



Commercial & Industrial Sensors
Test Equipment



APRIL 2010

INTRODUCING THE APRIL 2010 SELECTION GUIDE!

Hittite Microwave Corporation is pleased to introduce our April 2010 Product Selection Guide summarizing over 825 products including 35 new products and 2 new product lines; Broadband Time Delays and Tunable Filters. 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.



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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.**

NEW! • **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 & PLL Phase Noise Calculator
- Package & Layout Drawings - Product outline, PCB land pattern and tape & reel drawings.
- Product Cross Reference - Thousands of ICs cross-referenced to HMC products.
- Published Papers
- S-Parameter Files

Data Sheets

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

WHAT WE DO

Hittite Microwave is an innovative designer and manufacturer of analog and mixed-signal ICs, modules, subsystems and instrumentation for digital, RF, microwave and millimeterwave applications covering DC to 110 GHz. Our RFIC/MMIC products are developed using state-of-the-art GaAs, GaN, InGaP/GaAs, InP, SOI, SiGe, CMOS and BiCMOS semiconductor processes utilizing MESFET, HEMT, pHEMT, mHEMT, HBT and PIN devices. We offer over 825 products across 26 product lines

Amplifiers	Mod / Demodulators
Attenuators	Passives
Broadband Time Delays	Phase Shifters
Comparators	PLLs
Data Converters	PLLs w/ Integrated VCOs
DROs	Power Conditioning
Filters - Tunable	Power Detectors
Freq. Dividers & Detectors	Sensors
Freq. Multipliers	Signal Generators
High Speed Digital Logic	Switches
Limiting Amplifiers	Transimpedance Amplifiers
Interface	VGAs
Mixers	VCOs & PLOs

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

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

HMC is ISO 9001:2000 and AS9100 B 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.

AMPLIFIERS - Differential Gain Block & Connectorized Low Phase Noise Amp & PA Modules

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
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
5.6 - 17	Low Noise	19	26	1.6	15	+3.5V @ 80mA	Chip	EAR99	HMC903
5.6 - 17	Low Noise	18	25	1.7	14	+3.5V @ 80mA	LP3	EAR99	HMC903LP3E
DC - 1.0	50 / 75 Ohm Differential Gain Block	16	40	3.5	24	+8V @ 350mA	LP4B	EAR99	HMC771LP4BE
DC - 10	pHEMT Gain Block	15	26	5	18	+5V @ 65mA	LP2	EAR99	HMC788LP2E
DC - 22	Power Amplifier, 1 Watt	14	40	2.5	28	+11V @ 400mA	Chip	3A001.b.2.c	HMC797
0.2 - 25	Power Amplifier, 1/2 Watt	13	38	3	27	+11V @ 365mA	Chip	3A001.b.2.c	HMC907

AMPLIFIERS - Low Phase Noise Modules

Frequency (GHz)	Function	Gain / NF (dB)	OIP3 (dBm)	Phase Noise (dBc/Hz)	P1dB / Psat (dBm)	Bias Supply	Package / Connector	ECCN Code	Part Number
4 - 8	Low Phase Noise	9 / 6	33	-180	22 / 25	+7V @ 300mA	C-16 / SMA	EAR99	HMC-C079

ATTENUATORS - Digital

Frequency (GHz)	Function	Insertion Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
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

BROADBAND TIME DELAYS - New Product Line!

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
28	Time Delay	14 / 16	11	0.1 - 0.8	1450	+3.3	LC4B	3A001.a.11.b	HMC910LC4B

COMPARATORS - Window

Analog Input B/W (GHz) / Clock Rate (Gbps)	Function	Deterministic Jitter (ps)	Propagation Delay (ps)	Output Voltage Swing (Vdc)	DC Power Consumption (mW)	Vcco / Vterm * Power Supply (Vdc)	Package	ECCN Code	Part Number
10	Window Comparator	2	88	0.4	240	+2 / 0	LC3C	3A001.a.11.b	HMC974LC3C

* Note that Vee = -3.0V & Vcci = +3.3V

FILTERS - Tunable (Band Pass & Low Pass) - New Product Line!

Band Pass

Freq. 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

Low Pass

Freq. 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

FREQUENCY DIVIDERS

Input Frequency (GHz)	Function	Input Power (dBm)	Output Power (dBm)	100 kHz SSB Phase Noise (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
0.4 - 6	Programmable Divider (N = 1 to 6)	0 to +9	+5	-156	+3.3V @ 100mA	LP3	3A001.a.11.b	HMC905LP3E

HIGH SPEED DIGITAL LOGIC

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
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
50	1:2 Fanout Buffer*	11 / 11	3	0.4 - 1.2	465	-3.3	LC4B	3A001.a.11.b	HMC842LC4B
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
45	AND / NAND / OR / NOR*	10 / 10	2	0.2 - 0.85	500	-3.3	LC4B	3A001.a.11.b	HMC843LC4B
13 / 13	Fast Rise Time D-Type Flip-Flop*	19 / 17	2	0.7 - 1.3	260	-3.3	LP3	3A001.a.11.b	HMC723LP3E
43	D-Type Flip-Flop*	12 / 12	2	0.2 - 0.85	630	-3.3	LC4B	3A001.a.11.b	HMC841LC4B
13 / 13	Fast Rise Time XOR / XNOR*	19 / 18	2	0.6 - 1.1	230	-3.3	LP3	3A001.a.11.b	HMC721LP3E

* With Programmable Output Voltage

APRIL 2010 - 35 New Products

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
9 - 12	I/Q Downconverter / Receiver	DC - 3.5	11	2.2	25	2	LC5	EAR99	HMC908LC5
17 - 21	I/Q Downconverter / Receiver	DC - 3.3	11	2.2	21	2	LC5	EAR99	HMC904LC5

MIXERS - Double Balanced & Sub-Harmonic Mixers

RF Frequency (GHz)	Function	IF Frequency (GHz)	Conversion Gain (dB)	LO / RF Isolation (dB)	IIP3 (dBm)	Package	ECCN Code	Part Number
3 - 10	+17 LO, DBL-BAL Mixer	DC - 4	-9	55	23	LC3B	EAR99	HMC787LC3B
17.7 - 23.6	Sub-Harmonic, Upconverter	DC - 3.5	15	40	13	LC5	EAR99	HMC711LC5

MODULATORS - Direct Quadrature Modulator with VGA

Input Freq. (GHz)	Function	OIP3 (dBm) / Carrier Suppression (dBc)	Modulation Bandwidth (MHz)	Output Noise Floor (dBc/Hz)	Bias Supply	Package	ECCN Code	Part Number
0.05 - 2.7	Direct Quadrature with VGA	25 / 50	DC - 440	-159	+5V @ 120mA	LP5	3A001.a.11.b	HMC795LP5E

POWER DETECTORS - SDLVA

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV / dB)	RF Threshold Level (dBm)	Bias Supply	Package	ECCN Code	Part Number
0.6 - 20	SDLVA*	59	14	-54	+3.3V @ 80mA	Chip	EAR99	HMC913
2 - 20	SDLVA* w/ Limited RF Output	50	45	-45	+12V @ 370mA -5V @ 20mA	C-21 / SMA	EAR99	HMC-C078

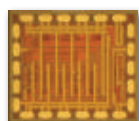
* Successive Detection Log Video Amplifier

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

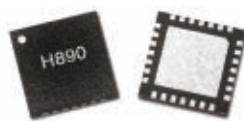
Frequency (GHz)	Function	Frequency Resolution (MHz)	Maximum Power Output (dBm)	100kHz SSB Phase Noise (dBc/Hz)	Spurious @ 1 GHz (dBc)	Switching Speed @ 100 MHz Steps (μs)	Package	ECCN Code	Part Number
0.01 - 20	Portable Signal Generator	0.01	+27 @ 2 GHz +25 @ 10 GHz	-113 @ 1 GHz -93 @ 10 GHz	-80	300	Portable / Benchtop	EAR99	HMC-T2100B

SWITCHES - SP4T

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
DC - 20	SP4T	2.1	42	23	0 / -5V	LC4	EAR99	HMC641LC4



HMC913



HMC890LP5E



HMC-C078

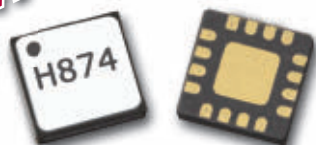


HMC-T2100B

NEW COMPARATOR LINE DELIVERS 20 Gbps WITH 50% LESS POWER CONSUMPTION!

Hittite Microwave offers high speed analog, digital and mixed-signal die & SMT components for medical imaging/diagnostics, test and industrial applications. Hittite specializes in Comparator solutions that offer a unique combination of low propagation delay for low input overdrive while minimizing propagation dispersion and power dissipation.

NEW!



Features

- ◆ RSPECL, RSCML & RSECL Versions Available
- ◆ 10 GHz Input Bandwidth
- ◆ Low Propagation Delay Clock to Output: 120 ps
- ◆ Low Overdrive & Slew Rate Dispersion: 10 ps
- ◆ Minimum Pulse Width: 60 ps
- ◆ Low Power Dissipation: 130 mW

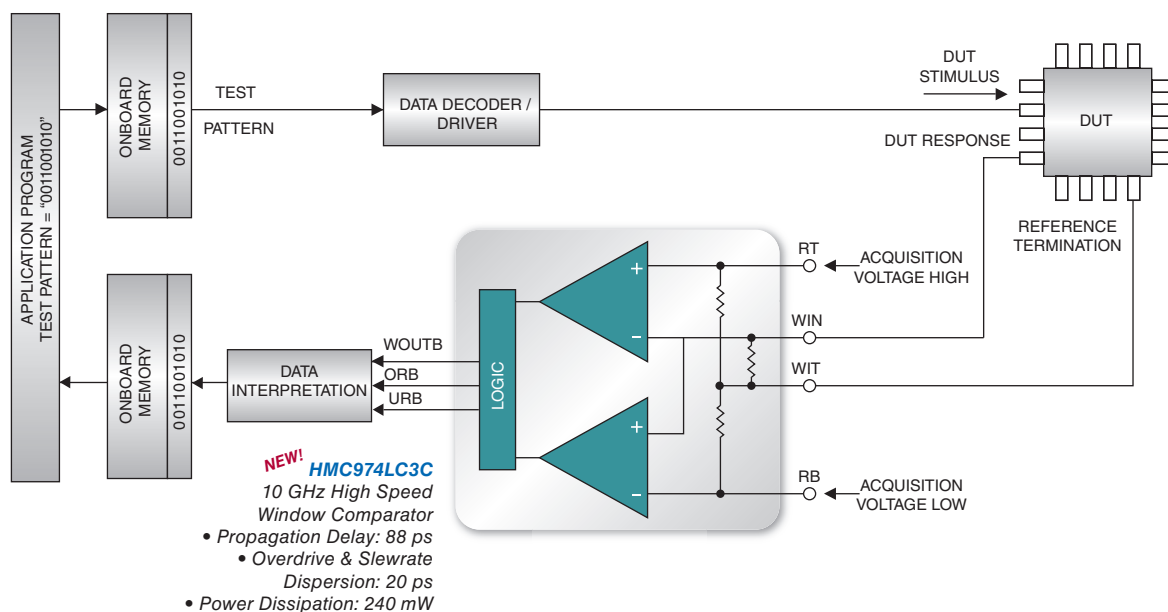
4 NEW IN-STOCK HIGH SPEED COMPARATORS

	Analog Input B/W (GHz) / Clock Rate (Gbps)	Function	Deterministic Jitter (ps)	Propagation Delay (ps)	Output Voltage Swing (Vdc)	DC Power Consumption (mW)	Vcco / Vterm ^[2] Power Supply (Vdc)	Package	Part Number
NEW!	10 / 20	Clocked Comparator - RSPECL	<3	120	0.4	150	+3.3 / +1.3	LC3C	HMC874LC3C
NEW!	10 / 20	Clocked Comparator - RSCML	<3	120	0.4	130	0 / 0	LC3C	HMC875LC3C
NEW!	10 / 20	Clocked Comparator - RSECL	<3	120	0.4	150	0 / -2.0	LC3C	HMC876LC3C
	10 / [1]	Latched Comparator - RSPECL	2	85	0.4	140	+3.3 / +1.3	LC3C	HMC674LC3C
	10 / [1]	Latched Comparator - RSCML	2	100	0.4	100	0 / 0	LC3C	HMC675LC3C
	10 / [1]	Latched Comparator - RSECL	2	100	0.35	120	0 / -2.0	LC3C	HMC676LC3C
NEW!	10 / -	Window Comparator	2	88	0.4	240	+2 / 0	LC3C	HMC974LC3C

[1] Note that HMC674/675/676LC3C is a family of Level Latched Comparators

[2] Vee = -3.0V & Vcci = +3.3V

AUTOMATIC TEST EQUIPMENT (ATE)

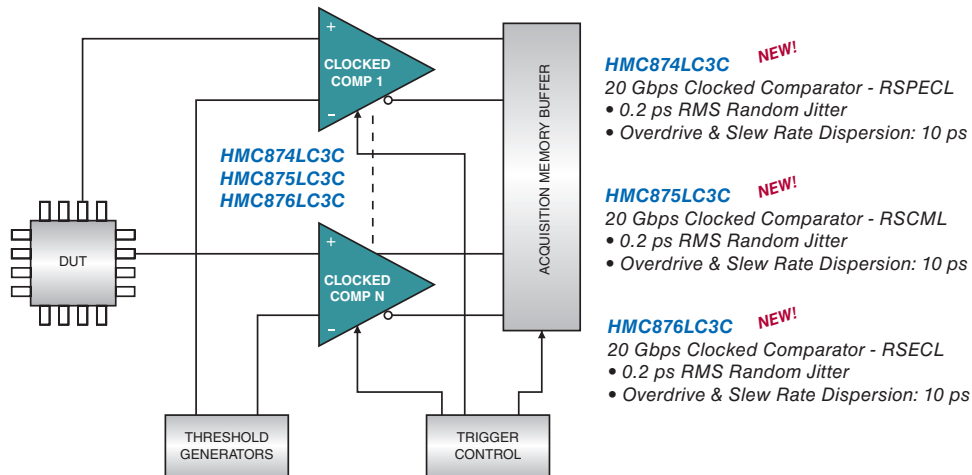


Hittite's 20 Gbps / 150 mW Clocked Comparators Reduce Total ATE System Power!

NEW & EXPANDED PRODUCT LINES

High Speed Clocked Comparators

LOGIC ANALYZERS AND OSCILLOSCOPES



Hittite Comparators Deliver Superior Channel-to-Channel Jitter Matching!

