.0
 SKY65014-70LF	LF-6	2	16.0	36	18.0	70	4.8	4-pin SOT-89 2.4 x 4.5
SKY65014-92LF	LF-9	2	15.0	36	18.0	70	5.4	6-pin SC-88 2.1 x 2.0
 SKY65015-70LF	LF-6	2	18.0	35	17.0	70	4.2	4-pin SOT-89 2.4 x 4.5
SKY65015-92LF	LF-6	2	18.0	35	18.0	70	4.8	6-pin SC-88 2.1 x 2.0
 SKY65016-70LF	LF-3	2	20.0	27	14.0	40	4.8	4-pin SOT-89 2.4 x 4.5
SKY65016-92LF	LF-3	2	20.0	27	14.0	40	5.4	6-pin SC-88 2.1 x 2.0
 SKY65017-70LF	LF-6	2	20.0	35	20.0	100	4.5	4-pin SOT-89 2.4 x 4.5

### Low Noise Amplifiers (LNAs) and Discretos

#### Low Noise Amplifiers

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	OP <sub>1</sub> dB (dBm)	V <sub>DD</sub> (V)	Supply Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
 SKY65038-70LF	0.25–6.0	1.000	15.0	40.0	21.5	5	150	2.00	4-pin SOT-89 2.4 x 4.5
SKY65047-360LF	0.40–3.0	–	16.5 dB @ 1575 MHz	16.5	–	3.3	6.7	0.75	8-pin QFN 2 x 2
 SKY65048-360LF	0.70–1.2	0.900	16.5	35.0	18.0	5	85	0.65	8-pin QFN 2 x 2
 SKY65049-360LF	1.70–2.4	2.000	17.0	34.0	17.5	5	65	0.70	8-pin QFN 2 x 2
 SKY65066-360LF	2.30–2.7	2.500	16.5	35.5	18.0	5	75	0.70	8-pin QFN 2 x 2
 SKY65084-360LF	1.50–2.4	1.950	24.0	34.0	16.0	5	65	0.70	8-pin QFN 2 x 2
 SKY65088	1.575	1.575	16.0	–	–	3	6.0	1.00	6-pin QFN 1.5 x 2
SKY65404-11	4.90–5.9	5.400	13.0	–	–	2.8–5.0	–	1.00	6-pin QFN 1.5 x 1.5
SKY65405-11	2.40–2.5	2.450	14.0	–	–	2.8–5.0	12	1.00	6-pin QFN 1.5 x 1.5
 SKY67100-396LF	1.7–2.0	1.850	18.5	34	19	4	56	0.55	8-pin QFN 2 x 2 x 0.75
 SKY67101-396LF	0.7–1.0	0.900	17.9	34	19	4	56	0.50	8-pin QFN 2 x 2 x 0.75





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## AMPLIFIERS

### Low Noise Amplifiers (LNAs) and Discretes

#### Low Noise Discrete Discrete Transistors

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 Typ. (dBm)	P <sub>1</sub> dB (dBm)	V <sub>CC</sub> (V)	NF (dB)	Quiescent Current Typ. (mA)	Package (mm)
 SKY65050-372LF	0.45–6	2.4	15.5	23.5	10.5	3	0.65	20	4-pin SC-70 2.2 x 1.35
 SKY65051-377LF	0.45–6	2.4	15.5	24.0	12.0	3	0.65	20	4-pin QFN 2 x 2
 SKY65052-372LF	0.45–6	2.4	16.0	34.0	19.0	5	0.85	55	4-pin SC-70 2.2 x 1.35
 SKY65053-377LF	0.45–6	2.4	16.5	33.5	15.5	5	0.80	55	4-pin QFN 2 x 2

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## ATTENUATORS

Skyworks Solutions is pleased to offer a broad selection of GaAs digital attenuators, PIN diode voltage variable attenuators, and silicon fixed attenuator pads for infrastructure, test & measurement, and other high performance microwave applications up to 40 GHz. These product solutions leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Digital Attenuators

Part Number	Frequency (GHz)	Control Bits/ Interface Parallel/Serial	Attenuation Range (dB)	LSB Attenuation (dB)	Typ. IL (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> (dBm)	Package (mm)
AA103-72LF	LF-2.5	1/P	10.0	10.0	0.3-0.4	41	20	SOT-5
AA116-72LF	LF-2.0	1/P	15.0	15.0	0.35-0.4	41	20	SOT-5
SKY12324-73LF	0.5-3.0	2/P	12.0	4.0	0.9-1.3	43	30	SOT-6
 SKY12338-337LF	0.35-4.0	2/P	18.0	6.0	0.55-1.3	45	30	QFN 3 x 3
 SKY12406-360LF	0.05-0.60	2/P	12.0	12.0	0.3	46	22	QFN-8L 2 x 2
 SKY12407-321LF	0.05-0.60	2/P	12.0	12.0	0.3	48	31	QFN-12L 3 x 3
SKY12325-350LF	0.5-6.0	3/P	7.0	1.0	0.7-1.3	47	27	QFN-16L 3 x 3
AA105-86LF	0.5-3.0	4/P	15.0	1.0	1.5-2.7	49	24	MSOP-10
AA210-25LF	LF-2.0	4/P	15.0	1.0	0.9-2.1	48	28	SOIC-16
AA264-87LF	0.5-2.0	4/P	30.0	2.0	1.6-1.8	36	15	TSSOP-16
AA101-80LF	0.5-2.5	5/P	31.0	1.0	2.0-2.9	41	21	SSOP-16
AA102-80LF	0.5-2.5	5/P	15.5	0.5	1.9-3.2	42	24	SSOP-16
AA106-86LF	0.5-2.0	5/P	15.5	0.5	2.0-3.0	41	21	MSOP-10
SKY12322-86LF	0.5-4.0	5/P	15.5	0.5	1.4-3.0	45	27	MSOP-10
SKY12323-303LF	0.5-3.0	5/P	31.0	1.0	1.4-2.3	48	30	MSOP-10EP
SKY12328-350LF	0.5-4.0	5/P	15.5	0.5	1.1-2.3	42	30	QFN-16L 3 x 3
SKY12329-350LF	0.4-4.0	5/P	31.0	1.0	1.2-2.7	39	29	QFN-16
 SKY12339-350LF	0.4-3.0	5/P	31.0	1.0	1.2-2.0	39	-	QFN 3 x 3
AA107-310LF	LF-2.0	5/S	15.5	0.5	1.4-1.72	44	24	QFN 5 x 5
AA109-310LF	0.5-2.5	5/S	31.0	1.0	2.0-3.1	41	21	QFN 5 x 5
 SKY12340-364LF	0.3-2.0	5/S	15.5	0.5	1.4-1.8	45	30	QFN 5 x 5
 SKY12345-362LF	0.7-4.0	5/S	15.5	0.5	1.2-2.0	42	32	QFN-24L 4 x 4
AA113-310LF	LF-1.0	6/P	31.5	0.5	1.5-1.8	48	29	QFN-32L 5 x 5

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## ATTENUATORS

### Fixed Attenuator Pads















Skyworks Solutions is pleased to now offer two fixed attenuator pad options for Radar, Test & Measurement, high frequency Transceivers and other high performance microwave applications up to 40 GHz. The next generation ATN3590 series offers enhanced RF power handling and attenuation flexibility. The unique ATN3590 die design eliminates the need for RF ground bonds enabling greatly improved Return Loss and Attenuation Flatness across multi-octave bandwidths.


These two product solutions, available in die form, leverage Skyworks extensive design knowledge, technical leadership, manufacturing expertise, and superior quality.


The ATN3590 and ATN3580 attenuator families are optimized for surface mounting on co-planar waveguide or microstrip printed circuit boards. Bond wires or ribbons are used to connect the input and output ports of the attenuators to the external circuit transmission lines. Connection to ground is accomplished by through-die vias to the die backside metallization on the ATN3590 family and bond wires or ribbons on the ATN3580 family.

The dice are attached using eutectic solder or conductive epoxy and can operate over a temperature range of -65 °C to 150 °C.

### ATN3580 Fixed Attenuator Pads

Part Number	Nominal Attenuation (dB)	Attenuation Tolerance @ DC (dB)	Attenuation Flatness			Return Loss		
			0.1–12 GHz (dB)	0.1–26.5 GHz (dB)	0.1–40 GHz (dB)	0.1–12 GHz (dB)	0.1–26.5 GHz (dB)	0.1–40 GHz (dB)
 ATN3580-01	1	±0.15	0.2	0.4	0.6	23	18	15
 ATN3580-02	2	±0.15	0.2	0.4	0.6	23	18	15
 ATN3580-03	3	±0.25	0.2	0.4	0.6	23	18	15
 ATN3580-04	4	±0.25	0.2	0.4	0.6	23	18	15
 ATN3580-05	5	±0.25	0.3	0.5	0.8	23	18	15
 ATN3580-06	6	±0.25	0.3	0.5	0.8	23	18	15
 ATN3580-07	7	±0.25	0.3	0.5	0.8	23	18	15
 ATN3580-08	8	±0.35	0.3	0.5	0.8	23	18	15
 ATN3580-09	9	±0.35	0.3	0.5	0.8	23	18	15
 ATN3580-10	10	±0.35	0.4	0.6	1.0	23	18	15
 ATN3580-12	12	±0.50	0.4	0.6	1.0	23	18	15
 ATN3580-15	15	±0.50	0.4	0.6	1.0	23	18	15
 ATN3580-20	20	±1.10	0.4	0.6	1.0	23	18	15
 ATN3580-30	30	±1.60	0.6	1.0	2.0	23	18	15

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







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## ATTENUATORS


### Fixed Attenuator Pads

The ATN3590 family of fixed resistive attenuators are integrated circuits comprising thin film resistors and through-die vias that provide excellent attenuation flatness from low frequency to 40 GHz or higher. These attenuators are available from 0 to 30 dB.

#### ATN3590 Fixed Attenuator Pads

Part Number	Nominal Attenuation (dB)	Attenuation Tolerance @ DC (dB)	Attenuation Flatness				Return Loss			
			DC–12 GHz (dB)	12–26 GHz (dB)	26–33 GHz (dB)	33–40 GHz (dB)	DC–12 GHz (dB)	12–26 GHz (dB)	26–33 GHz (dB)	33–40 GHz (dB)
 ATN3590-00	0	0.25	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-01	1	±0.20	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-02	2	±0.20	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-03	3	±0.20	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-04	4	±0.20	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-05	5	±0.20	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-06	6	±0.40	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-07	7	±0.40	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-08	8	±0.40	±0.15	±0.15	±0.20	±0.20	28	24	20	16
 ATN3590-09	9	±0.40	±0.20	±0.20	±0.25	±0.30	28	24	20	16
 ATN3590-10	10	±0.40	±0.20	±0.20	±0.25	±0.50	28	24	20	16
 ATN3590-12	12	±0.40	±0.20	±0.20	±0.30	±0.50	28	24	20	16
 ATN3590-15	15	±0.40	±0.20	±0.20	±0.50	±0.75	28	24	20	16
 ATN3590-20	20	±1.0	±0.20	±0.20	±0.75	±1.0	28	24	20	16
 ATN3590-30	30	±1.0	±0.20	±0.25	±0.75	±2.5	28	24	20	16

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## ATTENUATORS

### Voltage Variable Attenuators

#### 0.7–2.3 GHz Plastic Packaged Voltage Variable Attenuators—PIN Diode-Based

Part Number	Frequency (GHz)	Description	Insertion Loss at Min. Control (dB) Max.	Attenuation Range at Max. Control (dB) Typ.	Input IP3 (dBm) Min.	Control Input Range	Package (mm)
AV101-12LF	0.7–1.0	HIP3™ Variable Attenuator	1.5	20	47	0–3.0 mA	SOIC-8
AV102-12LF	1.7–2.0	HIP3™ Variable Attenuator	1.5	20	47	0–3.0 mA	SOIC-8
AV111-12LF	0.8–1.0	HIP3™ Variable Attenuator	1.5	25	37	0–1.4 mA	SOIC-8
AV113-12LF	2.0–2.3	HIP3™ Variable Attenuator	1.6	22	37	0–1.5 mA	SOIC-8
SKY12143-315	0.869–0.894 0.925–0.960	HIP3™ Variable Attenuator	1.5	23	43	0–12 V	LGA Surface Mount
SKY12144-315	1.805–1.870 1.930–1.990	HIP3™ Variable Attenuator	1.5	23	43	0–12 V	LGA Surface Mount
SKY12145-315	2.110–2.170	HIP3™ Variable Attenuator	1.5	23	43	0–12 V	LGA Surface Mount

#### 3.2–3.8 GHz Plastic Packaged Voltage Variable Attenuators—FET-Based

Part Number	Frequency (GHz)	Description	Typ. Insertion Loss Range (dB)	Attenuation Range (dB)	IP3 > 0.5 GHz (dBm) Typ.	Package (mm)
SKY12146-321LF	3.2–3.8	20 dB Single CTL	1.5–1.6	32–20	20	QFN-12 3 x 3 Surface Mount

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## COUPLERS

Skyworks wideband directional couplers come in low profile SOT-6 surface mount packages and address diverse markets such as WLAN, wireless infrastructure, test & measurement, distortion cancellation, RFID readers and other RF/microwave applications. These products offer excellent insertion loss, very good directivity, high isolation and low input/out VSWR.

Skyworks also offers a broad selection of monolithic hybrid couplers in surface mount packages for diverse markets such as WLAN, wireless infrastructure, automotive, test & measurement, energy management and other RF/microwave applications. These couplers are utilized for generation of quadrature signals as found in balanced signal chains, I/Q modulators, I/Q demodulators, analog phase shifters, analog variable attenuators and more. Their low insertion loss, excellent phase and amplitude balance produce outstanding system performance.


These product solutions leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Directional Couplers

Part Number	Frequency (GHz)	Insertion Loss (dB) Typ.	Isolation (dB) Typ.	Input VSWR Typ.	Output VSWR Typ.	Coupling (dB) Typ.	Coupled Port VSWR Typ.	Package
DC08-73LF	0.81–0.96	0.45	22	1.05:1	1.05:1	15.0	1.2:1	SOT-6
DC09-73LF	0.81–0.96	0.20	30	1.1:1	1.1:1	19.8	1.1:1	SOT-6
DC15-73LF	1.42–1.66	0.20	34	1.1:1	1.1:1	18.4	1.1:1	SOT-6
DC16-73LF	1.42–1.99	0.30	24	1.1:1	1.1:1	15.0	1.1:1	SOT-6
DC18-73LF	1.71–1.99	0.20	38	1.1:1	1.1:1	18.8	1.2:1	SOT-6
DC25-73LF	2.30–2.60	0.20	33	1.1:1	1.1:1	17.2	1.3:1	SOT-6

### 90-Degree Hybrid Couplers

Part Number	Frequency (GHz)	Insertion Loss (dB) Typ.	Isolation (dB) Typ.	Input VSWR Typ.	Output VSWR Typ.	Amplitude Balance (Degrees) Typ.	Phase Balance (dB) Typ.	Package
HY17-12LF	1.71–1.88	0.50	20	1.2:1	1.2:1	±0.5	±1	SOIC-8
HY19-12LF	1.85–1.99	0.50	20	1.3:1	1.3:1	±0.5	±1	SOIC-8
HY22-73LF	2.10–2.30	0.55	23	1.2:1	1.2:1	±0.4	±2	SOT-6
HY86-12LF	0.82–0.90	0.40	30	1.15:1	1.15:1	±0.5	±1	SOIC-8
HY92-12LF	0.88–0.96	0.40	25	1.1:1	1.1:1	±0.5	±1	SOIC-8

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## DETECTORS

Skyworks directional detectors incorporate innovative directional technology along with our advanced Schottky diode technology to produce a wide bandwidth, wide power range detector circuit with excellent directivity and low insertion loss that is easily temperature compensated with a single differential amplifier. This product is well-suited for use in radio infrastructure transmitter automatic level control systems, power amplifier monitors, and many other applications.

### Directional Detectors

Part Number	Frequency (GHz)	Insertion Loss (dB) Typ.	Directivity (dB)	Input VSWR Typ.	Output VSWR Typ.	Directed Output Voltage (dBm)	Package
DD02-999LF	0.65–3.0	0.2	2	1.1:1	1.1:1	80 mV @ 900 MHz 160 mV @ 1800 MHz	SC-88

## DIODES

Building on a proven legacy (including products developed at Alpha Industries prior to its merger with Conexant), our diode product offering includes PIN, Schottky, varactor and limiter diodes for a wide variety of microwave applications including WLAN, infrastructure, handset, SatCom (LNB/DBS-CATV), automotive, military, test & measurement, metering, medical, and RFID. Our discrete silicon and GaAs semiconductors are available as die, plastic packaged, surface mount (SMT) and ceramic hermetic packaged devices. Frequency ranges include low frequency, HF, VHF, UHF, L band, S band, C band, X band, KU band, K band, and Ka band. Skyworks diode products are manufactured using the most advanced processes and leadership technology.

### PIN, SCHOTTKY, VARACTOR DIODES


#### Select Diodes Available from Stock for Prototype or High Volume Production

Skyworks Solutions offers a select group diodes from our diverse RF 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

Feature	Characteristics	Package	Part Number
High Isolation Switching PIN Diode	Very Low Capacitance (0.14 pF), Isolation 40 dB	0402	SMP1345-040LF
Fast Switching/High Isolation PIN Diode	Low Capacitance, Low Series Resistance	SC-79	SMP1340-079LF
High Isolation (LNB/Multiswitch) PIN Diode	Low Capacitance, Series Pair	SOT-23	SMP1321-005LF
High Power PIN Diode	Power Handling to 50 W CW	QFN	SMP1302-085LF
Low Distortion/High IP3 Attenuator PIN Diode	Low Distortion, (4 Diode) PI Attenuator PIN Diode	SOT-5 Lead	SMP1307-027LF

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN, SCHOTTKY, VARACTOR DIODES


### Select Diodes Available from Stock for Prototype or High Volume Production

#### Schottky Diodes for Detector and Mixer Applications

Feature	Characteristics	Package	Part Number
Zero Biased Detector Schottky Diode	Lowest Barrier Height for Best Sensitivity	SC-79	SMS7630-079LF
Detector Schottky Diode	Low Barrier Height and Low Capacitance	SC-79	SMS7621-079LF
Series Pair Detector Schottky Diodes	Low Barrier Height and Low Capacitance, for Voltage Doubler Detectors	SOT-23	SMS7621-006LF
Low Barrier Detector Schottky Diode	Low Barrier Height with Breakdown Voltage >8 V	SC-79	SMS3922-079LF
Detector or Mixer Schottky Diode	Medium Barrier Height with Voltage Breakdown >20 V	SOD-323	SMS3923-011LF

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

Feature	Characteristics	Package	Part Number
Low Capacitance Tuning Varactor Diode	Low Capacitance (6.3 pF @ 1 V, 2 pF @ 6 V), Low Resistance (0.8 $\Omega$ ) Hyperabrupt	SOD-323	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) Hyperabrupt	SC-79	SMV1247-079LF
Medium Capacitance, Wide Tuning Range Varactor Diode	Medium Capacitance (31 pF @ 0.3 V, 2.6 pF @ 4.7 V) Hyperabrupt	SC-79	SMV1249-079LF
High Capacitance, Wide Tuning Range Varactor Diode	High Capacitance (64 pF @ 0.3 V, 5.2 pF @ 4.7 V) Hyperabrupt	SC-79	SMV1255-079LF
Low Resistance, High Q Abrupt Tuning Varactor Diode	Low Resistance (0.35 $\Omega$ ), High Q (2400) & Low Capacitance (6.4 pF @ 1 V, 1.75 pF @ 30 V)	SC-79	SMV1413-079LF




 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## LIMITER DIODES










### Limiter Diodes—Core Components for Receiver Protection Applications

#### Plastic Surface Mount (SMT) Limiter Diodes—Low Frequency to 6 GHz





































Part Number	$V_B$ $I_R = 10 \mu A$ (V)	Nominal I-Region Thickness ( $\mu m$ )	$C_T$ 0 V, F = 1 MHz (pF)	$C_T$ 0 V F = 1 GHz (pF)	$R_S$ $I_F = 10$ mA F = 100 MHz ( $\Omega$ )	Carrier Lifetime $T_L$ $I_F = 10$ mA (ns)	Package
SMP1330 Series	20–50	3	0.7 Typ., 1.0 Max.	0.7 Typ.	1.25 Typ., 1.5 Max.	4.0 Typ.	SOT-23


		
<b>Series Pair SOT-23</b>	<b>Low Inductance SOT-23</b>	<b>Single 0402 Green™</b>
SMP1330-005LF Marking: RQ2	SMP1330-007LF Marking: RQB	SMP1330-040LF Marking: F


#### Limiter Diode Chips—Low Frequency to 20 GHz

Part Number	$V_B$ @ 10 $\mu A$ (V)	Nominal I-Region Thickness ( $\mu m$ )	Typ. $C_J$ @ 0 V (pF)	Max. $C_J$ @ 6 V (pF)	Max. $R_S$ @ 10 mA ( $\Omega$ )	Max. $T_L$ @ 10 mA (ns)	Thermal Impedance	
							Max. Average (C/W)	Typ. 1 $\mu s$ Pulse (C/W)
 CLA4601-000	15–30	1.0	0.12	0.10	2.5	5	120	15
 CLA4602-000	15–30	1.0	0.20	0.15	2.0	5	80	10
 CLA4603-000	20–45	1.5	0.20	0.15	2.0	5	100	10
 CLA4604-000	30–60	2.0	0.12	0.10	2.5	7	100	10
 CLA4605-000	30–60	2.0	0.20	0.15	2.0	7	70	7.0
 CLA4606-000	45–75	2.5	0.20	0.15	2.0	10	80	7.0
 CLA4607-000	120–180	7.0	0.20	0.15 @ 50 V	2.0	50	40	1.2
 CLA4608-000	120–180	7.0	0.80	0.5 @ 50 V	1.2	100	15	0.3
 CLA4609-000	250 (Min.)	28.0	0.26	0.14	1.5	1175	15	0.3

#### Hermetic Packaged Limiter Diodes

Hermetic Stripline 240	Hermetic Pill 203	Hermetic Pill 219	Hermetic Pill 210
 CLA4601-240	 CLA4601-203	 CLA4601-219	 CLA4601-210
 CLA4602-240	 CLA4602-203	 CLA4602-219	 CLA4602-210
 CLA4603-240	 CLA4603-203	 CLA4603-219	 CLA4603-210
 CLA4604-240	 CLA4604-203	 CLA4604-219	 CLA4604-210
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 CLA4608-240	 CLA4608-203	 CLA4608-219	 CLA4608-210
 CLA4609-240	 CLA4609-203	 CLA4609-219	 CLA4609-210


 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.


 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.



## LIMITER DIODES

### High Power Limiter Diode

Part Number	Min. $V_B$ @ 10 $\mu A$ (V)	Nominal I-Region Thickness ( $\mu m$ )	Max. $C_T$ @ 30 V (pF)	Max. $R_S$ @ 10 mA ( $\Omega$ )	Typ. $T_L$ @ 10 mA ( $\mu s$ )
 CLA4609-086LF	250	28	0.60	1.5	1.1


<b>Single QFN 2 x 2 Green™</b>
CLA4609-086LF Marking: BQ



## PIN DIODES


### PIN Diodes—Superior Building Blocks for Switch and Attenuator Applications


#### Switching Silicon PIN Diodes

#### PIN Diodes—High Power (>30 W) for Large Signal Switch and Attenuator Applications

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 20 V$ $F = 1 MHz$ (pF)	Typ. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Max. $V_F$ @ $I_F = 50 mA$ (V)	Max. $R_S$ $F = 100 MHz$ ( $\Omega$ )	Min. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1324-087LF	200	–	0.9	1.2	0.75 @ 50 mA	2,000	100
SMP1371-087LF	35	1.2	–	1.0	0.5 @ 10 mA	200	12

	
<b>Single QFN 2 x 2 Green™</b>	<b>Low Inductance SOT-23 Green™</b>
SMP1324-087LF Marking: PW	SMP1371-087LF Marking: RY

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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN DIODES

### Plastic Surface Mount (SMT) PIN Diodes—Low Frequency to 6 GHz

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Typ. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1320 Series	50	0.3	0.85	2	0.9	400	8

<b>Single SOT-23</b> <i>Green™</i>	<b>Common Anode SOT-23</b> <i>Green™</i>	<b>Common Cathode SOT-23</b> <i>Green™</i>	<b>Series Pair SOT-23</b> <i>Green™</i>	<b>Low Inductance SOT-23</b> <i>Green™</i>	<b>Single SOD-323</b> <i>Green™</i>	<b>Ultralow Inductance SOT-143</b>	<b>Single SC-79<sup>(1)</sup></b> <i>Green™</i>	<b>Single 0402</b> <i>Green™</i>
SMP1320-001LF Marking: RL1	SMP1320-003LF Marking: RL9	SMP1320-004LF Marking: RL3	SMP1320-005LF Marking: RL2	SMP1320-007LF Marking: RL8	SMP1320-011LF Marking: RL	SMP1320-017LF Marking: RLF	SMP1320-079LF Marking: Cathode	SMP1320-040LF Marking: N
		<b>SC-70</b>	<b>SC-70</b>	<b>SC-70</b>				
		SMP1320-074LF Marking: RL3	SMP1320-075LF Marking: RL2	SMP1320-077LF Marking: RL8				

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

### Low Capacitance Switching PIN Diodes

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Typ. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1321 Series	100	0.25	0.85	3	2	400	15

<b>Single SOT-23</b> <i>Green™</i>	<b>Common Anode SOT-23</b> <i>Green™</i>	<b>Common Cathode SOT-23</b> <i>Green™</i>	<b>Series Pair SOT-23</b> <i>Green™</i>	<b>Low Inductance SOT-23</b> <i>Green™</i>	<b>Single SOD-323</b> <i>Green™</i>	<b>Single SC-79<sup>(1)</sup></b> <i>Green™</i>	<b>Anti-Parallel LGA</b> <i>Green™</i>	<b>Single 0402</b> <i>Green™</i>
SMP1321-001LF Marking: RM1	SMP1321-003LF Marking: RM9	SMP1321-004LF Marking: RM3	SMP1321-005LF Marking: RM2	SMP1321-007LF Marking: RMB	SMP1321-011LF Marking: RM	SMP1321-079LF Marking: Cathode	SMP1321-508 Marking: H	SMP1321-040LF Marking: C
		<b>SC-70</b>	<b>SC-70</b>	<b>SC-70</b>				
		SMP1321-073LF Marking: RM9	SMP1321-074LF Marking: RM3	SMP1321-075LF Marking: RM2				

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.









Skyworks *Green™* products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

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## PIN DIODES

### Lowest Series Resistance Switching PIN Diodes









Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Max. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1322 Series	50	1	0.825	1.5	0.5	400	8

							
<b>Single SOT-23</b> <i>Green™</i>	<b>Common Anode SOT-23</b> <i>Green™</i>	<b>Common Cathode SOT-23</b> <i>Green™</i>	<b>Series Pair SOT-23</b> <i>Green™</i>	<b>Single SOD-323</b> <i>Green™</i>	<b>T/R Switch SOT-143</b>	<b>Ultralow Inductance SOT-143</b>	<b>Single SC-79<sup>(1)</sup></b> <i>Green™</i>
SMP1322-001LF Marking: RN1	SMP1322-003LF Marking: RN9	SMP1322-004LF Marking: RN3	SMP1322-005LF Marking: RN2	SMP1322-011LF Marking: RN	SMP1322-016LF Marking: RN6	SMP1322-017LF Marking: RNF	SMP1322-079LF Marking: Cathode
		<b>SC-70</b>					
		SMP1322-074LF Marking: RN3					


1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.


### Low Capacitance, Fast Switching PIN Diodes

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 5 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Typ. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1340 Series	50	0.3	0.88	1.7	1.2	100	7

							
<b>Common Anode SOT-23</b> <i>Green™</i>	<b>Common Cathode SOT-23</b> <i>Green™</i>	<b>Series Pair SOT-23</b> <i>Green™</i>	<b>Low Inductance SOT-23</b> <i>Green™</i>	<b>Single SOD-323</b> <i>Green™</i>	<b>Single SC-79<sup>(1)</sup></b> <i>Green™</i>	<b>LGA</b> <i>Green™</i>	<b>Single 0402</b> <i>Green™</i>
SMP1340-003LF Marking: RS9	SMP1340-004LF Marking: RS3	SMP1340-005LF Marking: RS2	SMP1340-007LF Marking: RSB	SMP1340-011LF Marking: RS	SMP1340-079LF Marking: Cathode	SMP1340-508 Marking: X	SMP1340-040LF Marking: D
	<b>SC-70</b>	<b>SC-70</b>					
	SMP1340-074LF Marking: RS3	SMP1340-075LF Marking: RS2					

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.







 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN DIODES

### Lowest Capacitance Switching PIN Diodes for High Isolation




Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 20 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Typ. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1345 Series	50	0.2	0.89	3.5	2	100	10

					
<b>Common Anode</b> SOT-23 <i>Green™</i>	<b>Common Cathode</b> SOT-23 <i>Green™</i>	<b>Series Pair</b> SOT-23 <i>Green™</i>	<b>Single</b> SC-79 <sup>(1)</sup> <i>Green™</i>	<b>Ring</b> LGA <i>Green™</i>	<b>Single</b> 0402 <i>Green™</i>
SMP1345-003LF Marking: RU9	SMP1345-004LF Marking: RU3	SMP1345-005LF Marking: RU2	SMP1345-079LF Marking: Cathode	SMP1345-518 Marking: 0	SMP1345-040LF Marking: U
		<b>SC-70</b> SMP1345-075LF Marking: RU2			

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

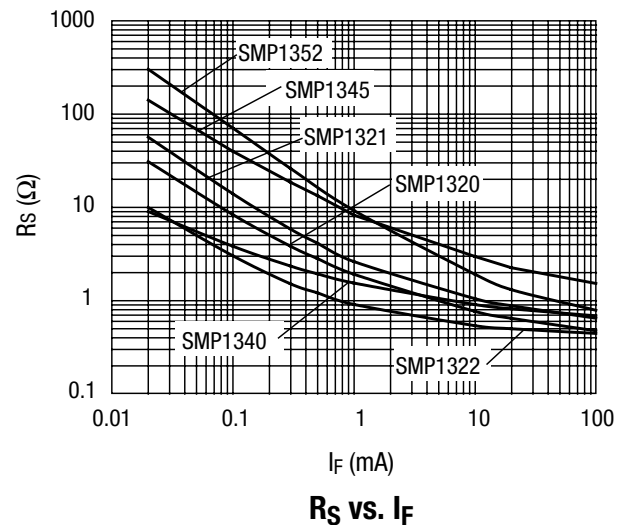
### Large Signal Switching PIN Diodes


Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 20 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Max. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1352 Series	200	0.35	0.8	15	2.8	1000	50


		
<b>Single</b> SOD-323 <i>Green™</i>	<b>Single</b> SC-79 <sup>(1)</sup> <i>Green™</i>	<b>Single</b> 0402 <i>Green™</i>
SMP1352-011LF Marking: RR	SMP1352-079LF Marking: Cathode	SMP1352-040LF Marking: S

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

### Typical Performance Characteristics










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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN DIODES






### PIN Diode Chips—Low Frequency to 20 GHz


Part Number	$V_B$ @ 10 $\mu$ A (V)	Nominal I-Region ( $\mu$ m)	Typ. $C_J$ @ 0 V (pF)	Max. $C_J$ @ 50 V (pF)	Max. $R_S$ @ 10 mA ( $\Omega$ )	Max. $T_I$ @ 10 mA (ns)	Max. Thermal Resistance (C/W)
 APD0505-000	50	5	0.10	0.05	2.0	20	100
 APD0510-000	50	5	0.20	0.10	1.5	40	80
 APD0520-000	50	5	0.25	0.20	1.0	50	80
 APD0805-000	100	8	0.10	0.05	2.0	100	80
 APD0810-000	100	8	0.15	0.10	1.5	160	60
 APD1510-000	200	15	0.20	0.10	2.0	300	60
 APD1520-000	200	15	0.25	0.20	1.2	900	30


### Ceramic Hermetic Packaged General-Purpose PIN Diodes for Switching and Attenuator Applications

Hermetic Stripline 240	Hermetic Pill 203	Hermetic Pill 210	Hermetic Pill 219
 APD0505-240	 APD0505-203	 APD0505-210	 APD0505-219
 APD0510-240	 APD0510-203	 APD0510-210	 APD0510-219
 APD0520-240	 APD0520-203	 APD0520-210	 APD0520-219
 APD0805-240	 APD0805-203	 APD0805-210	 APD0805-219
 APD0810-240	 APD0810-203	 APD0810-210	 APD0810-219
 APD1510-240	 APD1510-203	 APD1510-210	 APD1510-219
 APD1520-240	 APD1520-203	 APD1520-210	 APD1520-219

### PIN Diode Wafer on Film Frame—Low Frequency to 20 GHz



Part Number	$V_B$ @ 10 $\mu$ A (V)	Typ. $C_J$ @ 0 V (pF)	Max. $C_J$ @ 30 V (pF)	Typ. $V_F$ @ 10 mA (mV)	Max. $R_S$ @ 1 mA ( $\Omega$ )	Max. $R_S$ @ 10 mA ( $\Omega$ )	Max. $T_I$ @ 10 mA (ns)	Nominal Chip Size (mils)	Nominal Contact Diameter (mils)
 SMP1320-099	50	0.23	0.175	850	2 Typ.	0.9	400	13.5	3.0
 SMP1321-099	100	0.18	0.15	860	2	5 Typ.	400	13.5	3.0
 SMP1322-099	50	1.10	0.85	825	1.5	0.45 Typ.	400	13.5	7.5
 SMP1340-099	50	0.20	0.15 @ 10 V	880	1.7 Typ.	1.2	100	10.1	3.0
 SMP1353-099	100	0.35	0.15 @ 10 V	825	15	2.8	1000	10.1	8.0

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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN DIODES






### Beam-Lead PIN Diodes—Low Frequency to 40 GHz






Part Number	$V_B$ @ 10 $\mu$ A (V)	Max. $C_J$ @ 10 V (pF)	Max. $C_J$ @ 50 V (pF)	Max. $R_S$ @ 10 mA ( $\Omega$ )	Typ. $T_L$ @ 10 mA (ns)
 DSM8100-000	60	0.025	–	3.5	25
 DSG9500-000	100	–	0.025	4.0 @ 50 mA	250

### Attenuator PIN Diodes


#### Plastic Surface Mount (SMT) PIN Diodes—Low Frequency to 6 GHz


Part Number	Min. $V_B$ $I_R = 10 \mu$ A (V)	Max. $C_T$ $V_R = 30$ V $F = 1$ MHz (pF)	Typ. $V_F$ @ $I_F = 10$ mA (V)	Max. $R_S$ $I_F = 1$ mA $F = 100$ MHz ( $\Omega$ )	Max. $R_S$ $I_F = 10$ mA $F = 100$ MHz ( $\Omega$ )	Max. $R_S$ $I_F = 100$ mA $F = 100$ MHz ( $\Omega$ )	Typ. $T_L$ $I_F = 10$ mA (ns)	Nominal I-Region Thickness ( $\mu$ m)
SMP1302 Series	200	0.3	0.8	20	3	1.5	700	50

				
<b>Single SOT-23 Green™</b>	<b>Common Anode SOT-23 Green™</b>	<b>Common Cathode SOT-23 Green™</b>	<b>Series Pair SOT-23 Green™</b>	<b>Reverse Series Pair SOT-23 Green™</b>
SMP1302-001LF Marking: RF1	SMP1302-003LF Marking: RF9	SMP1302-004LF Marking: RF3	SMP1302-005LF Marking: RF2	SMP1302-006LF Marking: RF8
		<b>SC-70</b>	<b>SC-70</b>	
		SMP1302-074LF Marking: RF3	SMP1302-075LF Marking: RF2	

				
<b>Single SOD-323 Green™</b>	<b>Ultralow Inductance SOT-143</b>	<b>PI SOT-5</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>	<b>Single QFN 2 x 2 Green™</b>
SMP1302-011LF Marking: RF	SMP1302-017LF Marking: RFF	SMP1302-027LF Marking: RFM	SMP1302-079LF Marking: Cathode	SMP1302-085LF Marking: RF1

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## PIN DIODES

### Low-Distortion Attenuator PIN Diodes

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Max. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 100 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1304 Series	200	0.3	0.8	50	7	2	1000	100

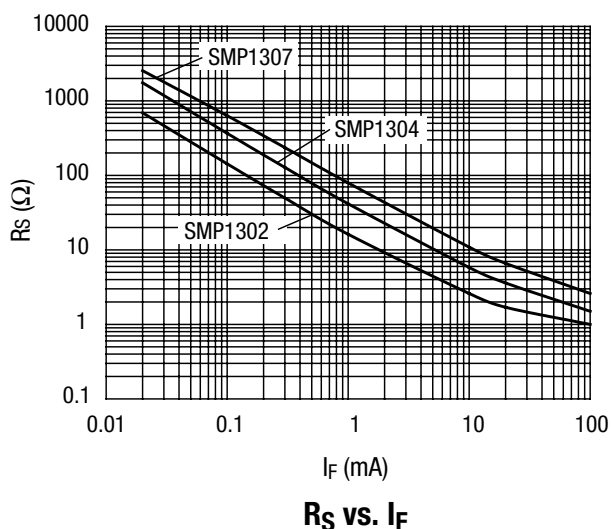
<b>Single SOT-23 Green™</b>	<b>Common Cathode SOT-23 Green™</b>	<b>Series Pair SOT-23 Green™</b>	<b>Reverse Series Pair SOT-23 Green™</b>	<b>Low Inductance SOT-23 Green™</b>	<b>Single SOD-323 Green™</b>	<b>PI SOT-143</b>	<b>PI SOT-5</b>
SMP1304-001LF Marking: RG1	SMP1304-004LF Marking: RG3	SMP1304-005LF Marking: RG2	SMP1304-006LF Marking: RG8	SMP1304-007LF Marking: RG8	SMP1304-011LF Marking: RGJ	SMP1304-019LF Marking: RGJ	SMP1304-027LF Marking: RGM

### Lowest Distortion, High IP3 Attenuator PIN Diodes

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Max. $C_T$ $V_R = 30 V$ $F = 1 MHz$ (pF)	Typ. $V_F$ @ $I_F = 10 mA$ (V)	Max. $R_S$ $I_F = 1 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 10 mA$ $F = 100 MHz$ ( $\Omega$ )	Max. $R_S$ $I_F = 100 mA$ $F = 100 MHz$ ( $\Omega$ )	Typ. $T_L$ $I_F = 10 mA$ (ns)	Nominal I-Region Thickness ( $\mu m$ )
SMP1307 Series	200	0.3	0.85	100	15	3	1500	175

<b>Single SOT-23 Green™</b>	<b>Common Anode SOT-23 Green™</b>	<b>Common Cathode SOT-23</b>	<b>Series Pair SOT-23 Green™</b>	<b>Reverse Series Pair SOT-23 Green™</b>	<b>Single SOD-323 Green™</b>	<b>PI SOT-5</b>
SMP1307-001LF Marking: RJ1	SMP1307-003LF Marking: RJ9	SMP1307-004LF Marking: RJ3	SMP1307-005LF Marking: RJ2	SMP1307-006LF Marking: RJ8	SMP1307-011LF Marking: RJ	SMP1307-027LF Marking: RJM

### Typical Performance Characteristics







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## PIN DIODES



### Ceramic Hermetic Packaged General-Purpose PIN Diodes for Switching and Attenuator Applications

Hermetic Stripline 240	Hermetic Pill 203	Hermetic Pill 210	Hermetic Pill 219
 APD2220-240	 APD2220-203	 APD2220-210	 APD2220-219

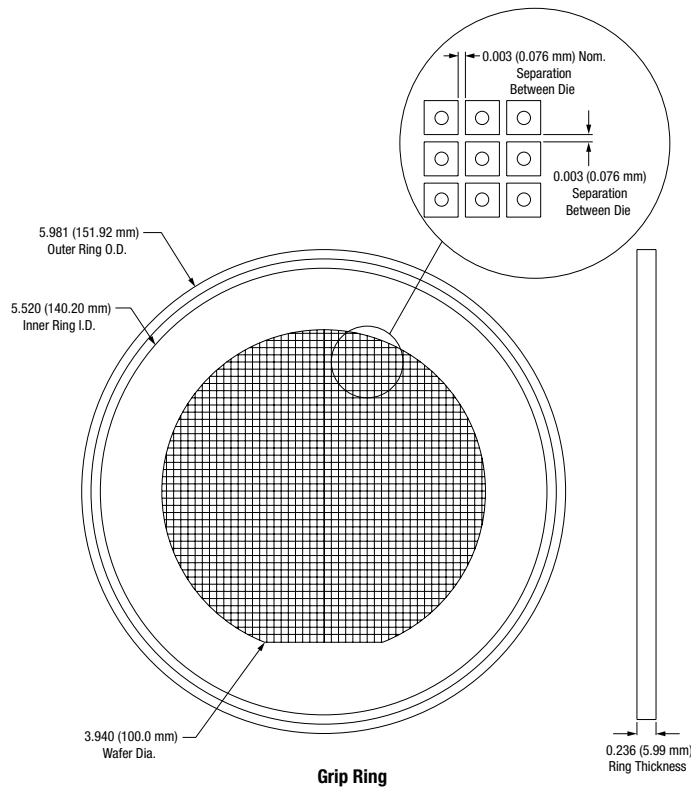
### General-Purpose PIN Diode Chip for Attenuator Applications


Part Number	$V_B$ @ 10 $\mu$ A (V)	Nominal I-Region ( $\mu$ m)	Typ. $C_J$ @ 0 V (pF)	Max. $C_J$ @ 50 V (pF)	Max. $R_S$ @ 10 mA ( $\Omega$ )	Max. $T_L$ @ 10 mA (ns)	Max. Thermal Resistance (C/W)
 APD2220-000	100	50	0.2	0.2	4	700	80


### PIN Diode Chips Supplied On Film Frame for Attenuator Applications—Low Frequency to 10 GHz

Part Number	$V_B$ @ 10 $\mu$ A (V)	Typ. $C_J$ @ 0 V (pF)	Max. $C_J$ @ 30 V (pF)	Typ. $V_F$ @ 10 mA (mV)	Max. $R_S$ @ 1 mA ( $\Omega$ )	Max. $R_S$ @ 10 mA ( $\Omega$ )	Max. $T_L$ @ 10 mA (ns)	Nominal Chip Size (mils)	Nominal Contact Diameter (mils)
 SMP1302-099	200	0.27	0.15	800	20	3	700	13.5	8.5
 SMP1304-099	200	0.18	0.15	800	50	7	1000	13.5	8.5

The above PIN diode chips are processed on 100 mm silicon wafers, 100% DC tested, sawn and shipped on 6" film frame hoops. Electrical rejects are identified with black ink.



