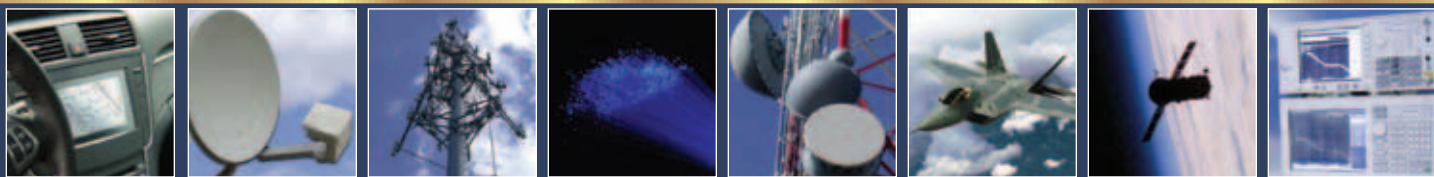


PRODUCT SELECTION GUIDE

**Analog, Digital & Mixed-Signal ICs, Modules,
Subsystems & Instrumentation, DC - 110 GHz**



AUTOMOTIVE

Telematics & Sensors

BROADBAND

Cable Modem, CATV, DBS & VoIP

WiMAX, WiBro, WLAN & UWB

CELLULAR INFRASTRUCTURE

GSM, GPRS, CDMA, TD-SCDMA,

WCDMA, UMTS & 4G /LTE

FIBER OPTICS & NETWORKING

OC-48 to 100G

MICROWAVE & MMWAVE COMMUNICATIONS

Backhaul Radio Links

Multi-Pt Radios & VSAT

MILITARY

C³I, ECM & EW

SPACE

Payload Electronics

TEST & MEASUREMENT

Commercial & Industrial Sensors

Test Equipment



JUNE 2011

REF# SG-0611

Hittite Microwave Corporation is pleased to introduce our June 2011 Product Selection Guide summarizing over 925 products including 17 new products. This selection guide organizes Hittite's portfolio by product line as well as by market applications. Full specifications for each product are available at www.hittite.com. Click on "My Subscription" to receive the latest product releases.

General Information

Page #

Customer Support	3
Sales Contact Information	56

New Products

4

New & Expanded Product Lines

Analog-to-Digital Converters	6
Tunable Filter ICs	6
DC Power Conditioning	7
PLL with Integrated VCOs	7
Active Bias Controllers	8
Analog Phase Shifters	8
Multiplexer ICs	9
RMS Power Detectors	9

RF & Microwave ICs

Amplifiers	10
Attenuators	13
Filters - Tunable	14
IF / Baseband Processing	15
Mixers	15
Modulators/Demodulators	18
Passives	18
Phase Shifters	18
Power Detectors	19
SDLVAs	19
Switches	19
Variable Gain Amplifiers	21

Analog & Mixed-Signal ICs

Broadband Time Delays	32
Comparators	32
Crosspoint Switch	32
Data Converters	32
DC Power Conditioning	33
DC Power Management	33
High Speed Digital Logic	33
Interface	34
IF / Baseband Processing	34
Limiting Amplifiers	34
Mux & Demux	35
Transimpedance Amplifiers	35

LO & Clock Generation ICs

Page #

DC Power Conditioning	40
Frequency Dividers & Detectors	40
Frequency Multipliers	40
Phase Locked Loop	41
PLL with Integrated VCOs	41
VCOs & PLOs	42

Connectorized Modules

Amplifiers	44
Attenuators	44
Dielectric Resonator Oscillators (DROs)	44
Frequency Dividers & Detectors	45
Frequency Multipliers	45
High Speed Digital Logic	45
Mixers	45
Phase Shifters	45
SDLVAs	45
Synthesizer Module, MicroSynth®	46
Switches	46
VCOs	46

Instrumentation

Signal Generators	48
-------------------------	----

Market & Application Solutions

Automotive	22
Broadband	23
Cellular Infrastructure	25
Analog to Digital Conversion	36
Fiber Optics & Networking	37
Microwave & mmWave Communications, Test & Measurement & Sensors	28

Military & Space Screening

50

Designer's Kits

51

Package Information

52

Part Number Index

53

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How to Buy:

Hittite Microwave Corporation offers many convenient ways to order products and/or receive pricing and delivery information. Our order entry/MRP system assures customer sample requests and orders will be entered quickly, tracked easily, and completed accurately on-time.

Direct Sales

• HMC Field Sales Offices:

You may contact our corporate or field sales offices listed on the back cover for assistance in purchasing Hittite products.

• Purchase On-line: www.hittite.com

With Hittite Microwave's E-Commerce capability customers can enjoy the convenience of on-line ordering via a secure shopping cart interface. Products can be purchased using either a MasterCard, Visa, American Express or JCB card. Orders are confirmed within one business day with delivery information. Orders ship within 2 business days of confirmation, based on availability.

• Purchase Orders via HMC Corporate Sales:

You may contact Hittite Microwave directly at (978) 250-3343. Purchase orders can be faxed to (978) 250-3373 or sent via email to sales@hittite.com. There is a minimum purchase order value of \$500.00 (U.S. Dollars).

Worldwide Network of Sales Representatives

You may purchase our products through our network of manufacturer representatives.

• **European customers may also purchase products in Euros (€) directly from Hittite Microwave Deutschland GmbH.**

• **Japanese customers may also purchase products in Yen (¥) directly from Hittite KK - Japan.**

OUR QUALITY POLICY:

Hittite Microwave Corporation is Committed to:

- Being a supplier of products of the highest quality.
- Advancing state-of-the-art technology to support our products.
- Enhancing our competitive position with superior products.

Hittite's Quality Policy Recognizes

Responsibilities for Every Individual to:

- Take the initiative to promote quality.
- Create an environment where the highest quality standards are maintained.
- Participate in continuous improvement practices.

QUALITY & PRODUCT SUPPORT:

The Quality & Product Support Section of Our Web Site Includes:

- Quality Assurance - Product manufacturing, qualification & screening flows.
- Product Reliability
- Qualification Test Reports

Product Application Support

- Application Engineering Support
- Application Notes
- Mixer Spur Chart Calculator, Parametric Search & PLL Phase Noise Calculator
- Package & Layout Drawings - Product outline, PCB land pattern and tape & reel drawings.
- Published Papers
- S-Parameter Files

Data Sheets

- Complete product data sheets can be found on our web site.

HMC is ISO 9001:2000 and AS9100 certified. Every component is backed by every Hittite employee and subcontractor's commitment to total quality, thus providing our customers with products that meet or exceed all requirements, are delivered on-time and function reliably throughout their useful life.

WHAT WE DO

Hittite Microwave Corporation is an innovative designer and manufacturer of high performance integrated circuits (ICs), modules, subsystems and instrumentation for technically demanding digital, RF, microwave and millimeterwave applications covering DC to 110 GHz. The Company's standard and custom products apply analog, digital and mixed-signal semiconductor technologies, which are used in a wide variety of wireless / wired communication and sensor applications for Automotive, Broadband, Cellular Infrastructure, Fiber Optics & Networking, Microwave & Millimeterwave Communications, Military, Test & Measurement, and Space markets. We offer over 925 products across 31 product lines.

<i>Amplifiers</i>	<i>Mixers</i>
<i>Attenuators</i>	<i>Mods. & Demodulators</i>
<i>Broadband Time Delays</i>	<i>Mux & Demux</i>
<i>Comparators</i>	<i>Passives</i>
<i>Crosspoint Switch</i>	<i>Phase Shifters</i>
<i>Data Converters</i>	<i>PLLs</i>
<i>DC Power Conditioning</i>	<i>PLLs with Integrated VCOs</i>
<i>DC Power Management</i>	<i>Power Detectors</i>
<i>DROs</i>	<i>Sensors</i>
<i>Filters - Tunable</i>	<i>SDLVAs</i>
<i>Freq. Dividers & Detectors</i>	<i>Signal Generators</i>
<i>Freq. Multipliers</i>	<i>Switches</i>
<i>High Speed Digital Logic</i>	<i>Transimpedance Amplifiers</i>
<i>Limiting Amplifiers</i>	<i>VGAs</i>
<i>Interface</i>	<i>VCOs & PLOs</i>
<i>IF Signal Processing</i>	

We design and supply custom ICs, modules, subsystems and instrumentation, combining multiple functions for specific requirements. We select the most appropriate semiconductor and package technologies, uniquely balancing digital and analog integration techniques.

Our custom and standard products support a wide range of wireless / wired communications & radar applications for the following markets:



Automotive

Telematics & Sensors



Broadband

CATV, DBS, WiBro, WiMAX, WLAN, Fixed Wireless & UWB



Cellular Infrastructure

GSM, GPRS, CDMA, WCDMA, UMTS, TD-SCDMA & 4G/LTE



Fiber Optic & Networking

OC-48 to 100G



Microwave & mmWave Communications

Backhaul Radio Links
Multi-Pt Radios & VSAT



Military

C³I, ECM & EW



Space

Payload Electronics



Test & Measurement

Commercial / Industrial
Sensors & Test Equipment

AMPLIFIERS - Linear & Power

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
12.5 - 15.5	2W Power Amplifier	26	41	-	34	+7V @ 1200mA	LP5G	3A001.b.2.b	HMC995LP5GE

ATTENUATORS - Analog & Digital

Frequency (GHz)	Function	Insertion Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
20 - 50	Analog VVA	3	0 to 35	33	0 / +3V	Chip	EAR99	HMC985

DC POWER CONDITIONING - Linear Voltage Regulators

Input Voltage (V)	Function	Output Voltage (V)	Output Current (mA)	Power Supply Rejection Ratio (PSRR) (dB)		Output Noise Spectral Density (nV/√Hz)		Regulated Outputs	Package	ECCN Code	Part Number
				1 kHz	1 MHz	1 kHz	10 kHz				
3.3 to 5.5	Low Noise, High PSRR	1.8 to 5.1	400	60	30	6	3	1	LP3	EAR99	HMC976LP3E

DC POWER MANAGEMENT - Active Bias Controller

Supply Voltage Range (V)	Function	VDRAIN Voltage Range (V)	IDRAIN Bias Current (mA)	IGATE Drive Current (mA)	VGATE Voltage Range (V)	Over / Under IDRAIN Current Alarm	Low VDD Alarm	Package	ECCN Code	Part Number
4 to 12	Active Bias Controller	4 to 12	0 to 200	-0.8 to 0.8	-2.5 to +2.5	-	-	LP3	EAR99	HMC981LP3E

FILTERS - TUNABLE - Band Pass Filter

Frequency Range (GHz)	Function	Return Loss (dB)	3 dB Bandwidth (%)	Low Side Rejection Frequency (Rej. >20 dB)	High Side Rejection Frequency (Rej. >20 dB)	Tuning Response (ns)	Package	ECCN Code	Part Number
5.9 - 11.2	Band Pass	7.5	6	0.92 x Fcenter	1.08 x Fcenter	200	LP5	EAR99	HMC894LP5E
18.5 - 37.0	Band Pass	10	18	0.81 x Fcenter	1.20 x Fcenter	200	LP4	EAR99	HMC899LP4E

MIXERS - I/Q Downconverters / Receivers

RF / LO Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Noise Figure (dB)	Image Rejection (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
20 - 28	I/Q Downconverter / Receiver	DC - 3.5	14	2.5	21	1	LP4	EAR99	HMC977LP4E

MUX / DEMUX

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vpk-pk)	DC Power Consumption (mW)	Power Supply (V)	Package	ECCN Code	Part Number
32 / 16	2:1 Mux with Programmable Output Voltage	15 / 15	-	1.25	480	±3.3	LC4B	3A001.a.11.b	HMC954LC4B
32 / 16	1:2 Demux with High Speed Invert & Programmable Output Voltage	19 / 18	<3	1.00	644	±3.3	LC4B	3A001.a.11.b	HMC955LC4B

PHASE SHIFTERS - Analog

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	2nd Harmonic Pin = -10 dBm (dBc)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
2 - 20	Analog	4	270° @ 2 GHz 180° @ 20 GHz	-45	30	0.5 to +11V	LP5	EAR99	HMC935LP5E

PHASE LOCKED LOOP - Fractional-N

Frequency (GHz)	Function	Max. PFD Frequency	Max. Reference Frequency	Figure of Merit (Frac/Int) (dBc/Hz)	Frequency Resolution with 50 MHz Ref.	Bias Supply	Package	ECCN Code	Part Number
DC - 8 GHz	Fractional-N with Sweeper	100 MHz	350 MHz	-230 / -233	3 Hz	+5V @ 6mA +3.3V @ 52mA	LP4	3A001.a.11.b	HMC703LP4E

PLLs with INTEGRATED VCOs - Microwave & RF PLLs with Integrated VCOs

Frequency (MHz)	Function	Closed Loop SSB Phase Noise @ 10 kHz Offset	Open Loop VCO Phase Noise @ 1 MHz Offset	Pout (dBm)	RMS Jitter Fractional Mode (fs)	Integrated PN Fractional Mode (deg rms)	Package	ECCN Code	Part Number
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2fo

9600 - 10800	Microwave VCO	-100 dBc/Hz	-135 dBc/Hz	9	185	0.7	LP6C	3A001.a.11.b	HMC778LP6CE
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Wideband Continuous Tuning

25 - 3000	Wideband RF VCO	-114 dBc/Hz @ 2 GHz Fract Mode	-141 dBc/Hz @ 2 GHz	5	180	0.13	LP6G	3A001.a.11.b	HMC830LP6GE
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POWER DETECTORS - RMS Detector

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV / dB)	RF Threshold Level (dBm)	Bias Supply	Package	ECCN Code	Part Number
DC - 3.9	Dual RMS, Single-Ended	70 ±1	38.5	-66	+5V @ 143mA	LP5	EAR99	HMC1030LP5E

SIGNAL GENERATORS - Precise RF Signal Generation for ATE & Lab Environments

Frequency (GHz)	Function	Frequency Resolution	Maximum Power Output (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Spurious (dBc)	Switching Speed @ 100 MHz Steps (µs)	Package	ECCN Code	Part Number
0.01 - 70	Signal Generator	1 Hz	+28 @ 1 GHz +2 @ 70 GHz	-118 @ 1 GHz -80 @ 70 GHz	< -60 Below 10 GHz < -65 @ 70 GHz	300	Rackmountable / Benchtop	3A002.d.3.e	HMC-T2270

VARIABLE GAIN AMPLIFIERS - Digital

Frequency (GHz)	Function	Gain Control Range (dB)	NF * (dB)	OIP3 * (dBm)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
0.5 - 4.0	6-Bit Digital, Serial, Parallel Control or Latched Parallel Control	-19 to +12.5	4	39	21.5	+5V @ 150mA	LP5	EAR99	HMC742HFLP5E
0.5 - 6.0	6-Bit Digital, Serial & Parallel Control	-13.5 to +18	6	33	19	+5V @ 88mA	LP5	EAR99	HMC625HFLP5E

* Maximum Gain State

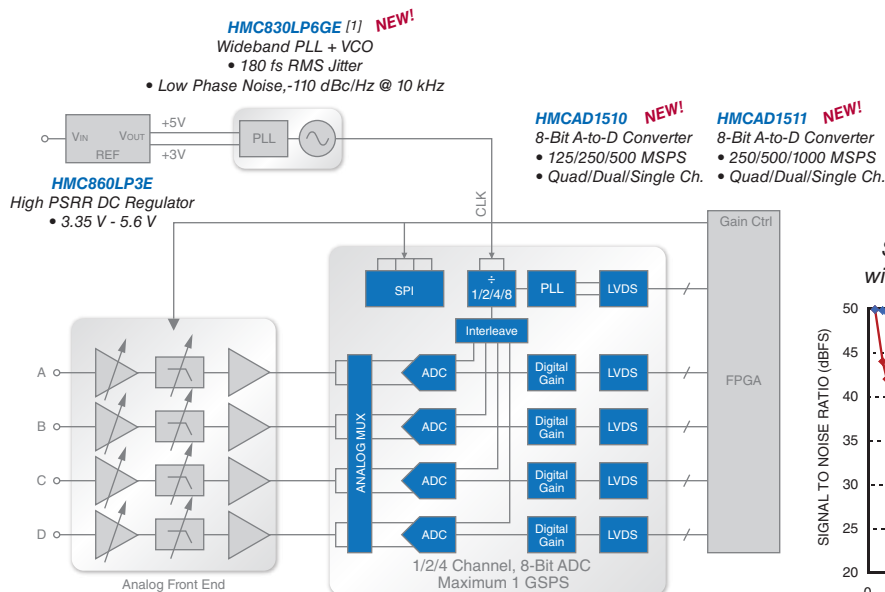
Low Power Multi-Channel Analog-to-Digital Converter!

NEW!

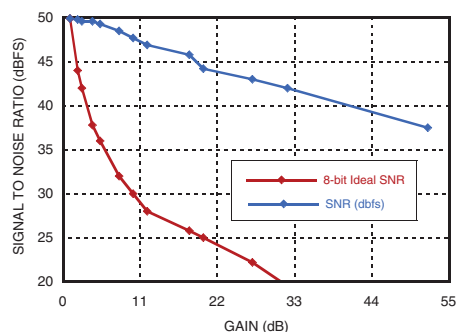
Features

- ◆ Sampling Rates: 250 to 1000 MSPS
- ◆ Resolution: 8 bits
- ◆ CMOS & LVDS Outputs
- ◆ Configurable Power Consumption & Functionality with SPI Settings
- ◆ Integrated Instrumentation Functionality

Digital Oscilloscopes Featuring the HMCAD1510 & HMCAD1511



SNR with Digital Gain Compared with Traditional Ideal 8-Bit Converter



Offers Lowest Power Consumption for Best SNR!

Tunable Band Pass Filters Cover 5.9 to 37 GHz!

NEW!



Features

- ◆ Fast Tuning Response: 200 ns
- ◆ Excellent Wideband Rejection
- ◆ User Selectable Passband Frequency
- ◆ Single Chip, Solid State Replacement for Mechanically Tuned & Switched Bank Filters

Frequency Range (GHz)	Function	Return Loss (dB)	3 dB Bandwidth (%)	Low Side Rejection Frequency (Rej. >20 dB)	High Side Rejection Frequency (Rej. >20 dB)	Tuning Response (ns)	ECCN Code	Part Number
5.9 - 11.2	Band Pass	7.5	6	0.92 x Fcenter	1.08 x Fcenter	200	EAR99	HMC894LP5E
18.5 - 37.0	Band Pass	10	18	0.81 x Fcenter	1.20 x Fcenter	200	EAR99	HMC899LP4E

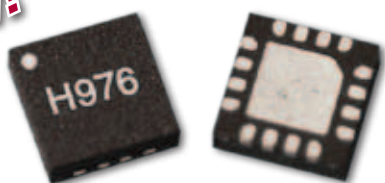
Ideal for Frequency Selection in Multi-Band Synthesizer Systems, Wideband Sensors, and Test & Measurement Equipment!

NEW & EXPANDED PRODUCT LINES

DC Power Conditioning & PLL with Integrated VCO ICs

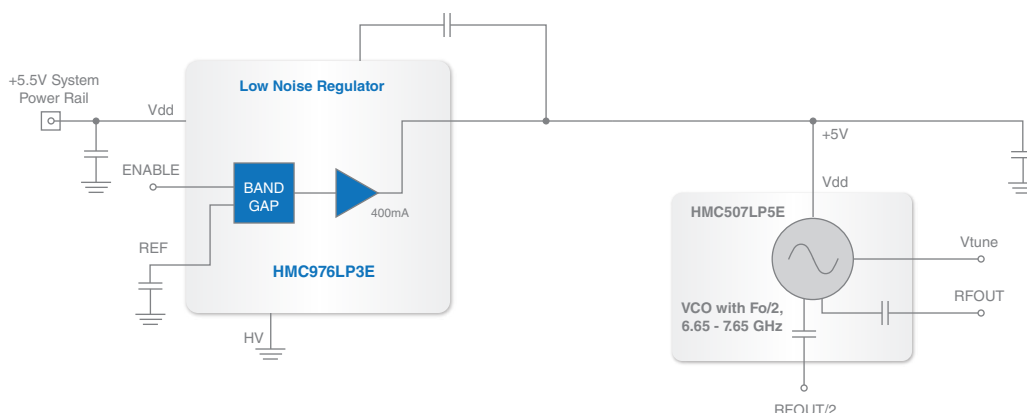
Linear Voltage Regulator Covers 1.8 to 5.1 Volts!

NEW!



HMC976LP3E

- ◆ Low Noise Spectral Density:
3nV/√Hz at 10 kHz, 6nV/√Hz at 1 kHz
- ◆ High PSRR:
>60 dB at 1 kHz, >30 dB at 1 MHz
- ◆ Adjustable From 1.8V to 5.1V @ 400mA



Ideal for Powering Hittite's Broad Line of Frequency Generation Products Including Our Low Noise PLLs with Integrated VCOs!

Wideband PLL with Integrated VCO Covers 25 MHz to 3000 MHz!

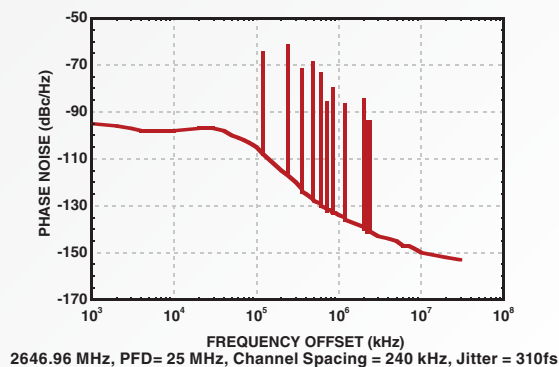
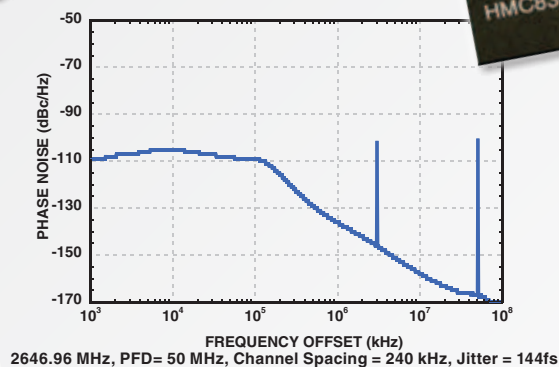
NEW!

Hittite HMC830LP6GE Phase Noise



VS.

Typical Competitor Product Phase Noise



Frequency (MHz)	Application	Closed Loop SSB Phase Noise @ 10 kHz Offset	Open Loop VCO Phase Noise @ 1 MHz Offset	Pout (dBm)	RMS Jitter Fractional Mode (fs)	Integrated PN Fractional Mode (deg rms)	ECCN Code	Part Number
25 - 3000	Wideband RF VCO	-114 dBc/Hz @ 2 GHz Fract Mode	-141 dBc/Hz @ 2 GHz	5	180	0.13	3A001.a.11.b	HMC830LP6GE

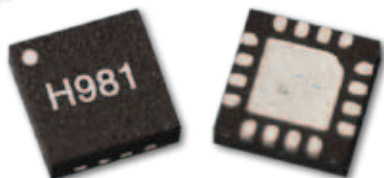
Ideal for Cellular/4G, Microwave Radio, Industrial / Medical Test Equipment, Military Communications & Sensors!

VISIT US AT WWW.HITTITE.COM

JUNE 2011

Active Bias Controller Cover 8 to 24 GHz!

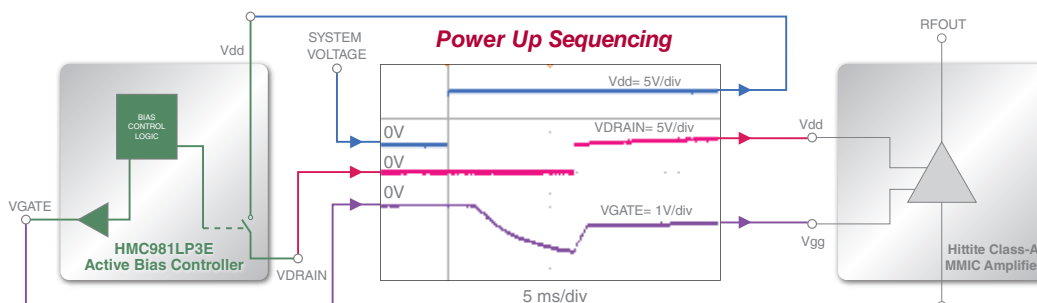
NEW!



Features

- ◆ Integrated Negative Voltage Generator
- ◆ Automated Power-up Sequencing
- ◆ Active & Adjustable Output Voltages & Currents:
Drain Voltage: +4.0 to +12 Vdc
Gate Voltage: -2.5 to +2.5 Vdc
- ◆ Stable Bias Current Over Temperature, Process Variation & Aging

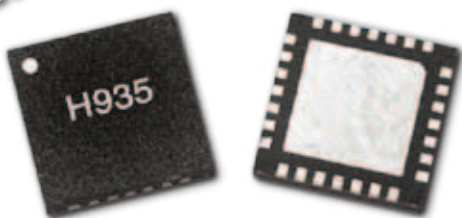
Supply Voltage Range (V)	Function	VDRAIN Voltage Range (V)	IDRAIN Bias Current (mA)	IGATE Drive Current (mA)	VGATE Voltage Range (V)	Over / Under IDRAIN Current Alarm	Low VDD Alarm	ECCN Code	Part Number
4 to 12	Active Bias Controller	4 to 12	0 to 200	-0.8 to +0.8	-2.5 to +2.5	-	-	EAR99	HMC981LP3E



Ideal for Power Management & Control in All RF, Microwave, Millimeterwave & Fiber Optic Applications

Analog Phase Shifter Cover 2 to 20 GHz!

NEW!



Features

- ◆ Low RMS Phase Error: as Low as 1.2°
- ◆ Low Insertion Loss as Low as 4 dB
- ◆ High Linearity: +30 dBm Input IP3
- ◆ Positive Control: 0.5V to +11V
- ◆ Die & SMT Versions Available From Stock

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	2nd Harmonic Pin = -10 dBm (dBc)	IIP3 (dBm)	Control Input (Vdc)	ECCN Code	Part Number
2 - 20	Analog	4	270 @ 2 GHz 180 @ 20 GHz	-45	30	0.5 to +11V	EAR99	HMC935LP5E

Ideal for Beamforming & Error Correction Applications to 20 GHz!

NEW & EXPANDED PRODUCT LINES

Multiplexer & RMS Power Detector ICs

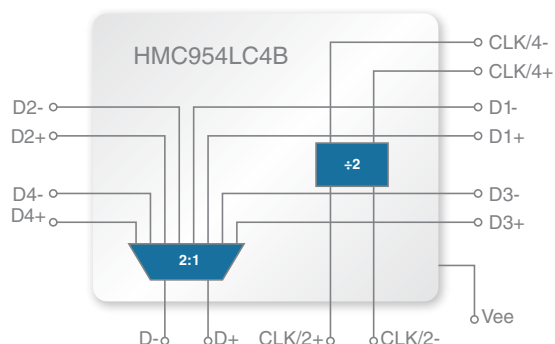
New Multiplexer ICs for 32 Gbps Data Serialization!

NEW!



Features

- ◆ Differential & Single-Ended Operation
- ◆ 1/2 Rate Clock Input & 1/4 Rate Ref. Clock Output
- ◆ Fast Rise and Fall Times: 16 ps
- ◆ Low Power Consumption: 510 mW typ.
- ◆ Programmable Differential Output Voltage Swing

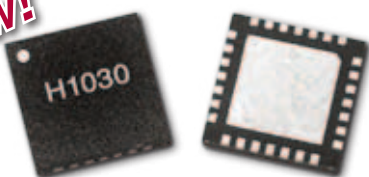


Data/ Clock Rate (Gbps / GHz)	Function	Rise / Fall (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vpk-pk)	DC Power Consumption (mW)	Power Supply (V)	ECCN Code	Part Number
32 / 16	2:1 Mux with Programmable Output Voltage	15 / 15	-	1.25	480	±3.3	3A001.a.11.b	HMC954LC4B
32 / 16	1:2 Demux with High Speed Invert & Programmable Output Voltage	19 / 18	<3	1.00	644	±3.3	3A001.a.11.b	HMC955LC4B

Ideal for SONET OC-192, Broadband Test & Measurement, Serial Data Transmission & FPGA Interfacing Applications!

New Dual Single-Ended RMS Detector Span 70 dB Dynamic Range!

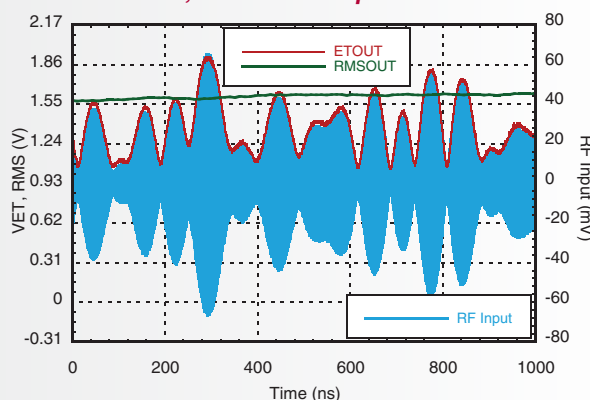
NEW!



Dual Channel Wireless Infrastructure Radio

- ◆ Crest Factor (Peak-to-Average Power Ratio) Measurement
- ◆ ±1 dB Detection Accuracy to 3.9 GHz
- ◆ Input Dynamic Range: -55 dBm to +15 dBm
- ◆ RF Signal Wave Shape & Crest Factor Independent

**HMC1030LP5E RMS & Envelope Response to WCDMA
4 Carrier; -20dBm RF Input @ 0.9 GHz**



Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV / dB)	RF Threshold Level (dBm)	Bias Supply	ECCN Code	Part Number
DC - 3.9	Dual RMS, Single-Ended	70 ±1	38.5	-66	+5V @ 143mA	EAR99	HMC1030LP5E

Choose From Over 20 Power Detector & SDLVA Products!

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
Low Noise Amplifiers									
0.175 - 0.66	Low Noise	24	37	0.5	19	+5V @ 90mA	LP3	EAR99	HMC616LP3E
0.23 - 0.66	Low Noise, Dual Channel	22	37	0.5	19	+5V @ 97mA	LP4	EAR99	HMC816LP4E
0.3 - 3.0	Low Noise, High IP3	15	37	1.5	22	+5V @ 90mA	SOT26	EAR99	HMC374E
0.55 - 1.2	Low Noise	16	37	0.5	21	+5V @ 88mA	LP5	EAR99	HMC617LP3E
0.55 - 1.2	Low Noise, Dual Channel	16	37	0.5	20.5	+5V @ 95mA	LP4	EAR99	HMC817LP4E
0.6 - 1.4	Low Noise	32	40	0.9	21.5	+5V @ 254mA	LP4	EAR99	HMC718LP4E
0.7 - 1.2	Low Noise with Failsafe Bypass	16	33	0.9	13	+5V @ 57mA	LP3	EAR99	HMC668LP3E
0.7 - 2.2	Low Noise	22	36	1.7	24	+5V @ 227mA	LP3	EAR99	HMC758LP3E
1 - 11	Low Noise	17	30	1.5	18	+5V @ 55mA	LP4	EAR99	HMC753LP4E [1]
1 - 12	Low Noise	17	28	1.5	19	+5V @ 55mA	Chip	EAR99	HMC-ALH444 [1]
1.2 - 3.0	Low Noise	26	21	1.3	11.5	+5V @ 21mA	LP3	EAR99	HMC548LP3E
1.3 - 2.9	Low Noise	34	39	1	21.5	+5V @ 272mA	LP4	EAR99	HMC719LP4E
1.7 - 2.2	Low Noise	19	36	0.75	20	+5V @ 117mA	LP3	EAR99	HMC618LP3E
1.7 - 2.2	Low Noise with Failsafe Bypass	17	29	1.4	12	+5V @ 86mA	LP3	EAR99	HMC669LP3E
1.7 - 2.2	Low Noise, Dual Channel	20.5	35	0.85	21	+5V @ 112mA	LP4	EAR99	HMC818LP4E
2 - 4	Low Noise	10	36	2.6	21	+6V @ 100mA	Chip	EAR99	HMC594 [1]
2 - 4	Low Noise	10	36	3	21	+6V @ 100mA	LC3B	EAR99	HMC594LC3B [1]
2 - 4	Low Noise	20.5	36	3	21	+6V @ 170mA	Chip	EAR99	HMC609 [1]
2 - 4	Low Noise	20	36.5	3.5	21.5	+6V @ 170mA	LC4	EAR99	HMC609LC4 [1]
2 - 12	Low Noise	15	25	1.8	13	+4V @ 45mA	LC4	EAR99	HMC772LC4 [1]
2.1 - 2.9	Low Noise	19	33	0.9	19	+5V @ 95mA	LP3	EAR99	HMC715LP3E
2.3 - 2.5	Low Noise	19	12	1.7	6	+3V @ 8.5mA	SOT26	EAR99	HMC286E
2.3 - 2.7	Low Noise	19	29.5	0.75	16.5	+5V @ 59mA	LP2	EAR99	HMC667LP2E
2.3 - 2.7	Low Noise with Bypass	20	31	1.1	17	+5V @ 74mA	LP3	EAR99	HMC605LP3E
2.4 - 2.5	Transceiver, Front End	13	10	3	5	+3V @ 24mA	MS8G	EAR99	HMC310MS8GE
3.1 - 3.9	Low Noise	18	33	1	19	+5V @ 65mA	LP3	EAR99	HMC716LP3E
3.3 - 3.8	Low Noise with Bypass	19	29	1.2	16	+5V @ 40mA	LP3	EAR99	HMC593LP3E
3.4 - 3.8	Low Noise with Bypass	16	18	2	7	+3V @ 9mA	LP3	EAR99	HMC491LP3E
3.5 - 7.0	Low Noise	15.5	28	2.4	16	+5V @ 50mA	Chip	EAR99	HMC392
3.5 - 7.0	Low Noise	16	30	2.5	16	+5V @ 55mA	LC4	EAR99	HMC392LC4
3.5 - 7.0	Low Noise	15	28	3	16	+5V @ 65mA	LH5	EAR99	HMC392LH5
4.8 - 6.0	Low Noise with Bypass	15	26	1.5	14	+5V @ 42mA	LP3	EAR99	HMC604LP3E
4.8 - 6.0	Low Noise	16.5	31.5	1.1	18.5	+5V @ 73mA	LP3	EAR99	HMC717LP3E
5 - 6	Low Noise	9	13	2.5	2	+3V @ 6mA	MS8G	EAR99	HMC318MS8GE
5 - 6	Low Noise	12	10	2.5	9	+3V @ 25mA	MS8G	EAR99	HMC320MS8GE
5 - 10	Low Noise	20	28	1.7	16	+3.5V @ 80mA	Chip	EAR99	HMC902
5 - 10	Low Noise	19	28	1.8	16	+3.5V @ 80mA	LP3	EAR99	HMC902LP3E
5 - 20	Low Noise	13	26	2.2	16	+5V @ 30mA	Chip	EAR99	HMC-ALH435 [1]
6 - 17	Low Noise	18	25	1.7	14	+3.5V @ 80mA	LP3	EAR99	HMC903LP3E
6 - 18	Low Noise	19	26	1.6	15	+3.5V @ 80mA	Chip	EAR99	HMC903
6 - 20	Low Noise	22	20	2.3	10	+3V @ 53mA	Chip	EAR99	HMC565
6 - 20	Low Noise	21	20	2.5	10	+3V @ 53mA	LC5	EAR99	HMC565LC5
6 - 26.5	Low Noise	22	18	2.5	10	+3.5V @ 45mA	LC4	EAR99	HMC963LC4
7 - 13.5	Low Noise	17	24	1.8	12	+3V @ 51mA	Chip	EAR99	HMC564
7 - 14	Low Noise	17	25	1.8	13	+3V @ 51mA	LC4	EAR99	HMC564LC4
7 - 17	Low Noise	21	20	1.8	15	+3V @ 65mA	Chip	EAR99	HMC516
7.5 - 26.5	Low Noise	13	23	2.5	13	+3.5V @ 70mA	LC4	EAR99	HMC962LC4
9 - 18	Low Noise	20	25	2	14	+3V @ 65mA	LC5	EAR99	HMC516LC5
12 - 16	Medium Power LNA	23	34	2.5	25	+5V @ 200mA	LP5	EAR99	HMC490LP5E [1]
12 - 17	Medium Power LNA	27	35	2	26	+5V @ 200mA	Chip	EAR99	HMC490 [1]
13 - 25	Low Noise	21	13	3.5	5	+3V @ 41mA	Chip	EAR99	HMC342
13 - 25	Low Noise	22	20	3.5	9	+3V @ 43mA	LC4	EAR99	HMC342LC4
14 - 27	Low Noise	19.5	-	2.2	17	+4V @ 90mA	LC4B	5A991.h	HMC504LC4B
14 - 27	Low Noise	18	-	2.5	14	+4V @ 90mA	Chip	5A991.h	HMC-ALH216 [1]
14 - 27	Low Noise	20	-	2	14	+4V @ 90mA	Chip	5A991.h	HMC-ALH476 [1]
17 - 26	Low Noise	19	23	2.2	11	+3V @ 65mA	Chip	EAR99	HMC517
17 - 26	Low Noise	19	23	2.5	13	+3V @ 67mA	LC4	EAR99	HMC517LC4
17 - 27	Low Noise	25	25	2.2	13	+4V @ 73mA	LC4	EAR99	HMC751LC4
18 - 31	Low Noise	15	23	3.5	11	+3V @ 75mA	LC4	EAR99	HMC519LC4
18 - 32	Low Noise	15	23	2.8	12	+3V @ 65mA	Chip	3A001.b.2.d	HMC519
18 - 40	Low Noise	10	-	3.9	12	+5V @ 45mA	Chip	3A001.b.2.d	HMC-ALH445
20 - 32	Low Noise	15	23	3	12	+3V @ 65mA	Chip	3A001.b.2.d	HMC518
21 - 29	Low Noise	13	19	2.5	8	+3V @ 35mA	LC3B	EAR99	HMC341LC3B
22 - 26.5	Low Noise	25	-	3	12	+2.5V @ 52mA	Chip	5A991.h	HMC-ALH311 [1]