MAGNETIC RESONANCE IMAGING (MRI)

HMC740ST89E
InGaP HBT Gain Block
• 0.05 - 3 GHz
• 15 dB Gain

HMC741ST89E
InGaP HBT Gain Block

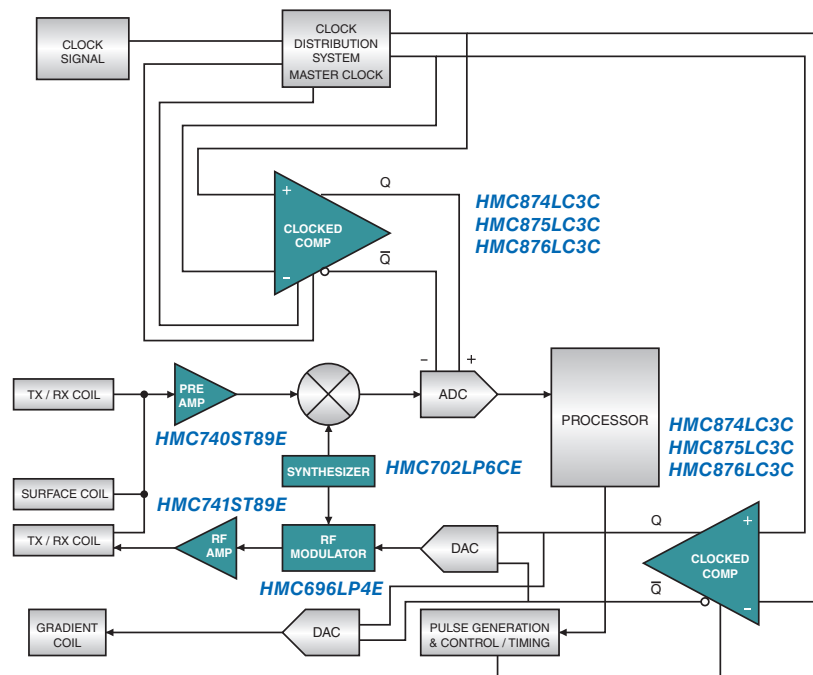
- 0.05 - 3 GHz
- 20 dB Gain

HMC702LP6CE
Fractional-N w/ Int. Sweeper

- 10 kHz to 14 GHz
- Low Phase Noise:
- -227 FOM Integer Mode

HMC696LP4E
Direct Quad. Modulator

- 20 - 2700 MHz
- > 42 dBc Sideband Suppression
- -163 dBc/Hz Broadband Noise Floor



Hittite's Low Jitter Comparators Drive ADC Clocks & Maintain High SINAD!

TUNABLE FILTER MMICs, DC TO 7.6 GHz!

NEW!



Low Pass



Band Pass

Features

- ◆ Fast Tuning Speed Response; 150 ns
- ◆ Excellent Wideband Rejection; 30 dB
- ◆ Single Chip Replacement for Mechanically Tuned Designs
- ◆ Single Analog Tuning Voltage Between 0 and 14V
- ◆ 32 Lead 5x5 mm SMT Package

BAND PASS

Freq. Range (GHz)	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	10	11	0.8 x Fcenter	1.2 x Fcenter	200	LP5	EAR99	HMC890LP5E
2 - 3.9	10	9	0.9 x Fcenter	1.15 x Fcenter	200	LP5	EAR99	HMC891LP5E

LOW PASS

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

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

QUAD OUTPUT LOW NOISE, HIGH PSRR, LINEAR VOLTAGE REGULATOR!

NEW!



Features

- ◆ Low Noise Spectral Density: 3nV/√Hz at 10 kHz
7nV/√Hz at 1 kHz
- ◆ High Power Supply Rejection Ratio: 80 dB at 1 kHz
60 dB at 1 MHz
- ◆ Four Voltage Outputs: VR1 at 3V / 75 mA
VR2, VR3 at 3V / 15 mA
VR4 at 4.5V / 100 mA
- ◆ All Outputs Are Adjustable From 2.5V to 5.2V

HIGH PSRR - QUAD LINEAR VOLTAGE REGULATOR

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	Part Number
3.35 - 5.6	Quad High PSRR	2.5 - 5.2	15 - 100	1 kHz 80 1 MHz 60	1 kHz 7 10 kHz 3	4	LP3	HMC860LP3E

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

NEW & EXPANDED PRODUCT LINES

Frequency Generation Expanded to Include New PLLs with Integrated VCOs

PLLs WITH INTEGRATED VCOs COVER 665 MHz TO 13.4 GHz!

NEW!



PLL w/ Integrated RF VCO

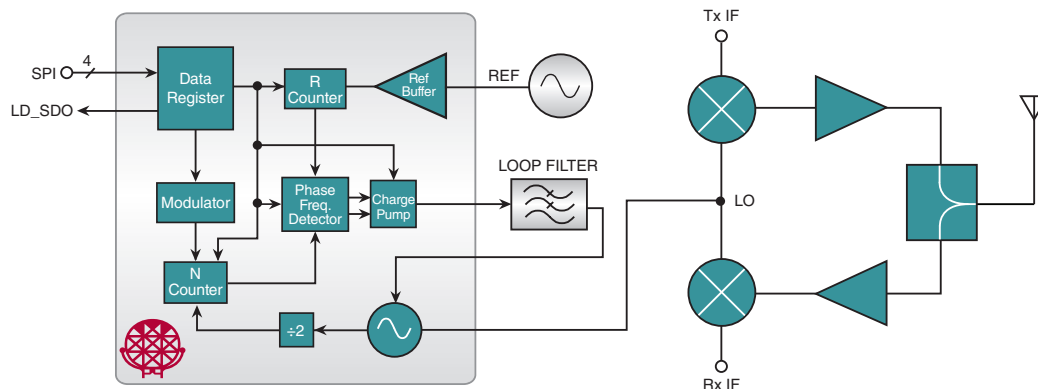


PLL w/ Integrated Microwave VCO

Features

- ◆ 10 kHz Closed Loop SSB Phase Noise:
 -120 dBc/Hz - HMC824LP6CE @ 870 MHz
 -102 dBc/Hz - HMC764LP6CE @ 7.8 GHz
- ◆ Fully Integrated LO Solution
 Just Add Crystal Reference & Loop Filter
- ◆ 6x6 mm QFN Package

MINIATURE LO SOLUTIONS FOR DEMANDING TRANSCEIVER APPLICATIONS



12 NEW IN-STOCK LOW PHASE NOISE PLLs w/ INTEGRATED VCOs

Frequency (GHz)	Closed Loop SSB Phase Noise @10kHz Offset	Open Loop VCO Phase Noise @1MHz Offset	Pout (dBm)	RMS Jitter Fractional Mode (fs)	Integrated PN Fractional Mode (deg rms)	Package	Part Number
0.665 - 0.825							
1.33 - 1.56	-115 dBc/Hz	-142 dBc/Hz	+10	190	0.10	LP6C	HMC822LP6CE
2.66 - 3.30							
0.78 - 0.87	-120 dBc/Hz	-147 dBc/Hz	+12	190	0.05	LP6C	HMC824LP6CE
0.86 - 1.04							
1.72 - 2.08	-113 dBc/Hz	-140 dBc/Hz	+10	190	0.12	LP6C	HMC821LP6CE
3.44 - 4.16							
0.99 - 1.105	-118 dBc/Hz	-145 dBc/Hz	+10	190	0.07	LP6C	HMC826LP6CE
1.095 - 1.275							
2.19 - 2.55	-110 dBc/Hz	-139 dBc/Hz	+10	190	0.17	LP6C	HMC820LP6CE
4.38 - 5.10							
1.285 - 1.415	-116 dBc/Hz	-142 dBc/Hz	+10	190	0.10	LP6C	HMC828LP6CE
1.815 - 2.01	-112 dBc/Hz	-141 dBc/Hz	+9	190	0.13	LP6C	HMC831LP6CE
3.365 - 3.705	-107 dBc/Hz	-135 dBc/Hz	0	190	0.25	LP6C	HMC836LP6CE
7.3 - 8.2	-102 dBc/Hz	-140 dBc/Hz	+15	196	0.55	LP6C	HMC764LP6CE
7.8 - 8.5	-102 dBc/Hz	-139 dBc/Hz	+13	193	0.58	LP6C	HMC765LP6CE
11.5 - 12.5	-100 dBc/Hz	-134 dBc/Hz	+11	181	0.78	LP6C	HMC783LP6CE
12.4 - 13.4	-98 dBc/Hz	-134 dBc/Hz	+8	175	0.81	LP6C	HMC807LP6CE

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

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
0.2 - 4.0	Low Noise, High IP3	13	38	2.3	22	+5V @ 110mA	ST89	EAR99	HMC639ST89E
0.2 - 4.0	Low Noise, High IP3	13	40	2.2	22	+5V @ 155mA	ST89	EAR99	HMC636ST89E
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 w/ 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 - 12	Low Noise	17	28	1.5	19	+5V @ 55mA	Chip	EAR99	HMC-ALH444
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 w/ 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
2 - 4	Low Noise	10	36	3	21	+6V @ 100mA	LC3B	EAR99	HMC594LC3B
2 - 4	Low Noise	20.5	36	3	21	+6V @ 170mA	Chip	EAR99	HMC609
2 - 4	Low Noise	20	36.5	3.5	21.5	+6V @ 170mA	LC4	EAR99	HMC609LC4
2.1 - 2.9	Low Noise	19	33	0.9	19	+5V @ 95mA	LP3	EAR99	HMC715LP3E
2.2 - 12	Low Noise	15	25	1.8	13	+4V @ 45mA	LC4	EAR99	HMC772LC4
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 w/ 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 w/ Bypass	19	29	1.2	16	+5V @ 40mA	LP3	EAR99	HMC593LP3E
3.4 - 3.8	Low Noise w/ 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 w/ 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
NEW! 5 - 10	Low Noise	20	28	1.7	16	+3.5V @ 80mA	Chip	EAR99	HMC902
NEW! 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
NEW! 5.6 - 17	Low Noise	19	26	1.6	15	+3.5V @ 80mA	Chip	EAR99	HMC903
NEW! 5.6 - 17	Low Noise	18	25	1.7	14	+3.5V @ 80mA	LP3	EAR99	HMC903LP3E
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
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
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
12 - 17	Medium Power LNA	27	35	2	26	+5V @ 200mA	Chip	EAR99	HMC490
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
14 - 27	Low Noise	20	-	2	14	+4V @ 90mA	Chip	5A991.h	HMC-ALH476
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 - 32	Low Noise	15	23	2.8	12	+3V @ 65mA	Chip	3A001.b.2.d	HMC519
18 - 31	Low Noise	15	23	3.5	11	+3V @ 75mA	LC4	EAR99	HMC519LC4
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
20 - 36	Low Noise	20	18	2.2	8	+3V @ 58mA	LP4	3A001.b.2.d	HMC263LP4E
21 - 29	Low Noise	13	19	2.5	8	+3V @ 35mA	LC3B	EAR99	HMC341LC3B

SMT & Chip (Die) Products

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
22 - 26.5	Low Noise	25	-	3	12	+2.5V @ 52mA	Chip	5A991.h	HMC-ALH311
24 - 28	Low Noise	25	26	2.5	13	+3V @ 70mA	LC4	EAR99	HMC752LC4
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 - 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
27 - 33	Low Noise	20	-	3	12	+2.5V @ 52mA	Chip	3A001.b.2.d	HMC-ALH313
29 - 36	Low Noise	20	23.5	2.8	12	+3V @ 80mA	Chip	3A001.b.2.d	HMC566
28 - 36	Low Noise	21	24	2.8	12	+3V @ 82mA	LP4	3A001.b.2.d	HMC566LP4E
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
57 - 65	Low Noise	21	-	4	12	+2.5V @ 64mA	Chip	3A001.b.2.f	HMC-ALH382
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 - 6	HBT Gain Block	14.5	32	4.5	15	+5V @ 56mA	LP3	EAR99	HMC311LP3E
DC - 8	HBT Gain Block	15	30	5	15	+5V @ 54mA	SC70	EAR99	HMC311SC70E
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	16	+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
NEW! DC - 10	pHEMT Gain Block	15	26	5	18	+5V @ 65mA	LP2	EAR99	HMC788LP2E
DC - 5	SiGe Gain Block	20	33	3.5	19	+8V @ 79mA	ST89	EAR99	HMC481ST89E
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
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	22.5	+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
NEW! DC - 1.0	50 / 75 Ohm Differential Gain Block	16	40	3.5	24	+8V @ 350mA	LP4B	EAR99	HMC771LP4BE
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	+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	18	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
5 - 20	Medium Power Amplifier	19	30	7	19	+5V @ 114mA	LC3	EAR99	HMC451LC3

SMT & Chip (Die) Products

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
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	15	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	EAR99	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	13	27	8	22	+5V @ 84mA	LC3B	EAR99	HMC442LC3B
17.5 - 25.5	Medium Power Amplifier	15	28	5.5	22	+5V @ 85mA	Chip	EAR99	HMC442
21 - 32	Medium Power Amplifier	16	33	5	24	+5V @ 200mA	Chip	3A001.b.2.b	HMC499
21 - 32	Medium Power Amplifier	17	34	5	23	+5V @ 200mA	LC4	3A001.b.2.b	HMC499LC4
34 - 42	Medium Power Amplifier	18.5	29	6.5	18	+5V @ 120mA	Chip	3A001.b.2.d	HMC-ABH264
37 - 40	Medium Power Amplifier	20	35	-	26	+5V @ 640mA	Chip	3A001.b.2.d	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
71 - 76	Medium Power Amplifier	24	-	-	17.5	+4V @ 130mA	Chip	3A001.b.2.f	HMC-AUH318
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
81 - 86	Medium Power Amplifier	22	-	-	17.5	+4V @ 160mA	Chip	3A001.b.2.f	HMC-AUH317
81 - 86	Medium Power Amplifier	12	-	-	19	+4V @ 240mA	Chip	3A001.b.2.f	HMC-APH634
NEW! DC - 22	Power Amplifier, 1 Watt	14	40	2.5	28	+11V @ 400mA	Chip	3A001.b.2.c	HMC797
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
0.45 - 2.2	Power Amplifier, 1 Watt	22.5	48	7	30	+5V @ 485mA	QS16G	EAR99	HMC452QS16GE
NEW! 0.45 - 2.2	Power Amplifier, 1.6 Watt	21.5	51	6.5	33	+5V @ 725mA	QS16G	EAR99	HMC453QS16GE
NEW! 0.2 - 25	Power Amplifier, 1/2 Watt	13	38	3	27	+11V @ 365mA	Chip	3A001.b.2.c	HMC907
1.7 - 2.2	Power Amplifier, 1 Watt	27	46	5	30.5	+5V @ 500mA	QS16G	EAR99	HMC457QS16GE
2.3 - 2.8	Power Amplifier, 2 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
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
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
22.5 - 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
27 - 31.5	Power Amplifier, 1 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
37 - 40	Power Amplifier, 1 Watt	15	37	-	28	+5V @ 1.08A	Chip	3A001.b.2.d	HMC-APH473

Wideband (Distributed) Amplifiers

DC - 20	Wideband LNA	14	28	2.5	16	+8V @ 60mA	Chip	EAR99	HMC460
DC - 20	Wideband LNA	14	29.5	2.5	17	+8V @ 75mA	LC5	EAR99	HMC460LC5
2 - 20	Wideband LNA	15.5	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 w/AGC	14	28	2.5	19	+5V @ 60mA	Chip	EAR99	HMC463
2 - 20	Wideband LNA w/AGC	13	26	3	18	+5V @ 60mA	LP5	EAR99	HMC463LP5E

