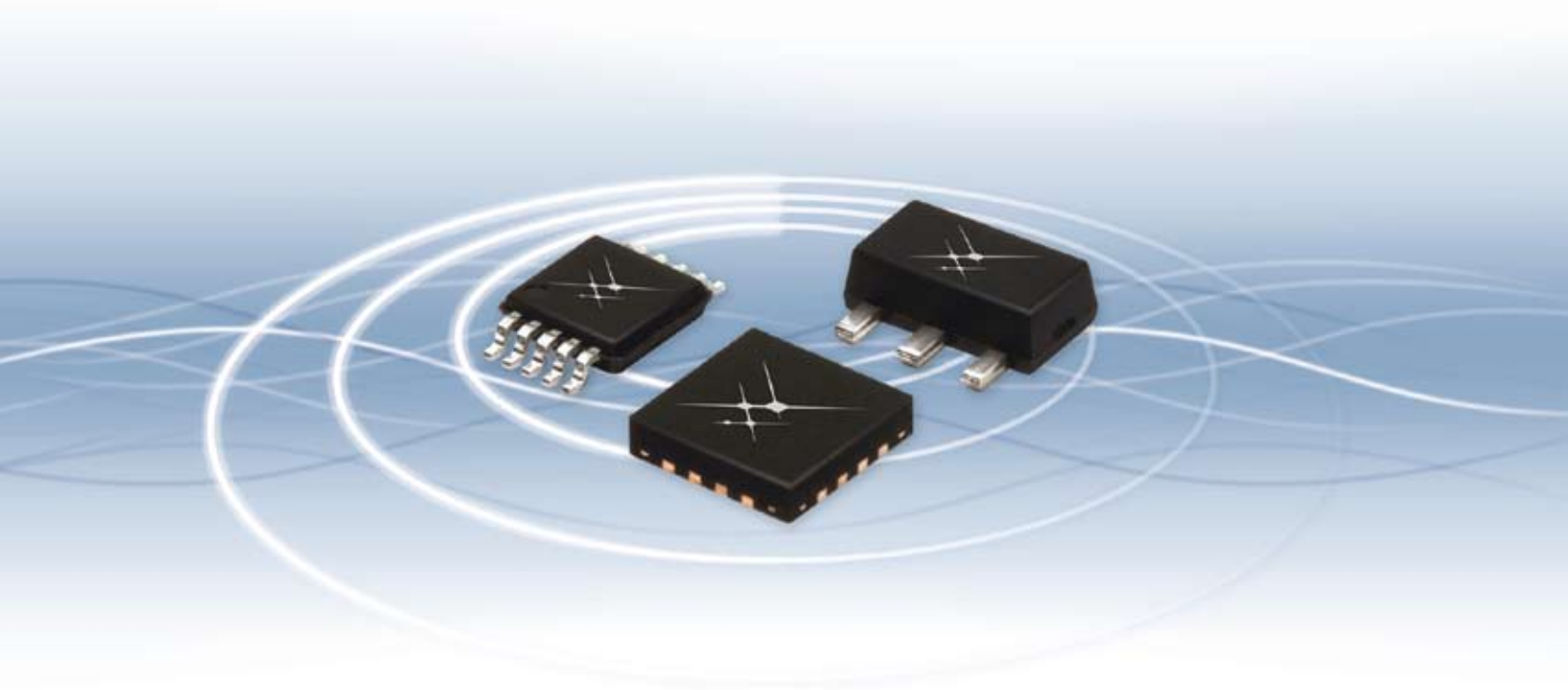
SKYWORKS®

BREAKTHROUGH SIMPLICITY®



Product Selection Guide

Fall 2009

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**. For additional information, please contact your local sales office or email us at **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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Products

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

Reference Material

Innovation to Go™ Select products (indicated in blue/bold) and sample/designer kits are now available for purchase online.

Skyworks Green™ products are lead (Pb)-free, Restriction of Hazardous Substances (RoHS)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide, and brominated flame retardants.

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.

PRODUCTS

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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 (%)	Typical Gain (dB)	Supply Voltage (V)	Package (mm)
SKY77318		iPAC™ PAM for Quad-Band GSM/GPRS			–	2.9–4.8	20-pin MCM
	824–849	GSM850	35.2	58			6 x 6 x 1.2
	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
	824–849	GSM850	35.4	56			6 x 6 x 1.2
	880–915	GSM900	35.1	56			
	1710–1785	DCS1800	33.2	54			
	1850–1910	PCS1900	32.9	53			
SKY77336		iPAC™ PAM for Quad-Band GSM/GPRS/EDGE			–	3.0–4.8	16-pad MCM
	824–849	GSM850	35.0	52			5 x 5 x 1.0
	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
	824–849	GSM850	35.1	54			6 x 8 x 1.2
	880–915	GSM900	34.9	53			
	1710–1785	DCS1800	33.5	52			
	1850–1910	PCS1900	33.2	52			
SKY77344		iPAC™ PAM for Quad-Band GSM/EDGE			–	3.0–4.8	20-pad
	824–849	GSM850	35.0	52			6 x 6 x 1.2
	880–915	GSM900	35.0	52			
	1710–1785	DCS1800	33.5	45			
	1850–1910	PCS1900	33.5	45			

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

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AMPLIFIERS

Cellular Power Amplifiers

LTE PAs

Part Number	Frequency (MHz)	Description	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)	27.5	3.0–4.6	MCM 4 x 4 x 0.85
SKY77449	777–798	PA Modules for LTE/E-UTRA Band XIII/Band XIV (777–798 MHz)	27.5	3.0–4.6	MCM 4 x 4 x 0.85
SKY77453	698–716	PA Modules for LTE/E-UTRA Band XII/Band XVII (698–716 MHz)	27.5	3.0–4.6	MCM 4 x 4 x 0.85

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
SKY77164	1850–1910	AutoSmart™ 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	MCM 3 x 3 x 0.85

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

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	MCM 3 x 3 x 0.85

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AMPLIFIERS

Cellular Power Amplifiers

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	MCM 3 x 3 x 0.85

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	MCM 3 x 3 x 0.85

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 1.2

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	TBD	TBD	3.2–4.2	5 x 4 x 0.85

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	TBD	TBD	3.2–4.2	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	MCM 5 x 4 x 0.85

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AMPLIFIERS

WLAN and ISM Power Amplifiers

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	$P_{1\ dB}$ (dBm)	PAE (%)	V_{CC} (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
SKY65146	0.806–0.849	0.815	38.7	37	35.6	51	3.5	329	–	28-pin MCM 10 x 14
SKY65152	2.4–2.5	2.442	31.0	42	33.0	33	5.0	465	5.0	20-pin MCM 6 x 6
SKY65137	5.0–6.0	5.75	26.0	–	32.0	29	5.0	420	6.0	20-pin MCM 6 x 6

Wireless Infrastructure Power Amplifiers

High Gain Linear PA Modules

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	$P_{1\ dB}$ (dBm)	V_{CC} (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	0.800–0.900	0.85	31.5	52.0	32.5	5	271	4.3	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
SKY65142	0.100–1.000	0.45	22.0	36.5	27.5	5	120	–	12-pin MCM 8 x 8

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AMPLIFIERS

Wireless Infrastructure Power Amplifiers

Ultralinear PA Drivers

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	$P_{1\ dB}$ (dBm)	V_{CC} (V)	Quiescent Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65004	0.25–2.7	1.96	16	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	33.0	21.0	3.3	76	3.0	3-pin MCM 4 x 4
SKY65009-70LF	0.25–2.5	1.96	12	42.0	27.0	3.3 or 5	100	4.3	4-pin SOT-89
SKY65028-70LF	0.25–2.7	1.96	16	42.0	25.0	3.3 or 5	125	5.5	4-pin SOT-89
SKY65038-70LF	0.25–6.0	1.00	15	40.0	21.5	3 to 5	140	2.0	4-pin SOT-89
SKY65045-70LF	0.39–1.5	0.8975	14	37.5	25.0	5	46	1.8	4-pin SOT-89
SKY65112-84LF	0.40–2.3	0.94	18	39.0	27.0	5	260	–	SOIC-8 Exposed Paddle
SKY65113-84LF	0.40–2.3	0.94	20	40.0	30.0	5	450	–	SOIC-8 Exposed Paddle

General Purpose Amplifiers

Part Number	Frequency Range (GHz)	Test Frequency (GHz)	Gain Typ. (dB)	OIP3 (dBm)	$P_{1\ dB}$ (dBm)	Quiescent Current Typ. (mA)	Noise Figure Typ. (dB)	Package (mm)
SKY65013-214LF	LF–6	2	11.5	29	12.5	40	5.4	Plastic Micro-X
SKY65013-70LF	LF–7	2	12.5	29	12.5	40	5.5	SOT-89
SKY65013-92LF	LF–12	2	12.5	29	12.5	40	5.8	SC-88
SKY65014-214LF	LF–6	2	13.5	36	18.0	70	4.6	Plastic Micro-X
SKY65014-70LF	LF–6	2	16.0	36	18.0	70	4.8	SOT-89
SKY65014-92LF	LF–9	2	15.0	36	18.0	70	5.4	SC-88
SKY65015-214LF	LF–6	2	16.0	24	18.0	70	5.2	Plastic Micro-X
SKY65015-70LF	LF–6	2	18.0	35	17.0	70	4.2	SOT-89
SKY65015-92LF	LF–6	2	18.0	35	18.0	70	4.8	SC-88
SKY65016-214LF	LF–3	2	19.0	20	14.0	40	6.5	Plastic Micro-X
SKY65016-70LF	LF–3	2	20.0	27	14.0	40	4.8	SOT-89
SKY65016-92LF	LF–3	2	20.0	27	14.0	40	5.4	SC-88
SKY65017-70LF	LF–6	2	20.0	35	20.0	100	4.5	SOT-89

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AMPLIFIERS

Low Noise Amplifiers (LNAs)

Low Noise Amplifiers

Part Number	Frequency (MHz)	Technology	Gain Typ. (dB)	Test Freq. (MHz)	NF (dB)(1)	OIP3 Typ. (dBm)	$P_{1\ dB}$ (dBm)	V_{DD} (V)	Quiescent Current Typ. (mA)	Package (mm)
SKY65037–360LF	700–1200	pHEMT	15–25	900	0.6	33.5	18	5	75	8-lead QFN 2 x 2
SKY65040-360LF	1500–2400	pHEMT	15–25	1900	0.6	34.0	18	5	65	8-lead QFN 2 x 2
SKY65066-360LF	2300–2700	pHEMT	15–25	2500	0.6	34.0	18	5	65	8-lead QFN 2 x 2
SKY65047-360LF	400–3000	SiGe	16.5	915	0.85	31.5	9.5	3.3	7.8	8-lead QFN 2 x 2
SKY65404-11	4900–5900	pHEMT	13	5900	1.00	20.0	10	3	10	6-lead QFN 1.5 x 1.5
SKY65405-11	2400–2500	pHEMT	15	2400	0.90	23.0	11	3	12	6–lead QFN 1.5 x 1.5

1. Input connector loss removed from measurement with unconditionally stable matching

Low Noise Discrete pHEMT

Part Number	Device Size (µm)	Frequency (MHz)	Test Freq. (GHz)	Gain Typ. (dB)	NF (dB)(1)	OIP3 Typ. (dBm)	$P_{1\ dB}$ (dBm)	V_{DD} (V)	Quiescent Current Typ. (mA)	Package (mm)
SKY65050-372LF	200	450–6000	2.4	15.5	0.65	23.5	10.5	3	20	4-lead SC-70
SKY65051-377LF	200	450–6000	2.4	15.5	0.65	24.0	12.0	3	20	4-lead QFN 2 x 2
SKY65052-372LF	400	450–6000	2.4	16.0	0.85	32.5	18.0	5	55	4-lead SC-70
SKY65053-377LF	400	450–6000	2.4	16.0	0.85	32.5	18.0	5	55	4-lead QFN 2 x 2

1. Input connector loss removed from measurement with unconditionally stable matching

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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. $IP_{1\ dB}$ (dBm)	Package (mm)
AA100-59LF	0.75–2.0	3/P	28.0	4.0	1.8	32	20	MSOP-8
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
AA103-72LF	LF–2.5	1/P	10.0	10.0	0.3–0.4	41	20	SOT-5
AA104-73LF	LF–2.5	1/P	32.0	32.0	0.8–1.0	41	21	SOT-6
AA105-86LF	0.5–3.0	4/P	15.0	1.0	1.5–2.7	49	24	MSOP-10
AA106-86LF	0.5–2.0	5/P	15.5	0.5	2.0–3.0	41	21	MSOP-10
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
AA110-85LF	DC–2.0	5/P	31.0	1.0	1.4–2.2	40	22	SSOP-20
AA113-310LF	LF–1.0	6/P	31.5	0.5	1.5–1.8	48	29	QFN-32 5 x 5
AA116-72LF	LF–2.0	1/P	15.0	15.0	0.35–0.4	41	20	SOT-5
AA117-85LF	DC–2.0	5/P	31.0	1.0	1.4–2.2	40	22	SSOP-20
AA210-25LF	LF–2.0	4/P	15.0	1.0	0.9–2.1	48	28	SOIC-16
AA226-87LF	0.5–2.5	4/P	15.0	1.0	1.3–2.3	49	25	TSSOP-16
AA260-85LF	LF–2.0	5/P	31.0	1.0	1.4–2.0	42	25	SSOP-20
AA264-87LF	0.5–2.0	4/P	30.0	2.0	1.6–1.8	36	15	TSSOP-16
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
SKY12324-73LF	0.5–3.0	2/P	12.0	4.0	0.9–1.3	43	30	SOT-6
SKY12325-350LF	0.5–6.0	3/P	7.0	1.0	0.7–1.3	47	27	QFN-16 3 x 3
SKY12328-350LF	0.5–4.0	5/P	15.5	0.5	1.1–2.3	42	30	QFN-16 3 x 3
SKY12329-350LF	0.4–4.0	5/P	31.0	1.0	1.2–2.7	39	29	QFN-16
SKY12332-310LF	LF–1.0	6/P	31.5	0.5	1.5–1.8	48	29	QFN-32 5 x 5
SKY12334-362LF	0.5–4.0	5/S	15.5	0.5	1.1–2.3	46	29	QFN-24 4 x 4
SKY12406-360LF	50–600 MHz	2/P	12.0	12.0	0.3	46	22	QFN-8 2 x 2

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ATTENUATORS

Fixed Attenuator Pads

Part Number	Nominal Attenuation (dB)	Attenuation Tolerance @ DC (dB)	Attenuation Flatness		
			DC–12 GHz (dB)	DC–26.5 GHz (dB)	DC–40 GHz (dB)
ATN3580-01	1	±0.15	±0.2	±0.50	±1
ATN3580-02	2	±0.15	±0.2	±0.50	±1
ATN3580-03	3	±0.25	±0.2	±0.50	±1
ATN3580-04	4	±0.25	±0.2	±0.50	±1
ATN3580-05	5	±0.25	±0.2	±0.50	±1
ATN3580-06	6	±0.25	±0.4	±0.60	±1
ATN3580-07	7	±0.25	±0.4	±0.60	±1
ATN3580-08	8	±0.35	±0.4	±0.60	±1
ATN3580-09	9	±0.35	±0.4	±0.60	±1
ATN3580-10	10	±0.35	±0.4	±0.60	±1
ATN3580-12	12	±0.50	±0.4	±0.60	±1
ATN3580-15	15	±0.50	±0.4	±0.60	±1
ATN3580-20	20	±1.10	±1.0	±2.00	±4
ATN3580-30	30	±1.60	±1.0	±2.00	±4
ATN3580-40	40	±1.60	±1.0	±2.00	±4

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ATTENUATORS

Voltage Variable Attenuators

0.7–3.0 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
SKY12221	0.7–1.2	HIP3™ Temperature Compensated Variable Attenuator	1.5	23	53	0–12 V	LGA Surface Mount
SKY12222	1.5–2.5	HIP3™ Temperature Compensated Variable Attenuator	1.5	23	53	0–12 V	LGA Surface Mount
SKY12223	1.65–2.65	HIP3™ Temperature Compensated Variable Attenuator	1.5	23	57	0–12 V	LGA Surface Mount

Voltage Variable Attenuators

DC–6 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

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DETECTORS

Skyworks Solutions' family of sampling phase detectors utilize automated chip on board manufacturing technology to provide a small footprint surface mount device with excellent microwave performance. Sampling phase detectors are used to phase lock a microwave VCO to a stable reference source at a sub-multiple frequency. The sampling phase detector consists of a step recovery diode, pair of coupling capacitors and a Schottky diode based microwave mixer. This phase detector family uses a selected step recovery diode chip whose carrier lifetime and transition time are appropriate for use in applications allowing reference frequencies below 50 MHz and microwave VCO frequencies as high as 22 GHz. The SPD1101-111, SPD1102-111 and SPD1103-111 utilize low, medium and high barrier Schottky diodes capable of efficient high frequency mixer performance and may be selected according to the available power generated by the microwave VCO.

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

Sampling Phase Detectors

Part Number	Barrier	Typ. Microwave Signal Drive Level (dBm)	Schottky Diode			Typ. Capacitor C_C (pF)	Step Recovery Diode		
			V_F @ 1 mA (mV)	Max. R_T @ 5 mA (Ω)	Typ. C_J @ 0 V (pF)		Typ. C_J @ 6 V (pF)	Typ. T_I (ns)	Typ. T_T (ps)
SPD1101-111	Low	-3 to 0	270–350	24	0.10	0.5	0.25	10 Typ.	70 Typ.
SPD1102-111	Medium	0 to 3	370–550	24	0.10	0.5	0.25	10 Typ.	70 Typ.
SPD1103-111	High	3 to 13	600–700	24	0.10	0.5	0.25	10 Typ.	70 Typ.

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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.

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 µA (V)	Nominal I-Region Thickness (µm)	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 (Ω)	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

	
Series Pair SOT-23	**Low Inductance SOT-23**
SMP1330-005LF Marking: RQ2	SMP1330-007LF Marking: RQB

Limiter Diode Chips—Low Frequency to 20 GHz

Part Number	V_B @ 10 µA (V)	Nominal I-Region Thickness (µm)	Typ. C_J @ 0 V (pF)	Max. C_J @ 6 V (pF)	Max. R_S @ 10 mA (Ω)	Max. T_L @ 10 mA (ns)	Thermal Impedance Max. Average (C/W)	Thermal Impedance Typ. 1 µs 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

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LIMITER DIODES

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
CLA4605-240	CLA4605-203	CLA4605-219	CLA4605-210
CLA4606-240	CLA4606-203	CLA4606-219	CLA4606-210
CLA4607-240	CLA4607-203	CLA4607-219	CLA4607-210
CLA4608-240	CLA4608-203	CLA4608-219	CLA4608-210

Ceramic Hermetic Limiter Diodes—Low Frequency to 20 GHz

Part Number	V_B @ 10 µA (V)	Nominal I-Region Thickness (µm)	Max. C_J @ 6V (pF)	Typ. TI @ 10 mA (ns)	Typ. Input Power for 1 dB Loss (dB)	Max. Pulsed Input Power (dBm)	Max. CW Input Power (W)	Package
CLA4605-108	30–60	2	0.28	7	12	50	4	Leadless Surface Mount
CLA4607-108	120–180	7	0.33	50	20	60	6	Leadless Surface Mount
CLA4608-108	120–180	7	0.69	100	20	66	15	Leadless Surface Mount

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PIN DIODES

PIN Diodes—Superior Building Blocks for Switch and Attenuator Applications

Switching Silicon PIN Diodes

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

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1320 Series	50	0.3	0.85	2	0.9	400	8

							
Single SOT-23	**Common Anode SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Low Inductance SOT-23**	**Single SOD-323**	**Ultralow Inductance SOT-143**	**Single SC-79[1]**
SMP1320-001LF Marking: RL1	SMP1320-003LF Marking: RL9	SMP1320-004LF Marking: RL3	SMP1320-005LF Marking: RL2	SMP1320-007LF Marking: RLB	SMP1320-011LF Marking: RL	SMP1320-017LF Marking: RLF	SMP1320-079LF Marking: Cathode
		SC-70	**SC-70**	**SC-70**			
		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 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1321 Series	100	0.25	0.85	3	2	400	15

							
Single SOT-23	**Common Anode SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Low Inductance SOT-23**	**Single SOD-323**	**Anti-Parallel Single SC-79[1]**	**LGA *Lead (Pb)-Free***
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
SC-70		**SC-70**	**SC-70**				
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.