SMT & Chip (Die) Products

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
24 - 28	Low Noise	25	26	2.5	13	+3V @ 70mA	LC4	EAR99	HMC752LC4 [1]
24 - 30	Low Noise	13	16	2.5	6	+3V @ 30mA	Chip	EAR99	HMC341
24 - 32	Low Noise	21	-	2	7	+5V @ 68mA	Chip	3A001.b.2.d	HMC-ALH364
24 - 36	Low Noise	23	17	2	8	+3V @ 58mA	Chip	3A001.b.2.d	HMC263
24 - 36	Low Noise	20	18	2.2	8	+3V @ 58mA	LP4	3A001.b.2.d	HMC263LP4E
24 - 40	Low Noise	12	-	3.5	13	+4V @ 45mA	Chip	3A001.b.2.d	HMC-ALH244
24 - 40	Low Noise	22	-	2	11	+5V @ 66mA	Chip	3A001.b.2.d	HMC-ALH369
24 - 40	Low Noise	11.5	-	4	15	+4V @ 60mA	Chip	3A001.b.2.d	HMC-ALH140 [1]
27 - 33	Low Noise	20	-	3	12	+2.5V @ 52mA	Chip	3A001.b.2.d	HMC-ALH313 [1]
28 - 36	Low Noise	21	24	2.8	12	+3V @ 82mA	LP4	3A001.b.2.d	HMC566LP4E
29 - 36	Low Noise	20	23.5	2.8	12	+3V @ 80mA	Chip	3A001.b.2.d	HMC566
35 - 45	Low Noise	16	-	2	6	+4V @ 87mA	Chip	3A001.b.2.d	HMC-ALH376
37 - 42	Low Noise	22	-	3.5	12	+2.5V @ 52mA	Chip	3A001.b.2.d	HMC-ALH310 [1]
57 - 65	Low Noise	21	-	4	12	+2.5V @ 64mA	Chip	3A001.b.2.f	HMC-ALH382 [1]
71 - 86	Low Noise	13	-	5	7	+2.4V @ 30mA	Chip	3A001.b.2.f	HMC-ALH508
71 - 86	Low Noise	14	-	5	7	+2V @ 50mA	Chip	3A001.b.2.f	HMC-ALH509

Broadband Gain Blocks (Listed by P1dB Output Power)

DC - 6	SiGe Gain Block	15.5	22	3	8	+5V @ 25mA	MP86	EAR99	HMC474MP86E
DC - 6	SiGe Gain Block	15	20	3	8	+3V @ 25mA	SC70	EAR99	HMC474SC70E
DC - 6	SiGe Gain Block	20	25	2.5	12	+5V @ 35mA	MP86	EAR99	HMC476MP86E
DC - 6	SiGe Gain Block	19	24	2.5	12	+5V @ 35mA	SC70	EAR99	HMC476SC70E
DC - 10	HBT Gain Block	15	24	4.5	13	+5V @ 56mA	Chip	EAR99	HMC397
DC - 10	HBT Gain Block	15	25	4	13	+5V @ 50mA	Chip	EAR99	HMC405
DC - 6	HBT Gain Block	17	27	6.5	14	+5V @ 50mA	SOT26	EAR99	HMC313E
DC - 8	HBT Gain Block	12	30	6	14	+5V @ 56mA	Chip	EAR99	HMC396
DC - 4	HBT Gain Block	15	28	4.5	15	+5V @ 54mA	Chip	EAR99	HMC395
DC - 8	HBT Gain Block	15	30	5	15	+5V @ 54mA	SC70	EAR99	HMC311SC70E
DC - 6	HBT Gain Block	14.5	32	4.5	15.5	+5V @ 56mA	LP3	EAR99	HMC311LP3E
DC - 6	HBT Gain Block	16	31.5	4.5	15.5	+5V @ 54mA	ST89	EAR99	HMC311ST89E
DC - 4	SiGe Gain Block	24	31	2.5	17	+5V @ 62mA	SC70	EAR99	HMC478SC70E
DC - 4	SiGe Gain Block	22	32	2	18	+5V @ 62mA	MP86	EAR99	HMC478MP86E
DC - 4	SiGe Gain Block	22	33	3	18	+5V @ 62mA	ST89	EAR99	HMC478ST89E
DC - 5	SiGe Gain Block	15	34	4	18	+8V @ 72mA	MP86	EAR99	HMC479MP86E
DC - 5	SiGe Gain Block	15	34	4	18	+8V @ 75mA	ST89	EAR99	HMC479ST89E
DC - 5	SiGe Gain Block	20	33	3.5	19	+8V @ 79mA	ST89	EAR99	HMC481ST89E
DC - 10	pHEMT Gain Block	14	30	7	20	+5V @ 76mA	LP2	EAR99	HMC788LP2E
DC - 5	SiGe Gain Block	19	34	2.9	20	+8V @ 82mA	ST89	EAR99	HMC480ST89E
DC - 5	SiGe Gain Block	20	33	3.5	20	+8V @ 74mA	MP86	EAR99	HMC481MP86E
DC - 4	HBT Gain Block	21	33	4	21	+5V @ 82mA	ST89	EAR99	HMC589ST89E
0.2 - 4.0	Low Noise, High IP3, pHEMT Gain Block	13	38	2.3	22	+5V @ 110mA	ST89	EAR99	HMC639ST89E
0.2 - 4.0	Low Noise, High IP3, pHEMT Gain Block	13	40	2.2	22	+5V @ 155mA	ST89	EAR99	HMC636ST89E
DC - 1	HBT Gain Block	22	37	2.8	22	+5V @ 88mA	ST89	EAR99	HMC580ST89E
DC - 4.5	HBT Gain Block	21	35	3.5	22	+8V @ 110mA	ST89	EAR99	HMC475ST89E
DC - 5	SiGe Gain Block	19	36	4	22	+8V @ 110mA	ST89	EAR99	HMC482ST89E
DC - 5	Dual SiGe Gain Block	15	34	4	18	+8V @ 75mA	MS8G	EAR99	HMC469MS8GE
DC - 5	Dual SiGe Gain Block	20	34	3.2	20	+8V @ 80mA	MS8G	EAR99	HMC471MS8GE

CATV Amplifiers

0.04 - 0.96	Low Noise, Dual Output	5	27	3.5	12	+5V @ 120mA	MS8G	EAR99	HMC549MS8GE
0.05 - 0.96	Low Noise, 75 Ohm	14	39	2.2	19	+5V @ 120mA	ST89	EAR99	HMC599ST89E
0.04 - 1.0	50 / 75 Ohm Differential Gain Block	16	40	2.5	23.5	+5V @ 270mA	LP4B	EAR99	HMC770LP4BE
0.05 - 3.0	HBT Gain Block	15	40	3.5	18	+5V @ 88mA	ST89	EAR99	HMC740ST89E
0.05 - 3.0	HBT Gain Block	20	42	2.5	18.5	+5V @ 96mA	ST89	EAR99	HMC741ST89E
DC - 1	HBT Gain Block, 75 Ohm	14	38	5.5	21	+5V @ 160mA	S8G	EAR99	HMC754S8GE

Driver Amplifiers

0.7 - 2.8	HBT Driver Amplifier	18	42	3.8	25	+5V @ 125mA	ST89	EAR99	HMC789ST89E
0.8 - 3.8	Driver Amplifier	18	30	7.5	17	+5V @ 53mA	SOT26	EAR99	HMC308E
3.0 - 4.5	HBT Driver Amplifier	21	36	5	23.5	+5V @ 130mA	MS8G	EAR99	HMC326MS8GE
17.5 - 41	Driver Amplifier	21	27	-	20	+5V @ 295mA	Chip	3A001.b.2.d	HMC-AUH256

Linear & Power Amplifiers

0.4 - 2.5	High IP3 Amp, 1/2 Watt	12.5	42	6	27	+5V @ 150mA	ST89	EAR99	HMC454ST89E
1.6 - 2.2	Medium Power Amplifier	22	40	5.5	27	+3.6V @ 270mA	QS16G	EAR99	HMC413QS16GE
5 - 6	Medium Power Amplifier	17	38	6	26	+5V @ 300mA	MS8G	EAR99	HMC406MS8GE
5 - 7	Medium Power Amplifier	15	40	5.5	25	+5V @ 230mA	MS8G	EAR99	HMC407MS8GE
5 - 18	Medium Power Amplifier	18	28	7	19.5	+5V @ 120mA	LP3	EAR99	HMC451LP3E
5 - 20	Medium Power Amplifier	22	30	6.5	20	+5V @ 127mA	Chip	EAR99	HMC451

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
5 - 20	Medium Power Amplifier	19	30	7	19	+5V @ 114mA	LC3	EAR99	HMC451LC3
6 - 18	Medium Power Amplifier	15.5	32	4.5	20	+5V @ 95mA	Chip	EAR99	HMC441
6 - 18	Medium Power Amplifier	17	32	4.5	20	+5V @ 95mA	LC3B	EAR99	HMC441LC3B
6.5 - 13.5	Medium Power Amplifier	14	29	4.5	18	+5V @ 95mA	LP3	EAR99	HMC441LP3E
7 - 15.5	Medium Power Amplifier	15	32	4.8	20	+5V @ 95mA	LH5 Hermetic	EAR99	HMC441LH5
7 - 15.5	Medium Power Amplifier	16	30	4.5	19	+5V @ 90mA	LM1	EAR99	HMC441LM1
9.5 - 11.5	Medium Power Amplifier	29.5	33	6	27	+5V @ 310mA	LC4	EAR99	HMC608LC4
12 - 30	Medium Power Amplifier	16	25	7	16	+5V @ 101mA	Chip	EAR99	HMC383
12 - 30	Medium Power Amplifier	15	25	7.5	16.5	+5V @ 100mA	LC4	EAR99	HMC383LC4
16 - 33	Medium Power Amplifier	17	33	-	24	+5V @ 400mA	Chip	5A991.h	HMC-APH596
17 - 24	Medium Power Amplifier	24	34	4	25	+5V @ 250mA	Chip	EAR99	HMC498
17 - 24	Medium Power Amplifier	22	36	4	25	+5V @ 250mA	LC4	EAR99	HMC498LC4
17 - 30	Medium Power Amplifier	20	31	-	22	+4.5V @ 400mA	Chip	5A991.h	HMC-APH196
17.5 - 24	Medium Power Amplifier	14	28	6.5	21.5	+5V @ 85mA	LM1	EAR99	HMC442LM1
17.5 - 25.5	Medium Power Amplifier	15	28	5.5	22	+5V @ 85mA	Chip	EAR99	HMC442 [1]
17.5 - 25.5	Medium Power Amplifier	13	27	8	22	+5V @ 84mA	LC3B	EAR99	HMC442LC3B [1]
21 - 32	Medium Power Amplifier	16	33	5	24	+5V @ 200mA	Chip	3A001.b.2.b	HMC499 [1]
21 - 32	Medium Power Amplifier	17	34	5	23	+5V @ 200mA	LC4	3A001.b.2.d	HMC499LC4 [1]
34 - 42	Medium Power Amplifier	18.5	29	6.5	18	+5V @ 120mA	Chip	3A001.b.2.d	HMC-ABH264 [1]
37 - 40	Medium Power Amplifier	20	35	-	26	+5V @ 640mA	Chip	3A001.b.2.f	HMC-APH510
37 - 45	Medium Power Amplifier	21	32	-	23	+5V @ 475mA	Chip	3A001.b.2.d	HMC-APH403
50 - 66	Medium Power Amplifier	24	25	-	17	+5V @ 220mA	Chip	3A001.b.2.f	HMC-ABH241
55 - 65	Medium Power Amplifier	13	25	-	16	+5V @ 80mA	Chip	3A001.b.2.f	HMC-ABH209 [1]
71 - 76	Medium Power Amplifier	24	-	-	17.5	+4V @ 130mA	Chip	3A001.b.2.f	HMC-AUH318 [1]
71 - 76	Medium Power Amplifier	13	-	-	20	+4V @ 240mA	Chip	3A001.b.2.f	HMC-APH633
71 - 86	Medium Power Amplifier	15	-	-	15	+4V @ 130mA	Chip	3A001.b.2.f	HMC-AUH320 [1]
81 - 86	Medium Power Amplifier	22	-	-	17.5	+4V @ 160mA	Chip	3A001.b.2.f	HMC-AUH317 [1]
81 - 86	Medium Power Amplifier	12	-	-	19	+4V @ 240mA	Chip	3A001.b.2.f	HMC-APH634
0.4 - 2.2	Power Amplifier, 1 Watt	21	49	6.5	30	+5V @ 510mA	ST89	EAR99	HMC452ST89E
0.4 - 2.2	Power Amplifier, 1.6 Watt	20.5	49	6.5	32	+5V @ 725mA	ST89	EAR99	HMC453ST89E
0.4 - 2.7	Power Amplifier, 2 Watt	16	48	8.5	33	+5V @ 700mA	LP4	EAR99	HMC921LP4E
0.45 - 2.2	Power Amplifier, 1 Watt	22.5	48	7	30	+5V @ 485mA	QS16G	EAR99	HMC452QS16GE
0.45 - 2.2	Power Amplifier, 1.6 Watt	21.5	51	6.5	33	+5V @ 725mA	QS16G	EAR99	HMC453QS16GE
1.7 - 2.2	Power Amplifier, 1 Watt	27	46	5	30.5	+5V @ 500mA	QS16G	EAR99	HMC457QS16GE
2.3 - 2.8	Power Amplifier, 1 Watt	31	45	5	32.5	+5V @ 430mA	LP4	EAR99	HMC755LP4E
3 - 4	Power Amplifier, 1/2 Watt	21	40	5	27	+5V @ 250mA	MS8G	EAR99	HMC327MS8GE
3.3 - 3.8	Power Amplifier, 1 Watt	31	45.5	5.8	30.5	+5V @ 615mA	LP4	EAR99	HMC409LP4E
5.1 - 5.9	Power Amplifier, 1 Watt	20	43	6	30	+5V @ 750mA	LP3	EAR99	HMC408LP3E
6 - 9.5	Power Amplifier, 1 Watt	21	40	-	30.5	+7V @ 820mA	LP5	3A001.b.2.d	HMC590LP5E
6 - 9.5	Power Amplifier, 2 Watt	18	41	-	33	+7V @ 1340mA	LP5	3A001.b.2.d	HMC591LP5E
6 - 10	Power Amplifier, 1 Watt	25	41	-	31.5	+7V @ 820mA	Chip	3A001.b.2.d	HMC590
6 - 10	Power Amplifier, 2 Watt	23	43	-	33.5	+7V @ 1340mA	Chip	3A001.b.2.d	HMC591
7 - 9	Power Amplifier, 2 Watt	26	40	6.5	33.5	+7V @ 1.3A	Chip	3A001.b.2.b	HMC486
7 - 9	Power Amplifier, 2 Watt	22	40	7	32	+7V @ 1.3A	LP5	3A001.b.2.b	HMC486LP5E
9 - 12	Power Amplifier, 2 Watt	20	36	8	32	+7V @ 1.3A	LP5	3A001.b.2.b	HMC487LP5E
10 - 13	Power Amplifier, 1 Watt	19	38	-	31	+7V @ 750mA	Chip	3A001.b.2.b	HMC592
12 - 16	Power Amplifier, 1 Watt	13	34	9	31	+7V @ 1.3A	LP5	3A001.b.2.b	HMC489LP5E
12.5 - 15.5	Power Amplifier, 2 Watt	30	42	-	34.5	+7V @ 1200mA	Chip	3A001.b.2.b	HMC949
12.5 - 15.5	Power Amplifier, 4 Watt	28	44	-	36	+7V @ 1200mA	Chip	3A001.b.2.b	HMC950
12.5 - 15.5	Power Amplifier, 2 Watt	27	40	-	32	+6V @ 1200mA	LP5	3A001.b.2.b	HMC965LP5E
NEW! 12.5 - 15.5	Power Amplifier, 2 Watt	26	41	-	34	+7V @ 1200mA	LP5G	3A001.b.2.b	HMC995LP5GE
15 - 27	Power Amplifier, 1 Watt	17	37	-	29	+5V @ 1.44A	Chip	3A001.b.2.c	HMC-APH462
16 - 24	Power Amplifier, 1 Watt	23	41	-	31	+7V @ 790mA	Chip	3A001.b.2.c	HMC756
16 - 24	Power Amplifier, 1/2 Watt	22	37	-	29	+7V @ 395mA	Chip	3A001.b.2.c	HMC757
16 - 24	Power Amplifier, 1/2 Watt	20.5	34.5	-	26.5	+5V @ 400mA	LP4	3A001.b.2.c	HMC757LP4E
18 - 20	Power Amplifier, 1 Watt	17.5	38.5	-	30	+5V @ 900mA	Chip	3A001.b.2.c	HMC-APH478
21 - 24	Power Amplifier, 1 Watt	17	39	-	30.5	+5V @ 950mA	Chip	3A001.b.2.c	HMC-APH518
22 - 26.5	Power Amplifier, 1/2 Watt	20	33	7	26.5	+5V @ 400mA	LP4	EAR99	HMC863LP4E
22.5 - 26.5	Power Amplifier, 1 Watt	17	40	-	30	+5V @ 950mA	Chip	3A001.b.2.c	HMC-APH608
24 - 29.5	Power Amplifier, 1/2 Watt	22	-	-	26.5	+6V @ 360mA	Chip	EAR99	HMC863
24 - 29.5	Power Amplifier, 1 Watt	27	40	-	29	+6V @ 750mA	Chip	3A001.b.2.c	HMC864
24 - 31.5	Power Amplifier, 1.5 Watt	22	43	-	34	+5.5V @ 1200mA	LP5	3A001.b.2.c	HMC943LP5E
27 - 31.5	Power Amplifier, 1/2 Watt	14	37	-	28	+5V @ 900mA	Chip	3A001.b.2.c	HMC-APH460
27 - 34	Power Amplifier, 1 Watt	17.5	37	-	29	+5V @ 800mA	Chip	3A001.b.2.d	HMC693
27.3 - 33.5	Power Amplifier, 2 Watt	23	43	-	33	+6V @ 1200mA	Chip	3A001.b.2.d	HMC906

SMT & Chip (Die) Products

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
37 - 40	Power Amplifier, 1 Watt	15	37	-	28	+5V @ 1.08A	Chip	3A001.b.2.d	HMC-APH473
37 - 40	Power Amplifier, 1 Watt	21	38	-	30.5	+6V @ 900mA	Chip	3A001.b.2.d	HMC968
40 - 43.5	Power Amplifier, 1 Watt	22	38	-	29	+6V @ 900mA	Chip	EAR99	HMC969
Wideband (Distributed) Amplifiers									
DC - 20	Wideband LNA	14	28	2.5	16	+8V @ 60mA	Chip	EAR99	HMC460 [1]
DC - 20	Wideband LNA	14	29.5	2.5	17	+8V @ 75mA	LC5	EAR99	HMC460LC5 [1]
2 - 20	Wideband LNA	15	26.5	2.5	15	+5V @ 63mA	Chip	EAR99	HMC462
2 - 20	Wideband LNA	13	25	2.5	14	+5V @ 66mA	LP5	EAR99	HMC462LP5E
2 - 20	Wideband LNA with AGC	14	28	2.5	19	+5V @ 60mA	Chip	EAR99	HMC463 [1]
2 - 20	Wideband LNA with AGC	13	26	3	18	+5V @ 60mA	LP5	EAR99	HMC463LP5E [1]
2 - 20	Wideband LNA with AGC	14	28	2.5	18	+5V @ 60mA	LH250	EAR99	HMC463LH250
2 - 20	Wideband LNA	10	-	3.5	10	+2V @ 55mA	Chip	EAR99	HMC-ALH102
2 - 22	Wideband LNA	16	-	1.7	14	+4V @ 45mA	Chip	EAR99	HMC-ALH482
DC - 20	Wideband Driver	17	30	2.5	22	+8V @ 160mA	Chip	EAR99	HMC465 [1]
DC - 20	Wideband Driver	15	28	3	23	+8V @ 160mA	LP5	EAR99	HMC465LP5E [1]
DC - 35	Wideband Driver	15	-	-	21	+5V @ 200mA	Chip	3A001.b.2.d	HMC-AUH249
DC - 43	Wideband Driver	14	-	5.4	16.5	+5V @ 180mA	Chip	3A001.b.2.d	HMC-AUH232
0.5 - 65	Wideband Driver	10	-	-	-	+8V @ 60mA	Chip	3A001.b.2.d	HMC-AUH312
2 - 35	Wideband Driver	12.5	27	3	18	+8V @ 80mA	Chip	3A001.b.2.d	HMC562 [1]
5 - 17	Wideband Driver	31	30	8	23	+5V @ 180mA	Chip	EAR99	HMC633 [1]
5 - 20	Wideband Driver	22	31	7.5	23	+5V @ 180mA	Chip	EAR99	HMC634 [1]
5 - 20	Wideband Driver	21	29	7.5	22	+5V @ 180mA	LC4	EAR99	HMC634LC4 [1]
5.5 - 17	Wideband Driver	30	30	8	23	+5V @ 180mA	LC4	EAR99	HMC633LC4 [1]
18 - 40	Wideband Driver	19.5	29	8	23	+5V @ 280mA	Chip	3A001.b.2.e	HMC635
18 - 40	Wideband Driver	18.5	27	7	22	+5V @ 280mA	LC4	3A001.b.2.f	HMC635LC4
DC - 6	Wideband Power Amplifier	14	45	5	29	+12V @ 400mA	Chip	EAR99	HMC637
DC - 6	Wideband Power Amplifier	13	40	5	29	+12V @ 400mA	LP5	EAR99	HMC637LP5E
DC - 10	Wideband Power Amplifier	12	41	6	28.5	+12V @ 300mA	Chip	EAR99	HMC619
DC - 10	Wideband Power Amplifier	12	41	6	28	+12V @ 300mA	LP5	EAR99	HMC619LP5E
DC - 15	Wideband Power Amplifier	19	35	2	26.5	+8V @ 300mA	Chip	EAR99	HMC659
DC - 15	Wideband Power Amplifier	19	35	2.5	27.5	+8V @ 300mA	LC5	EAR99	HMC659LC5
DC - 18	Wideband Power Amplifier	17	32	3	25	+8V @ 290mA	Chip	EAR99	HMC459
DC - 20	Wideband Power Amplifier	14	36	4	28	+10V @ 400mA	Chip	3A001.b.2.c	HMC559
DC - 22	Wideband Power Amplifier	14	40	2.5	28	+11V @ 400mA	Chip	3A001.b.2.c	HMC797
DC - 22	Wideband Power Amplifier	13.5	39	4	28	+10V @ 400mA	LP5	3A001.b.2.c	HMC797LP5E
DC - 40	Wideband Power Amplifier	13	33.5	5	22	+10V @ 175mA	Chip	3A001.b.2.f	HMC930 [1]
0.2 - 22	Wideband Power Amplifier	13	38	3	27	+11V @ 365mA	Chip	3A001.b.2.c	HMC907
0.2 - 22	Wideband Power Amplifier	12	36	3.5	26	+10V @ 350mA	LP5	3A001.b.2.c	HMC907LP5E
2 - 20	Wideband Power Amplifier	16	30	4	26	+8V @ 290mA	Chip	EAR99	HMC464
2 - 20	Wideband Power Amplifier	14	30	4	26	+8V @ 290mA	LP5	EAR99	HMC464LP5E

[1] Amplifiers that benefit from Hittite Active Bias Controllers

AMPLIFIERS - Low Phase Noise

Frequency (GHz)	Function	Gain / NF (dB)	OIP3 (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	P1dB / Psat (dBm)	Bias Supply	Package	ECCN Code	Part Number
2 - 18	Wideband, Low Phase Noise	14 / 4.5	27	-160	15 / 18	+5V @ 64mA	Chip	EAR99	HMC606
2 - 18	Wideband, Low Phase Noise	13.5 / 5	27	-160	15 / 17	+5V @ 64mA	LC5	EAR99	HMC606LC5

AMPLIFIERS - Microwave & Optical Modulator Drivers

Frequency (GHz)	Function	Gain (dB)	Group Variation Delay (ps)	Additive Jitter (ps)	P1dB (dBm)	Output Voltage Level (Vp-p)	Package	ECCN Code	Part Number
DC - 20	MZ Optical Modulator Driver	18	±15	0.3	22	2.5 - 8	LC5	EAR99	HMC870LC5 [1]
DC - 20	EA Optical Modulator Driver	15	±15	0.3	16.5	2.5 - 4	LC5	EAR99	HMC871LC5 [1]

[1] Amplifiers that benefit from Hittite Active Bias Controllers

ATTENUATORS

Frequency (GHz)	Function	Insertion Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
Attenuators - Analog								
0.45 - 2.2	Analog VVA	1.9	0 to 48	20	0 to +3V	MS8	EAR99	HMC473MS8E
0.5 - 6.0	Analog VVA	2.5	0 to 26	35	0 to +5V	LP3	EAR99	HMC973LP3E
DC - 8	Analog VVA	1.5	0 to 32	10	0 to -3V	MS8G	EAR99	HMC346MS8GE
DC - 8	Analog VVA	2	0 to 30	10	0 to -3V	C8	EAR99	HMC346C8
DC - 8	Analog VVA	2	0 to 30	10	0 to -3V	G8 Hermetic	EAR99	HMC346G8
DC - 14	Analog VVA	2	0 to 30	10	0 to -3V	LP3	EAR99	HMC346LP3E
DC - 18	Analog VVA	1.5	0 to 30	10	0 to -3V	LC3B	EAR99	HMC346LC3B
DC - 20	Analog VVA	2.2	0 to 25	10	0 to -3V	Chip	EAR99	HMC346

ATTENUATORS

Frequency (GHz)	Function	Insertion Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
5 - 26.5	Analog VVA	3.5	0 to 28	32	0 to -3V	LP3C	EAR99	HMC712LP3CE
5 - 30	Analog VVA	2.5	0 to 30	32	0 to -3V	Chip	EAR99	HMC712
5 - 30	Analog VVA	2	0 to 28	28	0 to -3V	LC4	EAR99	HMC812LC4
17 - 27	Analog VVA	1.5	0 to 22	17	-4 to +4V	Chip	5A991.h	HMC-VVD102
NEW! 20 - 50	Analog VVA	3	0 to 35	33	0 to +3V	Chip	EAR99	HMC985
36 - 50	Analog VVA	1.5	0 to 22	17	0 to +4V	Chip	5A991.h	HMC-VVD106
70 - 86	Analog VVA	2	0 to 14	-	-5 to +5V	Chip	5A991.h	HMC-VVD104

Attenuators - Digital

DC - 5	1-Bit Digital	1	10	50	TTL/CMOS	LP3	EAR99	HMC541LP3E
DC - 10	1-Bit Digital	2	10	54	0 / +3 to +5V	LP3	EAR99	HMC800LP3E
DC - 10	1-Bit Digital	1.5	15	53	0 / +3 to +5V	LP3	EAR99	HMC801LP3E
DC - 10	1-Bit Digital	2.5	20	53	0 / +3 to +5V	LP3	EAR99	HMC802LP3E
0.7 - 4.0	2-Bit Digital	0.5	2 to 6	52	0 / +3V	SOT26	EAR99	HMC290E
0.7 - 4.0	2-Bit Digital	0.9	4 to 12	54	0 / +3V	SOT26	EAR99	HMC291E
DC - 6	2-Bit Digital	0.5	2 to 6	50	TTL/CMOS	LP3	EAR99	HMC467LP3E
0.75 - 2.0	3-Bit Digital	1.8	4 to 28	45	0 / +3V	MS8	EAR99	HMC230MS8E
0.7 - 3.7	3-Bit Digital	1.3	2 to 14	51	0 / +3V	MS8	EAR99	HMC288MS8E
DC - 6	3-Bit Digital	0.7	1 to 7	50	TTL/CMOS	LP3	EAR99	HMC468LP3E
DC - 5.5	4-Bit Digital	0.8	1 to 15	50	TTL/CMOS	LP3	EAR99	HMC540LP3E
DC - 6	4-Bit Digital, Serial & Parallel Control	2.5	3 to 45	50	0 / +5V	LP4	EAR99	HMC629LP4E
0.1 - 30	5-Bit Digital	2.5	0.5 to 15.5	43	0 / +5V	Chip	EAR99	HMC941
0.1 - 40	5-Bit Digital	3.5	1 to 31	45	0 / +5V	Chip	EAR99	HMC939
0.7 - 2.7	5-Bit Digital	2.3	1 to 31	54	0 / +3V	QS16	EAR99	HMC274QS16E
0.7 - 3.7	5-Bit Digital, Serial Control	2.1	1 to 31	48	Serial/CMOS	LP4	EAR99	HMC271ALP4E
0.7 - 3.8	5-Bit Digital	2.1	1 to 31	48	0 / +3V	MS10G	EAR99	HMC273MS10GE
0.7 - 3.8	5-Bit Digital, Serial Control	1.5	0.5 to 15.5	52	Serial/CMOS	LP4	EAR99	HMC305ALP4E
0.7 - 3.8	5-Bit Digital	1.5	0.5 to 15.5	52	0 / +3V	MS10	EAR99	HMC306MS10E
0.7 - 3.8	5-Bit Digital	1.3	0.5 to 15.5	48	0 / +3V	MS10	EAR99	HMC603MS10E
0.7 - 3.8	5-Bit Digital	1.3	0.5 to 15.5	48	0 / +3V	QS16	EAR99	HMC603QS16E
DC - 3	5-Bit Digital	2.0	1 to 31	44	0 / -5V	G16 Hermetic	EAR99	HMC335G16
DC - 3	5-Bit Digital	1.3	1 to 31	45	TTL/CMOS	LP3	EAR99	HMC470LP3E
DC - 4	5-Bit Digital	1.9	1 to 31	44	0 / -5V	QS16G	EAR99	HMC307QS16GE
DC - 4	5-Bit Digital	0.7	0.25 to 7.75	50	TTL/CMOS	LP3	EAR99	HMC539LP3E
DC - 3.8	6-Bit Digital	1.5	0.5 to 31.5	45	TTL/CMOS	LP4	EAR99	HMC472LP4E
DC - 3	6-Bit Digital	3.0	0.5 to 31.5	32	0 / -5V	G16 Hermetic	EAR99	HMC424G16
DC - 4	6-Bit Digital, Serial Control	1.2	0.5 to 31.5	45	Serial/CMOS	LP4	EAR99	HMC542ALP4E
DC - 6	6-Bit Digital, Serial & Parallel Control	1.8	0.25 to 31.5	55	0 / +5V	LP4	EAR99	HMC624LP4E
DC - 6	6-Bit Digital, Serial & Parallel Control	1.8	0.25 to 15.75	55	TTL/CMOS	LP4	EAR99	HMC792LP4E
DC - 13	6-Bit Digital	4.0	0.5 to 31.5	32	0 / -5V	Chip	EAR99	HMC424
DC - 13	6-Bit Digital	3.2	0.5 to 31.5	32	0 / -5V	LH5 Hermetic	EAR99	HMC424LH5
DC - 13	6-Bit Digital	4.0	0.5 to 31.5	32	0 / -5V	LP3	EAR99	HMC424LP3E
2.4 - 8.0	6-Bit Digital	3.5	0.5 to 31.5	40	0 / +5V	Chip	EAR99	HMC425
2.2 - 8.0	6-Bit Digital	3.2	0.5 to 31.5	40	0 / +5V	LP3	EAR99	HMC425LP3E
0.01 - 0.3	7-Bit Digital	3.3	0.25 to 31.75	40	TTL/CMOS	LP3	EAR99	HMC759LP3E

FILTERS - Tunable (Band Pass & Low Pass)

RF Band Pass

Frequency Range (GHz)	Function	Return Loss (dB)	3 dB Bandwidth (%)	Low Side Rejection Frequency (Rej. >20 dB)	High Side Rejection Frequency (Rej. >20 dB)	Tuning Response (ns)	Package	ECCN Code	Part Number
1 - 2	Band Pass	10	11	0.8 x Fcenter	1.2 x Fcenter	200	LP5	EAR99	HMC890LP5E
2 - 3.9	Band Pass	10	9	0.9 x Fcenter	1.15 x Fcenter	200	LP5	EAR99	HMC891LP5E
4 - 7.7	Band Pass	15	9	0.9 x Fcenter	1.13 x Fcenter	200	LP5	EAR99	HMC892LP5E
4.8 - 9.5	Band Pass	7	6.5	0.9 x Fcenter	1.1 x Fcenter	200	LP5	EAR99	HMC893LP5E
NEW! 5.9 - 11.2	Band Pass	7.5	6	0.92 x Fcenter	1.08 x Fcenter	200	LP5	EAR99	HMC894LP5E
9 - 19	Band Pass	9.5	18	0.81 x Fcenter	1.17 x Fcenter	200	LP4	EAR99	HMC897LP4E
NEW! 18.5 - 37.0	Band Pass	10	18	0.81 x Fcenter	1.20 x Fcenter	200	LP4	EAR99	HMC899LP4E

RF Low Pass

Frequency Range (GHz)	Function	Return Loss (dB)	Cutoff Frequency Range (GHz)	Stopband Frequency (Rej. >20 dB)	Tuning Response (ns)	Package	ECCN Code	Part Number
DC - 4.0	Low Pass	10	2.2 - 4.0	1.25 x Fcutoff	150	LP5	EAR99	HMC881LP5E
DC - 7.6	Low Pass	10	4.5 - 7.6	1.23 x Fcutoff	150	LP5	EAR99	HMC882LP5E

SMT & Chip (Die) Products

IF / BASEBAND PROCESSING - Dual Baseband Low Pass Filter & Dual Baseband Digital VGA

Dual Baseband Low Pass Filter

3 dB Bandwidth Setting (MHz)	Function	3 dB Bandwidth Accuracy (%)	Gain (dB)	NF (dB)	OIP3 (dBm)	Package	ECCN Code	Part Number
3.5 - 50	Dual Low Pass with ADC Driver	± 2.5	0 / 10	12	30	LP5	EAR99	HMC900LP5E

Please Note: 400 Ohm Reference Impedance Are Shown

Dual Baseband Digital VGA

Frequency (MHz)	Function	NF (dB)	Variable Gain (dB)	OIP3 (dBm)	OIP2 (dBm)	Sideband Supp. (dB)	Magnitude (dB) / Phase (deg) Balance	Bias Supply	Package	ECCN Code	Part Number
DC - 100	Digital, Serial & Parallel Control	6	0 to 40	+30	+65	55	±0.1 / ±1	+5V @ 70mA	LP4	EAR99	HMC960LP4E

Please Note: 100 Ohm Reference Impedance Are Shown

I/Q MIXERS / IRMs

RF / LO Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Image Rejection (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
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I/Q Mixers / IRMs