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## SCHOTTKY DIODES

### Schottky Diodes—Designed for High Performance, High Volume and Cost Sensitive Mixer and Detector Applications

#### Plastic Surface Mount (SMT) Schottky Diodes—Low Frequency to 24 GHz

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Typ. $I_R$ $V_R = 1 V$ (nA)	Max. $V_F$ $I_F = 1 mA$ (mV)	Max. $C_T$ $V_R = 0 V$ (pF)	Max. $R_T$ $I_F = 10 mA$ ( $\Omega$ )
SMS1546-005LF	2	300	270	0.63	8
SMS7621 Series	2	80	320	0.25	18

Delta  $V_F$  for pairs and quads is 10 mV maximum at 1 mA.  
Breakdown voltage and reverse leakage cannot be measured directly on ring configurations.

Single SC-79 <sup>(1)</sup> Green™	Single SOT-23 Green™	Common Cathode SOT-23 Green™	Series Pair SOT-23 Green™	Reverse Series Pair SOT-23 Green™	Unconnected Pair SOT-143	Dual Series Pair SC-88	Unconnected Pair LGA Green™	Single 0402 Green™
			SMS1546-005LF Marking: SG2					
SMS7621-079LF Marking: Cathode	SMS7621-001LF Marking: XH1		SMS7621-005LF Marking: XH2	SMS7621-006LF Marking: XH8	SMS7621-015LF Marking: XH7	SMS7621-081LF Marking: XHQ	SMS7621-517 Marking: H	SMS7621-040LF Marking: E
		SC-70	SC-70					
		SMS7621-074LF Marking: XH3	SMS7621-075LF Marking: XH2					

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

#### Plastic Surface Mount (SMT) Schottky Diodes—Low Frequency to 24 GHz

Part Number	Min. $V_B$ $I_R = 100 \mu A$ (V)	Max. $V_F$ $I_F = 1 mA$ (mV)	Max. $C_T$ $V_R = 0 V$ (pF)	Typ. $R_T$ $I_F = 10 mA$ ( $\Omega$ )
SMS7630 Series	1	240	0.35	22

$V_B$  is measured at 100  $\mu A$  (avalanche breakdown is typically 6 V).  
Delta  $V_F$  for pairs and quads is 10 mV maximum at 1 mA.  
Breakdown voltage and reverse leakage cannot be measured directly on ring configurations.

Single SC-79 <sup>(1)</sup> Green™	Single SOD-323 Green™	Single SOT-23 Green™	Series Pair SOT-23 Green™	Reverse Series Pair SOT-23 Green™	Reverse Unconnected Pair SOT-143	Unconnected Pair LGA Green™	Single 0402 Green™
SMS7630-079LF Marking: Anode	SMS7630-011LF Marking: XD	SMS7630-001LF Marking: XD1	SMS7630-005LF Marking: XD2	SMS7630-006LF Marking: XD8	SMS7630-020LF Marking: XD0	SMS7630-517 Marking: D	SMS7630-040LF Marking: P

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

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







Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## SCHOTTKY DIODES


### General-Purpose Plastic Packaged Schottky Diodes—Low Frequency to 10 GHz


Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Typ. $I_R$ $V_R = 1 V$ (nA)	Max. $V_F$ $I_F = 1 mA$ (mV)	Max. $V_F$ @ Spec. $I_F$ (mV)	Max. $C_T$ $V_R = 0 V$ (pF)	Typ. $R_T$ $I_F = 10 mA$ ( $\Omega$ )
SMS3922 Series	8	100 Max.	340	450 @ 10 mA	1.03	7
SMS3923 Series	20	500 @ 15 V Max.	370	1000 @ 35 mA	1.23	11
SMS3924 Series	70	200 @ 50 V Max.	550	1000 @ 15 mA	1.83	7
SMS3925-079LF	40	–	670	–	0.60	7

Delta  $V_F$  for pairs and quads is 10 mV maximum at 1 mA.  
Breakdown voltage and reverse leakage cannot be measured directly on ring configurations.

							
Single SC-79 <sup>(1)</sup> Green™	Single SOD-323 Green™	Single SOT-23 Green™	Common Cathode SOT-23 Green™	Series Pair SOT-23 Green™	Unconnected Pair SOT-143	Dual Series Pair SC-88	Unconnected Pair LGA Green™
SMS3922-079LF Marking: Cathode	SMS3922-011LF Marking: XA	SMS3922-001LF Marking: XA1	SMS3922-004LF Marking: XA3	SMS3922-005LF Marking: XA2	SMS3922-015LF Marking: XA7		
SMS3923-079LF Marking: Cathode	SMS3923-011LF Marking: XB	SMS3923-001LF Marking: XB1		SMS3923-005LF Marking: XB2	SMS3923-015LF Marking: XB7	SMS3923-081LF Marking: XBQ	SMS3923-517 Marking: B
SMS3924-079LF Marking: Cathode				SMS3924-005LF Marking: XC2	SMS3924-015LF Marking: XC7		
				<b>SC-70</b>			
				SMS3924-075LF Marking: XC2			
SMS3925-079LF Marking: Cathode							

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

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For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.






 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## SCHOTTKY DIODES

### Silicon Schottky Mixer Quads—Low Frequency to 12 GHz

Part Number	Min. $V_B$ $I_R = 10 \mu A$ (V)	Typ. $I_R$ $V_R = 1 V$ (nA)	Max. $V_F$ $I_F = 1 mA$ (mV)	Max. $C_T$ $V_R = 0 V$ (pF)	Max. $R_T$ $I_F = 10 mA$ ( $\Omega$ )
SMS3926 Series/SMS3929-021LF	2	300	270	0.5	8
SMS3927 Series/SMS3930-021LF	2	50	370	0.5	8
SMS3928-023LF/SMS3931-021LF	4	5	580	0.5	8
SMS3940-026LF*	8	10	1160	0.3	16

\* SMS3940-026 and DMJ3952-020 consist of two diodes in series in each leg.  
Delta  $V_F$  for pairs and quads is 10 mV maximum at 1 mA.  
Breakdown voltage and reverse leakage can not be measured directly on ring configurations.



				
Ring Quad SOT-143	Crossover Quad SOT-143	Bridge Quad SOT-143	Octoquad SOT-143	Crossover Octoquad SOT-143
SMS3926-022LF Marking: XE4	SMS3926-023LF Marking: XE5	SMS3929-021LF Marking: XQE		
	SMS3927-023LF Marking: XJ5	SMS3930-021LF Marking: XRE		
	SMS3928-023LF Marking: XK5	SMS3931-021LF Marking: XSE	SMS3940-026LF Marking: XTG	SMS3940-029LF Marking: XTN


## NEW! 0201 Surface Mount Device Package


### Surface Mount Silicon Schottky Mixer and Detector Diodes— Low Frequency to 100 GHz



0.60 x 0.30 x 0.27 mm

Part Number	Min. $V_B$ @ 10 $\mu A$ (V)	Max. $C_T$ @ 0 V (pF)	Typ. $C_T$ @ 0.15 V (pF)	$V_F$ @ 0.1 mA (mV)	$V_F$ @ 1.0 mA (mV)	Series Resistance ( $\Omega$ )	Video Resistance @ 0 V ( $\Omega$ )	Package
 SMS7621-060	2	0.18	–	–	260–320	12	–	0201
 SMS7630-061	1	–	0.3	60–120	135–240	–	3000–7000	0201










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









## SCHOTTKY DIODES

### Schottky Diode Chips—Microwave/Millimeterwave



#### Silicon Schottky Diode Chips—Low Frequency to 40 GHz

Part Number	Barrier Height	Junction Type	C <sub>J</sub> (pF)	R <sub>T</sub> (Ω)	V <sub>F</sub> @ 1 mA (mV)	V <sub>B</sub> (V)	R <sub>V</sub> @ 0 Bias (Ω)
 CDB7619-000	Low	P	0.1	40	275–375	2	735
 CDB7620-000	Low	P	0.15	30	250–350	2	537
 CDC7630-000	ZBD	P	0.25	30	135–240	1	5,500
 CDC7631-000	ZBD	P	0.15	80	150–300	2	7,200
 CDF7621-000	Low	N	0.1	20	270–350	2	680
 CDF7623-000	Low	N	0.3	10	240–300	2	245
 CME7660-000	Med.	N	0.15	10	350–450	3	–
 CDE7618-000	Med.	N	0.1	20	375–500	3	–
 CDP7624-000	Med.–High	N	0.15	15	450–575	3	–





#### Hermetic Packaged Detector Schottky Diodes—Low Frequency to 20 GHz


Hermetic Ceramic Pill 207	Hermetic Ceramic Pill 203
 CDB7620-207	 CDB7620-203
 CDB7619-207	 CDB7619-203
 CDF7623-207	 CDF7623-203
 CDF7621-207	 CDF7621-203
 CME7660-207	 CME7660-203
 CDE7618-207	 CDE7618-203
 CDP7624-207	 CDP7624-203
 CDC7630-207	 CDC7630-203
 CDC7631-207	 CDC7631-203


#### P-Type Zero Bias Detector Beam-Lead Schottky Diodes—Low Frequency to 40 GHz

Part Number	Min. E <sub>0</sub> (mV)	Z <sub>V</sub> (Ω)	Min. T <sub>SS</sub> (dBm)
 DDC2353-000	8	2000–5000	-52
 DDC2354-000	15	5000–15000	-56

#### Epoxy and Hermetic Packaged P-Type Zero Bias Detector Beam-Lead Schottky Diodes—Low Frequency to 20 GHz

Epoxy Stripline 250	Hermetic 220
 DDC2353-250	 DDC2353-220
 DDC2354-250	 DDC2354-220

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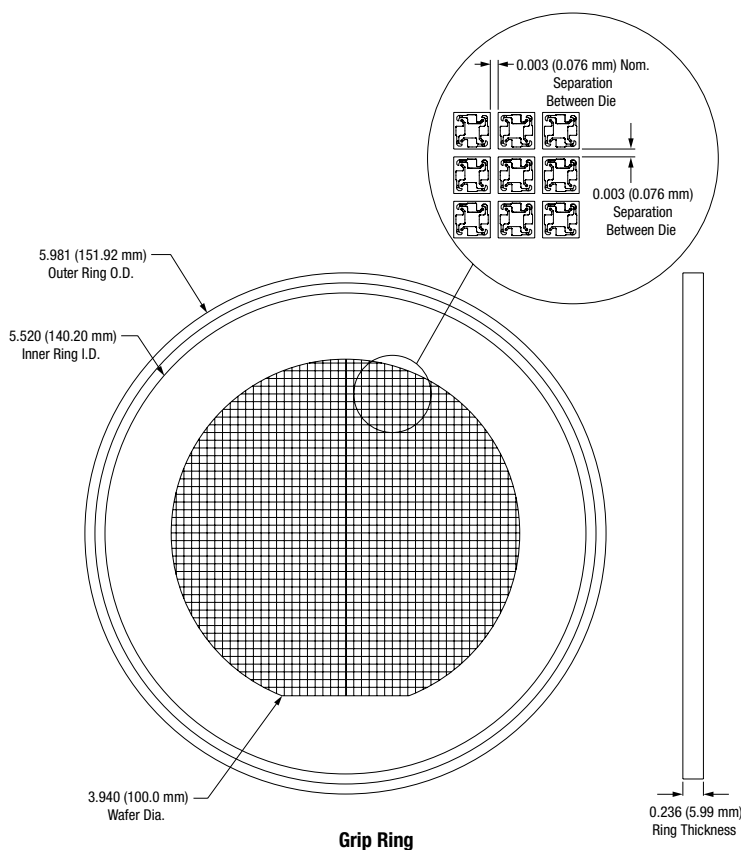
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## SCHOTTKY DIODES

### Schottky Diode Wafer on Film Frame—Microwave

#### Silicon Schottky Mixer Diode Chips—Low Frequency to 12 GHz

Part Number	Min. $V_B$ @ 10 $\mu A$ (V)	$C_J$ @ 0 V, F = 1 MHz (pF)	$V_F$ @ $I_F = 1$ mA (mV)	Max. $\Delta V_F$ @ 1 mA (mV)	Max. $R_T$ @ $I_F = 10$ mA ( $\Omega$ )
SMS3926-099	2	0.3–0.5	200–260	10	8
SMS3927-099	3	0.3–0.5	300–400	10	8
SMS3928-099	4	0.3–0.5	500–600	10	8



### Schottky Diodes—Microwave/Millimeterwave

#### GaAs Flip Chips—Low Frequency to 77 GHz

Part Number	$V_B$ @ 10 $\mu A$ (V)	$C_J$ @ 0 V, 1 MHz (pF)	Max. $R_S$ ( $\Omega$ )	$V_F$ @ 1 mA (mV)	Recommended Frequency (GHz)	Configuration
DMK2308-000	–	0.04–0.07	7	650–750	24 and 77	Anti-parallel
DMK2790-000	3	0.04–0.07	7	650–750	24 and 77	Single













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
## SCHOTTKY DIODES


### Schottky Diode Beam-Leads—Microwave/Millimeterwave


#### ▶ Beam-Lead Single, N-Type, Low, Medium, High Drive Schottky Diodes—Low Frequency to 40 GHz

Part Number	Frequency Band	C <sub>J</sub> 0 V @1 MHz (pF)	Max. R <sub>S</sub> @ 5 mA (Ω)	Min. V <sub>B</sub> @ 10 μA (V)	V <sub>F</sub> @ 1 mA (mV)	Drive Level
 DMF2820-000	S	0.30–0.50	5	2	200–260	Low
 DME2127-000	S	0.30–0.50	5	3	300–400	Med
 DMJ2823-000	S	0.30–0.50	5	4	500–600	High
 DMF2821-000	X	0.15–0.30	8	2	250–310	Low
 DME2957-000	X	0.15–0.30	8	3	325–425	Med
 DMJ2777-000	X	0.15–0.30	8	4	550–650	High
 DMF2344-000	Ku	0.05–0.15	13	2	260–330	Low
 DME2333-000	Ku	0.05–0.15	13	3	350–450	Med
 DMJ2824-000	Ku	0.05–0.15	13	4	500–680	High
 DMF2822-000	K	0.1 Max.	18	2	270–350	Low
 DME2458-000	K	0.1 Max.	18	3	375–550	Med
 DMJ2825-000	K	0.1 Max.	18	4	600–700	High


### Epoxy and Hermetic Packaged Beam-Lead Single, N-Type, Low, Medium, High Drive Schottky Diodes—Low Frequency to 20 GHz













Epoxy Stripline 250	Epoxy Stripline 230	Hermetic Stripline 220
 DMF2820-250		 DMF2820-220
 DME2127-250		 DME2127-220
 DMJ2823-250		 DMJ2823-220
 DMF2821-250		 DMF2821-220
 DME2957-250		 DME2957-220
 DMJ2777-250		 DMJ2777-220
 DMF2344-250	 DMF2344-230	 DMF2344-220
 DME2333-250	 DME2333-230	 DME2333-220
 DMJ2824-250	 DMJ2824-230	 DMJ2824-220
	 DMF2822-230	 DMF2822-220
	 DME2458-230	 DME2458-220
	 DMJ2825-230	 DMJ2825-220

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














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## SCHOTTKY DIODES


 **Beam-Lead Series Pair, N-Type, Low, Medium, High Drive Schottky Diodes—  
Low Frequency to 40 GHz**

Part Number	Frequency Band	$C_j$ 0 V, 1 MHz (pF)	Max. $R_S$ @ 5 mA ( $\Omega$ )	Min. $V_B$ @ 10 $\mu$ A (V)	$V_F$ @ 1 mA (mV)	Drive Level
 DMF2835-000	S	0.30–0.50	5	2	200–260	Low
 DME2050-000	S	0.30–0.50	5	3	300–400	Med
 DMJ2092-000	S	0.30–0.50	5	4	500–600	High
 DMF2826-000	X	0.15–0.30	8	2	250–310	Low
 DME2829-000	X	0.15–0.30	8	3	325–425	Med
 DMJ2093-000	X	0.15–0.30	8	4	550–650	High
 DMF2827-000	Ku	0.05–0.15	13	2	260–330	Low
 DME2830-000	Ku	0.05–0.15	13	3	350–450	Med
 DMJ2832-000	Ku	0.05–0.15	13	4	500–680	High
 DMF2828-000	K	0.1 Max.	18	2	270–350	Low
 DME2831-000	K	0.1 Max.	18	3	375–550	Med
 DMJ2833-000	K	0.1 Max.	18	4	600–700	High

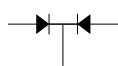
**Epoxy and Hermetic Packaged Beam-Lead Series Pair, N-Type, Low, Medium, High Drive Schottky Diodes—  
Low Frequency to 20 GHz**

Epoxy Stripline 252	Epoxy Stripline 232	Hermetic Stripline 222
 DMF2835-252		 DMF2835-222
 DME2050-252		 DME2050-222
 DMJ2092-252		 DMJ2092-222
 DMF2826-252		 DMF2826-222
 DME2829-252		 DME2829-222
 DMJ2093-252		 DMJ2093-222
 DMF2827-252	 DMF2827-232	 DMF2827-222
 DME2830-252	 DME2830-232	 DME2830-222
 DMJ2832-252	 DMJ2832-232	 DMJ2832-222
	 DMF2828-232	 DMF2828-222
	 DME2831-232	 DME2831-222
	 DMJ2833-232	 DMJ2833-222

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## SCHOTTKY DIODES



### Beam-Lead Common Cathode, N-Type, Low, Medium, High Drive Schottky Diodes— Low Frequency to 40 GHz

Part Number	Frequency Band	C <sub>J</sub> 0 V, 1 MHz (pF)	Max. R <sub>S</sub> @ 5 mA (Ω)	Min. V <sub>B</sub> @ 10 μA (V)	V <sub>F</sub> @ 1 mA (mV)	Drive Level
DMF2182-000	S	0.30–0.50	5	2	200–260	Low
DME2205-000	S	0.30–0.50	5	3	300–400	Med
DMJ2208-000	S	0.30–0.50	5	4	500–600	High
DMF2183-000	X	0.15–0.30	8	2	250–310	Low
DME2206-000	X	0.15–0.30	8	3	325–425	Med
DMJ2209-000	X	0.15–0.30	8	4	550–650	High
DMF2184-000	Ku	0.05–0.15	13	2	260–330	Low
DME2207-000	Ku	0.05–0.15	13	3	350–450	Med
DMJ2210-000	Ku	0.05–0.15	13	4	500–680	High
DMF2834-000	K	0.1 Max.	18	2	270–350	Low
DME2864-000	K	0.1 Max.	18	3	375–550	Med
DMJ2836-000	K	0.1 Max.	18	4	600–700	High

### Epoxy and Hermetic Packaged Beam-Lead Common Cathode, N-Type, Low, Medium, High Drive Schottky Diodes—Low Frequency to 20 GHz

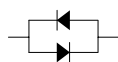
Epoxy Stripline 253	Hermetic Stripline 223
DMF2182-253	DMF2182-223
DME2205-253	DME2205-223
DMJ2208-253	DMJ2208-223
DMF2183-253	DMF2183-223
DME2206-253	DME2206-223
DMJ2209-253	DMJ2209-223
DMF2184-253	DMF2184-223
DME2207-253	DME2207-223
DMJ2210-253	DMJ2210-223
	DMF2834-223
	DME2864-223
	DMJ2836-223

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## SCHOTTKY DIODES



### Beam-Lead Anti-Parallel, N-Type, Low, Medium, High Drive Schottky Diodes— Low Frequency to 40 GHz

Part Number	Frequency Band	$C_j$ 0 V, 1 MHz (pF)	Max. $R_S$ @ 5 mA ( $\Omega$ )	Min. $V_B$ @ 10 $\mu$ A (V)	$V_F$ @ 1 mA (mV)	Drive Level
DMF2185-000	S	0.30–0.50	5	2	200–260	Low
DME2282-000	S	0.30–0.50	5	3	300–400	Med
DMJ2303-000	S	0.30–0.50	5	4	500–600	High
DMF2186-000	X	0.15–0.30	8	2	250–310	Low
DME2283-000	X	0.15–0.30	8	3	325–425	Med
DMJ2304-000	X	0.15–0.30	8	4	550–650	High
DMF2187-000	Ku	0.05–0.15	13	2	260–330	Low
DME2284-000	Ku	0.05–0.15	13	3	350–450	Med
DMJ2246-000	Ku	0.05–0.15	13	4	500–680	High
DMF2837-000	K	0.1 Max.	18	2	270–350	Low
DME2838-000	K	0.1 Max.	18	3	375–550	Med
DMJ2839-000	K	0.1 Max.	18	4	600–700	High

### Epoxy and Hermetic Packaged Beam-Lead Anti-Parallel, N-Type, Low, Medium, High Drive Schottky Diodes— Low Frequency to 20 GHz

Epoxy Stripline 251	Hermetic Stripline 221
DMF2185-251	DMF2185-221
DME2282-251	DME2282-221
DMJ2303-251	DMJ2303-221
DMF2186-251	DMF2186-221
DME2283-251	DME2283-221
DMJ2304-251	DMJ2304-221
DMF2187-251	DMF2187-221
DME2284-251	DME2284-221
DMJ2246-251	DMJ2246-221
	DMF2837-221
	DME2838-221
	DMJ2839-221

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## SCHOTTKY DIODES



### Beam-Lead Ring Quad, N-Type, Low, Medium, High Drive Schottky Diodes— Low Frequency to 40 GHz

Part Number	Frequency Band	$C_j$ 0 V, 1 MHz (pF)	Max. $R_S$ @ 5 mA ( $\Omega$ )	Min. $V_B$ @ 10 $\mu$ A (V)	$V_F$ @ 1 mA (mV)	Drive Level
DMF2865-000	S	0.30–0.50	5	2	200–260	Low
DME2857-000	S	0.30–0.50	5	3	300–400	Med
DMJ2502-000	S	0.30–0.50	5	4	500–600	High
DMF2011-000	X	0.15–0.30	8	2	250–310	Low
DME2858-000	X	0.15–0.30	8	3	325–425	Med
DMJ2990-000	X	0.15–0.30	8	4	550–650	High
DMF2012-000	Ku	0.05–0.15	13	2	260–330	Low
DME2859-000	Ku	0.05–0.15	13	3	350–450	Med
DMJ2667-000	Ku	0.05–0.15	13	4	500–680	High
DMF2454-000	K	0.1 Max.	18	2	270–350	Low
DME2459-000	K	0.1 Max.	18	3	375–550	Med
DMJ2455-000	K	0.1 Max.	18	4	600–700	High

### Epoxy and Hermetic Packaged Beam-Lead Ring Quad, N-Type, Low, Medium, High Drive Schottky Diodes— Low Frequency to 20 GHz

Epoxy Stripline 254	Epoxy Stripline 234	Hermetic Stripline 224
DMF2865-254		DMF2865-224
DME2857-254		DME2857-224
DMJ2502-254		DMJ2502-224
DMF2011-254		DMF2011-224
DME2858-254		DME2858-224
DMJ2990-254		DMJ2990-224
DMF2012-254	DMF2012-234	DMF2012-224
DME2859-254	DME2859-234	DME2859-224
DMJ2667-254	DMJ2667-234	DMJ2667-224
	DMF2454-234	DMF2454-224
	DME2459-234	DME2459-224
	DMJ2455-234	DMJ2455-224

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## SCHOTTKY DIODES


**Beam-Lead Bridge Quad, N-Type, Low, Medium, High Drive Schottky Diodes—  
Low Frequency to 40 GHz**

Part Number	Frequency Band	$C_j$ 0 V, 1 MHz (pF)	Max. $R_S$ @ 5 mA ( $\Omega$ )	Min. $V_B$ @ 10 $\mu$ A (V)	$V_F$ @ 1 mA (mV)	Drive Level
DMF2076-000	S	0.30–0.50	5	2	200–260	Low
DME2029-000	S	0.30–0.50	5	3	300–400	Med
DMJ2312-000	S	0.30–0.50	5	4	500–600	High
DMF2077-000	X	0.15–0.30	8	2	250–310	Low
DME2850-000	X	0.15–0.30	8	3	325–425	Med
DMJ2088-000	X	0.15–0.30	8	4	550–650	High
DMF2078-000	Ku	0.05–0.15	13	2	260–330	Low
DME2031-000	Ku	0.05–0.15	13	3	350–450	Med
DMJ2768-000	Ku	0.05–0.15	13	4	500–680	High
DMF2848-000	K	0.1 Max.	18	2	270–350	Low
DME2851-000	K	0.1 Max.	18	3	375–550	Med
DMJ2852-000	K	0.1 Max.	18	4	600–700	High

**Epoxy and Hermetic Packaged Beam-Lead Bridge Quad, N-Type, Low, Medium, High Drive Schottky Diodes—  
Low Frequency to 20 GHz**




Epoxy Stripline 255	Epoxy Stripline 235	Hermetic 225
DMF2076-255		DMF2076-225
DME2029-255		DME2029-225
DMJ2312-255		DMJ2312-225
DMF2077-255		DMF2077-225
DME2850-255		DME2850-225
DMJ2088-255		DMJ2088-225
DMF2078-255	DMF2078-235	DMF2078-225
DME2031-255	DME2031-235	DME2031-225
DMJ2768-255	DMJ2768-235	DMJ2768-225
	DMF2848-235	DMF2848-225
	DME2851-235	DME2851-225
	DMJ2852-235	DMJ2852-225

Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.










Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## SCHOTTKY DIODES

### Beam-Lead P-Type Detector Schottky Diodes—Low Frequency to 40 GHz







Part Number	Frequency Band	Min. $T_{SS}$ (dBm)	$Z_{IF}$ ( $\Omega$ )	Max. $C_J$ @ 0 V (pF)	$V_F$ @ 1 mA (mV)	$V_B$ @ 10 $\mu$ A (V)
 DDB2503-000	X	50	500–700	0.15	200–350	2
 DDB2504-000	Ku	48	500–700	0.10	200–350	2
 DDB2265-000	K	50	800–1200	0.10	300–450	3

### Epoxy and Hermetic Packaged Beam-Lead P-Type Detector Schottky Diodes—Low Frequency to 20 GHz




Epoxy Stripline 250	Epoxy Stripline 230	Hermetic Stripline 220
 DDB2503-250	 DDB2503-230	 DDB2503-220
 DDB2504-250	 DDB2504-230	 DDB2504-220
 DDB2265-250	 DDB2265-230	 DDB2265-220


### Schottky Diodes Beamless—Microwave/Millimeterwave


#### Beamless, N-Type, Low, Medium, High Drive Ring Quad Schottky Diodes—Low Frequency to 24 GHz

Part Number	Band	Barrier	$V_F$ $I_F = 1$ mA (mV)	$\Delta V_F$ $I_F = 1$ mA (mV)	$C_J$ $V_R = 0$ V, $F = 1$ MHz (pF)	$R_S$ $I_F = 5$ mA ( $\Omega$ )
 DMF3926-000	S	Low	200–260	10	0.30–0.50	5
 DME3927-000	S	Medium	300–400	10	0.30–0.50	5
 DMJ3928-000	S	High	500–600	10	0.30–0.50	5
 DMF3942-000	X	Low	250–310	10	0.15–0.30	8
 DME3943-000	X	Medium	325–425	10	0.15–0.30	8
 DMJ3944-000	X	High	550–650	10	0.15–0.30	8

#### Beamless, N-Type, Low, Medium, High Drive Bridge Quad Schottky Diodes—Low Frequency to 24 GHz




Part Number	Band	Barrier	$V_F$ $I_F = 1$ mA (mV)	$\Delta V_F$ $I_F = 1$ mA (mV)	$C_J$ $V_R = 0$ V, $F = 1$ MHz (pF)	$R_S$ $I_F = 5$ mA ( $\Omega$ )
 DMF3929-000	S	Low	200–260	10	0.3–0.5	5
 DME3930-000	S	Medium	300–400	10	0.3–0.5	5
 DMJ3931-000	S	High	500–600	10	0.3–0.5	5

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## SCHOTTKY DIODES




### Beamless, N-Type, Low, Medium, High Drive Series Pair Schottky Diodes—Low Frequency to 24 GHz

Part Number	Band	Barrier	$V_F$ $I_F = 1 \text{ mA}$ (mV)	$\Delta V_F$ $I_F = 1 \text{ mA}$ (mV)	$C_J$ $V_R = 0 \text{ V},$ $F = 1 \text{ MHz}$ (pF)	$R_S$ $I_F = 5 \text{ mA}$ ( $\Omega$ )
 DMF3932-000	S	Low	200–260	10	0.3–0.5	5
 DME3933-000	S	Medium	300–400	10	0.3–0.5	5
 DMJ3934-000	S	High	500–600	10	0.3–0.5	5




### Beamless, N-Type, Low, Medium, High Drive Back-to-Back Ring Series Pair Schottky Diodes—Low Frequency to 24 GHz


Part Number	Band	Barrier	$V_F$ $I_F = 1 \text{ mA}$ (mV)	$\Delta V_F$ $I_F = 1 \text{ mA}$ (mV)	$C_J$ $V_R = 0 \text{ V},$ $F = 1 \text{ MHz}$ (pF)	$R_S$ $I_F = 5 \text{ mA}$ ( $\Omega$ )
 DMF3935-000	S	Low	200–260	10	0.3–0.5	5
 DME3936-000	S	Medium	300–400	10	0.3–0.5	5
 DMJ3937-000	S	High	500–600	10	0.3–0.5	5


### Beamless, N-Type, Low, Medium, High Drive Octo Quad Ring Schottky Diodes—Low Frequency to 24 GHz

Part Number	Band	Barrier	$V_F$ $I_F = 1 \text{ mA}$ (mV)	$\Delta V_F$ $I_F = 1 \text{ mA}$ (mV)	$C_J$ $V_R = 0 \text{ V},$ $F = 1 \text{ MHz}$ (pF)	$R_S$ $I_F = 5 \text{ mA}$ ( $\Omega$ )
 DME3938-000	S-X	Low	400–520	15	0.15–0.30	16
 DMF3939-000	S-X	Medium	600–800	15	0.15–0.30	16
 DMJ3940-000	S-X	High	1000–1200	15	0.15–0.30	16

### Beamless, N-Type, Low, Medium, High Drive Back-to-Back Crossover Quad Schottky Diodes—Low Frequency to 24 GHz

Part Number	Band	Barrier	$V_F$ $I_F = 1 \text{ mA}$ (mV)	$\Delta V_F$ $I_F = 1 \text{ mA}$ (mV)	$C_J$ $V_R = 0 \text{ V},$ $F = 1 \text{ MHz}$ (pF)	$R_S$ $I_F = 5 \text{ mA}$ ( $\Omega$ )
 DMF3945-000	S	Low	200–260	15	0.3–0.5	5
 DME3946-000	S	Medium	300–400	15	0.3–0.5	5
 DMJ3947-000	S	High	525–625	15	0.3–0.5	5

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## SCHOTTKY DIODES

Epoxy Octo Ring Quad Schottky Diodes—Microwave



Epoxy Packaged Octo Quad Ring, N-Type, Low, Medium, High Drive Schottky Diodes—Low Frequency to 20 GHz

Part Number	Frequency Band	$C_j$ 0 V, 1 MHz (pF)	Max. $R_S$ @ 5 mA ( $\Omega$ )	Min. $V_B$ @ 10 $\mu$ A (V)	$V_F$ @ 1 mA (mV)	Drive Level
DMF3938-257	S-X	0.15–0.30	16	4	400–520	Low
DME3939-257	S-X	0.15–0.30	16	6	600–800	Medium
DMJ3940-257	S-X	0.15–0.30	16	8	1000–1200	High


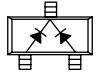
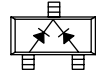

## VARACTOR DIODES

Varactor Diodes—Ideal for VCO, VCXO, Tuneable Filters and Phase Shifter Products


High Quality Factor (Abrupt) Varactor Diodes


Plastic Surface Mount (SMT) Abrupt Varactor Diodes—Low Frequency to 6 GHz

Part Number	Min. $V_R$ $I_R = 10 \mu$ A (V)	Typ. $C_T$ $V_R = 1$ V (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 4$ V (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 10$ V (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 30$ V (pF) <sup>1</sup>	Min. Total $C_T = 0$ V/ $C_T = 30$ V	Max. $R_S$ 500 MHz ( $\Omega$ )	Min. Q $V_R = 4$ V @ 50 MHz
SMV1405 Series	30	1.84	1.25	0.95	0.63	4.1	0.80	3200
SMV1408 Series	30	2.94	1.88	1.28	0.95	4.1	0.60	2900
SMV1413 Series	30	6.37	4.10	2.85	1.77	4.2	0.35	2400
SMV1430 Series	30	0.88	0.60	0.44	0.31	3.8	1.60	3500
SMV1493 Series	12	19.00	11.20	7.10	–	–	0.50	–
SMV1494 Series	12	38.40	23.10	14.7	–	–	0.45	–

			
<b>Single SOT-23 Green™</b>	<b>Common Cathode SOT-23 Green™</b>	<b>Common Cathode SC-70</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>
		SMV1405-074LF Marking: GE3	SMV1405-079LF Marking: Cathode
SMV1408-001LF Marking: DV1			
SMV1413-001LF Marking: ER1	SMV1413-004LF Marking: ER3	SMV1413-074LF Marking: ER3	SMV1413-079LF Marking: Cathode
			SMV1430-079LF Marking: Cathode
			SMV1493-079LF Marking: Cathode
			SMV1494-079LF Marking: Cathode

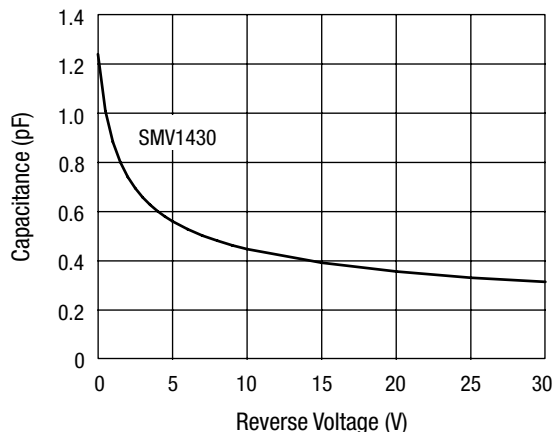
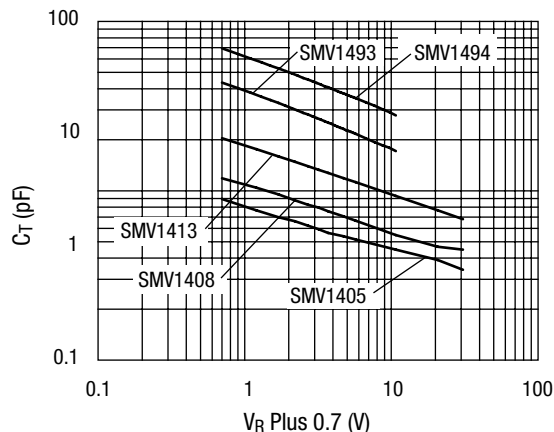
1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.