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PIN DIODES

Lowest Series Resistance Switching PIN Diodes

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Typ. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1322 Series	50	1	0.825	1.5	0.5	400	8

							
Single SOT-23	**Common Anode SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Single SOD-323**	**T/R Switch SOT-143**	**Ultralow Inductance SOT-143**	**Single SC-79[1]**
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
		SC-70					
		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 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1340 Series	50	0.3	0.88	1.7	1.2	100	7

						
Common Anode SOT-23	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Low Inductance SOT-23**	**Single SOD-323**	**Single SC-79[1]**	**LGA *Lead (Pb)-Free***
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
	SC-70	**SC-70**				
	SMP1340-074LF Marking: RS3	SMP1340-075LF Marking: RS2				

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

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PIN DIODES

Lowest Capacitance Switching PIN Diodes for High Isolation

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1345 Series	50	0.2	0.89	3.5	2	100	10

				
Common Anode SOT-23	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Single SC-79[1]**	**Ring LGA *Lead (Pb)-Free***
SMP1345-003LF Marking: RU9	SMP1345-004LF Marking: RU3	**SMP1345-005LF** Marking: RU2	**SMP1345-079LF** Marking: Cathode	**SMP1345-518** Marking: 0
		SC-70		
		SMP1345-075LF Marking: RU2		

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

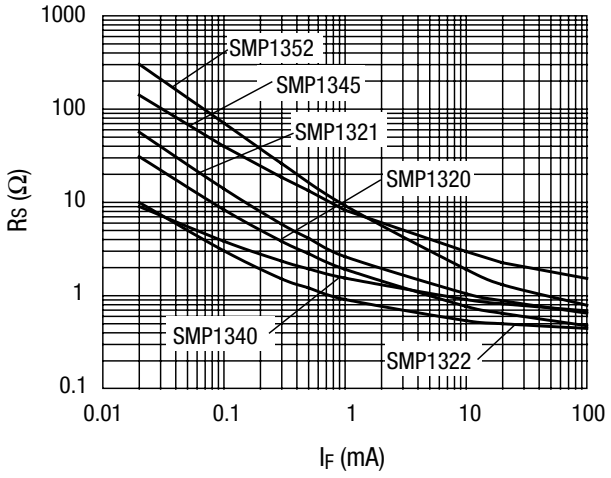
Large Signal Switching PIN Diodes

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1352 Series	200	0.35	0.8	15	2.8	1000	50

	
Single SOD-323	**Single SC-79[1]**
SMP1352-011LF Marking: RR	**SMP1352-079LF** Marking: Cathode

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

Typical Performance Characteristics



R_S vs. I_F

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PIN DIODES

Ceramic Hermetic PIN Diodes—Low Frequency to 20 GHz

Ceramic Hermetic Packaged Low Capacitance, Fast Switching PIN Diodes

Part Number	Min. V_B @ 10 µA (V)	Nominal I-Region (µm)	Typ. C_T @ 0 V (pF)	Max. C_T @ 10 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1.0 mA (Ω)	Max. R_S @ 10 mA (Ω)	Typ. T_L @ 10 mA (ns)	Package
SMP1340-108	50	7	0.26	0.325	880	1.7 Typ.	1.2	100	Leadless Surface Mount

Ceramic Hermetic Packaged Lowest Capacitance Switching PIN Diodes for High Isolation

Part Number	Min. V_B @ 10 µA (V)	Nominal I-Region (µm)	Max. C_T @ 10 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1.0 mA (Ω)	Max. R_S @ 10 mA (Ω)	Typ. T_L @ 10 mA (ns)	Package
SMP1345-108	50	10	0.285	850	3.5 Typ.	2	100	Leadless Surface Mount

Ceramic Hermetic Packaged Large Signal Switching PIN Diodes

Part Number	Min. V_B @ 10 µA (V)	Nominal I-Region (µm)	Max. C_T @ 20 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1.0 mA (Ohms)	Max. R_S @ 10 mA (Ω)	Typ. T_L @ 10 mA (ns)	Package
SMP1352-108	200	50	0.425	825	8 Typ.	2.8	1000	Leadless Surface Mount

PIN Diode Chips—Low Frequency to 20 GHz

Part Number	V_B @ 10 µA (V)	Nominal I-Region (µm)	Typ. C_J @ 0 V (pF)	Max. C_J @ 50 V (pF)	Max. R_S @ 10 mA (Ω)	Max. TI @ 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	100	15	0.25	0.20	1.2	900	30

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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
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 µA (V)	Typ. C_J @ 0 V (pF)	Max. C_J @ 30 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1 mA (Ω)	Max. R_S @ 10 mA (Ω)	Max. T_L @ 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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PIN DIODES

Beam-Lead PIN Diodes—Low Frequency to 40 GHz

Part Number	V_B @ 10 µA (V)	Max. C_J @ 10 V (pF)	Max. C_J @ 50 V (pF)	Max. R_S @ 10 mA (Ω)	Max. 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 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Max. R_S I_F = 100 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1302 Series	200	0.3	0.8	20	3	1.5	700	50

							
Single SOT-23	**Common Anode SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Single SOD-323**	**Ultralow Inductance SOT-143**	**PI SOT-5**	**Single SC-79[1]**
SMP1302-001LF Marking: RF1	SMP1302-003LF Marking: RF9	SMP1302-004LF Marking: RF3	SMP1302-005LF Marking: RF2	SMP1302-011LF Marking: RF	SMP1302-017LF Marking: RFF	SMP1302-027LF Marking: RFM	**SMP1302-079LF** Marking: Cathode
		SC-70	**SC-70**				
		SMP1302-074LF Marking: RF3	SMP1302-075LF Marking: RF2				

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

Low-Distortion Attenuator PIN Diodes

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Max. R_S I_F = 100 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1304 Series	200	0.3	0.8	50	7	2	1000	100

						
Single SOT-23	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Low Inductance SOT-23**	**Single SOD-323**	**PI SOT-143**	**PI SOT-5**
SMP1304-001LF Marking: RG1	**SMP1304-004LF** Marking: RG3	SMP1304-005LF Marking: RG2	**SMP1304-007LF** Marking: RGB	SMP1304-011LF Marking: RG	SMP1304-019LF Marking: RGJ	SMP1304-027LF Marking: RGM

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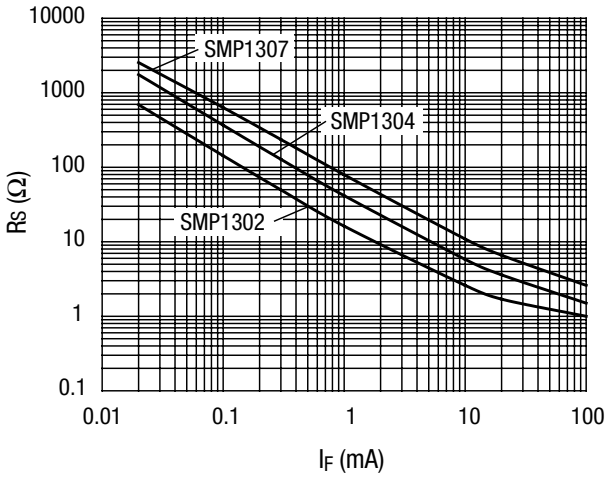
PIN DIODES

Lowest Distortion, High IP3 Attenuator PIN Diodes

Part Number	Min. V_B I_R = 10 µA (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 (Ω)	Max. R_S I_F = 10 mA F = 100 MHz (Ω)	Max. R_S I_F = 100 mA F = 100 MHz (Ω)	Typ. T_L I_F = 10 mA (ns)	Nominal I-Region Thickness (µm)
SMP1307 Series	200	0.3	0.85	100	15	3	1500	175

 Single SOT-23	 Common Anode SOT-23	 Common Cathode SOT-23	 Series Pair SOT-23	 Reverse Series Pair SOT-23	 Single SOD-323	 PI SOT-5
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



R_S vs. I_F

Ceramic Hermetic Packaged Low-Distortion Attenuator PIN Diodes—Low Frequency to 10 GHz

Part Number	Min. V_B @ 10 µA (V)	Nominal I-Region (µm)	Max. C_T @ 30 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1.0 mA (Ω)	Max. R_S @ 10 mA (Ω)	Typ. T_L @ 10 mA (ns)	Package
SMP1302-108	200	50	0.36	800	20	3	700	Leadless Surface Mount

Ceramic Hermetic Packaged Low-Distortion Attenuator PIN Diodes—Low Frequency to 10 GHz

Part Number	Min. V_B @ 10 µA (V)	Nominal I-Region (µm)	Max. C_T @ 30 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1.0 mA (Ω)	Max. R_S @ 10 mA (Ω)	Typ. T_L @ 10 mA (ns)	Package
SMP1304-108	200	100	0.36	800	50	7	1000	Leadless Surface Mount

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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

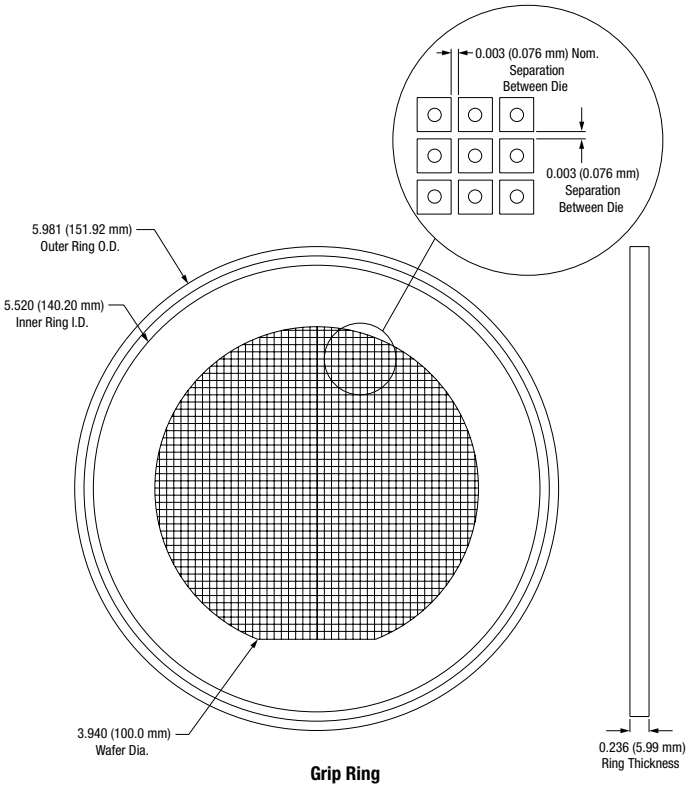
General-Purpose PIN Diode Chip for Attenuator Applications

Part Number	V_B @ 10 µA (V)	Nominal I-Region (µm)	Typ. C_J @ 0 V (pF)	Max. C_J @ 50 V (pF)	Max. R_S @ 10 mA (Ω)	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 µA (V)	Typ. C_J @ 0 V (pF)	Max. C_J @ 30 V (pF)	Typ. V_F @ 10 mA (mV)	Max. R_S @ 1 mA (Ω)	Max. R_S @ 10 mA (Ω)	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.



Grip Ring

Skyworks Green™ products are lead (Pb)-free, Restriction of Hazardous Substances (RoHS)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide, and brominated flame retardants.

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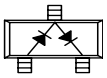
SCHOTTKY DIODES

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 µA (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 (Ω)
SMS1546-005LF	2	300	270	0.63	8
SMS7621 Series	2	80	320	0.28	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[1]	**Single SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Reverse Series Pair SOT-23**	**Unconnected Pair SOT-143**	**Dual Series Pair SC-88**	**Unconnected Pair LGA *Lead (Pb)-Free***
			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
		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 µA (V)	Max. V_F I_F = 1 mA (mV)	Max. C_T V_R = 0 V (pF)	Typ. R_T I_F = 10 mA (Ω)
SMS7630 Series	1	240	0.35	22

V_B is measured at 100 µA (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[1]	**Single SOD-323**	**Single SOT-23**	**Series Pair SOT-23**	**Reverse Series Pair SOT-23**	**Reverse Unconnected Pair SOT-143**	**Unconnected Pair LGA *Lead (Pb)-Free***
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

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

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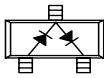
Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

SCHOTTKY DIODES

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

Part Number	Min. V_B I_R = 10 µA (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 (Ω)
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[1]	**Single SOD-323**	**Single SOT-23**	**Common Cathode SOT-23**	**Series Pair SOT-23**	**Unconnected Pair SOT-143**	**Dual Series Pair SC-88**	**Unconnected Pair LGA** ***Lead (Pb)-Free***
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		
				SC-70 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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SCHOTTKY DIODES

Silicon Schottky Mixer Quads—Low Frequency to 12 GHz

Part Number	Min. V_B I_R = 10 µA (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 (Ω)
SMS3926 Series/SMS3929-021	2	300	270	0.5	8
SMS3927 Series/SMS3930-021	2	50	370	0.5	8
SMS3928-023/SMS3931-021	4	5	580	0.5	8
SMS3940-026*	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

0.50 x 0.25 x 0.30 mm

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

Part Number	Min. V_B @ 10 µA (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 (Ω)	Video Resistance @ 0 V (Ω)	Package
SMS7621-096	2	0.18	–	–	260–320	12	–	0201
SMS7630-093	1	–	0.3	60–120	135–240	–	3000–7000	0201

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SCHOTTKY DIODES

Ceramic Hermetic Schottky Diodes—Low Frequency to 24 GHz

Ceramic Hermetic Packaged General-Purpose Schottky Diodes

Part Number	Barrier Height	Min. V_B @ 10 µA (V)	C_T V_R = 0 V, F = 1 MHz (pF)	V_F I_F = 1 mA (mV)	Max. V_F I_F = 35 mA (mV)	Package
SMS3922-108	Medium/Low	8	1.5 Max.	280–340	450 @ 10 mA	Leadless Surface Mount
SMS3923-108	Medium	20	0.875–1.275	310–370	1000	Leadless Surface Mount

Hermetic Packaged Silicon Schottky Diodes for Mixer and Detector Applications

Part Number	Barrier Height	Min. V_B @ 10 µA (V)	Max. C_T V_R = 0 V, F = 1 MHz (pF)	Max. R_S I_F = 5 mA (Ω)	Package
SMS7621-108	Low	2	0.325	18	Leadless Surface Mount

Hermetic Packaged Zero Bias Detector Schottky Diodes

Part Number	Barrier Height	Min. V_B @ 10 µA (V)	Typ. C_T V_R = 0.15 V, F = 1 MHz (pF)	V_F I_F = 100 µA (mV)	V_F I_F = 35.0 mA (mV)	Typ. Video Resistance (Ω)	Package
SMS7630-109	ZBD	1	0.5	65–100	135–240	5000	Leadless Surface Mount

Hermetic Packaged Beamless, N-Type, Low, Medium, High Drive Bridge Quad (To 8 GHz) Schottky Diodes

Part Number	Barrier Height	V_F I_F = 1 mA (mV)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	Max. ΔC_T @ 0 V (pF)	Max. R_T I_F = 10 mA (Ω)	Package
DMF3929-117	Low	200–260	15	0.3–0.5	0.07	8	Leadless Surface Mount
DME3930-117	Medium	300–400	15	0.3–0.5	0.07	8	Leadless Surface Mount
DMJ3931-117	High	525–625	15	0.3–0.5	0.07	8	Leadless Surface Mount

Hermetic Packaged Beamless, N-Type, Low, Medium, High Drive Crossover Ring Quad (To 8 GHz) Mixer Schottky Diodes

Part Number	Barrier Height	Max. C_T V_R = 0.15 V, F = 1 MHz (pF)	V_F I_F = 5 mA (mV)	Max. ΔV_F I_F = 5 mA (mV)	V_F I_F = 10 mA (mV)	Max. ΔV_F I_F = 10 mA (mV)	Max. R_T I_F = 5 mA (Ω)	Package
DMF3926-116	Low	0.55	260–330	10	–	–	10	Leadless Surface Mount
DME3927-116	Medium	0.55	435–520	–	435–520	10	12	Leadless Surface Mount
DMJ3928-116	High	0.55	610–700	–	610–700	10	10	Leadless Surface Mount

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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_J (pF)	R_T (Ω)	V_F @ 1 mA (mV)	V_B (V)	R_V @ 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	5.5
CDC7631-000	ZBD	P	0.15	80	150–300	2	7.2
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	Hermetic Surface Mount 108	Hermetic 109
CDB7620-207	CDB7620-203		SMS7620-109
CDB7619-207	CDB7619-203		SMS7619-109
CDF7623-207	CDF7623-203	SMS7623-108	
CDF7621-207	CDF7621-203	SMS7621-108	
CME7660-207	CME7660-203	SMS7660-108	
CDE7618-207	CDE7618-203	SMS7618-108	
CDP7624-207	CDP7624-203	SMS7624-108	
CDC7630-207	SDC7630-203		SMS7630-109
CDC7631-207	CDC7631-203		

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

Part Number	Min. EO (mV)	Z_V (Ω)	Min. T_{SS} (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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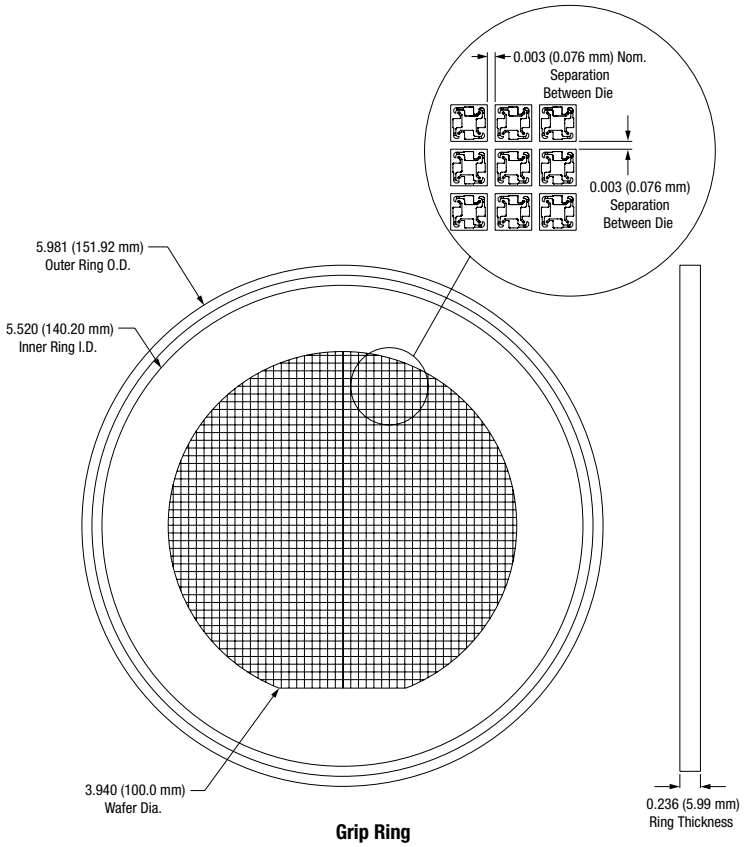
SCHOTTKY DIODES

Schottky Diode Wafer on Film Frame—Microwave

Silicon Schottky Mixer Diode Chips—Low Frequency to 12 GHz

Part Number	Min. V_B @ 10 µA (V)	C_J V_R = 0 V, F = 1 MHz (pF)	V_F I_F = 1 mA (mV)	Max. ΔV_F @ 1 mA (mV)	Max. R_T I_F = 10 mA (Ω)
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



Grip Ring

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SCHOTTKY DIODES

Schottky Diodes—Microwave/Millimeterwave

GaAs Flip Chips—Low Frequency to 77 GHz

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

Chip On Board Silicon Schottky Diode Ring Quads (to 6 GHz)

Part Number	Barrier	V_F I_F = 1 mA (mV)	Max. ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	Max. ΔC_T @ 0 V (pF)	Max. R_T I_F = 10 mA (Ω)	Outline Drawing
DMF3926-101	Low	200–260	15	0.3–0.5	0.07	8	549-002
DME3927-101	Medium	300–400	15	0.3–0.5	0.07	8	549-002
DMJ3928-101	High	525–625	15	0.3–0.5	0.07	8	549-002

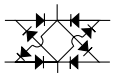
Chip On Board Silicon Schottky Diode Crossover Ring Quads (to 6 GHz)

Part Number	Barrier	V_F I_F = 1 mA (mV)	Max. ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	Max. ΔC_T @ 0 V (pF)	Max. R_T I_F = 10 mA (Ω)	Outline Drawing
DMF3926-100	Low	200–260	15	0.3–0.5	0.07	8	549-010
DME3927-100	Medium	300–400	15	0.3–0.5	0.07	8	549-010
DMJ3928-100	High	525–625	15	0.3–0.5	0.07	8	549-010