3 - 7	I/Q Mixer / IRM	DC - 3.5	-7.5	33	23	Chip	EAR99	HMC620
3 - 7	I/Q Mixer / IRM	DC - 3.5	-7.5	32	22	LC4	EAR99	HMC620LC4
4 - 8.5	I/Q Mixer / IRM	DC - 3.5	-7.5	40	23	Chip	EAR99	HMC525
4 - 8.5	I/Q Mixer / IRM	DC - 3.5	-7.5	40	23	LC4	EAR99	HMC525LC4
5.9 - 12.0	I/Q Mixer / IRM	DC - 1.5	-8	30	18	Chip	EAR99	HMC256
6 - 10	I/Q Mixer / IRM	DC - 3.5	-7	40	22	Chip	EAR99	HMC520
6 - 10	I/Q Mixer / IRM	DC - 3.5	-7	40	23	LC4	EAR99	HMC520LC4
6 - 10	I/Q Mixer / IRM	DC - 3.5	-7.5	40	28	Chip	EAR99	HMC526
6 - 10	I/Q Mixer / IRM	DC - 3.5	-7.5	40	28	LC4	EAR99	HMC526LC4
8.5 - 13.5	I/Q Mixer / IRM	DC - 3.5	-7.5	40	24	Chip	EAR99	HMC521
8.5 - 13.5	I/Q Mixer / IRM	DC - 3.5	-7.5	38	24	LC4	EAR99	HMC521LC4
8.5 - 13.5	I/Q Mixer / IRM	DC - 2	-7.5	35	28	Chip	EAR99	HMC527
8.5 - 13.5	I/Q Mixer / IRM	DC - 2	-7.5	34	28	LC4	EAR99	HMC527LC4
10 - 16	I/Q Mixer / IRM	DC - 3.5	-8	25	25	LC5	EAR99	HMC775LC5
11 - 16	I/Q Mixer / IRM	DC - 3.5	-7.5	35	24	Chip	EAR99	HMC522
11 - 16	I/Q Mixer / IRM	DC - 3.5	-7.5	35	24	LC4	EAR99	HMC522LC4
11 - 16	I/Q Mixer / IRM	DC - 3.5	-8	35	27	Chip	EAR99	HMC528
11 - 16	I/Q Mixer / IRM	DC - 3.5	-8	35	26	LC4	EAR99	HMC528LC4
15 - 23	I/Q Mixer / IRM	DC - 3.5	-8	25	25	LC4	EAR99	HMC523LC4
15 - 23.6	I/Q Mixer / IRM	DC - 3.5	-8	27	25	Chip	EAR99	HMC523
19 - 33	I/Q Mixer / IRM	DC - 5	-8	25	17	Chip	5A001.h	HMC-MDB172
22 - 32	I/Q Mixer / IRM	DC - 3.5	-10	23	20	Chip	EAR99	HMC524
22 - 32	I/Q Mixer / IRM	DC - 4.5	-10	20	20	LC3B	EAR99	HMC524LC3B
31 - 38	I/Q Mixer / IRM	DC - 3.5	-10.5	17	21	Chip	EAR99	HMC555
35 - 45	I/Q Mixer / IRM	DC - 5	-8	25	17	Chip	5A991.h	HMC-MDB171
36 - 41	I/Q Mixer / IRM	DC - 3.5	-11	18	23	Chip	EAR99	HMC556
55 - 64	I/Q Mixer / IRM	DC - 3	-9	30	16	Chip	5A991.h	HMC-MDB207
26 - 33 RF	Sub-Harmonic, I/Q Mixer / IRM	DC - 3	-11	22	16	Chip	EAR99	HMC404
54 - 64 RF	Sub-Harmonic, I/Q Mixer / IRM	DC - 3	-12.5	30	7	Chip	5A991.h	HMC-MDB218

I/Q DOWNCONVERTER / RECEIVERS

RF / LO Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Noise Figure (dB)	Image Rejection (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
5.6 - 8.6	I/Q Downconverter / Receiver	DC - 3	12	2.2	20	2	LP4	EAR99	HMC951LP4E
7 - 9	I/Q Downconverter / Receiver	DC - 3.5	10	2.5	35	1.5	LC5	EAR99	HMC567LC5
9 - 12	I/Q Downconverter / Receiver	DC - 3.5	11	2.2	25	2	LC5	EAR99	HMC908LC5
12 - 16	I/Q Downconverter / Receiver	DC - 3.5	14	2.8	32	-1	LC5	EAR99	HMC869LC5
17 - 20	I/Q Downconverter / Receiver	DC - 3.5	14	2.5	40	0	LP4	EAR99	HMC966LP4E
17 - 21	I/Q Downconverter / Receiver	DC - 3.5	10	3	17	3	Chip	EAR99	HMC570
17 - 21	I/Q Downconverter / Receiver	DC - 3.5	10	3	18	2	LC5	EAR99	HMC570LC5
17 - 24	I/Q Downconverter / Receiver	DC - 3.3	11	2.2	21	2	LC5	EAR99	HMC904LC5
17 - 24	I/Q Downconverter / Receiver	DC - 3.5	15	2.5	25	1	LP4	EAR99	HMC967LP4E
20 - 28	I/Q Downconverter / Receiver	DC - 3.5	14	2.5	21	1	LP4	EAR99	HMC977LP4E
21 - 25	I/Q Downconverter / Receiver	DC - 3.5	11	3	24	5	Chip	EAR99	HMC571
21 - 25	I/Q Downconverter / Receiver	DC - 3.5	10	2	20	5	LC5	EAR99	HMC571LC5
24 - 28	I/Q Downconverter / Receiver	DC - 3.5	8	3.5	20	5	Chip	EAR99	HMC572
24 - 28	I/Q Downconverter / Receiver	DC - 3.5	8	3.5	18	5	LC5	EAR99	HMC572LC5

NEW!

I/Q UPCONVERTER / TRANSMITTERS

RF / LO Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Sideband Rejection (dBc)	OIP3 (dBm)	Package	ECCN Code	Part Number
5.5 - 8.6	I/Q Upconverter / Transmitter w/ VGA	DC - 3	16.5	-30	29	LC5	EAR99	HMC925LC5
10 - 16	I/Q Upconverter / Transmitter w/ VGA	DC - 3	17	-30	14	LC5	EAR99	HMC924LC5
11 - 17	I/Q Upconverter / Transmitter	DC - 2	13	-20	26	LC5	EAR99	HMC709LC5
16 - 21	I/Q Upconverter / Transmitter	DC - 3.5	12	-20	30	LC5	EAR99	HMC710LC5
17.7 - 23.6	I/Q Upconverter / Transmitter	DC - 3.5	15	-35	35	LC5	EAR99	HMC819LC5
21 - 27	I/Q Upconverter / Transmitter	DC - 3.75	12	-20	27	LC5	EAR99	HMC815LC5

MIXERS

RF Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	LO / RF Isolation (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
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High IP3 Mixers

0.4 - 0.65	High IP3, 0 LO	DC - 0.25	-9	7	33	MS8G	EAR99	HMC585MS8GE
0.45 - 0.5	High IP3, SGL-END	DC - 0.15	-9.5	20	32	MS8	EAR99	HMC387MS8E
0.5 - 2.7	High IP3, DBL-BAL, +2 LO	DC - 1	-8	28	28	LP4	EAR99	HMC915LP4E
0.7 - 1.0	High IP3, SGL-END	DC - 0.25	-8.5	24	35	MS8	EAR99	HMC399MS8E
0.7 - 1.0	High IP3, DBL-BAL, 0 LO	DC - 0.45	-7	23	32	LP4	EAR99	HMC684LP4E
0.7 - 1.1	High IP3, DBL-BAL, 0 LO	0.05 - 0.25	-7.5	24	40	LP4	EAR99	HMC786LP4
0.7 - 1.2	High IP3, DBL-BAL	DC - 0.3	-9	42	25	S8	EAR99	HMC351S8E
0.7 - 1.5	High IP3, 0 LO	DC - 0.35	-9	20	33	MS8G	EAR99	HMC483MS8GE
0.7 - 1.5	High IP3, DBL-BAL, 0 LO	DC - 0.5	-7.5	24	34	LP4	EAR99	HMC686LP4E
0.8 - 1.2	High IP3, DBL-BAL, 0 LO	DC - 0.3	-8	27	27	LP4	EAR99	HMC551LP4E
1.5 - 3.5	High IP3, DBL-BAL	DC - 1	-8	38	25	MS8	EAR99	HMC316MS8E
1.6 - 3.0	High IP3, DBL-BAL, 0 LO	DC - 1	-8	30	25	LP4	EAR99	HMC552LP4E
1.7 - 2.2	High IP3, SGL-END	DC - 0.3	-8.8	30	36	MS8	EAR99	HMC400MS8E
1.7 - 2.2	High IP3, DBL-BAL, 0 LO	DC - 0.5	-8	30	35	LP4	EAR99	HMC685LP4E
1.7 - 2.2	High IP3, DBL-BAL, 0 LO	DC - 0.5	-8	31	34	LP4	EAR99	HMC687LP4E
1.7 - 2.2	High IP3, DBL-BAL, 0 LO	0.05 - 0.30	-8	30	38	LP4	EAR99	HMC785LP4E
1.7 - 2.4	High IP3, SGL-END	0.05 - 0.3	-9.2	10	34	MS8G	EAR99	HMC485MS8GE
1.7 - 3.0	High IP3, SGL-BAL	DC - 0.8	-9	30	30	MS8	EAR99	HMC304MS8E
1.7 - 4.0	High IP3, DBL-BAL, +4 LO	DC - 1.0	-8	32	25	LP4	EAR99	HMC215LP4E
1.8 - 2.2	High IP3, SGL-END	DC - 0.5	-8.5	25	31	MS8	EAR99	HMC402MS8E
2.0 - 2.7	High IP3, DBL-BAL, 0 LO	DC - 0.45	-7.5	25	31	LP4	EAR99	HMC688LP4E
2.0 - 2.7	High IP3, DBL-BAL, 0 LO	DC - 0.45	-7.5	26	31	LP4	EAR99	HMC689LP4E
2.3 - 4.0	High IP3, +4 LO	DC - 1	-10	15	35	LP4	EAR99	HMC615LP4E
2.4 - 4.0	High IP3, SGL-END	DC - 1	-10	30	34	MS8	EAR99	HMC214MS8E
3.1 - 3.9	High IP3, DBL-BAL, 0 LO	DC - 0.6	-8.5	28	30	LP4	EAR99	HMC666LP4E
6 - 12	High IP3, DBL-BAL	DC - 4	-8	40	30	LC3	EAR99	HMC663LC3
9 - 15	High IP3, DBL-BAL	DC - 2.5	-7.5	40	24	MS8G	EAR99	HMC410AMS8GE

Downconverter RFICs

0.7 - 1.0	Downconverter	0.05 - 0.25	12.5	25	15	QS16	EAR99	HMC420QS16E
0.7 - 1.0	High IP3, Dual Downconverter	0.06 - 0.5	7.5	16	23	LP6C	EAR99	HMC683LP6CE
0.8 - 0.96	High IP3 Dual Downconverter	0.05 - 0.3	9	4	26	LP6	EAR99	HMC581LP6E
0.8 - 1.0	High IP3 Downconverter	0.05 - 0.25	13.8	28	15	QS16G	EAR99	HMC377QS16GE
0.8 - 2.7	Hi-IP3 Wideband Downconverter	0.001 - 0.6	-1	48	26	LP4	EAR99	HMC334LP4E
0.9 - 1.6	Hi-IP3 Downconverter with RF Amplifier	0.05 - 0.5	30	45	6	LP4	EAR99	HMC621LP4E
1.4 - 2.3	High IP3 Downconverter	0.05 - 0.3	9	33	19	QS16G	EAR99	HMC421QS16E
1.7 - 2.2	High IP3 Downconverter	0.05 - 0.3	11	25	19	QS16G	EAR99	HMC380QS16GE
1.7 - 2.2	High IP3, Dual Downconverter	50 - 300	9	10	27	LP6	EAR99	HMC381LP6E
1.7 - 2.2	High IP3, Dual Downconverter	0.06 - 0.4	6	25	25	LP6C	EAR99	HMC682LP6CE
1.8 - 2.7	High IP3 Downconverter with RF Amplifier	0.05 - 0.65	33	45	11	LP4	EAR99	HMC623LP4E

0 to +7 dBm LO Double & Single Balanced Mixers

0.6 - 1.3	Low LO, DBL-BAL	DC - 0.4	-8	35	15	MS8	EAR99	HMC423MS8E
0.7 - 1.2	0 LO, DBL-BAL	0.25 - 0.45	10	36	23	LP4	EAR99	HMC665LP4E
1.2 - 2.6	Low LO, DBL-BAL	DC - 1	-8	30	15	MS8	EAR99	HMC422MS8E
1.8 - 3.9	+3 LO, DBL-BAL	0.2 - 0.55	9	33	23	LP4	EAR99	HMC622LP4E
3 - 3.8	Low LO, SGL-BAL	DC - 1	-8.5	15	10	SOT26	EAR99	HMC333E
4 - 7	0 LO, DBL-BAL	DC - 2.5	-7	32	15	MS8G	EAR99	HMC488MS8GE
4.5 - 6.0	+7 LO, DBL-BAL	DC - 1.6	-7	30	18	MS8	EAR99	HMC218MS8E

+10 dBm LO Double & Single Balanced Mixers

0.7 - 2.0	+10 LO, DBL-BAL	DC - 0.3	-9	45	17	S8	EAR99	HMC207S8E
0.7 - 2.0	+10 LO, DBL-BAL	DC - 0.5	-9	24	17	MS8	EAR99	HMC208MS8E
1.5 - 4.5	+10 LO, DBL-BAL	DC - 1.5	-8.5	40	19	MS8	EAR99	HMC213AMS8E
1.7 - 3.0	+10 LO, SGL-BAL	DC - 0.8	-9	30	21	MS8	EAR99	HMC272MS8E
1.7 - 3.5	+10 LO, SGL-BAL	DC - 0.9	-9	30	21	SOT26	EAR99	HMC285E
4.5 - 8.0	+10 LO, DBL-BAL	DC - 2	-8.2	35	16	C8	EAR99	HMC168C8
5 - 12	+10 LO, DBL-BAL	DC - 4	-7.5	25	17	MS8	EAR99	HMC220MS8E

SMT & Chip (Die) Products

MIXERS

RF Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	LO / RF Isolation (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
7 - 10	+10 LO, DBL-BAL	DC - 2	-9	32	16	C8	EAR99	HMC171C8
+13 to +14 dBm LO Double & Single Balanced Mixers								
0.7 - 1.2	+13 LO, SGL-BAL	DC - 0.3	-9	26	21	MS8	EAR99	HMC277MS8E
1.7 - 4.5	+13 LO, DBL-BAL	DC - 1	-8	30	20	MS8	EAR99	HMC175MS8E
1.7 - 4.5	+13 LO, Dual Channel	DC - 1.5	-8	-	23	LP5	EAR99	HMC340ALP5E
2.5 - 4.0	+13 LO, DBL-BAL	DC - 2	-9	45	18	C8	EAR99	HMC170C8
4.5 - 9.0	+13 LO, DBL-BAL	DC - 2.5	-8.5	25	21	MS8	EAR99	HMC219AMS8E
6 - 26	+13 LO, DBL-BAL	DC - 10	-9	32	20	Chip	EAR99	HMC773
6 - 26	+13 LO, DBL-BAL	DC - 8	-9	38	22	LC3B	EAR99	HMC773LC3B
7 - 14	+13 LO, DBL-BAL	DC - 5	-7	48	22	Chip	EAR99	HMC553
7 - 14	+13 LO, DBL-BAL	DC - 5	-7	50	22	LC3B	EAR99	HMC553LC3B
7 - 34	+13 LO, DBL-BAL	DC - 8	-11	35	22	LC3B	EAR99	HMC774LC3B
7 - 43	+13 LO, DBL-BAL	DC - 10	-9	35	22	Chip	EAR99	HMC774
9 - 15	+13 LO, DBL-BAL	DC - 2.5	-7.5	40 - 50	17	MS8G	EAR99	HMC412AMS8GE
10 - 15	+13 LO, SGL-BAL	DC - 3	-9	27	16	MS8G	EAR99	HMC411MS8GE
11 - 20	+13 LO, DBL-BAL	DC - 6	-7	46	18	Chip	EAR99	HMC554
11 - 20	+13 LO, DBL-BAL	DC - 6	-7	46	18	LC3B	EAR99	HMC554LC3B
14 - 26	+13 LO, DBL-BAL	DC - 8	-7.5	39	20	Chip	EAR99	HMC260
14 - 26	+13 LO, DBL-BAL	DC - 8	-7.5	38	20	LC3B	EAR99	HMC260LC3B
16 - 30	+13 LO, DBL-BAL	DC - 8	-8	40	21	LC3B	EAR99	HMC292LC3B
17 - 31	+13 LO, DBL-BAL	DC - 6	-8	32	19	LM3C	EAR99	HMC292LM3C
18 - 32	+13 LO, DBL-BAL	DC - 8	-7.5	38	19	Chip	EAR99	HMC292
24 - 32	+13 LO, DBL-BAL	DC - 8	-10	38	19	LC3B	EAR99	HMC329LC3B
24 - 40	+13 LO, DBL-BAL	DC - 18	-8	35	21	Chip	EAR99	HMC560
24 - 40	+13 LO, DBL-BAL	DC - 17	-10	35	21	LM3	EAR99	HMC560LM3
25 - 40	+13 LO, DBL-BAL	DC - 8	-9.5	42	19	Chip	EAR99	HMC329
26 - 40	+13 LO, DBL-BAL	DC - 8	-8	37	19	LM3	EAR99	HMC329LM3
54 - 64	+13 LO, DBL-BAL	DC - 5	-8	30	13	Chip	5A991.h	HMC-MDB169
70 - 90	+14 LO, DBL-BAL	DC - 18	-12	-	-	Chip	5A991.h	HMC-MDB277
+15 to +20 dBm LO Double & Single Balanced Mixers								
1.8 - 5.0	+15 LO, DBL-BAL	DC - 3	-7	42	18	Chip	EAR99	HMC128
1.8 - 5.0	+15 LO, DBL-BAL	DC - 2	-10	40	18	G8 Hermetic	EAR99	HMC128G8
2.5 - 7	+15 LO, DBL-BAL	DC - 3	-7	48	22	Chip	EAR99	HMC557
2.5 - 7	+15 LO, DBL-BAL	DC - 3	-7	48	22	LC4	EAR99	HMC557LC4
4 - 8	+15 LO, DBL-BAL	DC - 3	-7	40	17	Chip	EAR99	HMC129
4 - 8	+15 LO, DBL-BAL	DC - 3	-8	30	18	G8 Hermetic	EAR99	HMC129G8
4 - 8	+15 LO, DBL-BAL	DC - 3	-7	40	17	LC4	EAR99	HMC129LC4
5.5 - 14	+15 LO, DBL-BAL	DC - 6	-7	45	24	Chip	EAR99	HMC558
5.5 - 14	+15 LO, DBL-BAL	DC - 6	-7	45	24	LC3B	EAR99	HMC558LC3B
6 - 11	+15 LO, DBL-BAL	DC - 2	-7	40	17	Chip	EAR99	HMC130
6 - 15	+15 LO, DBL-BAL	DC - 2	-8.5	35	20	C8	EAR99	HMC141C8 / 142C8
6 - 18	+15 LO, DBL-BAL	DC - 6	-10	25	21	Chip	EAR99	HMC141 / 142
7 - 14	+15 LO, DBL-BAL	DC - 2	-10	35	20	LH5 Hermetic	EAR99	HMC141LH5
14 - 23	+15 LO, DBL-BAL	DC - 2	-10.5	38	18	Chip	EAR99	HMC203
3 - 10	+17 LO, DBL-BAL	DC - 4	-9	55	23	LC3B	EAR99	HMC787LC3B
5 - 20	+20 LO, DBL-BAL	DC - 3	-10	30	25	Chip	EAR99	HMC143 / 144
6 - 20	+20 LO, DBL-BAL	DC - 3	-10	35	23	LC4	EAR99	HMC144LC4
6 - 20	+20 LO, DBL-BAL	DC - 3	-10	35	24	LH5 Hermetic	EAR99	HMC144LH5
Sub-Harmonic Mixers								
14 - 20	Sub-Harmonic	DC - 3	-10	40	7	LM3	EAR99	HMC258LM3
14 - 21	Sub-Harmonic	DC - 3	-10	40	7	Chip	EAR99	HMC258
14.5 - 19.5	Sub-Harmonic	DC - 3.5	-10	45	5	LC3B	EAR99	HMC258LC3B
17 - 25	Sub-Harmonic	DC - 3	-9	27	10	Chip	EAR99	HMC337
17.7 - 23.6	Sub-Harmonic, Upconverter	DC - 3.5	15	40	13	LC5	EAR99	HMC711LC5
20 - 30	Sub-Harmonic	DC - 4	-9	30	10	LM3	EAR99	HMC264LM3
20 - 31	Sub-Harmonic, Downconverter	0.7 - 3.0	3	28	8	LM3	EAR99	HMC265LM3
20 - 32	Sub-Harmonic	DC - 6	-10	40	13	Chip	EAR99	HMC264
20 - 32	Sub-Harmonic, Downconverter	0.7 - 3.0	3	30	10	Chip	EAR99	HMC265
20 - 40	Sub-Harmonic	1 - 3	-12	24	13	Chip	EAR99	HMC266
21 - 31	Sub-Harmonic	DC - 6	-9	40	13	LC3B	EAR99	HMC264LC3B
24 - 34	Sub-Harmonic	DC - 3	-11	33	13	LC3B	5A991.b	HMC338LC3B
24 - 34	Sub-Harmonic	DC - 4	-10	30	22	LC4	EAR99	HMC798LC4
26 - 33	Sub-Harmonic	DC - 2.5	-9	33	11	Chip	5A991.b	HMC338
33 - 42	Sub-Harmonic	DC - 3	-10	37	10	Chip	EAR99	HMC339

DEMODULATORS - I/Q Demodulator

Input Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Noise Figure (dB)	IIP3 / IIP2 (dBm)	Package	ECCN Code	Part Number
0.1 - 4.0	I/Q Demodulator	DC - 0.6	-3.5	15	+25 / +60	LP4	EAR99	HMC597LP4E

MODULATORS - Bi-Phase Modulator

Input Frequency (GHz)	Function	Loss (dB)	Amp / Phase Balance (dB/Deg)	Carrier Suppression (dBc)	Bias Control (mA)	Package	ECCN Code	Part Number
1.8 - 5.2	Bi-Phase	8	0.2 / 2.5	30	+/- 5	Chip	EAR99	HMC135
4 - 8	Bi-Phase	8	0.1 / 4.0	30	+/- 5	Chip	EAR99	HMC136
6 - 11	Bi-Phase	9	0.25 / 10.0	20	+/- 5	Chip	EAR99	HMC137

MODULATORS - Direct Quadrature Modulator

Input Freq. (GHz)	Function	OIP3 (dBm) / Carrier Suppression (dBc)	Modulation Bandwidth (MHz)	Output Noise Floor (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
0.02 - 2.7	Direct Quadrature	23 / 42	DC - 700	-162	+5V @ 160mA	LP4	EAR99	HMC696LP4E
0.05 - 2.7	Direct Quadrature with VGA	25 / 50	DC - 440	-159	+5V @ 120mA	LP5	3A001.a.11.b	HMC795LP5E
0.1 - 4	Direct Quadrature	23 / 42	DC - 700	-159	+5V @ 170mA	LP4	EAR99	HMC497LP4E
0.25 - 3.8	Direct Quadrature	14 / 38	DC - 250	-158	+3.3V @ 108mA	LP3	EAR99	HMC495LP3E
0.45 - 4.0	Direct Quadrature	22 / 43	DC - 700	-165	+5V @ 168mA	LP4	EAR99	HMC697LP4E
4 - 7	Direct Quadrature	17 / 34	DC - 250	-157	+3V @ 93mA	LP3	EAR99	HMC496LP3E

MODULATORS - Vector Modulators

Frequency (GHz)	Function	Gain Range (dB)	Continuous Phase Control (deg)	IP3 / Noise Floor (Ratio)	IIP3 @ Max. Gain (dBm)	Package	ECCN Code	Part Number
0.7 - 1.0	Vector	-50 to -10	360	186.5	34	LP3	EAR99	HMC630LP3E
1.8 - 2.7	Vector	-50 to -10	360	186	35	LP3	EAR99	HMC631LP3E
1.8 - 2.2	Vector	-50 to -10	360	185	33	LP3	EAR99	HMC500LP3E

PASSIVES - Fixed Attenuators

Frequency (GHz)	Function	Attenuation Accuracy (dB)	Nominal Attenuation (dB)	Maximum Input Power (dBm)	Chip Size (Mils)	Package	ECCN Code	Part Number
DC - 50	Thru Line	±0.2	0.15	-	17 x 18	Chip	EAR99	HMC650
DC - 50	Thru Line	±0.3	0.15	-	23 x 18	Chip	EAR99	HMC651
DC - 50	Passive	±0.2	2	27	17 x 18	Chip	EAR99	HMC652
DC - 25	Passive	±0.5	2	27	-	LP2	EAR99	HMC652LP2E
DC - 50	Passive	±0.2	3	26	17 x 18	Chip	EAR99	HMC653
DC - 25	Passive	±0.5	3	26	-	LP2	EAR99	HMC653LP2E
DC - 50	Passive	±0.2	4	25	17 x 18	Chip	EAR99	HMC654
DC - 25	Passive	±0.5	4	25	-	LP2	EAR99	HMC654LP2E
DC - 50	Passive	±0.2	6	26	17 x 18	Chip	EAR99	HMC655
DC - 25	Passive	±0.5	6	26	-	LP2	EAR99	HMC655LP2E
DC - 50	Passive	±0.1	10	25	17 x 18	Chip	EAR99	HMC656
DC - 25	Passive	±1.5	10	25	N/A	LP2	EAR99	HMC656LP2E
DC - 50	Passive	±0.4	15	25	17 x 18	Chip	EAR99	HMC657
DC - 25	Passive	±2	15	25	N/A	LP2	EAR99	HMC657LP2E
DC - 50	Passive	±0.5	20	25	23 x 18	Chip	EAR99	HMC658
DC - 25	Passive	±2	20	25	N/A	LP2	EAR99	HMC658LP2E

PHASE SHIFTERS - Analog

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	2nd Harmonic Pin = -10 dBm (dBc)	Control Voltage Range (Vdc)	Package	ECCN Code	Part Number
2 - 4	Analog	3.5	480° @ 2 GHz 450° @ 4 GHz	-40	0V to +13V	LP5	EAR99	HMC928LP5E
NEW! 2 - 20	Analog	4	270° @ 2 GHz 180° @ 20 GHz	-45	0.5 to +11V	LP5	EAR99	HMC935LP5E
4 - 8	Analog	4	450° @ 4 GHz 430° @ 8 GHz	-40	0V to +13V	LP4	EAR99	HMC929LP4E
5 - 18	Analog	4	500° @ 5 GHz 100° @ 18 GHz	-80	0V to +10V	Chip	EAR99	HMC247
6 - 15	Analog	7	750° @ 6 GHz 500° @ 15 GHz	-40	0V to +5V	LP4	EAR99	HMC538LP4E
8 - 12	Analog	3.5	425° @ 8 GHz 405° @ 12 GHz	-35	0 to +13V	LP4	EAR99	HMC931LP4E
12 - 18	Analog	4	405° @ 12 GHz 385° @ 18 GHz	-40	0 to +13V	LP4	EAR99	HMC932LP4E
18 - 24	Analog	4.5	495° @ 18 GHz 460° @ 24 GHz	-37	0 to +13V	LP4	EAR99	HMC933LP4E

SMT & Chip (Die) Products

PHASE SHIFTERS - Digital

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
8 - 12	-Bit Digital	5	22.5 to 360	40	0 / -3V	Chip	EAR99	HMC543
8 - 12	4-Bit Digital	6.5	22.5 to 360	37	0 / -3V	LC4B	EAR99	HMC543LC4B
15 - 18.5	5-Bit Digital	7	11.25 to 360	40	0 / -3	Chip	EAR99	HMC644
15 - 18.5	5-Bit Digital	7	11.25 to 360	40	0 / -3	LC5	EAR99	HMC644LC5
1.2 - 1.4	6-Bit Digital	4	5.625 to 360	45	0 / +5V	LP6	EAR99	HMC936LP6E
2.5 - 3.1	6-Bit Digital	4	5.625 to 360	54	0 / +5	Chip	EAR99	HMC647
2.5 - 3.1	6-Bit Digital	4	5.625 to 360	54	0 / +5	LP6	EAR99	HMC647LP6E
2.9 - 3.9	6-Bit Digital	4	5.625 to 360	45	0 / +5	Chip	EAR99	HMC648
2.9 - 3.9	6-Bit Digital	5	5.625 to 360	45	0 / +5	LP6	EAR99	HMC648LP6E
3 - 6	6-Bit Digital	6.5	5.625 to 360	44	0 / +5	Chip	EAR99	HMC649
3 - 6	6-Bit Digital	8	5.625 to 360	44	0 / +5	LP6	EAR99	HMC649LP6E
9 - 12	6-Bit Digital	6.5	5.625 to 360	38	0 / -3	Chip	EAR99	HMC643
9 - 12	6-Bit Digital	7	5.625 to 360	38	0 / -3	LC5	EAR99	HMC643LC5
9 - 12.5	6-Bit Digital	6.5	5.625 to 360	41	0 / +5	Chip	EAR99	HMC642
9 - 12.5	6-Bit Digital	7	5.625 to 360	41	0 / +5	LC5	EAR99	HMC642LC5

POWER DETECTORS - Log Detector/Controllers & RMS Detectors

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV/dB)	RF Threshold Level (dBm)	Bias Supply	Package	ECCN Code	Part Number
50 Hz - 3.0	Log Detector / Controller	74 ±3	19	-66	+3.3V @ 29mA	LP4	EAR99	HMC612LP4E
0.001 - 8.0	Log Detector / Controller	70 ±3	-25	-61	+5V @ 113mA	LP4	EAR99	HMC602LP4E
0.001 - 10.0	Log Detector / Controller	73 ±3	-25	-65	+5V @ 103mA	Chip	EAR99	HMC611
0.001 - 10.0	Log Detector / Controller	70 ±3	-25	-65	+5V @ 106mA	LP4	EAR99	HMC611LP4E
0.01 - 4.0	Log Detector / Controller	70 ±3	19	-68	+3.3V @ 30mA	LP4	EAR99	HMC601LP4E
0.05 - 4.0	Log Detector / Controller	70 ±3	19	-69	+3.3V @ 29mA	LP4	EAR99	HMC600LP4E
0.05 - 8.0	Log Detector / Controller	54 ±1	17.5	-55	+5V @ 17mA	LP3	EAR99	HMC713LP3E
0.1 - 2.7	Log Detector / Controller	54 ±1	17.5	-52	+5V @ 17mA	MS8	EAR99	HMC713MS8E
8 - 30	Log Detector	54 ±3	13.3	-55	+3.3V @ 88mA	LP3	EAR99	HMC662LP3E
1 - 23	mmW Power Detector	56 ±3	14.2	-52	+3.3V @ 91mA	LP3	3A001.b.2.c	HMC948LP3E
DC - 3.9	RMS Power Detector	60 ±1	37	-69	+5V @ 50mA	LP4	EAR99	HMC1010LP4E
DC - 3.9	RMS, Single-Ended	72 ±1	35	-68	+5V @ 55 mA	LP4	EAR99	HMC1020LP4E
DC - 3.9	RMS, Single-Ended with Envelope Tracker	70 ±1	35	-68	+5V @ 75 mA	LP4	EAR99	HMC1021LP4E
NEW! DC - 3.9	Dual RMS, Single-Ended	70 ±1	38.5	-66	+5V @ 143mA	LP5	EAR99	HMC1030LP5E
DC - 5.8	RMS Power Detector	40 ±1	37	-69	+5V @ 42mA	LP4	EAR99	HMC909LP4E

SDLVAs - Successive Detection Log Video Amplifiers

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV/dB)	RF Threshold Level (dBm)	Bias Supply	Package	ECCN Code	Part Number
0.1 - 20	SDLVA	59	14	-54	+3.3V @ 83mA	LC4B	EAR99	HMC613LC4B
0.6 - 20	SDLVA	59	14	-54	+3.3V @ 80mA	Chip	EAR99	HMC913
0.6 - 20	SDLVA	59	14	-54	+3.3V @ 80mA	LC4B	EAR99	HMC913LC4B
1 - 20	SDLVA with Limited RF Output	55	15	-53	+3.3V @ 153mA	LC4B	EAR99	HMC813LC4B
1 - 26	SDLVA with Limited RF Output	55	14.5	-53	+3.3V @ 150mA	Chip	EAR99	HMC813

SWITCHES

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
SPST & SPDT Switches								
DC - 6	SPST, Failsafe	0.7	25	27	0 / +2.2 to +5V	SOT26	EAR99	HMC550E
DC - 6	SPST, High Isolation	1.4	52	27	0 / -5V	G7 Hermetic	EAR99	HMC231G7
DC - 3	SPDT, Reflective	0.4	27	30	0 / +3V	MS8	EAR99	HMC190AMS8E
DC - 3	SPDT, High Isolation	0.7	50	23	0 / +5V	MS8	EAR99	HMC194MS8E
DC - 3	SPDT, Reflective	0.4	28	30	0 / +3V	SOT26	EAR99	HMC197AE
DC - 3	SPDT, Reflective	0.4	28	30	0 / +3V	SOT26	EAR99	HMC221AE
DC - 3	SPDT, Reflective	0.3	31	34	0 / +3 to +8V	SOT26	EAR99	HMC545E
DC - 3.5	SPDT, High Isolation	0.5	45	25	0 / +5V	MS8G	EAR99	HMC284MS8GE
DC - 4	SPDT, High Isolation	0.9	65	31	0 / +5V	LP4C	EAR99	HMC349LP4CE
DC - 4	SPDT, High Isolation	0.9	57	31	0 / +5V	MS8G	EAR99	HMC349MS8GE
DC - 4	SPDT, High Isolation	1.1	47	31	0 / +5V	MS8G	EAR99	HMC435MS8GE
DC - 4	SPDT, Differential	0.8	45	35	0 / +3V to	LP4	EAR99	HMC922LP4E
DC - 6	SPDT, High Isolation	1.4	50	26	0 / -5V	G7 Hermetic	EAR99	HMC232G7
DC - 6	SPDT, High Isolation	1.4	43	26	0 / -5V	G8 Hermetic	EAR99	HMC232G8
DC - 6	SPDT, High Isolation	1.4	43	26	0 / -5V	G8 Hermetic	EAR99	HMC233G8
DC - 6	SPDT, High Isolation	1.6	42	25	0 / +5V	MS8G	EAR99	HMC336MS8GE
DC - 6	SPDT, High Isolation	1.4	46	27	0 / -5V	G7 Hermetic	EAR99	HMC607G7
DC - 6	SPDT, High Isolation	0.8	60	35	0 / +3 to +5V	LP4C	EAR99	HMC849LP4CE