SMT & Chip (Die) Products

AMPLIFIERS

Frequency (GHz)	Function	Gain (dB)	OIP3 (dBm)	NF (dB)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
2 - 20	Wideband LNA w/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
2 - 18	Wideband, Low Phase Noise	14	27	4.5	15	+5V @ 64mA	Chip	EAR99	HMC606
2 - 18	Wideband, Low Phase Noise	13.5	27	7	15	+5V @ 64mA	LC5	EAR99	HMC606LC5
DC - 20	Wideband Driver	17	30	2.5	22	+8V @ 160mA	Chip	EAR99	HMC465
DC - 20	Wideband Driver	15	28	3	23	+8V @ 160mA	LP5	EAR99	HMC465LP5E
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
5 - 17	Wideband Driver	31	30	8	23	+5V @ 180mA	Chip	EAR99	HMC633
5.5 - 17	Wideband Driver	30	30	8	23	+5V @ 180mA	LC4	EAR99	HMC633LC4
5 - 20	Wideband Driver	22	31	7.5	23	+5V @ 180mA	Chip	EAR99	HMC634
5 - 20	Wideband Driver	21	29	7.5	22	+5V @ 180mA	LC4	EAR99	HMC634LC4
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.d	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
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

AMPLIFIERS - Microwave & Optical 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	10 Gbps Modulator Driver	18	±15	0.3	22	2.5 - 8	LC5	EAR99	HMC870LC5
DC - 20	12.5 Gbps EML Modulator Driver	15	±16	0.3	16.5	2.5 - 4	LC5	EAR99	HMC871LC5

AMPLIFIERS - Limiting (LIA)

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
32	Limiting w/ DC Offset	25	30	5	0.3	+3.3V @ 90mA	LC3C	EAR99	HMC865LC3C
32	Limiting w/o DC Offset	25	29	7	0.3	+3.3V @ 85mA	LC3C	EAR99	HMC866LC3C

AMPLIFIERS - Transimpedance (TIA)

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	10 kΩ Low Noise TIA	10	20	0.7	<100	4.6	LP3	EAR99	HMC799LP3E
1 - 10	10 Gbps Transimpedance	1.25	3	7.5	<10	11	Chip	EAR99	HMC690

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
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
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
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

Frequency (GHz)	Function	Insertion Loss (dB)	Attenuation Range (dB)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
Attenuators - Digital								
DC - 5	1-Bit Digital	1	10	50	TTL/CMOS	LP3	EAR99	HMC541LP3E
NEW! DC - 10	1-Bit Digital	2	10	54	0 / +3 to +5V	LP3	EAR99	HMC800LP3E
NEW! DC - 10	1-Bit Digital	1.5	15	53	0 / +3 to +5V	LP3	EAR99	HMC801LP3E
NEW! 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
0.7 - 2.7	5-Bit Digital	2.3	1 to 31	54	0 / +3V	QS16	EAR99	HMC274QS16E
0.7 - 3.0	5-Bit Digital	1.3	0.5 to 15.5	48	0 / +3V	MS10	EAR99	HMC603MS10E
0.7 - 3.0	5-Bit Digital	1.3	0.5 to 15.5	48	0 / +3V	QS16	EAR99	HMC603QS16E
0.7 - 3.7	5-Bit Digital, Serial Control	2.1	1 to 31	48	Serial TTL/CMOS	LP4	EAR99	HMC271LP4AE
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 TTL/CMOS	LP4	EAR99	HMC305LP4AE
0.7 - 3.8	5-Bit Digital	1.5	0.5 to 15.5	52	0 / +3V	MS10	EAR99	HMC306MS10E
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 - 3	6-Bit Digital, Serial Control	1.2	0.5 to 31.5	45	Serial TTL/CMOS	LP4	EAR99	HMC542LP4E
DC - 3	6-Bit Digital, Serial Control	1.2	0.5 to 31.5	45	Serial TTL/CMOS	LP4	EAR99	HMC542LP4AE
DC - 6	6-Bit Digital, Serial & Parallel Control	1.8	31.5	55	0 / +5V	LP4	EAR99	HMC624LP4E
DC - 6	6-Bit Digital, Serial & Parallel Control	1.8	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	31.75	40	TTL/CMOS	LP3	EAR99	HMC759LP3E

BROADBAND TIME DELAYS - New Product Line!

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! 28	Time Delay	14 / 16	11	0.1 - 0.8	1450	+3.3	LC4B	3A001.a.11.b	HMC910LC4B

COMPARATORS - High Speed Clocked, Latched and 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
Clocked Comparators									
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
Latched Comparators									
10 / [2]	Latched Comparator-RSPECL	2	85	0.4	140	+3.3 / 3.0	LC3C	3A001.a.11.b	HMC674LC3C
10 / [2]	Latched Comparator-RSCML	2	100	0.4	100	0 / 0	LC3C	3A001.a.11.b	HMC675LC3C
10 / [2]	Latched Comparator-RSECL	2	100	0.35	120	0 / -2.0	LC3C	3A001.a.11.b	HMC676LC3C
Window Comparators									
NEW! 10 / -	Window Comparator	2	88	0.4	240	+2 / 0	LC3C	3A001.a.11.b	HMC974LC3C

[1] Vee = -3.0V & Vcc = +3.3V

[2] Note that HMC674/675/676LC3C is a family of Level Latched Comparators

DATA CONVERTERS - Track-and-Hold

Input Freq. (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
DC - 4.5	Track-and-Hold	-66 / 67	3.0	0.95	>60	LC4B	3A001.a.11.b	HMC660LC4B

SMT & Chip (Die) Products

FILTERS - Tunable (Band Pass & Low Pass) - New Product Line!

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
NEW!	1 - 2	Band Pass	10	11	0.8 x Fcenter	1.2 x Fcenter	200	LP5	EAR99	HMC890LP5E
NEW!	2 - 3.9	Band Pass	10	9	0.9 x Fcenter	1.15 x Fcenter	200	LP5	EAR99	HMC891LP5E

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
NEW!	DC - 4.0	Low Pass	10	2.2 - 4.0	1.25 x Fcutoff	150	LP5	EAR99	HMC881LP5E
NEW!	DC - 7.6	Low Pass	10	4.5 - 7.6	1.23 x Fcutoff	150	LP5	EAR99	HMC882LP5E

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 - 8	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	HMC494LP4E
	0.01 - 6.5	Programmable Divider (N = 1 to 17)	-15 to +10	0	-153	+5V @ 200mA	LP4	3A001.a.11.b	HMC705LP4E
	0.2 - 2.0	Programmable Divider (N = 1 to 4)	-2 to +10	10	-160	+5V @ 135mA	LP3	3A001.a.11.b	HMC794LP3E
NEW!	0.4 - 6	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 Vpk-pk	-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
	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

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
16 - 23	x2 Active	32 - 46	3	13	-127	Chip	EAR99	HMC579
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
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 (dBm)	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

HIGH SPEED DIGITAL LOGIC

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
1:2 Fanout Buffer									
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
NEW! 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
NEW! 50	1:2 Fanout Buffer*	11 / 11	3	0.4 - 1.2	465	-3.3	LC4B	3A001.a.11.b	HMC842LC4B
2:1 Selector									
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
AND / NAND / OR / NOR									
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
NEW! 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
NEW! 45	AND / NAND / OR / NOR*	10 / 10	2	0.2 - 0.85	500	-3.3	LC4B	3A001.a.11.b	HMC843LC4B
Clock Divider									
28 / 28	Clock Divide-by-2/4	12 / 14	-	0.6	660	-3.3	LC4B	3A001.a.11.b	HMC791LC4B
D-Type Flip-Flop									
13 / 13	D-Type Flip-Flop*	22 / 20	<1	0.4 - 1.1	210	-3.3	LC3C	3A001.a.11.b	HMC673LC3C
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
NEW! 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
NEW! 43	D-Type Flip-Flop*	12 / 12	2	0.2 - 0.85	630	-3.3	LC4B	3A001.a.11.b	HMC841LC4B
NRZ-to-RZ Converter									
13 / 13	NRZ-to-RZ Converter	15 / 13	2	0.3 - 1.2	594	+3.3	LC3C	3A001.a.11.b	HMC706LC3C
T Flip-Flop									
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

IC PRODUCTS

SMT & Chip (Die) Products

HIGH SPEED DIGITAL LOGIC

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
XOR / XNOR									
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
NEW! 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

* These products feature programmable output voltage swing.

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 Driver / Controller	TTL/CMOS	-5 / +2.2	1	+5V @ 1.5mA	LP5	EAR99	HMC677LP5E

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
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 - 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
8.5 - 13.6	I/Q Mixer / IRM	DC - 3.5	-7.5	38	24	LC4	EAR99	HMC521LC4
10 - 16	I/Q Mixer / IRM, 0 LO	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
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	14	2	33	-1	LC5	EAR99	HMC568LC5
NEW! 9 - 12	I/Q Downconverter / Receiver	DC - 3.5	11	2.2	25	2	LC5	EAR99	HMC908LC5
NEW! 12 - 16	I/Q Downconverter / Receiver	DC - 3.5	14	2.8	32	-1	LC5	EAR99	HMC869LC5
17 - 21	I/Q Downconverter / Receiver	DC - 3.3	11	2.2	21	2	LC5	EAR99	HMC904LC5
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
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

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
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

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
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

0.45 - 0.5	High IP3, SGL-END	DC - 0.15	-9.5	20	32	MS8	EAR99	HMC387MS8E
0.4 - 0.65	High IP3, 0 LO	DC - 0.25	-9	7	33	MS8G	EAR99	HMC585MS8GE
0.5 - 2.7	High IP3, DBL-BAL, +2 LO	DC - 1	-8	28	28	LP4	EAR99	HMC915LP4E
0.6 - 1.2	High IP3, SGL-BAL	DC - 0.3	-7.5	22	27	MS8	EAR99	HMC350MS8E
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 - 1.4	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, 0 LO	0.05 - 0.3	-9.2	9	35	MS8G	EAR99	HMC485MS8GE
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 - 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
2.2 - 2.7	High IP3, DBL-BAL, 0 LO	DC - 0.45	-7.5	25	31	LP4	EAR99	HMC688LP4E
2.2 - 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
3.3 - 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
0.9 - 1.6	Hi-IP3 Downconverter w/RF Amplifier	0.05 - 0.5	30	45	6	LP4	EAR99	HMC621LP4E
0.8 - 0.96	Hi-IP3 Dual Downconverter	0.05 - 0.3	9	4	26	LP6	EAR99	HMC581LP6E
0.8 - 1.0	Hi-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
1.4 - 2.3	Hi-IP3 Downconverter	0.05 - 0.3	9	33	19	QS16G	EAR99	HMC421QS16E
1.7 - 2.2	Hi-IP3 Downconverter	0.05 - 0.3	11	25	19	QS16G	EAR99	HMC380QS16GE
1.7 - 2.2	Hi-IP3 Dual Downconverter	50 - 300	9	10	27	LP6	EAR99	HMC381LP6E
1.7 - 2.2	Hi-IP3, Dual Downconverter	0.06 - 0.4	6	25	25	LP6C	EAR99	HMC682LP6CE
1.8 - 2.7	Hi-IP3 Downconverter w/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
1.8 - 3.9	+3 LO, DBL-BAL	0.2 - 0.55	9	33	23	LP4	EAR99	HMC622LP4E
1.2 - 2.5	Low LO, DBL-BAL	DC - 1	-8	30	15	MS8	EAR99	HMC422MS8E
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
7 - 10	+10 LO, DBL-BAL	DC - 2	-9	32	16	C8	EAR99	HMC171C8

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
+13 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	HMC219MS8E
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	HMC412MS8GE
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
+15 to +20 dBm LO Double & Single Balanced Mixers								
70 - 90	+14 LO, DBL-BAL	DC - 18	-12	-	-	Chip	5A991.h	HMC-MDB277
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
NEW! 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
NEW! 17.7 - 23.6	Sub-Harmonic, Upconverter	DC - 3.5	15	40	13	LC5	EAR99	HMC711LC5
20 - 30	Sub-Harmonic	DC - 6	-10	40	13	Chip	EAR99	HMC264
21 - 31	Sub-Harmonic	DC - 6	-9	40	13	LC3B	EAR99	HMC264LC3B
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, Downconverter	0.7 - 3.0	3	30	10	Chip	EAR99	HMC265
20 - 40	Sub-Harmonic	1 - 3	-12	24	13	Chip	EAR99	HMC266
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
0.1 - 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
NEW! 0.05 - 2.7	Direct Quadrature with VGA	25 / 50	DC - 440	-159	+5V @ 120mA	LP5	3A001.a.11.b	HMC795LP5E
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	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 - 50	Passive	±0.2	3	26	17 x 18	Chip	EAR99	HMC653
DC - 50	Passive	±0.2	4	25	17 x 18	Chip	EAR99	HMC654
DC - 50	Passive	±0.2	6	26	17 x 18	Chip	EAR99	HMC655
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
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

PHASE SHIFTERS - Digital

Frequency (GHz)	Function	Insertion Loss (dB)	Phase Range (deg)	IIP3 (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
8 - 12	4-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
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

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
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

PHASE LOCKED LOOP - Synthesizer ICs

Frequency (GHz)	Function	Max. PFD Freq. (MHz)	Max. Reference Freq. (MHz)	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 w/ Int. Sweeper	75	200	-221 / -227	3 Hz	+5V @ 37mA +3.3V @ 90mA	LP6C	3A001.a.11.b	HMC701LP6CE
10 kHz - 14 GHz	Fractional-N w/ Int. Sweeper	75	200	-221 / -227	6 Hz	+5V @ 37mA +3.3V @ 136mA	LP6C	3A001.a.11.b	HMC702LP6CE
10 MHz - 8 GHz	Fractional-N	70	200	-221 / -226	3 Hz	+5V @ 7mA +3.3V @ 95mA	LP4	3A001.a.11.b	HMC700LP4E
80 MHz - 7 GHz	Integer-N	1300	1300	-233	50 MHz	+5V @ 310mA	LP5	3A001.a.11.b	HMC698LP5E
160 MHz - 7 GHz	Integer-N	1300	1300	-233	50 MHz	+5V @ 310mA	LP5	3A001.a.11.b	HMC699LP5E
10 MHz - 2.8 GHz	Integer-N	1300	1300	-233	50 MHz	+5V @ 250mA	QS16G	3A001.a.11.b	HMC440QS16GE

PLLs with INTEGRATED VCOs

Frequency (GHz)	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
0.66 - 3.3	Tri-Band RF VCO	-115 dBc/Hz	-142 dBc/Hz	+10	190	0.10	LP6C	3A001.a.11.b	HMC822LP6CE
0.78 - 0.87	RF VCO	-120 dBc/Hz	-147 dBc/Hz	+12	190	0.05	LP6C	3A001.a.11.b	HMC824LP6CE
0.86 - 4.16	Tri-Band RF VCO	-113 dBc/Hz	-140 dBc/Hz	+10	190	0.12	LP6C	3A001.a.11.b	HMC821LP6CE
0.99 - 1.105	RF VCO	-118 dBc/Hz	-145 dBc/Hz	+10	190	0.07	LP6C	3A001.a.11.b	HMC826LP6CE
1.095 - 5.10	Tri-Band RF VCO	-110 dBc/Hz	-139 dBc/Hz	+10	190	0.17	LP6C	3A001.a.11.b	HMC820LP6CE
1.285 - 1.415	RF VCO	-116 dBc/Hz	-142 dBc/Hz	+10	190	0.10	LP6C	3A001.a.11.b	HMC828LP6CE
1.815 - 2.01	RF VCO	-112 dBc/Hz	-141 dBc/Hz	+9	190	0.13	LP6C	3A001.a.11.b	HMC831LP6CE
3.365 - 3.705	RF VCO	-107 dBc/Hz	-135 dBc/Hz	0	190	0.25	LP6C	3A001.a.11.b	HMC836LP6CE
7.3 - 8.2	Microwave VCO	-102 dBc/Hz	-140 dBc/Hz	+15	196	0.55	LP6C	3A001.a.11.b	HMC764LP6CE
7.8 - 8.8	Microwave VCO	-102 dBc/Hz	-139 dBc/Hz	+13	193	0.58	LP6C	3A001.a.11.b	HMC765LP6CE
11.5 - 12.5	Microwave VCO	-100 dBc/Hz	-134 dBc/Hz	+11	181	0.78	LP6C	3A001.a.11.b	HMC783LP6CE
12.4 - 13.4	Microwave VCO	-98 dBc/Hz	-134 dBc/Hz	+8	175	0.81	LP6C	3A001.a.11.b	HMC807LP6CE

* Figure of merit (FOM) of synthesizer is -225/-226 dBc/Hz (fractional/integer).