Chip On Board Silicon Schottky Diode Back-to-Back Crossover Quads (to 6 GHz)

Part Number	Barrier	V_F I_F = 1 mA (mV)	Max. ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	Max. ΔC_T @ 0 V (pF)	Max. R_T I_F = 10 mA (Ω)	Outline Drawing
DMF3945-103	Low	200–260	15	0.3–0.5	0.07	8	545-065
DME3946-103	Medium	300–400	15	0.3–0.5	0.07	8	545-065
DMJ3947-103	High	525–625	15	0.3–0.5	0.07	8	545-065

Chip On Board Silicon Schottky Diode Quads (To 6 GHz)

		
Ring Quad	**Crossover Quad**	**Back-to-Back Crossover Quad**
DMF3926-101 Marking: Red Dot	DMF3926-100 Marking: Red Dot	DMF3945-103 Marking: Red Dot
DME3927-101 Marking: Blue Dot	DME3927-100 Marking: Blue Dot	DME3946-103 Marking: Blue Dot
DMJ3928-101 Marking: Yellow Dot	DMJ3928-100 Marking: Yellow Dot	DMJ3947-103 Marking: Yellow Dot

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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_J 0 V @1 MHz (pF)	Max. R_S @ 5 mA (Ω)	Min. V_B @ 10 µA (V)	V_F @ 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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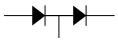
SCHOTTKY DIODES



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 (Ω)	Min. V_B @ 10 µA (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_J 0 V, 1 MHz (pF)	Max. R_S @ 5 mA (Ω)	Min. V_B @ 10 µA (V)	V_F @ 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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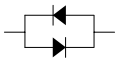
SCHOTTKY DIODES



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 (Ω)	Min. V_B @ 10 µA (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 (Ω)	Min. V_B @ 10 µA (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 (Ω)	Min. V_B @ 10 µA (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

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SCHOTTKY DIODES

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

Part Number	Frequency Band	Min. T_{SS} (dBm)	Z_{IF} (Ω)	Max. C_J @ 0 V (pF)	V_F @ 1 mA (mV)	V_B @ 10 µA (V)	Frequency (GHz)
DDB2503-000	X	50	500–700	0.15	200–350	2	10.00
DDB2504-000	Ku	48	500–700	0.10	200–350	2	16.00
DDB2265-000	K	50	800–1200	0.10	300–450	3	24.15

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)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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 mA (mV)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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 mA (mV)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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 mA (mV)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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 (To 6 GHz) Schottky Diodes—Low Frequency to 24 GHz

Part Number	Band	Barrier	V_F I_F = 1 mA (mV)	ΔV_F I_F = 1 mA (mV)	C_J V_R = 0 V, F = 1 MHz (pF)	R_S I_F = 5 mA (Ω)
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 (Ω)	Min. V_B @ 10 µA (V)	V_F @ 1 mA (mV)	Drive Level
DME3938-257	S–X	0.15–0.30	16	4	400–520	Low
DMF3939-257	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 Frequence to 3 GHz

Part Number	Min. V_B I_R = 10 µA (V)	C_T V_R = 0.5 V (pF)	C_T V_R = 1 V (pF)	C_T V_R = 4 V (pF)	Min. C_R 0 V/30 V	Max. R_S 500 MHz (Ω)	Max. R_S @ 1 V 500 MHz (Ω)	Q 50 MHz
SMV1405 Series	30	2.1 Typ.	1.8 Typ.	1.21–1.45	4.1	0.80	–	3200
SMV1408 Series	30	3.4 Typ.	2.9 Typ.	1.75–2.11	4.1	0.60	–	2900
SMV1413 Series	30	7.4 Typ.	6.4 Typ.	3.64–4.42	4.2	0.35	–	2400
SMV1493 Series	–	–	17.4–20.0	10.0–12.1	–	–	0.50	–
SMV1494 Series	–	–	36.3–41.7	20.7–25.3	–	–	0.45	–

			
Single SOT-23	**Common Cathode SOT-23**	**Common Cathode SC-70**	**Single SC-79[1]**
		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
			SMV1493-079LF Marking: Cathode
			SMV1494-079LF Marking: Cathode

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

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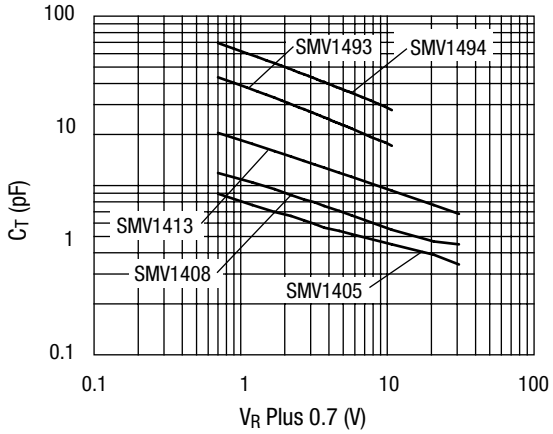
VARACTOR DIODES

Ceramic Hermetic Abrupt Varactor Diodes—Low Frequency to 10 GHz

Ceramic Hermetic Packaged High Q Silicon Abrupt Varactor Diodes

Part Number	Min. V_B I_R = 10 µA (V)	Max. I_R V_R = 24 V (nA)	C_T V_R = 4 V (pF)	Min. C_R 0 V/30 V	Max. R_S V_R = 4 V, F = 500 MHz (Ω)	Typ. Q V_R = 4 V F = 500 MHz
SMV1405-108	30	20	1.25–1.56	3.8	0.8	3200

Typical Performance Characteristics



Abrupt Varactor Diode Chips

Abrupt Junction Varactor Diode Chips—Low Frequency to 12 GHz

Part Number	V_B I_R @ 10 µA (V)	Typ. C_T @ 1 V (pF)	C_T @ 4 V (pF)	Min. C_T @ 0 V/ C_T @ 30 V (Ratio)	Max. R_S @ 1 V 50 MHz (Ω)	Max. R_S @ 4 V 50 MHz (Ω)	Typ. Q @ 4 V 50 MHz
SMV1405-000	30	–	1.08–1.32	4.1	–	0.80	3200
SMV1408-000	30	–	1.62–1.98	4.1	–	0.60	2900
SMV1413-000	30	–	3.59–4.29	4.2	–	0.35	2400
SMV1493-000	12	18.57	9.87–11.97	–	25	–	–
SMV1494-000	12	38.87	20.57–25.07	–	20	–	–

Hermetic Packaged Abrupt Junction Varactor Diodes —Low Frequency to 6 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

Skyworks Green™ products are lead (Pb)-free, Restriction of Hazardous Substances (RoHS)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide, and brominated flame retardants.

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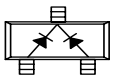
VARACTOR DIODES

Plastic Surface Mount (SMT) Hyperabrupt Varactor Diodes—Low Frequency to 3 GHz

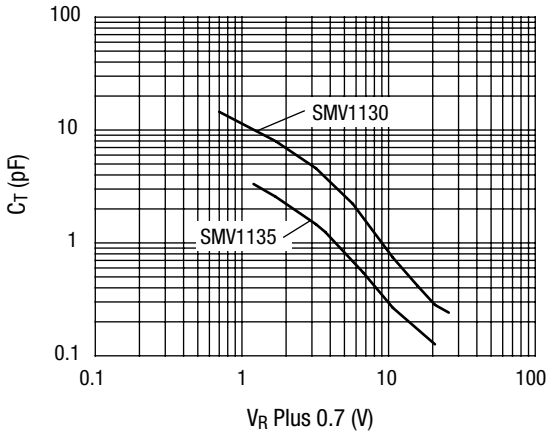
Large Bandwidth Silicon Hyperabrupt Varactor Diodes

Part Number	Min. V_B I_R = 10 µA (V)	C_T V_R = 1 V (pF)	C_R 1 V/3 V	C_R 1 V/9 V	R_S 500 MHz (Ω)
SMV1130 Series	26	17.4–21.2	1.47–1.76	3.7–4.5	0.8 Max. @ 1 V
SMV1135 Series	28	8.2–10.0	1.47–1.76	3.7–4.5	1.2 Max. @ 1 V

		
Common Cathode SOT-23	**Single SC-79[1]**	**Single SOT-23**
	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



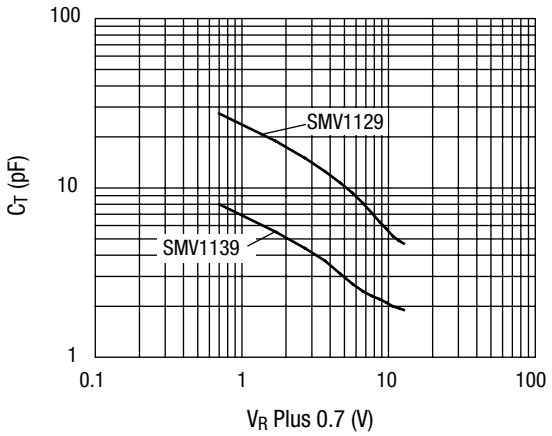
Part Number	C_T @ 1 V (pF)	Min. C_R @ 1 V/3 V	Min. C_R @ 1 V/6 V	Max. R_S 500 MHz @ 1 V (Ω)
SMV1129 Series	17.5–20.5	1.4	2.0	0.4
SMV1139 Series	4.95–5.85	1.4	2.0	0.6

Minimum breakdown voltage 12 V @ I_R = 10 µA.
Reverse leakage 20 nA max. @ V_R = 10 V.

	
Single SOD-323	**Single SC-79[1]**
	SMV1129-079LF Marking: Cathode
SMV1139-0 11LF Marking: HG	

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

Typical Performance Characteristics



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

VARACTOR DIODES

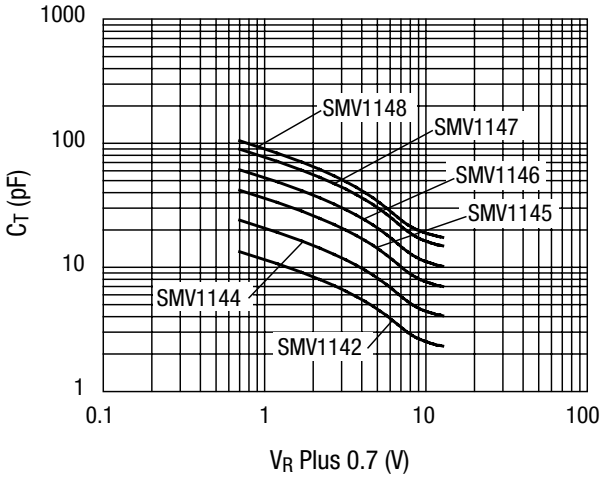
Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. V_B I_R = 10 µA (V)	C_T V_R = 1 V (pF)	Typ. C_T V_R = 3 V (pF)	Typ. C_T V_R = 6 V (pF)	C_R 1 V/3 V	C_R 1 V/6 V	Max. R_S 500 MHz (Ω)	Typ. Q 50 MHz
SMV1142 Series	12	8.20–10.00	5.8	3.5	1.50–1.65	2.43–2.93	0.70 @ 3 V	800 @ 3 V
SMV1143 Series	12	11.60-14.20	8.2	4.9	1.50-1.65	2.45-2.95	0.65 @ 3 V	600 @ 3V
SMV1144 Series	12	14.65–17.95	10.4	6.1	1.50–1.65	2.46–2.96	0.65 @ 3 V	500 @ 3 V
SMV1145 Series	12	25.50–31.20	18.1	10.6	1.50–1.65	2.50–3.00	0.60 @ 3 V	200 @ 3 V
SMV1147 Series	12	54.60–66.70	38.6	22.6	1.50–1.65	2.50–3.00	0.55 @ 3 V	150 @ 3 V
SMV1148 Series	12	62.00–76.00	44.1	25.2	1.50–1.65	2.50–3.00	0.50 @ 3 V	150 @ 3 V

	
Single SOD-323	**Single SC-79[1]**
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	Typ. C_T V_R = 1 V (pF)	C_T V_R = 2.5 V (pF)	Max. C_T V_R = 4 V (pF)	Typ. C_R 1 V/2.5 V	Typ. C_R 1 V/4 V	Typ. R_S 500 MHz @ 4 V (Ω)	Min. Q 50 MHz @ 4 V
SMV1211 Series	100	40–65	25.0	2	5	0.4	80
SMV1212 Series	50	18–27	12.0	2	5	0.8	150
SMV1213 Series	22	8.5–10.5	5.5	2	5	1.4	200
SMV1214 Series	16	6.5–7.8	4.8	2	5	1.7	300
SMV1215 Series	9.5	4.3–5.5	2.9	2	5	2.8	350

Minimum breakdown voltage 12 V @ I_R = 10 µA.
Reverse leakage 20 nA max. @ V_R = 8 V.

				
Single SOT-23	**Common Cathode SOT-23**	**Common Cathode SC-70**	**Single SOD-323**	**Single SC-79[1]**
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	

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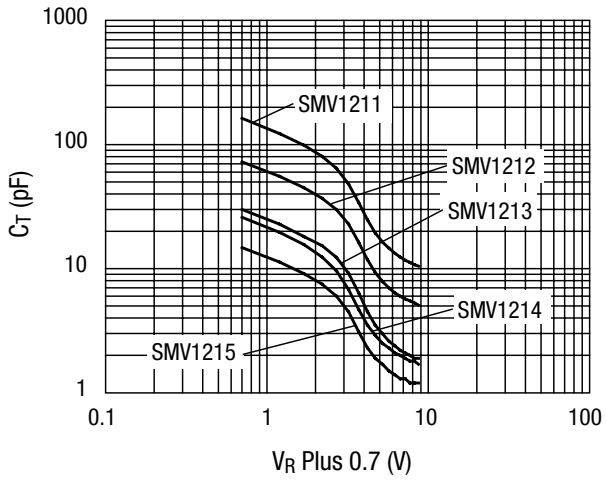
Typical Performance Characteristics



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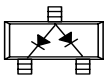
VARACTOR DIODES

Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	C_T V_R = 1 V (pF)	Typ. C_T V_R = 3 V (pF)	Typ. C_T V_R = 6 V (pF)	C_R 1 V/3 V	C_R 1 V/6 V	Max. R_S 500 MHz @ 3 V (Ω)	Typ. Q 50 MHz @ 3 V
SMV1231 Series	1.43–1.72	0.97	0.61	1.5–1.8	2.5–2.8	2.90	1500
SMV1232 Series	2.34–2.86	1.50	0.94	1.5–1.9	2.6–3.3	1.50	1400
SMV1233 Series	3.00–3.60	1.80	1.10	1.5–1.9	2.6–3.3	1.20	1200
SMV1234 Series	5.85–7.15	3.60	2.00	1.6–2.0	2.8–3.4	0.80	1000
SMV1235 Series	10.35–12.65	6.40	3.60	1.6–2.0	2.9–3.4	0.60	750
SMV1236 Series	15.50–18.50	9.20	5.30	1.6–2.0	3.0–3.5	0.50	700
SMV1237 Series	45–54	26.90	14.40	1.6–2.0	3.0–3.5	0.25	500

Minimum breakdown voltage 15 V @ I_R = 10 µA.
Reverse leakage 20 nA max. @ V_R = 8 V.

					
Single SOT-23	**Common Cathode SOT-23**	**Common Cathode SC-70**	**Common Anode SC-70**	**Single SOD-323**	**Single SC-79[1]**
		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					

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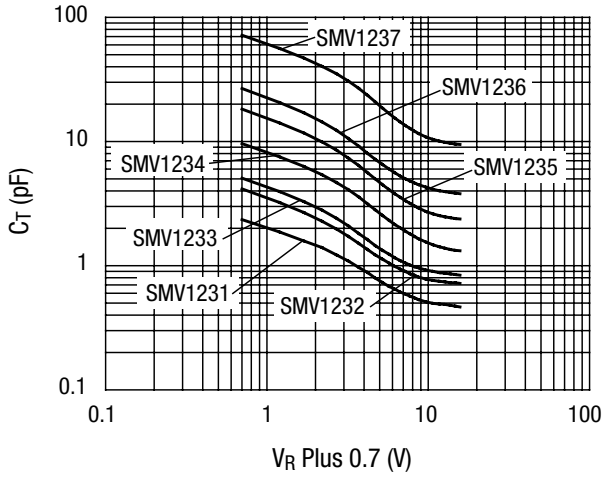
VARACTOR DIODES

Typical Performance Characteristics



Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. C_T V_R = 0.3 V (pF)	C_T V_R = 1 V (pF)	Typ. C_T V_R = 3 V (pF)	Typ. C_T V_R = 4.7 V (pF)	Min./Typ. C_R 0.3 V/4.7 V	Typ. C_R 1 V/3 V	Max. R_S 500 MHz @ 3 V (Ω)	Typ. Q 50 MHz @ 3 V
SMV1247 Series	7	4.4 Typ.	0.95	0.7	9.5/10.0	4.6	6.0	1500
SMV1248 Series	17	12.3 Typ.	2.60	1.5	10.8/12.0	4.7	3.3	700
SMV1249 Series	31	18.2 Typ.	3.40	2.6	11.0/12.1	5.3	2.2	600
SMV1251 Series	42	28.1 Typ.	5.80	3.4	11.0/12.2	4.8	1.6	400
SMV1253 Series	53	37.0 Typ.	7.77	4.3	11.0/12.3	4.7	1.4	350
SMV1255 Series	64	43.3 Typ.	8.50	5.2	11.0/12.3	5.1	1.3	350

Minimum breakdown voltage 15 V @ I_R = 10 µA.
Reverse leakage 20 nA max. @ V_R = 8 V.

					
Single SOT-23	**Common Anode SOT-23**	**Common Cathode SOT-23**	**Common Cathode SC-70**	**Single SOD-323**	**Single SC-79[1]**
			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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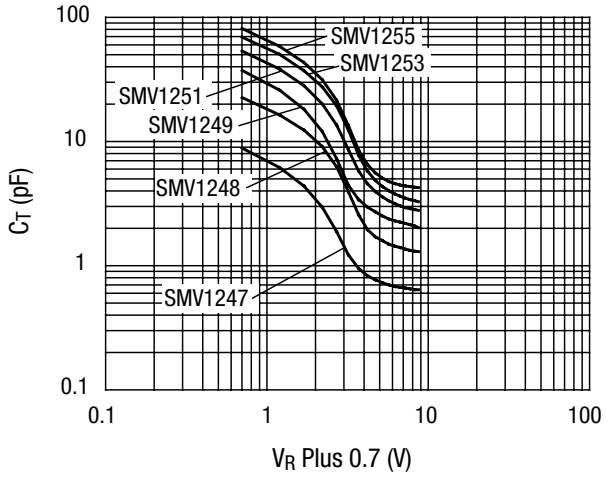
VARACTOR DIODES

Typical Performance Characteristics

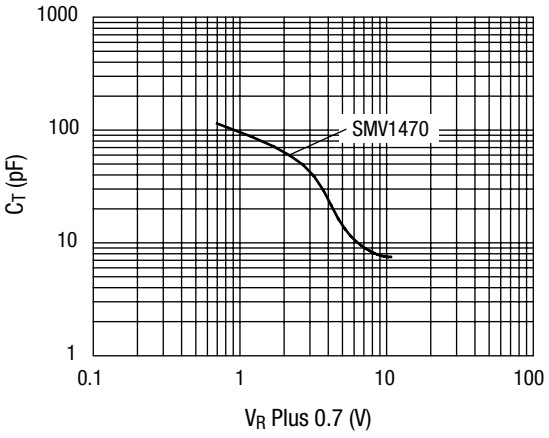


Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. V_B I_R = 10 µA (V)	C_T V_R = 1 V (pF)	C_T V_R = 4.5 V (pF)	C_T V_R = 20 V (pF)	C_T V_R = 26 V (pF)	C_R 1 V/3 V	Typ. C_R 1 V/5 V	C_R 1 V/9 V	C_R 1 V/20 V	C_R 1 V/26 V	R_S 500 MHz (Ω)
SMV1245 Series	26	4.4–5.4	–	–	–	1.47–1.76	–	3.5–4.2	–	–	2.0 Max. @ 1 V
SMV1265 Series	28	12.5–14.7	–	–	0.58–0.83	–	–	–	–	17.7 Min.	2.4 Typ. @ 1 V
SMV1281 Series	24	7.8–9.5	–	0.6–0.8	–	–	–	–	12.0 Typ.	–	1.7 Typ. @ 1 V
SMV1283 Series	28	8.5–9.7	–	–	0.50–0.75	–	–	–	–	14.7 Typ.	2.4 Typ. @ 1 V
SMV1470-004LF	10	65.8–74.2	12.0–14.8	–	–	–	6	–	–	–	0.8 Max. @ 1.5 V

		
Single SOD-323	**Single SC-79**	**Common Cathode SOT-23**
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



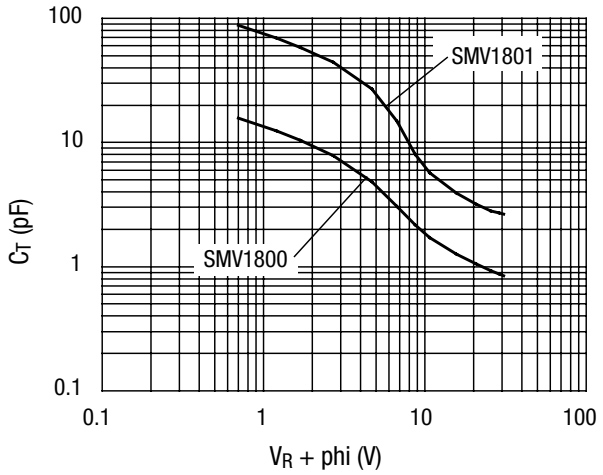
Unless otherwise noted, all parts in the guide are lead (Pb)-free and RoHS-compliant.