SWITCHES

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
DC - 8	SPDT, High Isolation	1.4	50	26	0 / -5V	C8	EAR99	HMC232C8
DC - 8	SPDT, High Isolation	1.5	45	26	0 / -5V	C8	EAR99	HMC234C8
DC - 8	SPDT, High Isolation	1.2	48	23	0 / -5V	MS8G	EAR99	HMC270MS8GE
DC - 8	SPDT, High Isolation	2.0	44	23	0 / -5V	C8	EAR99	HMC347C8
DC - 8	SPDT, High Isolation	2.2	35	23	0 / -5V	G8 Hermetic	EAR99	HMC347G8
DC - 12	SPDT, High Isolation	1.5	55	27	0 / -5V	LP4	EAR99	HMC232LP4E
DC - 14	SPDT, High Isolation	1.7	44	23	0 / -5V	LP3	EAR99	HMC347LP3E
DC - 15	SPDT, High Isolation	1.4	50	26	0 / -5V	Chip	EAR99	HMC232
DC - 15	SPDT, High Isolation	1.7	60	26	0 / -5V	Chip	EAR99	HMC607
DC - 20	SPDT, High Isolation	1.7	45	23	0 / -5V	Chip	EAR99	HMC347
DC - 20	SPDT, High Isolation	1.8	47	23	0 / -5V	LP3	EAR99	HMC547LP3E
55 - 86	SPDT, PIN MMIC	2	30	-	-5 / +5	Chip	5A991.h	HMC-SDD112
0.1 - 2.1	SPDT, 40W, Failsafe	0.4	22	46	0 / +3V to +8V	LP2	EAR99	HMC646LP2E
0.2 - 2.2	SPDT, 10W, Failsafe	0.4	40	> 40	0 / +3 to +8V	MS8G	EAR99	HMC546MS8GE
0.2 - 2.7	SPDT, 10W, Failsafe	0.4	35	43	0 / +3 to +8V	LP2	EAR99	HMC546LP2E
0.824 - 0.894	SPDT, 10W, T/R	0.6	22	> 40	0 / +5V	SOT26	EAR99	HMC446E
DC - 2.5	SPDT, CATV	0.6	58	28	0 / +5V	LP3	EAR99	HMC348LP3E
DC - 3	SPDT T/R	0.5	25	39	TTL/CMOS	MS8	EAR99	HMC174MS8E
DC - 3	SPDT, 5W, T/R	0.3	30	39	0 / +3 to +10V	MS8	EAR99	HMC574MS8E
DC - 3	SPDT, 3W, T/R	0.3	30	37	0 / +3 to +10V	SOT26	EAR99	HMC595E
DC - 4	SPDT T/R	0.25	23	39	0 / +3 to +5V	SOT26	EAR99	HMC544E
DC - 4	SPDT, 10W, T/R	0.4	30	40	0 / +3 to +8V	MS8G	EAR99	HMC784MS8GE
DC - 6	SPDT T/R	0.5	27	37	0 / +3 to +5V	MS8G	EAR99	HMC536MS8GE
DC - 6	SPDT T/R	0.6	27	37	0 / +3 to +5V	LP2	EAR99	HMC536LP2E
5 - 6	SPDT T/R	1.2	31	33	TTL/CMOS	MS8	EAR99	HMC224MS8E
Multi-Throw Switches								
DC - 3.5	SP3T	0.5	44	26	TTL/CMOS	QS16	EAR99	HMC245QS16E
DC - 2	SP4T	0.8	32	24	0 / -5V	S14	EAR99	HMC182S14E
DC - 3.5	SP4T	0.5	45	25	TTL/CMOS	QS16	EAR99	HMC241QS16E
DC - 4	SP4T	0.6	47	26	TTL/CMOS	LP3	EAR99	HMC241LP3E
DC - 4	SP4T	0.7	40	25	TTL/CMOS	G16 Hermetic	EAR99	HMC244G16
DC - 8	SP4T	1.8	42	21	0 / -5V	Chip	EAR99	HMC344
DC - 8	SP4T	2.0	45	26	0 / -5V	LC3	EAR99	HMC344LC3
DC - 8	SP4T	1.8	40	21	0 / -5V	LP3	EAR99	HMC344LP3E
DC - 8	SP4T	2.2	32	21	0 / 5V	LP3	EAR99	HMC345LP3E
DC - 12	SP4T	1.8	42	27	0 / -5V	LH5 Hermetic	EAR99	HMC344LH5
DC - 18	SP4T	2.1	42	24	0 / -5V	Chip	EAR99	HMC641
DC - 20	SP4T	2.1	42	23	0 / -5V	LC4	EAR99	HMC641LC4
DC - 20	SP4T	2.3	45	22	0 / -5V	LP4	EAR99	HMC641LP4E
23 - 30	SP4T	2.8	35	25	0 / -3V	LC4	EAR99	HMC944LC4
DC - 3	SP6T	0.8	41	24	TTL/CMOS	QS24	EAR99	HMC252QS24E
DC - 2	SP8T	1.3	30	20	0 / -5V	QS24	EAR99	HMC183QS24E
DC - 2.5	SP8T	1.1	36	23	TTL/CMOS	QS24	EAR99	HMC253QS24E
DC - 3.5	SP8T	1.2	36	24	TTL/CMOS	LC4	EAR99	HMC253LC4
DC - 8	SP8T	2.3	40	23	0 / 5V	LP4	EAR99	HMC321LP4E
DC - 8	SP8T	2.5	25	23	0 / -5V	LP4	EAR99	HMC322LP4E
DC - 10	SP8T	2	38	23	0 / -5V	Chip	EAR99	HMC322
Bypass, Diversity, Matrix & Transfer Switches								
DC - 2.5	Bypass DPDT	0.3	25	23	0 / +5V	MS8	EAR99	HMC199MS8E
5 - 6	DPDT, Diversity	1.2	20	30	0 / +5V	MS8G	EAR99	HMC393MS8GE
0.2 - 3.0	4x2 Matrix	6	44	26	0 / +5V	LP4	EAR99	HMC276LP4E
0.2 - 3.0	4x2 Matrix	6.5	43	22	0 / +3 to +5V	LP4	EAR99	HMC596LP4E
0.7 - 3.0	4x2 Matrix	5.8	33	26	0 / +5V	QS24	EAR99	HMC276QS24E
DC - 8	Transfer	1.2	42	26	0 / +5V	LP3	EAR99	HMC427LP3E

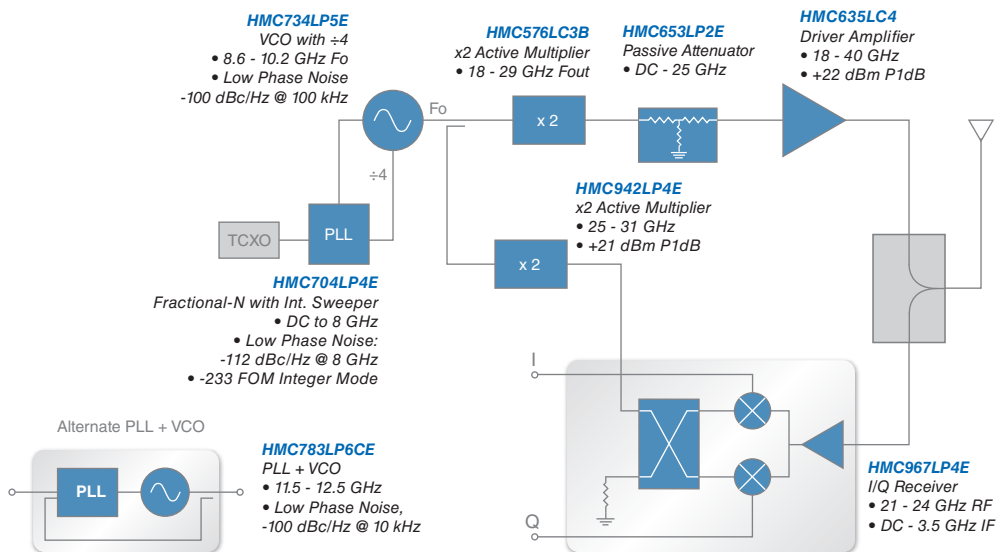
SMT & Chip (Die) Products

VARIABLE GAIN AMPLIFIERS

Frequency (GHz)	Function	Gain Control Range (dB)	NF * (dB)	OIP3 * (dBm)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
0.5 - 6.0	Analog	-35 to 15	7.5	28	21	+5V @ 90mA	LP5	EAR99	HMC972LP5E
2.3 - 2.5	Analog	-8 to 22	2.5	7	3	+3V @ 9mA	MS8	EAR99	HMC287MS8E
6 - 17	Analog	0 to 23	5	30	22	+5V @ 170mA	Chip	EAR99	HMC694
6 - 17	Analog	0 to 23	6	30	22	+5V @ 175mA	LP4	EAR99	HMC694LP4E
0.03 - 0.4	5-Bit digital, Differential Outputs	-4 to 19	5	40	25	+5V @ 240mA	LP4	EAR99	HMC680LP4E
0.05 - 0.8	5-Bit Digital	-8 to 15	5	35	18	+5V @ 65mA	LP4	EAR99	HMC628LP4E
0.07 - 4.0	6-Bit Digital, Serial & Parallel Control	-19.5 to 12	4	39	23	+5V @ 150mA	LP5	EAR99	HMC742LP5E
NEW! 0.5 - 4.0	6-Bit Digital, Serial & Parallel Control or Latched Parallel Control	-19 to 12.5	4	39	21.5	+5V @ 150mA	LP5	EAR99	HMC742HFLP5E
0.7 - 1.2	6-Bit Digital, Serial & Parallel Control	-2.5 to 29	0.8	38.5	21	+5V @ 236mA	LP5	EAR99	HMC707LP5E
0.7 - 2.7	6-Bit Digital	6.5 to 38	4.4	45	25	+5V @ 218mA	LP5	EAR99	HMC926LP5E
DC - 1	6-Bit Digital, Serial & Parallel Control	-11.5 to 20	4.3	36	20	+5V @ 90mA	LP5	EAR99	HMC627LP5E
DC - 1	6-Bit Digital, Parallel Control	8.5 to 40	2.8	36	20	+5V @ 176mA	LP5	EAR99	HMC626LP5E
DC - 1	6-Bit Digital, Serial Control	13.5 to 45	2.7	36	20	+5V @ 176mA	LP5	EAR99	HMC681LP5E
DC - 6	6-Bit Digital, Serial & Parallel Control	-13.5 to 18	6	33	19	+5V @ 88mA	LP5	EAR99	HMC625LP5E
NEW! 0.5 - 6.0	6-Bit Digital, Serial & Parallel Control	-13.5 to 18	6	33	19	+5V @ 88mA	LP5	EAR99	HMC625HFLP5E
1.7 - 2.2	6-Bit Digital, Serial & Parallel Control	-2.5 to 29	1.0	37.5	21.5	+5V @ 252mA	LP5	EAR99	HMC708LP5E
DC - 4	12-Bit Digital, Serial Control	-45 to 18	6	33	18	+5V @ 82mA	LP6C	EAR99	HMC743LP6CE

* Maximum Gain State

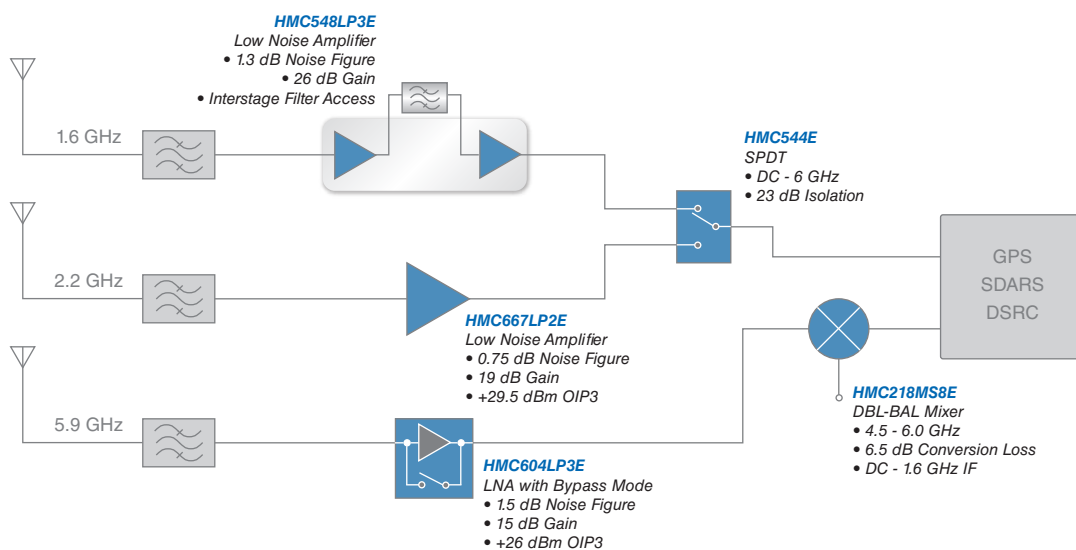
24 GHz FMCW AUTOMOTIVE SENSOR



Typical Automotive application is illustrated.

See the full product listing for alternatives to the HMC products shown in each functional block.

GPS, SDARS & DSRC RF FRONT-END FOR TELEMATICS



Typical Automotive application is illustrated.

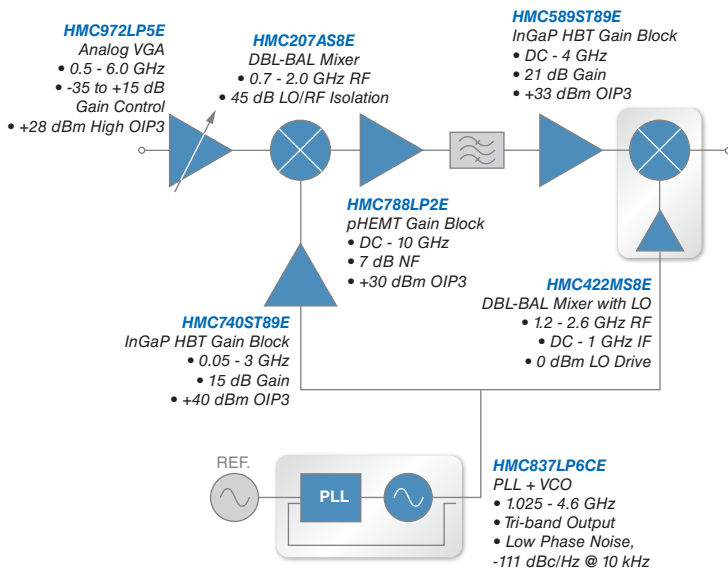
See the full product listing for alternatives to the select HMC products shown in each functional block.

MARKET & APPLICATION GUIDE

Broadband, DC - 11 GHz

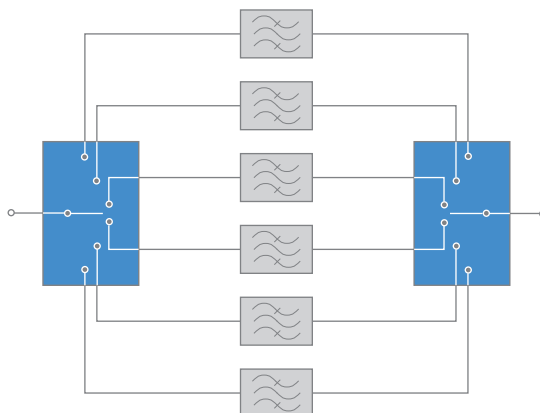
CABLE MODEM, CATV, DBS & VoIP SOLUTIONS, 5 - 2150 MHz

Cable Modem Termination System (CMTS)



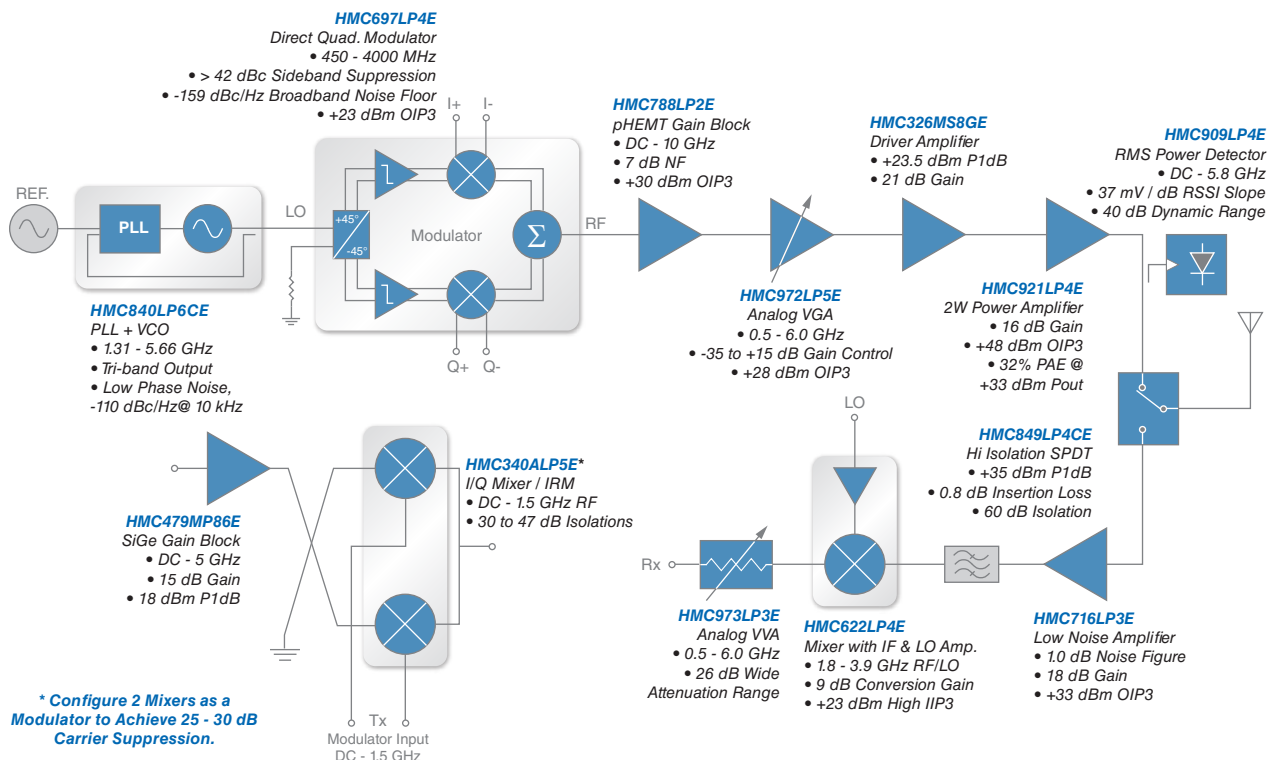
A Selection of SPNT Switches for CATV Filter & Signal Routing

Part Number	Frequency (GHz)	Function	1 GHz Loss / Isolation (dB)
HMC348LP3E	DC - 2.5	SPDT, 75 Ω	0.6 / 58
HMC349LP4CE	DC - 4	SPDT	0.9 / 65
HMC347LP3E	DC - 14	SPDT	1.7 / 44
HMC245QS16E	DC - 3.5	SP3T	0.5 / 44
HMC345LP3E	DC - 8	SP4T	2.2 / 32
HMC252QS24E	DC - 3	SP6T	2.0 / >45
HMC321LP4E	DC - 8	SP8T	2.0 / >45



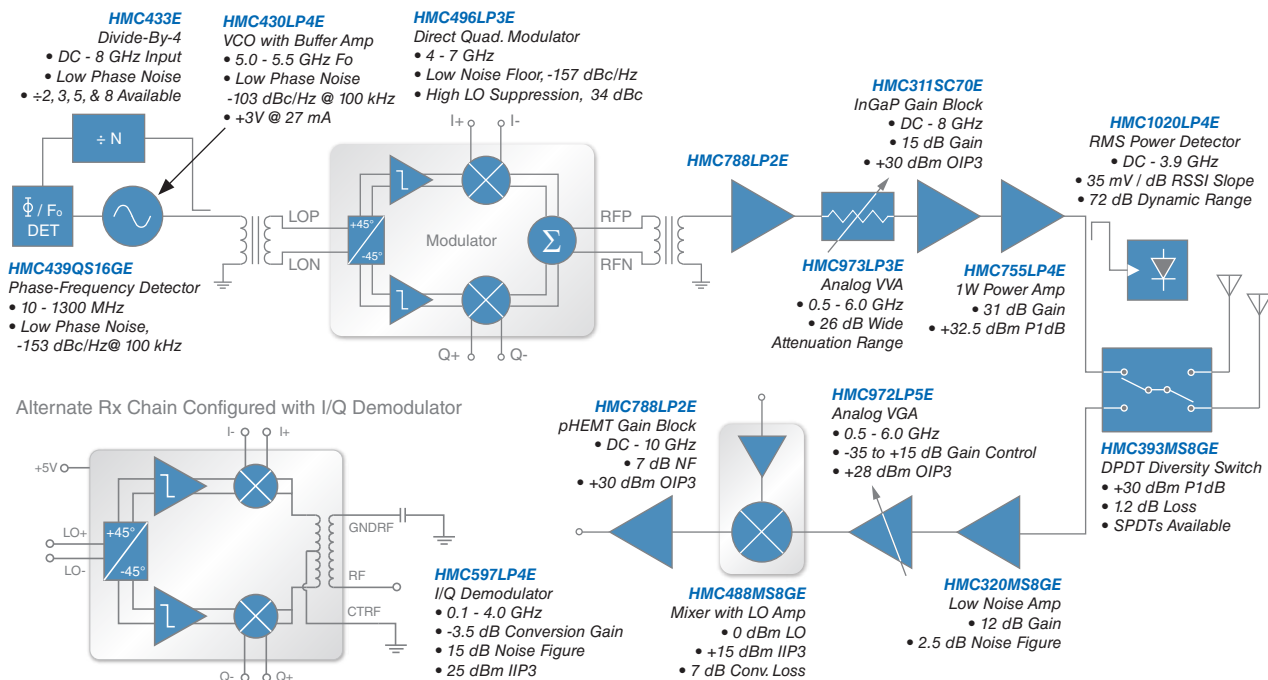
Typical Broadband applications are illustrated. See the full product listing for alternatives to the select HMC products shown in each functional block.

WiMAX & FIXED WIRELESS, 2 - 6 GHz



Typical WiMAX / FWA Transceiver is illustrated. See the full product listing for alternatives to the select HMC products shown in each functional block.

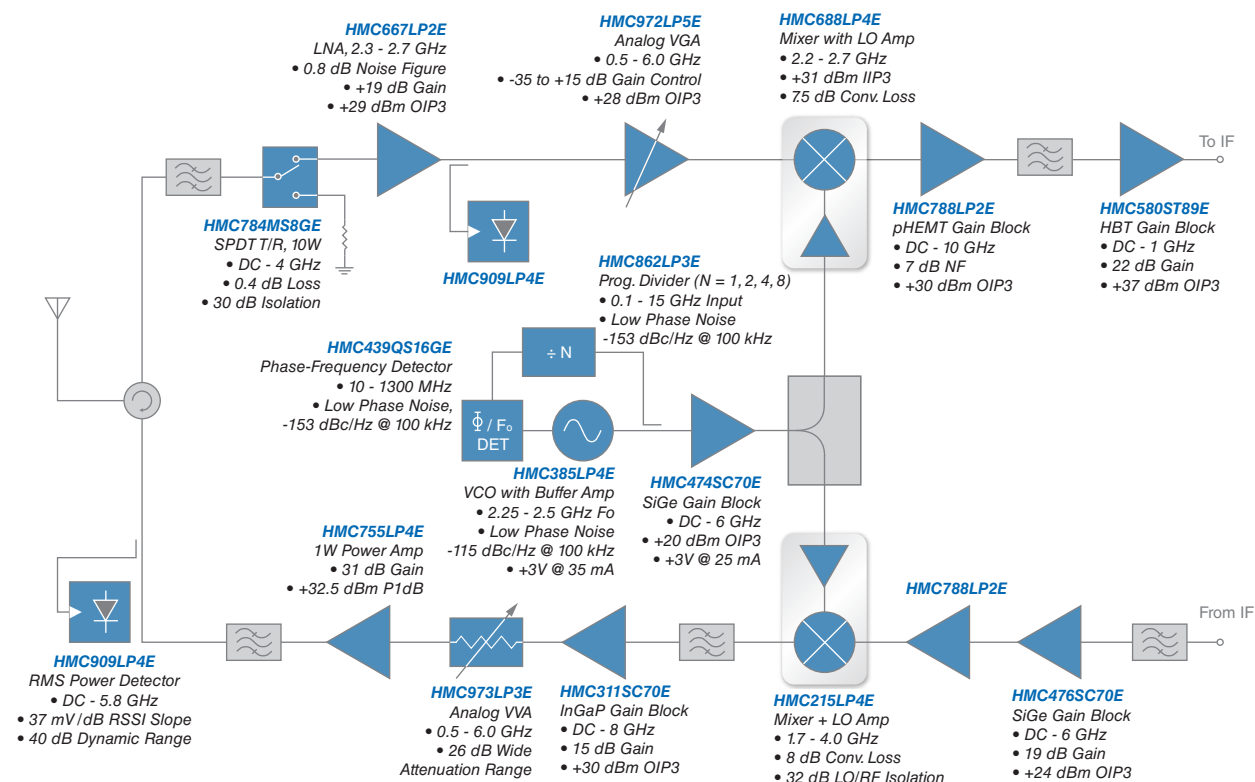
WIRELESS LAN, UWB, UNII & ISM SOLUTIONS, 2.4, 4.9, 5.4, 5.8 & 3 - 11 GHz



Typical 4.9 - 5.9 GHz Wi-Fi Access Point application is illustrated.

See the full product listing for alternatives to the select HMC products shown in each functional block.

WiBro "WIRELESS BROADBAND", 1.82 - 1.87, 2.3 - 2.5 & 3.48 - 3.52 GHz

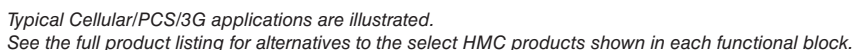


Typical WiBro application is illustrated. See the full product listing for alternatives to the select HMC products shown in each functional block.

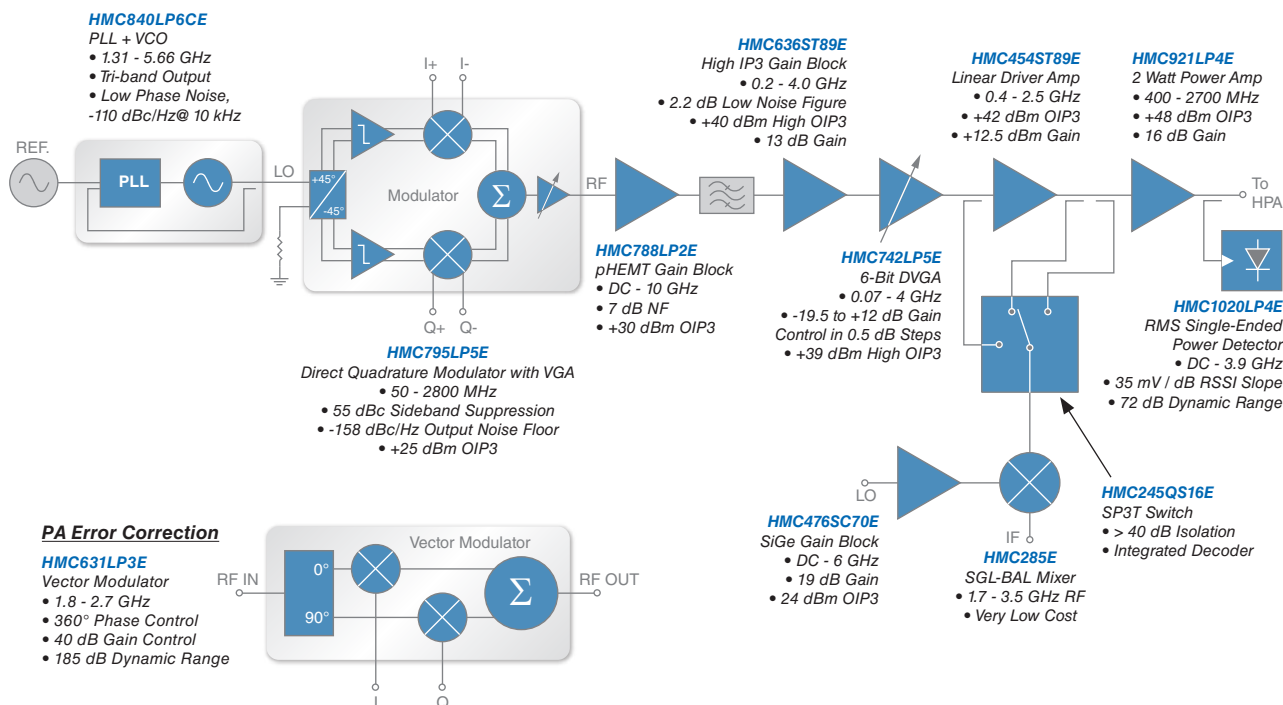
BTS RECEIVER SOLUTIONS FEATURING HIGH IP3 MIXER



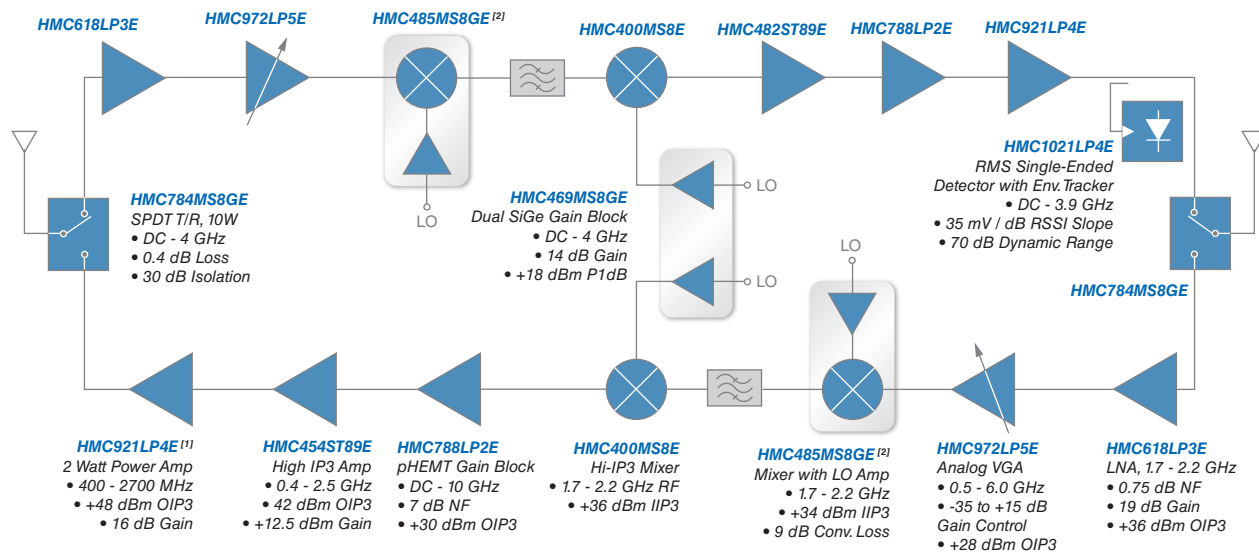
BTS RECEIVER SOLUTIONS FEATURING DUAL RFIC DOWNCONVERTER



BTS TRANSMITTER SOLUTIONS



CDMA / GSM / TD-SCDMA REPEATER SOLUTIONS



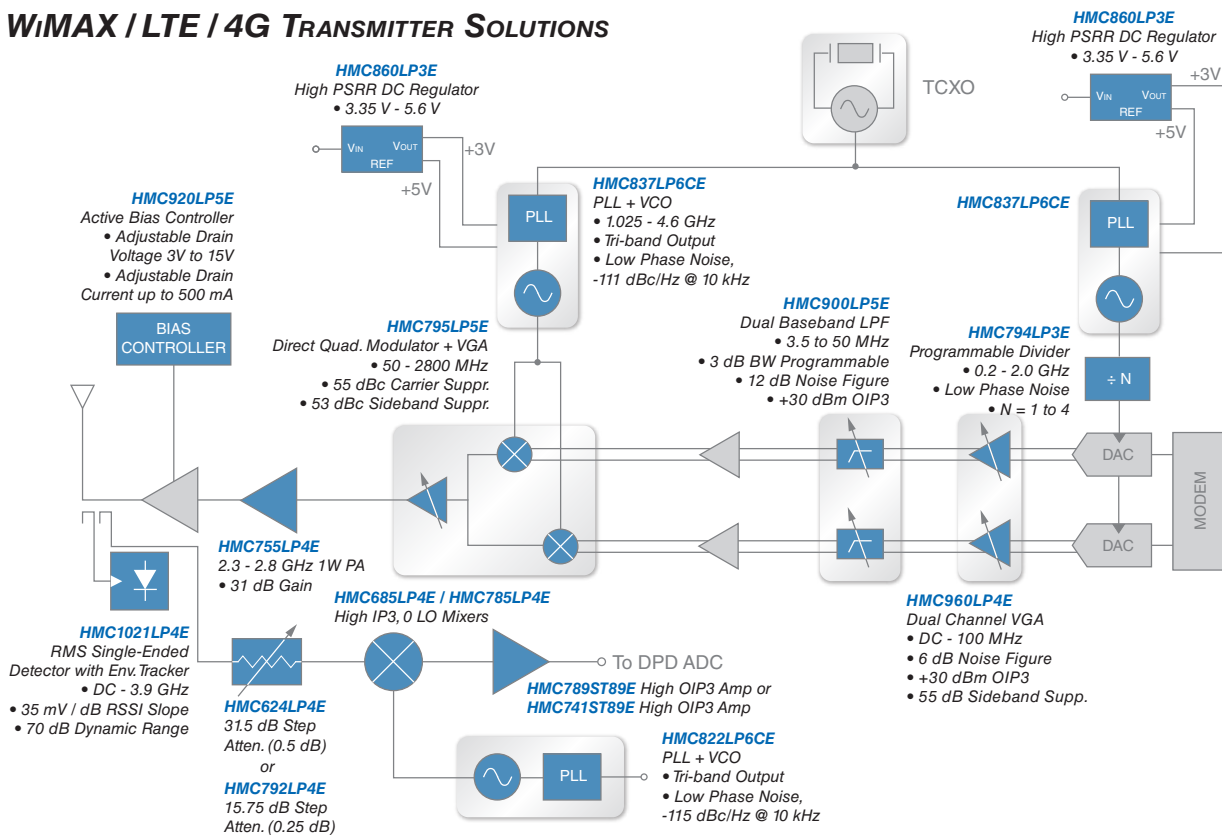
[1] High Gain Option:

[2] For 700 - 1000 MHz Systems Use:

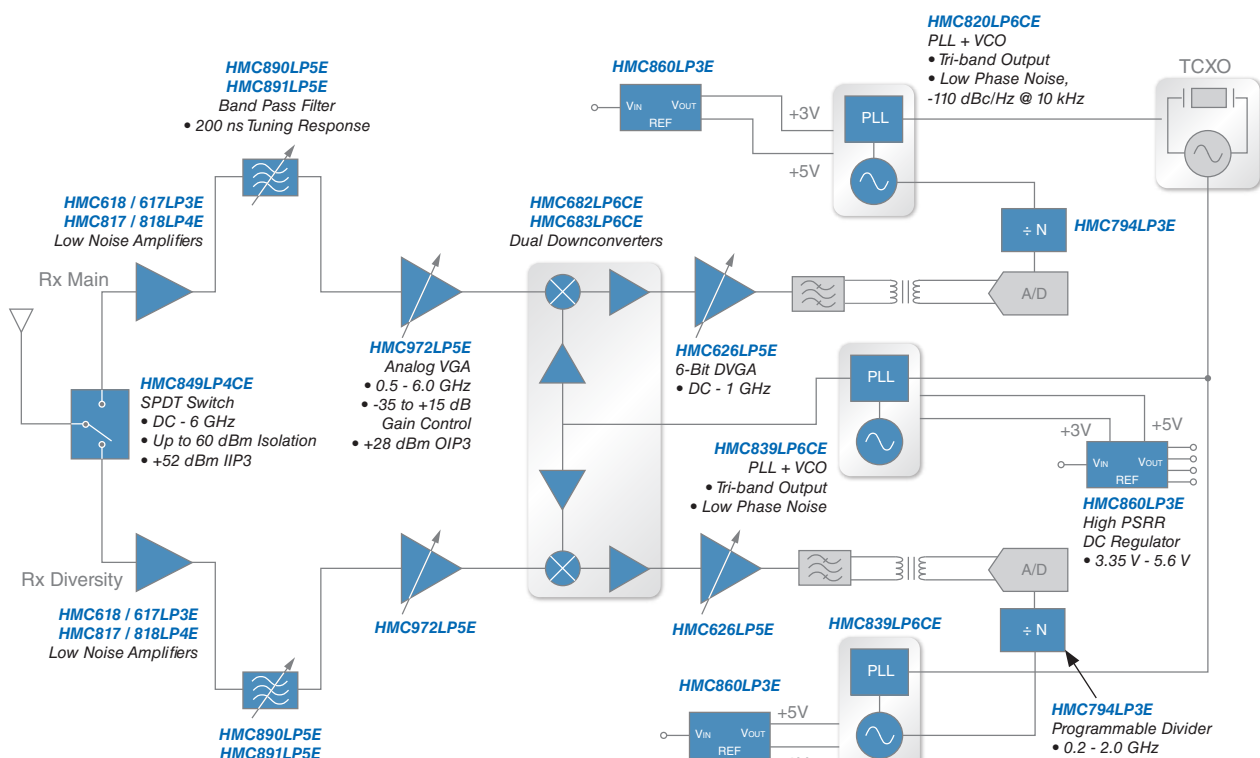
MARKET & APPLICATION GUIDE

Cellular Infrastructure, 380 - 2690 MHz

WiMAX / LTE / 4G TRANSMITTER SOLUTIONS



WiMAX / LTE / 4G RECEIVER SOLUTIONS FEATURING HETERODYNE DOWNCONVERSION

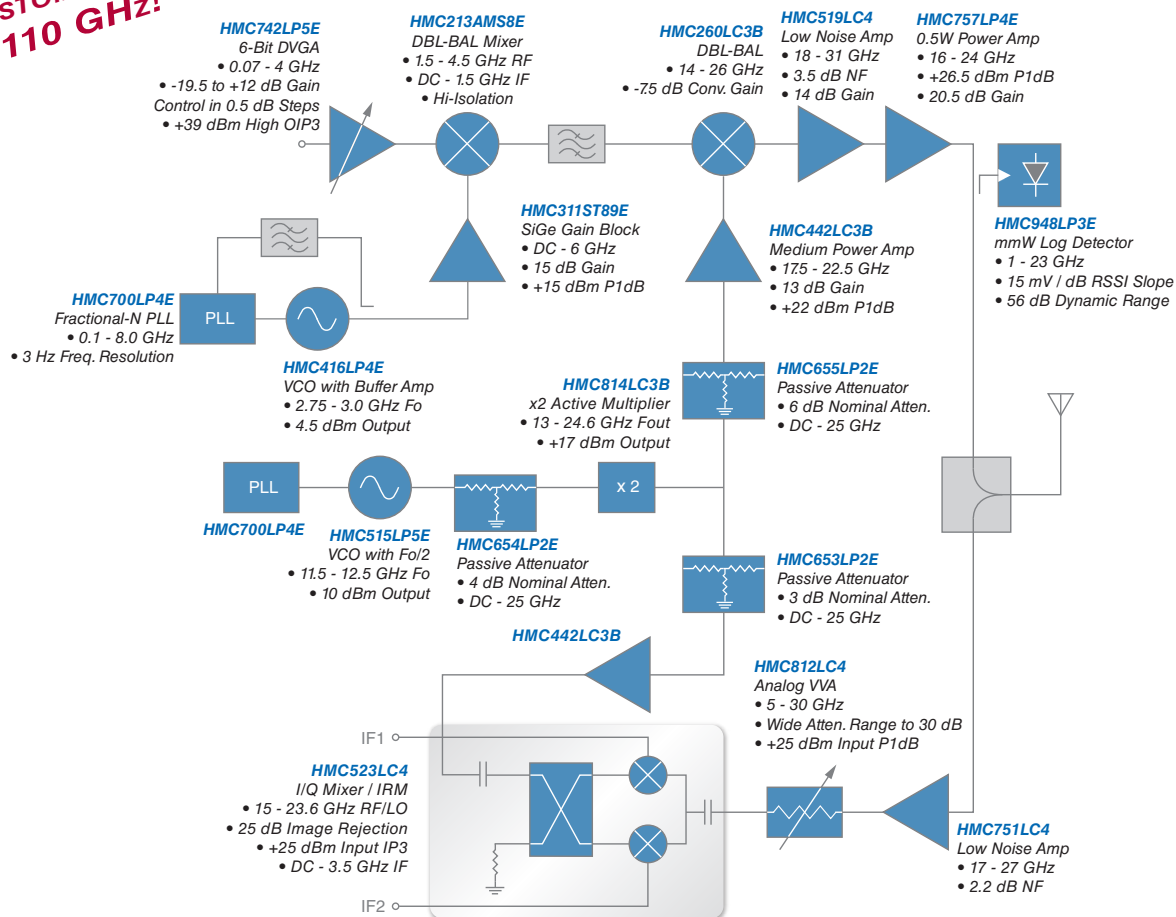


Typical WiMAX/LTE/4G applications are illustrated.