POWER CONDITIONING – High PSRR Quad 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
3.35 - 5.6	Quad High PSRR	2.5 - 5.2	15 - 100	80 60	7 3	4	LP3	EAR99	HMC860LP3E

POWER DETECTORS

Frequency (GHz)	Function	Dynamic Range (dB)	RSSI Slope (mV/dB)	RF Threshold Level (dBm)	Bias Supply	Package	ECCN Code	Part Number
Log Detector/Controller								
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

RMS Power Detectors

DC - 3.9	True RMS Power Detector	69 ±1	37	-60	+5V @ 65 mA	LP4	EAR99	HMC610ALP4E
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Successive Detection Log Video Amplifier

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

SWITCHES

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
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SPST & SPDT Switches

DC - 6	SPST, Failsafe	0.7	25	27	0 / +2.2 to +5V	SOT26	EAR99	HMC550E
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SMT & Chip (Die) Products

SWITCHES

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
DC - 6	SPST, Hi Isolation	1.4	52	27	0 / -5V	G7 Hermetic	EAR99	HMC231G7
DC - 2.5	SPDT, Reflective	0.4	36	29	0 / -5V	S8	EAR99	HMC239S8E
DC - 3	SPDT, Reflective	0.4	27	30	0 / +3V	MS8	EAR99	HMC190AMS8E
DC - 3	SPDT, Hi 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, Hi Isolation	0.5	45	25	0 / +5V	MS8G	EAR99	HMC284MS8GE
DC - 4	SPDT, Reflective	0.5	28	29	0 / -5V or +5V / 0	Chip	EAR99	HMC240
DC - 4	SPDT, Hi Isolation	0.9	65	31	0 / +5V	LP4C	EAR99	HMC349LP4CE
DC - 4	SPDT, Hi Isolation	0.9	57	31	0 / +5V	MS8G	EAR99	HMC349MS8GE
DC - 4	SPDT, Hi Isolation	1.1	47	31	0 / +5V	MS8G	EAR99	HMC435MS8GE
DC - 6	SPDT, Hi Isolation	1.4	50	26	0 / -5V	G7 Hermetic	EAR99	HMC232G7
DC - 6	SPDT, Hi Isolation	1.4	43	26	0 / -5V	G8 Hermetic	EAR99	HMC232G8
DC - 6	SPDT, Hi Isolation	1.4	43	26	0 / -5V	G8 Hermetic	EAR99	HMC233G8
DC - 6	SPDT, Hi Isolation	1.6	42	25	0 / +5V	MS8G	EAR99	HMC336MS8GE
DC - 6	SPDT, Hi Isolation	1.4	46	27	0 / -5V	G7	EAR99	HMC607G7
DC - 6	SPDT, Hi Isolation	0.8	60	35	0 / +3 to +5V	LP4C	EAR99	HMC849LP4CE
DC - 8	SPDT, Hi Isolation	1.4	50	26	0 / -5V	C8	EAR99	HMC232C8
DC - 8	SPDT, Hi Isolation	1.5	45	26	0 / -5V	C8	EAR99	HMC234C8
DC - 8	SPDT, Hi Isolation	1.2	48	23	0 / -5V	MS8G	EAR99	HMC270MS8GE
DC - 8	SPDT, Hi Isolation	2.0	44	23	0 / -5V	C8	EAR99	HMC347C8
DC - 8	SPDT, Hi Isolation	2.2	35	23	0 / -5V	G8 Hermetic	EAR99	HMC347G8
DC - 12	SPDT, Hi Isolation	1.5	55	27	0 / -5V	LP4	EAR99	HMC232LP4E
DC - 15	SPDT, Hi Isolation	1.4	50	26	0 / -5V	Chip	EAR99	HMC232
DC - 15	SPDT, Hi Isolation	1.6	44	23	0 / -5V	LP3	EAR99	HMC347LP3E
DC - 15	SPDT, Hi Isolation	1.7	60	26	0 / -5V	Chip	EAR99	HMC607
DC - 20	SPDT, Hi Isolation	1.7	45	23	0 / -5V	Chip	EAR99	HMC347
DC - 20	SPDT, Hi Isolation	1.8	47	23	0 / -5V	LP3	EAR99	HMC547LP3E
55 - 86	SPDT, Reflective	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
NEW! DC - 20	SP4T	2.1	42	23	0 / -5V	LC4	EAR99	HMC641LC4
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 - 10	SP8T	2	38	23	0 / -5V	Chip	EAR99	HMC322
DC - 8	SP8T	2.5	25	23	0 / -5V	LP4	EAR99	HMC322LP4E

Bypass, Diversity, Matrix & Transfer Switches

DC - 2.5	Bypass DPDT	0.3	25	23	0 / +5V	MS8	EAR99	HMC199MS8E
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SMT & Chip (Die) Products

SWITCHES

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package	ECCN Code	Part Number
4.9 - 5.9	DPDT or SP3T	1	23	30	0 / +3V	MS8G	EAR99	HMC436MS8GE
5 - 6	Diversity DPDT	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 - 8.0	Transfer	1.2	42	26	0 / +5V	LP3	EAR99	HMC427LP3E

VARIABLE GAIN AMPLIFIERS

Frequency (GHz)	Function	Gain Control Range (dB)	NF * (dB)	OIP3 * (dBm)	P1dB (dBm)	Bias Supply	Package	ECCN Code	Part Number
2.3 - 2.5	Analog	-8 to 22	2.5	7	3	+3V @ 9mA	MS8	EAR99	HMC287MS8E
6 - 17	Analog	23	5	30	22	+5V @ 170mA	Chip	EAR99	HMC694
6 - 17	Analog	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
0.7 - 1.2	6-Bit Digital, Serial & Parallel Control	-2.5 to +29	0.8	38.5	21	+5V @ 236mA	LP5	EAR99	HMC707LP5E
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 - 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
DC - 4	12-Bit Digital, Serial Control	-45 to +18	6	33	18	+5V @ 82mA	LP6C	EAR99	HMC743LP6CE

* Maximum Gain State

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
8 - 12.5	Wideband VCO	5	-65	-93	+5V @ 55mA	LC4B	EAR99	HMC588LC4B

* 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

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
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
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

CONNECTORIZED MODULES

Robust, High Performance RF to Light Solutions

Our hermetic module & instrumentation product line is expanding with two new module families. The new *DRO & MicroSynth™ integrated synthesizer* joins our already popular amplifier, attenuator, high speed digital logic, frequency multiplier, mixer, phase shifter, prescaler, signal generator, 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 - 15	Wideband Driver	16	33	3	23	+12V @ 195mA	C-3 / SMA	3A001.b.4.f	HMC-C004
0.01 - 15	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	Power Amplifier, 1 Watt	13	40	5	29.5	-5V @ 5mA +15V @ 450mA	C-17 / SMA	EAR99	HMC-C074
0.01 - 6.0	Power Amplifier, 1 Watt	24	42	5	29.5	-5V @ 5mA +15V @ 740mA	C-17 / SMA	EAR99	HMC-C075
0.05 - 15	Wideband Power Amplifier, 1/2 Watt	12	36	4	28	+11V @ 360mA	C-10B / SMA	3A001.b.4.f	HMC-C036
0.05 - 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	3A001.b.4.f	HMC-C020
21 - 31	Wideband Power Amplifier	15	32	5	24	+8V @ 215mA	C-10 / 2.92mm	3A001.b.4.c	HMC-C021
0.4 - 1.0	10 Watt Power Amplifier	40	54	12	40	+12V @ 6.5A	C-7 / SMA	EAR99	HMC-C012
0.8 - 2.0	10 Watt Power Amplifier	43	56	12	40	+12V @ 6.5A	C-7 / SMA	EAR99	HMC-C013
1.8 - 2.2	15 Watt Power Amplifier	42	53	6	42	+14V @ 6.5A	C-7 / SMA	EAR99	HMC-C008

AMPLIFIERS - Low Phase Noise

Frequency (GHz)	Function	Gain / NF (dB)	OIP3 (dBm)	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	-157	17 / 22	+7V @ 170mA	C-16 / SMA	EAR99	HMC-C077
2 - 18	Low Phase Noise	13.5 / 5	22.5	-150	15 / 18.5	+5V @ 80mA	C-1 / SMA	EAR99	HMC-C050
4 - 8	Low Phase Noise	9 / 6	33	-180	22 / 25	+7V @ 300mA	C-16 / SMA	EAR99	HMC-C079
6 - 12	Low Phase Noise	11 / 4.5	34	-174	20 / 22	+7V @ 170mA	C-16 / SMA	EAR99	HMC-C072
7 - 11	Low Phase Noise	9 / 6	33	-180	22 / 25	+7V @ 300mA	C-16 / SMA	EAR99	HMC-C076

NEW!

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 TTL/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

FREQUENCY DIVIDERS (PRESCALERS)

Input Freq. (GHz)	Function	Input Power (dBm)	Output Power (dBm)	100kHz 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)	100kHz 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 Voltage Swing (Vpp)	DC Power (mW)	Vee Power Supply (Vdc)	Package / Connector	ECCN Code	Part Number
50 / 25	AND / NAND / OR / NOR	9 / 10	2	0.5	560	-3.3	C-13 / 1.85mm	3A001.a.11.b	HMC-C065
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
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	8.5 / 10	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

CONNECTORIZED MODULES

Robust, High Performance RF to Light Solutions

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

POWER DETECTORS

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
NEW! 2 - 20	SDLVA * w/ Limited RF Output	50	45	-45	+12V @ 370mA -5V @ 20mA	C-21 / SMA	EAR99	HMC-C078

* Successive Detection Log Video Amplifier

SWITCHES - SPST, SPDT & SP4T

Frequency (GHz)	Function	Insertion Loss (dB)	Isolation (dB)	Input P1dB (dBm)	Control Input (Vdc)	Package / Connector	ECCN Code	Part Number
DC - 20	SPST, Hi Isolation	3	100	23	0 / +5V	C-9 / SMA	EAR99	HMC-C019
DC - 18	SPDT, Hi Isolation	2	55	27	0 / +5V	C-14 / SMA	EAR99	HMC-C058
DC - 20	SPDT, Hi Isolation	2	40	23	0 / -5V	C-5 / SMA	EAR99	HMC-C011
DC - 20	SP4T, Hi Isolation	3	40	24	0 / +5V	C-15 / SMA	EAR99	HMC-C071

SYNTHESIZER MODULE - MicroSynth™

Frequency (GHz)	Function	Min. Step Size Resolution (Hz)	Reference Frequency (MHz)	Phase Noise @ 100 kHz Offset (dBc/Hz)	Output Power (dBm)	Bias Supply	Package	ECCN Code	Part Number
5.5 - 10.5	MicroSynth™ Synthesizer	1.2	10	-92	21	+20V @ 20mA +6V @ 300mA +3.6V @ 100mA	C-20 / SMA	3A001.a.11.b	HMC-C070

VOLTAGE CONTROLLED OSCILLATORS*

Frequency (GHz)	Function	Output Power (dBm)	10k Hz 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	Wideband VCO	13	-74	-98	+5V @ 350mA	C-19 / SMA	EAR99	HMC-C073



C-20



C-11



C-12

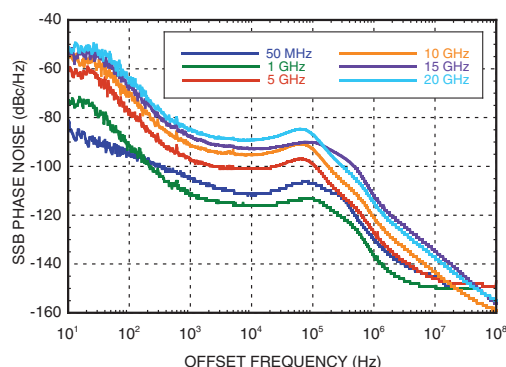
HMC-T2100B



HIGHLY PORTABLE!

Battery Powered Signal Generator Outputs +27 dBm From 10 MHz to 20 GHz!

SSB Phase Noise vs. Frequency



Performance

- ◆ Wide Frequency Range: 10 MHz to 20 GHz
- ◆ High Output Power: +27 dBm
- ◆ Power Resolution: 0.1 dB
- ◆ Frequency Resolution: 10 kHz
- ◆ Excellent SSB Phase Noise: -113 dBc/Hz @ 1 GHz @ 100 kHz Offset
- ◆ Spurious @ 1 GHz: -80 dBc
- ◆ USB, GPIB & Ethernet Control
- ◆ Battery Operation: 4 Hours

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

Frequency (GHz)	Function	Frequency Resolution (MHz)	Maximum Power Output (dBm)	100kHz SSB Phase Noise (dBc/Hz)	Spurious @ 1 GHz (dBc)	Switching Speed @ 100 MHz Steps (μs)	Package	ECCN Code	Part Number
0.01 - 20	Synthesized Signal Generator	0.01	+27 @ 2 GHz +25 @ 10 GHz	-113 @ 1 GHz -93 @ 10 GHz	-80	<300	Rack Mountable / Benchtop	EAR99	HMC-T2100
NEW! 0.01 - 20	Portable Synthesized Signal Generator	0.01	+27 @ 2 GHz +25 @ 10 GHz	-113 @ 1 GHz -93 @ 10 GHz	-80	300	Portable / Benchtop	EAR99	HMC-T2100B
0.7 - 8.0	Synthesized Signal Generator	1	+17 @ 2 GHz +15 @ 4 GHz	-78 @ 1 GHz -87 @ 4 GHz	-57	<200	Rack Mountable / Benchtop	EAR99	HMC-T2000

Applications

- ◆ ATE
- ◆ Test & Measurement
- ◆ R&D Laboratories

Advantages

- ◆ Versatile: Higher Drive Simplifies Test Set-Ups
- ◆ Efficient: 300 μs Frequency Switching
- ◆ Reliable: Incorporates Hittite MMICs
- ◆ Flexible: Manual or Software Control

HMC-T2000 & HMC-T2100 Rack Mount Kit Available!