VARACTOR DIODES

Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. V_B @ 10 µA (V)	Min.–Max. C_J @ 0.5 V (pF)	Min.–Max. C_J @ 28 V (pF)	Typ. C_R 0.5 V/28.0 V	R_S 470 MHz (Ω)
SMV1800-079LF	30	10.25–14.25	0.70–1.05	14	3.0 @ 1.5 V
SMV1801-079LF	30	54.0–62.0	2.48–2.89	22	1.2 @ 3.0 V

Typical Performance Characteristics

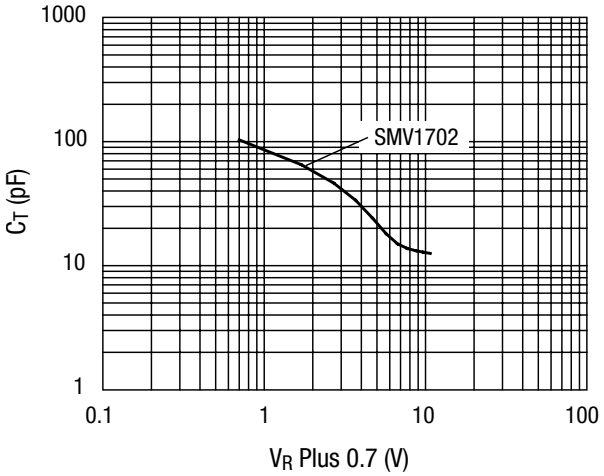


Part Number	Min. V_B @ 10 µA (V)	C_T V_R = 0.1 V (pF)	C_T V_R = 2 V (pF)	C_T V_R = 4 V (pF)	Min. C_R 0.1 V/4 V	Max. R_S 470 MHz (Ω) @ 5 V
SMV1702 Series	10	90–110	41–50	22–29	3.6	1.25

Single
SOD-323

SMV1702-011LF
Marking: HJ

Typical Performance Characteristics



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_B I_R = 10 µA (V)	C_T V_R = 4 V (pF)	C_T V_R = 20 V (pF)	Min. C_R 4 V/20 V	Q 50 MHz
SMV2022 Series	22	2.50–3.30	0.60–0.85	3.0	500 Typ. @ 4 V
SMV2023 Series	22	4.40–5.40	0.90–1.20	4.2	500 Typ. @ 4 V

		
Single SOT-23	**Common Cathode SOT-23**	**Single SOD-323**
	SMV2022-004LF Marking: DJ3	
SMV2023-001LF Marking: DK1	SMV2023-004LF Marking: DK3	SMV2023-011LF Marking: DK1

Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

Part Number	Min. V_B I_R = 10 µA (V)	C_T V_R = 0.5 V (pF)	C_T V_R = 1 V (pF)	C_T V_R = 2.5 V (pF)	C_T V_R = 4 V (pF)	Min. C_R 0.5 V/ 2.5 V	Typ. C_R 1 V/4 V	R_S 500 MHz (Ω)	Max. R_S 900 MHz (Ω)
SMV1263 Series	20	6.2–7.2	–	2.3–2.9	–	2.3	–	–	1.2 @ 1 V
SMV1269 Series	10	19.2–21.8	–	6.5–8.1	–	2.5	–	–	0.8 @ 1 V
SMV1270 Series	20	22.1–25.1	–	7.7–9.8	–	2.3	–	0.7 Typ. @ 1 V	–
SMV1705 Series	12	–	17.3–19.3	–	5.3–6.6	–	3	0.32 Typ. @ 1 V	–
SMV1763 Series	10	6.2–7.2	–	2.3–2.9	–	2.3	–	–	0.7 @ 1 V
SMV1770 Series	12	22.1–25.1	–	7.7–9.8	–	2.3	–	0.5 Max. @ 1 V	–
SMV1771 Series	12	22.0–24.0	–	9.25–12.5	–	2.3	–	0.5 Max. @ 1 V	–

Reverse leakage 20 nA max. @ V_R = 8 V.

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

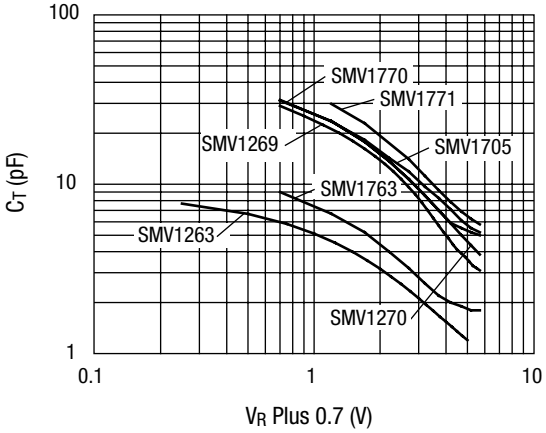
VARACTOR DIODES

Large Bandwidth Silicon Hyperabrupt Varactor Diodes (Continued)

		
Common Cathode SOT-23	**Common Cathode SC-70**	**Single SC-79[1]**
	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



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

Part Number	Typ. C_T @ 0 V (pF)	C_T @ 4 V (pF)	C_T @ 20 V (pF)	Min. Q @ 4 V 50 MHz	Typ. R_S @ 4 V 1 GHz (Ω)	Max. I_R @ 17.6 V (nA)
SMV2019-000	2.3	0.68–0.88	0.13–0.23	500	4.8	50
SMV2020-000	3.1	1.13–1.43	0.23–0.33	500	4.1	50
SMV2021-000	4.5	1.58–1.98	0.32–0.44	500	2.8	50
SMV2022-000	7.1	2.48–3.08	0.48–0.68	400	2.2	50
SMV2023-000	10.8	4.28–5.28	0.78–1.08	400	1.4	50

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VARACTOR DIODES

Hermetic Packaged Large Bandwidth Silicon Hyperabrupt Varactor Diodes—Low Frequency to 6 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

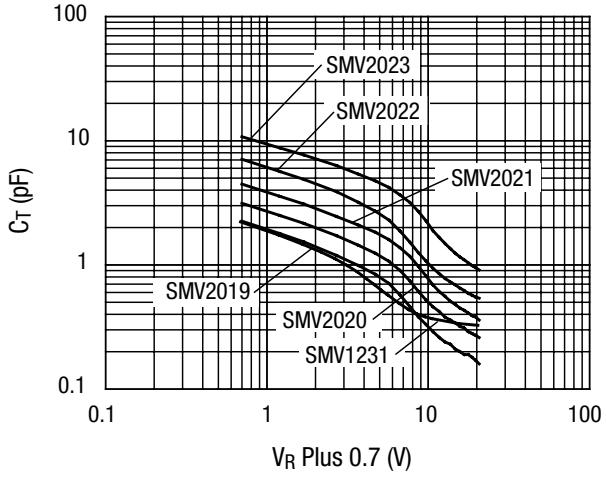
Ceramic Hermetic Hyperabrupt Varactor Diodes—Low Frequency to 10 GHz

Part Number	C_T @ 4 V (pF)	C_T @ 20 V (pF)	Typ. Q V_R = 4 V F = 50 MHz	Max. I_R V_R = 17.6 V (nA)	Min. V_B I_R = 10 µA (V)	Package
SMV2019-108	0.86–1.10	0.28–0.42	500	50	22	Leadless Surface Mount

Ceramic Hermetic Hyperabrupt Junction Varactor Diodes—Low Frequency to 10 GHz

Part Number	Min. V_B @ 10 µA (V)	Max. I_R @ 16 V (nA)	C_T @ 3 V (pF)	C_T @ 20 V (pF)	Min. C_{T3} C_{T20}	Min. Q @ 3 V 50 MHz	Package
SMV1206-108	20	50	10.6–12.6	2.15–2.6	4.45	400	Leadless Surface Mount

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

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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 that 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)
SKY73001	2–3500	DC–100	3.0	67 @ 900 MHz	27 @ 900 MHz	-3.5 @ 900 MHz	32-pin RFLGA 5 x 5
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)	$IP_{1\ dB}$ (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	6.0	26.0	32.0	17.0	9.6	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)	$I_{P1\ dB}$ (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	1700–2200	40–300	8.5	25.0	33.5	14.0	9.5	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)	$IP_{1\ dB}$ (dBm)	NF (dB)	Package (mm)
SKY73062	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	33.5	–	19.0	6.0	20-pin MCM 5 x 5
SKY73069	700–1000	50–300	-7.0	31.0	–	20.9	7.0	20-pin MCM 5 x 5

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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.

Single Channel Mixers

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	2.3	100	33.0	0–12	LGA
PS094-315	700–1250	Voltage Controlled Phase Shifter	2.3	100	33.0	0–12	LGA
PS196-315	1800–3000	Voltage Controlled Phase Shifter	2.3	100	33.0	0–12	LGA
PS214-315	1700–2800	Voltage Controlled Phase Shifter	2.3	100	33.0	0–12	LGA

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	-127	-148	300	120	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	-121	-144	300	120	5	38-pin MCM 9 x 12
SKY73112	750–850	0	-132	-152	300	120	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	–	–	300	120	5	38-pin MCM 9 x 12

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PLLS/SYNTHESIZERS/VCOs

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

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

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POWER DIVIDERS/COMBINERS

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

RF SOLUTIONS

Intera™ Front-End Modules

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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RF SOLUTIONS

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

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RF SOLUTIONS

Intera™ Front-End Modules for Cellular

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

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		41	2.9–4.8	34-pin MCM 8 x 8 x 1.2
	824–849	GSM850	33.3	43		
	880–915	GSM900	33.3	38		
	1710–1785	DCS1800	33.5	40		
	1850–1910	PCS1900	34.5			
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				
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		

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RF SOLUTIONS

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		Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS			2.7–4.8	20-pin MCM
	824–849	GSM850	33.7	48		6 x 8 x 1.1
	1850–1910	PCS1900	32.0	41		
SKY77518		Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS			2.7–4.8	20-pin MCM
	880–915	GSM900	33.5	44		6 x 8 x 1.1
	1710–1785	DCS1800	32.0	42		
SKY77531		Tx-Rx iPAC™ FEM for Quad-Band GSM/GPRS			3.1–4.8	30-pin MCM
	824–849	GSM850	33.7	42		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		Tx-Rx iPAC™ FEM for Dual-Band GSM/GPRS			3.1–4.8	20-pin MCM
	824–849	GSM850	33.7	42		6 x 8 x 1.05
	880–915	GSM900	33.6	44		
	1710–1785	DCS1800	31.8	42		
	1850–1910	PCS1900	32.0	41		

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

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RF SOLUTIONS

WLAN/WiMAX Front-End Modules

Part Number	Frequency (GHz)	802.11 WLAN Standard	Antenna Ports	Architecture	Typ. Current @ V_{CC} = 3.3 V (mA)	Typ. P_{OUT} @ 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	230 180	19.5 16.5	25 –	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

ZigBee®/802.15.4 Front-End Modules

Part Number	RF Frequency (MHz)	$OP_{1\ dB}$ (dBm)	Rx Gain (dB)	Rx NF (dB)	Tx Gain (dB)	Supply Voltage (V)	Package (mm)
SKY65329	902–928	25	17.5	2.0	28	3.6	28-pin MCM 8 x 8
SKY65336	2400–2500	20/10	10.5	2.5	17/7	3.0	28-pin MCM 8 x 8
SKY65337	2400–2500	20/10	-1.9	1.9	17/7	3.0	28-pin MCM 8 x 8
SKY65338	450–470	27	-0.8	0.8	32	3.6	12-pin MCM 8 x 8

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RF SOLUTIONS

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.

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RF SOLUTIONS

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 manufactures, 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:

- SKY74219-21 Transceiver—Highly integrated transceiver with four LNAs, an analog-interface quadrature demodulator, I/Q interface, and baseband filters for quad-band GSM, GPRS, and EDGE femtocell base stations and cellular repeaters.
- 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

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RF SOLUTIONS

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

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RF SOLUTIONS

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.
- SKY74219-21 Transceiver—Highly integrated transceiver with four LNAs, a quadrature demodulator, I/Q interface, and baseband filters for quad-band GSM, GPRS, and EDGE femto cell base stations and cellular repeaters.

CDMA Transceivers

Skyworks offers a highly integrated radio subsystem for CDMA base stations and cellular repeaters. The transceivers supports 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

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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. IL Series (dB)	Typ. IL Shunt (dB)	Typ. Isol. (dB)	Typ. Isolation Series (dB)	Typ. Isolation Shunt (dB)	Typ. IIP3 (dBm)	Typ. $IP_{1\ dB}$ (dBm)	Package (mm)
AF002C1-39LF	Control FET	LF–2.5	–	0.50	0.10	–	25	12	–	–	SOT-23
AF002C4-39LF	Control FET	LF–2.5	–	0.25	0.25	–	6	9	–	–	SOT-23
AS130-73LF	SPST (A/R)	0–2.5	0.75–1.0	–	–	53–24	–	–	44	25	SOT-6
AS156-73LF	SPST (R)	0.5–2.5	0.65–0.75	–	–	45–15	–	–	43	18	SOT-6
AS165-59LF	SPST (A/R)	0.5–2.5	0.7–1.2	–	–	45–38	–	–	45	28	MSOP-8
SKY13316-12LF	SPST (A)	LF–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. $IP_{1\ dB}$ (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

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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. $IP_{1\ dB}$ (dBm)	Package (mm)
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	LPCC 4 x 4
AS211-334	SPDT (R)	LF–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
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	52	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 x 0.9
SKY13299-321LF	SPDT (R)	0.1–4.0	0.3–0.65	30–29	60	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

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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. $IP_{1\ dB}$ (dBm)	Package (mm)
SKY13314-374LF	SPDT (R)	0.1–6.0	0.2–0.6	35–21	47	31	QFN-6 1.5 x 1.5 x 0.45
SKY13319-374LF	SPDT (R)	0.1–3.0	0.3–0.7	30–19	56	36.5 @ 0.1 dB	QFN-6 1.5 x 1.5 x 0.45
SKY13320-374LF	SPDT (R)	0.1–6.0	0.4–0.6	30–24	53	35 @ 0.1 dB	QFN-6 1.5 x 1.5 x 0.45
SKY13321-360LF	SPDT (R)	0.1–6.0	0.4–0.9	30–15	62	40 @ 0.1 dB	QFN-8 2 x 2 x 0.9
SKY13323-378LF	SPDT (R)	0.1–6.0	0.2–0.6	35–22	47	31	QFN-6 1 x 1 x 0.45

SP3T RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. $IP_{1\ dB}$ (dBm)	Package (mm)
AS202-321LF	SP3T (R)	LF–2.0	0.55–0.8	28–25	55	36	QFN-12
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

SP4T RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. $IP_{1\ dB}$ (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

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SWITCHES

Multiport RF Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. $IP_{1\ dB}$ (dBm)	Package (mm)
AS172-73LF	DPDT (R)	LF–2.0	0.3–0.95	25–13	50	34	SOT-6
AS195-306LF	SP5T (R)	0.1–2.0	0.5–1.0	35–23	55	37	MLF-16
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

High Power PIN Diode SPDT Switch

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. IIP3 (dBm)	Typ. $IP_{1\ dB}$ (dBm)	Package (mm)
SKY12004	SPDT (R)	1.9–2.2	0.5	35	>70	>50	MCM-20 5 x 5

LNB/DBS Matrix Switches

Part Number	Description (Absorptive/ Reflective)	Frequency (GHz)	Typ. IL (dB)	Typ. Isol. (dB)	Typ. $IP_{1\ dB}$ (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	–	15	QFN-20 4 x 4

Innovation to Go™ Select products (indicated in blue/bold) and sample/designer kits are now available for purchase online.

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

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 lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

Recommended Frequencies 1000 Series (ε_r = 10.5 ± 0.5, T_F = 0 ± 10)

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) ± 0.030 in.	Nominal Length Range (in.)	Characteristic Impedance (Ω)
λ/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
λ/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 (ε_r = 20.6 ± 1, T_F = 0 ±10)

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) ± 0.030 in.	Nominal Length Range (in.)	Characteristic Impedance (Ω)
λ/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
λ/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 (ε_r = 39 ± 1.5, T_F = 4 ± 2)

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) ± 0.030 in.	Nominal Length Range (in.)	Characteristic Impedance (Ω)
λ/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
λ/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 (ε_r = 90 ± 3, T_F = 0 ± 10)

Type	Profile	Recommended Range f (MHz)	Nominal Length (in.) ± 0.030 in.	Nominal Length Range (in.)	Characteristic Impedance (Ω)
λ/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
λ/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

- **Green, lead (Pb)-free, RoHS-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.**
- **Tab:** Y = Yes, N = No
- **Frequency Tolerance:** B = +1.0%, A = 0.5%
- **Resonant Frequency:** State in MHz
- **Type:** Q for λ/4, H for λ/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 lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

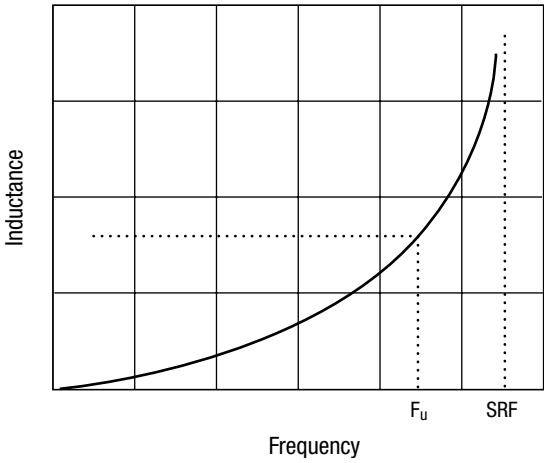


Figure 1. Frequency of Use vs. Inductance

COAXIAL INDUCTOR ORDER INFORMATION

An Order Example

SI	8800	LP	Q	0450	Y	6.3	E

Green, lead (Pb)-free, RoHS-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

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

Tab: Y = Yes, N = No

Frequency of Use (F_u): (see Figure 1 for definition)

Type: Q for λ/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_g) in Dielectric

Material	ε_r	Wavelength Formula for λ_g (inches)
1000	10.5 ± 0.5	$3642/f_0$
2000	20.6 ± 1.0	$2601/f_0$
8800	39.0 ± 1.5	$1890/f_0$
9000	90.0 ± 3.0	$1244/f_0$

Figure 2.

Inductor Selection Guide

1) Select one of Skyworks four dielectric materials.
2) Determine the VCO's operating frequency (f_{vco}).
3) Determine the desired inductance or circuit impedance (Z_{in}).
   Note: Convert inductances to impedances by using:
   $Z_{in} = 2*š * f_{vco} * L_{in}$ Ω
4) Calculate the effect of the tab. Tab inductances are given in Figure 9. Use the formula
   ($Z_{in} = 2*š * f_{vco} * L_{tab}$ Ω)
   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 (λg) of the part in the dielectric (see Figure 2 for appropriate formula).
7) Determine the characteristic impedance (Z_0) of the part (see Figure 3)
8) Calculate the physical length of the part using the formula: $1 = (\lambda_g /2 * š) \tan^{-1} (Z_{input} /Z_0)$ inches
9) Determine the SRF of this part using:
   $SRF = (\lambda_g * f_{vco}) / (4 * 1)$ MHz
10) Check the Recommended Frequency Chart for the appropriate material to ensure a valid part.