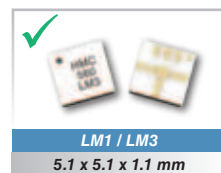
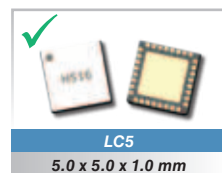
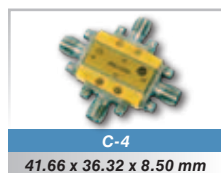
See the full product listing for alternatives to the select HMC products shown in each functional block.

DOUBLE UPCONVERSION & DIRECT DOWNCONVERSION

**CUSTOM ICs
TO 110 GHz!**



PRODUCTS AVAILABLE IN DIE, SMT OR CONNECTORIZED PACKAGE FORM TO 86 GHz!



Typical Microwave / Millimeterwave application is illustrated.

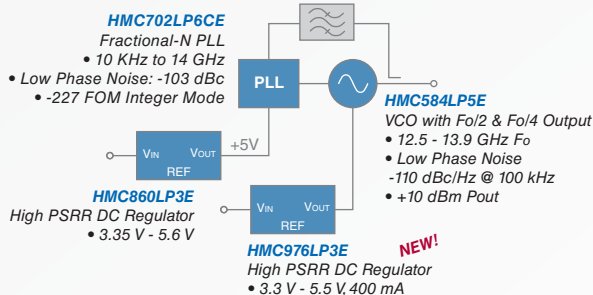
See the full product listing for alternatives to the select HMC products shown in each functional block.

MARKET & APPLICATION GUIDE

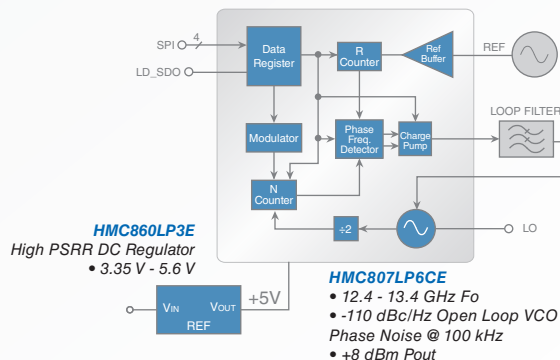
Microwave & mmWave Communications, Test & Measurement & Sensors, 2 - 86 GHz

HITTITE'S HIGH FREQUENCY LO SOURCE ALTERNATIVES

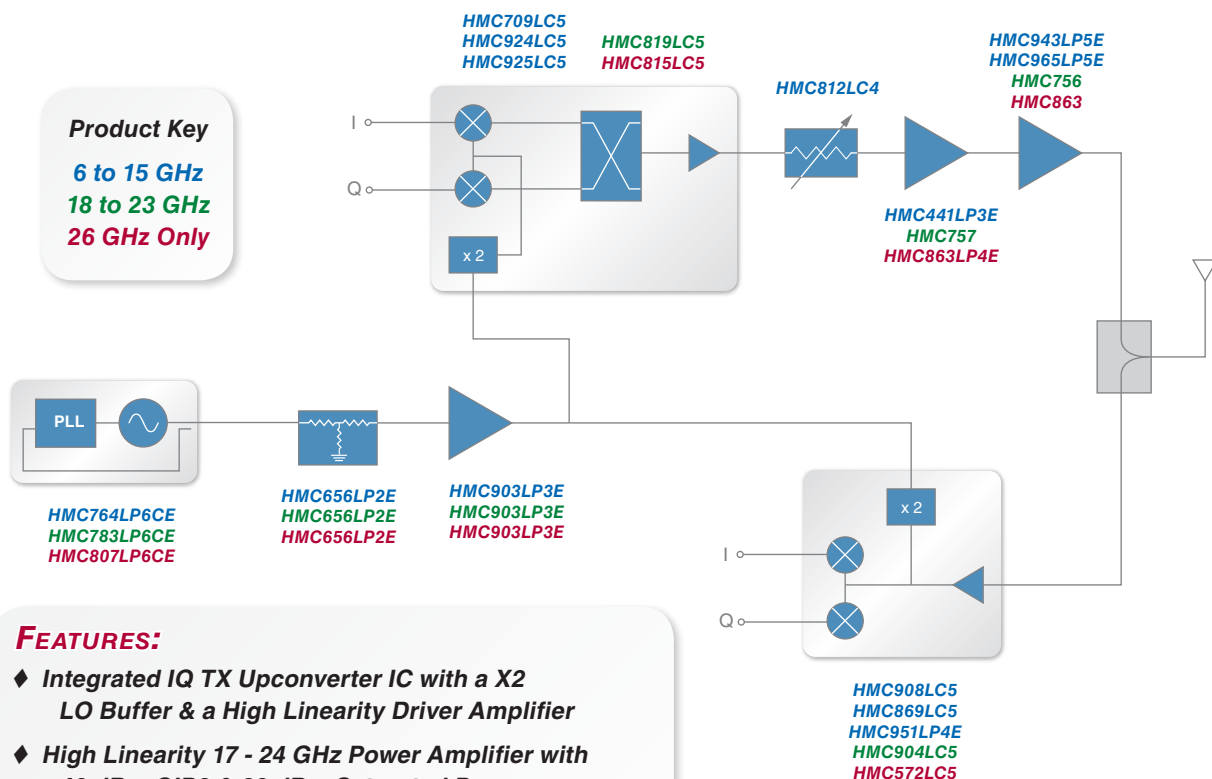
PLL & VCO CHIPSET



PLL WITH INTEGRATED VCO IC



CHIPSETS FOR 6 TO 42 GHz MICROWAVE RADIO BACKHAUL



FEATURES:

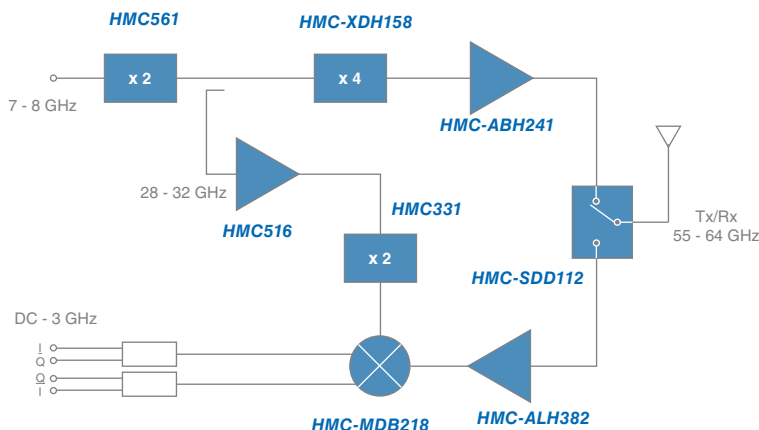
- ◆ Integrated IQ TX Upconverter IC with a X2 LO Buffer & a High Linearity Driver Amplifier
- ◆ High Linearity 17 - 24 GHz Power Amplifier with 40 dBm OIP3 & 32 dBm Saturated Power
- ◆ Low Noise Image Rejection Downconverter IC with a X2 Integrated LO Buffer
- ◆ Very Low Phase Noise PLL IC with an Integrated VCO

Typical Microwave / Millimeterwave application is illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

VISIT US AT WWW.HITTITE.COM

JUNE 2011

SUB-HARMONIC OPTION FOR 60 GHz CHIPSET

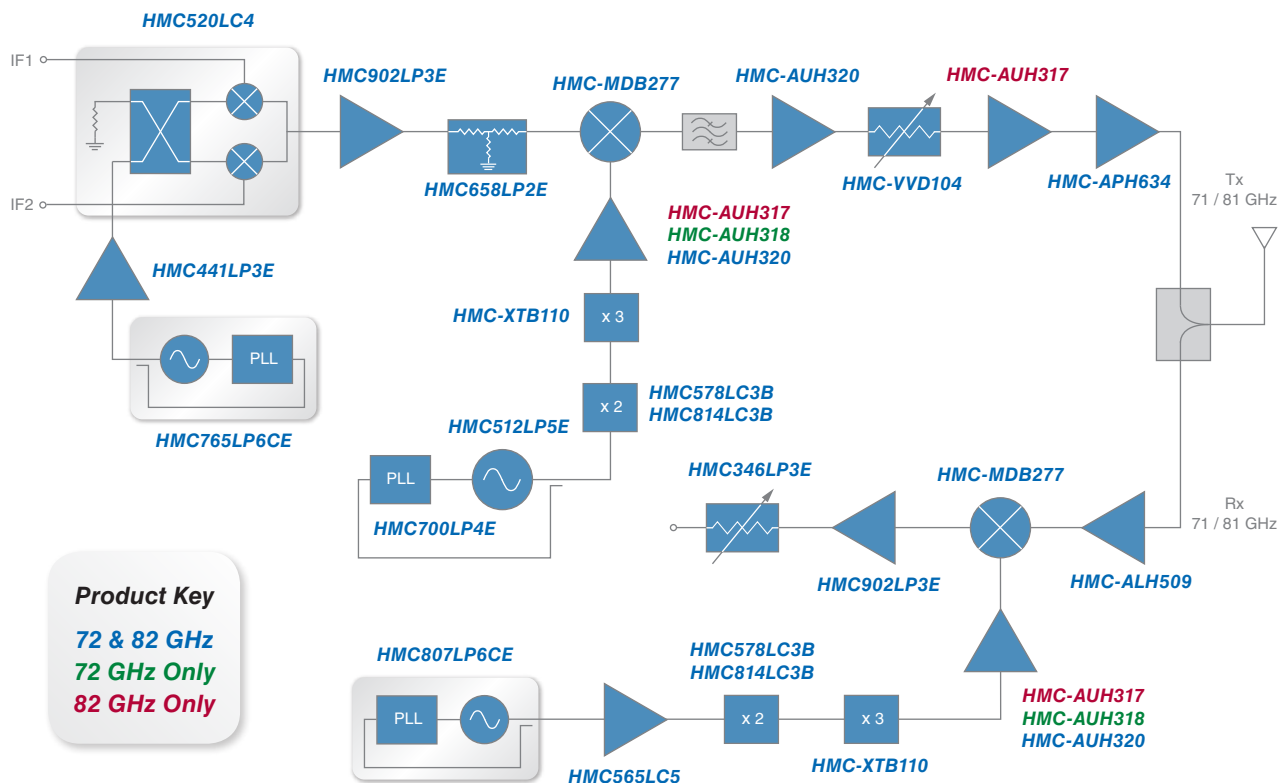


APPLICATIONS:

- ◆ Short Haul High Capacity Links
- ◆ Picocell Mobile Phone Links
- ◆ Network Backbone & Branch Links
- ◆ HDTV Wireless Broadcasting

Typical Microwave / Millimeterwave application is illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

70 / 80 GHz E-BAND RADIO CHIPSET

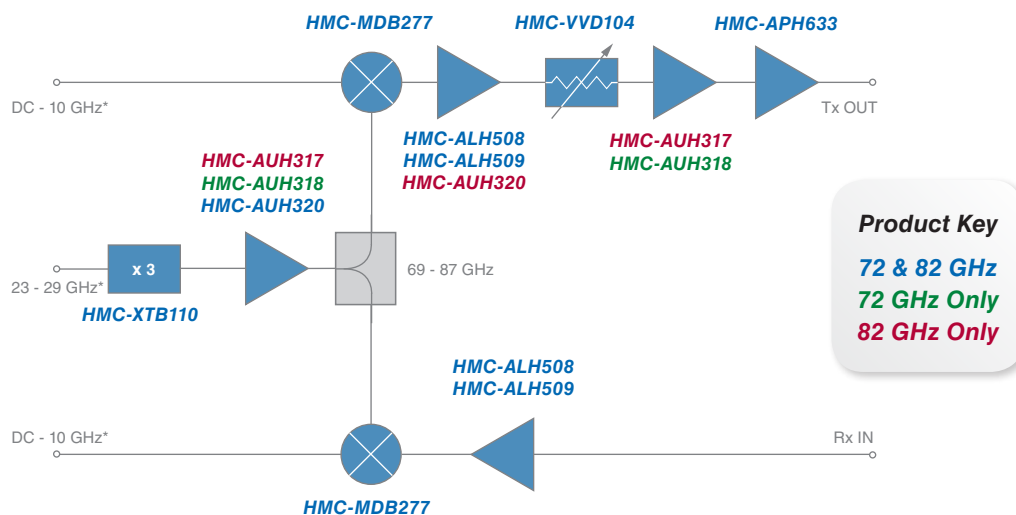


Product Key

72 & 82 GHz
72 GHz Only
82 GHz Only

Typical Microwave / Millimeterwave application is illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

72 & 82 GHz Tx/Rx CHIPSET FOR HIGH CAPACITY COMMUNICATION LINKS



Typical Microwave / Millimeterwave application is illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

BROADBAND TIME DELAYS - Analog & Digital

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vp-p)	DC Power Consumption (mW)	Vcc Power Supply (Vdc)	Package	ECCN Code	Part Number
32 / 24	Analog Time Delay	14 / 14	6	0.15 - 0.6	1450	+3.3	LC4B	3A001.a.11.b	HMC910LC4B
28 / 28	5-Bit Digital Time Delay	20 / 18	< 2	0.5 - 1.35	610	-3.3	LC5	3A001.a.11.b	HMC856LC5

COMPARATORS - High Speed Clocked, Latched & Window Comparators

Analog Input B/W (GHz) / Clock Rate (Gbps)	Function	Deterministic Jitter (ps)	Propagation Delay (ps)	Output Voltage Swing (Vdc)	DC Power (mW)	Vcc / Vterm Power Supply (Vdc)	Package	ECCN Code	Part Number
10 / 20	Clocked Comparator-RSPECL	<3	120	0.4	150	+3.3 / +1.3	LC3C	3A001.a.11.b	HMC874LC3C
10 / 20	Clocked Comparator-RSCML	<3	120	0.4	130	0 / 0	LC3C	3A001.a.11.b	HMC875LC3C
10 / 20	Clocked Comparator-RSECL	<3	120	0.4	150	0 / -2.0	LC3C	3A001.a.11.b	HMC876LC3C
10 / [2]	Latched Comparator-RSPECL	2	85	0.4	140	+3.3 / 1.3	LC3C	3A001.a.11.b	HMC674LC3C
10 / [2]	Latched Comparator-RSPECL	2	85	0.4	140	+3.3 / 1.3	LP3	3A001.a.11.b	HMC674LP3E
10 / [2]	Latched Comparator-RSCML	2	100	0.4	100	0 / 0	LC3C	3A001.a.11.b	HMC675LC3C
10 / [2]	Latched Comparator-RSCML	2	100	0.4	100	0 / 0	LP3	3A001.a.11.b	HMC675LP3E
10 / [2]	Latched Comparator-RSECL	2	100	0.35	120	0 / -2.0	LC3C	3A001.a.11.b	HMC676LC3C
10 / [2]	Latched Comparator-RSECL	2	100	0.35	120	0 / -2.0	LP3	3A001.a.11.b	HMC676LP3E
10 / -	Window Comparator	2	88	0.4	240	+2 / 0	LC3C	3A001.a.11.b	HMC974LC3C

[1] Vee = -3.0V & Vcci = +3.3V [2] These products are pin for pin compatible

CROSSPOINT SWITCH

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall Time (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vp-p)	DC Power (mW)	DC Power Supply (Vdc)	Package	ECCN Code	Part Number
14 / 14	2x2 Crosspoint Switch*	21 / 21	2	0.5 - 1.2	345	-3.3	LC5	3A001.a.11.b	HMC857LC5

DATA CONVERTERS - Low Power Analog-to-Digital Converters

Sample Rate	Function / Mode	Resolution (bits)	# of Channels	Power Dissipation [2][3]	SNR (dBFS)	SFDR (dBc)	Package	ECCN Code	Part Number
640 MSPS	High Speed, Single Channel	12	1	490 mW	70	60 / 75 [1]	LP7DE	3A001.a.5.a.4	HMCAD1520
320 MSPS	High Speed, Dual Channel	12	2	490 mW	70	60 / 78 [1]		3A001.a.5.a.4	
160 MSPS	High Speed, Quad Channel	12	4	490 mW	70	60 / 78 [1]		3A001.a.5.a.4	
105 MSPS 80 MSPS	Precision, Quad Channel	14	4	603 mW 530 mW	74 75	83 85		3A001.a.5.a.4	
1 GSPS	High Speed, Single Channel	8	1	710 mW	49.8	49 / 64 [1]	LP7DE	3A001.a.5.a.1	HMCAD1511
500 MSPS	High Speed, Dual Channel	8	2	710 mW	49.8	44 / 63 [1]		3A001.a.5.a.1	
250 MSPS	High Speed, Quad Channel	8	4	710 mW	49.8	57 / 70 [1]		3A001.a.5.a.1	
500 MSPS	High Speed, Single Channel	8	1	295 mW	49.8	49 / 65 [1]	LP7DE	3A991.c.1	HMCAD1510
250 MSPS	High Speed, Dual Channel	8	2	295 mW	49.8	59 / 69 [1]		3A991.c.1	
125 MSPS	High Speed, Quad Channel	8	4	295 mW	49.7	60 / 69 [1]		3A991.c.1	
80 MSPS	Octal Channel	13 / 12	8	59 mW / Channel	70.1	77	LP9E	3A001.a.5.a.4	HMCAD1102
65 MSPS	Octal Channel	13 / 12	8	51 mW / Channel	72.2	82	LP9E	3A001.a.5.a.4	HMCAD1101
50 MSPS	Octal Channel	13 / 12	8	41 mW / Channel	72.2	82	LP9E	3A001.a.5.a.4	HMCAD1100
40 MSPS	Octal Channel	13 / 12	8	35 mW / Channel	72.2	82		3A001.a.5.a.4	
20 MSPS	Octal Channel	13 / 12	8	23 mW / Channel	72.2	82		3A001.a.5.a.4	
80 MSPS	Dual Channel	13 / 12	2	102 mW	72	77	LP9E	3A001.a.5.a.4	HMCAD1050-80
65 MSPS	Dual Channel	13 / 12	2	85 mW	72.6	81		3A001.a.5.a.4	
40 MSPS	Dual Channel	13 / 12	2	55 mW	72.7	81	LP9E	3A001.a.5.a.4	HMCAD1050-40
20 MSPS	Dual Channel	13 / 12	2	30 mW	72.2	85		3A001.a.5.a.4	
80 MSPS	Single Channel	13 / 12	1	60 mW	72	77	LP6HE	3A001.a.5.a.4	HMCAD1051-80
65 MSPS	Single Channel	13 / 12	1	50 mW	72.6	81		3A001.a.5.a.4	
40 MSPS	Single Channel	13 / 12	1	33 mW	72.7	81	LP6HE	3A001.a.5.a.4	HMCAD1051-40
20 MSPS	Single Channel	13 / 12	1	19 mW	72.2	85		3A001.a.5.a.4	

SMT & Chip (Die) Products

DATA CONVERTERS - Low Power Analog-to-Digital Converters

Sample Rate	Function / Mode	Resolution (bits)	# of Channels	Power Dissipation [2][3]	SNR (dBFS)	SFDR (dBc)	Package	ECCN Code	Part Number
80 MSPS	Dual Channel	10	2	78 mW	61.6	75	LP9E	EAR99	HMCAD1040-80
65 MSPS	Dual Channel	10	2	65 mW	61.6	77		EAR99	
40 MSPS	Dual Channel	10	2	43 mW	61.6	81	LP9E	EAR99	HMCAD1040-40
20 MSPS	Dual Channel	10	2	24 mW	61.6	81		EAR99	
80 MSPS	Single Channel	10	1	46 mW	61.6	75	LP6HE	EAR99	HMCAD1041-80
65 MSPS	Single Channel	10	1	38 mW	61.6	77		EAR99	
40 MSPS	Single Channel	10	1	25 mW	61.6	81	LP6HE	EAR99	HMCAD1041-40
20 MSPS	Single Channel	10	1	15 mW	61.6	81		EAR99	

[1] Excluding Interleaving Spurs. [2] Supply Voltage (Vdd): +1.8 Vdc Analog Supply (AVdd) & +1.8 Vdc Digital Supply (DVdd) [3] Output Supply Voltage (OVdd): +1.7 to +3.6 Vdc

DATA CONVERTERS - Track-and-Hold Amplifiers

Input Frequency (GHz)	Function	Single Tone THD/SFDR (dB)	Maximum Clock Rate (GS/s)	Output Noise (mV RMS)	Hold Mode Feed-through Rejection (dB)	Package	ECCN Code	Part Number
0.02 - 4.5	Track-and-Hold	-66 / 67	3.0	0.95	>60	LC4B	3A001.a.11.b	HMC660LC4B

DC POWER CONDITIONING - Linear Voltage Regulators

Input Voltage (V)	Function	Output Voltage (V)	Output Current (mA)	Power Supply Rejection Ratio (PSRR) (dB)		Output Noise Spectral Density (nV/√Hz)		Regulated Outputs	Package	ECCN Code	Part Number
				1 kHz	1 MHz	1 kHz	10 kHz				
3.35 - 5.6	Quad High PSRR	2.5 - 5.2	15 - 100	80	60	7	3	4	LP3	EAR99	HMC860LP3E
NEW! 4.8 to 5.6	Low Noise, High PSRR	1.8 to 5.1	400	60	30	6	3	1	LP3	EAR99	HMC976LP3E

DC POWER MANAGEMENT - Active Bias Controller

Supply Voltage Range (V)	Function	VDRAIN Voltage Range (V)	IDRAIN Bias Current (mA)	IGATE Drive Current (mA)	VGATE Voltage Range (V)	Over / Under IDRAIN Current Alarm	Low VDD Alarm	Package	ECCN Code	Part Number
NEW! 4 to 12	Active Bias Controller	4 to 12	0 to 200	-0.8 to 0.8	-2.5 to 2.5	-	-	LP3	EAR99	HMC981LP3E
5 to 16.5	Active Bias Controller	3 to 15	0 to 500	-4 to 4	-2.5 to 2.5	Yes	Yes	LP5	EAR99	HMC920LP5E

HIGH SPEED DIGITAL LOGIC

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall Time (ps)	Deterministic Jitter (ps)	Differential Output Swing (Vp-p)	DC Power (mW)	DC Power Supply (Vdc)	Package	ECCN Code	Part Number
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1:2 & 1:4 Fanout Buffers

13 / 13	1:2 Fanout Buffer*	22 / 20	<1	0.4 - 1.1	240	-3.3	LC3C	3A001.a.11.b	HMC670LC3C
13 / 13	Fast Rise Time 1:2 Fanout Buffer*	19 / 18	2	0.6 - 1.1	300	-3.3	LC3C	3A001.a.11.b	HMC720LC3C
13 / 13	Fast Rise Time 1:2 Fanout Buffer*	19 / 18	2	0.6 - 1.1	300	-3.3	LP3	3A001.a.11.b	HMC720LP3E
13 / 13	Fast Rise Time 1:2 Fanout Buffer	19 / 18	2	1.1	300	-3.3	LC3C	3A001.a.11.b	HMC724LC3C
13 / 13	Fast Rise Time 1:2 Fanout Buffer*	22 / 20	2	0.6 - 1.2	290	+3.3	LC3C	3A001.a.11.b	HMC744LC3C
28 / 20	1:2 Fanout Buffer*	16 / 15	2	0.6 - 1.1	315	-3.3	LC3C	3A001.a.11.b	HMC850LC3C
45 / 28	1:2 Fanout Buffer*	11 / 11	3	0.4 - 1.2	465	-3.3	LC4B	3A001.a.11.b	HMC842LC4B
13 / 13	1:4 Fanout Buffer*	26 / 25	4	0.6 - 1.4	440	-3.3	LC4B	3A001.a.11.b	HMC940LC4B

2:1 Selectors

14 / 14	2:1 Differential Selector*	19 / 20	2	0.5 - 1.3	221	-3.3	LC4B	3A001.a.11.b	HMC858LC4B
13 / 13	2:1 Selector*	17 / 15	2	0.6 - 1.2	250	-3.3	LC3C	3A001.a.11.b	HMC678LC3C
13 / 13	2:1 Selector	17 / 15	2	1.1	250	-3.3	LC3C	3A001.a.11.b	HMC728LC3C
13 / 13	2:1 Selector*	22 / 22	2	0.6 - 1.2	250	+3.3	LC3C	3A001.a.11.b	HMC748LC3C
14 / 14	4:1 Selector*	17 / 17	2	0.5 - 1.3	294	-3.3	LC5	3A001.a.11.b	HMC958LC5

AND / NAND / OR / NORs

13 / 13	AND / NAND / OR / NOR*	22 / 20	<1	0.4 - 1.1	180	-3.3	LC3C	3A001.a.11.b	HMC672LC3C
13 / 13	Fast Rise Time AND / NAND / OR / NOR*	19 / 18	2	0.6 - 1.1	230	-3.3	LC3C	3A001.a.11.b	HMC722LC3C
13 / 13	Fast Rise Time AND / NAND / OR / NOR*	19 / 18	2	0.6 - 1.1	230	-3.3	LP3	3A001.a.11.b	HMC722LP3E
13 / 13	Fast Rise Time AND / NAND / OR / NOR	19 / 18	2	1.1	230	-3.3	LC3C	3A001.a.11.b	HMC726LC3C
13 / 13	Fast Rise Time AND / NAND / OR / NOR*	22 / 21	2	0.6 - 1.2	230	+3.3	LC3C	3A001.a.11.b	HMC746LC3C
28 / 28	AND / NAND / OR / NOR*	15 / 14	2	0.6 - 1.5	241	-3.3	LC3C	3A001.a.11.b	HMC852LC3C

HIGH SPEED DIGITAL LOGIC

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall Time (ps)	Deterministic Jitter (ps)	Differential Output Swing (Vp-p)	DC Power (mW)	DC Power Supply (Vdc)	Package	ECCN Code	Part Number
45 / 25	AND / NAND / OR / NOR*	10 / 10	2	0.2 - 0.9	530	-3.3	LC4B	3A001.a.11.b	HMC843LC4B
Clock Dividers									
28 / 28	Clock Divide-by-2/4	12 / 14	-	0.6	660	-3.3	LC4B	3A001.a.11.b	HMC791LC4B
- / 26	Clock Divide-by-4*	19 / 19	-	0.8 - 1.8	281	-3.3	LC3	3A001.a.11.b	HMC959LC3
- / 26	Clock Divide-by-8*	19 / 17	-	0.8 - 1.8	520	-3.3	LC3	3A001.a.11.b	HMC859LC3
D-Type Flip-Flops									
13 / 13	D-Type Flip-Flop*	22 / 20	<1	0.4 - 1.1	210	-3.3	LC3C	3A001.a.11.b	HMC673LC3C
14 / 14	Dual D-Type Flip-Flop with Common Clock*	22 / 20	2	0.6 - 1.3	442	-3.3	LC4B	3A001.a.11.b	HMC953LC4B
13 / 13	Fast Rise Time D-Type Flip-Flop*	19 / 17	2	0.7 - 1.3	260	-3.3	LC3C	3A001.a.11.b	HMC723LC3C
13 / 13	Fast Rise Time D-Type Flip-Flop*	19 / 17	2	0.7 - 1.3	260	-3.3	LC3C	3A001.a.11.b	HMC723LP3E
13 / 13	Fast Rise Time D-Type Flip-Flop	19 / 17	2	1.1	260	-3.3	LC3C	3A001.a.11.b	HMC727LC3C
13 / 13	Fast Rise Time D-Type Flip-Flop*	22 / 20	2	0.7 - 1.2	264	+3.3	LC3C	3A001.a.11.b	HMC747LC3C
28 / 28	D-Type Flip-Flop*	15 / 14	2	0.7 - 1.3	260	-3.3	LC3C	3A001.a.11.b	HMC853LC3C
43 / 43	D-Type Flip-Flop*	12 / 12	2	0.2 - 0.85	630	-3.3	LC4B	3A001.a.11.b	HMC841LC4B
NRZ-to-RZ Converters									
13 / 13	NRZ-to-RZ Converter	15 / 13	2	0.3 - 1.2	594	+3.3	LC3C	3A001.a.11.b	HMC706LC3C
T Flip-Flops									
26 / 26	T Flip-Flop w/ Reset*	18 / 17	2	0.4 - 1.1	270	-3.3	LC3C	3A001.a.11.b	HMC679LC3C
26 / 26	T Flip-Flop w/Reset	18 / 17	2	1.1	270	-3.3	LC3C	3A001.a.11.b	HMC729LC3C
26 / 26	T Flip-Flop w/ Reset*	18 / 17	2	0.6 - 1.2	270	+3.3	LC3C	3A001.a.11.b	HMC749LC3C
XOR / XNORs									
13 / 13	XOR / XNOR*	22 / 20	<1	0.4 - 1.1	180	-3.3	LC3C	3A001.a.11.b	HMC671LC3C
13 / 13	Fast Rise Time XOR / XNOR*	19 / 18	2	0.6 - 1.2	230	-3.3	LC3C	3A001.a.11.b	HMC721LC3C
13 / 13	Fast Rise Time XOR / XNOR*	19 / 18	2	0.6 - 1.2	230	-3.3	LP3	3A001.a.11.b	HMC721LP3E
13 / 13	Fast Rise Time XOR / XNOR	19 / 18	2	1.1	230	-3.3	LC3C	3A001.a.11.b	HMC725LC3C
13 / 13	Fast Rise Time XOR / XNOR*	21 / 19	2	0.6 - 1.2	240	+3.3	LC3C	3A001.a.11.b	HMC745LC3C
28 / 28	XOR / XNOR*	15 / 14	2	0.6 - 1.4	241	-3.3	LC3C	3A001.a.11.b	HMC851LC3C
45 / 28	XOR / XNOR*	11 / 10	3	0.2 - 8.5	512	-3.3	LC4B	3A001.a.11.b	HMC844LC4B

* These products feature programmable output voltage swing.