 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## VARACTOR DIODES





















### Typical Performance Characteristics





### Silicon Abrupt Varactor Diode Chips—Low Frequency to 12 GHz

Part Number	Die Sizes (Mils)	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 4 V$ (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 10 V$ (pF) <sup>1</sup>	Typ. $C_T$ $V_R = 30 V$ (pF) <sup>1</sup>	Min. Total $C_T = 0 V /$ $C_T = 30 V$	Max. $R_S$ 500 MHz ( $\Omega$ )	Min. Q $V_R = 4 V$ @ 50 MHz
 SMV1405-000	0.014±0.001	30	1.84	1.25	0.95	0.63	4.1	0.80	3200
 SMV1408-000	0.014±0.001	30	2.94	1.88	1.28	0.95	4.1	0.60	2900
 SMV1413-000	0.014±0.001	30	6.37	4.10	2.85	1.77	4.2	0.35	2400
 SMV1493-000	0.018±0.002	12	19.00	11.20	7.10	—	—	0.50	—
 SMV1494-000	0.018±0.002	12	38.40	23.10	14.70	—	—	0.45	—

### Hermetic Packaged Abrupt Junction Varactor Diodes—Low Frequency to 12 GHz

Hermetic Stripline 240	Hermetic Pill 203	Hermetic Pill 219	Hermetic Pill 210
 SMV1405-240	 SMV1405-203	 SMV1405-219	 SMV1405-210
 SMV1408-240	 SMV1408-203	 SMV1408-219	 SMV1408-210
 SMV1413-240	 SMV1413-203	 SMV1413-219	 SMV1413-210
 SMV1493-240	 SMV1493-203	 SMV1493-219	 SMV1493-210
 SMV1494-240	 SMV1494-203	 SMV1494-219	 SMV1494-210

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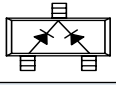


 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## VARACTOR DIODES

### Plastic Surface Mount (SMT) Hyperabrupt Varactor Diodes—Low Frequency to 6 GHz

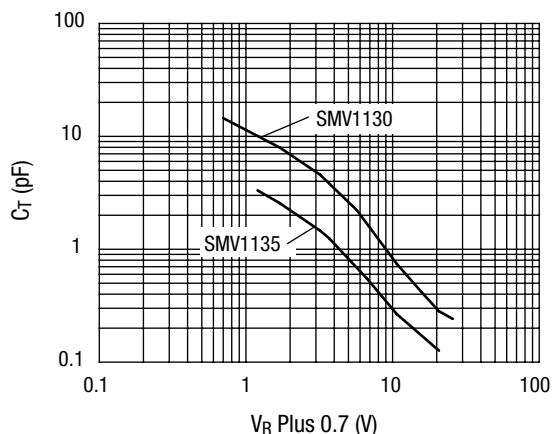
#### Large Bandwidth Silicon Hyperabrupt Varactor Diodes

Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 20 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1130 Series	21	18.50	2.00	1.47	1 to 3	0.8
SMV1135 Series	28	8.69	1.17	1.47	1 to 3	1.2



		
<b>Common Cathode SOT-23 Green™</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>	<b>Single SOT-23 Green™</b>
	SMV1130-079LF Marking: Cathode	SMV1130-001LF Marking: HW1
SMV1135-004LF Marking: EG3		

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

#### Typical Performance Characteristics

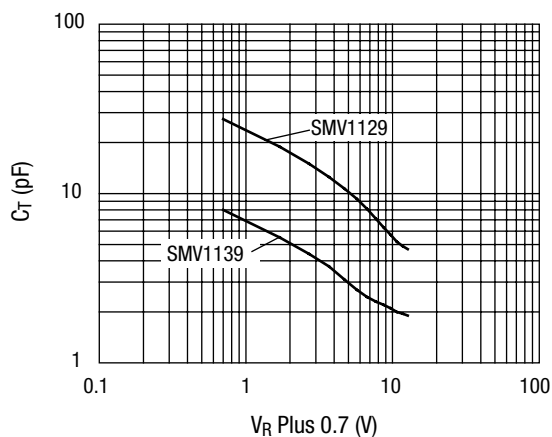



Part Number	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 12 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1129 Series	18.9	10.7	6.3	4.7	1.4	1 to 3	0.4
SMV1139 Series	5.5	3.1	2.2	1.9	1.4	1 to 3	0.6


	
<b>Single SOD-323 Green™</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>
	SMV1129-079LF Marking: Cathode
SMV1139-011LF Marking: HG	

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

#### Typical Performance Characteristics



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

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.



## VARACTOR DIODES

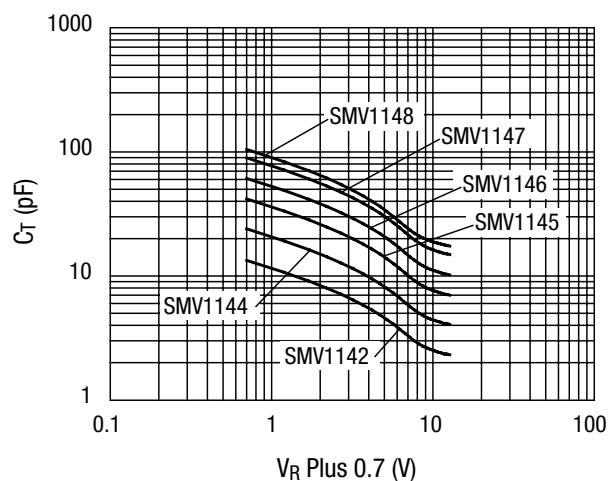
### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)


Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 12 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1142 Series	12	9.1	4.86	2.72	2.32	1.5	1 to 3	0.7
SMV1143 Series	12	12.9	6.87	3.82	3.25	1.5	1 to 3	0.65
SMV1144 Series	12	16.3	8.66	4.8	4.08	1.5	1 to 3	0.65
SMV1145 Series	12	28.35	15.02	8.29	7.02	1.5	1 to 3	0.6
SMV1147 Series	12	60.65	32.06	17.63	14.9	1.5	1 to 3	0.55
SMV1148 Series	12	70.48	36.29	20.22	17.43	1.5	1 to 3	0.5


	
<b>Single SOD-323 Green™</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>
SMV1142-011LF Marking: GU	
SMV1143-011LF Marking: GV	
SMV1144-011LF Marking: GW	
SMV1145-011LF Marking: GA	SMV1145-079LF Marking: Cathode
SMV1147-011LF Marking: GY	SMV1147-079LF Marking: Cathode
SMV1148-011LF Marking: GZ	

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

### Typical Performance Characteristics








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## VARACTOR DIODES

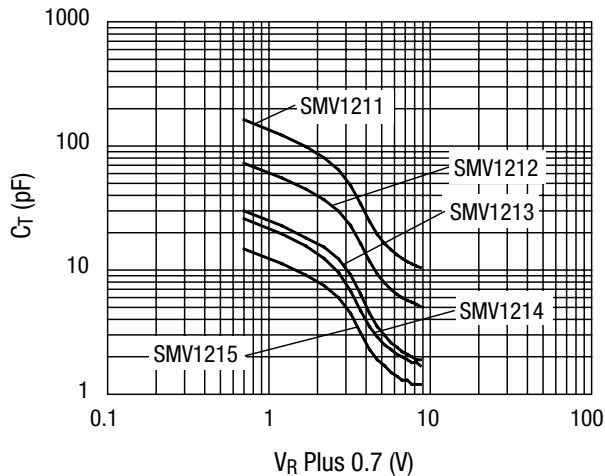
### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)


Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1211 Series	12	98.6	19.4	10.5	5	1 to 4	0.4
SMV1212 Series	12	44.9	9.3	5.1	5	1 to 4	0.8
SMV1213 Series	12	18.1	3.5	1.9	5	1 to 4	1.4
SMV1214 Series	12	15.6	2.9	1.7	5	1 to 4	1.7
SMV1215 Series	12	9.1	1.9	1.2	5	1 to 4	2.8


				
Single SOT-23 Green™	Common Cathode SOT-23 Green™	Common Cathode SC-70	Single SOD-323 Green™	Single SC-79 <sup>(1)</sup> Green™
SMV1211-001LF Marking: EA1				
SMV1212-001LF Marking: EB1	SMV1212-004LF Marking: EB3	SMV1212-074LF Marking: EB3		SMV1212-079LF Marking: Cathode
SMV1213-001LF Marking: D86	SMV1213-004LF Marking: GD3	SMV1213-074LF Marking: GD3	SMV1213-011LF Marking: GD	SMV1213-079LF Marking: Cathode
SMV1214-001LF Marking: DL1				
SMV1215-001LF Marking: DM1			SMV1215-011LF Marking: DM	

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

### Typical Performance Characteristics









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## VARACTOR DIODES


### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 12 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1231 Series	15	1.58	0.794	0.534	0.487	1.5	1 to 3	2.9
SMV1232 Series	15	2.67	1.22	0.81	0.74	1.5	1 to 3	1.5
SMV1233 Series	15	3.28	1.45	0.96	0.87	1.5	1 to 3	1.2
SMV1234 Series	15	6.28	2.81	1.65	1.38	1.6	1 to 3	0.8
SMV1235 Series	15	11.67	4.99	2.91	2.47	1.6	1 to 3	0.6
SMV1236 Series	15	17.02	7.19	4.49	3.95	1.6	1 to 3	0.5
SMV1237 Series	15	46.89	20.83	11.61	9.84	1.6	1 to 3	0.25

					
<b>Single SOT-23 Green™</b>	<b>Common Cathode SOT-23 Green™</b>	<b>Common Cathode SC-70</b>	<b>Common Anode SC-70</b>	<b>Single SOD-323 Green™</b>	<b>Single SC-79<sup>(1)</sup> Green™</b>
		SMV1231-074LF Marking: KA3		SMV1231-011LF Marking: KA	SMV1231-079LF Marking: Cathode
		SMV1232-074LF Marking: HC3		SMV1232-011LF Marking: HC	SMV1232-079LF Marking: Cathode
SMV1233-001LF Marking: DP1	SMV1233-004LF Marking: DP3	SMV1233-074LF Marking: DP3		SMV1233-011LF Marking: DP	SMV1233-079LF Marking: Cathode
SMV1234-001LF Marking: DQ1	SMV1234-004LF Marking: DQ3		SMV1234-073LF Marking: DQ9	SMV1234-011LF Marking: DQ	SMV1234-079LF Marking: Cathode
SMV1235-001LF Marking: DR1	SMV1235-004LF Marking: DR3	SMV1235-074LF Marking: DR3		SMV1235-011LF Marking: DR	SMV1235-079LF Marking: Cathode
SMV1236-001LF Marking: EQ1	SMV1236-004LF Marking: EQ3	SMV1236-074LF Marking: EQ3		SMV1236-011LF Marking: EQ1	SMV1236-079LF Marking: Cathode
SMV1237-001LF Marking: DT1					

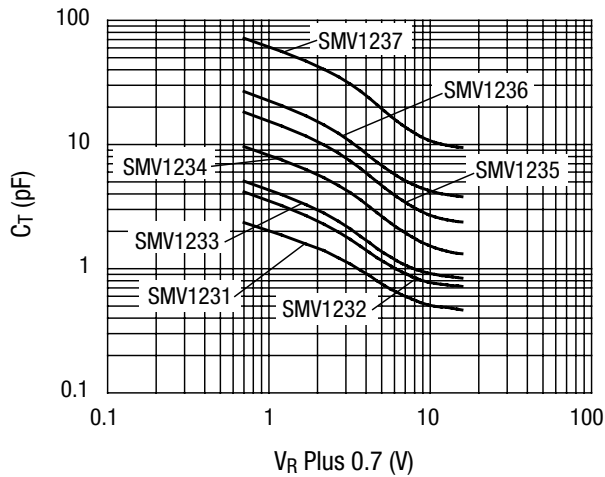
1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

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## VARACTOR DIODES

### Typical Performance Characteristics



### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1247 Series	15	4.37	0.77	0.64	9.5	0.3 to 4.7	6.0
SMV1248 Series	15	12.33	1.71	1.3	10.8	0.3 to 4.7	3.3
SMV1249 Series	15	18.18	2.72	2.03	11.0	0.3 to 4.7	2.2
SMV1251 Series	15	28.09	3.95	2.79	11.0	0.3 to 4.7	1.6
SMV1253 Series	15	37.07	4.86	3.28	11.0	0.3 to 4.7	1.4
SMV1255 Series	15	43.27	5.58	4.26	11.0	0.3 to 4.7	1.3

Single SOT-23 Green™	Common Anode SOT-23 Green™	Common Cathode SOT-23 Green™	Common Cathode SC-70	Single SOD-323 Green™	Single SC-79 <sup>(1)</sup> Green™
			SMV1247-074LF Marking: GF3	SMV1247-011LF Marking: GF	SMV1247-079LF Marking: Cathode
SMV1248-001LF Marking: GG1			SMV1248-074LF Marking: GG3		SMV1248-079LF Marking: Cathode
SMV1249-001LF Marking: EF1	SMV1249-003LF Marking: EF9	SMV1249-004LF Marking: EF3	SMV1249-074LF Marking: EF3	SMV1249-011LF Marking: EF	SMV1249-079LF Marking: Cathode
SMV1251-001LF Marking: EH		SMV1251-004LF Marking: EH3	SMV1251-074LF Marking: EH3	SMV1251-011LF Marking: EK	SMV1251-079LF Marking: Cathode
		SMV1253-004LF Marking: EJ3			SMV1253-079LF Marking: Cathode
SMV1255-001LF Marking: EK1		SMV1255-004LF Marking: EK3		SMV1255-011LF Marking: EK	SMV1255-079LF Marking: Cathode

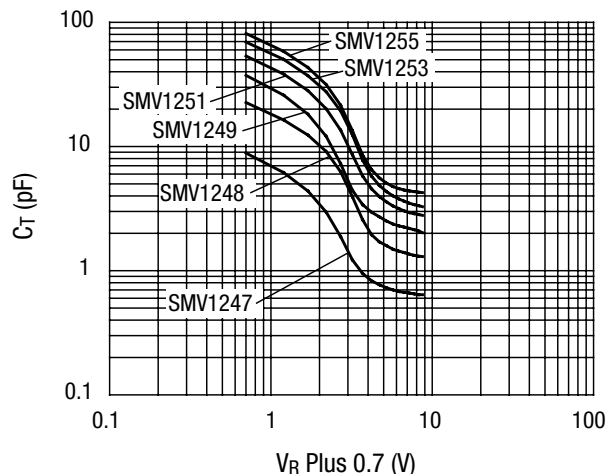
1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

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

## VARACTOR DIODES

### Typical Performance Characteristics

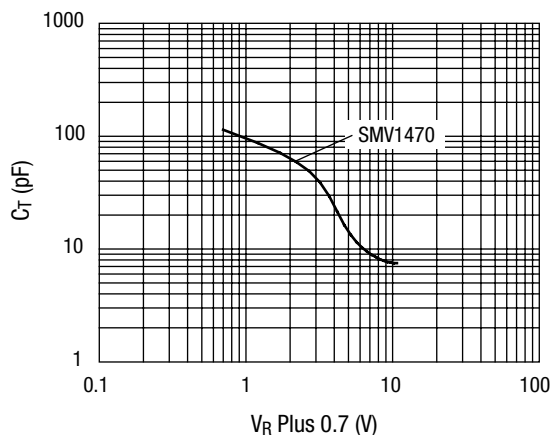



### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)


Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 12 V$ (pF)	Typ. $C_T$ $V_R = 20 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1245-011LF	26	4.93	2.51	1.380	1.020	–	1.47	1 to 3	2.0
SMV1265 Series	28	14.26	5.15	1.610	1.120	0.830	17.70	1 to 26	2.4
SMV1281 Series	24	8.60	3.60	1.400	0.940	0.690	12.00	1 to 20	1.7
SMV1283-011LF	28	8.70	2.95	1.188	0.904	0.688	14.70	1 to 26	2.0
SMV1470-004LF	10	71.30	16.30	7.900	–	–	5.00	1 to 5	0.8

		
<b>Single SOD-323 Green™</b>	<b>Single SC-79 Green™</b>	<b>Common Cathode SOT-23 Green™</b>
SMV1245-011LF Marking: HL		
SMV1265-011LF Marking: HM		
		SMV1470-007LF Marking: ET3
SMV1281-011LF Marking: HP	SMV1281-079LF Marking: Cathode	
SMV1283-011LF Marking: HQ		

### Typical Performance Characteristics

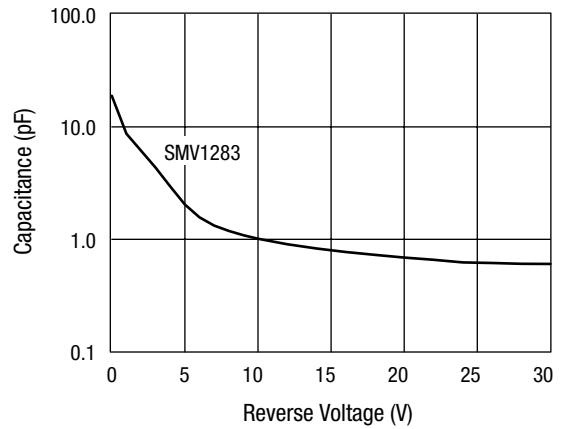
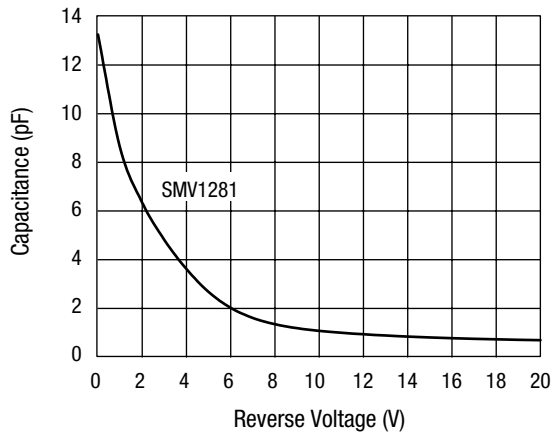
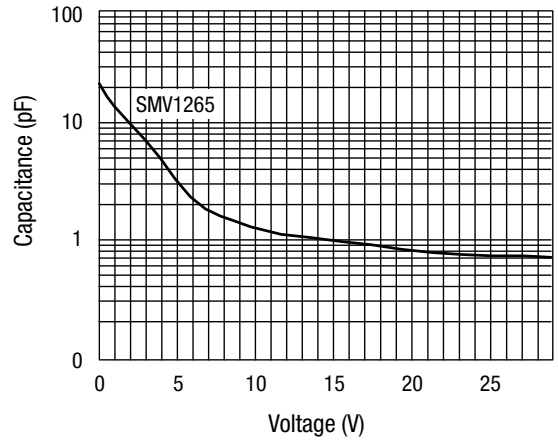
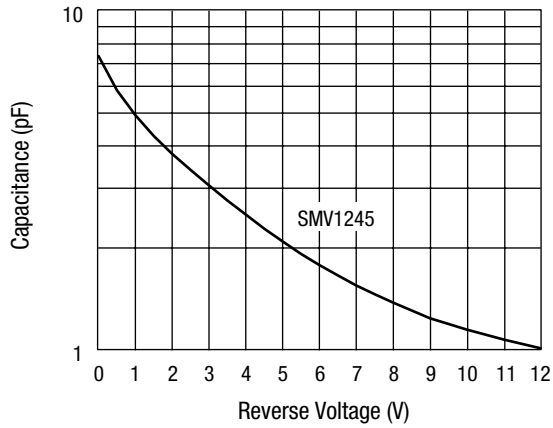


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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## VARACTOR DIODES

### Typical Performance Characteristics



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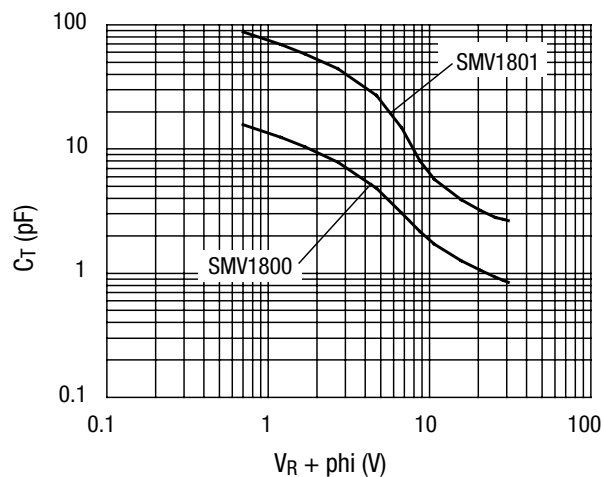
## VARACTOR DIODES

### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 20 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1800 Series	30	10.43	4.85	2.17	1.06	12.00	0.5 to 28	3.0
SMV1801 Series	32	58.00	26.90	8.00	3.20	20.6	1.0 to 28	1.2

<b>Single SC-79 Green™</b>	<b>Single SC-79 Green™</b>
SMV1800-079LF Marking: Cathode	SMV1801-079LF Marking: Cathode

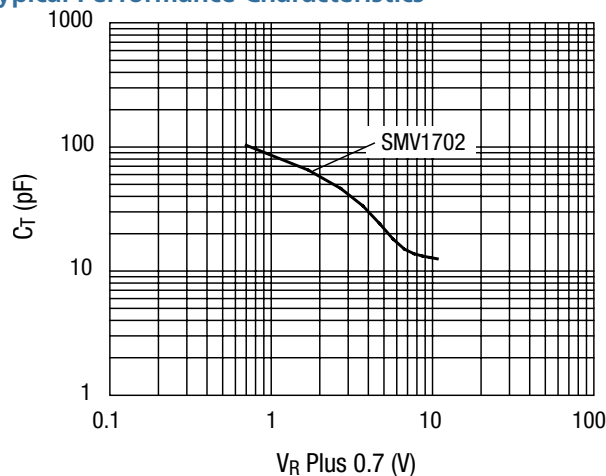
#### Typical Performance Characteristics



Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1702-011LF	10	65.1	24.2	13.21	3.6	0.1 to 4	1.25

<b>Single SOD-323 Green™</b>
SMV1702-011LF Marking: HJ

#### Typical Performance Characteristics







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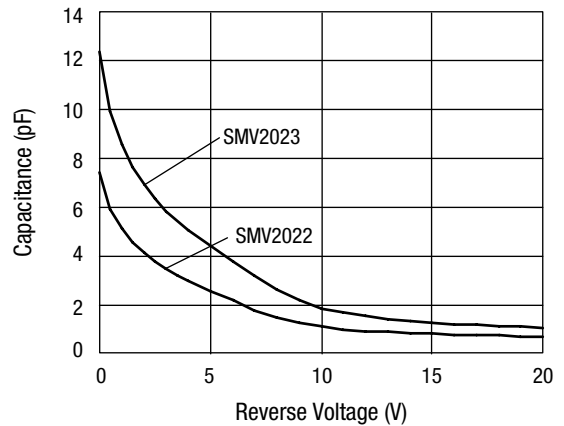
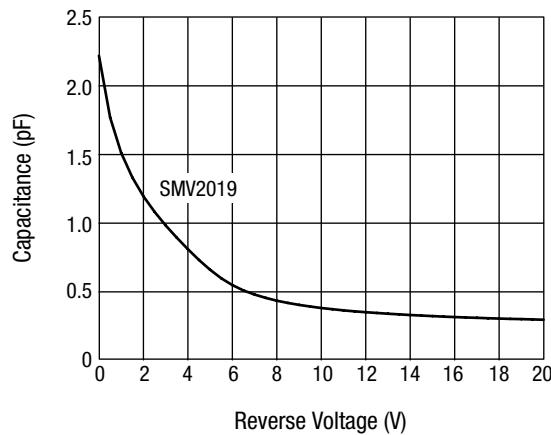
## VARACTOR DIODES


### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)


Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Typ. $C_T$ $V_R = 8 V$ (pF)	Typ. $C_T$ $V_R = 12 V$ (pF)	Typ. $C_T$ $V_R = 20 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)
SMV2019 Series	22	1.51	0.81	0.44	0.35	0.30	2.3	4 to 20
SMV2022 Series	22	5.14	3.01	1.50	0.96	0.73	3.0	4 to 20
SMV2023 Series	22	8.60	5.09	2.63	1.54	1.09	4.2	4 to 20

			
Single SOT-23 <i>Green™</i>	Common Cathode SOT-23 <i>Green™</i>	Single SOD-323 <i>Green™</i>	Single SC-79 <i>Green™</i>
			SMV2019-079LF Marking: Cathode
	SMV2022-004LF Marking: DJ3		
SMV2023-001LF Marking: DK1	SMV2023-004LF Marking: DK3	SMV2023-011LF Marking: DK1	

### Typical Performance Characteristics



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


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## VARACTOR DIODES

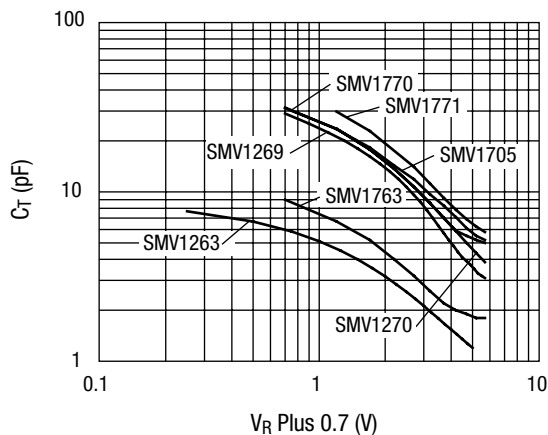
### Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)


Part Number	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_T$ $V_R = 1 V$ (pF)	Typ. $C_T$ $V_R = 4 V$ (pF)	Min. $C_T$ (Ratio)	Capacitance Ratio Range (V)	Max. $R_S$ ( $\Omega$ )
SMV1263 Series	20	5.11	1.54	2.3	0.5 to 2.5	1.2
SMV1269 Series	10	16.20	3.90	2.5	0.5 to 2.5	0.8
SMV1270-079LF	20	17.81	5.00	2.3	0.5 to 2.5	0.7
SMV1705 Series	12	18.30	6.10	2.8	1 to 4	0.32
SMV1763-079LF	10	5.20	1.90	2.3	0.5 to 2.5	0.7
SMV1770-079LF	12	17.80	5.50	2.3	0.5 to 2.5	0.5
SMV1771-079LF	12	22.90	6.90	2.3	0.5 to 2.5	0.5


 Common Cathode SOT-23 Green™	 Common Cathode SC-70	 Single SC-79 <sup>(1)</sup> Green™
	SMV1263-074LF Marking: EN3	SMV1263-079LF Marking: Cathode
	SMV1269-074LF Marking: EE3	
		SMV1270-079LF Marking: Cathode
SMV1705-004LF Marking: HY3	SMV1705-074LF Marking: HY3	SMV1705-079LF Marking: Cathode
		SMV1763-079LF Marking: Cathode
		SMV1770-079LF Marking: Cathode
		SMV1771-079LF Marking: Cathode

1. A lower profile (< 0.65 mm) SC-79 package is available; please contact sales.

### Typical Performance Characteristics



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## VARACTOR DIODES

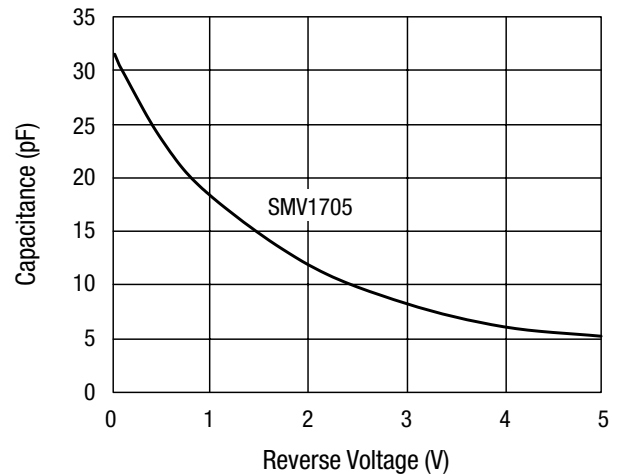
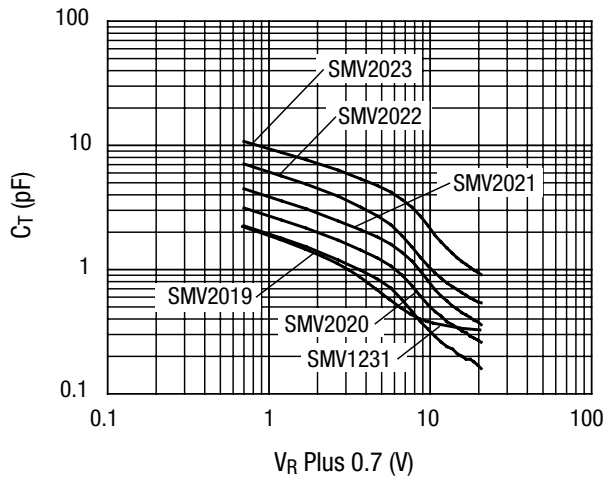
### Large Bandwidth Silicon Hyperabrupt Varactor Diode Chips—Low Frequency to 12 GHz

Part Number	Die Size (Mil)	Min. $V_R$ $I_R = 10 \mu A$ (V)	Typ. $C_J$ $V_R = 1 V$ (pF)	Typ. $C_J$ $V_R = 4 V$ (pF)	Typ. $C_J$ $V_R = 8 V$ (pF)	Typ. $C_J$ $V_R = 12 V$ (pF)	Typ. $C_J$ $V_R = 20 V$ (pF)	Min. Q $V_R = 4 V$ @ 50 MHz	Typ. $R_S$ 1000 MHz ( $\Omega$ )
SMV1705-000	0.012 ± 0.002	12	18.3	6.1	–	–	–	–	0.32
SMV2019-000	0.012 ± 0.002	22	1.53	0.84	0.38	0.24	0.16	500	4.8
SMV2020-000	0.012 ± 0.002	22	2.16	1.24	0.61	0.38	0.26	500	4.1
SMV2021-000	0.012 ± 0.002	22	3.09	1.83	0.97	0.56	0.36	500	2.8
SMV2022-000	0.012 ± 0.002	22	4.88	2.71	1.25	0.78	0.54	400	2.2
SMV2023-000	0.012 ± 0.002	22	7.67	4.75	2.68	1.49	0.91	400	1.4

### Hermetic Packaged Large Bandwidth Silicon Hyperabrupt Varactor Diodes—Low Frequency to 12 GHz

Hermetic Stripline 240	Hermetic Pill 203	Hermetic Pill 219	Hermetic Pill 210
SMV2019-240	SMV2019-203	SMV2019-219	SMV2019-210
SMV2020-240	SMV2020-203	SMV2020-219	SMV2020-210
SMV2021-240	SMV2021-203	SMV2021-219	SMV2021-210
SMV2022-240	SMV2022-203	SMV2022-219	SMV2022-210
SMV2023-240	SMV2023-203	SMV2023-219	SMV2023-210

### Typical Performance Characteristics



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## FILTERS

Skyworks Solutions is pleased to offer a selection of programmable filters for cellular applications and diverse markets such as wireless infrastructure, automotive, test & measurement, energy management and other high performance microwave applications. These solutions leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Programmable Filters

Part Number	Lowest Cutoff Frequency (MHz)	Highest Cutoff Frequency (MHz)	Program Method	Corner Accuracy (%)	Max. Pass Band Ripple (dB)	Max. Group Delay Variation (ns)	Gain (dBv)	Supply Current (mA)	Supply Voltage (V)	Package (mm)
SKY73201-364LF	1	28	SPI	1	0.5	35	0 or 6	32	3.3	QFN 32L 5 x 5
SKY73202-364LF	1	28	SPI	1	0.5	35	0 or 6	60	3.3	QFN 32L 5 x 5

## INTERA™ FRONT-END MODULES

### RF Solutions


Designed with cost and space savings in mind, Skyworks Intera™ Front-End Modules combine the company's industry-leading power amplifier (PA), low noise amplifiers (LNA) and switch functions into single low-cost, laminate-based multi-chip modules (MCM). Key features of the transmit FEMs include multi-band/multi-mode power amplifiers, current sensing power control, high-linearity transmit/receive switches and all associated filtering, duplexing and control functions. Further, the new module requires no external matching components, accelerating time-to-market.

Manufactured using Skyworks' proprietary heterojunction bipolar transistor (HBT) power amplifier process and low-loss pseudomorphic high electron mobility transistor (pHEMT) switch technologies, Intera FEMs deliver superior handset talk and standby time.

### Intera™ Front-End Modules Features:

- Multi-band/multi-mode power amplifiers
- High linearity Tx/Rx switches
- Single multi-chip module design
- Reduced handset design time
- Superior handset talk and standby times





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## INTERA™ FRONT-END MODULES

### Intera™ Front-End Modules for Cellular


#### WCDMA/CDMA Front-End Modules—Band 1 (Tx = 1920–1980 MHz) (Rx = 2110–2170 MHz)

Part Number	Description	Typical PAE (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
 SKY77433	FEM for WCDMA/HSDPA/HSUPA	–	–	3.5–4.45	16-pin MCM 4 x 7 x 1.2
 SKY77437	FEM for WCDMA/HSDPA/HSUPA	25	24	3.2–4.2	20-pin MCM 4 x 7 x 1.2



#### WCDMA/CDMA Front-End Modules—Band 2 (Tx =1850–1910 MHz) (Rx =1930–1990 MHz)

Part Number	Description	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77414	FEM for WCDMA	23	3.20–4.20	22-pin MCM 5 x 8 x 1.5


#### WCDMA/CDMA Front-End Modules—Band 4 (Tx = 1710–1770 MHz) (Rx = 2110–2170 MHz)


Part Number	Description	Supply Voltage (V)	Package (mm)
 SKY77435	FEM for WCDMA/HSDPA/HSUPA	3.4–4.45	16-pin MCM 4 x 7 x 1.2


#### WCDMA/CDMA Front-End Modules—Band 5 & 6 (Tx = 824–849 MHz) (Rx = 869–894 MHz)

Part Number	Description	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77413	FEM for WCDMA	25	3.2–4.2	22-pin MCM 5 x 8 x 1.5
 SKY77425	Tx FEM for CDMA	26	3.4–4.2	22-pin MCM 4 x 7 x 1.1
 SKY77436	FEM for WCDMA/HSDPA/HSUPA	–	3.4–4.45	16-pin MCM 4 x 7 x 1.2

#### WCDMA/CDMA Front-End Modules—Band 8 (Tx = 880–915 MHz) (Rx = 925–960 MHz)


Part Number	Description	TI @ 10 mA (ns)	Quiescent Current Typ. (mA)	Package (mm)
 SKY77438	FEM for WCDMA/HSDPA/HSUPA	3.1–4.45	20	16-pad 7 x 4 x 1.1


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**INTERA™ FRONT-END MODULES****Intera™ Front-End Modules for Cellular****EDGE Front-End Modules**

Part Number	Frequency (MHz)	Description	Typical Output Power (dBm) GSM/EDGE	Typical PAE (%) GSM	Supply Voltage (V)	Package (mm)
SKY77519		Tx-Rx FEM Quad-Band GSM GPRS EDGE- Antenna Switch Support for UMTS (WCDMA) Band 1			2.9–4.6	28-pin MCM 6 x 6 x 1.1
	824–849	GSM850	33.5/31.5	40/TBD		
	880–915	GSM900	33.5/31.5	40/TBD		
	1710–1785	DCS1800	31.0/30.5	35/20		
	1850–1910	PCS1900	31.0/30.5	35/20		
SKY77521		Tx-Rx FEM for Quad-Band GSM/GPRS/EDGE Triple-Band WCDMA Antenna Switch Support			3.0–4.6	30-pin MCM 7 x 6 x 1.0
	824–849	GSM850	33.5	40		
	880–915	GSM900	33.5	40		
	1710–1785	DCS1800	31.0	34		
	1850–1910	PCS1900	31.0	34		
SKY77526		Tx Front-End Module for Quad-Band GSM/EDGE			2.9–4.8	34-pin MCM 8 x 8 x 1.2
	824–849	GSM850	33.3	41		
	880–915	GSM900	33.3	43		
	1710–1785	DCS1800	33.5	38		
	1850–1910	PCS1900	34.5	40		
SKY77527		Tx Front-End Module for Quad-Band GSM/EDGE	–	–	2.9–4.4 (GSM) 3.0–4.4 (EDGE)	34-pad MCM 8 x 6 x 1.12
	824–849	GSM850				
	880–915	GSM900				
	1710–1785	DCS1800				
	1850–1910	PCS1900				
SKY77528		Tx Front-End Module for Quad-Band GSM/EDGE	–	–	2.9–4.8 (GSM) 2.9–4.8 (EDGE)	34-pad MCM 8 x 6 x 1.1
	824–849	GSM850				
	880–915	GSM900				
	1710–1785	DCS1800				
	1850–1910	PCS1900				
SKY77529		Tx Front-End Module for Quad-Band GSM/EDGE	–	–	2.9–5.0 (GSM) 3.0–5.0 (EDGE)	26-pad MCM 7.5 x 7 x 0.9
	824–849	GSM850				
	880–915	GSM900				
	1710–1785	DCS1800				
	1850–1910	PCS1900				
SKY77544		Tx-Rx FEM for Quad-Band GSM/GPRS/EDGE– Triple-Band WCDMA Antenna Switch Support			3.0–4.6	28-pad MCM 6 x 6 x 0.9
	824–849	GSM850	34.0	41.0		
	880–915	GSM900	34.0	41.0		
	1710–1785	DCS1800	40.0	40.0		
	1850–1910	PCS1900	40.0	40.0		
SKY77546		Tx-Rx Front-End Module for Dual-Band GSM/GPRS/EDGE			3.2–4.6 (GSM) 3.2–4.6 (EDGE)	30-pad MCM 7 x 6 x 1.0
	880–915	GSM900	34.0/–	45.0/18.5		
	1710–1785	DCS1800	24.0/–	21.0/21.0		
SKY77549		Tx-Rx FEM for Quad-Band GSM/GPRS/EDGE– Quad-Band WCDMA Antenna Switch Support			3.0–4.6	28-pad MCM 6 x 6 x 0.9
	824–849	GSM850	34.0	41.0		
	880–915	GSM900	34.0	41.0		
	1710–1785	DCS1800	31.2	39.0		
	1850–1910	PCS1900	31.2	39.0		

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## INTERA™ FRONT-END MODULES

### Intera™ Front-End Modules for Cellular

#### GSM/GPRS Front-End Modules






Part Number	Frequency (MHz)	Description	Typical Output Power (dBm) GSM	Typical PAE (%)	Supply Voltage (V)	Package (mm)
SKY77517	824–849	Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS GSM850	33.7	48	2.7–4.8	20-pin MCM 6 x 8 x 1.1
	1850–1910	PCS1900	32.0	41		
SKY77518	880–915	Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS GSM900	33.5	44	2.7–4.8	20-pin MCM 6 x 8 x 1.1
	1710–1785	DCS1800	32.0	42		
SKY77531	824–849	Tx-Rx iPAC™ FEM for Quad-Band GSM/GPRS GSM850	33.7	42	3.1–4.8	30-pin MCM 6 x 8 x 1.05
	880–915	GSM900	33.6	44		
	1710–1785	DCS1800	31.8	42		
	1850–1910	PCS1900	32.0	41		
SKY77534	824–849	Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS GSM850	33.7	42	3.1–4.8	20-pin MCM 6 x 8 x 1.05
	880–915	GSM900	33.6	44		
	1710–1785	DCS1800	31.8	42		
	1850–1910	PCS1900	32.0	41		
SKY77542	880–915	TX-RX iPAC™ FEM for Dual-Band GSM/GPRS GSM900	33.8	45.5	2.9–4.8	30-pin MCM 7 x 6 x 0.9
	1710–1785	DCS1800	32.0	39.5		
SKY77543	824–849	Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS GSM850	33.5	46.0	2.9–4.8	30-pin MCM 7 x 6 x 0.9
	1850–1910	PCS1900	32.0	38.5		
SKY77547	824–849	Tx-Rx iPAC™ FEM for Quad-Band GSM/GPRS GSM850	33.7	42.0	3.1–4.8	30-pin MCM 8 x 6 x 1.05
	880–915	GSM900	33.6	44.0		
	1710–1785	DCS1800	31.8	42.0		
	1850–1910	PCS1900	32.0	41.0		
SKY77548	824–849	Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS GSM850	33.7	42.0	3.1–4.8	30-pin MCM 8 x 6 x 1.05
	880–915	GSM900	33.6	44.0		
	1710–1785	DCS1800	31.8	42.0		
	1850–1910	PCS1900	32.0	41.0		
SKY77550	824–849	Quad-Band Tx/Dual-Band Rx iPAC™ FEM for GSM/GPRS GSM850	33.7	43.5	3.1–4.8	30-pin MCM 7 x 6 x 0.9
	880–915	GSM900	33.7	43.5		
	1710–1785	DCS1800	32.0	37.5		
	1850–1910	PCS1900	32.0	37.5		
SKY77555	880–915	Tx-Rx FEM Based on CMOS PA for Dual-Band GSM/GPRS GSM900	34.5	36.0	2.9–4.5	26-pin MCM 5 x 6 x 1.05
	1710–1785	DCS1800	33.5	29.0		

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## INTERA™ FRONT-END MODULES


### LTE Front-End Modules

Part Number	Frequency (MHz)	Description	Typical Linear LTE Power (dBm)	Supply Voltage (V)	Package (mm)
 SKY77445	2500–2690	Front-End Module for LTE/EUTRAN (Tx 2500–2570 MHz), (Rx 2620–2690 MHz)	24.5	3.0–4.6	4 x 7 x 1.2
 SKY77455	1920–2170	Front-End Module for LTE/E-UTRA Band I (Tx 1920–1980 MHz), (Rx 2110–2170 MHz)	24.5	3.0–4.6	4 x 7 x 1.2
 SKY77456	1710–2170	Front-End Module for LTE/E-UTRA Band IV/X (Tx 1710–1770 MHz), (Rx 2110–2170 MHz)	24.5	3.0–4.6	4 x 7 x 1.2
 SKY77457	824–894	Front-End Module for LTE/E-UTRA Band V (Tx 824–849 MHz), (Rx 869–894 MHz)	24.5	3.0–4.6	4 x 7 x 1.2
 SKY77458	880–960	Front-End Module for LTE/E-UTRA Band VIII (Tx 880–915 MHz), (Rx 925–960 MHz)	24.5	3.0–4.6	4 x 7 x 1.2

### WLAN/WiMAX Front-End Modules




Part Number	Frequency (GHz)	802.11 WLAN Standard	Antenna Ports	Architecture	Typ. Current @ V <sub>CC</sub> = 3.3 V (mA)	Typ. P <sub>OUT</sub> @ 2.5% EVM (dBm)	Typ. Tx Gain (dB)	Package (mm)
SKY65206-13	2.4–2.5	g b	2	One Single-Band Tx/Rx Chain	230 170	– 16.4	27 –	Laminate 8 x 7 x 1.4
SKY65225-11	2.4–2.5 4.9–5.85	b,g,n a,n	2	Two Full Dual-Band Tx/Rx Chains	190 180	19.0 16.0	24 25	MCM 10 x 14 x 0.9
SKY65249-11	2.4–2.5	b g	2	One Single-Band Tx/Rx Chain	210 180	21.0 18.0	26 26	Laminate 4 x 4 x 0.9
SKY65296-11	2.4–2.5	b g	2	One Single-Band Tx/Rx Chain	210 180	21.0 18.0	26 26	Laminate 4 x 4 x 0.9
SKY65298	2.4–2.5	b g	1	One Single-Band Tx/Rx Chain	170 125	20.5 16.0	31 31	16-pin 3 x 3 x 0.6
SKY65550-11	4.9–5.9	a n	1	One Single-Band Tx/Rx Chain	170 –	15.5 –	28 –	MCM 10-pin 3 x 3 x 0.9


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## INTERA™ FRONT-END MODULES

### Front-End Modules for ISM/ZigBee®/802.15.4

Part Number	RF Frequency (MHz)	Typ. Rx Insertion Loss (dB)	Typ. Rx Gain (dB)	Typ. Rx NF (dB)	Tx Gain (dB)	Typ. Saturated Output Power (dBm)	Supply Voltage (V)	Package (mm)
SKY65326-11	380–500	0.5	–	–	34.0	30.7	3.6	12-pin MCM 8 x 8
 SKY65329-11	902–928	–	17.5	2.2	28.0	24.3	3.6	28-pin MCM 8 x 8
SKY65336-11	2400–2500	–	10.5	2.0	17/7	20/10	3.0	28-pin MCM 8 x 8
SKY65337-11	2400–2500	1.6	–	–	17/7	20.1/10.5	3.0	28-pin MCM 8 x 8
 SKY65338-21	450–470	0.6	–	–	32.0	27.0	3.6	12-pin MCM 8 x 8
SKY65342-11	450–470	0.6	–	–	34.6	29.1	3.6	12-pin MCM 8 x 8
SKY65343-11	2400–2500	1.6	–	–	17.0	20.0	3.3	20-pin MCM 6 x 6
SKY65344-21	2400–2500	–	10.0	2.2	17.0	20.0	3.3	20-pin MCM 6 x 6
 SKY65346-11	902–928	–	12.4	2.4	35.0	26.0	3.3	26-pin MCM 5 x 5
SKY65352-11	2400–2500	–	8.2	2.2	17.0	20.0	3.3	20-pin MCM 6 x 6
SKY65266	2400–2500	–	2	2	24	32	3.3	24-pin MCM 7 x 8
SKY65157	2400–2500	1.6	–	–	17/7	20.1/10.5	3.0	24-pin MCM 4 x 4

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## MIS SILICON CHIP CAPACITORS


Skyworks Solutions' metal-insulator-semiconductor (MIS) chip capacitors are available in a wide range of capacitance values and die sizes for chip-and-wire circuits requiring DC blocking, RF bypassing or as tuning elements in filters, oscillators and matching networks.