Measurement Description of Q, f_0 and L

Evaluation of Q (quality factor) and f_0 (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 Ω. The Q is computed by observing the frequency span between VSWR-2.616 (Z = 50 ± j50 Ω) on either side of f_0. The Q is defined as $f_0/\Delta f$.

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_0) of the coaxial TEM mode components is a function of the profile dimensions and the dielectric constant of the material. Z_0 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_0.

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

where:
w = width of resonator
d = diameter of inner conductor
ε_r = 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.

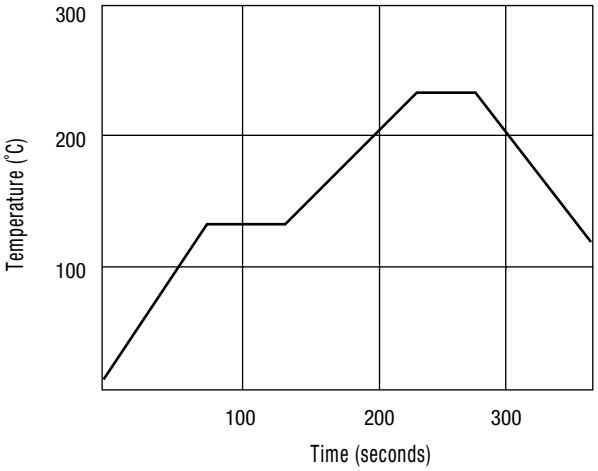


Figure 4. Soldering Profile

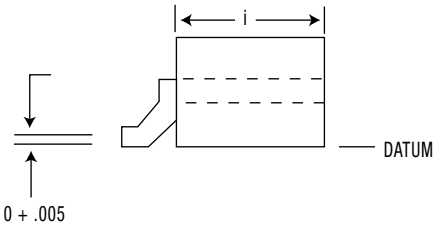


Figure 5. Surface Mount Tolerance for Components with Tabs

Equation (1) Input Impedance f_0

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

where: f_0 = use frequency

Equation (2) Resonant Frequency

$$\iota = \frac{c}{4\ SRF\sqrt{\varepsilon_r}}$$

where: c = speed of light ε_r = 39.08800 material
90.09000 material
10.51000 material
20.62000 material

TECHNICAL CERAMICS

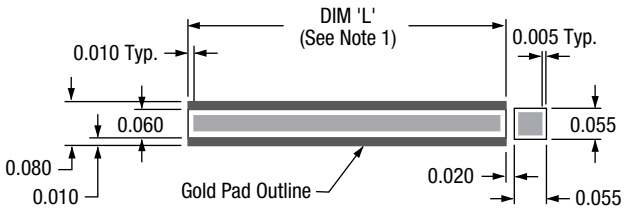
Ceramic Coaxial Inductors

Packaging

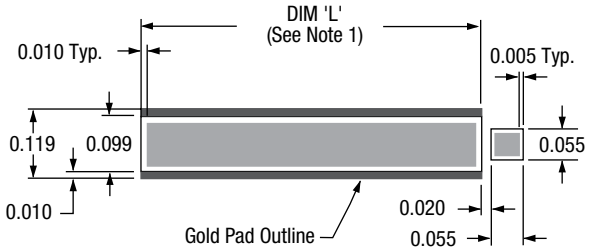
Tape and reel packaging is available. Consult the factory for details.

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

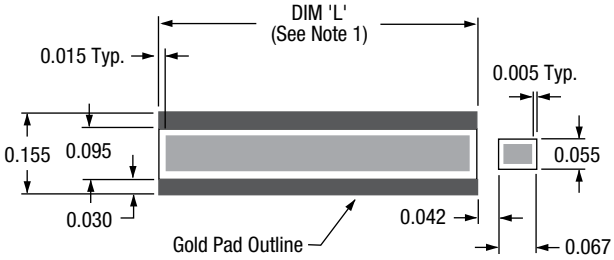
Key:
- = Solder over metallic mounting pad
- = Solder mask over metallic mounting pad
- = Exposed metallic mounting pad



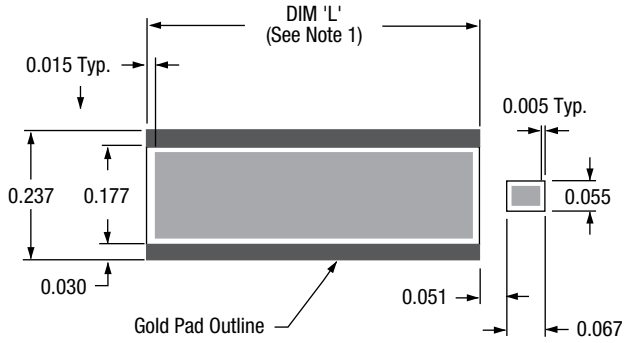
2 mm (5 m) Coaxial Resonator Footpad Dimensions



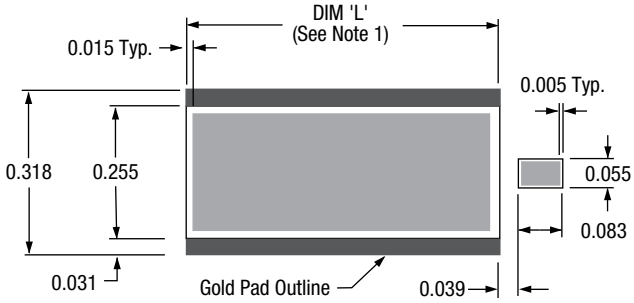
3 mm (MP) Coaxial Resonator Footpad Dimensions



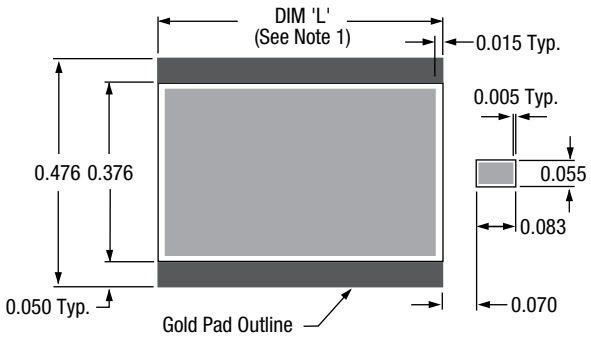
4 mm (LP/LS) Coaxial Resonator Footpad Dimensions



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

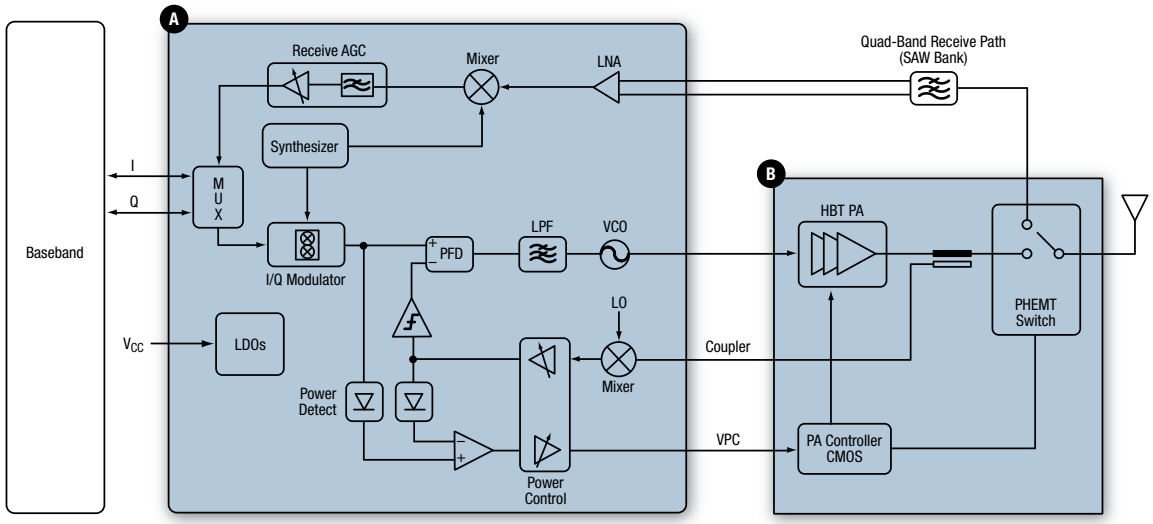
*These products are produced by Trans-Tech (a wholly owned subsidiary of Skyworks Solutions, Inc.)

REFERENCE MATERIAL

BLOCK DIAGRAMS

Handsets

Helios™ II-Plus EDGE RF Subsystem

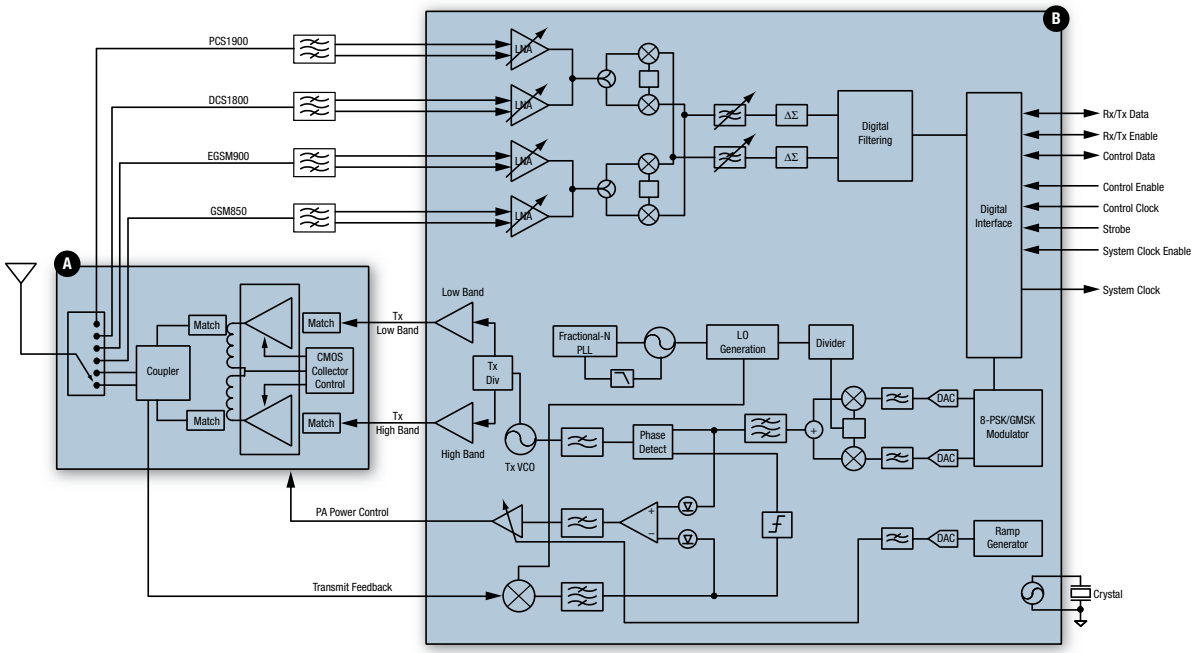


RF Transceiver
A SKY74138

Front-End Module
B SKY77523

Handsets

Helios™ 3 EDGE RF Subsystem



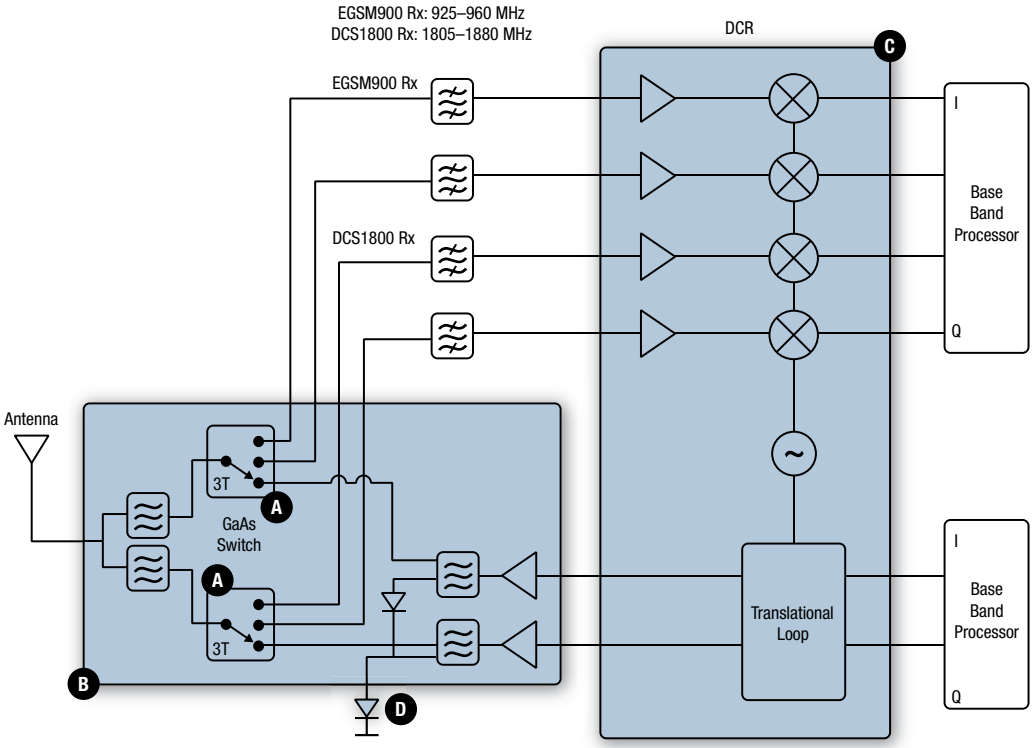
Front-End Module
A SKY77524

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

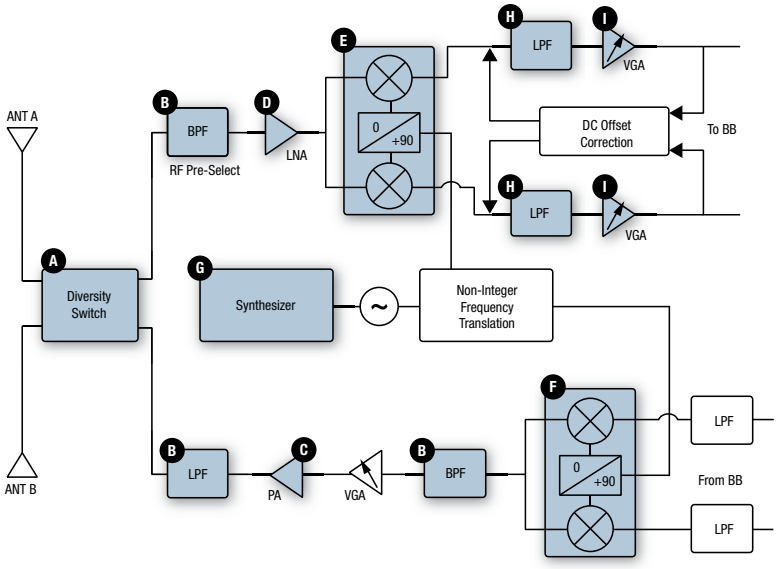
Transmitter Module
- B: SKY77500, SKY77506

DCR
- C: SKY74117-13A

Schottky Diode
- D: SMS3923-015LF

WiFi and ISM-Band Applications

2.4 GHz Direct Conversion Architecture



Switches
- A: AS179-92LF, AS218-321LF, SKY13267-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13314-374LF, SKY13318-321LF

Filters
- B: Ceramic Band Pass Filter

Power Amplifiers
- C: SKY65013, SKY65014, SKY65015, SKY65016, SKY65017, SKY65131, SKY65132, SKY65135, SKY65152, SKY65047

Low Noise Amplifiers
- D: SKY65042, SKY65405, SKY65406

Demodulators
- E: SKY73009, SKY73012

Modulator
- F: SKY73010

Synthesizers
- G: SKY72302, SKY73101

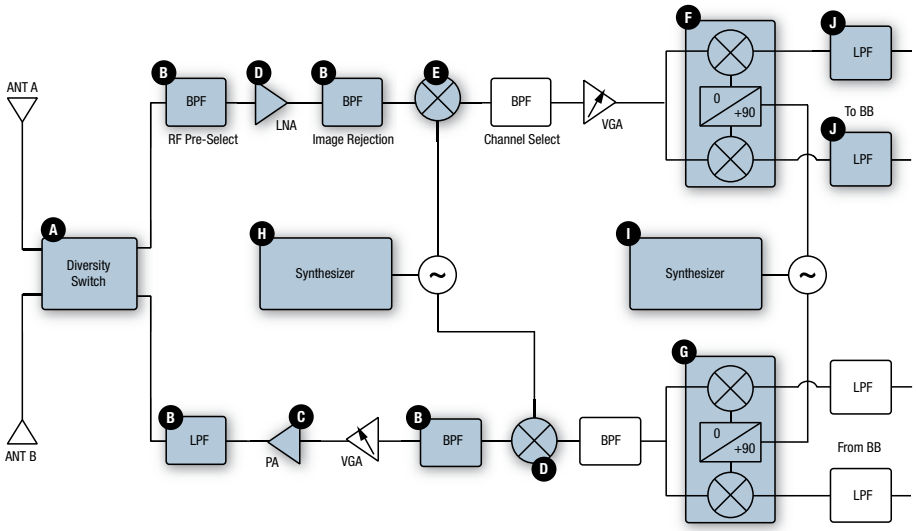
Programmable Low Pass Filters
- H: SKY73201-364LF, SKY73202-364LF

Low Noise Amplifier
- I: SKY65047

BLOCK DIAGRAMS

WiFi and ISM-Band Applications

2.4 GHz Superheterodyne Architecture



Switches
- A: AS218-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13267-321LF, SKY13290-313LF, SKY13306-313LF, SKY13318-321LF

Filters
- B: Ceramic Band Pass Filter

Power Amplifiers
- C: SKY65013, SKY65014, SKY65015, SKY65016, SKY65017, SKY65131, SKY65132, SKY65135, SKY65152, SKY65047

Low Noise Amplifiers
- D: SKY65043, SKY65405, SKY65406

Mixers
- E: SKY73001, SKY73025, SKY73035

Demodulators
- F: SKY73009, SKY73012

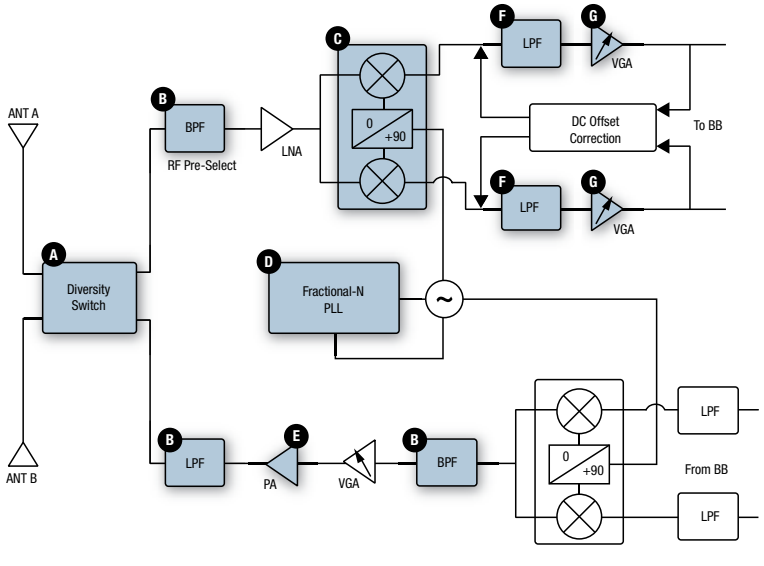
Modulator
- G: SKY73010

Synthesizers
- H: SKY72302
- I: SKY72302, SKY72310

Programmable Low Pass Filters
- J: SKY73201-364LF, SKY73202-364LF

WiMAX

2.5 GHz Direct Conversion Architecture



Switches
- A: AS179-92LF, AS218-321LF, SKY13267-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13314-374LF, SKY13318-321LF