IF / BASEBAND PROCESSING - Dual Baseband Low Pass Filter & Dual Baseband Digital VGA

Dual Baseband Low Pass Filter

3 dB Bandwidth Setting (MHz)	Function	3 dB Bandwidth Accuracy (%)	Gain (dB)	NF (dB)	OIP3 (dBm)	Package	ECCN Code	Part Number
3.5 - 50	Dual Low Pass with ADC Driver	± 2.5	0 / 10	12	30	LP5	EAR99	HMC900LP5E

Please Note: 400 Ohm Reference Impedance Are Shown

Dual Baseband Digital VGA

Frequency (MHz)	Function	NF (dB)	Variable Gain (dB)	OIP3 (dBm)	OIP2 (dBm)	Sideband Supp. (dB)	Magnitude (dB) / Phase (deg) Balance	Bias Supply	Package	ECCN Code	Part Number
DC - 100	Digital, Serial & Parallel Control	6	0 to 40	+30	+65	55	±0.1 / ±1	+5V @ 70mA	LP4	EAR99	HMC960LP4E

Please Note: 100 Ohm Reference Impedance Are Shown

INTERFACE - RF Switch, Attenuator & Phase Shifter Digital Drivers

Bit Rate (mbps)	Function	Input	Output Voltage (V)	Output Current (mA)	Bias Supply	Package	ECCN Code	Part Number
10	6-Bit Switch Driver / Controller	TTL/CMOS	-5 / +2.2	1	+5V @ 1.5mA	LP5	EAR99	HMC677LP5E
10	6-Bit Switch Driver / Controller	TTL/CMOS	-5 / +2.2	1	+5V @ 1mA	G32	EAR99	HMC677G32

LIMITING AMPLIFIERS

Data Rate (Gbps)	Function	Small Signal Bandwidth (GHz)	Differential Gain (dB)	Deterministic Jitter (ps p-p)	Additive Random Jitter (ps rms)	Supply Current	Package	ECCN Code	Part Number
12.5	Limiting Amplifier	11	44	5	0.2	+5V @ 106mA	LP4	EAR99	HMC750LP4E
12.5	Limiting Amplifier with LOS	9.5	32	-	0.9	+3.3V @ 47mA	LP4	EAR99	HMC914LP4E

ANALOG & MIXED-SIGNAL ICs

SMT & Chip (Die) Products

LIMITING AMPLIFIERS

Data Rate (Gbps)	Function	Small Signal Bandwidth (GHz)	Differential Gain (dB)	Deterministic Jitter (ps p-p)	Additive Random Jitter (ps rms)	Supply Current	Package	ECCN Code	Part Number
32	Limiting with DC Offset	25	30	5	0.3	+3.3V @ 90mA	LC3C	EAR99	HMC865LC3C
32	Limiting without DC Offset	25	29	7	0.3	+3.3V @ 85mA	LC3C	EAR99	HMC866LC3C

MUX & DEMUX

	Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vp-p)	DC Power Consumption (mW)	Vee Power Supply (Vdc)	Package	ECCN Code	Part Number
NEW!	32 / 16	2:1 Mux*	15 / 15	-	1.25	480	±3.3	LC4B	3A001.a.11.b	HMC954LC4B
	28 / 14	4:1 Mux with Adj. Vout	16 / 16	4	0.7 - 1.25	510	-3.3	LC5	3A001.a.11.b	HMC854LC5
	45 / 22.5	4:1 Mux*	11 / 12	3	0.25 - 0.9	1782	+3.3	LC5	3A001.a.11.b	HMC847LC5
NEW!	32 / 16	1:2 Demux with High Speed Invert*	19 / 18	<3	1.0	644	±3.3	LC4B	3A001.a.11.b	HMC955LC4B
	28 / 14	1:4 Demux with Adj. Vout	22 / 22	-	0.45 - 1.14	644	-3.3	LC5	3A001.a.11.b	HMC855LC5
	45 / 22.5	1:4 Demux with Adj. Vout	25 / 21	4	0.3 - 1.0	1782	+3.3	LC5	3A001.a.11.b	HMC848LC5

* With Programmable Output Voltage and/or Duty Cycle Control

OPTICAL MODULATOR DRIVERS

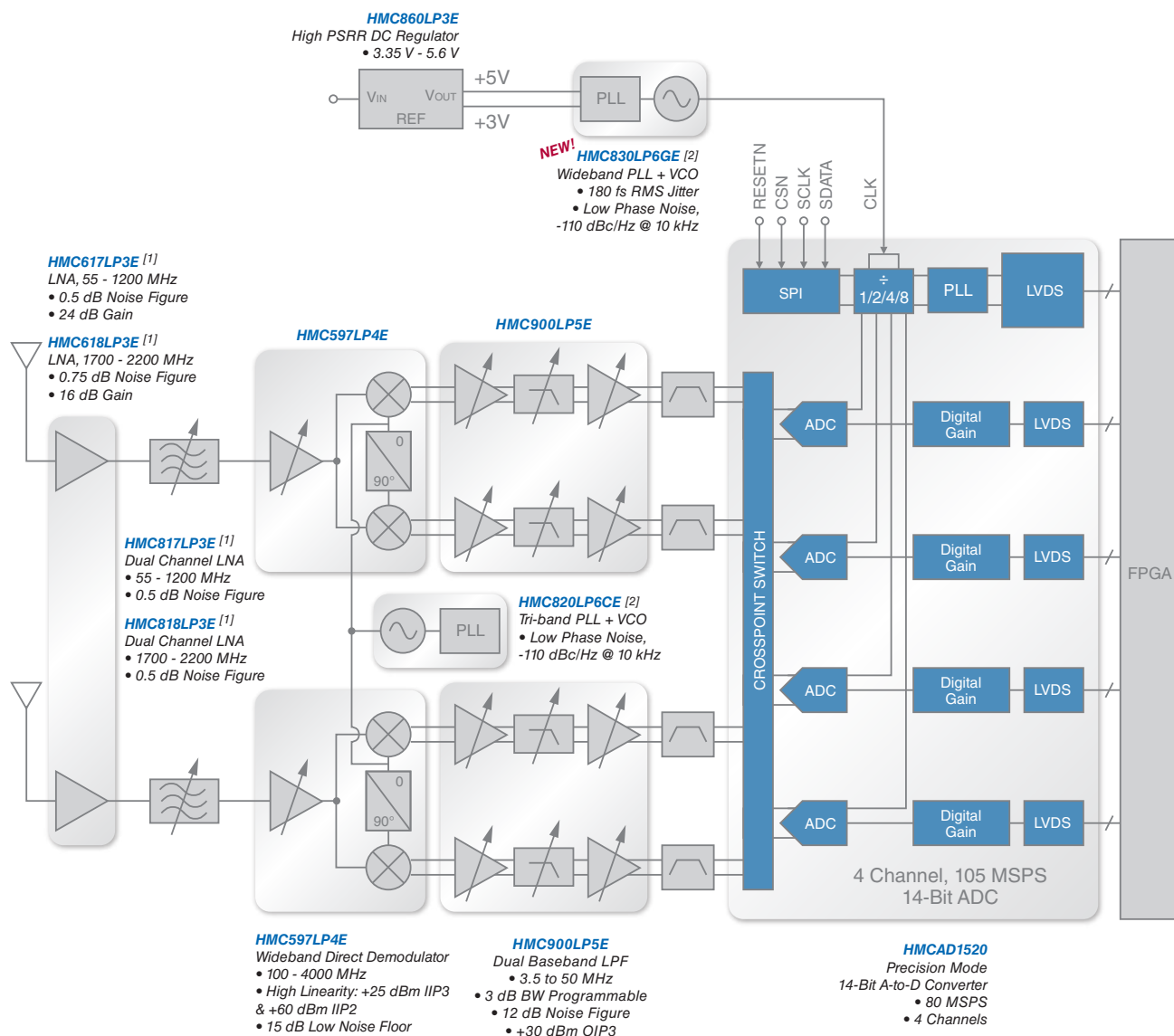
Frequency (GHz)	Function	Gain (dB)	Group Variation Delay (ps)	Additive Jitter (ps)	P1dB (dBm)	Output Voltage Level (Vp-p)	Package	ECCN Code	Part Number
DC - 20	MZ Optical Modulator Driver	18	±15	0.3	22	2.5 - 8	LC5	EAR99	HMC870LC5 [1]
DC - 20	EA Optical Modulator Driver	15	±15	0.3	16.5	2.5 - 4	LC5	EAR99	HMC871LC5 [1]

[1] Drivers that benefit from Hittite Active Bias Controllers

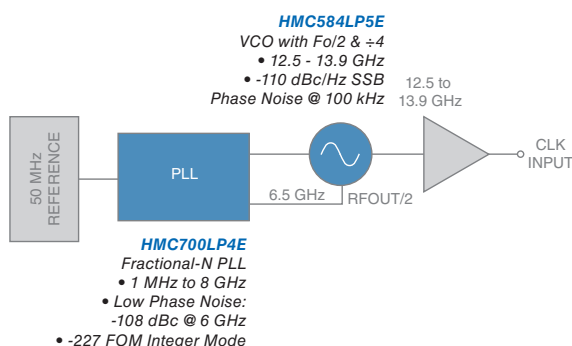
TRANSIMPEDANCE AMPLIFIERS

Data Rate (Gbps)	Function	Transimpedance (kΩ)	Input Overload (mApp)	Small Signal Bandwidth (GHz)	Deterministic Jitter (ps)	Noise (pA/√Hz)	Package	ECCN Code	Part Number
0.1 - 1.0	Low Noise Transimpedance Amplifier	10	20	0.7	<100	4.6	LP3	EAR99	HMC799LP3E
1 - 10	Transimpedance Amplifier	1.25	3	7.5	<10	11	Chip	EAR99	HMC690

DIRECT CONVERSION RECEIVER WITH DIVERSITY FEATURING THE HMCAD1520 A/D CONVERTER



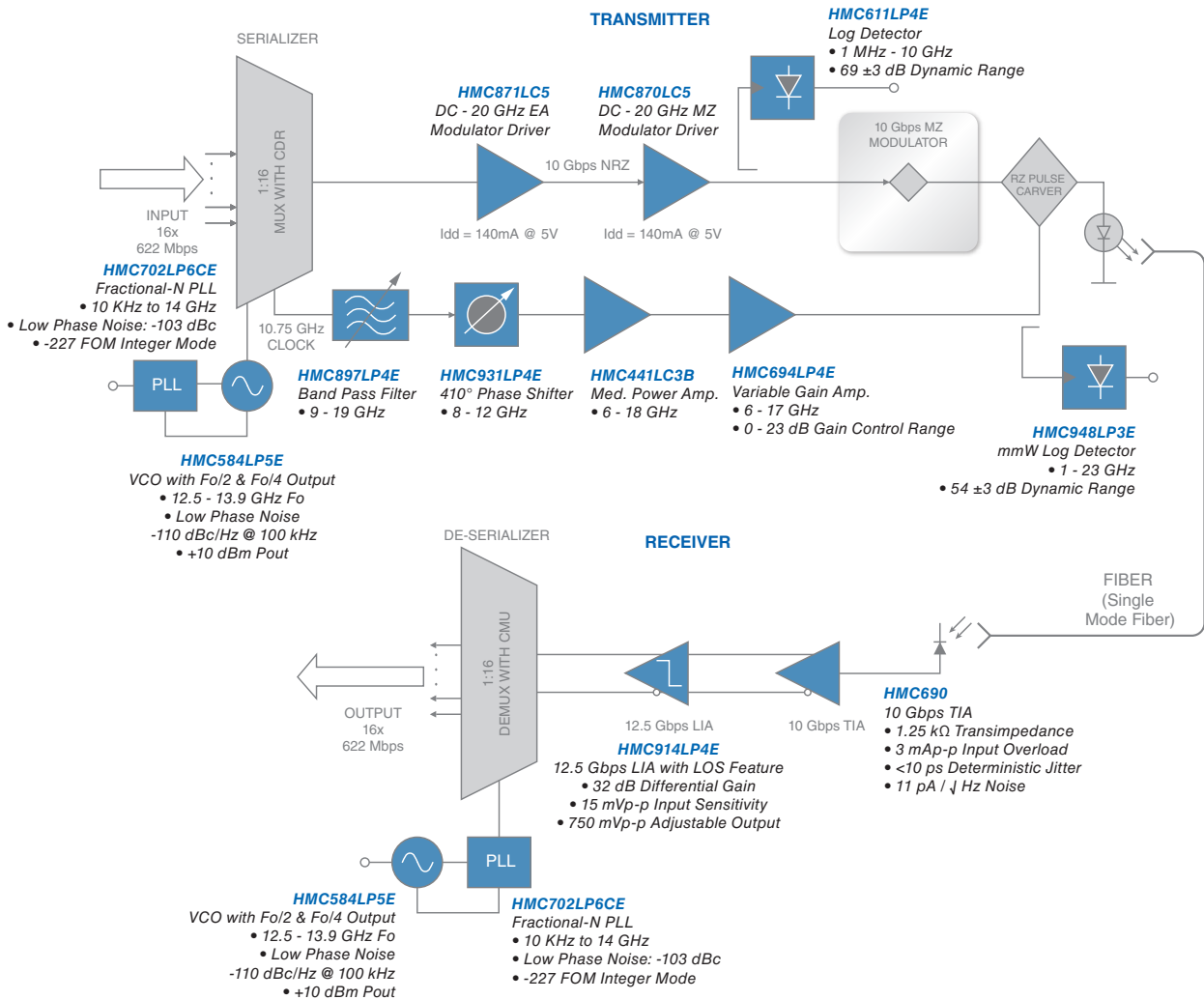
ADC / DAC CLOCK DRIVER CIRCUIT



Typical Fiber Optic & Networking applications are illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

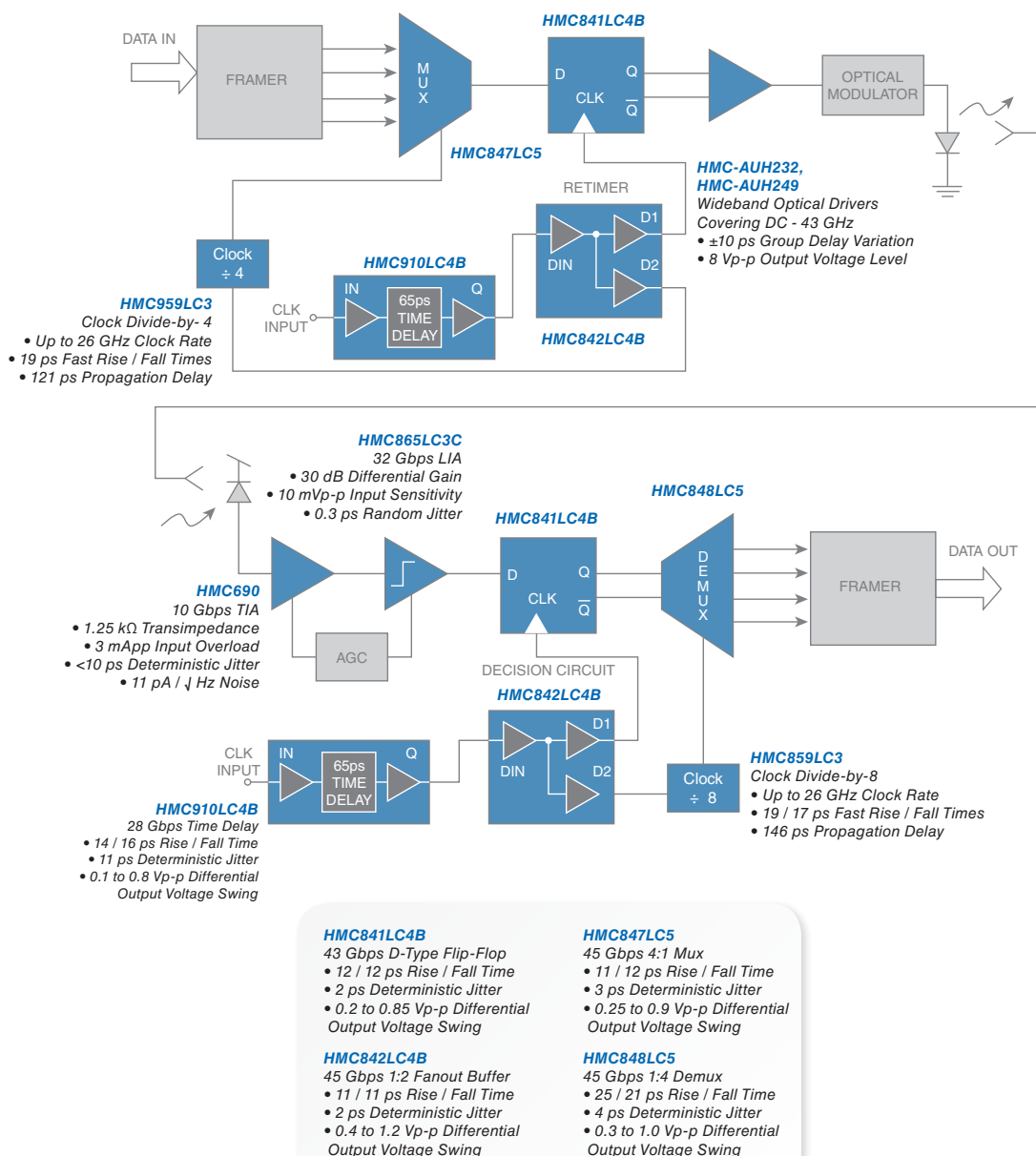
Fiber Optics & Networking

10 Gbps LONG RANGE SOLUTIONS



Typical Fiber Optic & Networking applications are illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

TYPICAL SERIAL FIBER OPTIC DATA TRANSMISSION SYSTEM

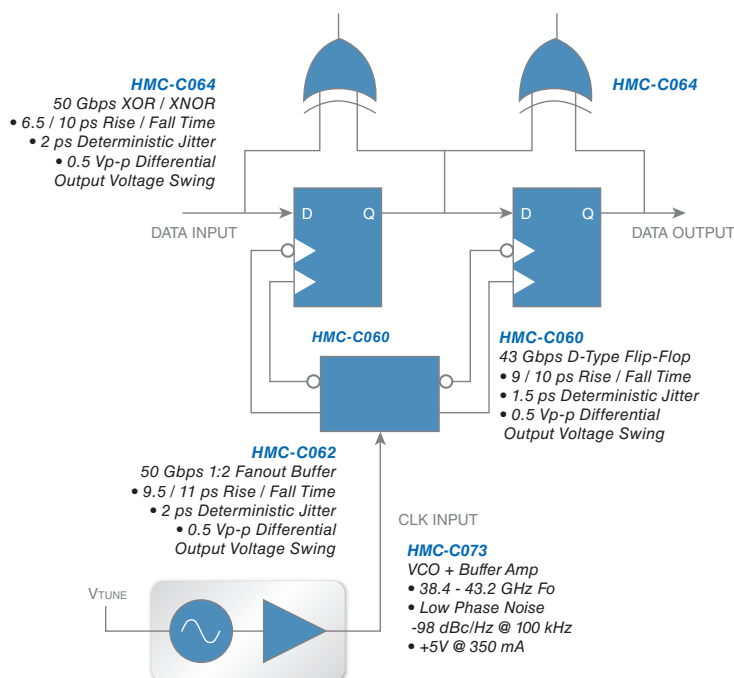


Typical Fiber Optic & Networking applications are illustrated.

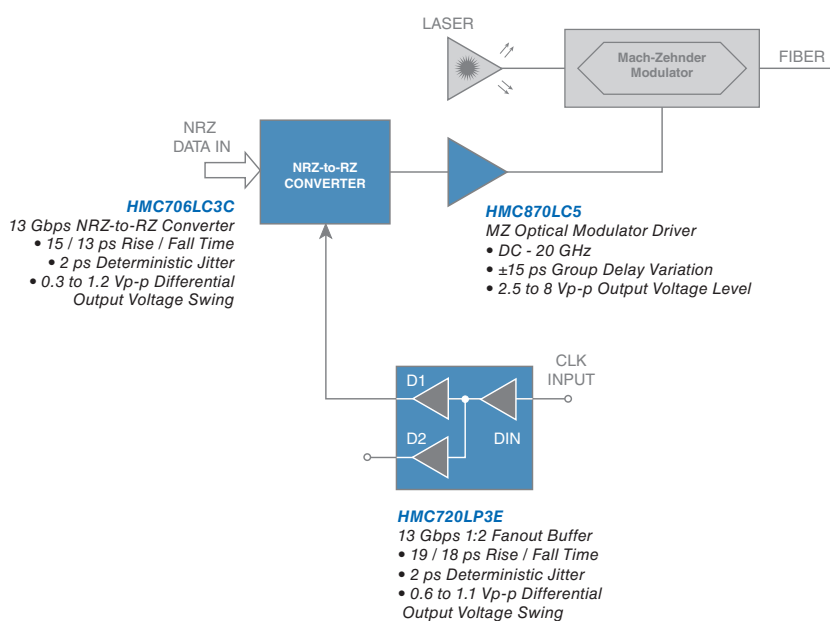
See the full product listing for alternatives to the select HMC products shown in each functional block.

Fiber Optics & Networking

43 Gbps HOGGE PHASE DETECTOR FOR CLOCK & DATA RECOVERY



13 Gbps, NRZ-TO-RZ CONVERSION



Typical Fiber Optic & Networking applications are illustrated.
 See the full product listing for alternatives to the select HMC products shown in each functional block.

DC POWER CONDITIONING - Linear Voltage Regulators

Input Voltage (V)	Function	Output Voltage (V)	Output Current (mA)	Power Supply Rejection Ratio (PSRR) (dB)		Output Noise Spectral Density (nV/√Hz)		Regulated Outputs	Package	ECCN Code	Part Number
				1 kHz	1 MHz	1 kHz	10 kHz				
3.35 - 5.6	Quad High PSRR	2.5 - 5.2	15 - 100	80	60	7	3	4	LP3	EAR99	HMC860LP3E
NEW! 4.8 to 5.6	Low Noise, High PSRR	1.8 to 5.1	400	60	30	6	3	1	LP3	EAR99	HMC976LP3E

FREQUENCY DIVIDERS (PRESCALERS) & DETECTORS

Input Frequency (GHz)	Function	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
DC - 8	Divide-by-2	-12 to +12	-6	-148	+3V @ 42mA	SOT26	3A001.a.11.b	HMC432E
DC - 10	Divide-by-2	-15 to +10	3	-148	+5V @ 83mA	S8G	3A001.a.11.b	HMC361S8GE
DC - 11	Divide-by-2	-15 to +10	3	-148	+5V @ 105mA	Chip	3A001.a.11.b	HMC361
DC - 12.5	Divide-by-2	-15 to +10	2	-145	+5V @ 105mA	S8G	3A001.a.11.b	HMC364S8GE
DC - 13	Divide-by-2	-15 to +10	1	-145	+5V @ 105mA	Chip	3A001.a.11.b	HMC364
DC - 13	Divide-by-2	-15 to +10	5	-145	+5V @ 110mA	G8 Hermetic	3A001.a.11.b	HMC364G8
DC - 18	Divide-by-2	-15 to +10	-4	-150	+5V @ 77mA	LP3	3A001.a.11.b	HMC492LP3E
DC - 7	Divide-by-3	-12 to +12	-2	-153	+5V @ 69mA	MS8G	3A001.a.11.b	HMC437MS8GE
DC - 4	Divide-by-4	-15 to +10	3.5	-146	+3V @ 13mA	MS8	3A001.a.11.b	HMC426MS8E
DC - 8	Divide-by-4	-12 to +12	-3	-150	+3V @ 53mA	SOT26	3A001.a.11.b	HMC433E
DC - 11	Divide-by-4	-15 to +10	-6	-149	+5V @ 68mA	Chip	3A001.a.11.b	HMC362
DC - 12	Divide-by-4	-15 to +10	-6	-149	+5V @ 68mA	S8G	3A001.a.11.b	HMC362S8GE
DC - 13	Divide-by-4	-15 to +10	2	-151	+5V @ 110mA	Chip	3A001.a.11.b	HMC365
DC - 13	Divide-by-4	-15 to +10	7	-151	+5V @ 120mA	G8 Hermetic	3A001.a.11.b	HMC365G8
DC - 13	Divide-by-4	-15 to +10	2	-151	+5V @ 110mA	S8G	3A001.a.11.b	HMC365S8GE
DC - 18	Divide-by-4	-15 to +10	-4	-150	+5V @ 96mA	LP3	3A001.a.11.b	HMC493LP3E
10 - 26	Divide-by-4	-15 to +10	-4	-150	+5V @ 96mA	LC3	3A001.a.11.b	HMC447LC3
DC - 7	Divide-by-5	-12 to +12	-1	-153	+5V @ 80mA	MS8G	3A001.a.11.b	HMC438MS8GE
DC - 8	Divide-by-8	-5 to +12	-2	-150	+3V @ 62mA	SOT26	3A001.a.11.b	HMC434E
DC - 12	Divide-by-8	-15 to +10	-9	-153	+5V @ 70mA	Chip	3A001.a.11.b	HMC363
DC - 12	Divide-by-8	-15 to +10	4	-153	+5V @ 90mA	G8 Hermetic	3A001.a.11.b	HMC363G8
DC - 12	Divide-by-8	-15 to +10	-9	-153	+5V @ 70mA	S8G	3A001.a.11.b	HMC363S8GE
DC - 18	Divide-by-8	-15 to +10	-4	-150	+5V @ 105mA	LP3	3A001.a.11.b	HMC494LP3E
0.1 - 6.5	Programmable Divider (N = 1 to 17)	-15 to +10	0	-153	+5V @ 200mA	LP4	3A001.a.11.b	HMC705LP4E
0.1 - 15	Programmable Divider (N = 1, 2, 4, 8)	-5 to 10	2	-153	+5V @ 105mA	LP3	3A001.a.11.b	HMC862LP3E
0.2 - 2.0	Programmable Divider (N = 1 to 4)	-2 to +10	10	-160	+5V @ 135mA	LP3	3A001.a.11.b	HMC794LP3E
0.4 - 6.0	Programmable Divider (N = 1 to 6)	0 to +9	5	-156	+3.3V @ 100mA	LP3	3A001.a.11.b	HMC905LP3E
DC - 2.2	5-bit Counter, ±2 to 32	-15 to +10	4	-153	+5V @ 194mA	LP4	3A001.a.11.b	HMC394LP4E

Phase / Frequency Detectors

0.01 - 1.3	Phase Frequency Detector	-10 to +10	2 Vp-p	-153	+5V @ 96mA	QS16G	3A001.a.11.b	HMC439QS16GE
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FREQUENCY MULTIPLIERS - Active

Input Frequency (GHz)	Function	Output Frequency (GHz)	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Package	ECCN Code	Part Number
3 - 4	x2 Active	6 - 9	0	17	-140	LP4	EAR99	HMC575LP4E
4.0 - 10.5	x2 Active	8 - 21	5	17	-139	Chip	EAR99	HMC561
4.0 - 10.5	x2 Active	8 - 21	5	14	-139	LP3	EAR99	HMC561LP3E
4 - 11	x2 Active	8 - 22	5	12	-134	LC3B	EAR99	HMC573LC3B
4.5 - 8.0	x2 Active	9 - 16	2	15	-140	LP4	EAR99	HMC368LP4E
4.95 - 6.35	x2 Active	9.9 - 12.7	0	4	-142	LP3	EAR99	HMC369LP3E
6.5 - 12.3	x2 Active	13.0 - 24.6	4	17	-136	Chip	EAR99	HMC814
6.5 - 12.3	x2 Active	13.0 - 24.6	4	17	-136	LC3B	EAR99	HMC814LC3B
9.0 - 14.5	x2 Active	18 - 29	3	17	-132	Chip	EAR99	HMC576
9.0 - 14.5	x2 Active	18 - 29	3	15	-132	LC3B	EAR99	HMC576LC3B
9.5 - 12.5	x2 Active	19 - 25	0	11	-135	Chip	EAR99	HMC448
10.0 - 12.5	x2 Active	20 - 25	0	11	-135	LC3B	EAR99	HMC448LC3B
11 - 23	x2 Active	22 - 46	5	15	-	Chip	EAR99	HMC598
12.0 - 16.5	x2 Active	24 - 33	3	17	-132	Chip	EAR99	HMC578
12.0 - 16.5	x2 Active	24 - 33	3	15	-132	LC3B	EAR99	HMC578LC3B
12.5 - 15.5	x2 Active	25 - 31	3	21	-	LP4	EAR99	HMC942LP4E
13.5 - 15.5	x2 Active	27 - 31	0	9	-132	LC3B	EAR99	HMC449LC3B
13.5 - 15.5	x2 Active	27 - 31	5	20	-128	LC4B	EAR99	HMC577LC4B
13.5 - 16.5	x2 Active	27 - 33	0	10	-132	Chip	EAR99	HMC449
16 - 23	x2 Active	32 - 46	3	13	-127	Chip	EAR99	HMC579
2.66 - 5.33	x3 Active	8 - 16	5	2	-152	LP3	EAR99	HMC916LP3E
1.5 - 2.5	x4 Active	6 - 10	5	2	-148	LP3	EAR99	HMC917LP3E
2.45 - 2.8	x4 Active	9.8 - 11.2	-15	3	-142	LP4	EAR99	HMC443LP4E
2.85 - 3.3	x4 Active	11.4 - 13.2	-15 to +5	7	-140	LP4	EAR99	HMC695LP4E
3.6 - 4.1	x4 Active	14.4 - 16.4	-15	0	-140	LP4	EAR99	HMC370LP4E

LO & CLOCK GENERATION ICs

SMT & Chip (Die) Products

FREQUENCY MULTIPLIERS - Active

Input Frequency (GHz)	Function	Output Frequency (GHz)	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Package	ECCN Code	Part Number
14 - 16	x4 Active	56 - 64	2	-6	-	Chip	3A001.b.2.f	HMC-XDH158
1.2375 - 1.4	x8 Active	9.9 - 11.2	-15	6	-136	LP4	EAR99	HMC444LP4E
0.61875 - 0.6875	x16 Active	9.9 - 11	-15	7	-130	LP4	EAR99	HMC445LP4E

FREQUENCY MULTIPLIERS - Passive

Input Frequency (GHz)	Function	Output Frequency (GHz)	Conversion Loss (dB)	1Fo / 4Fo Isolation (dB)	Input Drive (dBm)	Package	ECCN Code	Part Number
0.7 - 2.4	x2 Passive	1.4 - 4.8	15	47 / 38	10 to 20	Chip	EAR99	HMC156
0.7 - 2.4	x2 Passive	1.4 - 4.8	15	47 / 38	10 to 20	C8	EAR99	HMC156C8
0.85 - 2.0	x2 Passive	1.7 - 4.0	15	45 / 40	10 to 20	MS8	EAR99	HMC187AMS8E
1.25 - 3.0	x2 Passive	2.5 - 6.0	15	45 / 45	10 to 20	MS8	EAR99	HMC188MS8E
1.3 - 4.0	x2 Passive	2.6 - 8.0	15	45 / 40	10 to 20	Chip	EAR99	HMC158
1.3 - 4.0	x2 Passive	2.6 - 8.0	15	45 / 40	10 to 20	C8	EAR99	HMC158C8
2 - 4	x2 Passive	4 - 8	13	34 / 40	10 to 15	MS8	EAR99	HMC189AMS8E
4 - 8	x2 Passive	8 - 16	20	45 / 38	10 to 15	Chip	EAR99	HMC204
4 - 8	x2 Passive	8 - 16	17	41 / 40	10 to 15	C8	EAR99	HMC204C8
4 - 8	x2 Passive	8 - 16	17	42 / 50	10 to 15	MS8G	EAR99	HMC204MS8GE
6 - 12	x2 Passive	12 - 24	17	32 / 32	10 to 15	Chip	EAR99	HMC205
10 - 15	x2 Passive	20 - 30	13	30	+13	Chip	5A991.h	HMC-XDB112
12 - 18	x2 Passive	24 - 36	14	50 / 60	11 to 15	Chip	EAR99	HMC331
24 - 30	x3 Passive	72 - 90	19	-	+13	Chip	5A991.h	HMC-XTB110

PHASE LOCKED LOOP - Fractional-N & Integer-N ICs

Frequency	Function	Max. PFD Frequency	Max. Reference Frequency	Figure of Merit (Frac/Int) (dBc/Hz)	Frequency Resolution w/ 50 MHz Ref.	Bias Supply	Package	ECCN Code	Part Number
10 kHz - 8 GHz	Fractional-N with Sweeper	75 MHz	200 MHz	-221 / -227	3 Hz	+5V @ 37mA +3.3V @ 90mA	LP6C	3A001.a.11.b	HMC701LP6CE
10 kHz - 14 GHz	Fractional-N with Sweeper	75 MHz	200 MHz	-221 / -227	6 Hz	+5V @ 37mA +3.3V @ 136mA	LP6C	3A001.a.11.b	HMC702LP6CE
10 MHz - 8 GHz	Fractional-N	70 MHz	200 MHz	-221 / -226	3 Hz	+5V @ 7mA +3.3V @ 95mA	LP4	3A001.a.11.b	HMC700LP4E
NEW! DC - 8 GHz	Fractional-N with Sweeper	100 MHz	350 MHz	-230 / -233	3 Hz	+5V @ 6mA +3.3V @ 52mA	LP4	3A001.a.11.b	HMC703LP4E
DC - 8 GHz	Fractional-N	100 MHz	350 MHz	-230 / -233	3 Hz	+5V @ 6mA +3.3V @ 52mA	LP4	3A001.a.11.b	HMC704LP4E
80 MHz - 7 GHz	Integer-N	1300 MHz	1300 MHz	-233	50 MHz	+5V @ 310mA	LP5	3A001.a.11.b	HMC698LP5E
160 MHz - 7 GHz	Integer-N	1300 MHz	1300 MHz	-233	50 MHz	+5V @ 310mA	LP5	3A001.a.11.b	HMC699LP5E
10 MHz - 2.8 GHz	Integer-N	1300 MHz	1300 MHz	-233	50 MHz	+5V @ 250mA	QS16G	3A001.a.11.b	HMC440QS16GE

PLLs with INTEGRATED VCOs - Microwave & RF PLLs with Integrated VCOs

Frequency (MHz)	Function	Closed Loop SSB Phase Noise @ 10 kHz Offset	Open Loop VCO Phase Noise @ 1 MHz Offset	Pout (dBm)	RMS Jitter Fractional Mode (fs)	Integrated PN Fractional Mode (deg rms)	Package	ECCN Code	Part Number
fo/2									
665 - 825	Tri-Band RF VCO	-118 dBc/Hz	-148 dBc/Hz	11	180	0.05	LP6C	3A001.a.11.b	HMC822LP6CE
795 - 945	Tri-Band RF VCO	-123 dBc/Hz	-148 dBc/Hz	10	180	0.06	LP6C	3A001.a.11.b	HMC838LP6CE
780 - 870	RF VCO	-116 dBc/Hz	-148 dBc/Hz	14	180	0.06	LP6C	3A001.a.11.b	HMC824LP6CE
860 - 1040	Tri-Band RF VCO	-118 dBc/Hz	-147 dBc/Hz	10	180	0.07	LP6C	3A001.a.11.b	HMC821LP6CE
990 - 1105	RF VCO	-114 dBc/Hz	-146 dBc/Hz	11	180	0.07	LP6C	3A001.a.11.b	HMC826LP6CE
NEW! 1025 - 1150	Tri-Band RF VCO	-123 dBc/Hz	-147 dBc/Hz	12	180	0.07	LP6C	3A001.a.11.b	HMC837LP6CE
1050 - 1205	Tri-Band RF VCO	-121 dBc/Hz	-146 dBc/Hz	10	180	0.08	LP6C	3A001.a.11.b	HMC839LP6CE
1095 - 1275	Tri-Band RF VCO	-118 dBc/Hz	-147 dBc/Hz	10	180	0.08	LP6C	3A001.a.11.b	HMC820LP6CE
NEW! 1310 - 1415	Tri-Band RF VCO	-121 dBc/Hz	-145 dBc/Hz	10	180	0.09	LP6C	3A001.a.11.b	HMC840LP6CE
fo									
1285 - 1415	RF VCO	-112 dBc/Hz	-143 dBc/Hz	10	180	0.09	LP6C	3A001.a.11.b	HMC828LP6CE
1330 - 1650	Tri-Band RF VCO	-112 dBc/Hz	-142 dBc/Hz	6.5	180	0.11	LP6C	3A001.a.11.b	HMC822LP6CE
1590 - 1890	Tri-Band RF VCO	-118 dBc/Hz	-143 dBc/Hz	7.5	180	0.12	LP6C	3A001.a.11.b	HMC838LP6CE
1720 - 2080	Tri-Band RF VCO	-112 dBc/Hz	-141 dBc/Hz	6.5	180	0.13	LP6C	3A001.a.11.b	HMC821LP6CE
1815 - 2010	RF VCO	-112 dBc/Hz	-143 dBc/Hz	7.5	180	0.13	LP6C	3A001.a.11.b	HMC831LP6CE
NEW! 2050 - 2300	Tri-Band RF VCO	-117 dBc/Hz	-141 dBc/Hz	10.5	180	0.15	LP6C	3A001.a.11.b	HMC837LP6CE
2100 - 2410	Tri-Band RF VCO	-115 dBc/Hz	-140 dBc/Hz	7.5	180	0.16	LP6C	3A001.a.11.b	HMC839LP6CE
2190 - 2550	Tri-Band RF VCO	-112 dBc/Hz	-141 dBc/Hz	6.5	180	0.17	LP6C	3A001.a.11.b	HMC820LP6CE
NEW! 2620 - 2830	Tri-Band RF VCO	-115 dBc/Hz	-139 dBc/Hz	9	180	0.18	LP6C	3A001.a.11.b	HMC840LP6CE
2fo									
2660 - 3300	Tri-Band RF VCO	-106 dBc/Hz	-136 dBc/Hz	-4	180	0.21	LP6C	3A001.a.11.b	HMC822LP6CE
3180 - 3780	Tri-Band RF VCO	-112 dBc/Hz	-135 dBc/Hz	-4	180	0.24	LP6C	3A001.a.11.b	HMC838LP6CE
3365 - 3705	RF VCO	-107 dBc/Hz	-135 dBc/Hz	0	190	0.25	LP6C	3A001.a.11.b	HMC836LP6CE

PLLs with INTEGRATED VCOs - Microwave & RF PLLs with Integrated VCOs

Frequency (MHz)	Function	Closed Loop SSB Phase Noise @ 10 kHz Offset	Open Loop VCO Phase Noise @ 1 MHz Offset	Pout (dBm)	RMS Jitter Fractional Mode (fs)	Integrated PN Fractional Mode (deg rms)	Package	ECCN Code	Part Number
3440 - 4160	Tri-Band RF VCO	-106 dBc/Hz	-135 dBc/Hz	-4	180	0.27	LP6C	3A001.a.11.b	HMC821LP6CE
4100 - 4600	Tri-Band RF VCO	-111 dBc/Hz	-135 dBc/Hz	-0.5	180	0.30	LP6C	3A001.a.11.b	HMC837LP6CE
4200 - 4820	Tri-Band RF VCO	-108 dBc/Hz	-135 dBc/Hz	-4	180	0.31	LP6C	3A001.a.11.b	HMC839LP6CE
4380 - 5100	Tri-Band RF VCO	-106 dBc/Hz	-135 dBc/Hz	-4	180	0.33	LP6C	3A001.a.11.b	HMC820LP6CE
5240 - 5660	Tri-Band RF VCO	-109 dBc/Hz	-133 dBc/Hz	-3	180	0.37	LP6C	3A001.a.11.b	HMC840LP6CE
7300 - 8200	Microwave VCO	-101 dBc/Hz	-140 dBc/Hz	15	196	0.58	LP6C	3A001.a.11.b	HMC764LP6CE
7800 - 8800	Microwave VCO	-101 dBc/Hz	-140 dBc/Hz	13	193	0.61	LP6C	3A001.a.11.b	HMC765LP6CE
NEW! 9600 - 10800	Microwave VCO	-100 dBc/Hz	-135 dBc/Hz	9	185	0.7	LP6C	3A001.a.11.b	HMC778LP6CE
11500 - 12500	Microwave VCO	-99 dBc/Hz	-134 dBc/Hz	10	181	0.81	LP6C	3A001.a.11.b	HMC783LP6CE
12400 - 13400	Microwave VCO	-98 dBc/Hz	-132 dBc/Hz	8	175	0.84	LP6C	3A001.a.11.b	HMC807LP6CE

Wideband Continuous Tuning

NEW! 25 - 3000	Wideband RF VCO	-114 dBc/Hz @ 2 GHz Fract Mode	-141 dBc/Hz @ 2 GHz	5	180	0.13	LP6G	3A001.a.11.b	HMC830LP6GE
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VOLTAGE CONTROLLED OSCILLATORS*

Fo Frequency (GHz)	Function	Fo Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
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VCOs with Buffer Amplifier

2.05 - 2.25	VCO with Buffer	3.5	-89	-112	+3V @ 35mA	LP4	EAR99	HMC384LP4E
2.25 - 2.5	VCO with Buffer	4.5	-89	-115	+3V @ 35mA	LP4	EAR99	HMC385LP4E
2.6 - 2.8	VCO with Buffer	5	-88	-115	+3V @ 35mA	LP4	EAR99	HMC386LP4E
2.75 - 3.0	VCO with Buffer	4.5	-89	-114	+3V @ 37mA	LP4	EAR99	HMC416LP4E
3.15 - 3.4	VCO with Buffer	4.9	-88	-113	+3V @ 39mA	LP4	EAR99	HMC388LP4E
3.35 - 3.55	VCO with Buffer	4.7	-89	-112	+3V @ 41mA	LP4	EAR99	HMC389LP4E
3.55 - 3.9	VCO with Buffer	4.7	-87	-112	+3V @ 42mA	LP4	EAR99	HMC390LP4E
3.9 - 4.45	VCO with Buffer	5	-81	-106	+3V @ 30mA	LP4	EAR99	HMC391LP4E
4.45 - 5.0	VCO with Buffer	4	-79	-105	+3V @ 30mA	LP4	EAR99	HMC429LP4E
5.0 - 5.5	VCO with Buffer	2	-80	-103	+3V @ 27mA	LP4	EAR99	HMC430LP4E
5.5 - 6.1	VCO with Buffer	2	-80	-102	+3V @ 27mA	LP4	EAR99	HMC431LP4E
5.8 - 6.8	VCO with Buffer	10	-82	-105	+3V @ 100mA	MS8G	EAR99	HMC358MS8GE
6.1 - 6.72	VCO with Buffer	4.5	-73	-101	+3V @ 31mA	LP4	EAR99	HMC466LP4E
6.8 - 7.4	VCO with Buffer	11	-80	-106	+3V @ 80mA	LP4	EAR99	HMC505LP4E
7.1 - 7.9	VCO with Buffer	14	-80	-101	+3V @ 85mA	LP4	EAR99	HMC532LP4E
7.8 - 8.7	VCO with Buffer	14	-80	-103	+3V @ 77mA	LP4	EAR99	HMC506LP4E
8.6 - 10.2	VCO with ÷4	18	-70	-100	+5V @ 220mA	LP5	3A001.a.11.b	HMC734LP5E
10.5 - 12.2	VCO with ÷4	17	-75	-100	+5V @ 220mA	LP5	3A001.a.11.b	HMC735LP5E
13.2 - 13.5	VCO with ÷8	-8	-83	-110	+5V @ 230mA	QS16G	3A001.a.11.b	HMC401QS16GE
14.0 - 15.0	VCO with ÷8	6	-75	-110	+5V @ 260mA	QS16G	3A001.a.11.b	HMC398QS16GE
23.8 - 24.8	VCO with ÷16	12	-70	-95	+5V @ 220mA	LP4	3A001.a.11.b	HMC533LP4E

Wideband VCOs

4 - 8	Wideband VCO	5	-75	-100	+5V @ 55mA	LC4B	EAR99	HMC586LC4B
5 - 10	Wideband VCO	5	-65	-95	+5V @ 55mA	LC4B	EAR99	HMC587LC4B
6 - 12	Wideband VCO	1	-65	-95	+5V @ 57mA	LC4B	EAR99	HMC732LC4B
8 - 12.5	Wideband VCO	5	-65	-93	+5V @ 55mA	LC4B	EAR99	HMC588LC4B
10 - 20	Wideband VCO	3	-60	-90	+5V @ 70mA	LC4B	EAR99	HMC733LC4B

* HMC VCOs integrate resonator, negative resistance generator and tuning varactor circuits on-chip. No external components are required.