Dual Rack Mounting Plate 19" 2u Chassis

See www.hittite.com For Ordering Information

Contact Us Today with Your Custom Test Instrumentation Requirements at TE@hittite.com

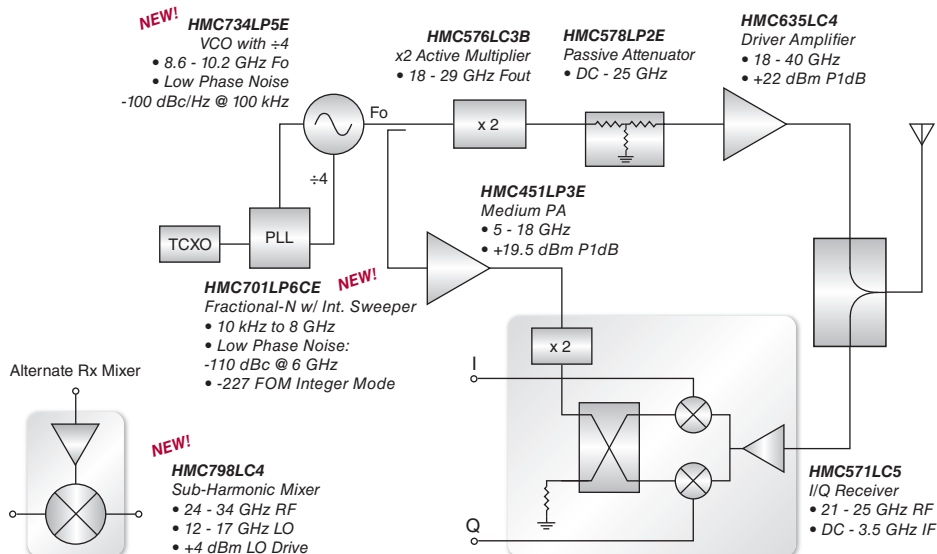
MARKET & APPLICATION GUIDE

A selection of components, see the full product listing starting on page 10.

AUTOMOTIVE; DC - 6 GHz and 6 - 80 GHz

Function	DC - 6 GHz			6 - 80 GHz		
	Chip	SMT		Chip	SMT	
Amplifiers Gain Blocks & Drivers	HMC396 HMC405 HMC397	HMC311LP3E HMC311ST89E HMC313E HMC770LP4BE	HMC474MP86E HMC478MP86E HMC480ST89E	HMC562 HMC465 HMC606	HMC383LC4 HMC442LC3B HMC451LC3 HMC462LP5E HMC463LP5E	HMC464LP5E HMC465LP5E HMC489LP5E HMC490LP5E HMC635LC4
Low Noise Amplifier	HMC392 HMC609 HMC594	HMC374E HMC392LH5 HMC548LP3E HMC667LP2E HMC758LP3E	HMC594LC3B HMC604LP3E HMC605LP3E HMC617LP3E	HMC565 HMC518 HMC263 HMC566 HMC-ALH508 HMC-ALH509	HMC341LC3B HMC504LC4B HMC516LC5 HMC519LC4	HMC517LC4 HMC565LC5
Linear & Power Amplifier	HMC459 HMC559 HMC606	HMC318MS8GE HMC320MS8GE HMC327MS8GE	HMC407MS8GE HMC409LP4E HMC606LC5	HMC464 HMC562 HMC592 HMC693 HMC-ABH264	HMC383LC4 HMC464LP5E	HMC489LP5E HMC498LC4 HMC499LC4
Attenuator: Analog		HMC346C8		HMC712	HMC812LC4	HMC712LP3CE
Attenuator: Digital		HMC425LP3E HMC467LP3E HMC468LP3E HMC540LP3E HMC629LP4E	HMC759LP3E HMC792LP4E			
Frequency Divider & Detector	HMC361 HMC362	HMC432E HMC433E	HMC437MS8GE HMC438MS8GE HMC794LP3E	HMC363 HMC365	HMC447LC3 HMC492LP3E	HMC493LP3E HMC494LP4E
Frequency Multipliers: Active	HMC561	HMC369LP3E HMC370LP4E HMC443LP4E HMC695LP4E	HMC444LP4E HMC575LP4E HMC561LP3E HMC695LP4E	HMC449 HMC576 HMC579 HMC-XDH158	HMC370LP4E HMC449LC3B HMC573LC3B	HMC576LC3B HMC577LC4B HMC578LC3B
Frequency Multipliers: Passive	HMC156	HMC187AMS8E	HMC188MS8E	HMC205 HMC-XTB110	HMC204MS8GE	
Mixer Fundamental	HMC128 HMC129	HMC175MS8E HMC213AMS8E HMC218MS8E	HMC285E HMC488MS8GE HMC615LP4E	HMC292 HMC554 HMC560 HMC-MDB169 HMC-MDB277	HMC144LC4 HMC260LC3B HMC292LC3B	HMC329LC3B HMC554LC3B HMC560LM3
Mixers: I/Q, IIR, Sub-Harmonic & I/Q Upconverters/ Downconverters	HMC525 HMC620	HMC340ALP5E HMC525LC4	HMC620LC4	HMC339 HMC404 HMC556 HMC572 HMC-MDB171 HMC-MDB172 HMC-MDB207 HMC-MDB218	HMC258LM3 HMC264LC3B HMC265LM3 HMC338LC3B HMC709LC5 HMC815LC5 HMC869LC5	HMC522LC4 HMC523LC4 HMC528LC4 HMC572LC5 HMC710LC5 HMC798LC4
Modulator		HMC495LP3E HMC696LP4E HMC697LP4E	HMC497LP3E HMC696LP4E HMC697LP4E		HMC496LP3E	
PLLs: Synthesizer ICs		HMC698LP5E HMC699LP5E	HMC700LP4E HMC701LP6CE		HMC698LP5E HMC699LP5E	HMC700LP4E HMC701LP6CE
Power Detector		HMC601LP4E HMC713LP3E	HMC610ALP4E		HMC602LP4E HMC713MS8E HMC714LP5E	HMC611LP4E HMC662LP3E
Switch: SPST, SPNT, SPDT, SPDT T/R, Bypass, Diversity, Matrix & Transfer	HMC240 HMC322 HMC344 HMC641	HMC321LP4E HMC332E HMC336MS8GE HMC544E HMC436MS8GE	HMC536MS8GE HMC550E HMC784MS8GE HMC849LP4CE	HMC232 HMC347 HMC607 HMC-SDD112	HMC232LP4E HMC321LP4E HMC344LP3E	HMC347LP3E HMC427LP3E HMC547LP3E
VGAs: Digital		HMC625LP4E HMC743LP6CE	HMC742LP5E			
VCO * Requires x2 or x4		HMC388LP4E HMC389LP4E HMC390LP4E	HMC391LP4E HMC431LP4E HMC586LC4B		HMC515LP5E* HMC531LP5E* HMC534LP4E HMC736LP4E	HMC535LP5E HMC587LC4B HMC588LC4B HMC737LP4E

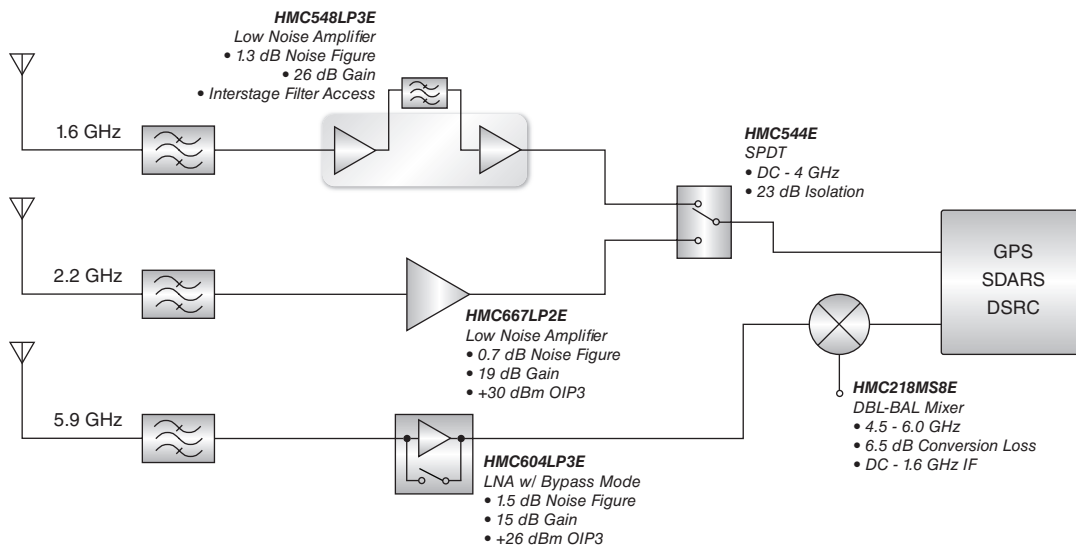
24 GHz FMCW AUTOMOTIVE SENSOR



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

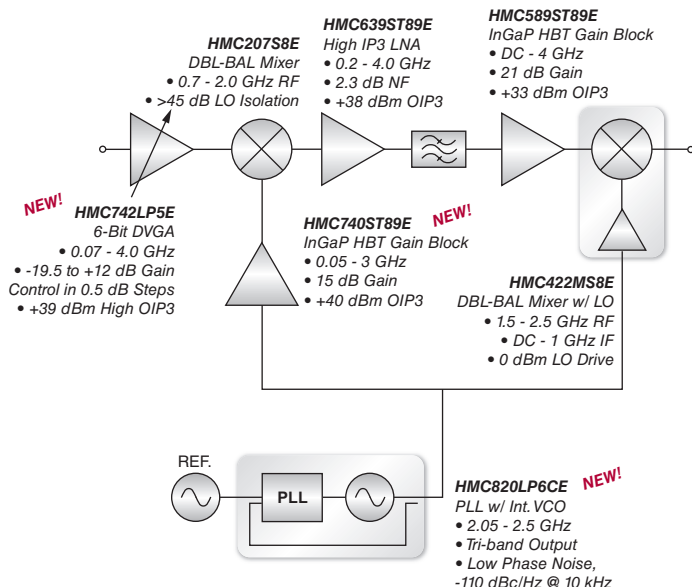
A selection of components, see the full product listing starting on page 10.

BROADBAND, DC - 11 GHz – CATV, DBS, VoIP, WiMAX, WiBro & WLAN

Function	0.005 - 2.15 GHz CATV & DBS	1.8 - 2.7 GHz WiMAX / WiBro	3.3 - 3.9 GHz WiMAX / WiBro	4.9 - 5.9 GHz WiMAX / Fixed
Low Noise Amplifier	HMC548LP3E HMC549MS8GE HMC599ST89E	HMC286E HMC287MS8GE HMC605LP3E HMC636ST89E HMC639ST89E HMC715LP3E	HMC476SC70E HMC491LP3E HMC593LP3E HMC636ST89E HMC639ST89E HMC716LP3E	HMC318MS8GE HMC320MS8GE HMC476SC70E HMC604LP3E HMC717LP3E
Driver Amplifier & Gain Block	HMC311SC70E HMC454ST89E HMC474SC70E HMC475ST89E HMC476SC70E HMC589ST89E HMC770LP4BE	HMC308E HMC311SC70E HMC474SC70E HMC475ST89E HMC476SC70E HMC589ST89E HMC755LP4E	HMC311SC70E HMC326MS8GE HMC327MS8GE HMC474SC70E HMC475ST89E HMC476SC70E	HMC311SC70E HMC406MS8GE HMC407MS8GE HMC415LP3E HMC474SC70E HMC476SC70E
Linear & Power Amplifier	HMC453QS16GE HMC636ST89E	HMC454ST89E HMC636ST89E	HMC409LP4E HMC636ST89E	HMC408LP3E
Attenuator: Analog	HMC473MS8E	HMC346MS8GE	HMC346MS8GE	HMC346MS8GE
Attenuator: Digital	HMC467LP3E HMC468LP3E HMC542LP4E HMC624LP4E HMC629LP4E HMC759LP3E	HMC305ALP4E HMC540LP3E HMC542LP4E HMC624LP4E HMC629LP4E HMC792LP4E	HMC424LP3E HMC467LP3E HMC539LP3E HMC624LP4E HMC629LP4E HMC792LP4E	HMC425LP3E HMC467LP3E HMC468LP3E HMC624LP4E HMC629LP4E HMC792LP4E
Mixer	HMC207S8E HMC208MS8E HMC400MS8E HMC483MS8GE	HMC215LP4E HMC285E HMC316MS8E HMC334LP4E HMC552LP4E HMC557 HMC557LC4 HMC622LP4E HMC688LP4E HMC689LP4E	HMC214MS8E HMC215LP4E HMC333E HMC340ALP5E HMC557 HMC557LC4 HMC615LP4E HMC622LP4E HMC666LP4E	HMC220MS8E HMC218MS8E HMC219MS8E HMC488MS8GE HMC525LC5 HMC557 HMC557LC4
Demodulator	HMC597LP4E	HMC597LP4E HMC631LP3E	HMC597LP4E	
Modulator	HMC495LP3E HMC497LP4E HMC696LP4E	HMC495LP3E HMC497LP4E HMC696LP4E HMC697LP4E	HMC495LP3E HMC497LP4E HMC697LP4E	HMC496LP3E
Phase Shifter: Digital		HMC647 HMC647LP6E	HMC648 HMC648LP6E HMC649 HMC649LP6E	HMC649 HMC649LP6E HMC638LP5E
PLL	HMC700LP4E	HMC700LP4E	HMC700LP4E	HMC700LP4E
Power Detector	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC612LP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC612LP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E
Switch: SPST & SPNT	HMC253QS24E HMC536MS8GE HMC536LP2E HMC544E HMC550E HMC646LP2E HMC784MS8GE HMC849LP4CE	HMC241LP3E HMC536MS8GE HMC546LP2E HMC550E HMC784MS8GE HMC849LP4CE	HMC241LP3E HMC349MS8GE HMC536MS8GE HMC544E HMC550E HMC784MS8GE HMC849LP4CE	HMC224MS8E HMC321LP4 HMC536LP2E HMC536MS8GE HMC550E
Switch: Bypass, Diversity, Matrix & Transfer	HMC276LP4E HMC427LP3E HMC596LP4E	HMC276LP4E HMC427LP3E HMC596LP4E	HMC427LP3E	HMC436MS8GE HMC427LP3E
VCO	HMC384LP4E	HMC384LP4E HMC385LP4E	HMC388LP4E HMC389LP4E	HMC430LP4E HMC431LP4E
VGA	HMC625LP5E HMC626LP5E HMC627LP5E HMC628LP4E	HMC625LP5E HMC680LP4E HMC681LP5E	HMC625LP5E HMC680LP4E HMC681LP5E	HMC625LP5E HMC680LP4E HMC681LP5E