Filters
- B: Ceramic Band Pass Filter

Demodulators
- C: SKY73001, SKY73012

Synthesizer
- D: SKY72302

Power Amplifiers
- E: SKY65013, SKY65014, SKY65015, SKY65017

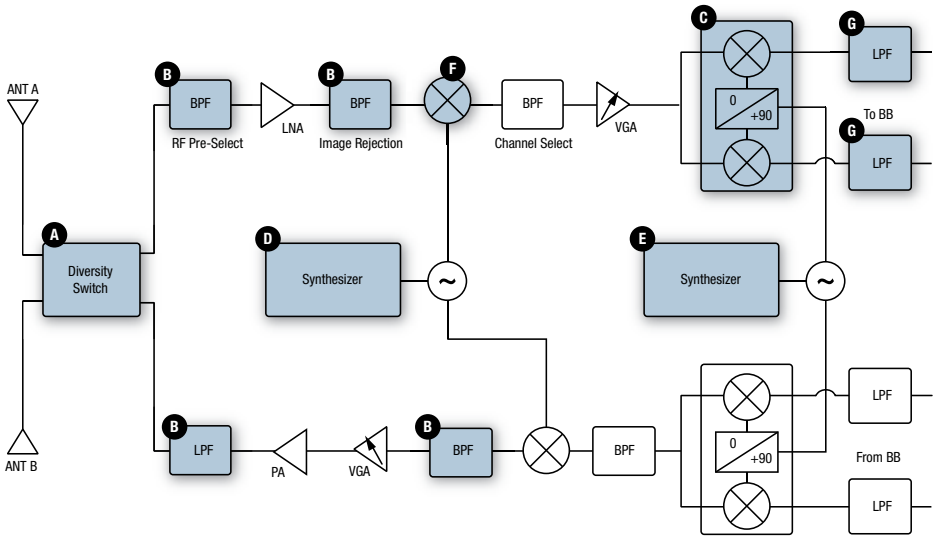
Programmable Low Pass Filters
- F: SKY73201-364LF, SKY73202-364LF

Low Noise Amplifier
- G: SKY65047

BLOCK DIAGRAMS

WiMAX

2.5 GHz Superheterodyne Architecture



Switches
- A: AS218-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13267-321LF, SKY13290-313LF, SKY13306-313LF, SKY13318-321LF

Filters
- B: Ceramic Band Pass Filter

Demodulators
- C: SKY73009, SKY73012

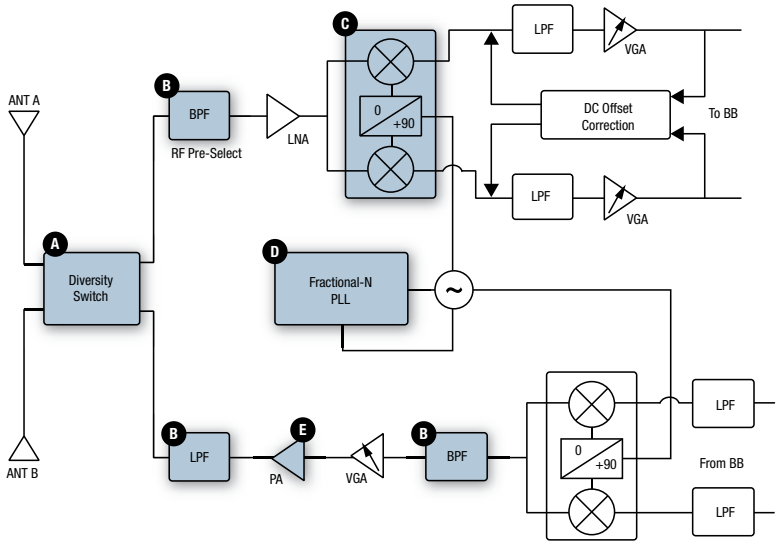
Synthesizers
- D: SKY72302
- E: SKY72302

Mixers
- F: SKY73025, SKY73035

Programmable Low Pass Filters
- G: SKY73201-364LF, SKY73202-364LF

WiMAX

3.5 GHz Direct Conversion Architecture



Switches
- A: AS179-92LF, AS218-321LF, SKY13267-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13314-314LF

Filters
- B: Ceramic Band Pass Filter

Demodulators
- C: SKY73001, SKY73012

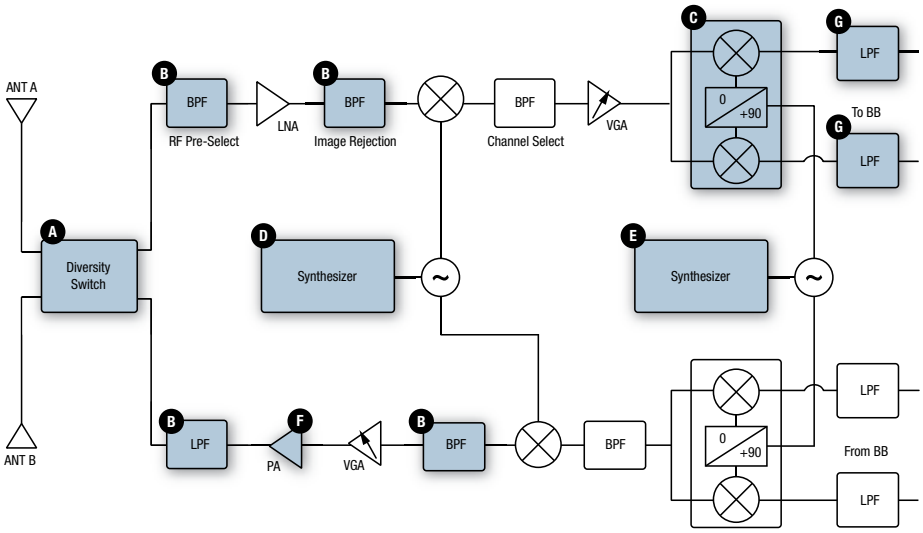
Synthesizer
- D: SKY72302

Power Amplifiers
- E: SKY65013, SKY65014, SKY65015, SKY65017, SKY65263

BLOCK DIAGRAMS

WiMAX

3.5 GHz Superheterodyne Architecture



Switches
- A: AS218-321LF, SMP1340 Series, SMP1345 Series, SMP1320 Series, SMP1352 Series, SKY13267-321LF, SKY13290-313LF, SKY13306-313LF

Filters
- B: Ceramic Band Pass Filter

Demodulators
- C: SKY73009, SKY73012

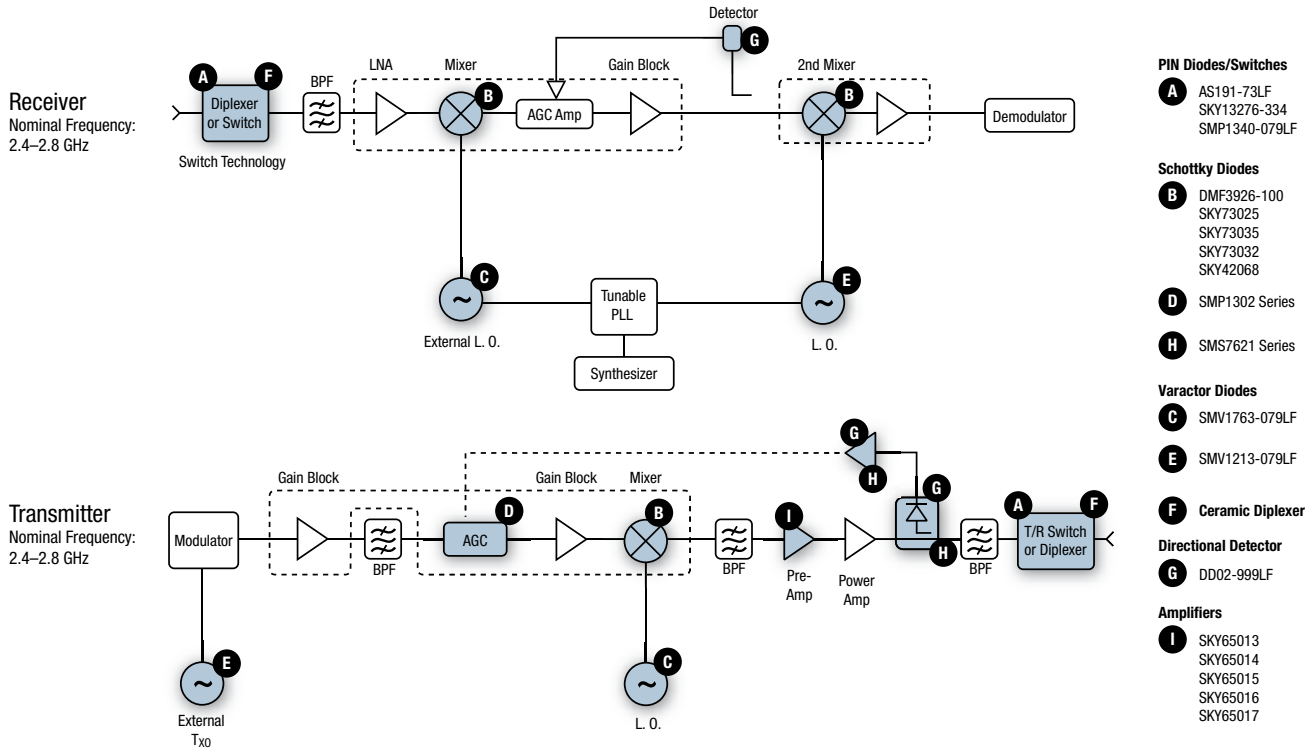
Synthesizers
- D: SKY72302
- E: SKY72302

Power Amplifier
- F: SKY65263

Programmable Low Pass Filters
- G: SKY73201-364LF, SKY73202-364LF

WiMAX

MMDS Link



PIN Diodes/Switches
- A: AS191-73LF, SKY13276-334, SMP1340-079LF

Schottky Diodes
- B: DMF3926-100, SKY73025, SKY73035, SKY73032, SKY42068
- D: SMP1302 Series
- H: SMS7621 Series

Varactor Diodes
- C: SMV1763-079LF
- E: SMV1213-079LF

F: Ceramic Diplexer

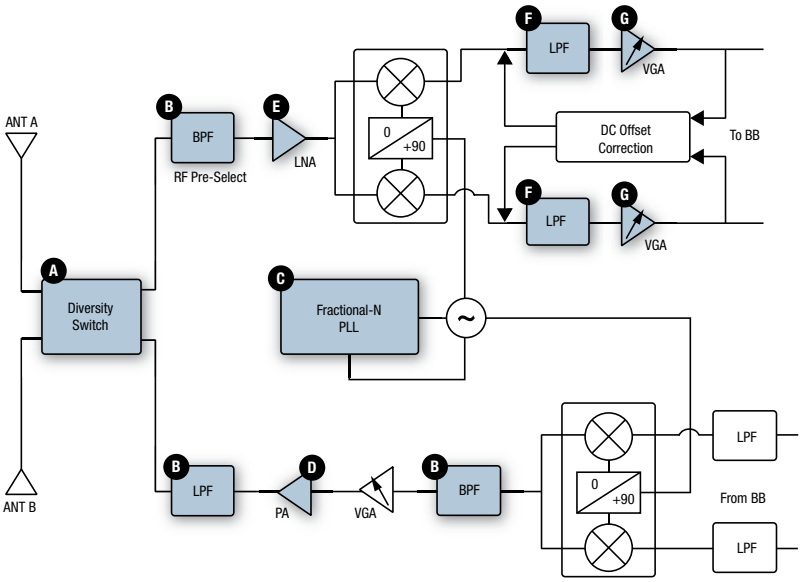
Directional Detector
- G: DD02-999LF

Amplifiers
- I: SKY65013, SKY65014, SKY65015, SKY65016, SKY65017

BLOCK DIAGRAMS

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

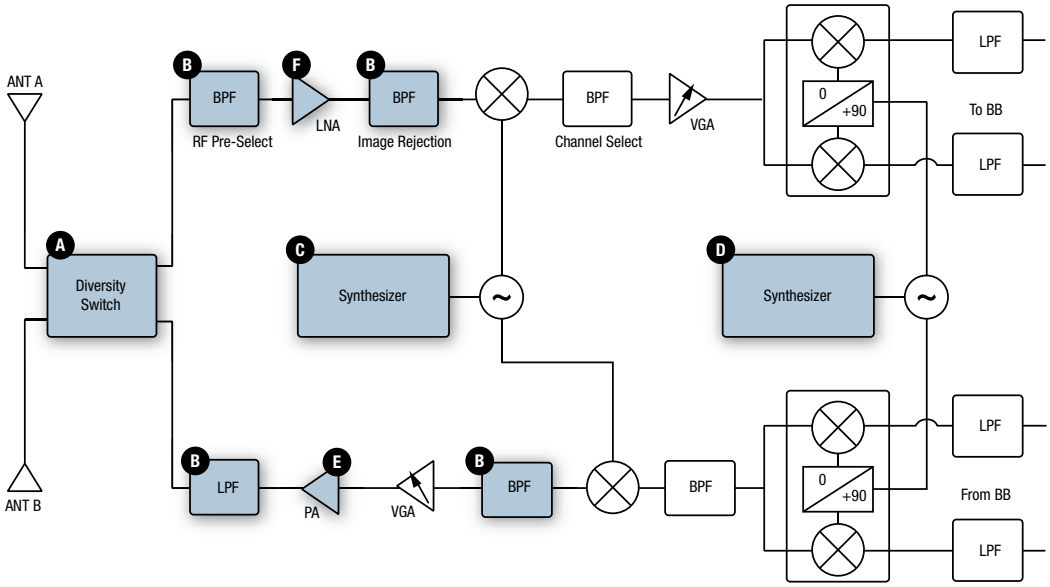
Low Noise Amplifiers
E SKY65404
SKY65406

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

Low Noise Amplifier
G SKY65047

WiFi

5.8 GHz Superheterodyne Architecture



Switch
A SKY13306-313LF
SKY13314-374LF

Filters
B Ceramic Band Pass Filter

Synthesizers
C SKY72302
D SKY72302

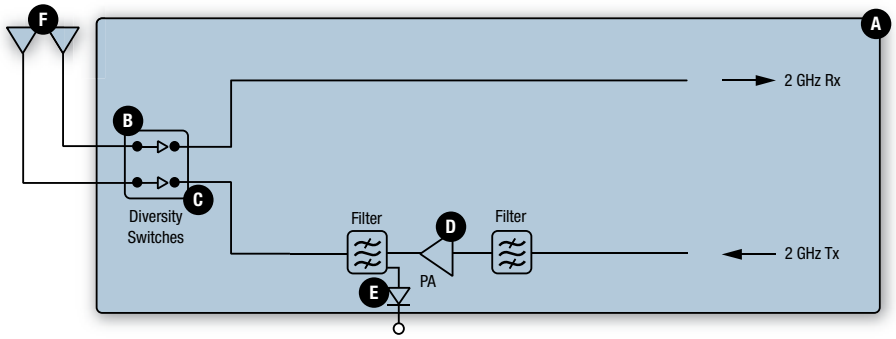
Power Amplifiers
E SKY65013
SKY65014
SKY65015
SKY65017

Low Noise Amplifiers
F SKY65404
SKY65406

BLOCK DIAGRAMS

WLAN

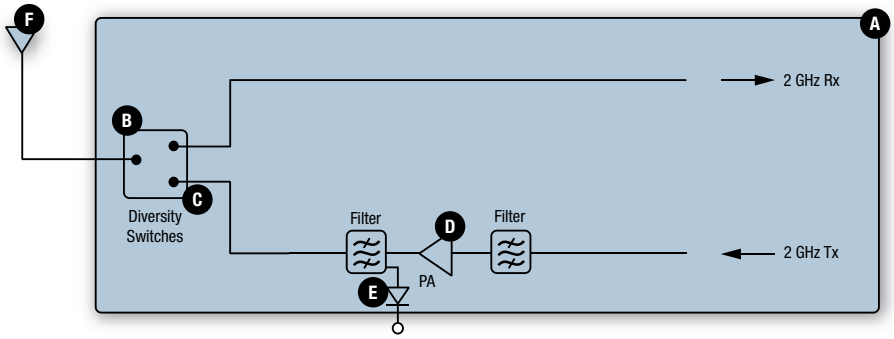
Wireless LAN Front-End for 802.11a,b,g,n Single-Band Access Point Applications, Dual Antenna Configuration



Front-End Module	Switches	PIN Diodes	Power Amplifiers	Detectors
A SKY65249-11	B SKY13267-321LF SKY13268-344LF SKY13276-334 SKY13306-313LF SKY13309-370LF SKY13314-374LF SKY13317-373LF SKY13318-321LF	C SMP1321-508 SMP1340-079LF SMP1340-508 SMP1345-518 F SMP1345-518	D SKY65006 SKY65132 SKY65135	E DD02-999LF SMS7621-079LF SMS7630-093 SMS7630-079LF

WLAN

Wireless LAN Front-End for 802.11a,b,g,n Single-Band Access Point Applications, Single Antenna Configurations

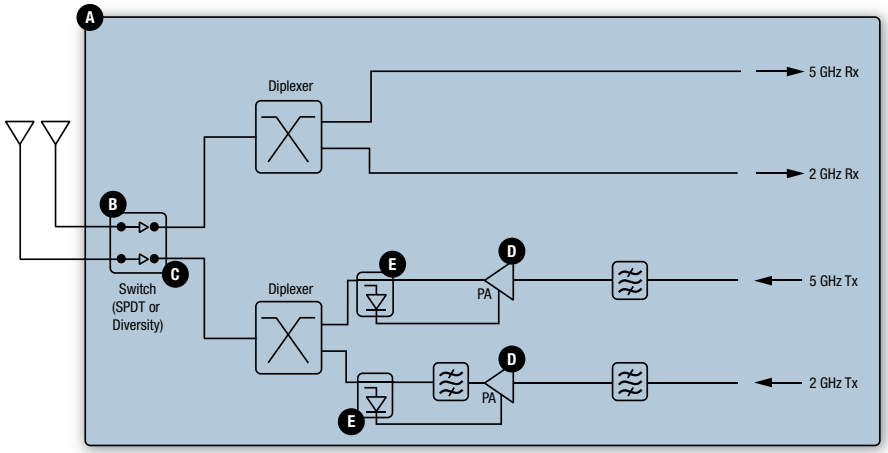


Front-End Module	Switches	PIN Diodes	Power Amplifiers	Detectors
A SKY65249-11	B SKY13268-344LF SKY13276-334 SKY13306-313LF SKY13309-370LF SKY13314-374LF SKY13317-373LF	C SMP1340-079LF F SMP1340-079LF	D SKY65006 SKY65132 SKY65135	E DD02-999LF SMS7621-079LF SMS7630-093 SMS7630-079LF

BLOCK DIAGRAMS

WLAN

Wireless LAN Front-End for 802.11a,b,g,n Dual-Band Applications



Front-End Module
A SKY65225-11

Switches
B SKY13267-321LF
SKY13268-344LF
SKY13276-334
SKY13306-313LF
SKY13309-370LF
SKY13314-374LF
SKY13317-373LF
SKY13318-321LF

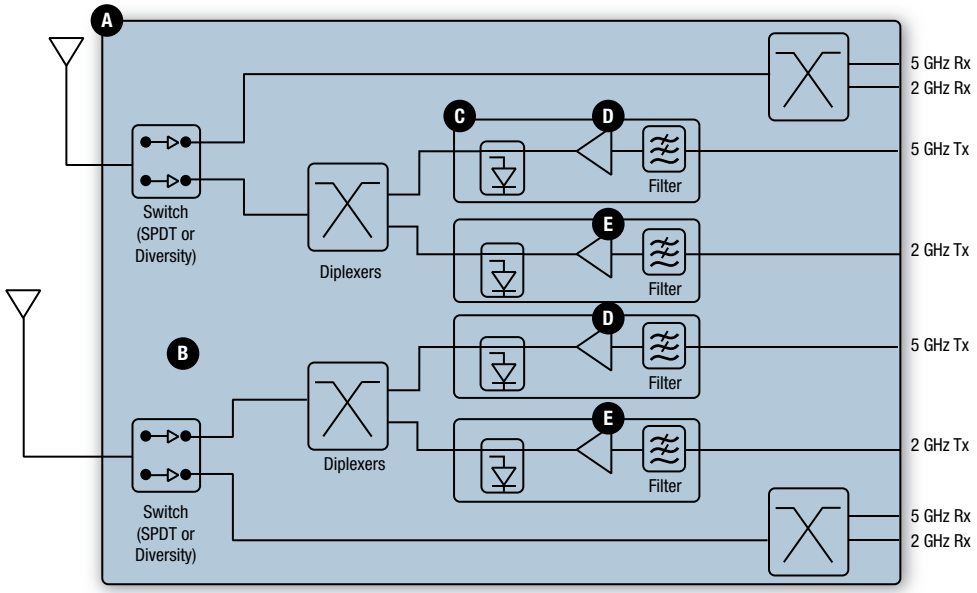
PIN Diodes
C SMP1340-079LF
SMP1345-518

Power Amplifiers
D SKY65132
SKY65135
SKY65006
SKY65139

Detectors
E DD02-999LF
SMS7621-079LF
SMS7621-096
SMS7630-079LF
SMS7630-093

WLAN

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



Front-End Module
A SKY65225-11

Switches
B SKY13267-321LF
SKY13268-344LF
SKY13276-334
SKY13306-313LF
SKY13309-370LF
SKY13314-374LF
SKY13317-373LF
SKY13318-321LF