The capacitors have a dielectric composed of thermally-grown silicon dioxide over which a layer of silicon nitride is deposited. This two-layer dielectric produces a very a low temperature coefficient of capacitance, very high insulation resistance, outstanding long-term stability and excellent reliability. The temperature coefficient of capacitance is less than 50 ppm/°C, and the capacitors are suitable for operation from -65 °C to 200 °C. Skyworks MIS chip capacitors offer very high Q.

Wafers can be supplied on expanded film frame for automatic pick-and-place manufacturing. To reduce cost, chips can be supplied packaged in vials with sample electrical testing. Packaging in waffle packs with 100% electrical test and visual inspection is available if required.

Part Number	Capacitance Value (pF) ±20%	Size (mils)
 SC00080912	0.8	12 x 12
 SC00120912	1.2	12 x 12
 SC00180912	1.8	12 x 12
 SC00260912	2.6	12 x 12
 SC00380912	3.8	12 x 12
 SC00560912	5.6	12 x 12
 SC00680912	6.8	12 x 12
 SC00821518	8.2	18 x 18
 SC01000710	10	10 x 10
 SC01500912	15	12 x 12
 SC02201518	22	18 x 18
 SC03301518	33	18 x 18
 SC04701518	47	18 x 18
 SC06801518	68	18 x 18
 SC10002430	100	30 x 30
 SC33303440	333	40 x 40
 SC50004450	500	50 x 50
 SC99906068	1000	68 x 68

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## MIXERS/DEMODULATOR/MODULATORS



### Direct Quadrature Demodulator and Direct Conversion Mixer


Part Number	RF Input Frequency Range (MHz)	IF Input Frequency Range (MHz)	Voltage (V)	IIP2 (dBm)	IIP3 (dBm)	Voltage Conversion Gain (dB)	Package (mm)
SKY73009	400–3000	DC–250	3.0	60 @ 900 MHz	27 @ 900 MHz	2 @ 900 MHz	32-pin RFLGA 5 x 5
SKY73012	400–3900	DC–250	3.0	60 @ 900 MHz	29 @ 900 MHz	1 @ 900 MHz	32-pin RFLGA 5 x 5


### Direct Quadrature Modulators

Part Number	RF Output Frequency Range (MHz)	Broad Band Noise Floor (dBm/Hz)	ACPR (dBc)	Package (mm)
SKY73010-21	300–2500	<-153	72	16-pin RFLGA 4 x 4

### Diversity Mixers/Downconverters

Part Number	RF Frequency (MHz)	IF Frequency (MHz)	Gain (dB)	IIP3 (dBm)	OIP3 (dBm)	IP <sub>1</sub> dB (dBm)	NF (dB)	Package (mm)
SKY73020	700–1000	50–250	7.0	27.0	34.0	16.5	10.2	36-pin MCM 6 x 6
SKY73021	1700–2200	50–500	8.6	23.5	32.1	12.3	9.8	36-pin MCM 6 x 6
SKY73022-11	700–1000	40–300	9.4	25.3	34.7	13.3	9.0	36-pin MCM 6 x 6
SKY73023-11	1700–2200	40–300	9.7	25.7	35.4	13.6	9.5	36-pin MCM 6 x 6
SKY73025-11	2300–2700	40–300	9.4	25.3	34.7	13.3	9.0	36-pin MCM 6 x 6
 SKY73084-11	300–500	50–250	9.8	25.2	35.0	13.2	9.4	36-pin MCM 6 x 6
 SKY73085-11	390–500	40–250	9.3	24.9	35.2	12.9	9.3	36-pin MCM 6 x 6

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## MIXERS/DEMODULATOR/MODULATORS

### Single Channel Mixers

Part Number	RF Frequency (MHz)	IF Frequency (MHz)	Gain (dB)	IIP3 (dBm)	OIP3 (dBm)	IP <sub>1</sub> dB (dBm)	NF (dB)	Package (mm)
SKY42068	400–1000	50–250	2.5	36.0	38.5	17.0	9.5	20-pin QFN 5 x 5
SKY73032	700–1000	40–300	9.5	27.0	36.5	13.3	8.3	20-pin MCM 5 x 5
SKY73033-11	1700–2200	40–300	8.9	24.0	32.9	13.5	9.4	20-pin MCM 5 x 5
SKY73035-11	2300–2700	50–500	7.6	25.0	32.6	13.5	9.8	20-pin MCM 5 x 5
SKY73070	700–1000	40–300	9.5	27.0	36.5	13.3	8.3	20-pin MCM 5 x 5

### Up/Downconversion Mixers


Part Number	RF Frequency (MHz)	IF Frequency (MHz)	Gain (dB)	IIP3 (dBm)	OIP3 (dBm)	IP <sub>1</sub> dB (dBm)	NF (dB)	Package (mm)
SKY73062-11	700–1000	50–300	-7.5	32.6	26.1	20.0	7.5	20-pin MCM 5 x 5
SKY73063	1700–2100	100–200	-6.0	30.7	–	19.0	6.8	20-pin MCM 5 x 5
SKY73069-11	700–1000	50–300	-7.0	31.5	–	20.9	6.8	20-pin MCM 5 x 5

## PHASE SHIFTERS

Skyworks Solutions offers a broad selection of wideband analog phase shifters in surface mount packages for diverse markets such as WLAN, wireless infrastructure, test & measurement, distortion cancellation, smart antennae and other RF/microwave applications. These products offer excellent insertion loss, low distortion and wide phase shift range and more. The solutions we offer leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Phase Shifters


Part Number	Frequency (MHz)	Description	Insertion Loss (dB) Max.	Phase Shift (Deg.) Min.	IP3 (dBm) Min.	Control Voltage Range (V)	Package (mm)
PS088-315	700–1100	Voltage Controlled Phase Shifter	2.8	85	33.0	0–12	LGA
PS094-315	700–1200	Voltage Controlled Phase Shifter	3.2	80	33.0	0–12	LGA
PS196-315	1500–3000	Voltage Controlled Phase Shifter	3.3	65	33.0	0–12	LGA
PS214-315	1700–2800	Voltage Controlled Phase Shifter	2.5	75	33.0	0–12	LGA

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## PLLs/SYNTHESIZERS/VCOs

### High Performance VCOs/Synthesizers

Part Number	RF Output Frequency Range (MHz)	Output Power (dBm)	Phase Noise @ 200 kHz (dBc/Hz)	Phase Noise @ 800 kHz (dBc/Hz)	Phase Settling Time (µs)	Current Consumption (mA)	Supply Voltage (V)	Package (mm)
SKY73100	865–960	-0.3	-125	-147	340	110	5	38-pin MCM 9 x 12
SKY73101	1930–1990	-10	-112	-139	300	120	5	38-pin MCM 9 x 12
SKY73103	1460–1665	-10.8	-126	-143	300	114	5	38-pin MCM 9 x 12
SKY73112	750–850	0	-128	-151	300	110	5	38-pin MCM 9 x 12
SKY73120	890–960	0	-124	-144	–	26	3	28-pin MCM 6 x 6
SKY73121	1805–1890	-10	-126	-142	227	114	5	38-pin MCM 9 x 12


Part Number	RF Output Frequency Range (MHz)	Output Power (dBm)	Phase Noise @ 100 kHz (dBc/Hz)	Phase Noise @ 1 MHz (dBc/Hz)	Max. Phase Settling Time (µs)	Current Consumption (mA)	Supply Voltage (V)	Package (mm)
 SKY73126-31	160–165	10	-141.9	-153.1	5000	72	5.0	16-pin MCM 11.4 x 15
SKY73134	370–5600	-2 to 4	-115.0	-143.0	1000	120	3.3	32-pin RFLGA 5 x 5


### Single Fractional-N Synthesizers

Part Number	Main Synthesizer Frequency (MHz)	Main Synthesizer Phase Noise (dBc/Hz)	Supply Voltage (V)	Package (mm)
SKY72310-362LF	100–2100	-91 @ 1800 MHz	2.7–3.3	24-pin QFN 4 x 4

### Dual Fractional-N Synthesizers

Part Number	Main Synthesizer Frequency (MHz)	Auxiliary Synthesizer Frequency (MHz)	Main Synthesizer Phase Noise (dBc/Hz)	Supply Voltage (V)	Package (mm)
SKY72300-21	100–2100	100–500	-91 @ 1800 MHz	2.7–3.3	28-pin EP-TSSOP 9.7 x 6.4
SKY72300-362	100–2100	100–500	-91 @ 1800 MHz	2.7–3.3	24-pin QFN 4 x 4
SKY72301-22	100–1000	100–500	-96 @ 950 MHz	2.7–3.3	28-pin EP-TSSOP 9.7 x 6.4
SKY72302-21	400–6100	100–1000	-80 @ 6100 MHz	2.7–3.3	28-pin EP-TSSOP 9.7 x 6.4
SKY74038-21	100–2600	1–800	-85 @ 2500 MHz	2.6–3.6	20-pin TSSOP 6.5 x 4.4

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## POWER DIVIDERS/COMBINERS


Skyworks Solutions offers a broad selection of monolithic 2-way and 4-way power divider/combiners in surface mount packages for diverse markets such as WLAN, wireless infrastructure, automotive, test & measurement, energy management and other RF/microwave applications. These divider/combiners are utilized to equally split signals into in-phase signals as found in balanced signal chains, local oscillator distribution networks and more. Conversely, they can also be used to combine two or four signals while providing excellent isolation between the individual signal sources. Their low insertion loss, excellent phase and amplitude balance produce outstanding system performance. The solutions we offer leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.

### Power Dividers—2 Way

Part Number	Frequency (GHz)	Insertion Loss Less 3 dB Split Typ.	Isolation (dB) Typ.	Input VSWR Typ.	Output VSWR Typ.	Amplitude Balance (dB)	Phase Balance (Deg.) Typ.	Total Max. Power w/2.0:1 All Ports	Package
PD09-73LF	0.81–0.96	0.40	25	1.2:1	1.3:1	±0.1	±1.0	1.5 W	SOT-6
PD15-73LF	1.42–1.66	0.40	23	1.2:1	1.2:1	±0.1	±1.0	1.5 W	SOT-6
PD16-73LF	1.42–1.66	0.40	23	1.2:1	1.2:1	±0.1	±1.0	1.5 W	SOT-6
PD18-73LF	1.71–1.99	0.40	23	1.3:1	1.2:1	±0.1	±1.0	1.5 W	SOT-6
PD19-73LF	1.71–1.99	0.55	25	1.3:1	1.2:1	±0.1	±1.0	1.5 W	SOT-6
PD22-73LF	2.10–2.30	0.55	18	1.5:1	1.1:1	±0.1	±1.0	1.5 W	SOT-6

### Power Dividers—4 Way

Part Number	Frequency (GHz)	Insertion Loss Less 6 dB Split Typ.	Isolation (dB) Typ.	Input VSWR Typ.	Output VSWR Typ.	Amplitude Balance (dB)	Phase Balance (Deg.) Typ.	Total Max. Power w/2.0:1 All Ports	Package
PD4W09-12LF	0.81–0.96	1.3	23	1.2:1	1.2:1	±0.4	±6	1.5 W	SOIC-8
PD4W09-59LF	0.81–0.96	1.3	23	1.2:1	1.2:1	±0.4	±6	1.5 W	MSOP-8
PD4W18-12LF	1.71–1.99	0.7	25	1.6:1	1.2:1	±0.3	±5	1.5 W	SOIC-8
PD4W18-59LF	1.71–1.99	0.7	25	1.3:1	1.3:1	±0.3	±5	1.5 W	MSOP-8

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## RF SUBSYSTEMS

### Skyworks RF Subsystems

Skyworks family of RF subsystems consist highly integrated transceivers and power amplifiers for GSM, GPRS and EDGE air interfaces in a small form factor.

These high-performance, field-proven RF subsystems allow wireless terminal manufacturers worldwide to significantly reduce the RF footprint and minimize power consumption for next-generation multi-band GPRS handsets and wireless applications.

#### Typical GPRS RF Subsystem Product Features:

- Direct down-conversion receivers that eliminate IF filters
- Integrated, quad-band LNAs, transmit VCOs, and loop filters
- Single integrated, fully programmable fractional-N synthesizers
- Integrated, digital crystal oscillators
- Quad-band, multi-slot GPRS Class 12 operation
- Support for GPRS and downlink EDGE standards
- Direct conversion architectures that eliminate IF conversion stages
- Compatibility with baseband devices from industry-leading providers

### GSM/GPRS RF Subsystems

Skyworks GPRS RF Subsystem family consists of Skyworks GPRS Transceiver and Power Amplifier products. GPRS RF Subsystem products offer a high level of integration in a small form factor.


These high-performance, field-proven RF subsystems allow wireless terminal manufacturers worldwide to significantly reduce the RF footprint and minimize power consumption for next-generation multi-band GPRS handsets.

#### Typical GSM/GPRS RF Subsystem Product Features:

- Direct down-conversion receivers that eliminate IF filters
- Integrated, quad-band LNAs, transmit VCOs, and loop filters
- Single integrated, fully programmable fractional-N synthesizers
- Integrated, digital crystal oscillators
- Quad-band, multi-slot GPRS Class 12 operation
- Support for GPRS and downlink EDGE standards
- Direct conversion architectures that eliminate IF conversion stages
- Compatible with Skyworks baseband devices and numerous 3rd party baseband devices

#### GPRS RF Subsystem Products Include:

- SKY74963 DCR™ Transceiver + SKY77500 Front-End Module—Direct conversion radio device is combined with a transmit and receive front-end module and compatible with any GSM/EGPRS baseband.
- CX74063 DCR™ Transceiver + SKY77500 Front-End Module—Direct conversion radio device is combined with a transmit and receive front-end module and compatible with any GSM/EGPRS baseband.

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## RF SUBSYSTEMS

### EDGE RF Subsystem

Skyworks offers a highly integrated radio subsystem for quad-band EDGE handset, base stations and cellular repeaters. The subsystem supports GSM850, EGSM900, DCS1800, and PCS1900 applications, and combines a fully programmable quad-band transceiver with a transmit/receive FEM. The FEM integrates pHEMT switches, GaAs-based power amplifiers, couplers, and other discrete matching components into a single multi-chip module.

The dual-chip RF subsystem solutions save significant space, cost, and design cycle time. The subsystems provide excellent linearity, blocker performance, dynamic range, and output power required by handset manufacturers, cellular operators, carriers, and equipment manufacturers of global femtocell base stations and cellular repeaters.

#### The EDGE RF Subsystem Features:

- Quad-band transceiver that supports the GSM850, EGSM900, DCS1800, and PCS1900 bands
- FEM providing a complete transmit path from transceiver to antenna with 50 Ohms input/output matching
- Excellent linearity, blocker performance, noise figure, and dynamic range
- Lower BOM cost and compact design

#### The EDGE RF Subsystem Consists Of:

- SKY65330 Transmit/Receive FEM (For infrastructure applications) - highly integrated FEM with two PA blocks, one for the GSM/EGSM bands and the other for the DCS/PCS bands.
- SKY74218 RF Transceiver—Highly integrated, quad-band RF transceiver with DigRF interface.
- SKY77524 T/R Front-End Module (For handset applications)—Quad-band Front-End Module with integrated coupler, pHEMT RF switch, and separate GSM850/EGSM900 and DCS1800/PCS1900 PA blocks provides a complete DigRF interface transmit path from transceiver output to antenna.

### CDMA RF Subsystem


Skyworks offers a highly integrated radio subsystem for CDMA base stations and cellular repeaters. The subsystem supports CDMA applications, and combines a fully programmable quad-band transceiver with a transmit/receive FEM.

#### The CDMA RF Subsystem Features:

- FEM providing a complete transmit path from transceiver to antenna with 50 Ohms input/output matching
- Excellent linearity, blocker performance, noise figure, and dynamic range
- Lower BOM cost and compact design

#### The CDMA RF Subsystem Consists Of:

- SKY74067—RF Transmitter
- SKY74711—RF Receiver
- SKY65043—LNA

 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.



## SWITCHES


Skyworks Solutions is pleased to offer a broad selection of GaAs switches for diverse markets such as WLAN, handset, wireless infrastructure, SatCom (LNB/DBS-CATV), automotive, test & measurement, energy management, and other microwave applications. Skyworks switches are available in many different configurations including broadband, high power, high isolation, low insertion loss, reflective, and non-reflective. Our lead (Pb)-free, RoHS-compliant and Green™ high quality products are available for applications including antenna transmit/receive (T/R) switches for use in cellular handsets and WLAN systems, synthesizer switches for infrastructure needs, and many other high volume, high performance requirements. These switch product solutions leverage the extensive design knowledge, technical leadership, manufacturing expertise and superior quality of Skyworks.


### SPST RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS165-59LF	SPST (A/R)	0.5–2.5	0.7–1.2	45–38	45	28	MSOP-8
SKY13316-12LF	SPST (A)	0.0003–2.5	0.5–0.75	59–30	46	24	SOIC-8

### SPDT RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS169-73LF	SPDT (R)	LF–2.5	0.3–0.4	25–24	48	30	SOT-6
AS176-59LF	SPDT (R)	LF–3.0	0.7–0.9	55–27	41	20	MSOP-8
AS177-86LF	SPDT (R)	LF–3.0	0.7–0.9	55–40	41	21	MSOP-10
 AS179-000	SPDT (R)	0.3–3.0	0.3–0.35	25–22	48	30	Chip
AS179-92LF	SPDT (R)	LF–3.0	0.3–0.4	25–23	48	30	SC-88
AS183-92LF	SPDT (R)	LF–2.5	0.3–0.55	20–13	48	30	SC-88
AS186-302LF	SPDT (A)	LF–4.0	0.8–1.00	55–40	27	17	MSOP-8
AS188-92LF	SPDT (R)	LF–2.0	0.35–0.55	26–17	50	33	SC-88
AS191-73LF	SPDT (R)	0.1–4.0	0.5–0.70	27–18	53	35	SOT-6
 AS193-000	SPDT (R)	0.1–2.5	0.3–0.55	30–17	55	37	Chip
AS193-73LF	SPDT (R)	0.1–2.5	0.3–0.55	30–17	55	37	SOT-6
AS196-307LF	SPDT (A)	LF–6.0	0.9–1.60	55–30	30	17	LPC4 4 x 4
AS211-334	SPDT (R)	0.1–4.0	0.3–0.60	26–22	50	34	LGA-6 1.5 x 1.2
AS213-92LF	SPDT (R)	0.1–3.0	0.3–0.5	27–19	40	27	SC-88












 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.


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## SWITCHES

## SPDT RF Switches



Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS214-92LF	SPDT (R)	0.1–3.0	0.3–0.4	30–25	40	20	SC-88
AS215-92LF	SPDT (R)	0.5–3.0	0.5–0.75	28–20	40	20	SC-88
AS222-92LF	SPDT (R)	0.1–3.0	0.35–0.5	27–18	44	20	SC-88
AS225-313LF	SPDT (R)	0.1–6.0	0.5–0.60	21–20	52	30	QFN-6
AS230-348LF	SPDT (R)	LF–6.0	0.8–1.20	30–15	63	40	QFN-16 3 x 3
 SKY13268-344LF	SPDT (R)	0.3–3.0	0.3–0.40	25–23	43	30	SOT-666
SKY13270-92LF	SPDT (R)	0.1–2.5	0.3–0.55	30–17	56	37 @ 0.1 dB	SC-88
SKY13274-349LF	SPDT (A/R)	LF–6.0	0.5–0.80	25–17	46	25 @ 0.1 dB	QFN-8
SKY13276-334	SPDT (R)	0.1–6.0	0.6–0.70	21–20	53	30	LGA-6 1.5 x 1.2
SKY13278-313LF	SPDT (R)	0.1–2.5	0.4–0.55	32–18	62	40 @ 0.1 dB	QFN-6 2 x 3
SKY13286-359LF	SPDT (A)	0.1–6.0	0.8–1.50	62–42	46	30	QFN-16 4 x 4
SKY13290-313LF	SPDT (R)	0.5–2.5	0.4–0.55	26–18	63	40.5 @ 0.1 dB	QFN-6 2 x 3
SKY13298-360LF	SPDT (R)	3.0–8.0	0.7–0.9	25–22	47	26	QFN-8 2 x 2
SKY13299-321LF	SPDT (R)	0.1–5.0	0.3–0.75	30–22	57	38.5 @ 0.1 dB	QFN-12 3 x 3
SKY13306-313LF	SPDT (R)	0.1–6.0	0.4–0.55	26–18	53	35 @ 0.1 dB	QFN-6 2 x 3
 SKY13314-374LF	SPDT (R)	0.1–6.0	0.45–0.60	22–21	47	31	MLPD-6 1.5 x 1.5
 SKY13319-374LF	SPDT (R)	0.1–3.0	0.35–0.60	25–17	60	36 @ 0.1 dB	MLPD-6 1.5 x 1.5
 SKY13320-374LF	SPDT (R)	0.1–6.0	0.4–0.6	28–24	52	33 @ 0.1 dB	MLPD-6 1.5 x 1.5
 SKY13321-360LF	SPDT (R)	0.1–3.0	0.4–0.6	26–16	62	39 @ 0.1 dB	QFN-8 2 x 2
 SKY13323-378LF	SPDT (R)	0.1–3.0	0.2–0.50	27–24	50	27	MLPD-6 1 x 1
 SKY13335-381LF	SPDT (R)	0.1–6.0	0.20–0.60	24–27	37–48	15–29	MLPD-6 1.5 x 2
 SKY13344-378LF	SPDT (R)	2.0–6.0	0.35–0.60	27–22	50	27	MLPD-6 1 x 1
 SKY13350-385LF	SPDT (R)	0.8–6.0	0.35–0.60	18–20	50	33	MLPD-6 1 x 1
 SKY13351-378LF	SPDT (R)	2.0–6.0	0.35–0.50	24–26	50	30 @ 0.5 dB	MLPD-6 1 x 1
 SKY13366-378LF	SPDT (R)	2.0–6.0	0.35–0.50	24–26	50	30 @ 0.5 dB	MLPD-6 1 x 1
 SKY13348-374LF	SPDT	0.5–6.0	0.60–1.00	29–21	60	37	MLPD-6 1.5 x 1.5

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## SWITCHES


### SP3T RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS219-321LF	SP3T (R)	0.1–2.6	0.35–0.8	26–14	54	35	QFN-12
AS227-321LF	SP3T (R)	LF–2.0	0.45–0.7	32–20	63	37	QFN-12
SKY13251-349LF	SP3T (R)	LF–3.0	0.35–0.6	29–15	46	25	QFN-8
SKY13277-355LF	SP3T (A)	0.5–2.5	0.9–1.2	62–55	43	30	QFN 5 x 5
SKY13309-370LF	SP3T (R)	0.1–3.0	0.5–0.6	26–25	45	29	QFN 2 x 2 x 0.6
 SKY13317-373LF	SP3T (R)	0.1–6.0	0.2–0.8	40–22	50	29	QFN-8 1.5 x 1.5 x 0.45
 SKY13346-368LF	SP3T (R)	0.5–2.5	0.4–0.5	25–28	47	30	QFN 2 x 2

### SP4T RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
 AS192-000	SP4T (R)	0.1–2.5	0.9–1.1	34–21	55	37	Chip
AS204-80LF	SP4T (A)	0.5–3.0	0.4–0.9	45–25	40	26	SSOP-16
AS221-306LF	SP4T (R)	0.1–2.5	0.6–1.1	34–22	55	38	QFN-16 4 x 4
SKY13296-340LF	SP4T (A)	0.02–2.5	0.4–0.7	40–26	40	18	QFN-20 4 x 4
 SKY13322-375LF	SP4T (R)	0.1–6.0	0.5–1.3	50–24	47	30	QFN-10 2 x 3
SKY14151-350LF	SP4T (R)	0.1–2.5	0.4–0.5	29–23	60	37	QFN 3 x 3 x 0.45


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## SWITCHES

### Dual Pole (xT) RF Switches

#### WLAN Antenna Diversity

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS172-73LF	DPDT (R)	LF-2.0	0.3-0.95	25-13	50	34	SOT-6
 AS218-000	DPDT (R)	0.1-5.85	1.6-1.4	19	54	33	Chip
AS218-321LF	DPDT (R)	LF-6.0	1.2-1.6	28-19	47	33	QFN-12
AS236-321LF	DPDT (R)	LF-6.0	0.95-1.15	22-15	56	34	QFN-12
SKY13267-321LF	DPDT (R)	2.4-6.0	0.7-0.9	32-20	49	30	QFN-12
SKY13318-321LF	DPDT (R)	0.1-6.0	0.95-1.15	22-15	57	34	QFN-12


#### Cellular Band Switch


Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
 SKY14155	DP4T (R)	0.1-2.5	0.3-0.5	32	-	-	QFN-12 2 x 2

### High Throw Count (<5T) Switches/Antenna Switch Modules/Switch Rx FEMs

#### Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
AS195-306LF	SP5T (R)	0.1-2.0	0.5-1.0	35-23	55	37	QFN-16 2 x 2

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## SWITCHES


### High Throw Count (>5T) Switches/Antenna Switch Modules/Switch Rx FEMs

#### Antenna Switch Modules




Skyworks Solutions is pleased to offer a broad selection of high throw count Antenna Switch Modules (ASMs) leveraging both GaAs and SOI technology to respond to all cellular standards specific requirements (GSM, GPRS, EDGE, WCDMA, TD-SCDMA, and LTE). Using either Multi-Chip Module (MCM) or Quad Flat No-Lead (QFN) packaging allows the integration of filtering functions such as Tx harmonic filters, Rx band SAW filters, ESD protection and respond to a wide range of cellular front-end switching requirements such as antenna switching, Rx diversity switching or WCDMA band mode switching. Any cellular RF front-end that requires high performance, reduced current consumption and low insertion loss in a compact footprint would benefit from our portfolio of Antenna Switch Module solutions.


Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
 SKY13362-389LF	SP10T (R)	0.4–2.2	0.5–1.1	30	61	40	QFN-26 3 x 3.8
 SKY18106-455LF	SP8T (A)	0.4–2.2	0.5–0.8	25	66	43	QFN-26 3 x 3.8
 SKY13364-389LF	SP10T (R)	0.4–2.2	0.5–1.0	30	61	40	QFN-26 3 x 3.8


#### Switch Rx Front-End Modules

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
 SKY14152	SP8T (R)	0.4–2.17	0.5–0.7	32	–	–	MCM-20 3.2 x 3.2

### LNB/DBS Matrix Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IP <sub>1</sub> dB (dBm)	Package (mm)
SKY13264-340LF	LNB/DBS (R)	0.25–2.15	7.5–8.5	40–33	15	QFN-20 4 x 4
SKY13272-340LF	LNB/DBS (A)	0.25–2.15	7.5–8.5	40–31	15	QFN-20 4 x 4
SKY13292-365LF	LNB/DBS (R)	0.25–2.15	7.5–9.0	40–30	15	QFN-20 4 x 4
 SKY13293-340LF	LNB/DBS (R)	0.25–2.15	8.0–9.0	57–45	15	QFN-20 4 x 4
 SKY13327-365LF	LNB/DBS (R)	0.25–2.15	7.5–9.0	40–30	15	QFN-20 4 x 4
 SKY13369-365LF	LNB/DBS (R)	0.25–2.15	7.5–9.0	40–30	15	QFN-20 4 x 4

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 Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## TRANSCEIVERS

Skyworks' Helios™ family of transceivers is a group of single or multi-device cellular radio solutions that save significant space, cost, and design cycle time while providing improved performance. These highly integrated solutions are available for selected mobile handset applications.



### Transceiver Family Features:

- Direct down-conversion, eliminating the need for an IF stage
- Integrated quad-band LNAs, transmit VCOs, and loop filters
- Single integrated, fully programmable fractional-N synthesizer
- Digital crystal oscillator reference frequency control
- Low external component count

### GSM/GPRS Transceivers

Skyworks GSM/GPRS Transceivers family consists of Skyworks GPRS Transceiver and Power Amplifier products. GPRS RF Subsystem products offer a high level of integration in a small form factor.

These high-performance, field-proven RF subsystems allow wireless terminal manufacturers worldwide to significantly reduce the RF footprint and minimize power consumption for next-generation multi-band GPRS handsets.

### Typical GSM/GPRS Transceivers Feature:

- Direct down-conversion receivers that eliminate IF filters
- Integrated, quad-band LNAs, transmit VCOs, and loop filters
- Single integrated, fully programmable fractional-N synthesizers
- Integrated, digital crystal oscillators
- Quad-band, multi-slot GPRS Class 12 operation
- Support for GPRS and downlink EDGE standards
- Direct conversion architectures that eliminate IF conversion stages
- Compatible with Skyworks baseband devices and numerous 3rd party baseband devices

### Skyworks' GSM/GPRS Transceivers Include:

- SKY74963—DCR™ Transceiver
- CX74063—DCR™ Transceiver

Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

## TRANSCEIVERS

### EDGE Transceiver

The low Intermediate Frequency (IF) receive architecture incorporates digital back-end filtering. Analog signals are converted into a digital representation suitable for Digital Signal Processor (DSP) operations. The timing and control section of the SKY74218 generates a 26 MHz high-stability clock for use onchip and a 26 MHz signal (SYSCLK) supplied to the baseband. Three additional reference clocks are also available. The device also generates a number of internal General Purpose Inputs/Outputs (GPIOs) used for timing and control, and an analog signal to control the PA output power.

#### The EDGE Transceivers Feature:

- Direct connection to a single cell Lithium-ion battery with no required external regulation
- Closed polar loop transmit modulation architecture
- Compatibility with v1.12 of the DigRF standard
- PA saturation detection and prevention circuit
- Support for multi-slot GPRS and EDGE applications up to Class 34/39
- Simplified control interface with channel and PCL programming

#### The EDGE Transceivers Consist Of:

- SKY74218 RF Transceiver—Highly integrated, quad-band RF transceiver with DigRF interface.

### CDMA Transceivers

Skyworks offers a highly integrated radio subsystem for CDMA base stations and cellular repeaters. The transceivers support CDMA applications, and combines a fully programmable quad-band transceiver with a transmit/receive FEM.

#### The CDMA Transceivers Feature:

- FEM providing a complete transmit path from transceiver to antenna with 50 Ohms input/output matching
- Excellent linearity, blocker performance, noise figure, and dynamic range
- Lower BOM cost and compact design

#### The CDMA Transceivers Consist Of:

- SKY74067—RF Transmitter
- SKY74711—RF Receiver

## TECHNICAL CERAMICS

### Ceramic Coaxial Resonators\*

Skyworks Solutions, through Trans-Tech, its industry-leading ceramic products division, designs and manufactures a complete line of RF and microwave components for commercial markets. With over 50 years of experience, we offer a complete line of high quality, low-cost ceramic-based components for a number of RF and microwave markets including wireless communications, infrastructure, military, cable television, broadband access, circuit miniaturization, technical powder and ingots. Our tightly controlled processes, from raw materials to forming, firing, finishing, assembly and test, produce the highest quality and the most consistently reproducible components available today for both low and high volume requirements. Our product portfolio includes dielectric resonators and coaxial transmission line elements for DRO and VCO applications, ceramic bandpass filters, ferrite and garnet material for circulators/isolators.



Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to Skyworks Definition of Green™, document number SQ04-0074.