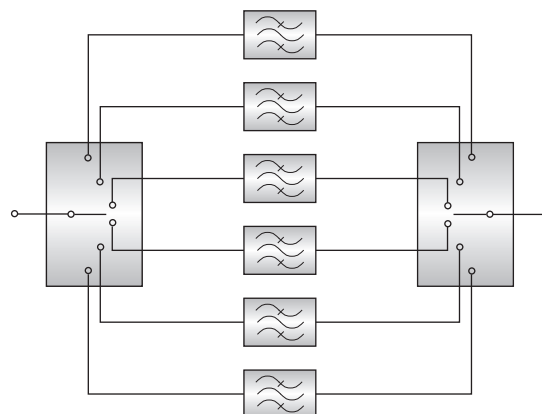
CABLE MODEM, CATV, DBS & VoIP SOLUTIONS, 5 - 2150 MHz

Cable Modem Termination System (CMTS)



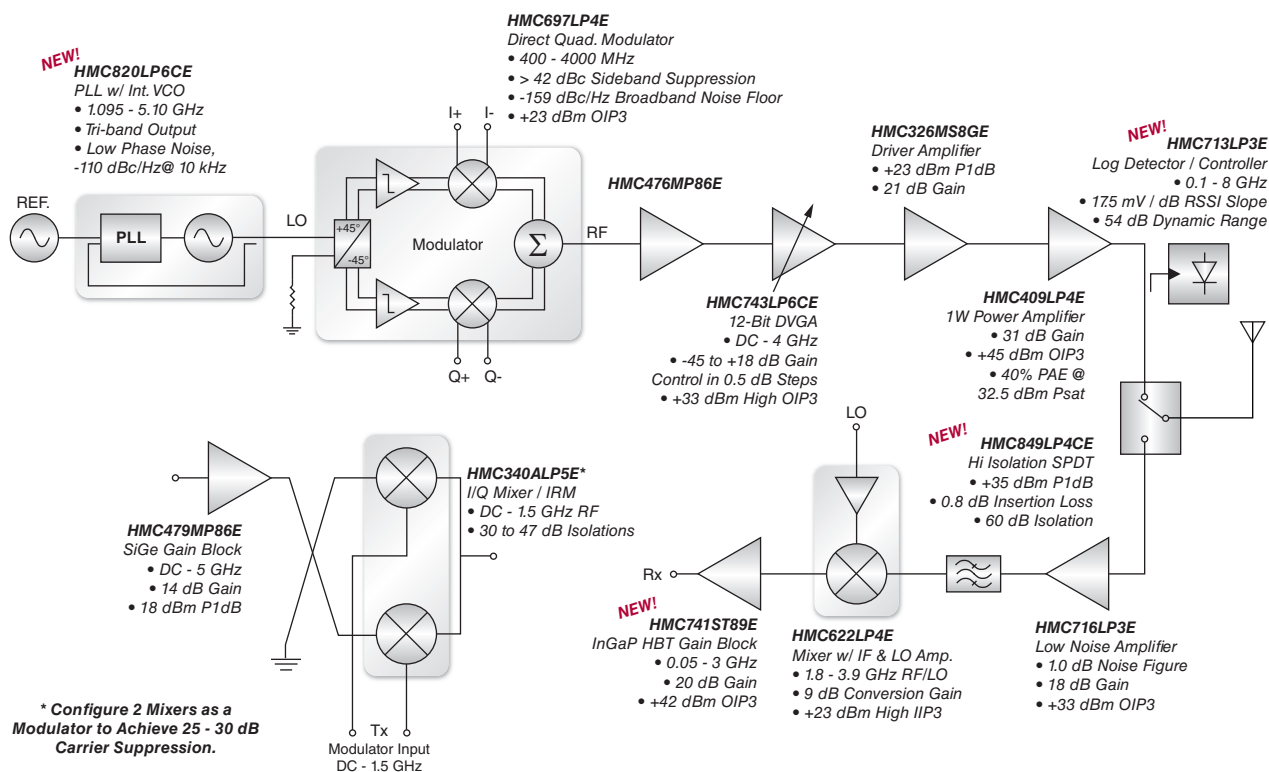
A Selection of SPNT Switches for CATV Filter & Signal Routing

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 - 15	SPDT	1.4 / 65
HMC245QS16GE	DC - 3.5	SP3T	0.5 / 44
HMC345LP3E	DC - 8	SP4T	2.0 / >50
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



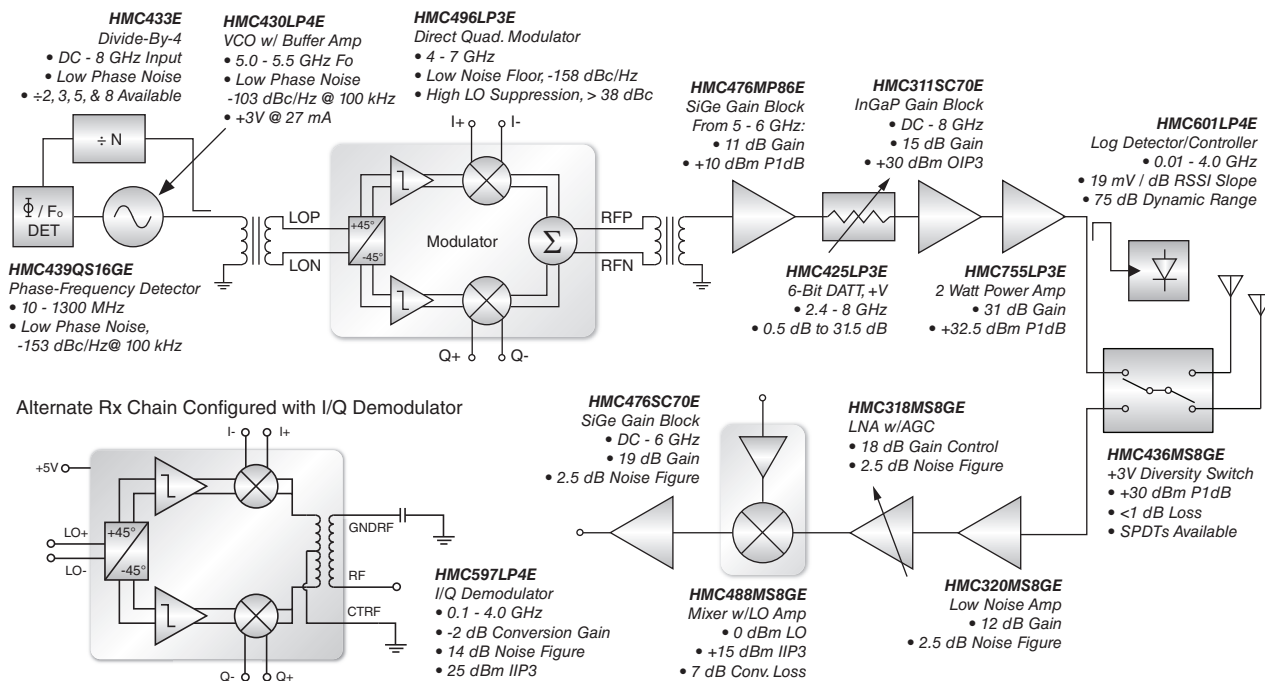
Alternate Modulator Circuit Configured with Two HMC340LP5 Mixers

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

MARKET & APPLICATION GUIDE

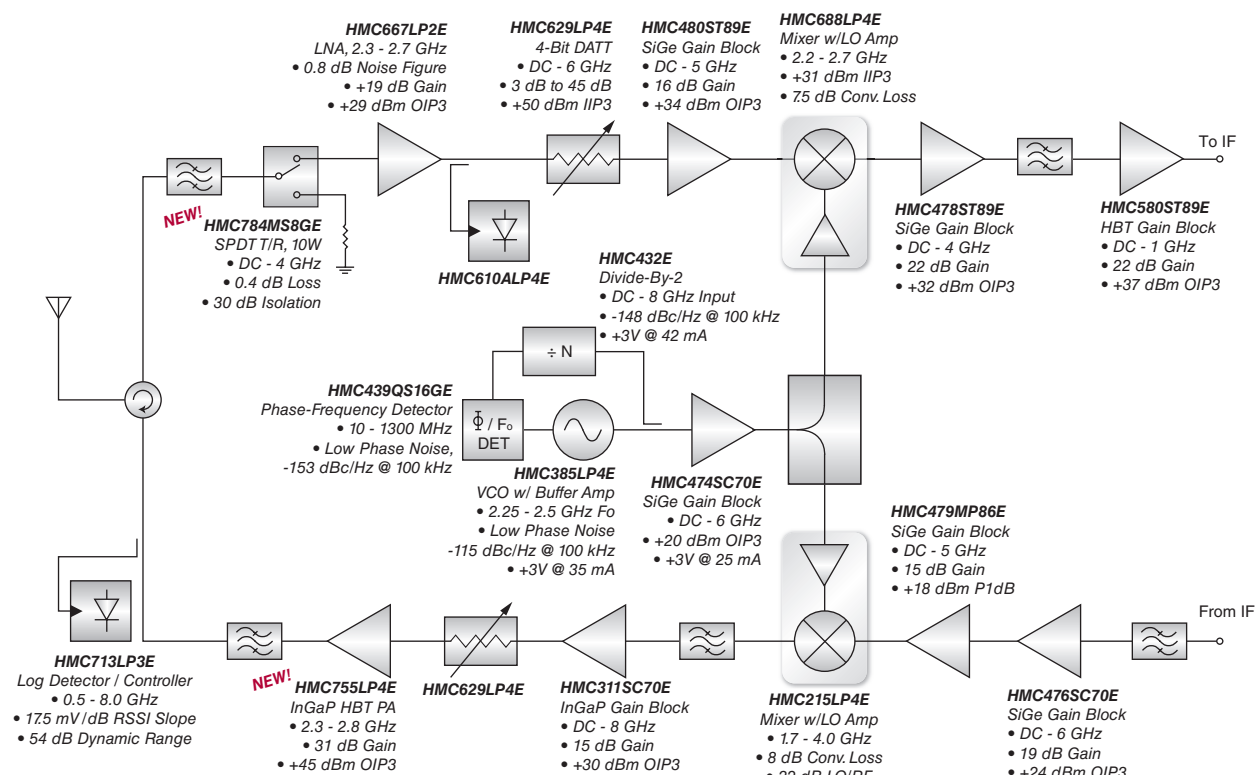
Broadband, DC - 11 GHz

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.

A selection of components, see the full product listing starting on page 10.

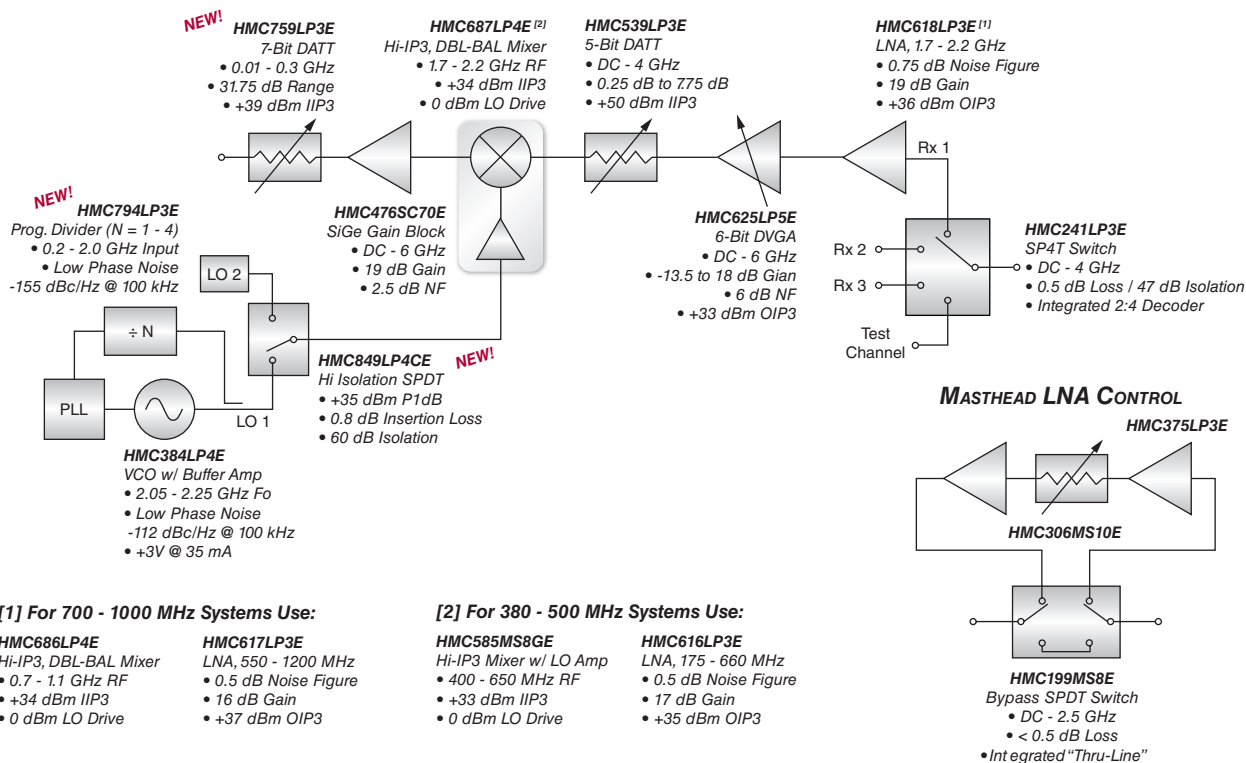
CELLULAR INFRASTRUCTURE, 380 - 2200 MHz – GSM, GPRS, CDMA, TD-SCDMA, WCDMA, UMTS & 4G/LTE