VOLTAGE CONTROLLED OSCILLATORS WITH Fo/2 OUTPUT

Fo Frequency (GHz)	Fo/2 Frequency (GHz)	Function	Fo Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
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VCOs with Fo/2

6.65 - 7.65	3.325 - 3.825	VCO with Fo/2	13	-90	-115	+5V @ 230mA	LP5	EAR99	HMC507LP5E
7.3 - 8.2	3.65 - 4.1	VCO with Fo/2	15	-90	-116	+5V @ 240mA	LP5	EAR99	HMC508LP5E
7.8 - 8.8	3.9 - 4.4	VCO with Fo/2	13	-90	-115	+5V @ 250mA	LP5	EAR99	HMC509LP5E
9.05 - 10.15	4.525 - 5.075	VCO with Fo/2	13	-88	-115	+5V @ 265mA	LP5	EAR99	HMC511LP5E
14.5 - 15.0	7.25 - 7.5	VCO with Fo/2	9	-80	-105	+4.2V @ 150mA	LP4	EAR99	HMC736LP4E
14.9 - 15.5	7.45 - 7.75	VCO with Fo/2	9	-80	-105	+4.2V @ 150mA	LP4	EAR99	HMC737LP4E

VCOs with Fo/2 & ÷4

8.45 - 9.55	4.225 - 4.775	VCO with Fo/2 & ÷4	13	-92	-116	+5V @ 315mA	LP5	3A001.a.11.b	HMC510LP5E
9.5 - 10.8	4.75 - 5.4	VCO with Fo/2 & ÷4	11	-85	-110	+5V @ 350mA	LP5	3A001.a.11.b	HMC530LP5E
9.6 - 10.8	4.8 - 5.4	VCO with Fo/2 & ÷4	9	-85	-111	+5V @ 330mA	LP5	3A001.a.11.b	HMC512LP5E
10.43 - 11.46	5.215 - 5.73	VCO with Fo/2 & ÷4	7	-85	-110	+3V @ 275mA	LP5	3A001.a.11.b	HMC513LP5E
10.6 - 11.8	5.3 - 5.9	VCO with Fo/2 & ÷4	11	-82	-110	+5V @ 350mA	LP5	3A001.a.11.b	HMC534LP5E
11.1 - 12.4	5.55 - 6.2	VCO with Fo/2 & ÷4	9	-83	-110	+5V @ 350mA	LP5	3A001.a.11.b	HMC582LP5E

SMT & Chip (Die) Products

VOLTAGE CONTROLLED OSCILLATORS WITH Fo/2 OUTPUT

Fo Frequency (GHz)	Fo/2 Frequency (GHz)	Function	Fo Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
11.17 - 12.02	5.585 - 6.01	VCO with Fo/2 & ±4	7	-87	-110	+3V @ 275mA	LP5	3A001.a.11.b	HMC514LP5E
11.5 - 12.5	5.75 - 6.25	VCO with Fo/2 & ±4	10	-83	-110	+5V @ 200mA	LP5	3A001.a.11.b	HMC515LP5E
11.5 - 12.8	5.75 - 6.4	VCO with Fo/2 & ±4	11	-80	-110	+5V @ 350mA	LP5	3A001.a.11.b	HMC583LP5E
12.4 - 13.4	6.2 - 6.7	VCO with Fo/2 & ±4	8	-83	-110	+5V @ 260mA	LP5	3A001.a.11.b	HMC529LP5E
12.5 - 13.9	6.25 - 6.95	VCO with Fo/2 & ±4	10	-81	-110	+5V @ 330mA	LP5	3A001.a.11.b	HMC584LP5E
13.6 - 14.9	6.8 - 7.45	VCO with Fo/2 & ±4	7	-82	-110	+5V @ 260mA	LP5	3A001.a.11.b	HMC531LP5E
14.25 - 15.65	7.125 - 7.825	VCO with Fo/2 & ±4	9	-80	-107	+5V @ 350mA	LP5	3A001.a.11.b	HMC632LP5E

VCOs with Fo/2 & ±16

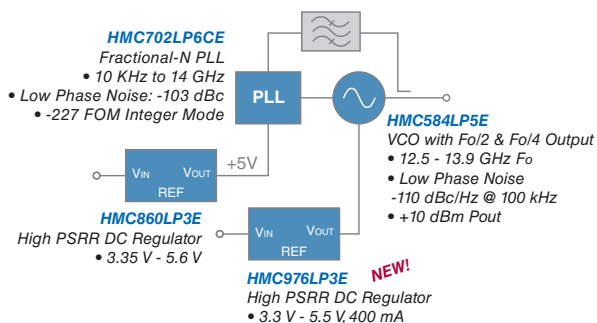
20.9 - 23.9	10.45 - 11.95	VCO with Fo/2 & ±16	9	-65	-95	+5V @ 200mA	LP4	3A001.a.11.b	HMC738LP4E
23.8 - 26.8	11.9 - 13.4	VCO with Fo/2 & ±16	8	-64	-93	+5V @ 200mA	LP4	3A001.a.11.b	HMC739LP4E

PHASE LOCKED OSCILLATOR

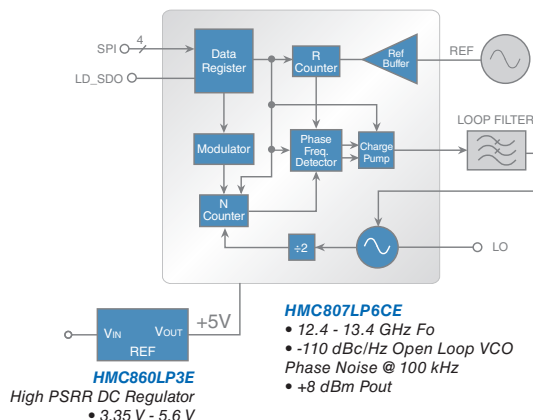
Fo Frequency (GHz)	Function	Fo Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
14.7 - 15.4	Phase Locked Oscillator	9	-80	-110	+5V @ 340mA +12V @ 28mA	LP4	3A001.a.11.b	HMC535LP4E

HITTITE'S HIGH FREQUENCY LO SOURCE ALTERNATIVES

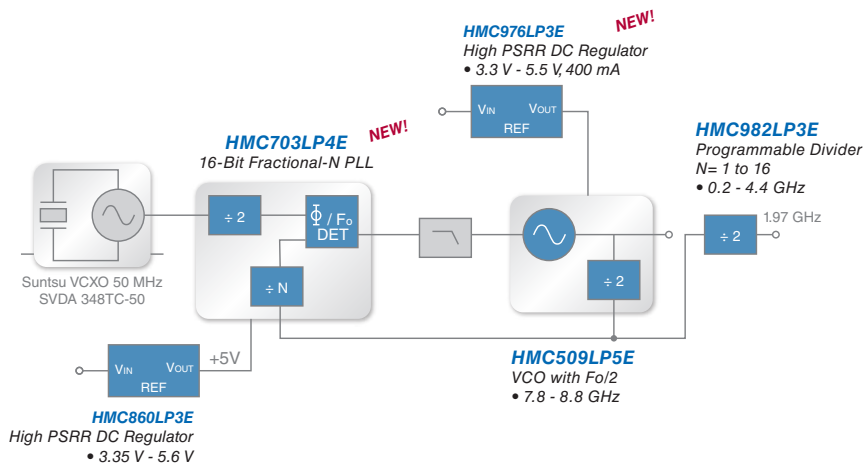
PLL & VCO CHIPSET



PLL WITH INTEGRATED VCO IC

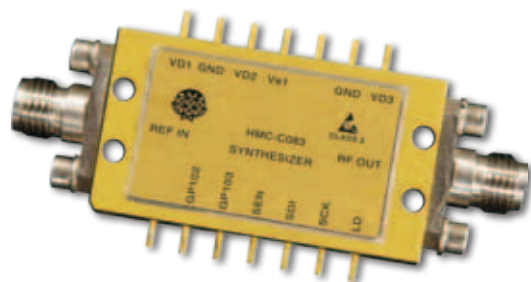


REFERENCE CLOCK SOLUTIONS FOR 100G DP-QPSK



Typical LO & Clock Generation IC applications are illustrated.
See the full product listing for alternatives to the select HMC products shown in each functional block.

Our hermetic module product line is expanding with two new module families. The new *SDLVA* joins our already popular amplifier, attenuator, DRO, high speed digital logic, frequency multiplier, MicroSynth® integrated synthesizer, mixer, phase shifter, prescaler, switch & VCO product portfolio. Utilizing our standard MMIC products, we take advantage of our design, manufacturing and quality knowledge base. Contact us to discuss your custom module requirements.



Features:

- ◆ Off-The-Shelf Availability
- ◆ Hermetically Sealed
- ◆ Internal DC Power Regulation
- ◆ Field Replaceable Connectors
- ◆ Military & Space Upscreening
- ◆ Customization Offered

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package / Connector	ECCN Code	Part Number
1 - 12	Low Noise	16	30	1.8	16	+6V @ 60mA	C-10B / SMA	EAR99	HMC-C059
1.8 - 4.2	Low Noise	26	26	0.7	15.5	+8V @ 112mA	C-10 / SMA	EAR99	HMC-C045
5 - 9	Low Noise	24	25	1.4	15	+12V @ 105mA	C-10 / SMA	EAR99	HMC-C048
29 - 36	Low Noise	20	22	2.9	11	+3V @ 80mA	C-10 / 2.92mm	3A001.b.4.c	HMC-C027
2 - 20	Wideband LNA	15	25	2.5	14	+12V @ 65mA	C-1 / SMA	EAR99	HMC-C001
2 - 20	Wideband LNA	14	26	2	18	+12V @ 60mA	C-2 / SMA	EAR99	HMC-C002
2 - 20	Wideband LNA	14	27	2	16	+8V @ 75mA	C-2B / SMA	EAR99	HMC-C022
7 - 17	Wideband LNA	22	25	2	14	+8V @ 93mA	C-1 / SMA	EAR99	HMC-C016
17 - 27	Wideband LNA	18	25	3	14	+8V @ 96mA	C-1B / 2.92mm	EAR99	HMC-C017
0.01 - 20	Wideband Driver	16	33	3	23	+12V @ 195mA	C-3 / SMA	3A001.b.4.f	HMC-C004
0.01 - 20	Wideband Driver	15	30	3	23	+12V @ 225mA	C-3B / SMA	3A001.b.4.f	HMC-C024
2 - 35	Wideband Driver	12	29	3	18	+11V @ 92mA	C-10 / 2.92mm	3A001.b.4.c	HMC-C038
0.01 - 6.0	Single Stage Power Amplifier, 1 Watt	13	40	5	29.5	-5V @ 5mA +15V @ 450mA	C-17 / SMA	EAR99	HMC-C074
0.01 - 6.0	Two Stage Power Amplifier, 1 Watt	24	42	5	29.5	-5V @ 5mA +15V @ 740mA	C-17 / SMA	EAR99	HMC-C075
0.01 - 15	Wideband Power Amplifier, 1/2 Watt	12	36	4	28	+11V @ 360mA	C-10B / SMA	3A001.b.4.f	HMC-C036
0.01 - 15	Wideband Power Amplifier, 1/2 Watt	12	36	4	28	+11V @ 360mA	C-12 / SMA	3A001.b.4.f	HMC-C037
2 - 20	Wideband Power Amplifier	15	34	4	26	+12V @ 310mA	C-2 / SMA	3A001.b.4.f	HMC-C003
2 - 20	Wideband Power Amplifier	15	34	4	26	+12V @ 310mA	C-2B / SMA	3A001.b.4.f	HMC-C023
2 - 20	Wideband Power Amplifier	31	33	3	26	+12V @ 400mA	C-3B / SMA	3A001.b.4.f	HMC-C026
17 - 24	Wideband Power Amplifier	22	33	3.5	24	+8V @ 250mA	C-10 / 2.92mm	EAR99	HMC-C020
21 - 31	Wideband Power Amplifier	15	32	5	24	+8V @ 215mA	C-10 / 2.92mm	3A001.b.4.c	HMC-C021
0.8 - 2.0	Power Amplifier, 10 Watt	43	56	12	40	+12V @ 6.5A	C-7 / SMA	EAR99	HMC-C013

AMPLIFIERS - Low Phase Noise

Frequency (GHz)	Function	Gain / NF (dB)	OIP3 (dBm)	10 kHz Phase Noise (dBc/Hz)	P1dB / Psat (dBm)	Bias Supply	Package / Connector	ECCN Code	Part Number
1.5 - 5.0	Low Phase Noise	14 / 4.5	26.5	-171	17 / 22	+7V @ 170mA	C-16 / SMA	EAR99	HMC-C077
2 - 18	Low Phase Noise	13.5 / 5	22.5	-160	15 / 18.5	+5V @ 80mA	C-1 / SMA	EAR99	HMC-C050
3 - 8	Low Phase Noise	9 / 6	33	-168	22 / 25	+7V @ 300mA	C-16 / SMA	EAR99	HMC-C079
6 - 12	Low Phase Noise	11 / 4.5	34	-176	20 / 22	+7V @ 170mA	C-16 / SMA	EAR99	HMC-C072
7 - 11	Low Phase Noise	9 / 6	33	-170	22 / 25	+7V @ 300mA	C-16 / SMA	EAR99	HMC-C076

ATTENUATORS - Analog & Digital

Frequency (GHz)	Function	Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package / Connector	ECCN Code	Part Number
DC - 20	Analog VVA	5.5	35	10	-5	C-10 / SMA	EAR99	HMC-C053
DC - 13	6-Bit Digital, Serial Control	3.6	0.5 to 31.5	32	Serial/CMOS	C-6 / SMA	EAR99	HMC-C018
DC - 13	6-Bit Digital	3.2	0.5 to 31.5	38	0 / +5V	C-6 / SMA	EAR99	HMC-C025

DIELECTRIC RESONATOR OSCILLATORS (DRO)

Frequency (GHz)	Function	Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Frequency Drift (ppm/°C)	Bias Supply	Package	ECCN Code	Part Number
8.0 - 8.3	Dielectric Resonator Oscillator	14.5	-122	-140	2	+6 to +15V @ 125mA	C-18 / SMA	EAR99	HMC-C200

Robust, High Performance RF to Light Solutions

FREQUENCY DIVIDERS (PRESCALERS)

Input Freq. (GHz)	Function	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package / Connector	ECCN Code	Part Number
DC - 18	Divide-by-2	-15 to +10	-4	-150	+5V @ 75mA	C-1 / SMA	3A001.a.11.b	HMC-C005
DC - 18	Divide-by-4	-15 to +10	-4	-150	+5V @ 93mA	C-1 / SMA	3A001.a.11.b	HMC-C006
0.5 - 8	Divide-by-5	-15 to +10	-1	-155	+5V @ 80mA	C-1 / SMA	3A001.a.11.b	HMC-C039
DC - 18	Divide-by-8	-15 to +10	-4	-150	+5V @ 98mA	C-1 / SMA	3A001.a.11.b	HMC-C007
0.5 - 17	Divide-by-10	-15 to +10	-1	-155	+5V @ 152mA	C-1 / SMA	3A001.a.11.b	HMC-C040

FREQUENCY MULTIPLIERS - Active

Input Freq. (GHz)	Function	Output Freq. (GHz)	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Package / Connector	ECCN Code	Part Number
3 - 5	x2 Active	6 - 10	3	17	-140	C-10 / SMA	EAR99	HMC-C031
9.0 - 14.5	x2 Active	18 - 29	3	16	-132	C-10 / 2.92mm	EAR99	HMC-C032
12.0 - 16.5	x2 Active	24 - 33	3	17	-132	C-10 / 2.92mm	EAR99	HMC-C033
16 - 23	x2 Active	32 - 46	3	13	-130	C-10 / 2.92mm	EAR99	HMC-C034
4.0 - 10.5	x2 Active	8 - 21	6	14	-142	C-10 / SMA	EAR99	HMC-C056

HIGH SPEED DIGITAL LOGIC

Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall Time (ps)	Deterministic Jitter (ps)	Differential Output Swing (Vp-p)	DC Power (mW)	Vee Power Supply (Vdc)	Package / Connector	ECCN Code	Part Number
50 / 30	1:2 Fanout Buffer	9.5 / 11	2	0.5	455	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C062
50 / 25	AND / NAND / OR / NOR	9 / 10	2	0.5	560	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C065
43 / 43	D-Type Flip-Flop	9 / 10	1.5	0.5	580	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C060
50 / 25	D-Type Flip-Flop Double Edge Triggered	9 / 11	1.5	0.5	690	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C061
50 / 25	XOR / XNOR	6.5 / 10	2	0.5	550	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C064

I/Q MIXERS

RF / LO Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	Image Rejection (dB)	IIP3 (dBm)	Package / Connector	ECCN Code	Part Number
4 - 8.5	I/Q Mixer / IRM	DC - 3.5	-7.5	35	23	C-4 / SMA	EAR99	HMC-C009
6 - 10	I/Q Mixer / IRM	DC - 3.5	-7.5	35	25	C-4 / SMA	EAR99	HMC-C041
8.5 - 13.5	I/Q Mixer / IRM	DC - 2	-8	28	25	C-4 / SMA	EAR99	HMC-C042
11 - 16	I/Q Mixer / IRM	DC - 3.5	-9	30	28	C-4 / SMA	EAR99	HMC-C043
15 - 23	I/Q Mixer / IRM	DC - 3.5	-8	30	25	C-4 / 2.92mm & SMA	EAR99	HMC-C044
20 - 31	I/Q Mixer / IRM	DC - 4.5	-10	24	22.5	C-4B / 2.92mm & SMA	EAR99	HMC-C046
30 - 38	I/Q Mixer / IRM	DC - 3.5	-10.5	15	19	C-4 / 2.92mm & SMA	EAR99	HMC-C047

MIXERS

RF Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	LO/RF Isolation (dB)	IIP3 (dBm)	Package / Connector	ECCN Code	Part Number
7 - 14	+13 LO, DBL-BAL	DC - 5	-7	48	20	C-11 / SMA	EAR99	HMC-C049
11 - 20	+13 LO, DBL-BAL	DC - 6	-7	43	18	C-11 / SMA	EAR99	HMC-C051
16 - 32	+13 LO, DBL-BAL	DC - 8	-8	35	19	C-11 / 2.92mm & SMA	EAR99	HMC-C014
23 - 37	+13 LO, DBL-BAL	DC - 13	-9	35	19	C-11 / 2.92mm & SMA	EAR99	HMC-C035
24 - 38	+13 LO, DBL-BAL	DC - 8	-8.5	35	20	C-11 / 2.92mm & SMA	EAR99	HMC-C015

PHASE SHIFTERS - Analog

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	2nd harmonic Pin = 10 dBm (dBc)	Control Voltage Range (Vdc)	Package / Connector	ECCN Code	Part Number
6 - 15	Analog	7	750° @ 6 GHz 450° @ 15 GHz	40	0V to +5V	C-1 / SMA	EAR99	HMC-C010

PHASE SHIFTERS - Digital

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	IIP3 (dBm)	Control Voltage Range (Vdc)	Package / Connector	ECCN Code	Part Number
8 - 12	4-Bit Digital	7	22.5 to 360	38	0V to +5V	C-6 / SMA	EAR99	HMC-C055

SDLVAs - Successive Detection Log Video Amplifier

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV / dB)	RF Threshold Level (dBm)	Bias Supply	Package / Connector	ECCN Code	Part Number
1 - 20	SDLVA	59	14	-67	+12V @ 86mA	C-10 / 2.92mm	EAR99	HMC-C052
2 - 20	SDLVA with Limited RF Output	50	45	-45	+12V @ 370mA -5V @ 20mA	C-21 / SMA	EAR99	HMC-C078

SWITCHES - SPST, SPDT & SP4T

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Switching Speed (ns)	Package / Connector	ECCN Code	Part Number
DC - 20	SPST, Hi Isolation	3	100	23	8.5	C-9 / SMA	EAR99	HMC-C019
DC - 18	SPDT, Hi Isolation	2	55	27	3	C-14 / SMA	EAR99	HMC-C058
DC - 20	SPDT, Hi Isolation	2	40	23	5	C-5 / SMA	EAR99	HMC-C011
DC - 20	SP4T, Hi Isolation	3	40	24	14	C-15 / SMA	EAR99	HMC-C071

SYNTHESIZED MODULES - MicroSynth®

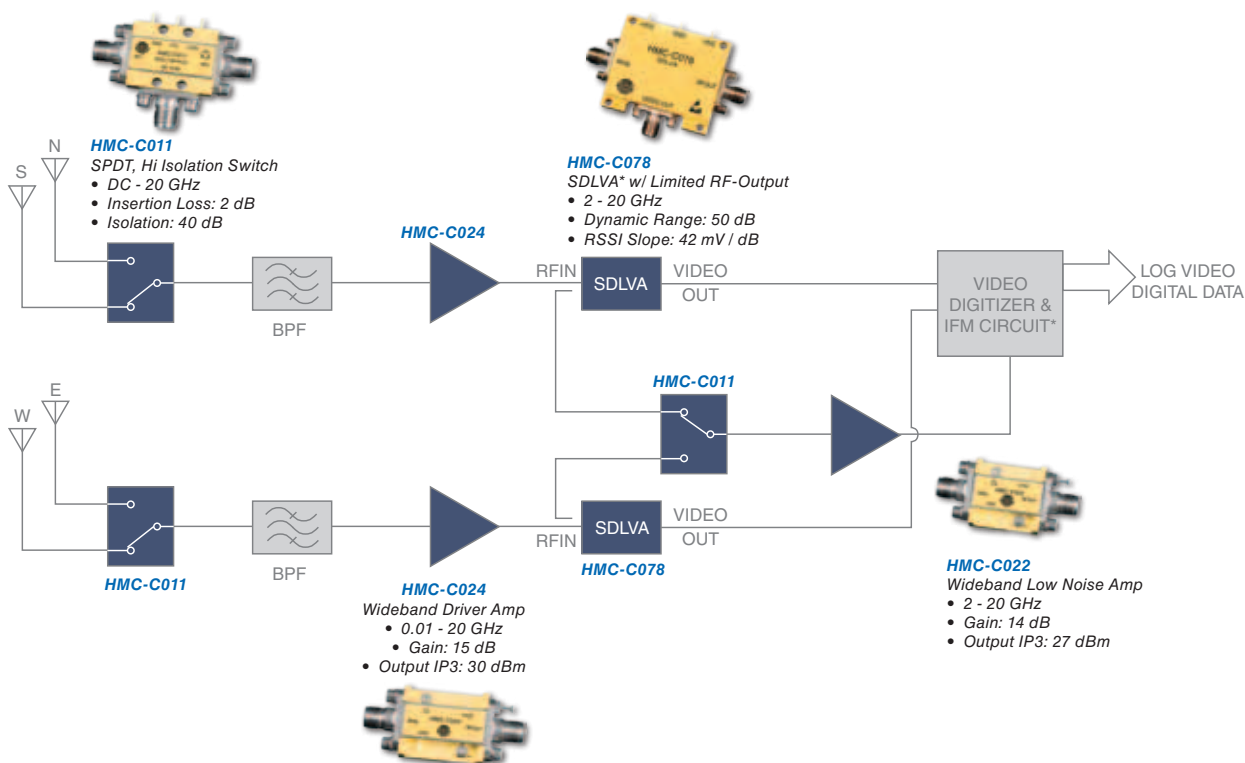
Frequency (GHz)	Function	Min. Step Size Resolution (Hz)	Reference Frequency (MHz)	SSB Phase Noise @ 100 kHz Offset (dBc/Hz)	Output Power (dBm)	Bias Supply	Package	ECCN Code	Part Number
2 - 6	MicroSynth® Synthesizer	0.6	10	-93	17	+20V @ 7mA +6V @ 330mA	C-20 / SMA	EAR99	HMC-C083
5.5 - 10.5	MicroSynth® Synthesizer	1.2	10	-92	21	+20V @ 20mA +6V @ 300mA +3.6V @ 100mA	C-20 / SMA	EAR99	HMC-C070

VOLTAGE CONTROLLED OSCILLATORS

Frequency (GHz)	Function	Output Power (dBm)	10 kHz SSB Phase Noise (dBc/Hz)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package / Connector	ECCN Code	Part Number
4 - 8	Wideband VCO	20	-75	-95	+12V @ 185mA	C-1 / SMA	EAR99	HMC-C028
5 - 10	Wideband VCO	20	-64	-93	+12V @ 195mA	C-1 / SMA	EAR99	HMC-C029
8 - 12.5	Wideband VCO	21	-59	-83	+12V @ 195mA	C-1 / SMA	EAR99	HMC-C030
38.4 - 43.2	VCO	13	-74	-98	+5V @ 350mA	C-19 / 2.4mm	EAR99	HMC-C073

Hittite Microwave can offer any of our Die or SMT IC products in a connectorized module.
Full specifications for each product are available at www.hittite.com.

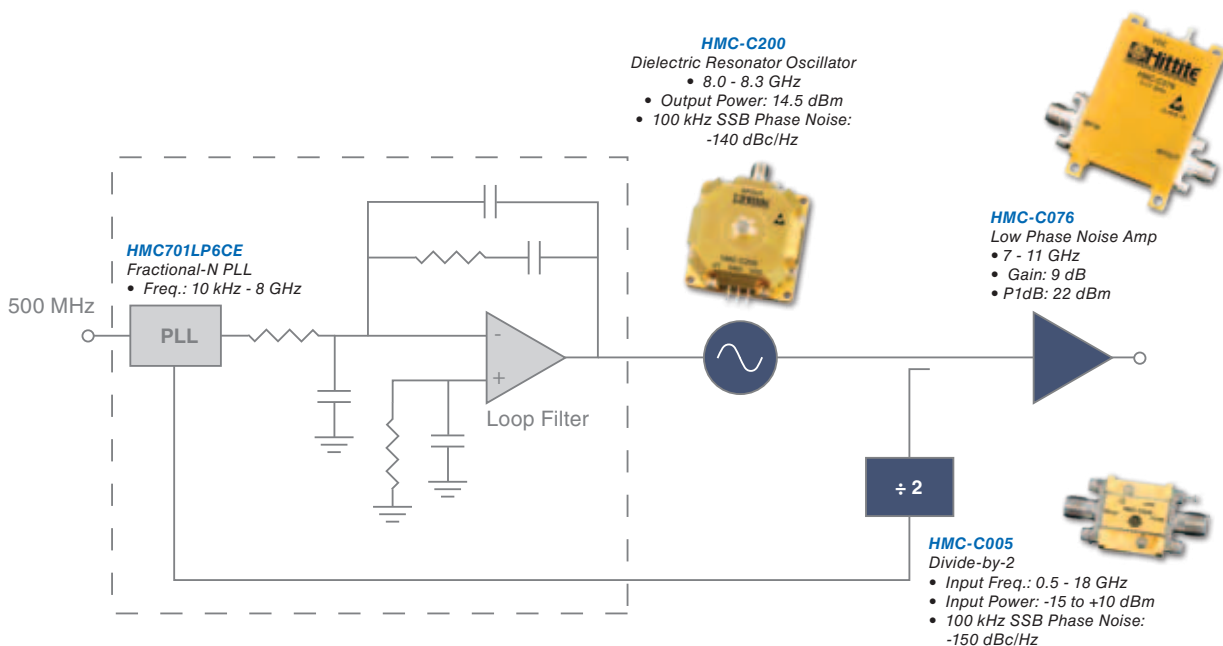
RADAR RECEIVER APPLICATION



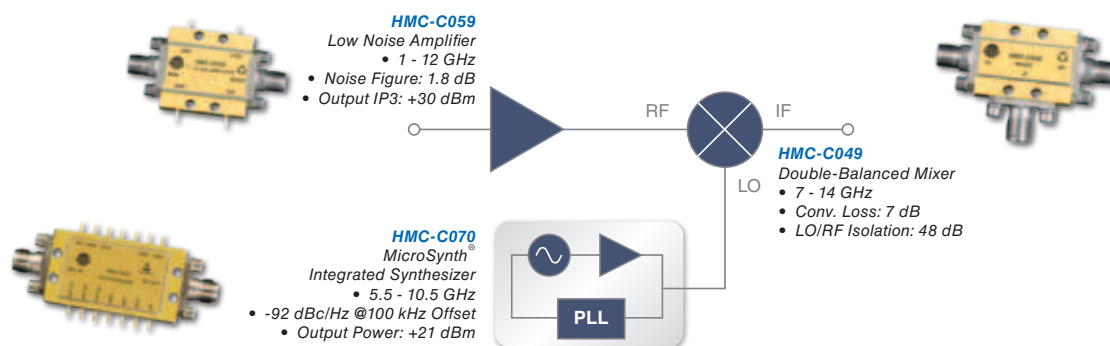
*Successive Detection Log Video Amplifier

Robust, High Performance RF to Light Solutions

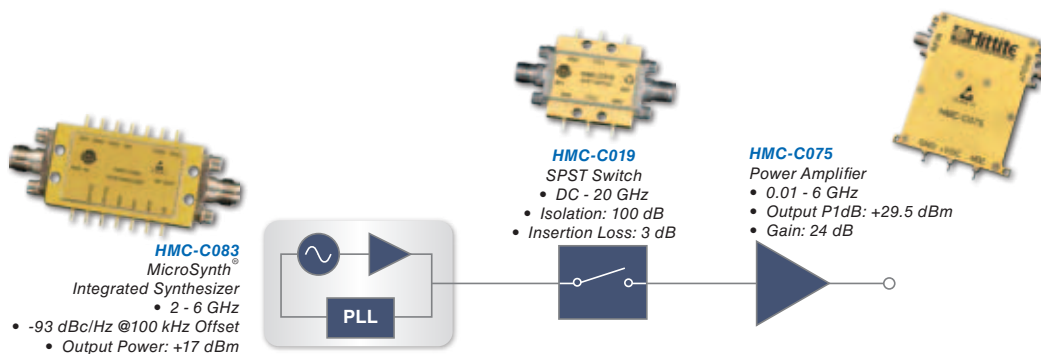
ULTRA LOW PHASE NOISE PHASE LOCKED OSCILLATOR (PLO) APPLICATION



X-BAND DOWNCONVERTER APPLICATION



PULSED 0.5W C-BAND SYNTHESIZER APPLICATION



Expanded Synthesized Signal Generator Family to 70 GHz

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700 MHz to 8 GHz



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HMC-T2100
10 MHz to 20 GHz



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HMC-T2220B
10 MHz to 20 GHz
Battery Powered



Our Signal Generator Products

- ◆ **Wide Frequency Range:** 10 MHz to 70 GHz
- ◆ **Versatile:** High Output Power Simplifies Test Set-Ups
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HMC-T2220
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HMC-T2240
10 MHz to 40 GHz



\$19,498

Performance

- ◆ High Output Power: +20 dBm @ 40 GHz
- ◆ Excellent 10 GHz SSB Phase Noise: -92 dBc/Hz @ 100 kHz Offset
- ◆ Spurious: < -65 dBc @ 10 GHz
- ◆ Resolution: 0.1 dB & 1 Hz
- ◆ Fast Switching: 500 μ s

NEW!