#### Recommended Frequencies 1000 Series ( $\epsilon_r = 10.5 \pm 0.5$ , $T_F = 0 \pm 10$ )

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) $\pm 0.030$ in.	Nominal Length Range (in.)	Characteristic Impedance ( $\Omega$ )
$\lambda/4$ Quarter Wave Length	HP	1150–800	$L = 911/f_0$ (MHz)	0.506–0.792	25.3
	EP	1150–2500		0.364–0.792	22.5
	SP	1150–3100		0.294–0.792	18.3
	LS	1150–4600		0.198–0.792	18.4
	LP	1150–4100		0.222–0.792	27.4
	MP	1150–5100		0.179–0.792	25.7
	SM	1150–5100		0.179–0.792	18.4
$\lambda/2$ Half Wave Length	HP	2300–3400	$L = 1821/f_0$ (MHz)	0.536–0.792	25.3
	EP	2300–5000		0.364–0.792	22.5
	SP	2300–6000		0.304–0.792	18.3
	LS	2300–6000		0.304–0.792	18.4
	LP	2300–6000		0.304–0.792	27.4
	MP	2300–6000		0.304–0.792	25.7
	SM	2300–6000		0.304–0.792	18.4

#### Recommended Frequencies 2000 Series ( $\epsilon_r = 20.6 \pm 1$ , $T_F = 0 \pm 10$ )

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) $\pm 0.030$ in.	Nominal Length Range (in.)	Characteristic Impedance ( $\Omega$ )
$\lambda/4$ Quarter Wave Length	HP	800–1200	$L = 650/f_0$ (MHz)	0.542–0.813	18.1
	EP	800–1700		0.382–0.813	16.1
	SP	800–2200		0.296–0.813	13.1
	LS	800–3200		0.203–0.813	13.1
	LP	800–2900		0.224–0.813	19.6
	MP	800–3600		0.181–0.813	18.4
	SM	800–3600		0.181–0.813	13.1
$\lambda/2$ Half Wave Length	HP	1600–2500	$L = 1300/f_0$ (MHz)	0.520–0.813	18.1
	EP	1600–3500		0.372–0.813	16.1
	SP	1600–4500		0.289–0.813	13.1
	LS	1600–6000		0.217–0.813	13.1
	LP	1600–6000		0.217–0.813	19.6
	MP	1600–6000		0.217–0.813	18.4
	SM	1600–6000		0.217–0.813	13.1

\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)

## TECHNICAL CERAMICS

### Ceramic Coaxial Resonators

#### Recommended Frequencies 8800 Series ( $\epsilon_r = 39 \pm 1.5$ , $T_F = 4 \pm 2$ )

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) $\pm 0.030$ in.	Nominal Length Range (in.)	Characteristic Impedance ( $\Omega$ )
$\lambda/4$ Quarter Wave Length	HP	600–900	$L = 472/f_0$ (MHz)	0.525–0.787	13.1
	EP	600–1200		0.394–0.787	11.7
	SP	600–1600		0.295–0.787	9.5
	LS	600–2300		0.205–0.787	9.5
	LP	600–2100		0.225–0.787	14.2
	MP	600–2600		0.182–0.787	13.3
	SM	600–2600		0.182–0.787	9.5
$\lambda/2$ Half Wave Length	HP	1200–1900	$L = 945/f_0$ (MHz)	0.497–0.787	13.1
	EP	1200–2500		0.378–0.787	11.7
	SP	1200–3200		0.295–0.787	9.5
	LS	1200–4700		0.201–0.787	9.5
	LP	1200–4300		0.220–0.787	14.2
	MP	1200–5200		0.182–0.787	13.3
	SM	1200–5200		0.182–0.787	9.5

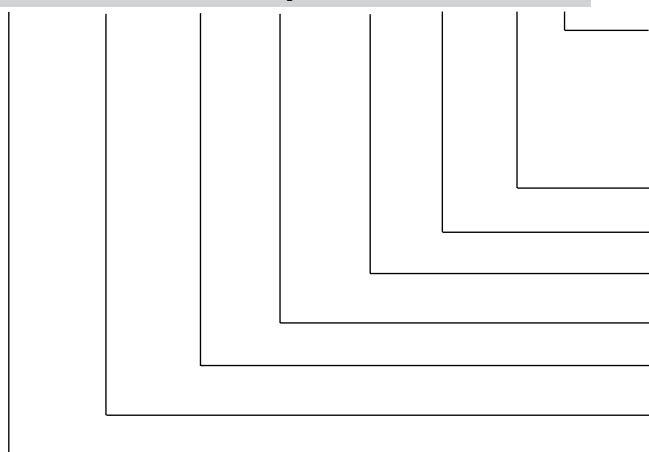
#### Recommended Frequencies 9000 Series ( $\epsilon_r = 90 \pm 3$ , $T_F = 0 \pm 10$ )

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) $\pm 0.030$ in.	Nominal Length Range (in.)	Characteristic Impedance ( $\Omega$ )
$\lambda/4$ Quarter Wave Length	HP	400–600	$L = 311/f_0$ (MHz)	0.518–0.778	8.6
	EP	300–800		0.389–1.037	7.7
	SP	300–1000		0.311–1.037	6.3
	LS	300–1500		0.207–1.037	6.3
	LP	300–1400		0.222–1.037	9.4
	MP	400–1700		0.183–0.778	8.8
	SM	400–1700		0.183–0.778	6.3
$\lambda/2$ Half Wave Length	HP	800–1200	$L = 622/f_0$ (MHz)	0.518–0.778	8.6
	EP	800–1700		0.366–0.778	7.7
	SP	800–2100		0.296–0.778	6.3
	LS	800–3100		0.201–0.778	6.3
	LP	800–2800		0.222–0.778	9.4
	MP	800–3400		0.183–0.778	8.8
	SM	800–3400		0.183–0.778	6.3

## COAXIAL RESONATOR ORDER INFORMATION

### An Order Example

**SR 8800 SP Q 1300 B Y E**



Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

Tab: Y = Yes, N = No

Frequency Tolerance: B = +1.0%, A = 0.5%

Resonant Frequency: State in MHz

Type: Q for  $\lambda/4$ , H for  $\lambda/2$

Profile: HP, EP, SP, LP, LS, MP, SM

Material: 8800, 9000, 1000, 2000

Product Code: SR - square coaxial resonator



## TECHNICAL CERAMICS

### Ceramic Coaxial Inductors\*

Skyworks coaxial inductors are most frequently used in the resonant circuit of VCOs (Voltage-Controlled Oscillators), where a varactor provides the tuning capability. The designer is usually confronted with trade-offs between high Q for best phase noise and component size versus circuit board real estate. An algorithm for selecting the correct Skyworks part follows. In addition, Skyworks COAX Program can provide valuable assistance for determining the correct Skyworks part. Application notes and references give example circuits, basic principles and some helpful hints.

While there is no physical distinction between a coaxial resonator and a coaxial inductor, the selection of an inductor for a VCO begins by first knowing (from analysis or experiment) the equivalent inductance that the active circuit, including the varactor, must see. In general, the VCO active circuit loads the "resonator," lowering the resonator's self-resonant frequency (SRF). The situation is analogous to externally capacitively loading a discrete parallel resonant L-C circuit.


While there is an approximate equivalent L-C circuit for the coaxial resonator close to resonance, this model has limited application.

The coaxial resonators and inductors are more accurately modeled as a transmission line. Our application notes and references delve further into this topic.

Values of inductance that can be achieved depend upon the separation between the VCO frequency and the SRF of the coaxial line element. Values less than 1 nH are not practical, since the metal connection tab itself has an equivalent inductance of this order.

In our experience, equivalent inductances in the range of 3–20 nH have been popular among designers of VCOs for wireless equipment.

Call for availability, utilize the Inductor Selection Guide, use the COAX Program, or refer to the application notes for assistance with ordering the correct part.

 Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

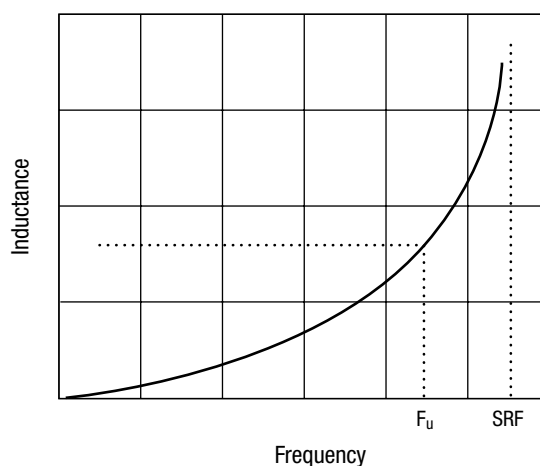


Figure 1. Frequency of Use vs. Inductance

## COAXIAL INDUCTOR ORDER INFORMATION

### An Order Example

SI	8800	LP	Q	0450	Y	6.3	E
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Skyworks Green™ products are compliant to all applicable materials legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.

**Inductance:** (see Figure 1) Available in 0.01 nH increments

**Tab:** Y = Yes, N = No

**Frequency of Use (Fu):** (see Figure 1 for definition)

**Type:** Q for  $\lambda/4$  standard

**Profile:** HP, EP, SP, LP, LS, MP, SM

**Material:** 1000, 2000, 8800, 9000

**Product Code:** SI - square coaxial inductor

\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)

## TECHNICAL CERAMICS

### Ceramic Coaxial Inductors

#### Coax Line Properties vs. Profile and Material

Profile	1000	2000	8800	9000	Tab Inductors
HP	25.3 Ω	18.1 Ω	13.1 Ω	8.6 Ω	1.8 nH
EP	22.5 Ω	16.1 Ω	11.7 Ω	7.7 Ω	1.0 nH
SP	18.3 Ω	13.1 Ω	9.5 Ω	6.3 Ω	1.0 nH
LS	18.4 Ω	13.1 Ω	9.5 Ω	6.3 Ω	0.9 nH
LP	27.4 Ω	19.6 Ω	14.2 Ω	9.4 Ω	1.0 nH
SP	25.7 Ω	18.4 Ω	13.3 Ω	8.8 Ω	0.6 nH
SM	18.4 Ω	13.1 Ω	9.5 Ω	6.3 Ω	0.6 nH

#### Wavelength (λ<sub>g</sub>) in Dielectric

Material	ε <sub>r</sub>	Wavelength Formula for λ <sub>g</sub> (inches)
1000	10.5 ± 0.5	3642/f <sub>0</sub>
2000	20.6 ± 1.0	2601/f <sub>0</sub>
8800	39.0 ± 1.5	1890/f <sub>0</sub>
9000	90.0 ± 3.0	1244/f <sub>0</sub>

Figure 2.

#### Inductor Selection Guide

- 1) Select one of Skyworks four dielectric materials.
- 2) Determine the VCO's operating frequency (f<sub>VCO</sub>).
- 3) Determine the desired inductance or circuit impedance (Z<sub>in</sub>).  
Note: Convert inductances to impedances by using:  
 $Z_{in} = 2 * \xi * f_{VCO} * L_{in} \Omega$
- 4) Calculate the effect of the tab. Tab inductances are given in Figure 9. Use the formula  
 $(Z_{in} = 2 * \xi * f_{VCO} * L_{tab} \Omega)$   
to convert the tab inductances to impedances.
- 5) Determine the input impedance by subtracting the effect of the tab using:  $Z_{input} = Z_{in} - Z_{tab}$
- 6) Calculate the wavelength (λ<sub>g</sub>) of the part in the dielectric (see Figure 2 for appropriate formula).
- 7) Determine the characteristic impedance (Z<sub>0</sub>) of the part (see Figure 3)
- 8) Calculate the physical length of the part using the formula:  $l = (\lambda_g / 2 * \xi) \tan^{-1} (Z_{input} / Z_0)$  inches
- 9) Determine the SRF of this part using:  
 $SRF = (\lambda_g * f_{VCO}) / (4 * 1) \text{ MHz}$
- 10) Check the Recommended Frequency Chart for the appropriate material to ensure a valid part.

#### Measurement Description of Q, f<sub>0</sub> and L

Evaluation of Q (quality factor) and f<sub>0</sub> (resonant frequency) of coaxial components is made with a one-port reflection measurement on a network analyzer. The probe is moved into the inner diameter (ID) of the device until the input resistance of the device matches the terminal resistance of the network analyzer. This is indicated by a 50 Ω circle on the Smith Chart display and is known as "critical" coupling. The point on this circle where the response is purely resistive (capacitance reactance equals inductive reactance) is the point of resonance and will be defined by a complex impedance of  $Z = 50 + j \Omega$ . The Q is computed by observing the frequency span between VSWR-2.616 ( $Z = 50 \pm j50 \Omega$ ) on either side of f<sub>0</sub>. The Q is defined as f<sub>0</sub>/Δf.

The inductance parameter (L) is measured with an APC-7 mm connector mounted flush with a conducting plane and a full one-port calibration (open, short, broadband 50 Ω load) is performed. The inductor is then clamped into place with the tab touching the inner conductor and the metallized body touching the grounding plane. The inductance (L) is measured at the frequency of use. The impedance vector on the Smith Chart of an ANA gives the necessary information where  $Z = R + jwL$ .

#### Characteristic Impedance

As shown in Figure 3, the characteristic impedance (Z<sub>0</sub>) of the coaxial TEM mode components is a function of the profile dimensions and the dielectric constant of the material. Z<sub>0</sub> is reduced over its air line value by the square root of the dielectric constant of the material. At one-eighth wavelength, the short-circuit line exhibits an inductive reactance while the open-circuit line exhibits a capacitive reactance equal in magnitude to Z<sub>0</sub>.

$$Z_0 = \text{characteristic impedance} = \frac{60}{\sqrt{\epsilon_R}} \ln \left( 1.079 \frac{w}{d} \right)$$

where:

w = width of resonator

d = diameter of inner conductor

ε<sub>r</sub> = dielectric constant

Profile	1000	2000	8800	9000
HP	25.3 Ω	18.1 Ω	13.1 Ω	8.6 Ω
EP	22.5 Ω	16.1 Ω	11.7 Ω	7.7 Ω
SP	18.3 Ω	13.1 Ω	9.5 Ω	6.3 Ω
LS	18.4 Ω	13.1 Ω	9.5 Ω	6.3 Ω
LP	27.4 Ω	19.6 Ω	14.2 Ω	9.4 Ω
MP	25.7 Ω	18.4 Ω	13.3 Ω	8.8 Ω
SM	18.4 Ω	13.1 Ω	9.5 Ω	6.3 Ω

Figure 3.

## TECHNICAL CERAMICS

### Ceramic Coaxial Inductors

#### Soldering Conditions

Skyworks coaxial components are compatible with standard surface mount reflow and wave soldering methods. The HP profile components may require mechanical support mounting because of the larger size. Consult the factory for details.

Use silver-bearing solder such as SN62 (62Sn-36Pb-2Ag). Skyworks tabs are pretinned to improve solderability. Additional attaching methods include hot air gun, infrared source, soldering iron, hot plate, vapor phase, and others. The coaxial component body is a ceramic and subject to thermal shock if heated or cooled too rapidly. Figure 4 is the recommended soldering profile, not to exceed 230 °C for a duration of about 10 seconds. Repeatable results can be best achieved with air cooling only, not quenching.

Figure 5 indicates the maximum tolerance of the component planarity with respect to the datum plane.

#### Equation (1) Input Impedance $f_0$

$$Z_{input} = fZ_0 \tan\left(\frac{2f_0}{4SRF}\right)$$

where:  $f_0$  = use frequency

#### Equation (2) Resonant Frequency

$$f = \frac{c}{4SRF\sqrt{\epsilon_r}}$$

where:  $c$  = speed of light  $\epsilon_r$  = 39.08800 material  
 90.09000 material  
 10.51000 material  
 20.62000 material

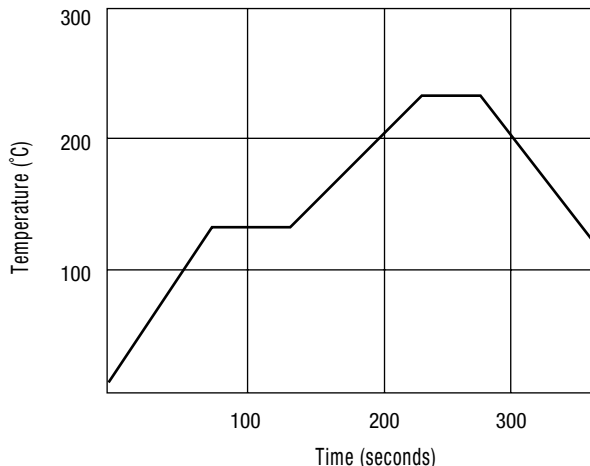


Figure 4. Soldering Profile

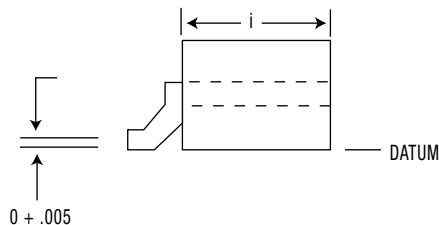


Figure 5. Surface Mount Tolerance for Components with Tabs

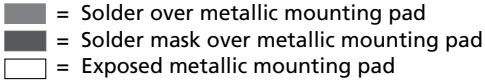
## TECHNICAL CERAMICS

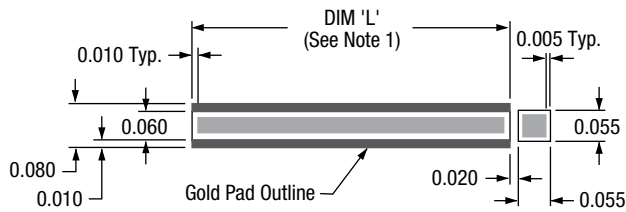
### Ceramic Coaxial Inductors

#### Packaging

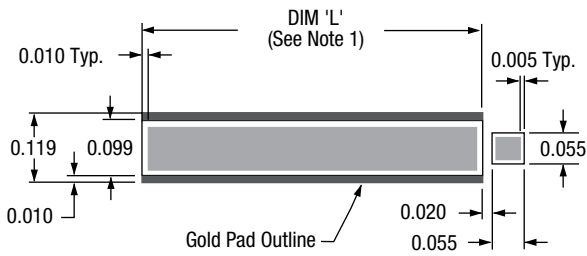
Tape and reel packaging is available. Consult the factory for details.

Notes: 1. Dimension "L" is length which depends on frequency.

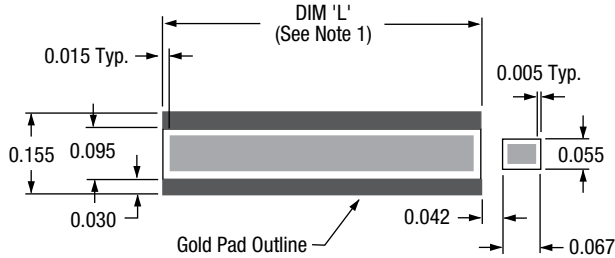
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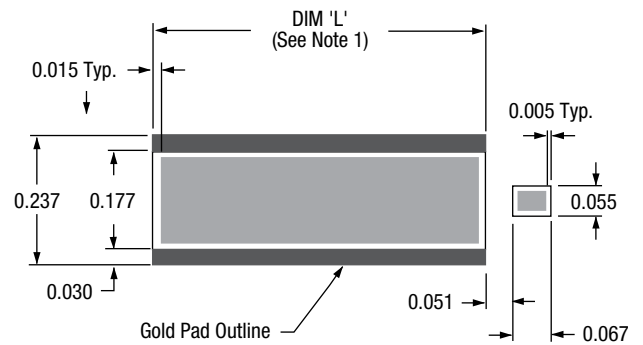
2 mm (5 m) Coaxial Resonator Footpad Dimensions



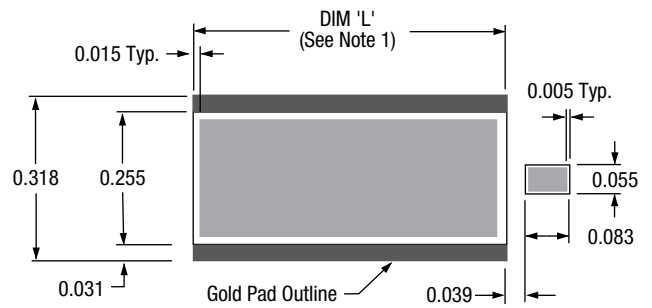
3 mm (MP) Coaxial Resonator Footpad Dimensions



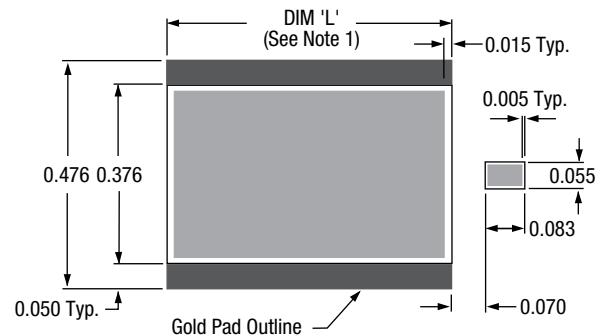
4 mm (LP/LS) Coaxial Resonator Footpad Dimensions



6 mm (SP) Coaxial Resonator Footpad Dimensions



8 mm (EP) Coaxial Resonator Footpad Dimensions



12 mm (HP) Coaxial Resonator Footpad Dimensions

## TECHNICAL CERAMICS

### Standard Filters/Diplexers\*

This list contains Skyworks most popular filter and diplexer designs. A variety of footprints and configurations are available for application-specific needs. Please contact the factory or your local representative with your specifications or for more information on any of these

designs. Skyworks maintains a list of over 700 active filters and diplexers. We welcome every opportunity to assist in the selection or creation of a filter or diplexer that will meet your specifications.

#### CATV

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT3P2-1068P0-3507	Band Pass	3 mm/2 pole	1068	35	0.7	PCB SMT
TT4P2-1013P2-2020	Band Pass	4 mm/2 pole	1013	20	2.0	PCB SMT
TT4P2-1082.5P2-0720	Band Pass	4 mm/2 pole	1082.5	07	2.0	PCB SMT
TT4P2-1082P2-0620	Band Pass	4 mm/2 pole	1082	06	2.0	PCB SMT
TT4P2-1090P2-0610	Band Pass	4 mm/2 pole	1090	06	1.0	PCB SMT
TT4P3-1030P2-1535	Band Pass	4 mm/3 pole	1030	15	3.5	PCB SMT
TT4P3-1067P2-4420	Band Pass	4 mm/3 pole	1067	44	2.0	PCB SMT
TT6P4-1080P4-7015	Band Pass	6 mm/4 pole	1080	70	1.5	PCB SMT
TT6P4-1090P2-1036	Band Pass	6 mm/4 pole	1090	10	3.6	PCB SMT

#### WCS

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT6P6-0750P0-5017	Band Pass	6 mm/6 pole	0750	50	1.7	PCB SMT
TT6P5-0765P0-11225	Band Pass	6 mm/5 pole	0765	112	2.5	PCB SMT
TT6P2-0770T-1215	Band Pass	6 mm/2 pole	0770	12	1.5	PCB SMT
TT6P3-0770T-1225	Band Pass	6 mm/3 pole	0770	12	2.5	PCB SMT
TT6P3-0770T-2020	Band Pass	6 mm/3 pole	0770	20	2.0	PCB SMT

#### MDS

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT4P3-2120P2-6020	Band Pass	4 mm/3 pole	2120	60	2.0	PCB SMT
TT4P6-2122P0-2835	Band Pass	4 mm/6 pole	2122	28	3.5	PCB SMT
TT6P4-2158P2-1422	Band Pass	6 mm/4 pole	2158	14	2.2	PCB SMT
TT6P6-2500P3-3635	Band Pass	6 mm/6 pole	2500	36	3.5	PCB SMT

\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)

**TECHNICAL CERAMICS**  
**Standard Filters/Diplexers\***

ISM

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT4P2-0915P2-2620	Band Pass	4 mm/2 pole	0915	26	2.0	PCB SMT
TT6P2-0902F-2518	Band Pass	6 mm/2 pole	0902	25	1.8	PCB SMT
TT6P2-0915T-2518	Band Pass	6 mm/2 pole	0915	25	1.8	PCB SMT
TT6P3-0902T-2520	Band Pass	6 mm/3 pole	0902	25	2.0	PCB SMT
TT6P3-0915T-2520	Band Pass	6 mm/3 pole	0915	25	2.0	PCB SMT
TT6P3-0917F-1425	Band Pass	6 mm/3 pole	0917	14	2.5	PCB SMT
TT3P3-2400P1-1030	Band Pass	3 mm/3 pole	2400	10	3.0	PCB SMT
TT3P3-2450P1-1445	Band Pass	3 mm/3 pole	2450	14	4.5	PCB SMT
TT6P3-2467P0-3330	Band Pass	6 mm/3 pole	2467	33	3.0	PCB SMT

Cell, PCS, DCS, UMTS

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT3P2-1880P0-6010	Band Pass	3 mm/2 pole	1880	60	1.0	PCB SMT
TT3P3-0881.5P2-2530	Band Pass	3 mm/3 pole	0881.5	25	3.0	PCB SMT
TT3P3-1880P0-6022	Band Pass	3 mm/3 pole	1880	60	2.2	PCB SMT
TT3P3-1960P0-6022	Band Pass	3 mm/3 pole	1960	60	2.2	PCB SMT
TT3P3-1960P2-6030	Band Pass	3 mm/3 pole	1960	60	3.0	PCB SMT
TT3P4-0836.5P2-2525	Band Pass	3 mm/4 pole	0836.5	25	2.5	PCB SMT
TT3P4-0881.5P2-2525	Band Pass	3 mm/4 pole	0881.5	25	2.5	PCB SMT
TT3P4-1880P2-6020	Band Pass	3 mm/4 pole	1880	60	2.0	PCB SMT
TT3P4-1880P2-6030	Band Pass	3 mm/4 pole	1880	60	3.0	PCB SMT
TT4P3-0863P0-0585	Band Pass	4 mm/3 pole	0863	05	8.5	PCB SMT
TT4P3-2180P1-2540	Band Pass	4 mm/3 pole	2180	25	4.0	PCB SMT
TT4P4-1880P0-6216	Band Pass	4 mm/4 pole	1880	62	1.6	PCB SMT
TT4P4-1960P0-6216	Band Pass	4 mm/4 pole	1960	62	1.6	PCB SMT
TT4P5-2240P2-1032	Band Pass	4 mm/5 pole	2240	10	3.2	PCB SMT
TT4P6-0860.5P0-1937	Band Pass	4 mm/6 pole	0860.5	19	3.7	PCB SMT
TT6P3-0836T-2520	Band Pass	6 mm/3 pole	0836	25	2.0	PCB SMT
TT6P3-0860P3-2020	Band Pass	6 mm/3 pole	0860	20	2.0	PCB SMT
TT6P3-0860T-2020	Band Pass	6 mm/3 pole	0860	20	2.0	PCB SMT
TT6P3-0881F-2520	Band Pass	6 mm/3 pole	0881	25	2.0	PCB SMT
TT6P5-1960P0-6025	Band Pass	6 mm/5 pole	1960	60	2.5	PCB SMT
TT6P5-2280P1-7032	Band Pass	6 mm/5 pole	2280	70	3.2	PCB SMT
TT6P6-1900P3-8035	Band Pass	6 mm/6 pole	1900	80	3.5	PCB SMT
TT6P3-2140P2-6011	Band Pass	6 mm/3 pole	2140	60	1.1	PCB SMT
TT6P10-R1950-T2140	Diplexer	6 mm/10 pole	1950	–	–	PCB SMT

\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)

## TECHNICAL CERAMICS

### Standard Filters/Diplexers\*

#### GPS

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT4P4-R1227.6-T1575.42	Diplexer	4 mm/4 pole	1227.6	-	-	PCB SMT
TT4P3-1227.6P1-2030	Band Pass	4 mm/3 pole	1227.6	20	3.0	PCB SMT
TT4P3-1575.42P2-2040	Band Pass	4 mm/3 pole	1575.42	20	4.0	PCB SMT
TT3P3-1227.6P1-1030	Band Pass	3 mm/3 pole	1227.6	10	3.0	PCB SMT
TT3P3-1575.42P2-1030	Band Pass	3 mm/3 pole	1575.42	10	3.0	PCB SMT

#### Other

Part Number	Filter Type	Size/Poles	Center Frequency (MHz)	Bandwidth (MHz)	Insertion Loss (dB)	Package (mm)
TT3P4-2513P2-5055	Band Pass	3 mm/4 pole	2513	50	5.5	PCB SMT
TT3P5-3687P1-7466	Band Pass	3 mm/5 pole	3687	74	6.6	PCB SMT
TT4P3-3417P2-0220	Band Pass	4 mm/3 pole	3417	02	2.0	PCB SMT
TT4P5-1090P0-1050	Band Pass	4 mm/5 pole	1090	10	5.0	PCB SMT
TT6P5-0810P3-5030	Band Pass	6 mm/5 pole	0810	50	3.0	PCB SMT
TT6P4-0509P7-0148	Band Pass	6 mm/4 pole	0509	01	4.8	PCB SMT
TT4P4-1000P2-1030	Band Pass	4 mm/4 pole	1000	10	3.0	PCB SMT
TT6P3-0826.5P3-0520	Band Pass	6 mm/3 pole	0826.5	05	2.0	PCB SMT
TT6P3-0827P3-0620	Band Pass	6 mm/3 pole	0825	06	2.0	PCB SMT
TT6P6-1000P5-8530	Band Pass	6 mm/6 pole	1000	85	3.0	PCB SMT
TT6P6-0545P6-3022	Band Pass	6 mm/6 pole	0545	30	2.2	PCB SMT
TT4P3-3500P2-10020	Band Pass	4 mm/3 pole	3500	100	2.0	PCB SMT
TT6P6-0889P3-4029	Band Pass	6 mm/6 pole	0889	40	2.9	PCB SMT
TT6P4-0722P4-4817	Band Pass	6 mm/4 pole	0722	48	1.7	PCB SMT
TT3P3-1088P2-9015	Band Pass	3 mm/3 pole	1088	90	1.5	PCB SMT
TT6P3-0740P3-2020	Band Pass	6 mm/3 pole	0740	20	2.0	PCB SMT
TT6P5-1950P3-6040	Band Pass	6 mm/5 pole	1950	60	4.0	PCB SMT
TT3P4-0917P2-4524	Band Pass	3 mm/4 pole	0917	45	2.4	PCB SMT
TT6P3-1090P2-1029	Band Pass	6 mm/3 pole	1090	10	2.9	PCB SMT
TT6P4-0770P0-1240	Band Pass	6 mm/4 pole	0770	12	4.0	PCB SMT
TT6P3-1030P2-1029	Band Pass	6 mm/3 pole	1030	10	2.9	PCB SMT
TT6P5-0881.5P0-2530	Band Pass	6 mm/5 pole	0881.5	25	3.0	PCB SMT
TT6P3-0730P3-1213	Band Pass	6 mm/3 pole	0730	12	1.3	PCB SMT
TT6P3-0445.25T-0145	Band Pass	6 mm/3 pole	0445.25	01	4.5	PCB SMT
TT4P3-2400P1-20015	Band Pass	4 mm/3 pole	2400	200	1.5	PCB SMT
TT6P3-1080P2-0650	Band Pass	6 mm/3 pole	1080	06	5.0	PCB SMT
TT6P3-0745.3P3-1920	Band Pass	6 mm/3 pole	0745.3	19	2.0	PCB SMT
TT6P4-0435P0-3019-NS	Band Pass	6 mm/4 pole	0435	30	1.9	PCB SMT
TT3P4-0895.5P2-3926	Band Pass	3 mm/4 pole	0895.5	39	2.6	PCB SMT

\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)



## REFERENCE MATERIAL

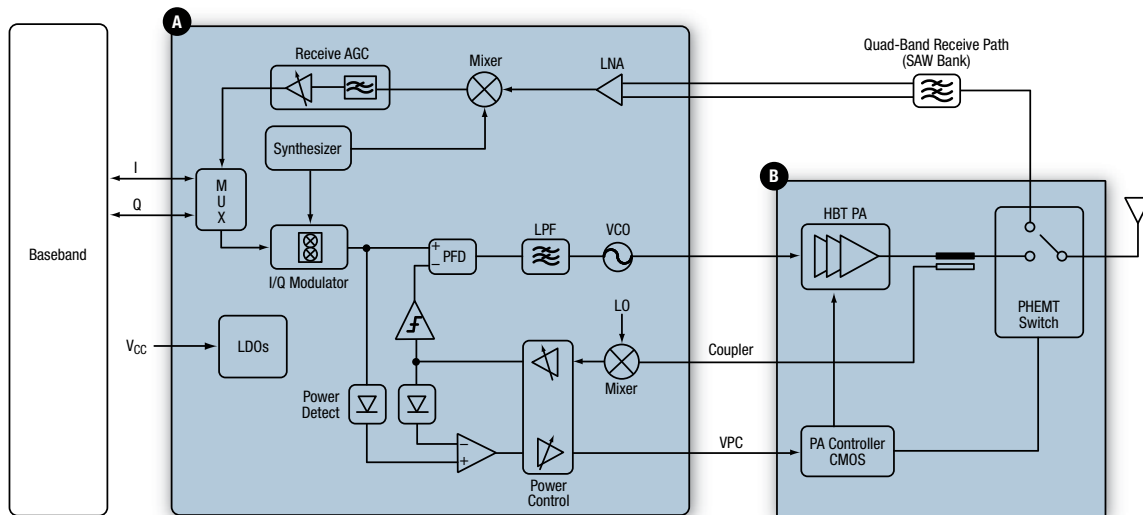
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## BLOCK DIAGRAMS

### Handsets

#### Helios™ II-Plus EDGE RF Subsystem

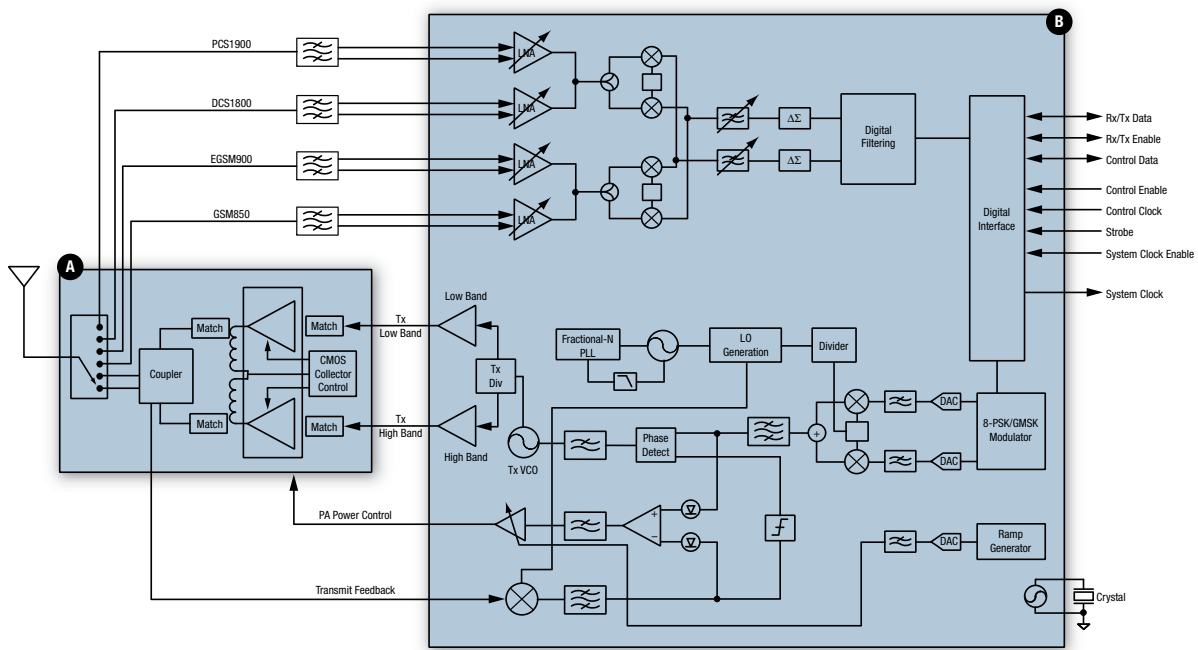


**RF Transceiver**  
**A** SKY74138

**Front-End Module**  
**B** SKY77523

### Handsets

#### Helios™ 3 EDGE RF Subsystem



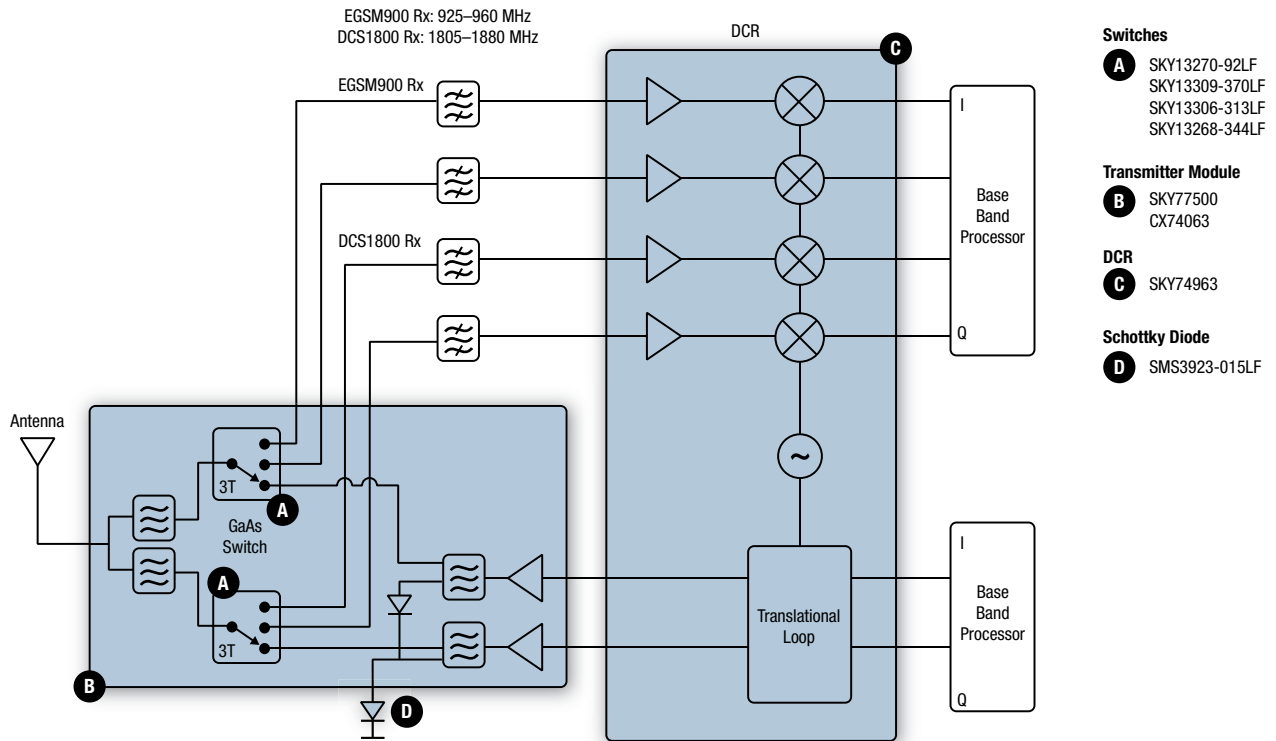
**Front-End Module**  
**A** SKY77524

**Transceiver**  
**B** SKY74218

## BLOCK DIAGRAMS

### Handsets

#### Quad-Band GSM/GPRS RF Subsystem with DCR™ Transceiver



#### Switches

- A** SKY13270-92LF
- SKY13309-370LF
- SKY13306-313LF
- SKY13268-344LF

#### Transmitter Module

- B** SKY77500
- CX74063

#### DCR

- C** SKY74963

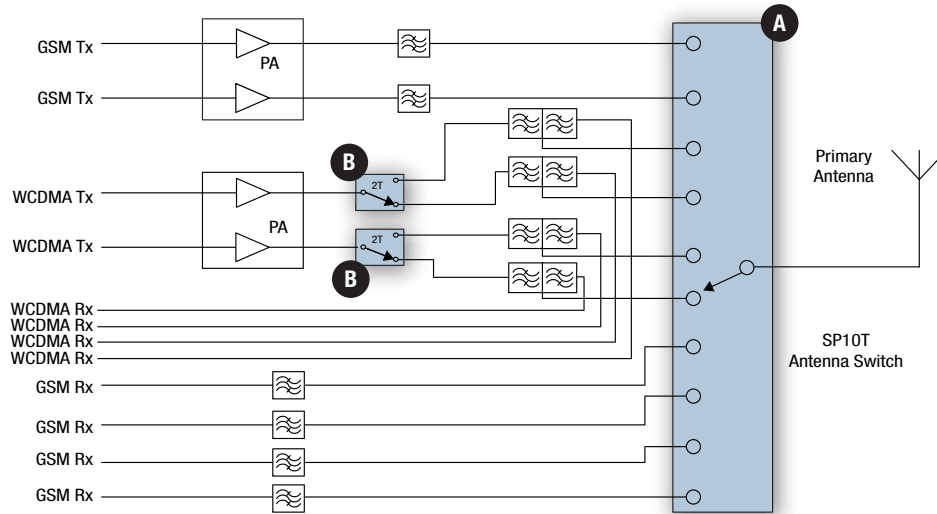
#### Schottky Diode

- D** SMS3923-015LF

# BLOCK DIAGRAMS

## Handsets

Smart Phone Using Discrete Switches or Antenna Switch Modules (ASMs)



### Primary Antenna Switch

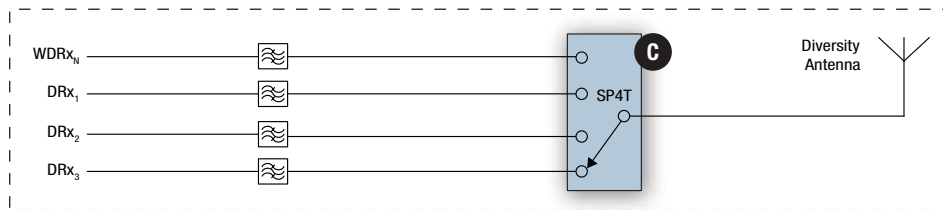
- A** SKY14152
- SKY13364-389LF
- SKY13362-389LF
- SKY18806