Function	400 MHz	700 / 800 / 900 MHz	1800 / 1900 MHz	2100 / 2200 MHz
Low Noise Amplifier	HMC374E HMC616LP3E HMC636ST89E	HMC617LP3E HMC636ST89E HMC718LP4E	HMC618LP3E HMC636ST89E HMC719LP4E	HMC618LP3E HMC636ST89E HMC667LP2E
Driver Amplifier & Gain Block	HMC311SC70E HMC454ST89E HMC474SC70E HMC475ST89E HMC476SC70E HMC478ST89E HMC580ST89E	HMC308E HMC311SC70E HMC454ST89E HMC474SC70E HMC475ST89E HMC476SC70E HMC589ST89E	HMC308E HMC311SC70E HMC454ST89E HMC474SC70E HMC475ST89E HMC476SC70E HMC589ST89E	HMC308E HMC311SC70E HMC454ST89E HMC474SC70E HMC475ST89E HMC476SC70E HMC589ST89E
Linear & Power Amplifier	HMC452ST89E HMC453ST89E HMC454ST89E HMC636ST89E	HMC452ST89E HMC453ST89E HMC454ST89E HMC636ST89E	HMC452ST89E HMC453ST89E HMC454ST89E HMC457QS16GE HMC636ST89E	HMC452ST89E HMC453ST89E HMC454ST89E HMC636ST89E
Attenuator: Analog	HMC473MS8E	HMC473MS8E		
Attenuator: Digital	HMC540LP3E HMC541LP3E HMC472LP4E HMC542LP4E HMC624LP4E HMC629LP4E HMC759LP3E HMC792LP4E	HMC540LP3E HMC541LP3E HMC467LP3E HMC542LP4E HMC624LP4E HMC629LP4E HMC759LP3E HMC792LP4E	HMC539LP3E HMC541LP3E HMC468LP3E HMC542LP4E HMC624LP4E HMC629LP4E HMC759LP3E HMC792LP4E	HMC539LP3E HMC541LP3E HMC542LP4E HMC624LP4E HMC629LP4E HMC759LP3E HMC792LP4E
Frequency Divider & Detector	HMC394LP4E HMC434E HMC439QS16GE HMC705LP5E	HMC394LP4E HMC434E HMC439QS16GE HMC705LP5E	HMC394LP4E HMC434E HMC439QS16GE HMC705LP5E	HMC394LP4E HMC434E HMC439QS16GE HMC705LP5E
Mixer	HMC387MS8E HMC585MS8GE	HMC334LP4E HMC399MS8E HMC423MS8E HMC483MS8GE HMC551LP4E HMC581LP6E HMC621LP4E HMC665LP4E HMC683LP6E HMC684LP4E HMC686LP4E	HMC215LP4E HMC334LP4E HMC381LP6E HMC400MS8E HMC485MS8GE HMC552LP4E HMC622LP4E HMC623LP4E HMC682LP6E HMC685LP4E HMC687LP4E	HMC215LP4E HMC334LP4E HMC400MS8E HMC421QS16GE HMC422MS8E HMC615LP4 HMC622LP4E HMC688LP4E HMC689LP4E
Demodulator	HMC597LP4E	HMC597LP4E	HMC597LP4E	HMC597LP4E
Modulator: Direct Quadrature & Vector	HMC495LP3E HMC497LP4E HMC696LP4E HMC697LP4E	HMC495LP3E HMC497LP4E HMC630LP3E HMC696LP4E HMC697LP4E	HMC495LP3E HMC497LP4E HMC631LP3E HMC696LP4E HMC697LP4E	HMC495LP3E HMC497LP4E HMC631LP3E HMC696LP4E HMC697LP4E
PLL: Synthesizer ICs	HMC700LP4E	HMC700LP4E	HMC700LP4E	HMC700LP4E
Power Detector	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC611LP4E HMC612LP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC611LP4E HMC612LP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC611LP4E HMC612LP4E	HMC600LP4E HMC601LP4E HMC602LP4E HMC610ALP4E HMC611LP4E HMC612LP4E
Switch: SPST & SPNT	HMC546MS8GE HMC550E HMC646LP2E HMC784MS8GE HMC849LP4CE	HMC550E HMC574MS8E HMC646LP2E HMC784MS8GE HMC849LP4CE	HMC545E HMC546MS8GE HMC646LP2E HMC784MS8GE HMC849LP4CE	HMC546LP2E HMC550E HMC646LP2E HMC784MS8GE HMC849LP4CE
Switch: Bypass, Diversity, Matrix & Transfer	HMC199MS8E HMC596LP4E	HMC199MS8E HMC596LP4E	HMC199MS8E HMC596LP4E	HMC199MS8E HMC596LP4E
VGA	HMC625LP5E HMC626LP5E HMC627LP5E HMC628LP4E HMC680LP4E HMC681LP5E	HMC625LP5E HMC626LP5E HMC627LP5E HMC628LP4E HMC680LP4E HMC681LP5E	HMC625LP5E HMC626LP5E HMC627LP5E HMC628LP4E HMC680LP4E HMC681LP5E	HMC625LP5E HMC626LP5E HMC627LP5E HMC628LP4E HMC680LP4E HMC681LP5E

MARKET & APPLICATION GUIDE

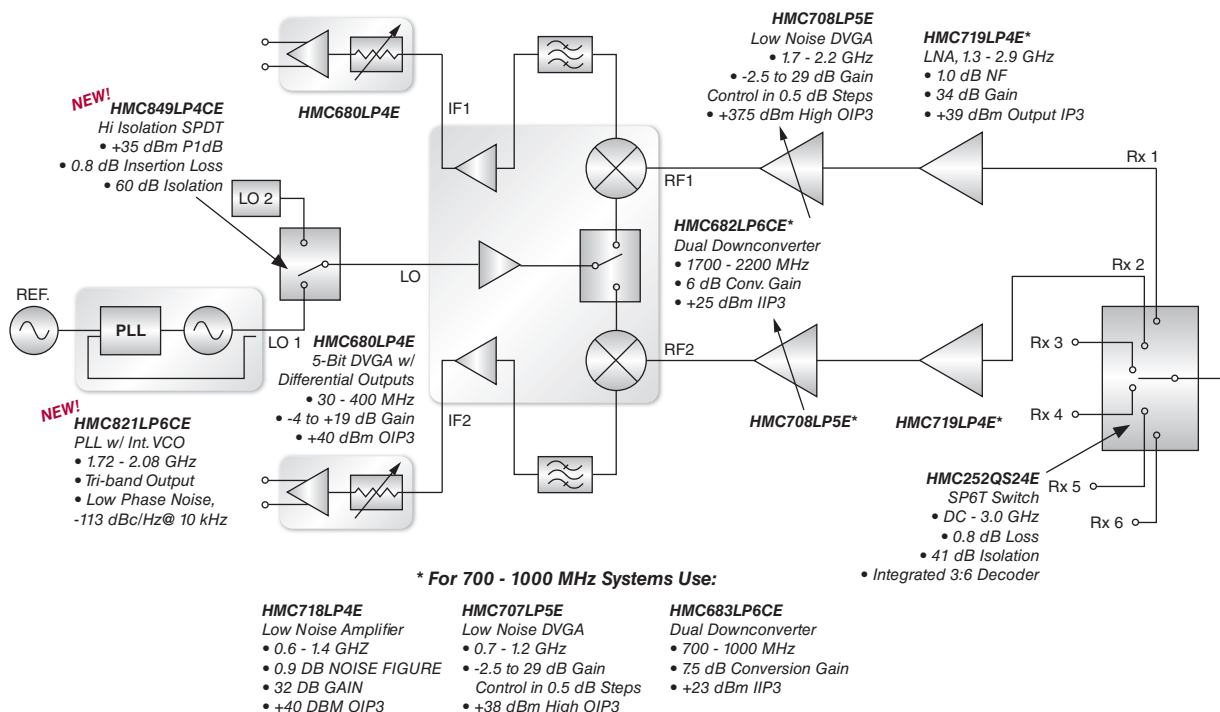
Cellular Infrastructure, 380 - 2200 MHz

BTS RECEIVER SOLUTIONS FEATURING HIGH IP3 MIXER



Ask About Our Custom VCO Capabilities!

BTS RECEIVER SOLUTIONS FEATURING DUAL RFIC DOWNCONVERTER



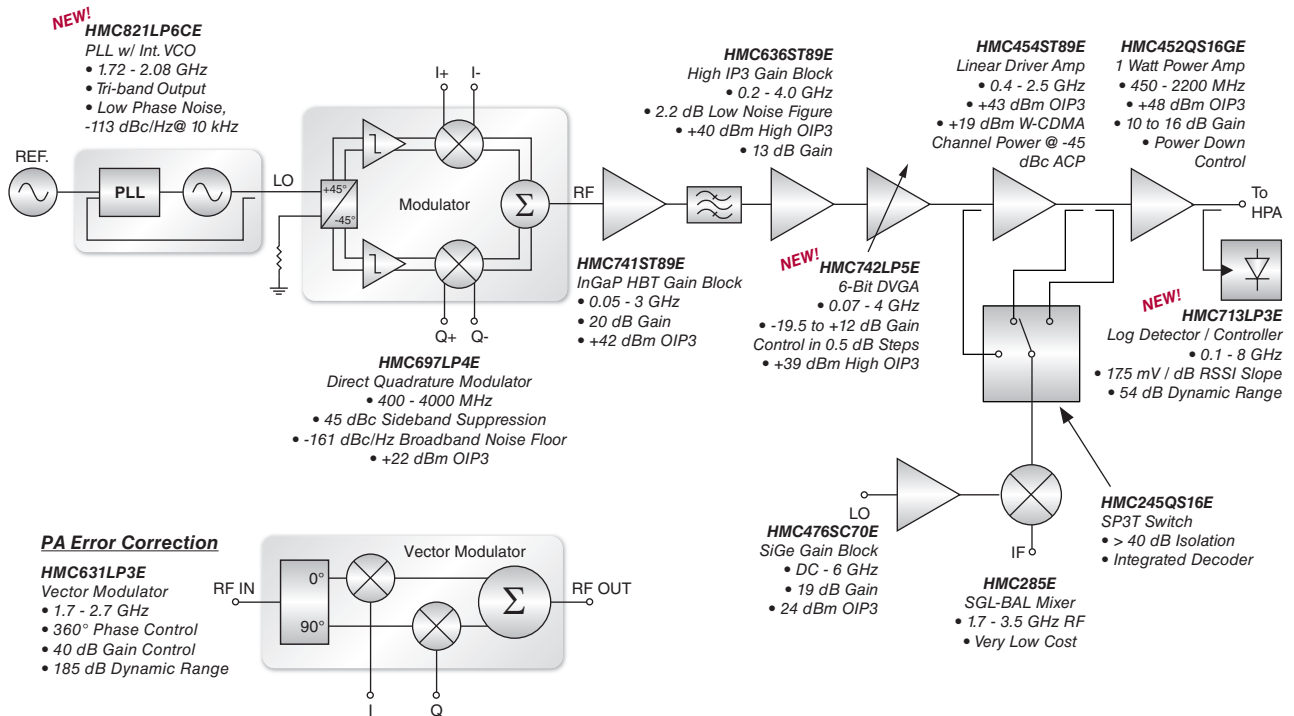
Typical Cellular/PCS/3G applications are illustrated.

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

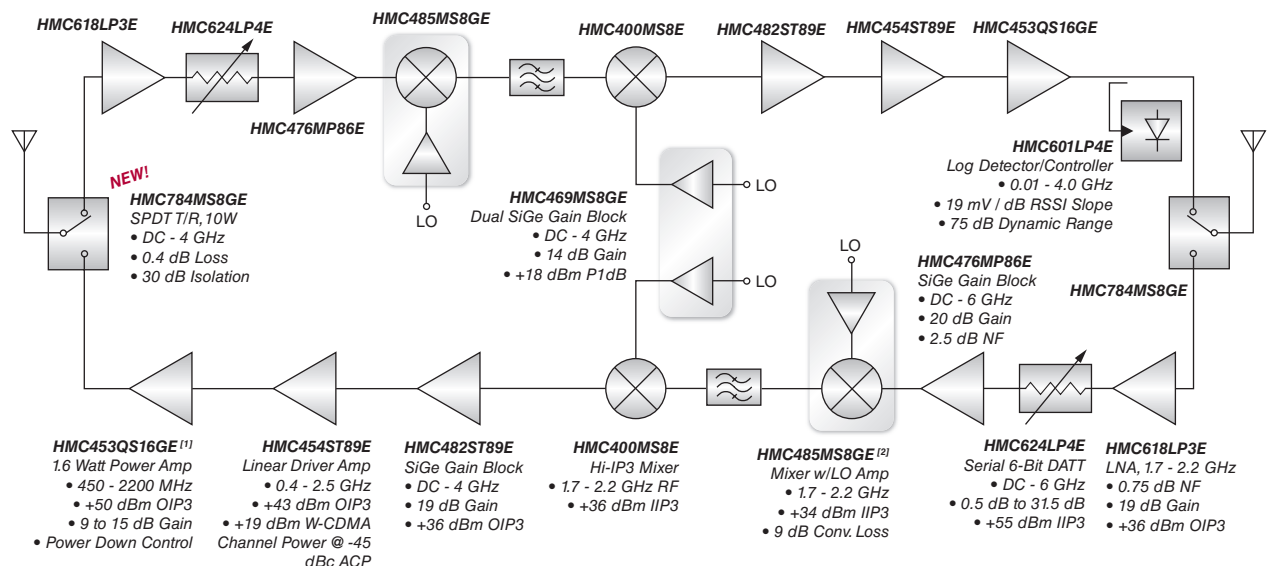
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APRIL 2010

BTS TRANSMITTER SOLUTIONS



CDMA / GSM / TD-SCDMA REPEATER SOLUTIONS



[1] High Gain Option:

HMC457QS16GE
1 Watt Power Amp
• 1.7 - 2.2 GHz
• +46 dBm OIP3
• 26 dB Gain

[2] For 700 - 1000 MHz Systems Use:

HMC483MS8GE
Mixer w/LO Amp
• 0.7 - 1.4 GHz
• +35 dBm IIP3

Typical Cellular/PCS/3G applications are illustrated.

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

MARKET & APPLICATION GUIDE

A selection of components, see the full product listing starting on page 10.