HMC-T2270
10 MHz to 70 GHz



Performance

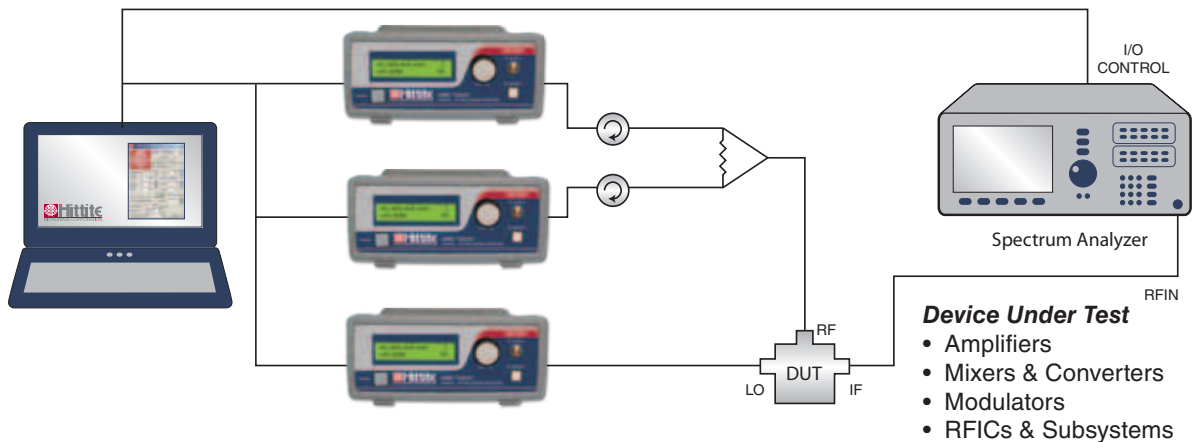
- ◆ +19 dBm @ 40 GHz, +2 dBm @ 70 GHz
- ◆ Excellent 30 GHz SSB Phase Noise: -85 dBc/Hz @ 100 kHz Offset
- ◆ Spurious: < -60 dBc @ 70 GHz
- ◆ Call for Price

Expanded Synthesized Signal Generator Family to 40 GHz

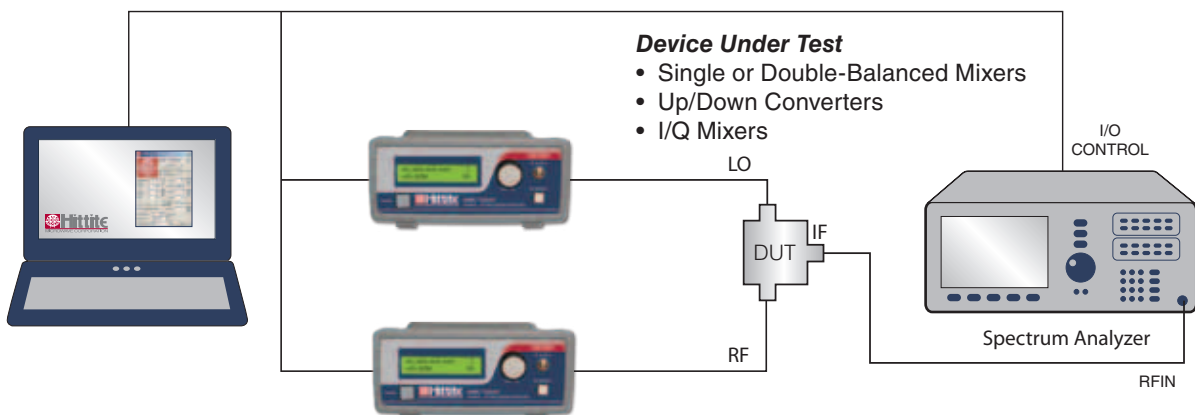
SIGNAL GENERATORS - Precise RF Signal Generation for ATE & Lab Environments

Frequency (GHz)	Function	Frequency Resolution	Maximum Power Output (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Spurious (dBc)	Switching Speed Steps (μs)	Package	ECCN Code	Part Number
0.7 - 8.0	Signal Generator	1 MHz	+17 @ 1 GHz +10 @ 8 GHz	-87 @ 4 GHz	< -45	200	Rack Mountable / Benchtop	EAR99	HMC-T2000
0.01 - 20	Signal Generator	10 kHz	+25 @ 1 GHz +22 @ 20 GHz	-93 @ 10 GHz	< -27	300	Rack Mountable / Benchtop	EAR99	HMC-T2100
0.01 - 20	Portable Signal Generator	1 Hz	+28 @ 1 GHz +24 @ 20 GHz	-99 @ 10 GHz	< -57	300	Portable / Benchtop	EAR99	HMC-T2220B
0.01 - 20	Signal Generator	1 Hz	+28 @ 1 GHz +24 @ 20 GHz	-99 @ 10 GHz	< -57	300	Rack Mountable / Benchtop	EAR99	HMC-T2220
0.01 - 40	Signal Generator	1 Hz	+29 @ 1 GHz +20 @ 40 GHz	-92 @ 10 GHz	< -60	500	Rack Mountable / Benchtop	EAR99	HMC-T2240
NEW! 0.01 - 70	Signal Generator	1 Hz	+28 @ 1 GHz +2 @ 70 GHz	-118 @ 1 GHz -80 @ 70 GHz	< -60 Below 10 GHz < -65 @ 70 GHz	300	Rackmountable / Benchtop	3A002.d.3.e	HMC-T2270

TWO TONE THIRD ORDER INTERCEPT TEST SET-UP



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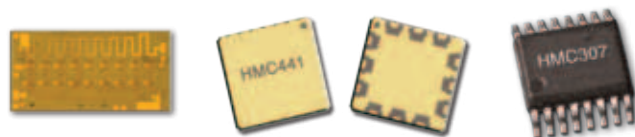
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- Constant Acceleration Stress Test
- Fine & Gross Hermeticity Test
- Serialized Test Data
- ESD Characterization

SPACE LEVEL COMPONENTS, MODULES & SUBSYSTEMS

Class S Screening & Qualification

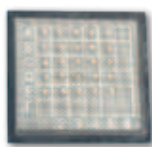
- VI to Methods 2010A & 2017K
- Temp Cycle Stress Test
- High Temp Burn-In & Life Test
- Wafer Lot Acceptance Test
- Bond Pull & Die Shear Test
- SEM Inspection
- Metal & Glass Thicknesses
- Serialized Test Data
- Qualification Report

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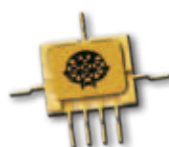
Space Solution Inquiries: SPACE@hittite.com



FET Channel SEM



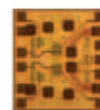
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Evaluation Boards & ICs Reduce Design Cycle Time

7 DESIGNER'S KITS AVAILABLE TO CHOOSE FROM!



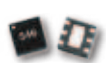
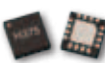
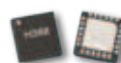
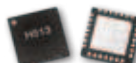
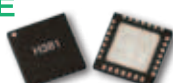
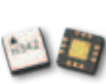
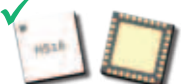
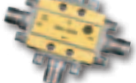
- ◆ Gain Blocks DC - 6 GHz, HMC-DK001
- ◆ Linear Driver Amplifiers 0.4 - 2.5 GHz, HMC-DK002
- ◆ High IP3 Mixers 0.45 - 4.0 GHz, HMC-DK003
- ◆ Digital Attenuators DC - 6 GHz, HMC-DK004
- ◆ SPDT Switches DC - 12 GHz, HMC-DK005
- ◆ Passive Attenuator Chips DC - 50 GHz, HMC-DK006
- ◆ Serial/Parallel USB Interface Kit, HMC-DK008

Design engineers can order pre-packaged MMIC Designer's Kits which enable them to quickly assess which Hittite product is the best choice for their application. The end result is a design that goes to layout more quickly and with fewer subsequent changes.

Each Hittite Designer's Kit contains an assembled & tested connectorized evaluation board, 5 to 10 ICs of each part and the latest Hittite CD-ROM catalog.

Designer's Kit	Kit Contents			
	ICs		Eval Boards	
Gain Blocks DC - 6 GHz HMC-DK001	HMC474MP86E HMC476MP86E HMC313E HMC311ST89E HMC478MP86E HMC478ST89E	HMC479MP86E HMC479ST89E HMC481ST89E HMC480ST89E HMC481MP86E HMC482ST89E	104217 – HMC313E 110161 – HMC478ST89E 107490 – HMC481MP86E	
Linear Driver Amps 0.4 - 2.5 GHz HMC-DK002	HMC454ST89E HMC450QS16GE HMC413QS16GE	HMC452ST89E HMC453ST89E HMC457QS16GE	107749 – HMC454ST89E 108349 – HMC450QS16GE 105000 – HMC413QS16GE	108712 – HMC452ST89E 108718 – HMC453ST89E 106043 – HMC457QS16GE
Hi-IP3 Mixers 0.45 - 4.0 GHz HMC-DK003	HMC387MS8E HMC483MS8GE HMC399MS8E HMC316MS8E HMC400MS8E HMC485MS8GE	HMC402MS8E HMC214MS8E HMC478ST89E HMC481ST89E HMC480ST89E	110161 – HMC478ST89E 105188 – HMC485MS8GE	106334 – HMC399MS8E 101830 – HMC400MS8E
Digital Attenuators DC - 6 GHz HMC-DK004	HMC291E HMC468LP3E HMC274QS16E HMC271ALP4E HMC273MS10GE	HMC305ALP4E HMC306MS10E HMC470LP3E HMC472LP4E	103372 – HMC291E 107302 – HMC468LP3E 104976 – HMC274QS16E 108782 – HMC271ALP4E 103393 – HMC273MS10GE	108782 – HMC305AMS10E 103393 – HMC306MS10E 107006 – HMC470LP3E 107010 – HMC472LP4E
SPDT Switches DC - 12 GHz HMC-DK005	HMC221AE HMC284MS8GE HMC349MS8GE HMC232LP4E HMC544E	HMC595E HMC574MS8E HMC784MS8GE HMC536MS8GE	101675 – HMC221AE 107662 – HMC349MS8GE 107723 – HMC232LP4E	104124 – HMC574MS8E 104124 – HMC784MS8GE 105143 – HMC536MS8GE
Passive Attenuators DC - 50 GHz HMC-DK006	HMC650 HMC651 HMC652 HMC653 HMC654	HMC655 HMC656 HMC657 HMC658		
Serial/Parallel USB Interface Kit HMC-DK008	The HMC-DK008 Serial/Parallel Interface Designer's kit enables users to interface with Hittite's family of digital attenuators, interface and variable gain amplifiers.			

Available Plastic, Ceramic, Hermetic SMT & Connectorized Module Packages

 MP86 "Micro-P" 5.21 x 5.08 x 1.57 mm	 SC70 2.15 x 2.1 x 0.9 mm	 SOT26 2.8 x 2.9 x 1.2 mm	 ST89 4.50 x 4.14 x 1.54 mm	 MS8 / MS8G 4.9 x 3.0 x 1.0 mm	 MS10 / MS10G 4.9 x 3.0 x 1.0 mm
 S8 / S8G 6.0 x 4.9 x 1.6 mm	 S14 6.0 x 8.7 x 1.6 mm	 LP2 "DFN" 2.0 x 2.0 x 1.0 mm	 LP3 "QFN" 3.0 x 3.0 x 1.0 mm	 LP4 / LP4B / LP4C "QFN" 4.0 x 4.0 x 1.0 mm	 LP5 "QFN" 5.0 x 5.0 x 1.0 mm
 LP6 / LP6C "QFN" 6.0 x 6.0 x 1.0 mm	 LP6H "QFN" 6.0 x 6.0 x 1.0 mm	 LP7D "QFN" 7.0 x 7.0 x 1.0 mm	 LP9 "QFN" 9.0 x 9.0 x 1.0 mm	 QS16 / QS16G 6.0 x 4.9 x 1.5 mm	 QS24 6.0 x 8.7 x 1.6 mm
 LC3 / LC3B / LC3C 3.0 x 3.0 x 1.0 / 1.45 mm	 LC4 / LC4B 4.0 x 4.0 x 1.0 / 1.2 mm	 LC5 5.0 x 5.0 x 1.0 mm	 LM1 / LM3 5.1 x 5.1 x 1.1 mm	 C8 7.4 x 5.1 x 2.4 mm	 G7 Hermetic 16.1 x 17.3 x 1.7 mm
 G8 Hermetic 10.2 x 4.6 x 1.8 mm	 G16 Hermetic 10.4 x 10.4 x 1.7 mm	 G32 Hermetic 16 x 16 x 1.96 mm	 LH250 Hermetic 6.35 x 6.35 x 1.27 mm	 LH5 Hermetic 5.0 x 5.0 x 1.0 mm	 C-1 / C-1B 35.31 x 17.78 x 7.38 mm
 C-2 / C-2B 38.1 x 17.78 x 7.38 mm	 C-3 / C-3B 40.89 x 17.78 x 7.38 mm	 C-4 41.66 x 36.32 x 8.50 mm	 C-5 41.66 x 26.8 x 8.79 mm	 C-6 45.34 x 17.27 x 8.50 mm	 C-9 44.45 x 21.59 x 8.76 mm
 C-10 / C-10B 46.63 x 21.59 x 8.50 mm	 C-11 41.66 x 26.8 x 8.64 mm	 C-12 107.6 x 43.0 x 43.0 mm	 C-13 39.43 x 47.12 x 11.42 mm	 C-14 41.91 x 29.85 x 9.65 mm	 C-15 59.69 mm DIA x 9.14 mm
 C-16 48.0 x 48.26 x 14.10 mm	 C-17 68.5 x 66.0 x 14.2 mm	 C-18 38.10 x 47.62 x 26.67 mm	 C-19 27.31 x 25.15 x 5.84 mm	 C-20 53.59 x 19.05 x 6.22 mm	 C-21 38.10 x 33.53 x 5.84 mm

E or  = RoHS Compliant.

For more information on our "Green" component program, please contact earthfriendly@hittite.com for details on our RoHS Compliant products or see the RoHS Compliant Components link on our web site.

PART NUMBER INDEX

Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
HMC128	17	HMC260LC3B	17	HMC346LC3B	13	HMC424	14	HMC478MP86E	11
HMC128G8	17	HMC263	11	HMC346LP3E	13	HMC424G16	14	HMC478SC70E	11
HMC129	17	HMC263LP4E	11	HMC346MS8GE	13	HMC424LH5	14	HMC478ST89E	11
HMC129G8	17	HMC264	17	HMC347	20	HMC424LP3E	14	HMC479MP86E	11
HMC129LC4	17	HMC264LC3B	17	HMC347C8	20	HMC425	14	HMC479ST89E	11
HMC130	17	HMC264LM3	17	HMC347G8	20	HMC425LP3E	14	HMC480ST89E	11
HMC135	18	HMC265	17	HMC347LP3E	20	HMC426MS8E	40	HMC481MP86E	11
HMC136	18	HMC265LM3	17	HMC348LP3E	20	HMC427LP3E	20	HMC481ST89E	11
HMC137	18	HMC266	17	HMC349LP4CE	19	HMC429LP4E	42	HMC482ST89E	11
HMC141 / 142	17	HMC270MS8GE	20	HMC349MS8GE	19	HMC430LP4E	42	HMC483MS8GE	16
HMC141C8 / 142C8	17	HMC271LP4E	14	HMC351S8E	16	HMC431LP4E	42	HMC485MS8GE	16
HMC141LH5	17	HMC272MS8E	16	HMC358MS8GE	42	HMC432E	40	HMC486	12
HMC143 / 144	17	HMC273MS10GE	14	HMC361	40	HMC433E	40	HMC486LP5E	12
HMC144LC4	17	HMC274QS16E	14	HMC361S8GE	40	HMC434E	40	HMC487LP5E	12
HMC144LH5	17	HMC276LP4E	20	HMC362	40	HMC435MS8GE	19	HMC488MS8GE	16
HMC156	41	HMC276QS24E	20	HMC362S8GE	40	HMC437MS8GE	40	HMC489LP5E	12
HMC156C8	41	HMC277MS8E	17	HMC363	40	HMC438MS8GE	40	HMC490	10
HMC158	41	HMC284MS8GE	19	HMC363G8	40	HMC439QS16GE	40	HMC490LP5E	10
HMC158C8	41	HMC285E	16	HMC363S8GE	40	HMC440QS16GE	41	HMC491LP3E	10
HMC168C8	16	HMC286E	10	HMC364	40	HMC441	12	HMC492LP3E	40
HMC170C8	17	HMC287MS8E	21	HMC364G8	40	HMC441LC3B	12	HMC493LP3E	40
HMC171C8	17	HMC288MS8E	14	HMC364S8GE	40	HMC441LH5	12	HMC494LP3E	40
HMC174MS8E	20	HMC290E	14	HMC365	40	HMC441LM1	12	HMC495LP3E	18
HMC175MS8E	17	HMC291E	14	HMC365G8	40	HMC441LP3E	12	HMC496LP3E	18
HMC182S14E	20	HMC292	17	HMC365S8GE	40	HMC442	12	HMC497LP4E	18
HMC183QS24E	20	HMC292LC3B	17	HMC368LP4E	40	HMC442LC3B	12	HMC498	12
HMC187MS8E	41	HMC292LM3C	17	HMC369LP3E	40	HMC442LM1	12	HMC498LC4	12
HMC188MS8E	41	HMC304MS8E	16	HMC370LP4E	40	HMC443LP4E	40	HMC499	12
HMC189MS8E	41	HMC305LP4E	14	HMC374E	10	HMC444LP4E	41	HMC499LC4	12
HMC190MS8E	19	HMC306MS10E	14	HMC377QS16GE	16	HMC445LP4E	41	HMC500LP3E	18
HMC194MS8E	19	HMC307QS16GE	14	HMC380QS16GE	16	HMC446E	20	HMC504LC4B	10
HMC197E	19	HMC308E	11	HMC381LP6E	16	HMC447LC3	40	HMC505LP4E	42
HMC199MS8E	20	HMC310MS8GE	10	HMC383	12	HMC448	40	HMC506LP4E	42
HMC203	17	HMC311LP3E	11	HMC383LC4	12	HMC448LC3B	40	HMC507LP5E	42
HMC204	41	HMC311SC70E	11	HMC384LP4E	42	HMC449	40	HMC508LP5E	42
HMC204C8	41	HMC311ST89E	11	HMC385LP4E	42	HMC449LC3B	40	HMC509LP5E	42
HMC204MS8GE	41	HMC313E	11	HMC386LP4E	42	HMC451	11	HMC510LP5E	42
HMC205	41	HMC316MS8E	16	HMC387MS8E	16	HMC451LC3	12	HMC511LP5E	42
HMC207S8E	16	HMC318MS8GE	10	HMC388LP4E	42	HMC451LP3E	11	HMC512LP5E	42
HMC208MS8E	16	HMC320MS8GE	10	HMC389LP4E	42	HMC452QS16GE	12	HMC513LP5E	42
HMC213MS8E	16	HMC321LP4E	20	HMC390LP4E	42	HMC452ST89E	12	HMC514LP5E	43
HMC214MS8E	16	HMC322	20	HMC391LP4E	42	HMC453QS16GE	12	HMC515LP5E	43
HMC215LP4E	16	HMC322LP4E	20	HMC392	10	HMC453ST89E	12	HMC516	10
HMC218MS8E	16	HMC326MS8GE	11	HMC392LC4	10	HMC454ST89E	11	HMC516LC5	10
HMC219MS8E	17	HMC327MS8GE	12	HMC392LH5	10	HMC457QS16GE	12	HMC517	10
HMC220MS8E	16	HMC329	17	HMC393MS8GE	20	HMC459	13	HMC517LC4	10
HMC221E	19	HMC329LC3B	17	HMC394LP4E	40	HMC460	13	HMC518	10
HMC224MS8E	20	HMC329LM3	17	HMC395	11	HMC460LC5	13	HMC519	10
HMC230MS8E	14	HMC331	41	HMC396	11	HMC462	13	HMC519LC4	10
HMC231G7	19	HMC333E	16	HMC397	11	HMC462LP5E	13	HMC520	15
HMC232	20	HMC334LP4E	16	HMC398QS16GE	42	HMC463	13	HMC520LC4	15
HMC232C8	20	HMC335G16	14	HMC399MS8E	16	HMC463LH250	13	HMC521	15
HMC232G7	19	HMC336MS8GE	19	HMC400MS8E	16	HMC463LP5E	13	HMC521LC4	15
HMC232G8	19	HMC337	17	HMC401QS16GE	42	HMC464	13	HMC522	15
HMC232LP4E	20	HMC338	17	HMC402MS8E	16	HMC464LP5E	13	HMC522LC4	15
HMC233G8	19	HMC338LC3B	17	HMC404	15	HMC465	13	HMC523	15
HMC234C8	20	HMC339	17	HMC405	11	HMC465LP5E	13	HMC523LC4	15
HMC241LP3E	20	HMC340LP5E	17	HMC406MS8GE	11	HMC466LP4E	42	HMC524	15
HMC241QS16E	20	HMC341	11	HMC407MS8GE	11	HMC467LP3E	14	HMC524LC3B	15
HMC244G16	20	HMC341LC3B	10	HMC408LP3E	12	HMC468LP3E	14	HMC525	15
HMC245QS16E	20	HMC342	10	HMC409LP4E	12	HMC469MS8GE	11	HMC525LC4	15
HMC247	18	HMC342LC4	10	HMC410MS8GE	16	HMC470LP3E	14	HMC526	15
HMC252QS24E	20	HMC344	20	HMC411MS8GE	17	HMC471MS8GE	11	HMC526LC4	15
HMC253LC4	20	HMC344LC3	20	HMC412MS8GE	17	HMC472LP4E	14	HMC527	15
HMC253QS24E	20	HMC344LH5	20	HMC413QS16GE	11	HMC473MS8E	13	HMC527LC4	15
HMC256	15	HMC344LP3E	20	HMC416LP4E	42	HMC474MP86E	11	HMC528	15
HMC258	17	HMC345LP3E	20	HMC420QS16E	16	HMC474SC70E	11	HMC528LC4	15
HMC258LC3B	17	HMC346	13	HMC421QS16E	16	HMC475ST89E	11	HMC529LP5E	43
HMC258LM3	17	HMC346C8	13	HMC422MS8E	16	HMC476MP86E	11	HMC530LP5E	42
HMC260	17	HMC346G8	13	HMC423MS8E	16	HMC476SC70E	11	HMC531LP5E	43

Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
HMC532LP4E	42	HMC589ST89E	11	HMC644	19	HMC703LP4E	41	HMC778LP6CE	4, 42
HMC533LP4E	42	HMC590	12	HMC644LC5	19	HMC705LP4E	40	HMC783LP6CE	42
HMC534LP5E	42	HMC590LP5E	12	HMC646LP2E	20	HMC706LC3C	34	HMC784MS8GE	20
HMC535LP4E	43	HMC591	12	HMC647	19	HMC707LP5E	21	HMC785LP4E	16
HMC536LP2E	20	HMC591LP5E	12	HMC647LP6E	19	HMC708LP5E	21	HMC786LP4	16
HMC536MS8GE	20	HMC592	12	HMC648	19	HMC709LC5	16	HMC787LC3B	17
HMC538LP4E	18	HMC593LP3E	10	HMC648LP6E	19	HMC710LC5	16	HMC788LP2E	11
HMC539LP3E	14	HMC594	10	HMC649	19	HMC711LC5	17	HMC789ST89E	11
HMC540LP3E	14	HMC594LC3B	10	HMC649LP6E	19	HMC712	14	HMC791LC4B	34
HMC541LP3E	14	HMC595E	20	HMC650	18	HMC712LP3CE	14	HMC792LP4E	14
HMC542LP4E	14	HMC596LP4E	20	HMC651	18	HMC713LP3E	19	HMC794LP3E	40
HMC543	19	HMC597LP4E	18	HMC652	18	HMC713MS8E	19	HMC795LP5E	18
HMC543LC4B	19	HMC598	40	HMC652LP2E	18	HMC715LP3E	10	HMC797	13
HMC544E	20	HMC599ST89E	11	HMC653	18	HMC716LP3E	10	HMC797LP5E	13
HMC545E	19	HMC600LP4E	19	HMC653LP2E	18	HMC717LP3E	10	HMC798LC4	17
HMC546LP2E	20	HMC601LP4E	19	HMC654	18	HMC718LP4E	10	HMC799LP3E	35
HMC546MS8GE	20	HMC602LP4E	19	HMC655	18	HMC719LP4E	10	HMC800LP3E	14
HMC547LP3E	20	HMC603MS10E	14	HMC655LP2E	18	HMC720LC3C	33	HMC801LP3E	14
HMC548LP3E	10	HMC603QS16E	14	HMC656	18	HMC720LP3E	33	HMC802LP3E	14
HMC549MS8GE	11	HMC604LP3E	10	HMC656LP2E	18	HMC721LC3C	34	HMC807LP6CE	42
HMC550E	19	HMC605LP3E	10	HMC657	18	HMC721LP3E	34	HMC812LC4	14
HMC551LP4E	16	HMC606	13	HMC657LP2E	18	HMC722LC3C	33	HMC813	19
HMC552LP4E	16	HMC606LC5	13	HMC658	18	HMC722LP3E	33	HMC813LC4B	19
HMC553	17	HMC607	20	HMC658LP2E	18	HMC723LC3C	34	HMC814	40
HMC553LC3B	17	HMC607G7	19	HMC659	13	HMC723LP3E	34	HMC814LC3B	40
HMC554	17	HMC608LC4	12	HMC659LC5	13	HMC724LC3C	33	HMC815LC5	16
HMC554LC3B	17	HMC609	10	HMC660LC4B	33	HMC725LC3C	34	HMC816LP4E	10
HMC555	15	HMC609LC4	10	HMC662LP3E	19	HMC726LC3C	33	HMC817LP4E	10
HMC556	15	HMC611	19	HMC663LC3	16	HMC727LC3C	34	HMC818LP4E	10
HMC557	17	HMC611LP4E	19	HMC665LP4E	16	HMC728LC3C	33	HMC819LC5	16
HMC557LC4	17	HMC612LP4E	19	HMC666LP4E	16	HMC729LC3C	34	HMC820LP6CE	41, 42
HMC558	17	HMC613LC4B	19	HMC667LP2E	10	HMC732LC4B	42	HMC821LP6CE	41, 42
HMC558LC3B	17	HMC615LP4E	16	HMC668LP3E	10	HMC733LC4B	42	HMC822LP6CE	41
HMC559	13	HMC616LP3E	10	HMC669LP3E	10	HMC734LP5E	42	HMC824LP6CE	41
HMC560	17	HMC617LP3E	10	HMC670LC3C	33	HMC735LP5E	42	HMC826LP6CE	41
HMC560LM3	17	HMC618LP3E	10	HMC671LC3C	34	HMC736LP4E	42	HMC828LP6CE	41
HMC561	40	HMC619	13	HMC672LC3C	33	HMC737LP4E	42	HMC830LP6GE	4, 42
HMC561LP3E	40	HMC619LP5E	13	HMC673LC3C	34	HMC738LP4E	43	HMC831LP6CE	41
HMC562	13	HMC620	15	HMC674LC3C	32	HMC739LP4E	43	HMC836LP6CE	41
HMC564	10	HMC620LC4	15	HMC674LP3E	32	HMC740ST89E	11	HMC837LP6CE	41, 42
HMC564LC4	10	HMC621LP4E	16	HMC675LC3C	32	HMC741ST89E	11	HMC838LP6CE	41
HMC565	10	HMC622LP4E	16	HMC675LP3E	32	HMC742HFLP5E	5, 21	HMC839LP6CE	41, 42
HMC565LC5	10	HMC623LP4E	16	HMC676LC3C	32	HMC742LP5E	21	HMC840LP6CE	41, 42
HMC566	11	HMC624LP4E	14	HMC676LP3E	32	HMC743LP6CE	21	HMC841LC4B	34
HMC566LP4E	11	HMC625HFLP5E	5, 21	HMC677G32	34	HMC744LC3C	33	HMC842LC4B	33
HMC567LC5	15	HMC625LP5E	21	HMC677LP5E	34	HMC745LC3C	34	HMC843LC4B	34
HMC570	15	HMC626LP5E	21	HMC678LC3C	33	HMC746LC3C	33	HMC844LC4B	34
HMC570LC5	15	HMC627LP5E	21	HMC679LC3C	34	HMC747LC3C	34	HMC847LC5	35
HMC571	15	HMC628LP4E	21	HMC680LP4E	21	HMC748LC3C	33	HMC848LC5	35
HMC571LC5	15	HMC629LP4E	14	HMC681LP5E	21	HMC749LC3C	34	HMC849LP4CE	19
HMC572	15	HMC630LP3E	18	HMC682LP6CE	16	HMC750LP4E	34	HMC850LC3C	33
HMC572LC5	15	HMC631LP3E	18	HMC683LP6CE	16	HMC751LC4	10	HMC851LC3C	34
HMC573LC3B	40	HMC632LP5E	43	HMC684LP4E	16	HMC752LC4	11	HMC852LC3C	33
HMC574MS8E	20	HMC633	13	HMC685LP4E	16	HMC753LP4E	10	HMC853LC3C	34
HMC575LP4E	40	HMC633LC4	13	HMC686LP4E	16	HMC754S8GE	11	HMC854LC5	35
HMC576	40	HMC634	13	HMC687LP4E	16	HMC755LP4E	12	HMC855LC5	35
HMC576LC3B	40	HMC634LC4	13	HMC688LP4E	16	HMC756	12	HMC856LC5	32
HMC577LC4B	40	HMC635	13	HMC689LP4E	16	HMC757	12	HMC857LC5	32
HMC578	40	HMC635LC4	13	HMC690	35	HMC757LP4E	12	HMC858LC4B	33
HMC578LC3B	40	HMC636ST89E	11	HMC693	12	HMC758LP3E	10	HMC859LC3C	34
HMC579	40	HMC637	13	HMC694	21	HMC759LP3E	14	HMC860LP3E	33, 40
HMC580ST89E	11	HMC637LP5E	13	HMC694LP4E	21	HMC764LP6CE	42	HMC862LP3E	40
HMC581LP6E	16	HMC639ST89E	11	HMC695LP4E	40	HMC765LP6CE	42	HMC863	12
HMC582LP5E	42	HMC641	20	HMC696LP4E	18	HMC770LP4BE	11	HMC863LP4E	12
HMC583LP5E	43	HMC641LC4	20	HMC697LP4E	18	HMC772LC4	10	HMC864	12
HMC584LP5E	43	HMC641LP4E	20	HMC698LP5E	41	HMC773	17	HMC865LC3C	35
HMC585MS8GE	16	HMC642	19	HMC699LP5E	41	HMC773LC3B	17	HMC866LC3C	35
HMC586LC4B	42	HMC642LC5	19	HMC700LP4E	4, 41	HMC774	17	HMC869LC5	15
HMC587LC4B	42	HMC643	19	HMC701LP6CE	41	HMC774LC3B	17	HMC870LC5	13, 35
HMC588LC4B	42	HMC643LC5	19	HMC702LP6CE	41	HMC775LC5	15	HMC871LC5	13, 35

PART NUMBER INDEX

Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
HMC874LC3C	32	HMC939	14	HMCAD1100	32	HMC-C003	44	HMC-C050	44
HMC875LC3C	32	HMC940LC4B	33	HMCAD1101	32	HMC-C004	44	HMC-C051	45
HMC876LC3C	32	HMC941	14	HMCAD1102	32	HMC-C005	45	HMC-C052	45
HMC881LP5E	14, 15,	HMC942LP4E	40	HMCAD1510	32	HMC-C006	45	HMC-C053	44
34		HMC943LP5E	12	HMCAD1511	32	HMC-C007	45	HMC-C055	45
HMC882LP5E	14	HMC944LC4	20	HMCAD1520	32	HMC-C009	45	HMC-C056	45
HMC890LP5E	14	HMC948LP3E	19	HMC-ALH102	13	HMC-C010	45	HMC-C058	46
HMC891LP5E	14	HMC949	12	HMC-ALH140	11	HMC-C011	46	HMC-C059	44
HMC892LP5E	14	HMC950	12	HMC-ALH216	10	HMC-C013	44	HMC-C060	45
HMC893LP5E	4, 6, 14	HMC951LP4E	15	HMC-ALH244	11	HMC-C014	45	HMC-C061	45
HMC894LP5E	14	HMC953LC4B	34	HMC-ALH310	11	HMC-C015	45	HMC-C062	45
HMC897LP4E	4, 6, 14	HMC954LC4B	4, 35	HMC-ALH311	10	HMC-C016	44	HMC-C064	45
HMC899LP4E	14	HMC955LC4B	4, 35	HMC-ALH313	11	HMC-C017	44	HMC-C065	45
HMC902	10	HMC958LC5	33	HMC-ALH364	11	HMC-C018	44	HMC-C070	46
HMC902LP3E	10	HMC959LC3C	34	HMC-ALH369	11	HMC-C019	46	HMC-C071	46
HMC903	10	HMC960LP4E	15, 34	HMC-ALH376	11	HMC-C020	44	HMC-C072	44
HMC903LP3E	10	HMC962LC4	10	HMC-ALH382	11	HMC-C021	44	HMC-C073	46
HMC904LC5	15	HMC963LC4	10	HMC-ALH435	10	HMC-C022	44	HMC-C074	44
HMC905LP3E	40	HMC965LP4E	12	HMC-ALH444	10	HMC-C023	44	HMC-C075	44
HMC906	12	HMC966LP4E	4, 15	HMC-ALH445	10	HMC-C024	44	HMC-C076	44
HMC907	13	HMC967LP4E	15	HMC-ALH476	10	HMC-C025	44	HMC-C077	44
HMC907LP5E	13	HMC968	13	HMC-ALH482	13	HMC-C026	44	HMC-C078	45
HMC908LC5	15	HMC969	13	HMC-ALH508	11	HMC-C027	44	HMC-C079	44
HMC909LP4E	19	HMC972LP5E	21	HMC-ALH509	11	HMC-C028	46	HMC-C083	46
HMC910LC4B	32	HMC973LP3E	13	HMC-APH196	12	HMC-C029	46	HMC-C200	44
HMC913	19	HMC976LP3E	4, 33, 40	HMC-APH403	12	HMC-C030	46	HMC-MDB169	17
HMC913LC4B	19	HMC977LP4E	15	HMC-APH460	12	HMC-C031	45	HMC-MDB171	15
HMC914LP4E	34	HMC981LP3E	4, 33	HMC-APH462	12	HMC-C032	45	HMC-MDB172	15
HMC915LP4E	16	HMC985	4, 14	HMC-APH473	13	HMC-C033	45	HMC-MDB207	15
HMC916LP3E	40	HMC995LP5GE	4, 12	HMC-APH478	12	HMC-C034	45	HMC-MDB218	15
HMC917LP3E	40	HMC1010LP4E	19	HMC-APH510	12	HMC-C035	45	HMC-MDB277	17
HMC920LP5E	33	HMC1020LP4E	4, 9, 19	HMC-APH518	12	HMC-C036	44	HMC-SDD112	20
HMC921LP4E	12	HMC1021LP4E	19	HMC-APH596	12	HMC-C037	44	HMC-T2000	49
HMC922LP4E	19	HMC1030LP5E	19	HMC-APH608	12	HMC-C038	44	HMC-T2100	49
HMC924LC5	16	HMC-ABH209	12	HMC-APH633	12	HMC-C039	45	HMC-T2100B	49
HMC925LC5	16	HMC-ABH241	12	HMC-APH634	12	HMC-C040	45	HMC-T2220	49
HMC926LP5E	21	HMC-ABH264	12	HMC-AUH232	13	HMC-C041	45	HMC-T2220B	49
HMC928LP5E	18	HMCAD1040-40	33	HMC-AUH249	13	HMC-C042	45	HMC-T2240	49
HMC929LP4E	18	HMCAD1040-80	33	HMC-AUH256	11	HMC-C043	45	HMC-T2270	5, 49
HMC930	13	HMCAD1041-40	33	HMC-AUH312	13	HMC-C044	45	HMC-VVD102	14
HMC931LP4E	18	HMCAD1041-80	33	HMC-AUH317	12	HMC-C045	44	HMC-VVD104	14
HMC932LP4E	18	HMCAD1050-40	32	HMC-AUH318	12	HMC-C046	45	HMC-VVD106	14
HMC933LP4E	4, 8, 18	HMCAD1050-80	32	HMC-AUH320	12	HMC-C047	45	HMC-XDB112	41
HMC935LP5E	18	HMCAD1051-40	32	HMC-C001	44	HMC-C048	44	HMC-XDH158	41
HMC936LP6E	19	HMCAD1051-80	32	HMC-C002	44	HMC-C049	45	HMC-XTB110	41

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