### Mode/Band Switch

- B** SKY13323-374LF
- SKY13350-385LF
- SKY13351-378LF
- SKY13309-370LF
- SKY13317-373LF
- SKY14155-368LF

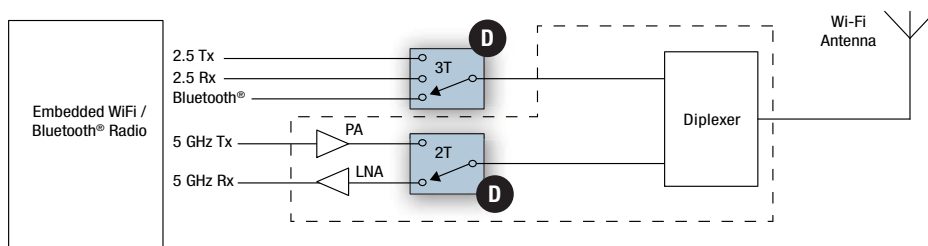
### Diversity Antenna Switch

- C** SKY13323-374LF
- SKY13350-385LF
- SKY13351-378LF
- SKY13309-370LF
- SKY13317-373LF
- SKY13322-375LF
- SKY14153-368LF
- SKY14151-350LF



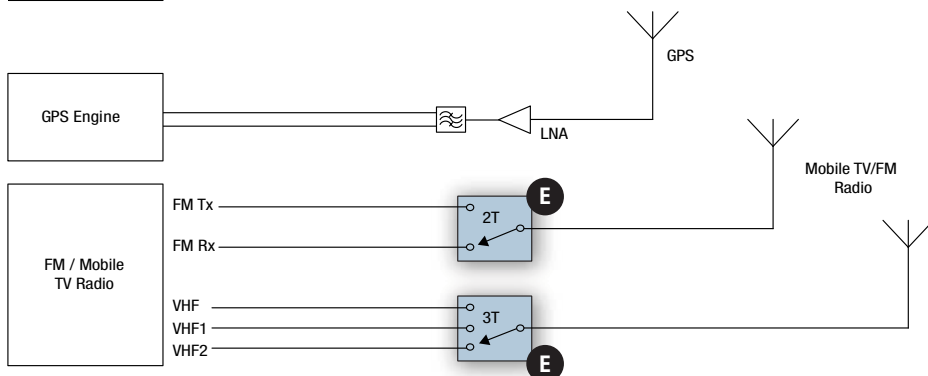
### Mobile Connectivity— Embedded Wi-Fi

- D** SKY13323-374LF
- SKY13350-385LF
- SKY13351-378LF
- SKY13309-370LF
- SKY13317-373LF



### Mobile Connectivity— Mobile TV

- E** SKY13323-374LF
- SKY13350-385LF
- SKY13351-378LF
- SKY13309-370LF
- SKY13317-373LF
- SKY13322-375LF
- SKY14153-368LF

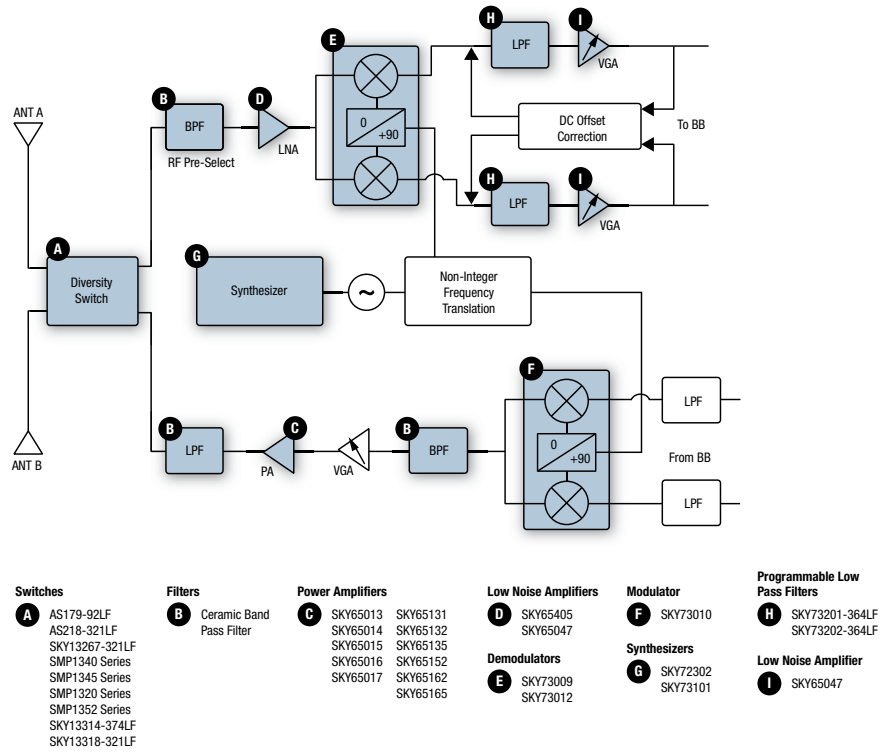


--- Optional

## BLOCK DIAGRAMS

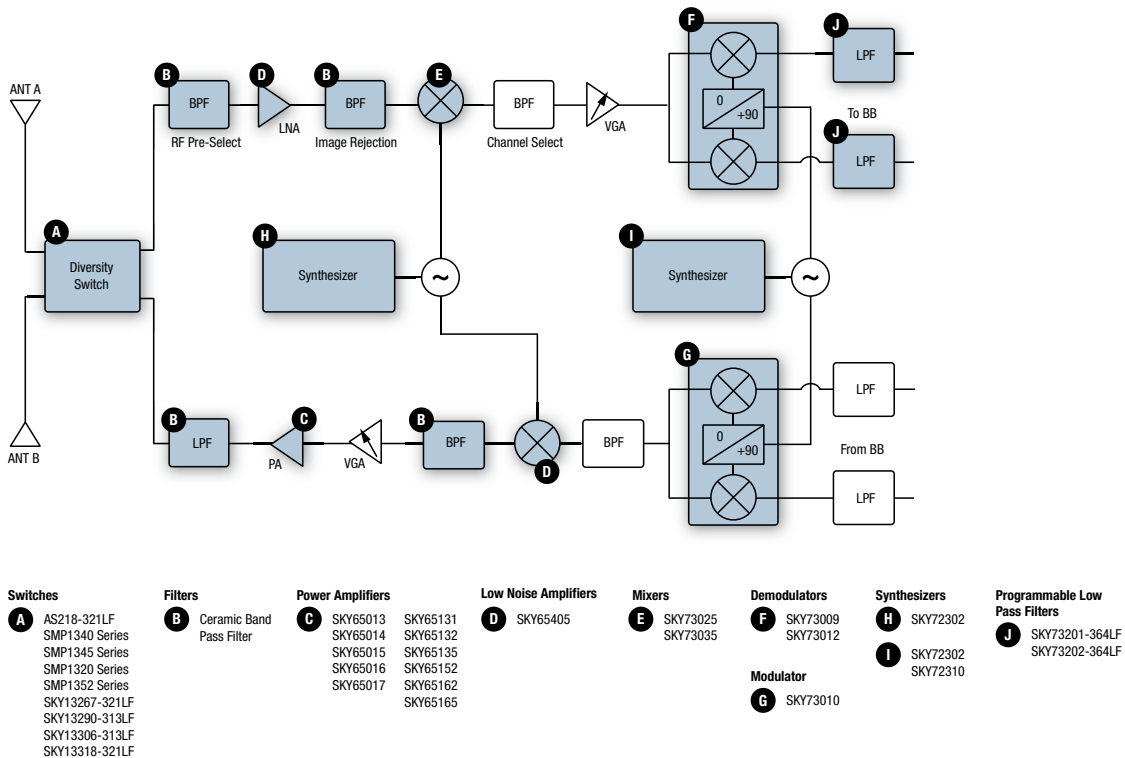
### WiFi and ISM-Band Applications

#### 2.4 GHz Direct Conversion Architecture



### WiFi and ISM-Band Applications

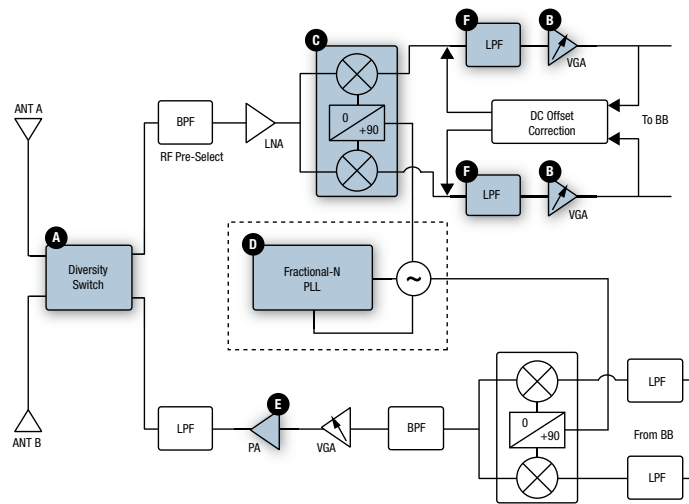
#### 2.4 GHz Superheterodyne Architecture



## BLOCK DIAGRAMS

## WiMAX

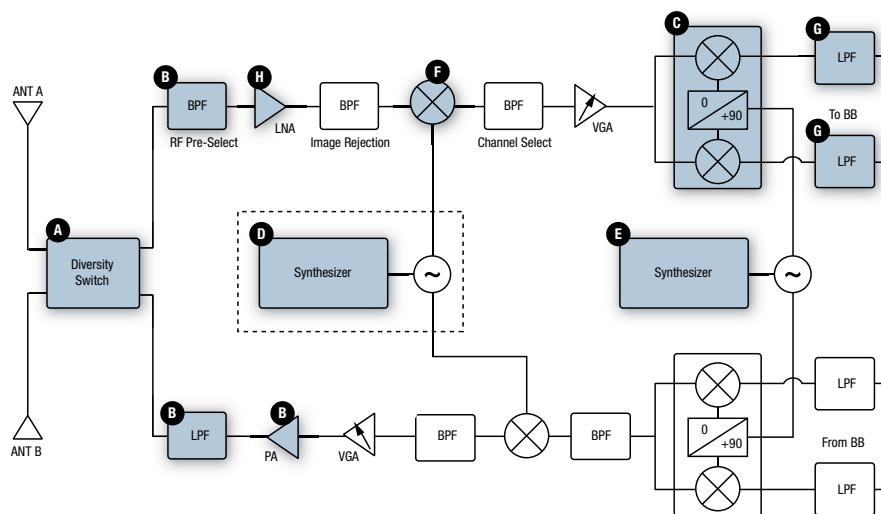
## 2.5 GHz Direct Conversion Architecture



Switches	Low Noise Amplifier	Demodulators	Synthesizer	Power Amplifiers	Programmable Low Pass Filters
<b>A</b> SKY13267-321LF SMP1340 Series SMP1345 Series SMP1320 Series SMP1352 Series SKY13318-321LF SKY13348-374LF SKY13320-374LF SKY13321-360LF SKY13290-313LF SKY13306-313LF	<b>B</b> SKY65047 SKY65081	<b>C</b> SKY73012	<b>D</b> SKY72302 SKY73134	<b>E</b> SKY65013 SKY65014 SKY65015 SKY65017 SKY65081 SKY65162 SKY65028 SKY65005	<b>F</b> SKY73201-364LF SKY73202-364LF

## WiMAX

## 2.5 GHz Superheterodyne Architecture

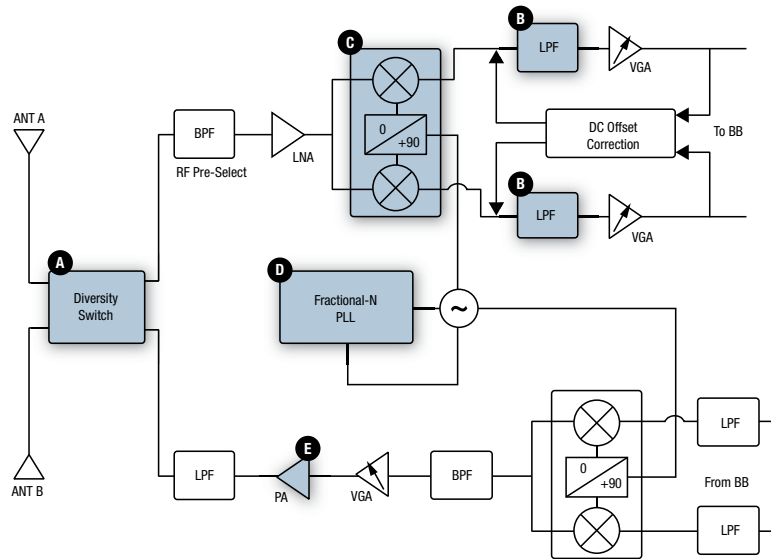


Switches	Power Amplifiers	Synthesizers	Programmable Low Pass Filters
<b>A</b> SMP1340 Series SMP1345 Series SMP1320 Series SMP1352 Series SKY13267-321LF SKY13290-313LF SKY13306-313LF SKY13318-321LF SKY13348-374LF SKY13320-374LF SKY13321-360LF	<b>B</b> SKY65081 SKY65162 SKY65028	<b>D</b> SKY72302 SKY73134 <b>E</b> SKY72302	<b>G</b> SKY73201-364LF SKY73202-364LF
<b>C</b> SKY73009 SKY73012	<b>Ultra Low Noise Amplifiers</b>	<b>Mixers</b>	<b>H</b> SKY65081 SKY65047
		<b>F</b> SKY73025 SKY73048	

## BLOCK DIAGRAMS

### WiMAX

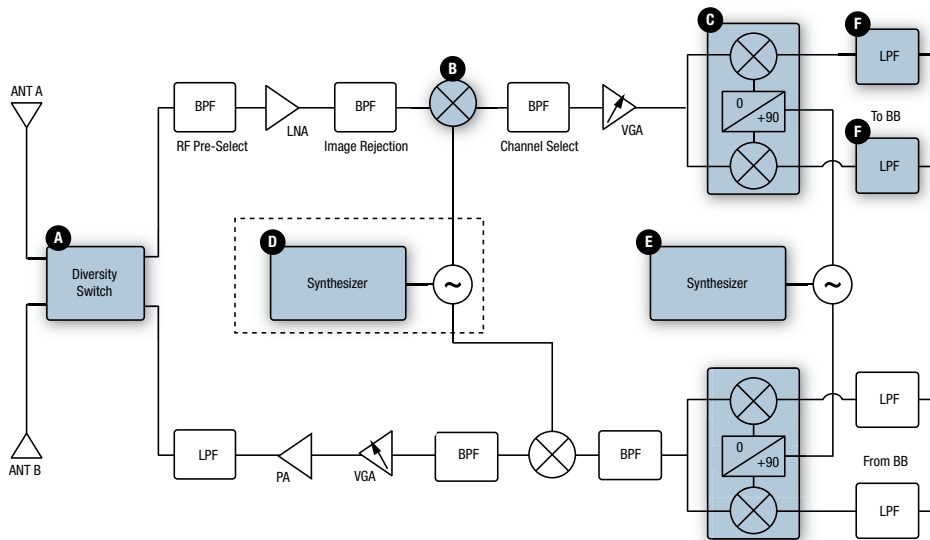
#### 3.5 GHz Direct Conversion Architecture



- |  |   |                     |                               |   |
|--|---|---------------------|-------------------------------|---|
| <b>Switches</b>  | <b>Programmable Low Pass Filters</b>      | <b>Demodulators</b> | <b>Synthesizer</b>            | <b>Power Amplifiers</b>                               |
| <b>A</b> AS179-92LF<br>AS218-321LF<br>SKY13267-321LF<br>SMP1340 Series<br>SMP1345 Series<br>SMP1320 Series<br>SMP1352 Series<br>SKY13314-314LF | <b>B</b> SKY73201-364LF<br>SKY73202-364LF | <b>C</b> SKY73012   | <b>D</b> SKY72302<br>SKY73134 | <b>E</b> SKY65013<br>SKY65014<br>SKY65015<br>SKY65017 |

### WiMAX

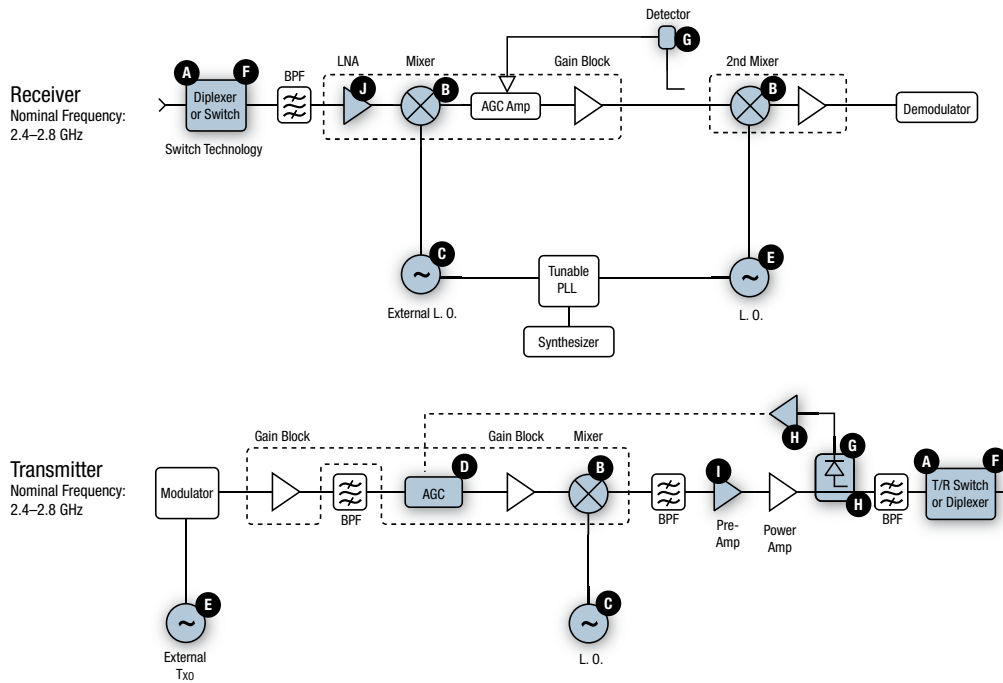
#### 3.5 GHz Superheterodyne Architecture



- |  |                       |                               |  |   |
|--|-----------------------|-------------------------------|--|---|
| <b>Switches</b>  | <b>I/Q Modulators</b> | <b>Demodulators</b>           | <b>Synthesizers</b>                                | <b>Programmable Low Pass Filters</b>      |
| <b>A</b> AS218-321LF<br>SMP1340 Series<br>SMP1345 Series<br>SMP1320 Series<br>SMP1352 Series<br>SKY13267-321LF<br>SKY13290-313LF<br>SKY13306-313LF | <b>B</b> SKY73048     | <b>C</b> SKY73009<br>SKY73012 | <b>D</b> SKY72302<br>SKY73134<br><b>E</b> SKY72302 | <b>F</b> SKY73201-364LF<br>SKY73202-364LF |

## BLOCK DIAGRAMS

### WiMAX MMDS Link



**PIN Diodes/Switches**

- A** AS191-73LF  
SKY13276-334  
SMP1340-079LF

**Mixer**

- B** SMS3926-023LF  
SKY73025  
SKY73035  
SKY73032  
SKY42068  
SKY73048

- D** SMP1302 Series

- H** SMS7621 Series

**Varactor Diodes/Oscillators**

- C** SMV1763-079LF  
SKY73134

- E** SMV1213-079LF  
SKY73134

- F** Ceramic Diplexer

**Directional Detector**

- G** DD02-999LF

**Amplifiers**

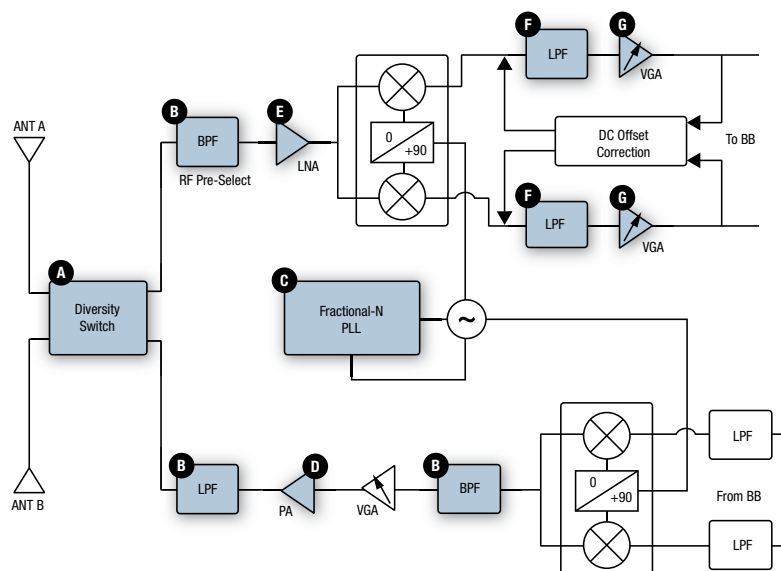
- I** SKY65013  
SKY65014  
SKY65015  
SKY65016  
SKY65017  
SKY65081  
SKY65028  
SKY65162

**Programmable Low Pass Filter**

- J** SKY65081

### WiFi

#### 5.8 GHz Direct Conversion Architecture



- Switch**
- A** SKY13306-313LF  
SKY13314-374LF

- Filters**
- B** Ceramic Band Pass Filter

- Synthesizer**
- C** SKY72302

- Power Amplifiers**
- D** SKY65013  
SKY65014  
SKY65015  
SKY65017  
SKY65137  
SKY65157

- Low Noise Amplifiers**
- E** SKY65404

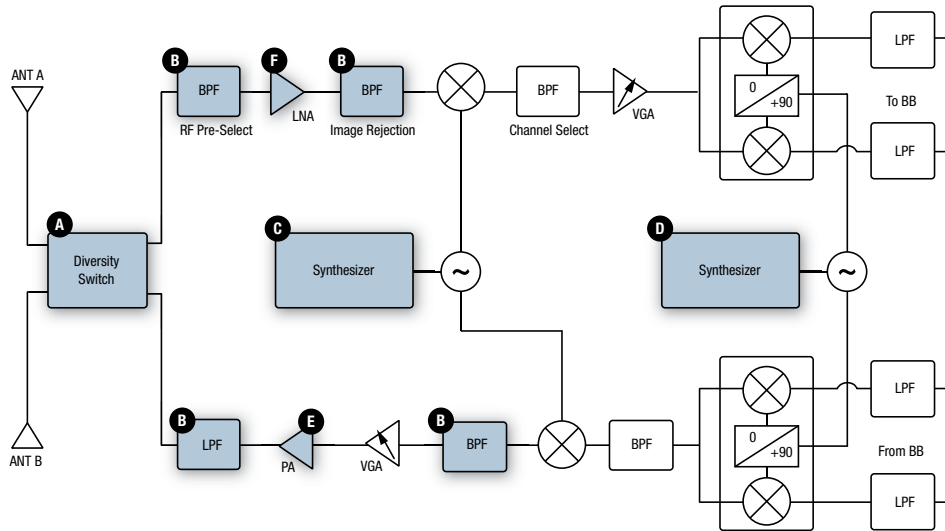
- Programmable Low Pass Filters**
- F** SKY73201-364LF  
SKY73202-364LF

- Low Noise Amplifier**
- G** SKY65047

## BLOCK DIAGRAMS

### WiFi

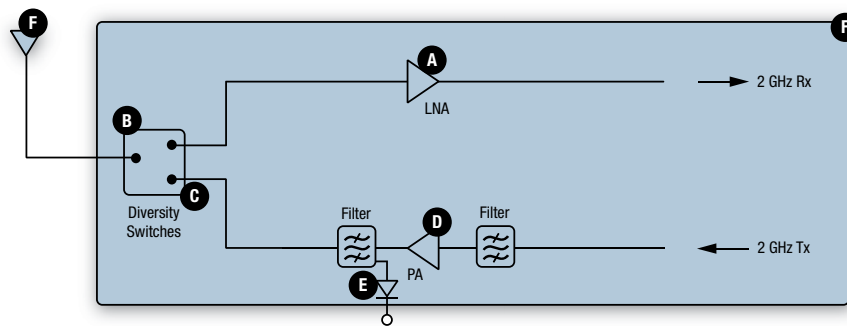
#### 5.8 GHz Superheterodyne Architecture



- |   |                                      |  |   |                             |
|---|--------------------------------------|--|---|-----------------------------|
| <b>Switch</b>                             | <b>Filters</b>                       | <b>Synthesizers</b>                    | <b>Power Amplifiers</b>   | <b>Low Noise Amplifiers</b> |
| <b>A</b> SKY13306-313LF<br>SKY13314-374LF | <b>B</b> Ceramic Band<br>Pass Filter | <b>C</b> SKY72302<br><b>D</b> SKY72302 | <b>E</b> SKY65013<br>SKY65014<br>SKY65015<br>SKY65017<br>SKY65137<br>SKY65157 | <b>F</b> SKY65404           |

### WLAN

#### Wireless LAN Front-End for 2.4 GHz for 802.11b,g,n Single-Band Applications



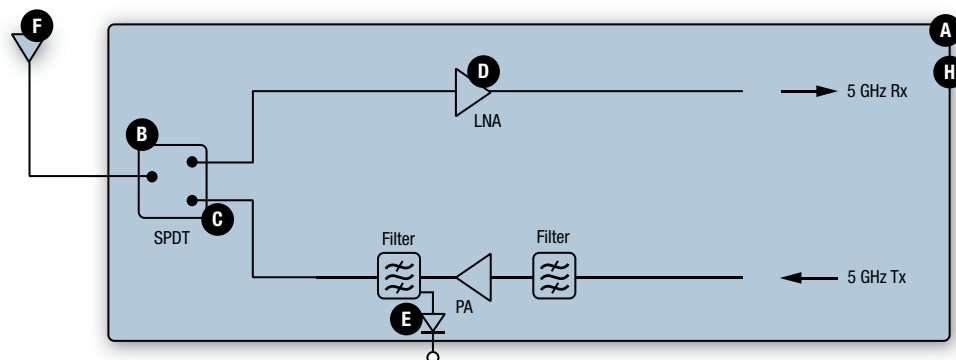
- |                                  |   |   |   |  |                               |
|----------------------------------|---|---|---|--|-------------------------------|
| <b>Ultra Low Noise Amplifier</b> | <b>Switches</b>   | <b>PIN Diodes</b>   | <b>Power Amplifiers</b>   | <b>Detectors</b>   | <b>Front-End Module</b>       |
| <b>A</b> SKY65405-11<br>SKY65047 | <b>B</b> SKY13268-344LF<br>SKY13276-334<br>SKY13306-313LF<br>SKY13314-374LF<br>SKY13323-378LF<br>SKY13350-385LF<br>SKY13351-378LF<br>AS179-92LF | <b>C</b> SMP1340-079LF<br>SMP1345-040LF<br><b>F</b> SMP1340-079LF | <b>D</b> SKY65006<br>SKY65132<br>SKY65135<br>SKY65152<br>SKY65165<br>SKY65137<br>SKY65157 | <b>E</b> DD02-999LF<br>SMS7621-079LF<br>SMS7630-061<br>SMS7630-079LF<br>SMS7621-040LF<br>SMS7630-040LF | <b>F</b> SKY65249<br>SKY65296 |



## BLOCK DIAGRAMS

## WLAN

Wireless LAN Front-End for 802.11a,n Single-Band Mobile and Portable Applications



## Front-End Module

A SKY65550-11

## Switches

B SKY13276-334  
SKY13351-378LF  
SKY13350-385LF

## PIN Diodes

C SMP1340-079LF  
SMP1345-040LF

## Ultra Low Noise Amplifiers

D SKY13335-381LF  
SKY65404-11

## Detectors

E DD02-999LF  
SMS7621-079LF  
SMS7630-061  
SMS7630-079LF  
SMS7621-040LF  
SMS7630-040LF

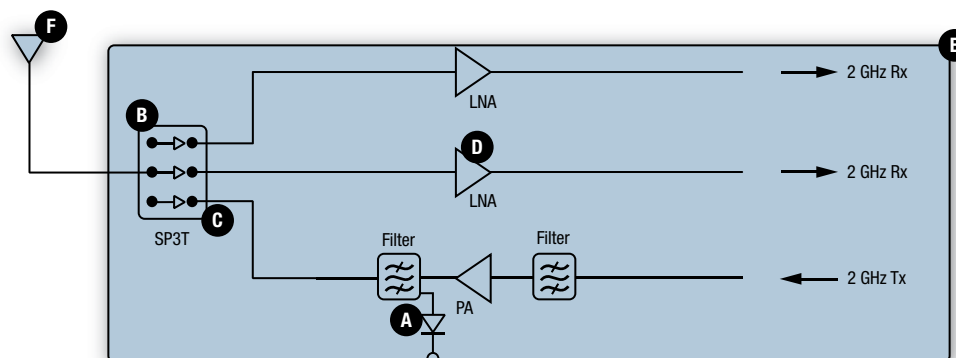
## Receive Module

H SKY65507-11

F SMP1340-079LF

## WLAN

Wireless LAN Front-End for 802.11b,g,n Single-Band Mobile and Portable Applications



## Detectors

A DD02-999LF  
SMS7621-079LF  
SMS7630-061  
SMS7630-079LF  
SMS7621-040LF  
SMS7630-040LF

## Switches

B SKY13309-370LF  
SKY13317-373LF

## PIN Diodes

C SMP1340-079LF  
SMP1345-040LF  
SMP1345-518

## Ultra Low Noise Amplifiers

D SKY65405  
SKY65047  
SKY65050

## Front-End Modules

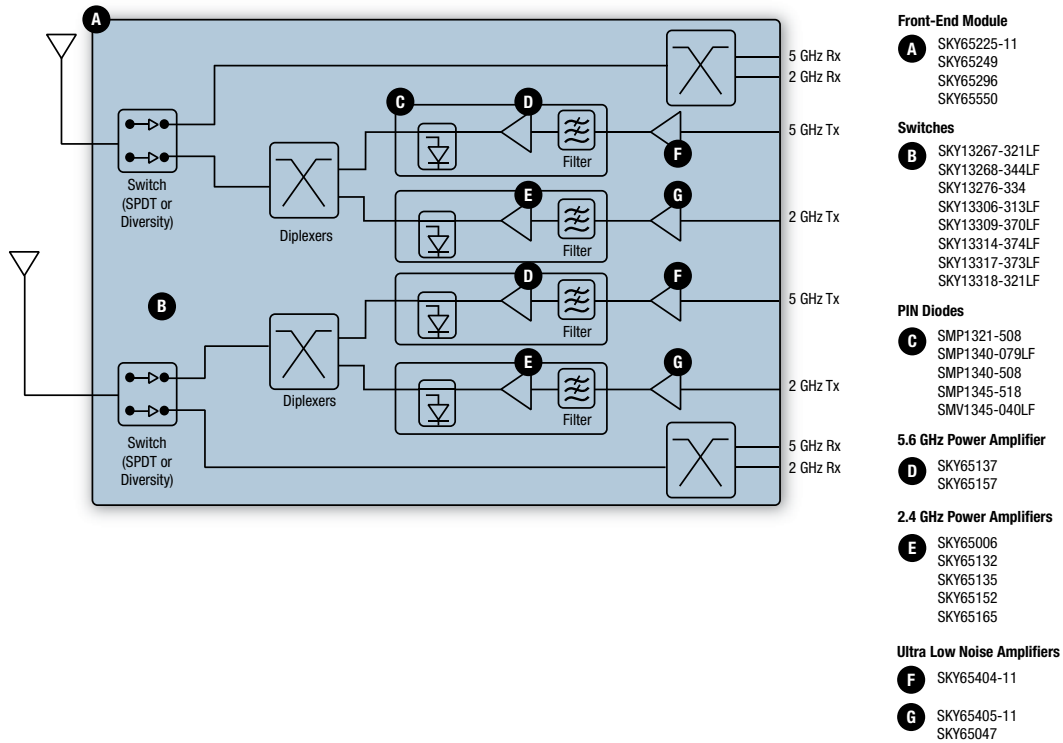
E SKY65298

F SMP1345-518

## BLOCK DIAGRAMS

### WLAN

Wireless LAN FEM for 802.11a,b,g,n, Single and Dual-Band Applications, Multiple Antenna Configurations



### Infrastructure

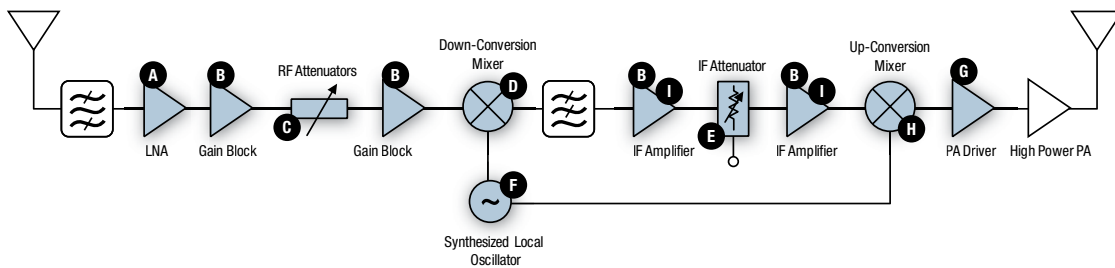
2G, 3G Base Station Repeater

Down-Link/Up-Link

RF Frequency Band: GSM, DCS, PCS, TD-SCDMA, WCDMA

800 MHz, 900 MHz, 1800/1900 MHz, LTE 2.1 GHz, 2.3-2.4 GHz

IF Frequency: 50~250 MHz



**LNA**

- A** SKY65084  
SKY65048  
SKY65049  
SKY65066  
SKY65051  
SKY65052  
SKY65053  
SKY65050  
SKY67100  
SKY67101

**General Purpose Amplifier**

- B** SKY65013-70LF  
SKY65013-92LF  
SKY65014-70LF  
SKY65014-92LF  
SKY65015-70LF  
SKY65015-92LF  
SKY65016-70LF  
SKY65016-92LF  
SKY65017-70LF  
SKY65009-70LF  
SKY65028-70LF  
SKY65038-70LF  
SKY65045-70LF  
SKY65080-70LF  
SKY65161  
SKY65162

**RF Attenuator**

- C** **Digital**  
SKY12323-303LF  
SKY12329  
SKY12340  
SKY12345
- Voltage Variable**  
AV101-12LF  
AV102-12LF  
AV113-12LF  
AV111-12LF  
SKY12143-315  
SKY12144-315  
SKY12145-315
- PIN Diodes**  
SMP1304  
SMP1307

**Down Conversion Mixer**

- D** SKY73032  
SKY73070  
SKY73033  
SKY73035  
SKY73062  
SKY73063  
SKY73069

**IF Attenuator**

- E** **PIN Diodes**  
SMP1304  
SMP1307
- Digital**  
SKY12406-360LF  
AA113

**PLL/VCO/Synthesizer**

- F** SKY73120  
SKY72310-362  
SKY72300-21  
SKY72300-362  
SKY72301-22  
SKY72302-21  
SKY74038-21  
SKY73100  
SKY73101  
SKY73103  
SKY73112  
SKY73121  
SKY73134

**PA Driver**

- G** SKY65009-70LF  
SKY65028-70LF  
SKY65038-70LF  
SKY65045-70LF  
SKY65080-70LF  
SKY65112-84LF  
SKY65113-84LF  
SKY65120  
SKY65124  
SKY65126  
SKY65127  
SKY65161  
SKY65162

**Up-Conversion Mixer**

- H** SKY73062  
SKY73063  
SKY73069

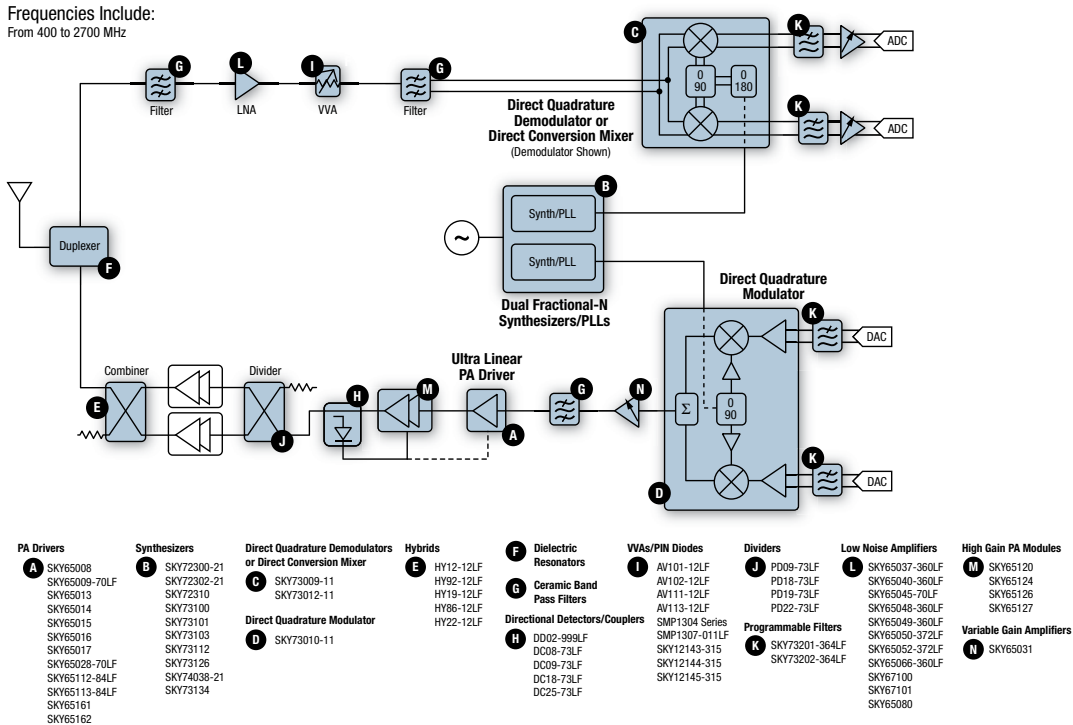
**IF Amplifier**

- I** SKY65013-70LF  
SKY65013-92LF  
SKY65014-70LF  
SKY65014-92LF  
SKY65015-70LF  
SKY65015-92LF  
SKY65016-70LF  
SKY65016-92LF  
SKY65017-70LF