PIN Diodes
C SMP1321-508
SMP1340-079LF
SMP1340-508
SMP1345-518

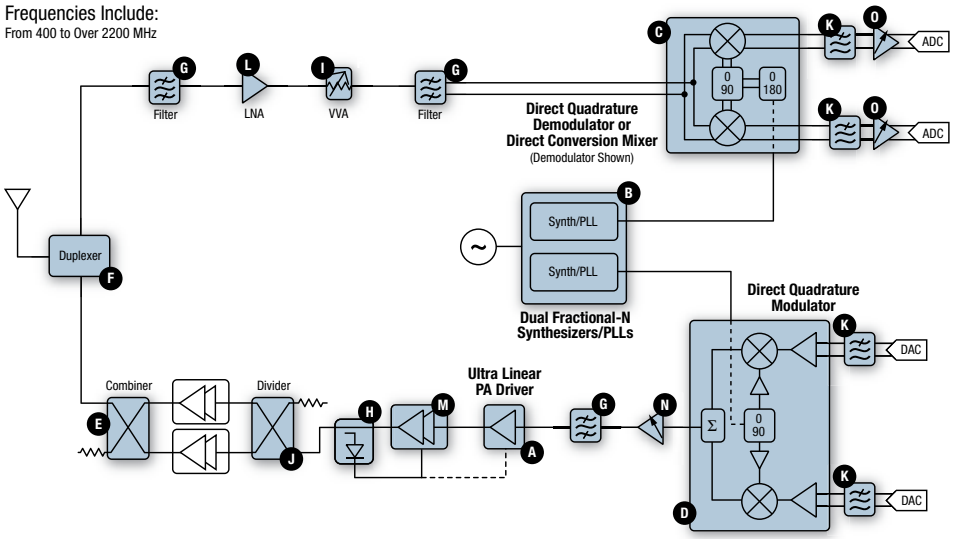
5.6 GHz Power Amplifier
D SKY65137

2.4 GHz Power Amplifiers
E SKY65006
SKY65132
SKY65135

BLOCK DIAGRAMS

Infrastructure

Direct Conversion Base Station Transceiver



PA Drivers
- A SKY65008
- SKY65009-70LF
- SKY65013
- SKY65014
- SKY65015
- SKY65016
- SKY65017
- SKY65028-70LF
- SKY65112-84LF
- SKY65113-84LF

Synthesizers
- B SKY72300-21
- SKY72302-21
- SKY72310
- SKY73100
- SKY73101
- SKY73103
- SKY73112
- SKY73126
- SKY74038-21

Direct Quadrature Demodulators or Direct Conversion Mixer
- C SKY73001-11
- SKY73009-11
- SKY73012-11

Direct Quadrature Modulator
- D SKY73010-11

Hybrids
- E HY12-12LF
- HY92-12LF
- HY19-12LF
- HY86-12LF
- HY22-12LF

Dielectric Resonators
- F

Ceramic Band Pass Filters
- G

Directional Detectors/Couplers
- H DD02-999LF
- DC08-73LF
- DC09-73LF
- DC18-73LF
- DC25-73LF

VVAs/PIN Diodes
- I AV101-12LF
- AV102-12LF
- AV111-12LF
- AV113-12LF
- SMP1304 Series
- SMP1307-011LF
- SKY12221-11
- SKY12222-11
- SKY12223-11

Dividers
- J PD09-73LF
- PD18-73LF
- PD19-73LF
- PD22-73LF
- SKY16401-73LF

Programmable Filters
- K SKY73201-364LF
- SKY73202-364LF

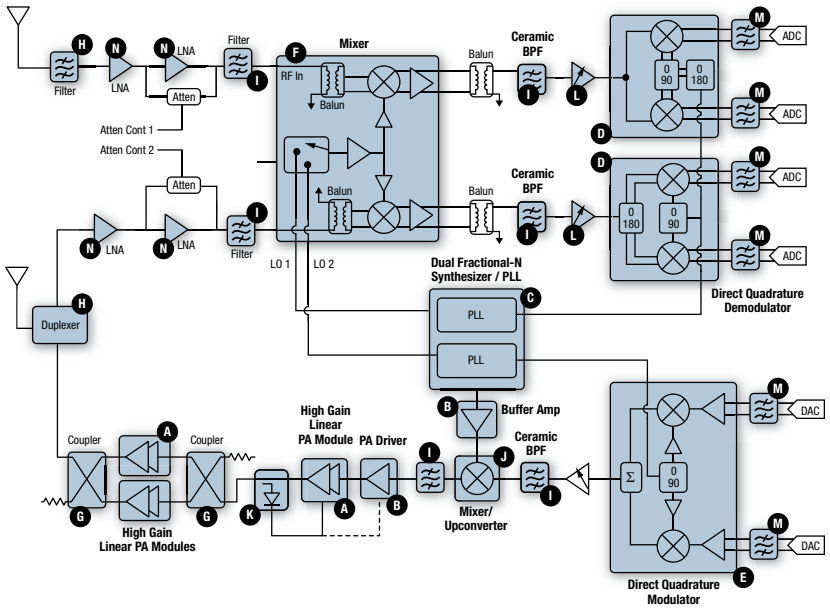
Low Noise Amplifiers
- L SKY65037-360LF
- SKY65040-360LF
- SKY65045-70LF
- SKY65050-372LF
- SKY65052-372LF
- O SKY65047

High Gain PA Modules
- M SKY65120
- SKY65124
- SKY65126
- SKY65127

Variable Gain Amplifiers
- N SKY65031

Infrastructure

Superheterodyne Base Station Transceiver



High Gain PA Module
- A SKY65120 SKY65126
- SKY65124 SKY65127

PA Drivers
- B SKY65028-70LF SKY65015
- SKY65008 SKY65016
- SKY65009-70LF SKY65017
- SKY65013 SKY65038-70LF
- SKY65014 SKY65045-70LF

Synthesizers
- C SKY72300-21 SKY73101
- SKY72302-21 SKY73103
- SKY74038-21 SKY73112
- SKY72310 SKY73126
- SKY73100

Direct Quadrature Demodulator
- D SKY73009-11
- SKY73012-11

Direct Quadrature Modulator
- E SKY73010-11

Mixers
- F SKY73020-11 (dual) SKY73025
- SKY42068-11 (single) SKY73084
- SKY73021-11 SKY73085
- SKY73022 SKY73062
- SKY73023 SKY73063
- SKY73032 (single) SKY73069
- SKY73033 (single)

Hybrids
- G HY17-12LF HY17-12LF
- HY92-12LF HY92-12LF
- HY19-12LF

Dielectric Resonators
- H

Ceramic Band Pass Filters
- I

Schottky Diodes
- J DME3927-100
- DMJ3928-100

Directional Detectors/Couplers
- K DD02-999LF DD02-999LF
- DC08-73LF DC08-73LF
- DC09-73LF

Attenuators
- L SKY12322-86LF SKY12329-350LF
- SKY12323-303LF SKY12334-362LF
- SKY12328-350LF

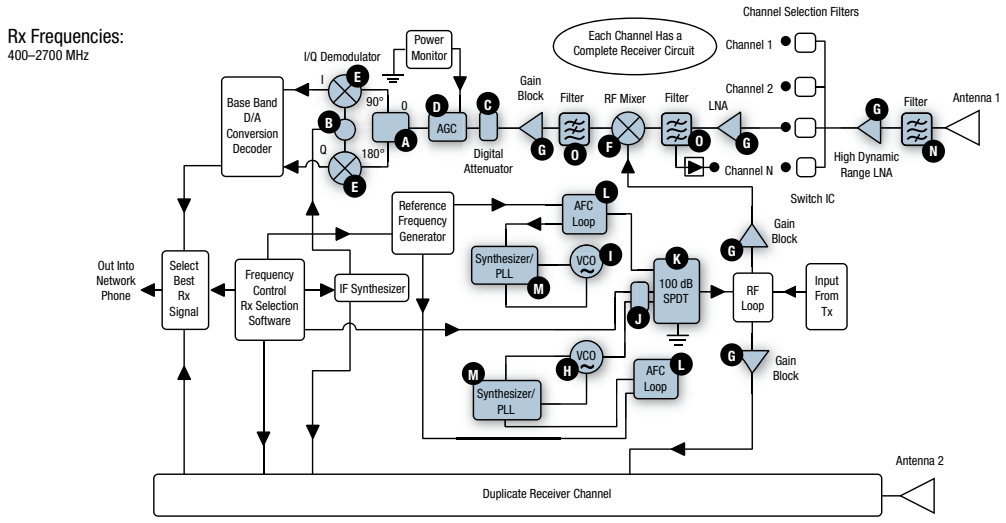
Programmable Filters
- M SKY73201-364LF
- SKY73202-364LF

Low Noise Amplifiers
- N SKY65045-370LF SKY65037-360LF
- SKY65050-372LF SKY65040-360LF
- SKY65052-372LF

BLOCK DIAGRAMS

Infrastructure

Base Station Receiver System Using Antenna Diversity



Power Dividers
- A HY92-12LF, HY17-12LF, HY19-12LF
- B PD09-73LF, PD18-73LF

Digital Attenuators
- C AA110-85LF, AA113-310LF, SKY12322-86LF, SKY12323-303LF, SKY12324-73LF, SKY12325-350LF, SKY12328-350LF

PIN Diodes
- D SMP1304-001LF, SMP1304-004LF, SMP1307-001LF

Schottky Diodes & RF / IF ICs
- E DMJ3947-103, SKY73009, SKY73012-11

Mixer/Downconverters
- F DMF3926-100, SKY73020-11, SKY73001-11, SKY73021-11, SKY73022, SKY73023, SKY73032, SKY73033, SKY42068, SKY73025, SKY73062, SKY73063, SKY73069, SKY12329-370LF, SKY12334-362LF

Amplifiers
- G SKY65008, SKY65009-70LF, SKY65013, SKY65014, SKY65015, SKY65016, SKY65017, SKY65028-70LF, SKY65045, SKY65120, SKY65124, SKY65126, SKY65127, SKY65038-70LF

VCO or Varactor Diodes
- H SMV1233-079LF, SKY73120
- I SMV1236-079LF, SKY73120

Directional Couplers
- J DC09-73LF, DC18-73LF

Switches
- K AS177-86LF, AS186-302LF, SKY13277-355LF, SKY13286-359LF

Schottky Diodes
- L SMS7630-079LF

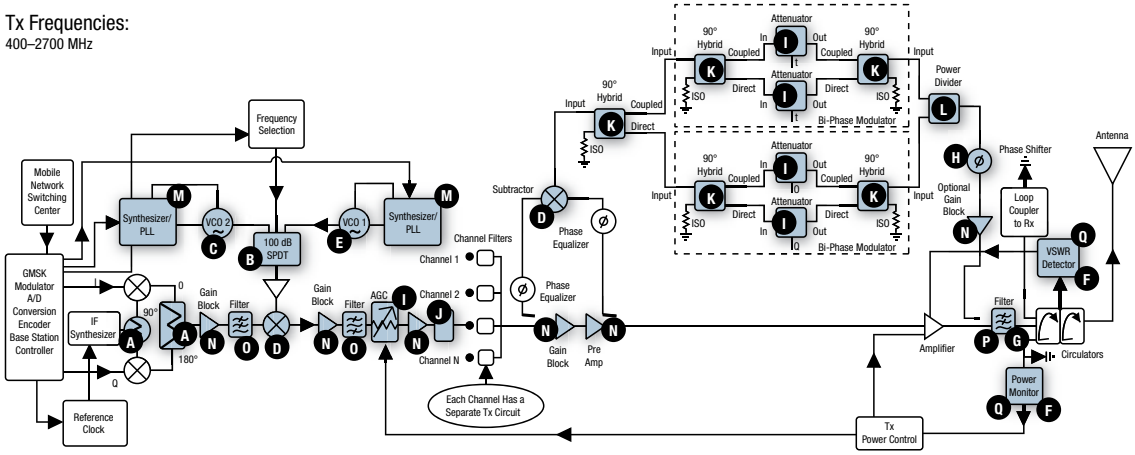
Synthesizer/PLL
- M SKY72300-21, SKY72302-21, SKY72310, SKY73100, SKY73101, SKY73103, SKY73112, SKY74038-21

Dielectric Resonators
- N

Ceramic Band Pass Filters
- O

Infrastructure

Base Station Transmitter With Combining Amplifier



Hybrids
- A HY92-12LF, HY17-12LF, HY19-12LF
- K HY86-12LF, HY92-12LF, HY17-12LF, HY19-12LF, HY22-73LF

SPDT
- B AS177-86LF, AS186-302LF, SKY13286-359LF, SMP1302-011LF

Varactor Diodes
- C SMV1233-079LF, SMV1763-079LF
- E SMV1236-079LF

Schottky Diodes and Mixers
- D DMF3926-100, SKY73032, SKY73033, SKY73062, SKY73063, SKY73069

Schottky Diode
- F SMS3923-005LF

Filters
- G DC09-73LF, DC18-73LF, DC25-73LF

Phase Shifters
- H PS088-315, PS094-315, PS196-315, PS214-315

PIN Diodes/VV Attenuators
- I SMP1304-001LF, SMP1307-001LF, AV101-12LF, AV102-12LF, AV111-12LF, AV113-12LF, SKY12143-315, SKY12144-315, SKY12145-315, SKY12221-11, SKY12222-11, SKY12223-11

Digital Attenuators
- J AA104-73LF, SKY12322-86LF, SKY12323-303LF, SKY12324-73LF, SKY12325-350LF, SKY12328-350LF, SKY12332-310LF, SKY12334-362LF, SKY12406-360LF

Power Dividers
- L PD09-73LF, PD18-73LF, PD22-73LF, SKY16401-73LF

Synthesizer/PLL
- M SKY72300-21, SKY72302-21, SKY74038-21

Amplifiers
- N SKY65008, SKY65009-70LF, SKY65013, SKY65014, SKY65015, SKY65016, SKY65017, SKY65028-70LF, SKY65038-70LF, SKY65040-360LF, SKY65045, SKY65120, SKY65124, SKY65126, SKY65127