# BLOCK DIAGRAMS

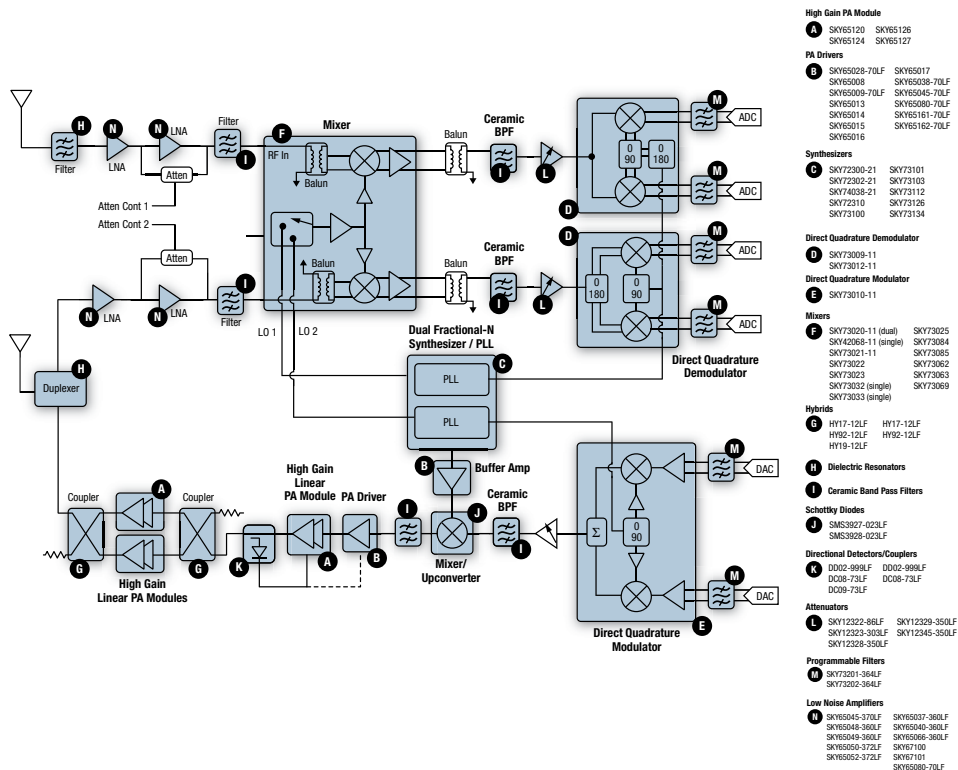
## Infrastructure

### Direct Conversion Base Station Transceiver



## Infrastructure

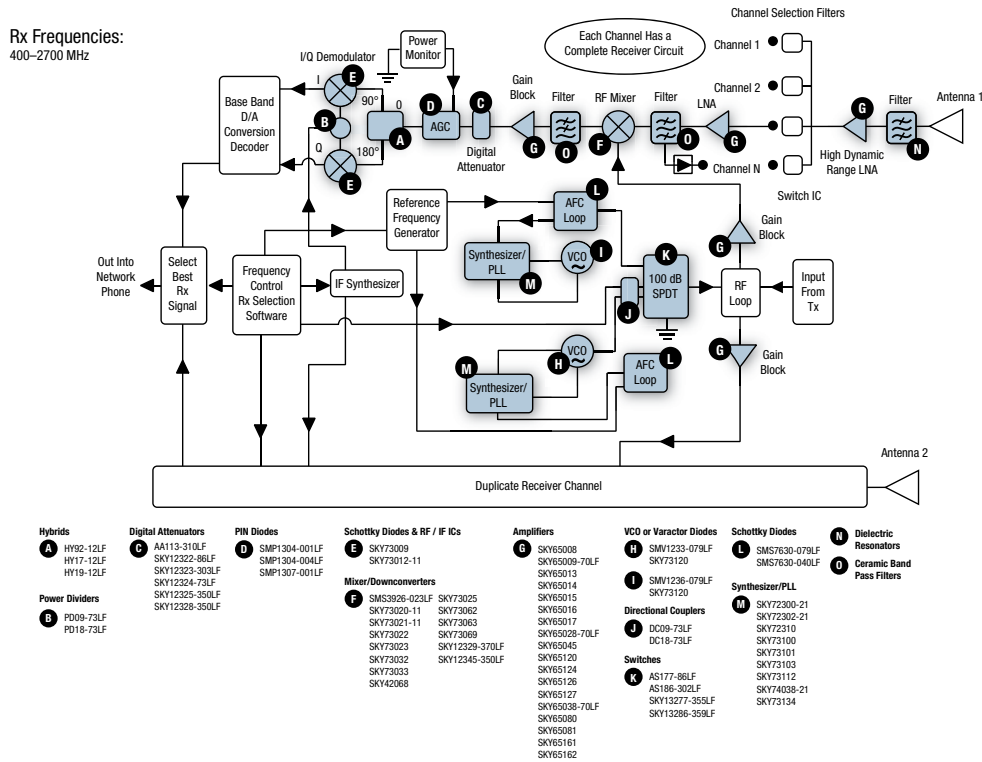
### Superheterodyne Base Station Transceiver



# BLOCK DIAGRAMS

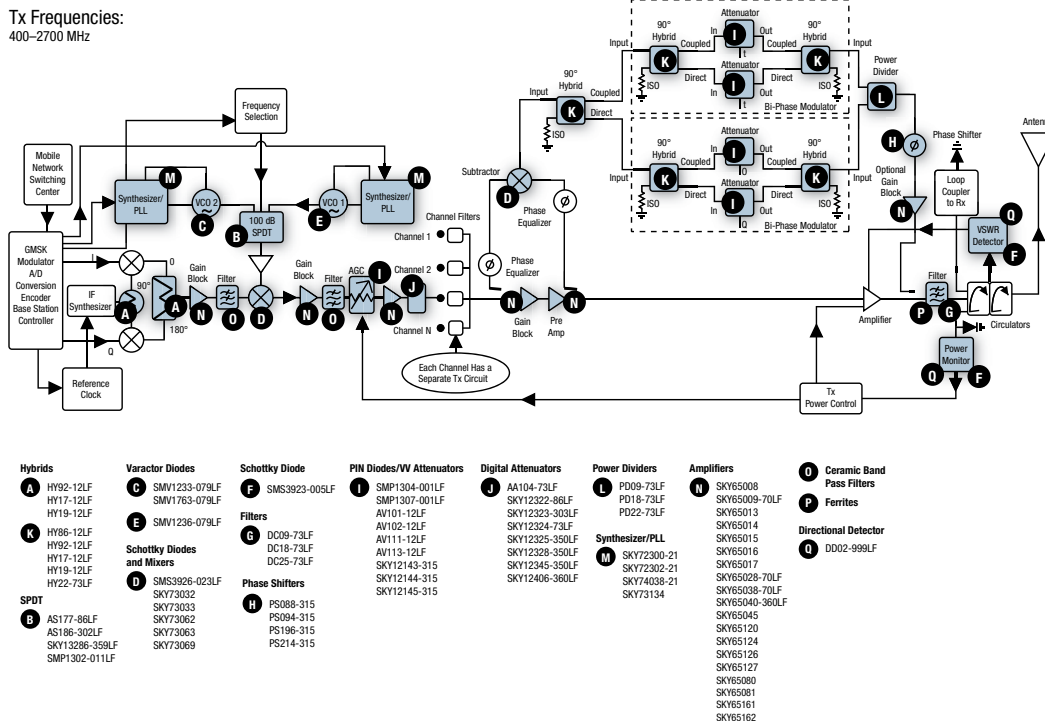
## Infrastructure

### Base Station Receiver System Using Antenna Diversity



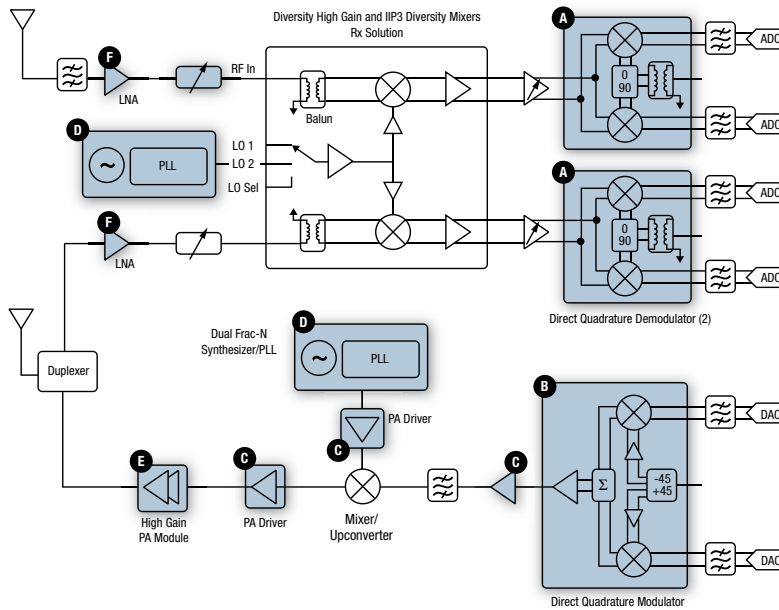
## Infrastructure

### Base Station Transmitter With Combining Amplifier



## BLOCK DIAGRAMS

### Infrastructure Transceiver



#### Direct Quadrature Demodulators

- A** SKY73009-11  
SKY73012

#### Direct Quadrature Modulators

- B** SKY73010-11

#### Amplifiers

- C** SKY65008  
SKY65009-70LF  
SKY65013  
SKY65014-92LF  
SKY65014-92LF  
SKY65014-214LF  
SKY65015  
SKY65016  
SKY65017  
SKY65038-70LF  
SKY65045-70LF  
SKY65080-70LF  
SKY65081-70LF  
SKY65161-70LF  
SKY65162-70LF

#### Synthesizer/PLL

- D** SKY72300-21  
SKY72302-21  
SKY72310  
SKY73100  
SKY73101  
SKY73103  
SKY73112  
SKY74038-21  
SKY73126

#### High Gain PA Module

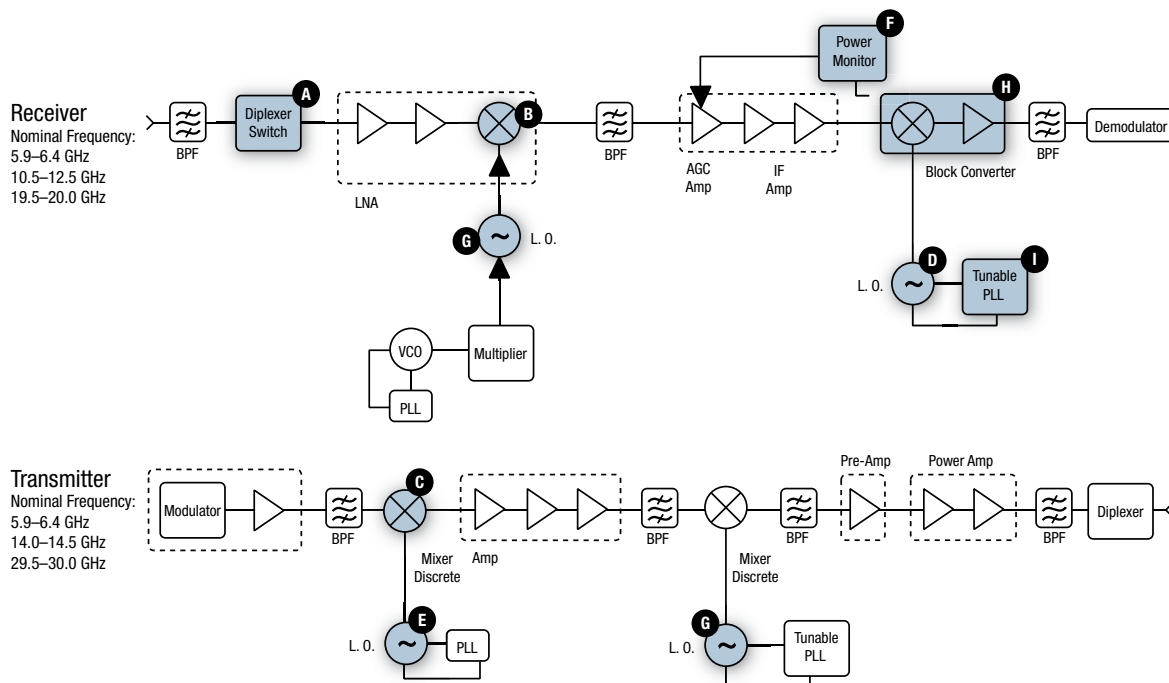
- E** SKY65120  
SKY65124  
SKY65126  
SKY65127

#### Low Noise Amplifiers

- F** SKY65037-360LF SKY65066-360LF  
SKY65040-360LF SKY67100  
SKY65045-70LF SKY67101  
SKY65048-360LF SKY65080  
SKY65049-360LF SKY65081  
SKY65050-372LF SKY65161  
SKY65052-372LF SKY65162

## Broadband Access Systems

### Satellite Systems



#### PIN Diodes

- A** SMP1321-005LF

#### Schottky Diodes

- B** SMS7621-005LF
- C** SMS3926 Series
- F** SMS7621-079LF  
SMS7630-061  
DMK2308-000  
SMS7621-040LF

#### Varactor Diodes

- D** SMV1265-011LF
- E** SMV1142-011LF
- G** SMV2019-079LF  
SMV1430-079LF

#### Upconverters

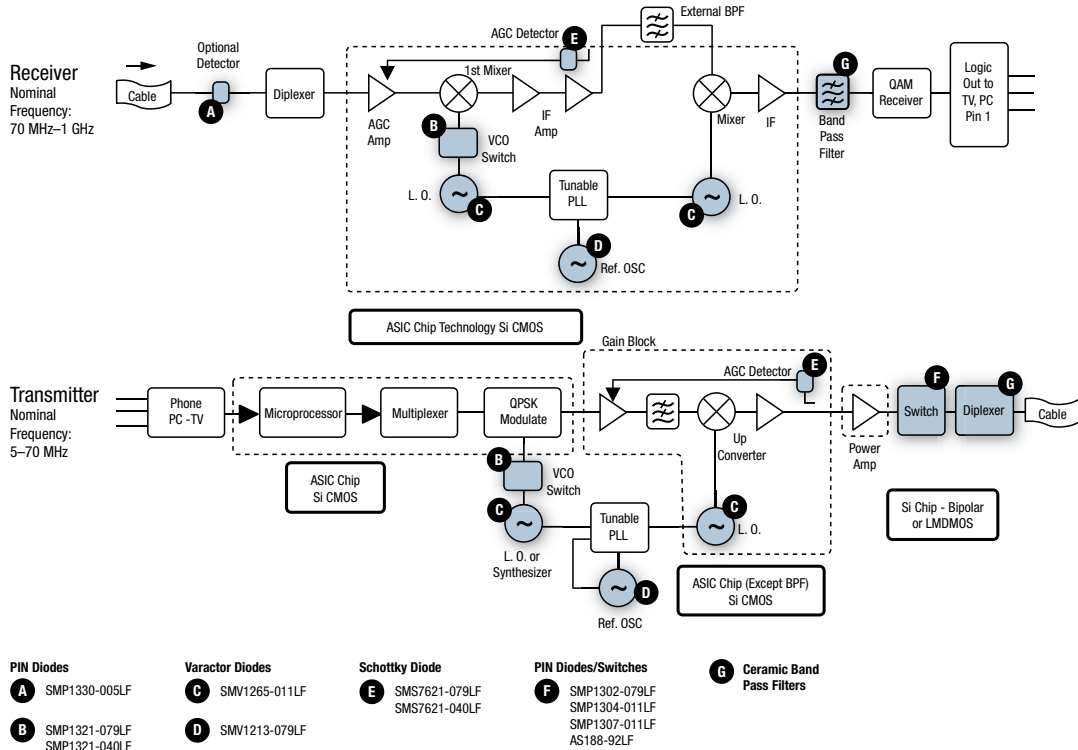
- H** SKY73032  
SKY73033  
SKY42068

#### Synthesizer/PLL

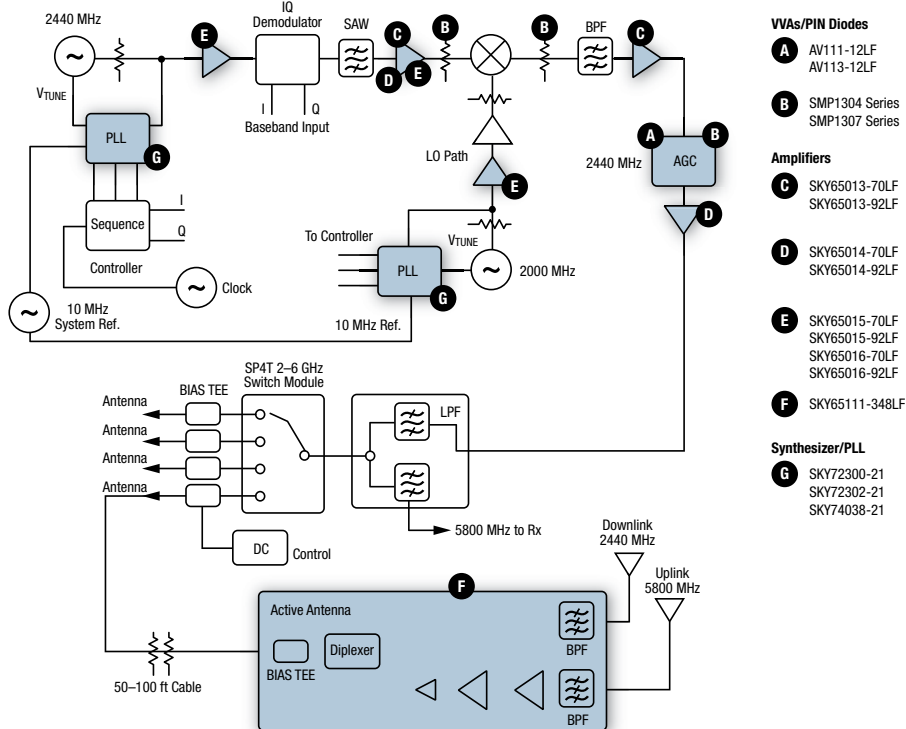
- I** SKY72310  
SKY73100  
SKY73101  
SKY73103  
SKY73112

# BLOCK DIAGRAMS

## CATV Modem

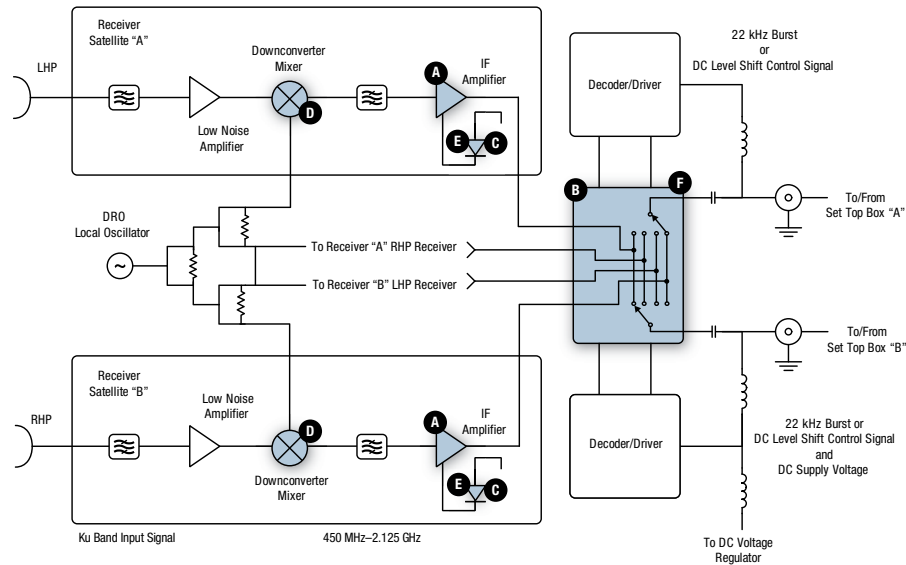


## Reader/Active Antennas/Transmitter, Full Duplex 2440



## BLOCK DIAGRAMS

### LNB



**Amplifiers**

- A** SKY65013-70LF SKY65013-92LF SKY65014-70LF SKY65014-92LF
- SKY65015-70LF SKY65015-92LF SKY65016-70LF SKY65016-92LF SKY65017-70LF

**Switches**

- B** SKY13272-340LF SKY13264-340LF SKY13292-365LF SKY13293-340LF SKY13327-365LF SKY13269

**Schottky Diodes**

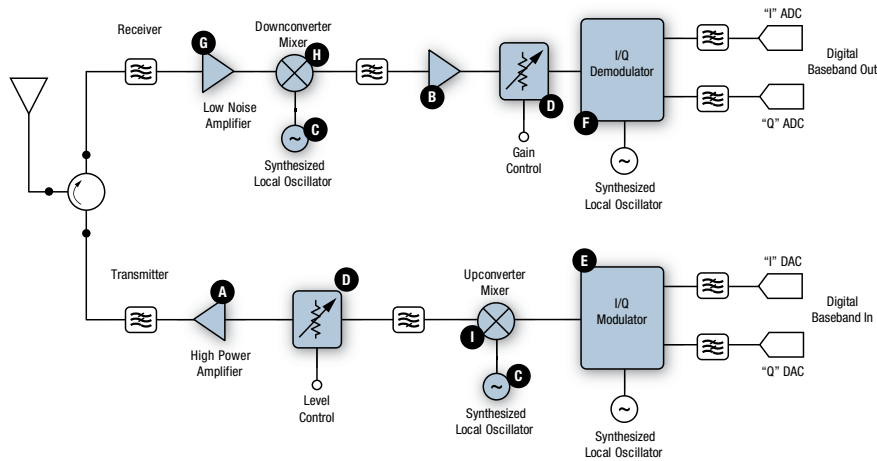
- D** DMK2790-000 DMK2308-000
- E** SMS7621-060

**PIN Diodes**

- F** SMP1321-005LF SMP1340-079LF SMP1340-040LF

- C** SMS7621-006LF

### Transceiver (Simplified)



**Amplifiers**

- A** SKY65111-348LF
- B** SKY65013-70LF SKY65013-92LF SKY65013-214LF SKY65014-70LF SKY65014-92LF SKY65014-214LF
- SKY65015-70LF SKY65015-92LF SKY65015-214LF SKY65016-70LF SKY65016-92LF SKY65016-214LF

**Synthesizers/PLLs**

- C** SKY72300-21 SKY72302-21 SKY74038-21

**Attenuators**

- D** AA264-87LF SKY12322-86LF SKY12323-303LF SKY12324-73LF SKY12325-350LF SKY12328-350LF SKY12329-350LF SKY12406-360LF SKY12345-350LF

**Direct Quadrature Modulator**

- E** SKY73010-11

**Direct Quadrature Demodulators**

- F** SKY73009-11 SKY73012-11

**LNA**

- G** SKY65084 SKY65048 SKY65049 SKY65066 SKY65051 SKY65052 SKY65053 SKY65050 SKY67100 SKY67101

**Down Conversion Mixer**

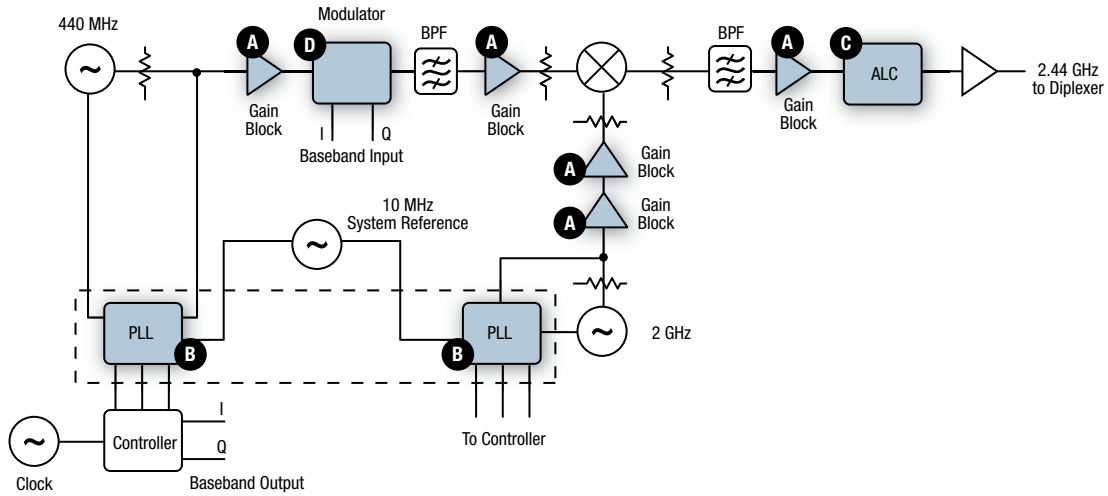
- H** SKY73032 SKY73070 SKY73033 SKY73035 SKY65051 SKY73062 SKY73063 SKY73069

**Up-Conversion Mixer**

- I** SKY73062 SKY73063 SKY73069

## BLOCK DIAGRAMS

### RF ID Transmitter



**Amplifiers**

- A** SKY65013-70LF SKY65015-70LF
- SKY65013-92LF SKY65015-92LF
- SKY65014-70LF SKY65016-70LF
- SKY65014-92LF SKY65016-92LF

**Synthesizers/PLLs**

- B** SKY72300-21 SKY72302-21
- SKY74038-21 SKY73100
- SKY73112

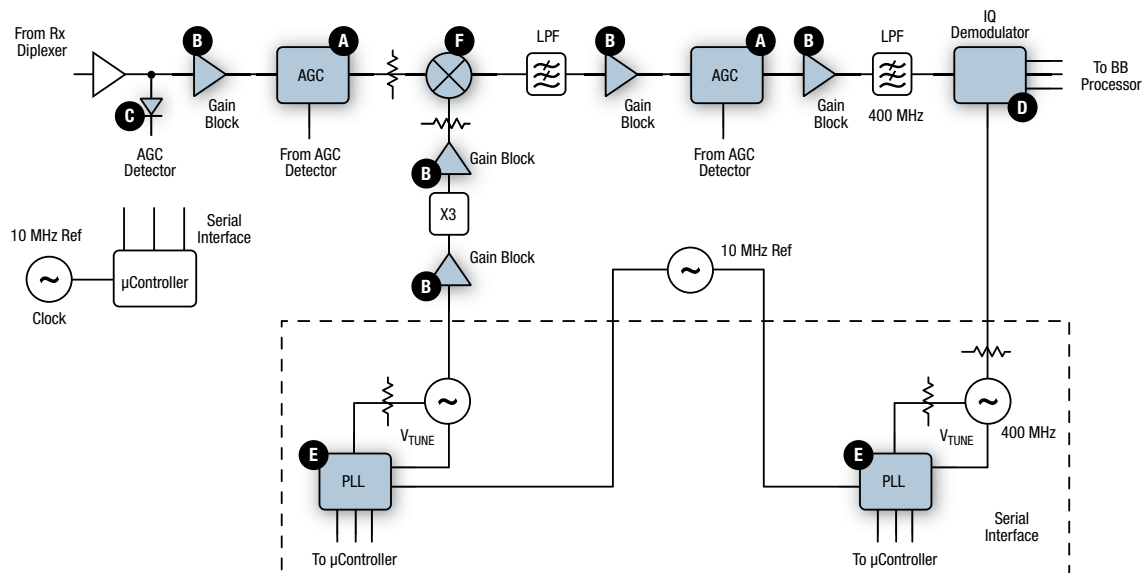
**Attenuators**

- C** SKY12322-86LF SKY12323-303LF
- SKY12324-73LF SKY12325-350LF
- SKY12328-350LF SKY12329-350LF
- SKY12406-360LF SKY12345-350LF

**Direct Quadrature Modulator**

- D** SKY73010-11

### RF ID Receiver



**Attenuators**

- A** SKY12324-73LF SKY12325-350LF
- SKY12328-350LF SKY12329-350LF
- SKY12406-360LF SKY12345-350LF

**Amplifiers**

- B** SKY65013-70LF SKY65015-70LF
- SKY65013-92LF SKY65015-92LF
- SKY65014-70LF SKY65016-70LF
- SKY65014-92LF SKY65016-92LF

**Schottky Diode**

- C** SMS7630-079LF SMS7630-061
- SMS7630-040LF

**Direct Quadrature Demodulators**

- D** SKY73009-11 SKY73012-11

**Synthesizers/PLLs**

- E** SKY72300-21 SKY72302-21
- SKY73100 SKY73112
- SKY74038-21

**Mixers**

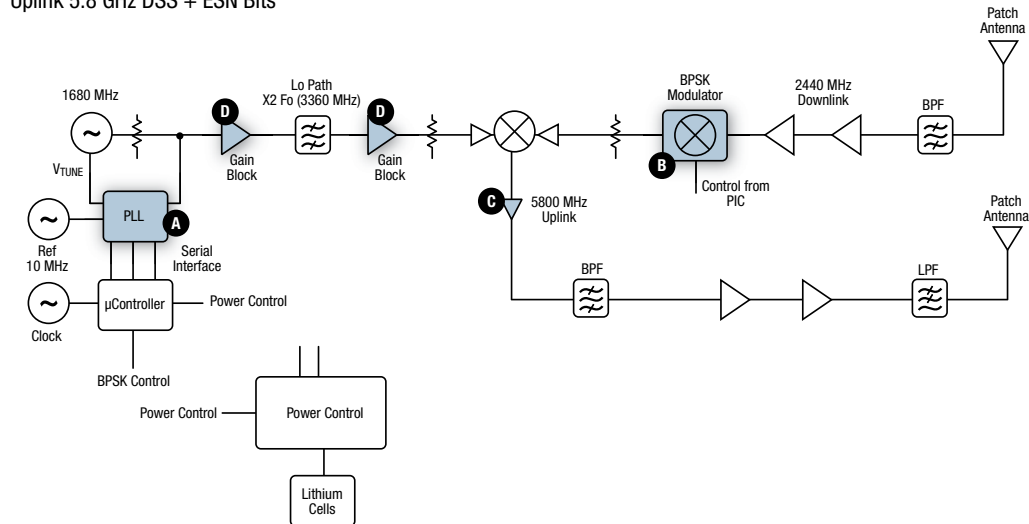
- F** SKY42068 SKY73032
- SKY73035



## BLOCK DIAGRAMS

### RF ID Full Duplex Tag

Downlink 2.44 GHz DSS  
Uplink 5.8 GHz DSS + ESN Bits



**Synthesizers/PLLs**

- A** SKY72300-21
- SKY72302-21
- SKY74038-21

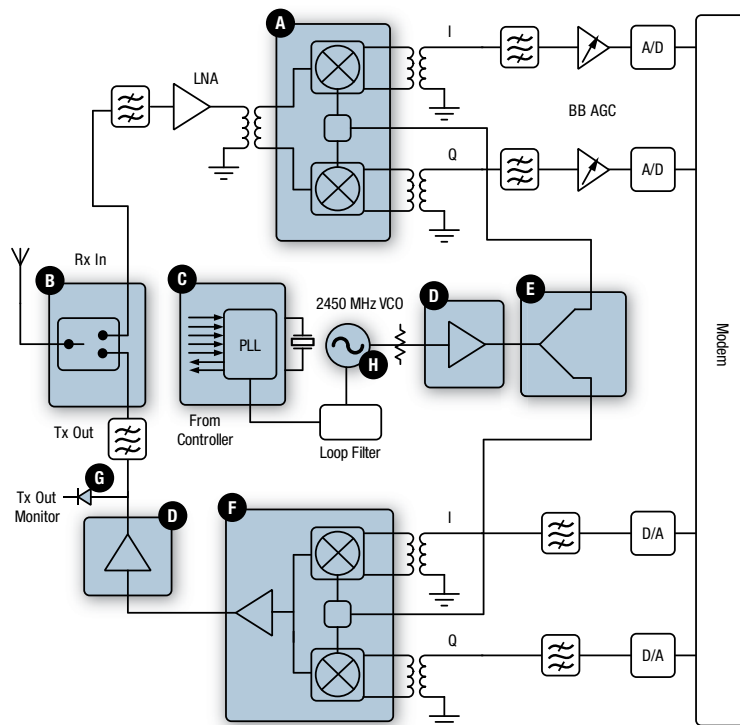
**Direct Quadrature Demodulators or Direct Conversion Mixer**

- B** SKY73009-11
- SKY73012-11

**Amplifiers**

- C** SKY65015-70LF
- SKY65015-92LF
- D** SKY65016-70LF
- SKY65016-92LF

### 2.45 GHz DSS Wireless Reader (Simplified)



**Direct Quadrature Demodulators or Direct Conversion Mixer**

- A** SKY73009-11
- SKY73012-11

**Switch**

- B** AS179-92LF
- AS211-334
- SMP1320-001LF
- SKY13268-344LF
- SKY13314-374LF
- SKY13306-313LF

**Synthesizers/PLLs**

- C** SKY72302
- SKY74038

**Amplifiers**

- D** SKY65013-70LF
- SKY65013-92LF

**Power Divider**

- E** PD22-73LF

**Direct Quadrature Modulator**

- F** SKY73010-11

**Level Detectors**

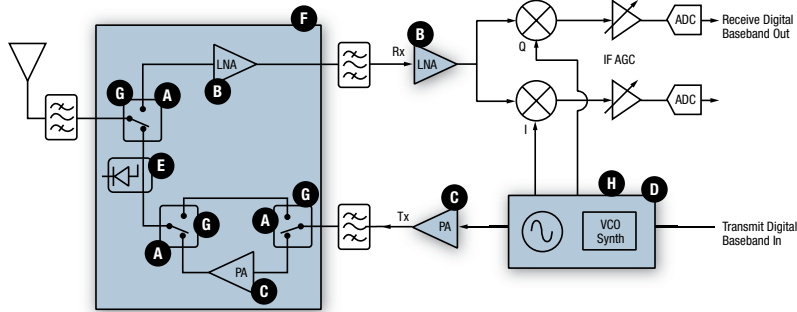
- G** SMS7630-005LF

**Varactor Diodes**

- H** SMV1413-079LF
- SMV1413-001LF
- SMV1251-079LF
- SMV1142-011LF
- SMV1249-003LF
- SMV1235-011LF

## BLOCK DIAGRAMS

### Short Range Radio



#### 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

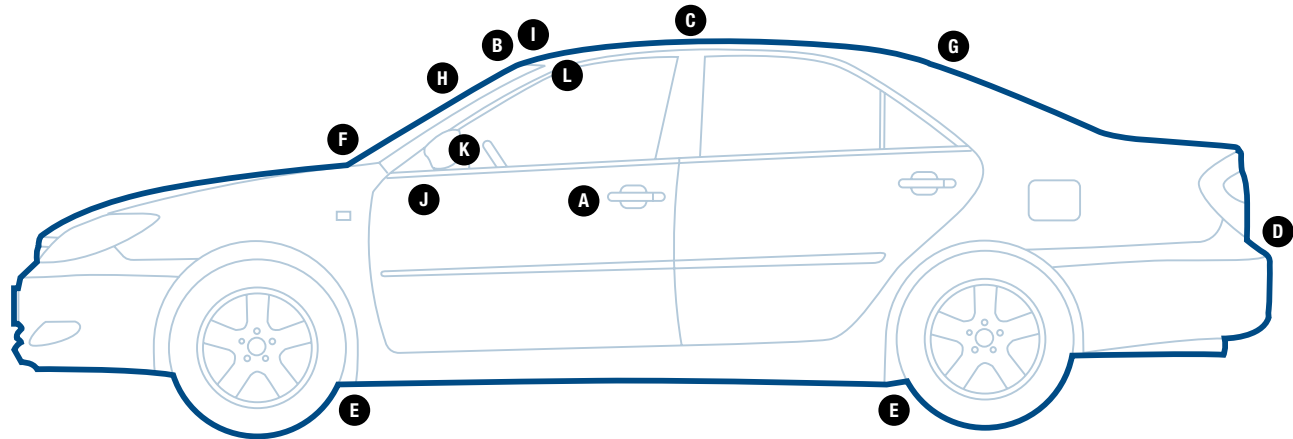
- E** SMS7630-079LF
- SMS7630-061
- SMS7621-079LF
- SMS7621-060
- SMS3926-023LF
- SMS3927-023LF
- SMS3928-023LF
- SMS7630-040LF
- SMS7621-040LF

#### Tx/Rx Front-End Modules

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

## BLOCK DIAGRAMS

## Automotive



A

## Keyless Entry

## PIN Diode

SMP1345-079LF

## Switches

AS179-92LF  
AS211-334  
SKY13268-344LF  
SKY13314-374LF

B

## Garage Door Openers, Remote Controls

## PIN Diodes

SMP1320-079LF  
SMP1302-004LF  
SMP1322-004LF

## Schottky Diode

SMS3923-011LF

## Varactor Diodes

SMV1413-001LF  
SMV1705-004LF

C

## Audio/Video Systems

## Varactor Diodes

SMV1212-079LF  
SMV1255-004LF

D

## Rear Collision Avoidance Sensors

## Schottky Diodes

SMS7621-005LF  
SMS7621-079LF  
SMS7621-040LF

## Schottky Flip Chips

DMK2790-000  
DMK2308-000

## Chip Capacitor

SCI0002430

E

## Tire Pressure Sensors

## Varactor Diode

SMV1253-011LF

## Schottky Diode

SMS7630-079LF  
SMS7630-040LF

F

## In-Dash Monitor, Direction System

## Varactor Diode

SMV1405-074LF

G

## Satellite Radio

## Switches

AS179-92LF  
AS211-334  
SKY13268-344LF  
SKY13314-374LF

## Varactor Diode

SMV1235-011 LF

H

## Toll Tag Transponder

Schottky Diode  
SMS7630-006LF

## Switch

SKYA13270-92LF

I

## Wireless Communications

## PIN Diode

SMP1320-011LF

J

## Airbags

## Switches

AS179-92LF  
AS211-334  
SKY13268-344LF

K

## Traffic Control Systems

## Directional Detector

DD02-999LF

L

## Telematics















## Switches

AS172-73LF  
SKY13290-313LF  
SKYA13270-92LF







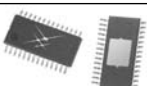





## PACKAGE SELECTION GUIDE

### Front-End Module Products

Front-End Modules, Power Amplifier Modules

Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-321, -348, -350, -356	QFN (3 x 3)		3.00 x 3.00 x 0.75
N/A	Multichip Module (MCM)		3.00 x 3.00
N/A	Multichip Module (MCM)		4.00 x 4.00
-317	QFN-16 (4 x 4) 1.47 mm Paddle		4.00 x 4.00 x 1.00
-70	SOT-89 3L with Tab		4.57 x 4.24 x 1.60
-214	Micro-X		5.08 x 5.08 x 1.52
-12	SOIC-8		6.00 x 4.90 x 1.60
N/A	Multichip Module (MCM)		6.00 x 6.00
N/A	RF WLAN Module		6.00 x 6.00 x 1.70
N/A	LCC		8.00 x 8.00
N/A	Multichip Module (MCM)		9.10 x 11.60
N/A	RF WLAN Module		10.00 x 14.00 x 1.70
N/A	Multichip Module (MCM)		10.00 x 14.00
N/A	Multichip Module (MCM)		13.00 x 13.00




























### RF Subsystems
























Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
N/A	CSP		3.50 x 4.50
N/A	LGA		4.00 x 4.00
N/A	ESQIC 8L		4.90 x 3.90
N/A	LGA		5.00 x 5.00
N/A	RFLGA		5.00 x 5.00
N/A	RFLGA		6.00 x 6.00
N/A	EP-SSOP 28L		6.40 x 9.70
N/A	RFLGA		7.00 x 7.00
N/A	TQFP		7.00 x 7.00
N/A	RFLGA		8.00 x 8.00
N/A	RFLGA		9.00 x 9.00
N/A	RFLGA FPBGA, FPBGA 100L,		10.00 x 10.00

\*Dimensions indicated: lead tip to lead tip x body width x total thickness.