Ceramic Band Pass Filters
- O

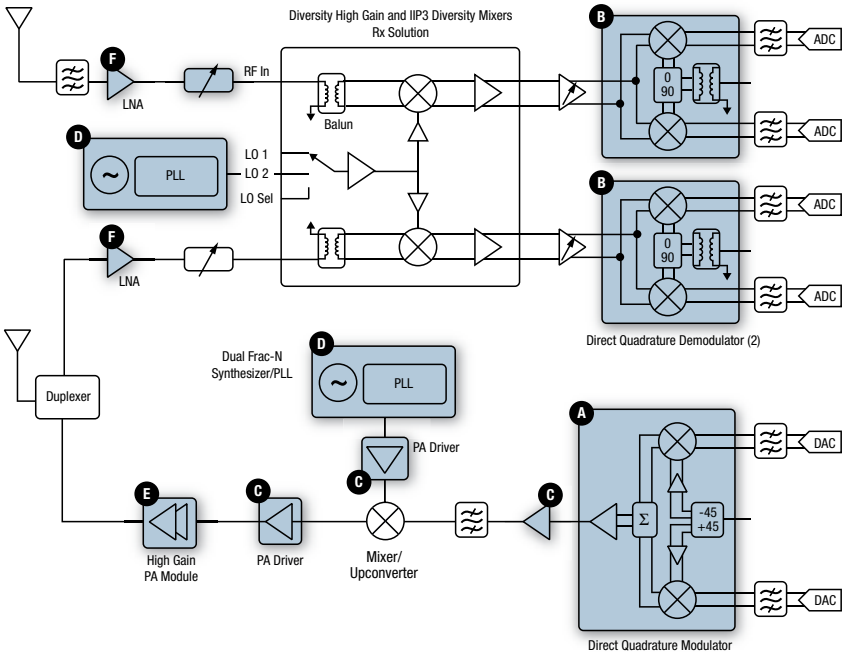
Ferrites
- P

Directional Detector
- Q DD02-999LF

BLOCK DIAGRAMS

Infrastructure

Transceiver



Direct Quadrature Demodulators

A SKY73009-11
SKY73012

Direct Quadrature Modulators

B SKY73010-11

Amplifiers

C SKY65008
SKY65009-70LF
SKY65013
SKY65014-70LF
SKY65014-92LF
SKY65014-214LF
SKY65015
SKY65016
SKY65017
SKY65038-70LF

Synthesizer/PLL

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

High Gain PA Module

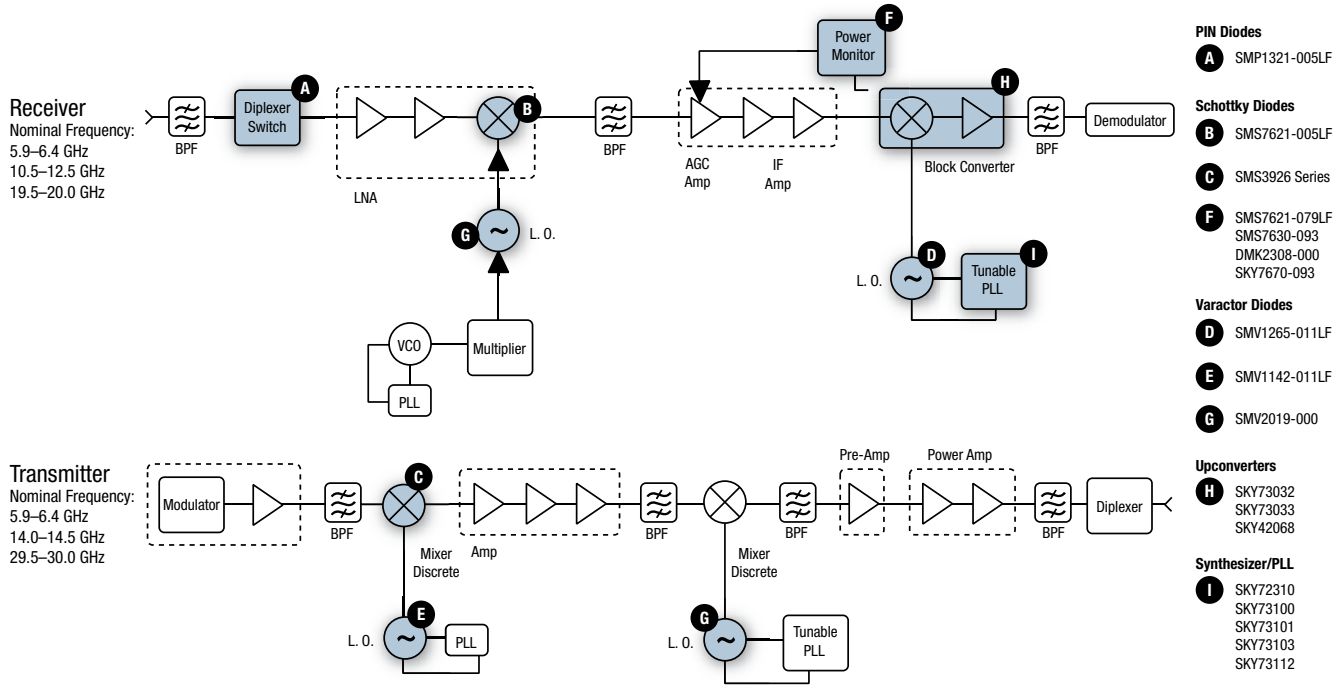
E SKY65120
SKY65124
SKY65126
SKY65127

Low Noise Amplifiers

F SKY65037-360LF
SKY65040-360LF
SKY65045-70LF
SKY65050-372LF
SKY65052-372LF

Broadband Access Systems

Satellite Systems



PIN Diodes

A SMP1321-005LF

Schottky Diodes

B SMS7621-005LF

C SMS3926 Series

F SMS7621-079LF
SMS7630-093
DMK2308-000
SKY7670-093

Varactor Diodes

D SMV1265-011LF

E SMV1142-011LF

G SMV2019-000

Upconverters

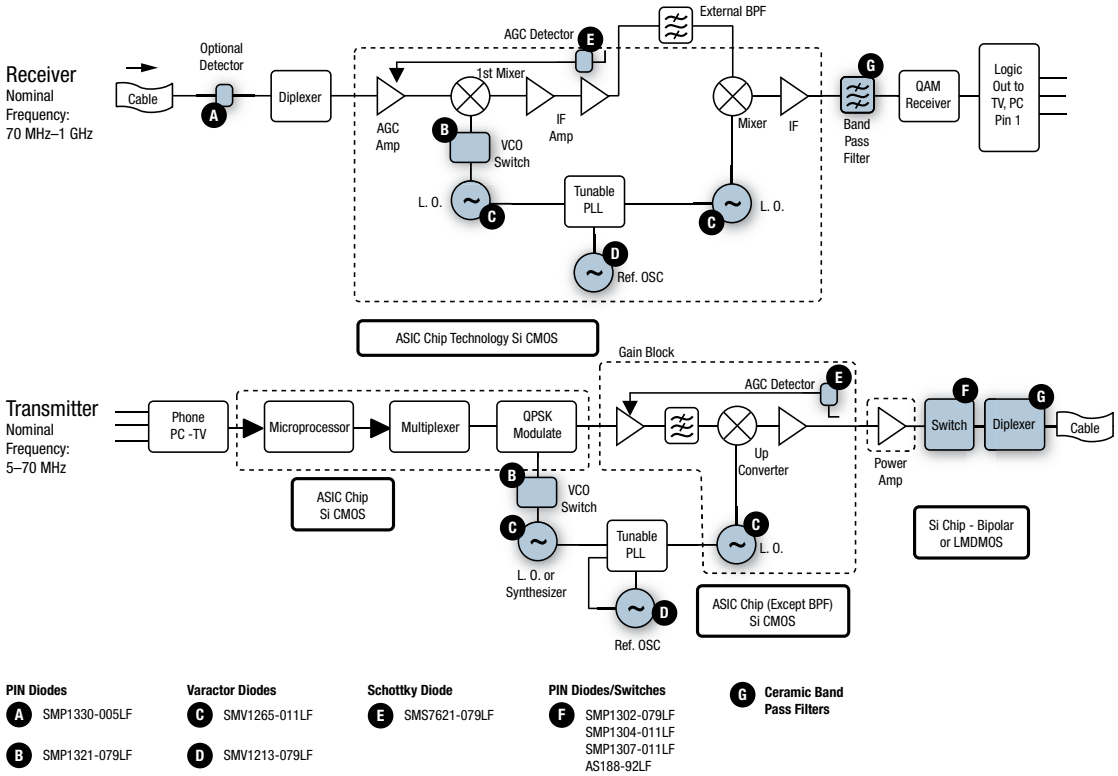
H SKY73032
SKY73033
SKY42068

Synthesizer/PLL

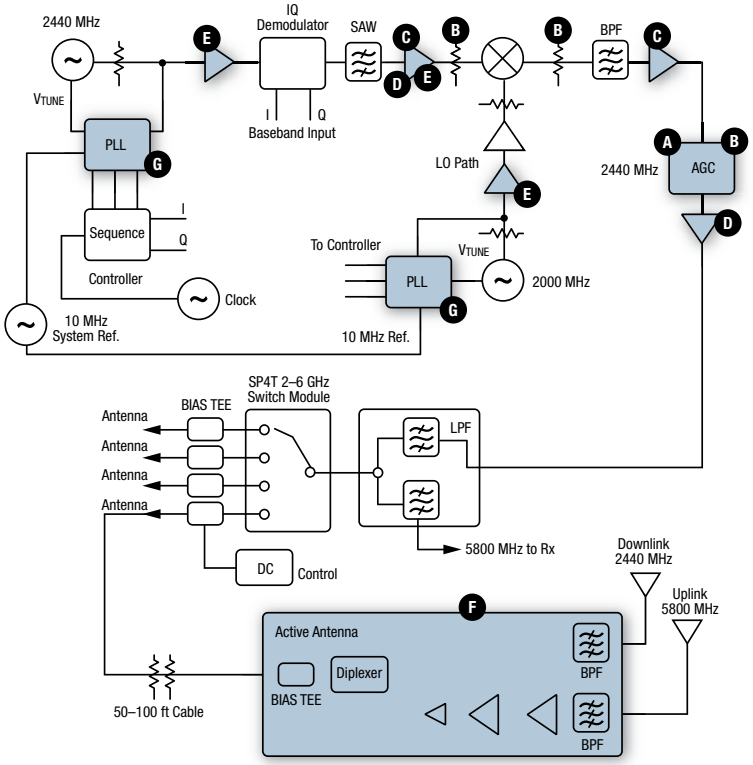
I SKY72310
SKY73100
SKY73101
SKY73103
SKY73112

BLOCK DIAGRAMS

CATV Modem

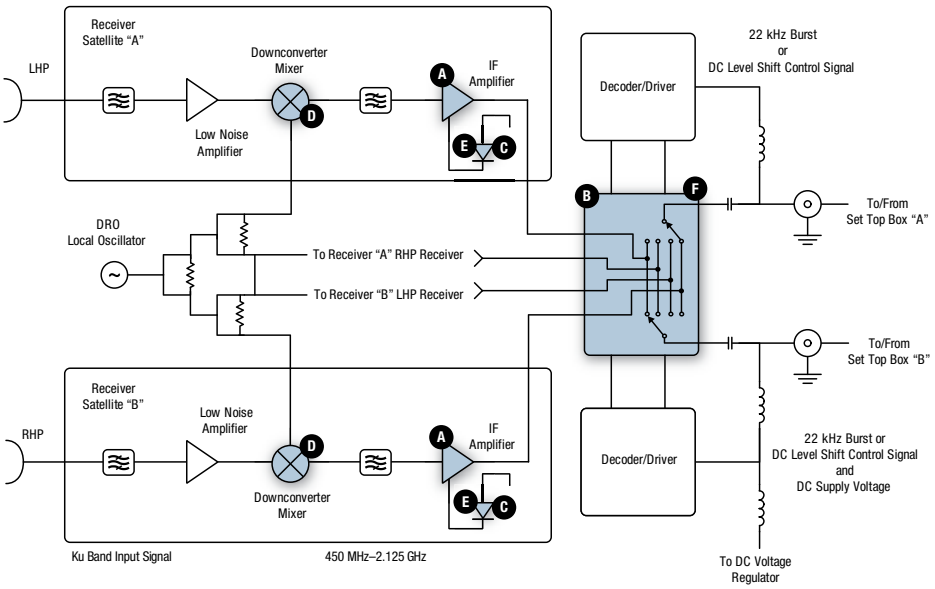


Reader/Active Antennas/Transmitter, Full Duplex 2440



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

C SMS7621-006LF

Schottky Diodes

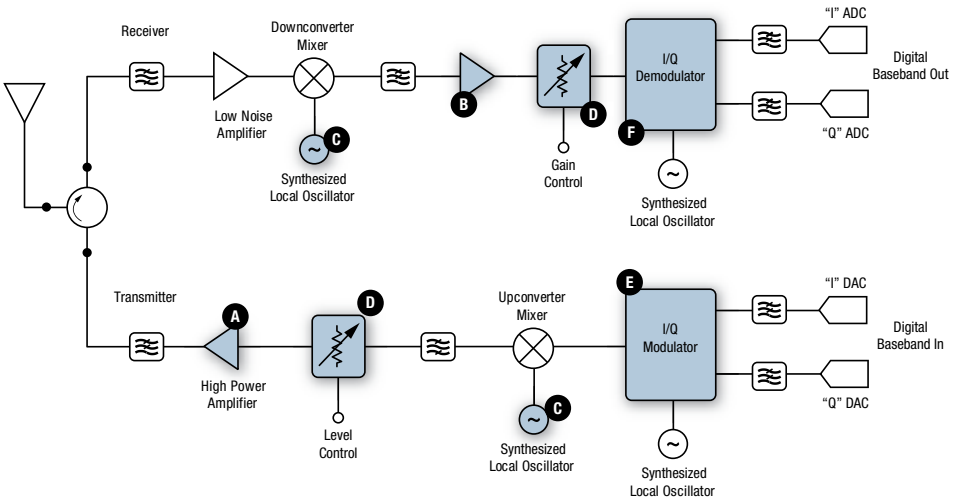
D DMK2790-000, DMK2308-000

E SMS7621-096

PIN Diodes

F SMP1321-005LF, SMP1340-079LF

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, AV105-12LF, SKY12322-86LF, SKY12323-303LF, SKY12324-73LF, SKY12325-350LF, SKY12328-350LF, SKY12329-350LF, SKY12406-360LF, SKY12334-362LF

Direct Quadrature Modulator

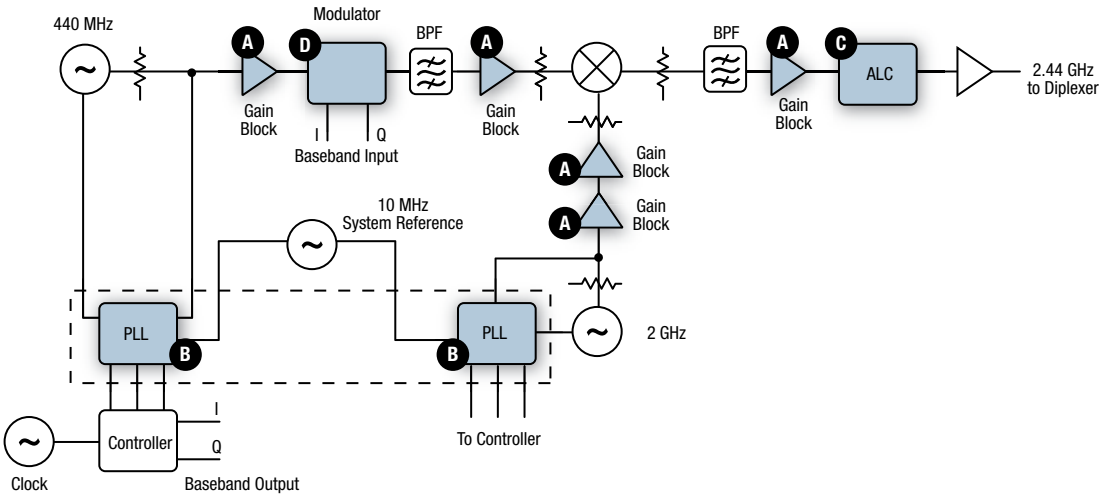
E SKY73010-11

Direct Quadrature Demodulators

F SKY73009-11, SKY73012-11

BLOCK DIAGRAMS

RF ID Transmitter



Amplifiers

A
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

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

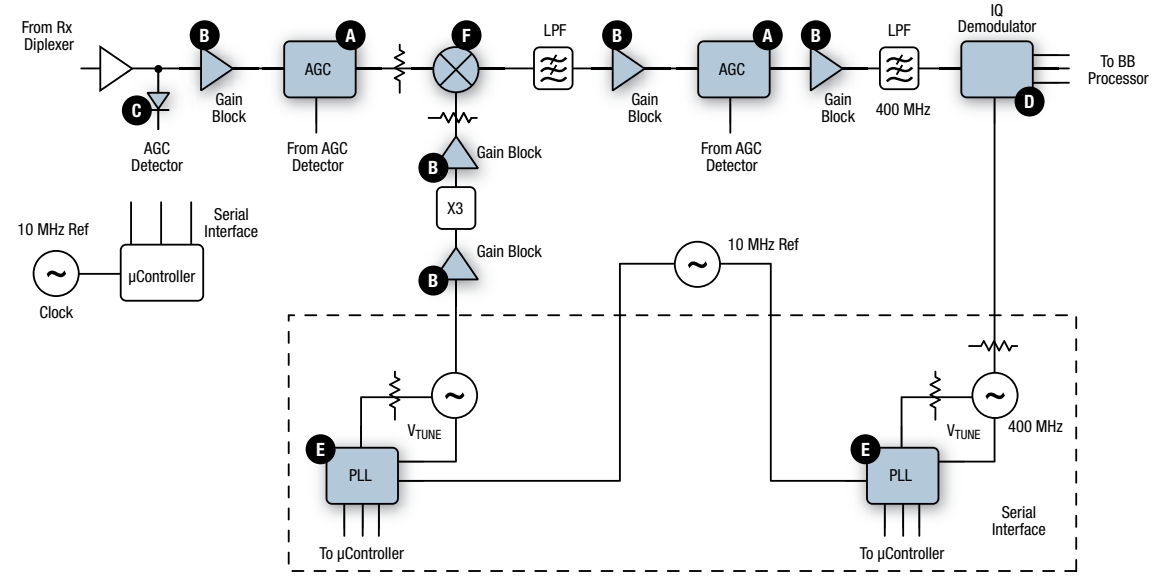
Attenuators

C
SKY12322-86LF
SKY12323-303LF
SKY12324-73LF
SKY12325-350LF
SKY12328-350LF
SKY12329-350LF
SKY12406-360LF
SKY12334-362LF

Direct Quadrature Modulator

D
SKY73010-11

RF ID Receiver



Attenuators

A
SKY12324-73LF
SKY12325-350LF
SKY12328-350LF
SKY12329-350LF
SKY12406-360LF
SKY12334-362LF

Amplifiers

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

Schottky Diode

C
SMS7630-079LF

Direct Quadrature Demodulators

D
SKY73009-11
SKY73012-11

Synthesizers/PLLs

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

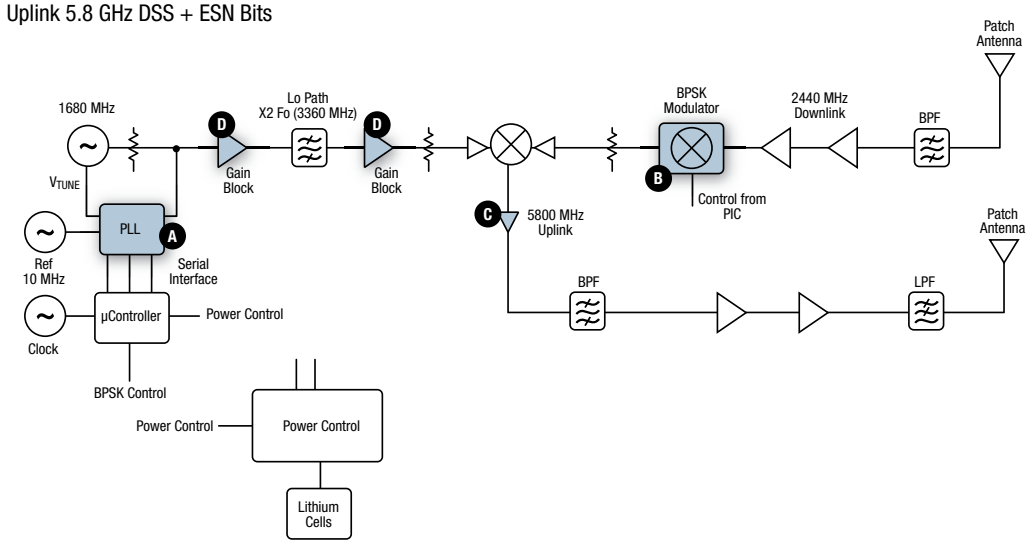
Mixers

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

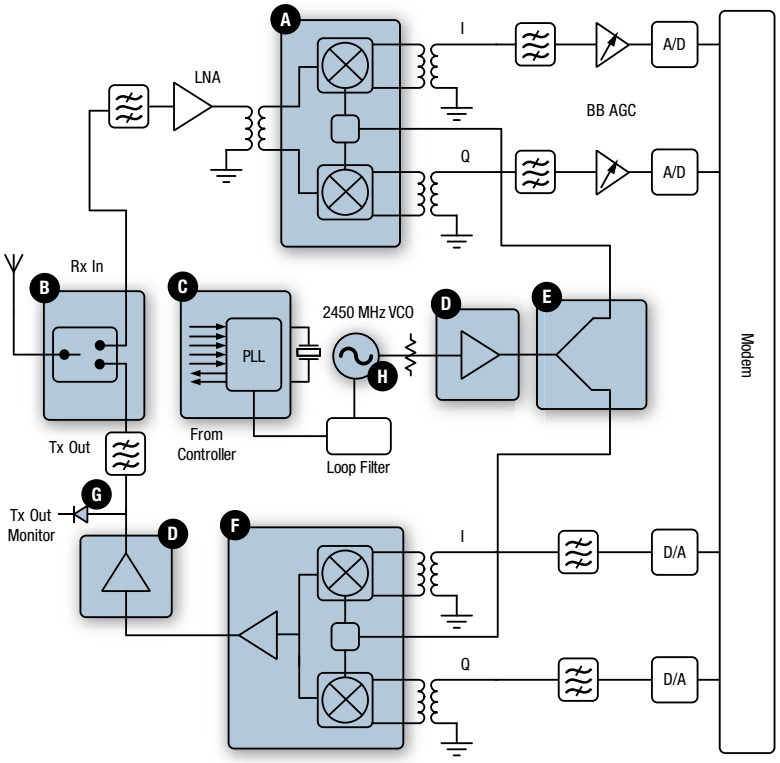
B SKY73009-11
SKY73012-11

Amplifiers

C SKY65015-70LF
SKY65015-92LF
SKY65015-214LF

D SKY65016-70LF
SKY65016-92LF
SKY65016-214LF

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
SKY65013-214LF

Power Divider

E PD22-73LF

Direct Quadrature Modulator

F SKY73010-11

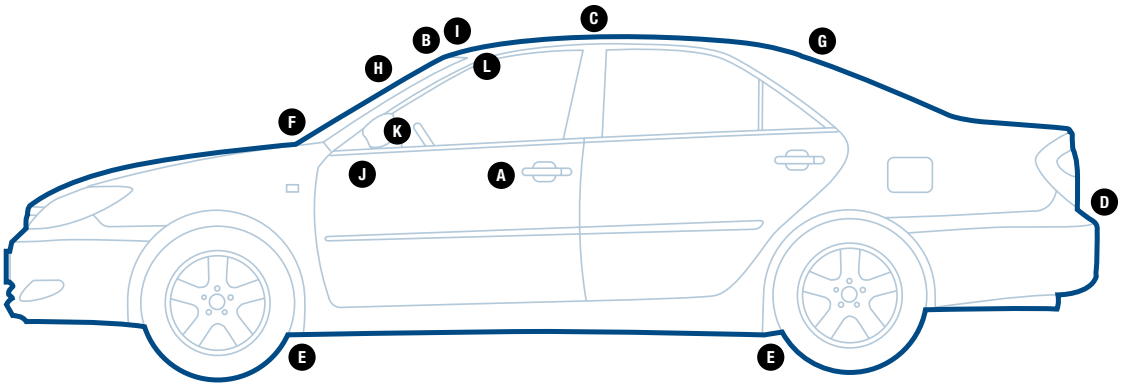
Level Detectors

G SMS7630-005LF

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

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

Chip Capacitor
SCI0002430

Schottky Flip Chips
DMK2790-000
DMK2308-000

E

Tire Pressure Sensors

Varactor Diode
SMV1253-011LF

Schottky Diode
SMS7630-079LF

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

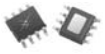
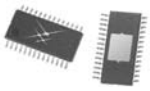
PACKAGE SELECTION GUIDE

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	ESOIC 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

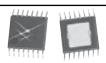
Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-093, -096	0201 Micro Surface Mount Device (MSMD)		0.50 x 0.25 x 0.30
-378	QFN 6L		1.00 x 1.00 x 0.45
-203	Hermetic Pill		1.27 x 1.40
-508, -517, -518	LGA		1.47 x 1.23 x 0.70
-334	LGA 6L		1.50 x 1.20 x 0.80
-374	QFN 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
-108	Ceramic LTCC		1.83 x 1.43 x 1.00
-109	Ceramic LTCC		1.83 x 1.43 x 1.00
-219	Hermetic Pill		1.91 x 1.91 x 1.14
-322	QFN 5L		2.00 x 1.00 x 0.40
-116, -117	Hermetic Surface Mount		2.00 x 1.70 x 0.90
-370	QFN 8L		2.00 x 2.00 x 0.55
-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
-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
-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
-011	SOD-323		2.52 x 1.25 x 1.04
-100, -101, -103	Chip On Board		2.54 x 3.05 x 1.02
-111	SPD Surface Mount Package		2.79 x 2.28 x 1.01

Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
-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
-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
-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

*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)*
-234, -235	Epoxy Stripline		5.98 x 5.98 x 0.76
-339	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
-255, -257	Epoxy Stripline		8.12 x 8.12 x 1.27

Part Number Suffix	Package Type	Actual Size	Package Dimensions (mm) (Lead Inclusive)*
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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