## PACKAGE SELECTION GUIDE

### Discrete and Passive Components

















Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-060, -061	0201 Micro Surface Mount Device		0.60 x 0.30 x 0.27
-378	MLPD 6-Pin		1.00 x 1.00 x 0.45
-203	Hermetic Pill		1.27 x 1.40
-508, -517, -518	LGA		1.47 x 1.23 x 0.70
-334	LGA 6L		1.50 x 1.20 x 0.80
-374	QFN 6L		1.50 x 1.50 x 0.45
-373	QFN 8L		1.50 x 1.50 x 0.45
-079	SC-79		1.60 x 0.80 x 0.60
-344	SOT-666		1.65 x 1.65 x 0.60
-219	Hermetic Pill		1.91 x 1.91 x 1.14
-322	QFN 5L		2.00 x 1.00 x 0.40
-370	QFN 8L		2.00 x 2.00 x 0.55
-396	QFN 8L		2.00 x 2.00 x 0.75
-085	QFN 2L (2 x 2) 1.7 mm Paddle		2.00 x 2.00 x 0.90
-086	QFN 2L (2 x 2) 1.7 mm Paddle		2.00 x 2.00 x 0.90
-087	QFN 2L (2 x 2)		2.00 x 2.00 x 0.90
-335	QFN 6L (2 x 2)		2.00 x 2.00 x 0.90
-360	QFN 8L (2 x 2)		2.00 x 2.00 x 0.90
-349	MLP 8L (2 x 2)		2.00 x 2.00 x 0.90
-360	QFN 8L		2.00 x 2.00 x 0.90
-372	SC-70 4L		2.00 x 2.00 x 1.10
-313	QFN 6L		2.00 x 3.00 x 1.00
-92, -081	SC-88 (SC-70 6L)		2.10 x 2.00 x 0.95
-073, -074, -075, -076	SC-70		2.10 x 2.00 x 0.95
-377	QFN 4L		2.20 x 2.00 x 1.35
-001, -003, -004, -005, -006, -007, -39	SOT-23 3L		2.37 x 2.92 x 1.00
-015, -016, -017, -019, -020, -021, -022, -023, -026, -32	SOT-143		2.37 x 2.92 x 1.00












Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-011	SOD-323		2.52 x 1.25 x 1.04
-027, -72	SOT-23 5L		2.80 x 2.90 x 1.18
-73	SOT-23 6L		2.80 x 2.90 x 1.18
-321, -348, -350, -356	QFN (3 x 3)		3.00 x 3.00 x 0.75
N/A	LGA 24L		3.50 x 4.50
N/A	LGA		4.00 x 4.00
-340	QFN 20L (4 x 4) 2.1 mm Paddle		4.00 x 4.00 x 0.75
-355	QFN 16L (4 x 4)		4.00 x 4.00 x 0.90
-306	QFN 16L (4 x 4)		4.00 x 4.00 x 0.90
-307	QFN 16L (4 x 4) 2.8 mm Paddle		4.00 x 4.00 x 0.90
-359	QFN 16L (4 x 4)		4.00 x 4.00 x 0.90
-308	QFN 20L (4 x 4) 2.1 mm Paddle		4.00 x 4.00 x 0.90
-365	QFN 20L		4.00 x 4.00 x 1.00
-362	QFN 24L		4.00 x 4.00
-70	SOT-89		4.50 x 2.40 x 1.50
-59	MSOP 8L		4.90 x 3.00 x 0.96
-86	MSOP 10L		4.90 x 3.00 x 0.96
-302, -303	MSOP 8L Exposed Pad		4.90 x 3.00 x 1.10 (Max.)
-315	LGA Surface Mount Package		4.90 x 3.20 x 2.32
-355	QFN 20L		5.00 x 5.00 x 0.90
-364	QFN 32L 3.15 mm Paddle		5.00 x 5.00 x 0.90
-310	QFN 32L (5 x 5) 3.3 mm Paddle		5.00 x 5.00 x 0.90
-207	Hermetic Ceramic Pill		5.08 x 2.18

\*Dimensions indicated: lead tip to lead tip x body width x total thickness.

## PACKAGE SELECTION GUIDE

### Discrete and Passive Components (Continued)

Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-210	Hermetic Pill		5.7 x 3.15
-230	Epoxy Stripline		5.98 x 1.4 x 0.76
-232	Epoxy Stripline		5.98 x 3.69 x 0.76
-234, -235	Epoxy Stripline		5.98 x 5.98 x 0.76
-339, -84	SOIC 8L Exposed Pad		5.99 x 4.93 x 1.55
-12	SOIC 8L		6.00 x 4.90 x 1.60
-80	SSOP 16L		6.00 x 4.90 x 1.60
-93	TSSOP 16L Exposed Pad		6.40 x 6.40 x 1.00
-87	TSSOP 16L		6.40 x 5.00 x 1.00
-85	SSOP 20L		7.80 x 7.20 x 1.90
-24	SOIC 14L		6.00 x 8.70 x 1.55
N/A	Multichip Module (MCM)		8.00 x 8.00
-345, -501, N/A	Multichip Module (MCM)		8.00 x 10.00
-250, -251	Epoxy Stripline		8.12 x 2.54 x 1.27
-252, -253	Epoxy Stripline		8.12 x 5.33 x 1.27
-254	Epoxy Stripline		8.12 x 8.12 x 1.27


















Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-255, -257	Epoxy Stripline		8.12 x 8.12 x 1.27
N/A	CLCC 8L		8.30 x 8.30
N/A	Multichip Module (MCM)		9.10 x 11.60 x 1.50
-25	SOIC 16L		10.00 x 6.00 x 1.70
-220, -221	Hermetic Stripline		11.3 x 1.91 x 1.14
-224	Hermetic Stripline		11.3 x 11.3 x 1.14
-225	Hermetic Stripline		11.3 x 11.3 x 1.14
-222	Hermetic Stripline		11.3 x 6.6 x 1.14
-223	Hermetic Stripline		11.3 x 6.6 x 1.14
-240	Hermetic Stripline		11.52 x 2.64 x 1.18
N/A	Multichip Module (MCM)		13.00 x 13.00












\*Dimensions indicated: lead tip to lead tip x body width x total thickness.

## PACKAGE SELECTION GUIDE

### Discrete and Passive Components (Continued)

Skyworks offers filters in a number of standard packages. In addition to SMT, Skyworks offers a flatpack and through-hole configuration. In addition to our standard offering, Skyworks has the capability and experience to meet many unique footprint layouts and custom packages. For each of our 2- to 6-pole packages, Skyworks can offer profiles ranging from 2 mm to 6 mm. Dimension "L" will vary in length, dependent upon filter's frequency.

Part Number** Suffix	Package Type	Not Actual Size	Package Dimensions (mm) (Lead Inclusive)*
TT2P2-P	SMT		5.33 x L x 3.01
TT2P3-P	SMT		7.42 x L x 3.01
TT2P4-P	SMT		9.50 x L x 3.01
TT2P5-P	SMT		11.58 x L x 3.01
TT2P6-P	SMT		13.67 x L x 3.01
TT3P2-P	SMT		7.80 x L x 4.01
TT3P3-P	SMT		11.18 x L x 4.01
TT3P4-P	SMT		13.72 x L x 4.01
TT3P5-P	SMT		16.81 x L x 4.01
TT3P6-P	SMT		19.91 x L x 4.01
TT4P2-P	SMT		9.16 x L x 4.99
TT4P3-P	SMT		13.16 x L x 4.99
TT4P4-P	SMT		17.48 x L x 4.98
TT4P5-P	SMT		21.08 x L x 4.98
TT4P6-P	SMT		25.40 x L x 4.98
TT6P2-P	SMT		13.14 x L x 7.01
TT6P3-P	SMT		19.14 x L x 7.01

Part Number** Suffix	Package Type	Not Actual Size	Package Dimensions (mm) (Lead Inclusive)*
TT6P4-P	SMT		25.85 x L x 7.01
TT6P5-P	SMT		31.14 x L x 7.01
TT6P6-P	SMT		37.16 x L x 7.01
TT6P2-F	Flatpack		17.00 x L x 6.50
TT6P3-F	Flatpack		24.00 x L x 6.50
TT6P2-T	Through Hole		13.00 x L x 6.50
TT6P3-T	Through Hole		20.00 x L x 6.50
TT4P4-T-R	SMT		16.10 x 19.30 x 4.98
TT6P10-T-R	SMT		62.79 x 21.23 x 7.01
Notch Filter Connecterized	SMA		57.79 x 55.75 x 20.62
Connecterized Filter Assembly	SMA		31.12 x 55.50 x 144.27

\*Dimensions indicated: lead tip to lead tip x body width x total thickness.

\*\*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions Inc.)

## WARRANTY/ORDER INFORMATION

### How to Order

To order products from this brochure or for additional information, please contact your local representative, distributor, or contact us directly.

A worldwide list of Sales Offices/Representatives and Distributors appears at the back of this brochure. Please provide part numbers, quantities, and any additional information that will help us expedite your order.

### Warranty

Skyworks provides world-class warranty coverage for all products purchased.

A full statement of Terms and Conditions of Sales is included with the order acknowledgment.

### Customer Satisfaction

As an integral part of our total quality management, Skyworks primary focus is customer satisfaction. Our reputation with customers for impeccable quality is the result of an aggressive, ongoing Total Quality Management Program in which each employee accepts responsibility for continuously improving the company's products, processes, and procedures.

To our customers, Skyworks is a trusted partner. We work closely with you to provide product solutions that best achieve your design and manufacturing objectives. Skyworks has a worldwide network of sales representatives, distributors, and experienced application engineers ready to work with you towards your specific product requirements.

### Terms of Sale

For minimum order requirements, fees, or charges, please contact your local sales representatives or contact us directly. A complete set of Skyworks Terms and Conditions of Sales is available upon request.

### Returns

Skyworks requires a Returned Material Authorization (RMA) number prior to returning any product. Please contact your sales representative or contact us directly so that we may help you with your request in the quickest and most efficient manner.

### Notice

The information contained in this brochure is subject to change without notice. Skyworks reserves the right to change specifications, designs, and any other information in this brochure at any time, without notice, and assumes no responsibility for errors and/or omissions.



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Huntsville, AL 35802  
Telephone: 1 (256) 882 9100  
Fax: 1 (256) 883 9516  
Email: [datap@beaconmail.com](mailto:datap@beaconmail.com)

**Connecticut/Maine/Massachusetts/  
New Hampshire/Rhode Island/Vermont**  
Advanced Technology Marketing  
2 Courthouse Ln., Suite 16  
Chelmsford, MA 01824  
Telephone: 1 (978) 458 0200  
Fax: 1 (978) 458 7990  
Email: [atm@atmink.com](mailto:atm@atmink.com)

#### Florida

Beacon Electronic Associates, Inc.  
1465 Waukon Circle  
Casselberry, FL 32707  
Telephone: 1 (407) 788 1155  
Fax: 1 (407) 788 1176  
Email: [dyonchik@beaconmail.com](mailto:dyonchik@beaconmail.com)

#### Georgia/Kentucky/Tennessee

Beacon Electronic Associates, Inc.  
(Headquarters)  
5887 Glenridge Dr.,  
Suite 130  
Atlanta, GA 30328  
Telephone: 1 (404) 256 9640  
Fax: 1 (404) 256 1398  
Email: [mquattlebaum@beaconmail.com](mailto:mquattlebaum@beaconmail.com)

#### New Jersey (Southern)/Pennsylvania (Eastern Zip Codes 17000 and Above)/ Delaware

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115 Locust Grove Rd.  
Rosemont, PA 19010  
Telephone: 1 (610) 525 9782  
Fax: 1 (610) 525 0142  
Email: [mmaz@beaconmail.com](mailto:mmaz@beaconmail.com)

#### New York/New Jersey (Northern)/ Fairfield County, Connecticut

Beacon Electronics  
115 Locust Grove Rd.  
Rosemont, PA 19010  
Telephone: 1 (610) 525 9782  
Fax: 1 (610) 525 0142  
Email: [mmaz@beaconmail.com](mailto:mmaz@beaconmail.com)

#### North Carolina/South Carolina

Beacon Electronic Associates, Inc.  
127 Southwold Dr.  
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Fax: 1 (425) 675 0868  
Email: [davery@beaconmail.com](mailto:davery@beaconmail.com)

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Fax: 1 (214) 827 8110  
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Fax: 1 (319) 286 9899  
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Fax: 1 (952) 882 4088  
Email: [tom.ottoson@cain-forlaw.com](mailto:tom.ottoson@cain-forlaw.com)

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Cain-Forlaw Co.  
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Suite 8-141  
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Telephone: 1 (800) 515 1554  
Fax: 1 (800) 515 1574  
Email: [jbeard@yando.com](mailto:jbeard@yando.com)

##### California (Northern)/Nevada

Disman Bakner  
883 N. Shoreline Blvd.,  
Suite C100  
Mountain View, CA 94043  
Telephone: 1 (650) 969 3010  
Fax: 1 (650) 969 5620  
Email: [sales@dbsales.com](mailto:sales@dbsales.com)

##### California (Southern)

Cain Technology  
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Westlake, CA 91361  
Telephone: 1 (805) 496 5702  
Fax: 1 (805) 496 6702  
Email: [sales@caintech.com](mailto:sales@caintech.com)

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7108 S. Alton Way,  
Bldg. 2  
Centennial, CO 80112  
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Fax: 1 (303) 280 7702  
Email: [roxy@crestonegroup.com](mailto:roxy@crestonegroup.com)

##### Washington/Oregon/Idaho/ Montana/Wyoming

Stratus Technical Sales, LLC  
8201 164th Ave NE, #200,  
Redmond, WA 98052,  
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Fax: (425) 996-9516  
Email: [rcrandall@stratustechnical.com](mailto:rcrandall@stratustechnical.com)

## SKYWORKS SALES REPRESENTATIVES

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Intelatech  
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Calgary, Alberta  
T2Z 2M6  
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Fax: (403) 686 6926  
Email: sales@intelatech.com

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Intelatech  
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K2E 7S4  
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Mississauga, Ont  
L4W 4Y8  
Telephone: (905) 629 0082  
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Marathon International Assoc., Inc.  
115 Granada Ct.  
Orlando, FL 32803  
Telephone: 1 (407) 872 5775  
Fax: 1 (407) 872 0535  
Email: jmg@marathontech.com

#### Mexico (Guadalajara Jalisco)

Beacon Electronic Associates, Inc.  
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Raleigh, NC 27603  
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Email: egallegos@beaconmail.com

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Gigacomp GmbH  
Domagkstrasse 33, Haus 26  
D-80807, Munchen  
Germany  
Telephone: 49 (6122) 530 554  
Fax: 49 (89) 3220 8958  
Email: info@gigacomp.de

#### Sweden and Norway

InResonance  
Box 715  
187 27 Täby  
Sweden  
Telephone: +46 8 559 155 49  
Mobile: +46 70 771 55 49  
Fax: +46 8 768 04 60  
Email: info@inresonance.se

### ASIA • PACIFIC

#### Korea

Bluesky Semiconductor  
Rm. #258, Posville 156, Gumi-Dong  
Bundang-Gu Sunghnam-Si  
Kyunggi-Do 463-500 Korea  
Telephone: 82 31 603 1913  
Fax: 82 31 603 1914  
Email: alexlim@bluesemi.com

#### Taiwan

Asian Information Technology, Inc.  
7F, No. 439 Jui-Kuang Rd.  
Taipei, Taiwan, R.O.C.  
Telephone: 886 2 8797 6866  
Fax: 886 2 8797 6877  
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Sao Paulo 04043-300  
Brazil  
Telephone: 11 5079 2150  
Fax: 11 5079 2160  
Email: vendas@avnet.com.br

### EUROPE • MIDDLE EAST • AFRICA

#### Austria

BFI Optilas GmbH  
Boschstrasse 12  
D-82178 Puchheim  
Germany  
Telephone: 49(0)89 890 13 50  
Fax: 49(0)89 800 25 61  
Email: Sabine.Peick@bfioptilas.com

#### Belgium

BFI Optilas B.V.  
Chr. Huygensweg 17 (P.O. Box 222)  
2408 AJ Alphen AAN DEN RIJN  
The Netherlands  
Telephone: 31(0)172 44 60 60  
Fax: 31(0)172 44 34 14  
Email: Piet.van-der-Kuijl@bfioptilas.com

#### Denmark

BFI Optilas A/S  
Langebjergvaenget 8B1th  
Roskilde 4000  
Denmark  
Telephone: 45 465 9999  
Fax: 45 4655 9998  
Email: Claus.Nilsson@bfioptilas.com

#### Finland

BFI Optilas AB  
Bangardsgatan 8  
751 43 Uppsala  
Sweden  
Telephone: 46 18 565830  
Fax: 46 18 565835  
Email: Henry.Laine@bfioptilas.com

#### France

BFI Optilas S.A.  
4, Allee du Cantal  
Z.I. La Petite Montagne Sud  
91018 - EVRY Cedex  
France  
Telephone: 33(0)1 60 79 59 00  
Fax: 33(0)1 60 79 89 01  
Email: Pierre.Ball@bfioptilas.com

#### Germany

BFI Optilas GmbH  
Boschstrasse 12  
D-82178 Puchheim  
Germany  
Telephone: 49(0)89 890 13 50  
Fax: 49(0)89 800 25 61  
Email: Sabine.Peick@bfioptilas.com

#### Ireland

BFI Optilas, Ltd.  
Mill Square, Featherstone Road  
Wolverton Mill South  
Milton Keynes MK12 5ZY  
United Kingdom  
Telephone: 44(0)1908 326326  
Fax: 44(0)1908 221110  
Email: Ian.O'Neill@bfioptilas.com

#### Israel

RFMW  
P.O. Box 1064  
Hod Hasharon  
Israel 45110  
Telephone: 972 9-740 6884  
Fax: 972 9-740 5881  
Email: israelw@rfmw.com

#### Italy

BFI Optilas S.r.l.  
Via Brembo 27  
20139 Milano  
Italy  
Telephone: 39 02 53583208  
Fax: 39 02 53583201  
Email: Giorgio.Papis@bfioptilas.com

BFI Optilas  
Via Emilio De Marchi 27  
00141 Roma  
Italy  
Telephone: 39 06 86894259  
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Email: Ernesto.Prestifilippo@bfioptilas.com

#### Netherlands

BFI Optilas B.V.  
Chr. Huygensweg 17 (Po Box 222)  
2408 AJ Alphen AAN DEN RIJN  
The Netherlands  
Telephone: 31(0)172 44 60 60  
Fax: 31(0)172 44 34 14  
Email: Piet.van-der-Kuijl@bfioptilas.com

#### Norway

BFI Optilas A/S  
Hedelykke, Hovedgaden 451K  
DK-2640 Hedehusene  
Denmark  
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Email: Claus.Nilsson@bfioptilas.com

## SKYWORKS DISTRIBUTORS

### Portugal

BFI Optilas SA  
Anabel Segura 7 Planta Baja  
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Spain  
Telephone: 34 (91) 453 11 60  
Fax: 34 (91) 662 68 37  
Email: Javier.Fuente@bfioptilas.com

### Russia

BFI Optilas GmbH  
Boschstrasse 12  
D-82178 Puchheim  
Germany  
Telephone: 49 (0) 89 890 13 50  
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Email: Sabine.Peick@bfioptilas.com

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CST Electronics (Pty) Ltd.  
Cnr. Galaxy Ave. & Electron St.  
Linbro Business Park, 2090  
Sandton, South Africa  
Telephone: 27 11 608 0070  
Fax: 27 11 608 0401  
Email: ckeyser@cstelectronics.co.za

### Spain

BFI Optilas SA  
Anabel Segura 7 Planta Baja  
28108 Alcobendas  
Madrid  
Spain  
Telephone: 34 (91) 453 11 60  
Fax: 34 (91) 662 68 37  
Email: Javier.Fuente@bfioptilas.com

### Sweden

BFI Optilas AB  
Bangardsgatan 8  
751 43 Uppsala  
Sweden  
Telephone: 46 18 565830  
Fax: 46 18 565835  
Email: Henry.Laine@bfioptilas.com

### Switzerland

BFI Optilas GmbH  
Boschstrasse 12  
D-82178 Puchheim  
Germany  
Telephone: 49(0)89 890 13 50  
Fax: 49(0)89 800 25 61  
Email: Sabine.Peick@bfioptilas.com

### United Kingdom

BFI Optilas, Ltd.  
Mill Square, Featherstone Road  
Wolverton Mill South  
Milton Keynes MK12 5ZY  
United Kingdom  
Telephone: 44(0)1908 326326  
Fax: 44(0)1908 221110  
Email: lan.O'Neill@bfioptilas.com

## ASIA • PACIFIC

### Australia/New Zealand

Avnet (Australia) Pty, Ltd.  
2 Giffnock Avenue  
North Ryde NSW 2113, Australia  
Telephone: 1300 888 364  
61 2 9878 1299  
Fax: 61 2 9878 1266  
Email: avnet.au@avnet.com

Caelera Pty. Ltd.  
1B Riddell Parade  
Elsternwick  
Victoria 3185 Australia  
Telephone: 613 9532 9444  
Fax: 613 9533 0179  
Email: greg.burns@caelera.com

## CHINA

### Beijing

Asian Information Technology Inc. Ltd.  
Room 1010, East Ocean Centre  
No.24A Jianguomenwai Street  
Chaoyang District  
Beijing, PRC 100004  
Telephone: 86-10-65155766  
Fax: 86-10-65155720  
Email: ryan.liu@aitgroup.com.cn

Avnet China  
Rm 1201-1207 Tower A  
Cheng Jian Plaza,  
No 18 Beitaipingzhuang Road  
Haidian District, Beijing PRC  
100088  
Telephone: (10) 82255181  
Fax: (10) 82255299

### Changsha

Avnet China  
Room C, 12/F., Oversea Chinese Building  
18 Jie Fang Road  
Central, Changsha, PRC  
410011  
Telephone: (731) 4411732  
Fax: (731) 4412732

### Chengdu

Avnet China  
Block H, 25F  
First City Plaza, No.308  
Shun Cheng Avenue  
Chengdu, PRC  
610017  
Telephone: (28) 86528262  
Fax: (28) 82528261

### Chongqing

Avnet China  
Rm.12 B-6, 12 Floor  
TaiXing Science and Technology Plaza  
8 YuZhou Road  
Shi Qiao Pu, High-Tech District  
Chongqing, PRC  
400039  
Telephone: (23) 68790845  
Fax: (23) 68790845

### Dalian

Avnet China  
Room 504, 5F, Yin Hai Building  
NO.156 Jinma Road, Dalian Economy  
and Technology Development Zone  
Dalian, PRC  
116600  
Telephone: (411) 87922610  
Fax: (411) 87922621

### Fuzhou

Avnet China  
Rm. 2118, TianHua Building  
283 Wu Si Road  
North, Fuzhou, Fujian  
PRC  
350003  
Telephone: 86 591 7737851  
Fax: 86 591 7737194

### Guangzhou

Avnet China  
28A East Tower  
China Travel Comm'l Building  
No.39-49 Qiao Lin Street  
Tian He Bei Road  
Guangzhou, PRC  
510610  
Telephone: (20) 22838106  
Fax: (20) 22838109

### Hangzhou

Avnet China  
Rm 803, Jinhui Business Building  
No. 631 North Zhongshan Road  
Hangzhou, Zhejiang, PRC  
310014  
Telephone: (571) 8580 0906  
Fax: (571) 8580 0919

### Hong Kong

Avnet/MEMEC Insight  
Unit 3612, 36F Metroplaza Tower I  
Hing Fong Road  
Kwai Fong N.T., Hong Kong  
Telephone: (852) 24102780  
Fax: (852) 2401 2518  
Email: insight@memec-asiapacific.com

Avent Technology Hong Kong Ltd.  
16/F Spectrum Tower  
53 Hung To Road  
Kwun Tong Kowloon  
Hong Kong  
Telephone: (852) 21765202



## SKYWORKS DISTRIBUTORS

Pangaea (Hong Kong), Ltd.  
Rooms 1803, 1809, 1810  
Tai Yau Bldg.  
181 Johnston Rd.  
Wanchai, Hong Kong  
Telephone: 852 2836 3301  
Fax: 852 2834 7340  
Email: rfung@pangaea.com.hk

Silicon Application Co., Ltd.  
T2-A3 Hi-Tech Industrial Park  
Nanshan District  
Shenzhen, China  
Telephone: 86 755 2671 1655, ext. 506  
Fax: 86 755 2671 1670  
Email: waynehsu@sac.com.hk

### Nanjing

Avnet China  
Rm A2, A3, 22/F,  
Nanjing Shang Mao Plaza  
49 South Zhong Shan Road  
Nanjing, Jiang Su, PRC  
210005  
Telephone: (25) 86890220  
Fax: (025) 86890280

### Ningbo

Avnet China  
Room 1706, Building B,  
Yinxin Center Mansion  
No. 787, Bai Zhang Road  
Ningbo, Zhejiang Province, PRC  
315040  
Telephone: (574) 87714702  
Fax: (574) 87714712

### Qingdao

Avnet China  
Rm. 1102, Zhong Gang Plaza,  
No 16 Fuzhou South Road,  
Qingdao, PRC  
266071  
Telephone: (532) 5773254  
Fax: (532) 5710557

### Shanghai

Asian Information Technology Inc. Ltd.  
Room 8D, Sun Tong Info Port Plaza  
No.55 Huaihai West Road  
Shanghai, PRC 200030  
Telephone: 86-21-52989911  
Fax: 86-21-52989022  
Email: tommy.wang@aitinc.com.tw

Avnet China  
21/F & 22/F, Block 3, Strength Plaza  
Lane 600, Tian Shan Road  
Shanghai, PRC  
200051  
Telephone: (21) 52062288  
Fax: (21) 52062299

Holy Stone International Trading  
(Shanghai) Co., Ltd.  
905 Walton Plaza  
801 Changle Road  
Shanghai 20031 PRC  
Telephone: 86 21 5403 1122  
Fax: 86 21 5404 4177  
Email: autumn@holystone.com.tw

### Shenzhen

Asian Information Technology Inc.  
T2F, Block East H1, the Hua Qiao Cheng  
Industrial Park  
East Qiao Cheng Rd.  
Nanshan, Shenzhen, PRC 518053  
Telephone: 86-755-26711655  
Fax: 86-755-88312399  
Email: derek.li@aitgroup.com.cn

Avnet Logistics (Shenzhen) Ltd.  
10/F, Block A  
Electronics Science & Technology Building  
2070 Shennan Road Central  
Shenzhen, PRC 518031  
Telephone: (755) 8378 1886  
Fax: (755) 8378 3656

Holy Stone International Trading  
(Shanghai) Co., Ltd.  
2708, Top Office, Glittery City  
3027 Shennan Rd.  
Shenzhen PRC 518033  
Telephone: 86 755 83031903  
Fax: 86 755 83289091  
Email: kevin@holystone.com.tw

Comtech Broadband Corp. (Shenzhen)  
Rm. 1104, Tower A, Skyworth Bldg.  
High-Tech. Industrial Park  
Shenzhen, PRC 518057  
Telephone: +86 755 26743011  
Email: jerry.ye@comtech.com

### Suzhou

Avnet China  
Suite 405 of Building No 01  
Lijing Garden  
636 Ganjiang Dong Road  
Suzhou, Jiangsu, PRC  
215005  
Telephone: (512) 65222535  
Fax: (512) 65222536

### Tianjin

Avnet China  
Room 602, Huaying Building  
418 Hongqi Road,  
South, Nankai District  
Tianjin, PRC  
300070  
Telephone: (22) 23530190  
Fax: (22) 23530191

### Taiwan

EDOM Technology  
8F, No. 50, Lane 10,  
Kee Hu Road, Nei Hu Taipei (114)  
Taiwan ROC  
Telephone: +886-(0)2-2657-8811  
Fax: +886-(0)2-02-2657-9090  
Email: lawrencelee@edom.com.tw

### WuHan

Avnet China  
Unit 2406, Tower B, Zhong Shang Plaza  
7 Zhong Nan Road,  
Wuchang District  
Wuhan, PRC  
430071  
Telephone: (27) 87322659  
Fax: (27) 87322659

### Xiamen

Avnet China  
Rm 11 C1, International Trade Building  
No.388, Hubin South Road  
Xiamen, Fujian, PRC  
361004  
Telephone: (592) 5163621  
Fax: (592) 5163620

### Xian

Avnet China  
Room 805, Gao Ke Building  
No. 52, Gao Xin Road  
Xi'an, PRC  
710075  
Telephone: (29) 8831 1055  
Fax: (29) 8831 0390

### ZhengZhou

Avnet China  
Room 6003, LongMen Hotel  
No 20, Zhenghua Road  
ZhengZhou, PRC  
450052  
Telephone: (371) 7975032  
Fax: (371) 7976542

### KOREA

Karmel Technologies, Inc.  
#422 Daeryung Post Tower 2,  
182-13, Guro 3-dong,  
Guro-gu,  
Seoul 152-790, Korea  
Telephone: 82-2-581-7406  
Fax: 82-2-581-7407  
Email: info@karmeltech.com

Mewtel Technology Inc.  
27F, Prime Center, 546-4,  
Guui-dong, Gwangjin-gu  
Seoul 143-200, Korea  
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Fax : 82-2-3424-1604  
Email: tony@mewtel.com

## SKYWORKS DISTRIBUTORS

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India  
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Fax: 91 80 5588146  
Email: avnet.in@avnet.com

SM Electronic Technologies Pvt., Ltd.  
Fusion Technology Group  
#1790, 5th Main, 9th Cross, RPC Layout  
Vijayanagar 2nd Stage,  
Bangalore 560040 India  
Telephone: 91 80 23301030  
Fax: 91 80 23387197  
Email: smgroup@vsnl.com

#### Chennai

SM Electronic Technologies Pvt., Ltd.  
Sarojini Street, T. Nagar,  
Chennai 600017 India  
Telephone: 91 80 23301030  
Fax: 91 80 23387197  
Email: smgroup@vsnl.com

#### Delhi

Avnet India  
#8, Second Floor, Community Centre  
East of Kailash,  
New Delhi 110 065  
India  
Telephone: 91 11 26443495 98  
Fax: 91 11 26447688

SM Electronic Technologies Pvt., Ltd.  
New Rajinder Nagar,  
New Delhi 110060 India  
Telephone: 91 80 23301030  
Fax: 91 80 23387197  
Email: smgroup@vsnl.com

#### Hyderabad

SM Electronic Technologies Pvt., Ltd.  
Gandhinagar  
Hyderabad 500080 India  
Telephone: 91 80 23301030  
Fax: 91 80 23387197  
Email: smgroup@vsnl.com

### Mumbai

Avnet India  
101, Nirman Kendra  
Behind Famous Cine Studio  
Dr. E. Moses Road  
Mahalaxmi  
Mumbai 400011  
Telephone: 91 22 4950625  
Fax: 91 22 4950628  
Email: avnet.in@avnet.com

### Pune

SM Electronic Technologies Pvt., Ltd.  
Sus - Baner Link Road, Pashan,  
Pune 411021 India  
Telephone: 91 80 23301030  
Fax: 91 80 23387197  
Email: smgroup@vsnl.com

### JAPAN

#### Tokyo

M-RF Co., Ltd.  
1-8-11, Kandaizumi-cho  
Sun Center Bldg. 5F  
Tokyo, Chiyoda-ku 101-0024 Japan  
Telephone: 81 3 5821 3623  
Fax: 81 3 5821 3625  
Email: kazami@mrf.co.jp

Tachibana Eletech Co., Ltd.  
Shuwa Shiba Park Bldg, A-5F, 2-4-1  
Shiba-Koen,  
Minato-Ku  
Tokyo, Japan  
105-0011  
Telephone: 81 6 6539 2513  
Fax: 81 6 6539 8828  
Email: yano@tachibana.co.jp

### Korea

Avnet/Memec Insight  
9th Floor, KLI 63 Building 60  
Youido-Dong, Youngdungpo-ku  
Seoul 150-763  
Korea  
Telephone: 82 2 6277 6300  
Fax: 82 2 761 4121  
Email: insight-kr@memec-asiapacific.com

Myungmin Systems Inc.  
410 Gwanyang Doosan  
Venture Dime  
1307-37 Gwanyang 2- Dong  
Dongan-Gu, Anyang-Si  
Gyeonggi-Do 431-810  
Korea  
Telephone: 82-31-596-6750  
Fax: 82-31-596-6751  
Email: sjchung@myungmin.com

### Malaysia

Avnet Technology  
24-1 Jalan Medan Setia 2,  
Plaza Damansara,  
Bukit Damansara WP 50490  
Kuala Lumpur  
Telephone: (603) 2093 9721  
Fax: (603) 2093 9723

### Philippines

Avnet Philippines Pty., Ltd.  
1505 Richville Corporate Tower 1107  
Alabang Zapote Road  
Madrigal Business Park  
Ayala Alabang, Muntinlupa City 1780  
Telephone: (632) 7724201/02/03  
Fax: (632) 7724204  
Email: yh.lek@avnet.com

Pangaea International Trading Co.  
Unit 204 Alabang Business Tower  
Madrigal Business Park  
Ayala Alabang  
Muntinlupa City  
1780 Philippines  
Telephone: 63 2 807 8429  
Fax: 63 2 809 1355  
Email: chris@pangaea.com.ph

## SKYWORKS DISTRIBUTORS

### Singapore/Malaysia

Avnet Asia Pte, Ltd.  
151 Lorong Cuan  
New Tech Park #06-03  
Singapore 556741  
Telephone: (65) 6580 6000  
Fax: (65) 6580 6200  
Email: yhilek@avnet.com

Avnet Malaysia Sdn. Bhd.  
24-1 Jalan Medan Setia 2  
Plasa Damansara  
Bukit Damansara WP  
50490 Kuala Lumpur  
Malaysia  
Telephone: (603) 20939721  
Email: yhilek@avnet.com

Avnet Malaysia Sdn. Bhd.  
1-2-29 Krystal Point Corporate Park  
Lebuh Bukit Kecil 6 11900 Bayan Lepas  
Penang 11900  
Telephone: (604) 646 1837  
Fax: (604) 646 1950  
Email: yhilek@avnet.com

E-Smart Distribution Pte., Ltd.  
17 Kallang Junction  
#04-03 Esmart Centre  
Singapore 339274  
Telephone: 65 6299 7811  
Fax: 65 6294 1518  
Email: sales@e-smart.com.sg

### Taiwan

Asian Information Technology, Inc.  
7F, No. 439 Jui-Kuang Road,  
Taipei, Taiwan  
Telephone: 886 2 879 76866  
Fax: 886 2 879 76877  
Email: david-wu@aitinc.com.tw

Holy Stone Enterprise Co., Ltd.  
7F No.17, Lane 91  
Sec. 1, Nei Hu Rd.  
Nei Hu Dist.,  
Taipei 114, Taiwan R.O.C.  
Telephone: 886 2 2658955, ext: 333  
Fax: 886 2 2798 5529  
Email: kevin@holystone.com.tw

Silicon Application Co., Ltd.  
T2-F, Block East H1  
The Hua Quao Cheng Industrial Park  
East Qiao Cheng Rd.,  
Nanshan District  
Shenzhen 518053  
China  
Telephone: 86-755-2671-1655, x2471  
Fax: 86-755-2671-1670  
Email: waynehsu@sac.com.hk

### Thailand

Avnet Technology (Thailand) Co., Ltd.  
184/153 Forum Tower  
Tower 25th Floor  
Rachadapisek Road  
Khet/Kwang Huay Kwang, Bangkok 10320  
Telephone: (662) 645 3678 80  
Fax: (662) 645 3681  
Email: yhilek@avnet.com









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

**USA**

**Headquarters**

Skyworks Solutions, Inc.  
20 Sylvan Road  
Woburn, MA 01801  
Telephone: (781) 376 3000  
Fax: (781) 376 3100  
sales@skyworksinc.com

Skyworks Solutions, Inc.  
5221 California Avenue  
Irvine, CA 92617  
Telephone: (949) 231 3000  
Fax: (949) 231 3206  
kirat.hatzfeld@skyworksinc.com

Skyworks Solutions, Inc.  
5520 Adamstown Road  
Adamstown, MD 21710  
Telephone: (301) 695 9400  
Fax: (301) 695 7065  
transtech@skyworksinc.com

**EUROPE**

Skyworks Solutions, Inc.  
Parallelvej 10  
Lyngby 2800, Denmark  
Telephone: +45 45267945  
Fax: +45 45267710  
jan.thoning@skyworksinc.com

Skyworks Solutions, Inc.  
34 Avenue Franklin Roosevelt  
Suresnes 92150, France  
Telephone: +00 33 1 41443660  
Fax: +00 33 1 41443661  
irene.pfeiffer@skyworksinc.com

Skyworks Solutions, Ltd.  
Abbey Manor Business Centre  
The Abbey  
Preston Road,  
Yeovil, Somerset BA20 2EN  
UK  
Telephone: +44 1935 848546  
Fax: +44 1935 431269  
mike.carroll@skyworksinc.com

Skyworks Solutions, Inc.  
Keilasatama 3  
02150 Espoo  
Finland  
Telephone: +358 925107131  
tommi.hiilos@skyworksinc.com

**ASIA • PACIFIC**

**China**

Skyworks Solutions Commercial  
(Shenzhen) Co., Ltd. Shanghai Branch  
Room 2901-02, Chong Hing  
Finance Center,  
No.288 Nanjing Road (W),  
Shanghai, 200003 China  
Telephone: +86 21 23066230  
Fax: +86 21 33663398  
elaine.zhao@skyworksinc.com

Skyworks Solutions, Inc.  
Room 05, 11/F, Tower 2,  
Kerry Plaza  
No. 1 Zhongxinsi Road  
Futian District  
Shenzhen 518048 PRC  
Telephone: +86 755 8291 3788  
ext. 60017  
Fax: +86 755 8293 1633  
sabrina.chen@skyworksinc.com

Skyworks Solutions, Inc.  
Suite 1212, COFCO, No. 8  
Jianguomennei Avenue  
Dongcheng District  
Beijing, 100005 PRC  
Telephone: +8610 652 60859  
ext. 61608  
Fax: +8610 852 98350  
david.qi@skyworksinc.com

**Japan**

Skyworks Solutions, Inc.  
3-20-2 Nishi-Shinjuku  
Shinjuku-ku  
Opera City Tower  
Tokyo, 163-1436  
Japan  
Telephone: +81-3-5308-5180  
Fax: +81-3-5308-5190  
ahihiro.karikomi@skyworksinc.com

**Korea**

Skyworks Solutions, Inc.  
Sam Hee Bldg.  
559-10, 13F  
Bumeo-1 Dong, Soosung-Gu  
Daegu 706-011 Korea  
Telephone: +825 3746 7141  
Fax: +825 3745 1440  
hannah.kim@skyworksinc.com

Skyworks Solutions, Inc.  
648-19, Yeoksam-Dong  
Seoul, Korea 135-911  
Telephone: +822 3490 3816  
christine.cho@skyworksinc.com

**Singapore**

Skyworks Solutions, Inc.  
Centennial Tower  
3 Temasek Avenue  
Office #21-25  
Singapore 039190  
Telephone: +65 65497113  
peter.gan@skyworksinc.com

**Taiwan**

Skyworks Solutions, Inc.  
4 F, #198, Section 2  
Tun Hwa. S. Road  
Taipei 106, Taiwan ROC  
Telephone: +8862 5559 8990  
Fax: +8662 2735 6508  
diana.wang@skyworksinc.com



**Skyworks Solutions, Inc.**

20 Sylvan Road, Woburn, MA 01801

USA: (781) 376-3000 • Asia: 886 2 2735 0399

Europe: 33 (0)1 41443660 • Fax: (781) 376-3100

Email: [sales@skyworksinc.com](mailto:sales@skyworksinc.com) • [www.skyworksinc.com](http://www.skyworksinc.com)

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