FIBER OPTICS, OC-48 to 100G

Fiber Optic Custom Solutions Inquiries: FO@hittite.com

Function	OC-1	OC-3	OC-12	OC-48	OC-192	OC-768
Broadband Gain Blocks	HMC311SC70E HMC396 HMC405 HMC474MP86E HMC474SC70E HMC475ST89E HMC476SC70E HMC478SC70E	HMC311SC70E HMC396 HMC405 HMC474MP86E HMC474SC70E HMC475ST89E HMC476SC70E HMC478SC70E	HMC311SC70E HMC396 HMC405 HMC474MP86E HMC474SC70E HMC475ST89E HMC476SC70E HMC478SC70E	HMC311SC70E HMC396 HMC405 HMC474MP86E HMC474SC70E HMC475ST89E HMC476SC70E HMC478SC70E	HMC405	
Limiting Amplifier	HMC750LP4E	HMC750LP4E	HMC750LP4E	HMC750LP4E	HMC750LP4E	
Transimpedance Amplifier					HMC690	
Wideband (Distributed) Amplifiers	HMC459 HMC460 HMC465 HMC465LP5E HMC559 HMC637LP5E HMC-AUH312 HMC-AUH232 HMC-AUH249	HMC459 HMC460 HMC465 HMC465LP5E HMC559 HMC637LP5E HMC-AUH312 HMC-AUH232 HMC-AUH249	HMC459 HMC460 HMC465 HMC465LP5E HMC559 HMC637LP5E HMC-AUH312 HMC-AUH232 HMC-AUH249	HMC459 HMC460 HMC465 HMC465LP5E HMC559 HMC637LP5E HMC-AUH312 HMC-AUH232 HMC-AUH249	HMC459 HMC460 HMC465 HMC465LP5E HMC559 HMC-AUH312 HMC-AUH232 HMC-AUH249	HMC-AUH312
Connectorized Amplifier Modules	HMC-C004 HMC-C036 HMC-C037	HMC-C004 HMC-C036 HMC-C037	HMC-C004 HMC-C036 HMC-C037	HMC-C004 HMC-C036 HMC-C037	HMC-C004 HMC-C036 HMC-C037	
Attenuators: Analog	HMC346 HMC346G8 HMC346LP3E HMC346MS8GE	HMC346 HMC346G8 HMC346LP3E HMC346MS8GE	HMC346 HMC346G8 HMC346LP3E HMC346MS8GE	HMC346 HMC346G8 HMC346LP3E HMC346MS8GE	HMC346 HMC346LP3	HMC-VVD104 HMC-VVD106
Attenuators: Digital	HMC424 HMC424LH5 HMC424LP3E HMC542LP4E HMC624LP4E HMC629LP4E	HMC424 HMC424LH5 HMC424LP3E HMC542LP4E HMC624LP4E HMC629LP4E	HMC424 HMC424LH5 HMC424LP3E HMC542LP4E HMC624LP4E HMC629LP4E	HMC424 HMC424LH5 HMC424LP3E HMC542LP4E HMC624LP4E HMC629LP4E	HMC424 HMC424LH5 HMC424LP3E	
Attenuators: Passive	HMC650 - HMC655 HMC656LP2E HMC657LP2E HMC658LP2E	HMC650 - HMC655 HMC656LP2E HMC657LP2E HMC658LP2E	HMC650 - HMC655 HMC656LP2E HMC657LP2E HMC658LP2E	HMC650 - HMC655 HMC656LP2E HMC657LP2E HMC658LP2E	HMC650 - HMC655 HMC656LP2E HMC657LP2E HMC658LP2E	HMC650 - HMC655 HMC656 HMC657 HMC658
Connectorized Attenuator Modules	HMC-C018 HMC-C053	HMC-C018 HMC-C053	HMC-C018 HMC-C053	HMC-C018 HMC-C053	HMC-C025 HMC-C053	
Frequency Dividers & Detectors	HMC394LP4E HMC439QS16GE HMC440QS16GE HMC492LP3E HMC493LP3E HMC494LP4E	HMC394LP4E HMC439QS16GE HMC440QS16GE HMC492LP3E HMC493LP3E HMC494LP4E	HMC394LP4E HMC439QS16GE HMC440QS16GE HMC492LP3E HMC493LP3E HMC494LP4E	HMC394LP4E HMC440QS16GE HMC492LP3E HMC493LP3E		
Connectorized Freq. Divider Modules	HMC-C040	HMC-C006 HMC-C007 HMC-C039 HMC-C040	HMC-C005 HMC-C006 HMC-C007 HMC-C039 HMC-C040	HMC-C005 HMC-C006		
Frequency Multipliers: Active					HMC448LC3B HMC576 HMC576LC3B HMC561LP3E HMC598 HMC-XDB112 HMC-XDH158	HMC579 HMC598
Connectorized Freq. Multiplier Modules					HMC-C032 HMC-C033 HMC-C034	

A selection of components, see the full product listing starting on page 10.

FIBER OPTICS, OC-48 to 100G

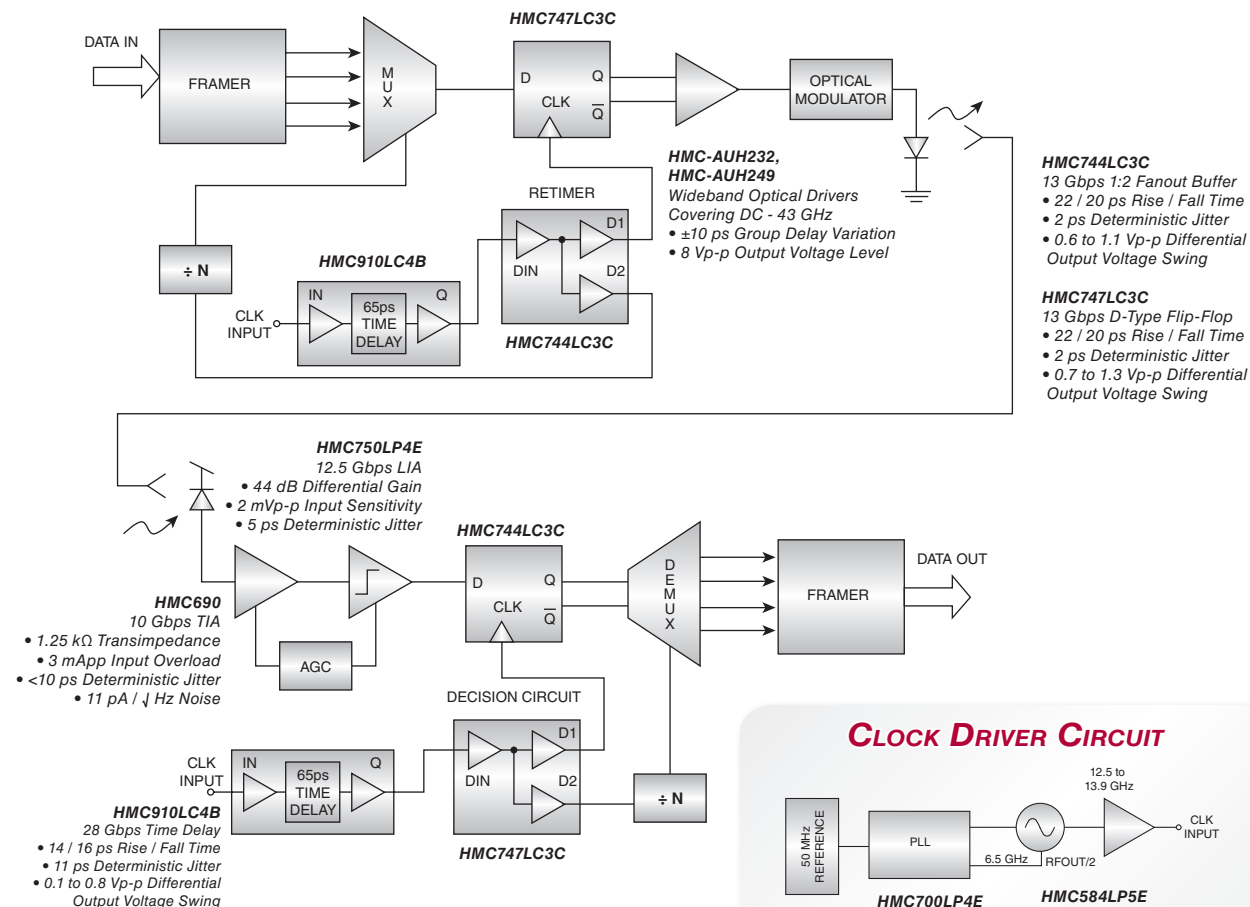
Fiber Optic Custom Solutions Inquiries: FO@hittite.com

Function	OC-1	OC-3	OC-12	OC-48	OC-192	OC-768
High Speed Digital Logic:						
1:2 Fanout Buffer	HMC720LC3C	HMC720LC3C	HMC724LC3C	HMC724LC3C	HMC744LC3C	
2:1 Selector	HMC678LC3C	HMC678LC3C	HMC728LC3C	HMC728LC3C	HMC748LC3C	HMC748LC3C
XOR / XNOR	HMC721LC3C	HMC721LC3C	HMC725LC3C	HMC725LC3C	HMC745LC3C	
AND / NAND / OR / NOR	HMC722LC3C	HMC722LC3C	HMC726LC3C	HMC726LC3C	HMC746LC3C	
D-Type Flip-Flop	HMC723LC3C	HMC723LC3C	HMC727LC3C	HMC727LC3C	HMC747LC3C	HMC853LC3C
T Flip-Flop w/ Reset	HMC679LC3C	HMC679LC3C	HMC729LC3C	HMC729LC3C	HMC749LC3C	HMC749LC3C
NRZ-to-RZ Converter	HMC706LC3C	HMC706LC3C	HMC706LC3C	HMC706LC3C	HMC706LC3C	
Clock Divider	HMC791LC4B	HMC791LC4B	HMC791LC4B	HMC791LC4B	HMC791LC4B	HMC791LC4B
Connectorized High Speed Digital Logic Modules						HMC-C060 HMC-C061 HMC-C062 HMC-C064 HMC-C065
Connectorized Mixer Modules	HMC-C035	HMC-C035	HMC-C035	HMC-C035		
Phase Shifters: Analog				HMC247 HMC538LP4E	HMC247 HMC538LP4E	
Phase Shifters: Digital				HMC647 HMC647LP6E HMC648 HMC648LP6E	HMC642LC5 HMC643LC5 HMC644 HMC644LC5	
Connectorized Phase Shifter Modules					HMC-C010	
Switches: SPDT	HMC232LP4E HMC347 HMC347LP3E HMC547LP3E HMC646LP2E	HMC232LP4E HMC347 HMC347LP3E HMC547LP3E HMC646LP2E	HMC232LP4E HMC347 HMC347LP3E HMC547LP3E HMC646LP2E	HMC232 HMC232LP4E HMC347 HMC347LP3E HMC547LP3E	HMC232 HMC232LP4E HMC347 HMC347LP3E HMC547LP3E	HMC-SDD112
Switches: Multi-Throw	HMC253LC4 HMC344LC3 HMC641	HMC253LC4 HMC344LC3 HMC641	HMC253LC4 HMC344LC3 HMC641	HMC253LC4 HMC344LC3 HMC641	HMC641	
Switches: Transfer	HMC427LP3E	HMC427LP3E	HMC427LP3E	HMC427LP3E		
Connectorized Switch Modules	HMC-C011 HMC-C019 HMC-C058	HMC-C011 HMC-C019 HMC-C058	HMC-C011 HMC-C019 HMC-C058	HMC-C011 HMC-C019 HMC-C058	HMC-C011 HMC-C019 HMC-C058	
Connectorized VCO Modules						HMC-C073

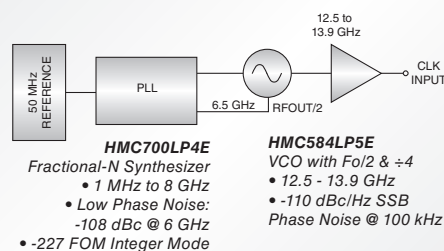
MARKET & APPLICATION GUIDE

Fiber Optics, OC-48 to 100G

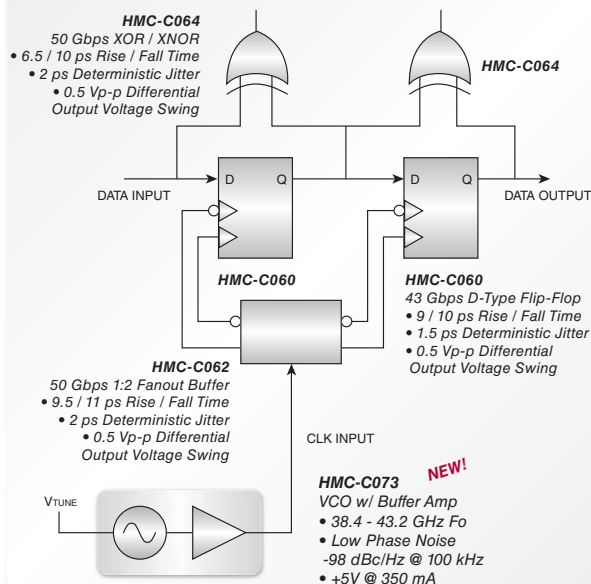
TYPICAL SERIAL FIBER OPTIC DATA TRANSMISSION SYSTEM



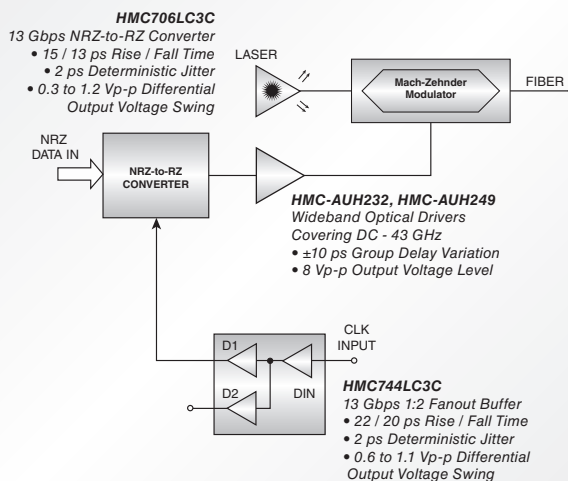
CLOCK DRIVER CIRCUIT



43 Gbps HOGGE PHASE DETECTOR FOR CLOCK & DATA RECOVERY



13 Gbps, NRZ-to-RZ CONVERSION



Typical Fiber Optic applications are illustrated.

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

A selection of components, see the full product listing starting on page 10.

MICROWAVE & MILLIMETERWAVE RADIO, 7 to 23 GHz

Function	7 / 8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz
Low Noise Amplifier	HMC392LC4	HMC516LC5	HMC516LC5	HMC504LC4B	HMC517LC4	HMC341LC3B
	HMC392LH5	HMC564	HMC565	HMC516LC5	HMC519LC4	HMC504LC4B
	HMC564	HMC564LC4	HMC565LC5	HMC565	HMC565	HMC517LC4
	HMC564LC4	HMC565		HMC565LC5	HMC565LC5	HMC519
	HMC565	HMC565LC5				HMC519LC4
Driver Amplifier	HMC441LP3E	HMC441LP3E	HMC441LC3B	HMC441LC3B	HMC383LC4	HMC383LC4
	HMC451LC3	HMC451LC3	HMC451LC3	HMC451LC3	HMC442LC3B	HMC442LC3B
	HMC516LC5	HMC451LP3E	HMC451LP3E	HMC451LP3E	HMC451LP3E	HMC498LC4
		HMC516LC5	HMC490LP5E	HMC490LP5E	HMC498LC4	HMC635
Power Amplifier	HMC486LP5E	HMC487LP5E	HMC489LP5E	HMC489LP5E	HMC498LC4	HMC498LC4
	HMC590	HMC592	HMC592	HMC-APH462	HMC-APH196	HMC-APH196
	HMC590LP5E	HMC608LC4			HMC-APH462	HMC-APH462
	HMC591				HMC-APH478	HMC-APH518
	HMC591LP5E				HMC-APH596	HMC-APH596
	HMC637					
Wideband (Distributed) Amplifiers	HMC463LH250	HMC463LH250	HMC463LH250	HMC463LH250	HMC463LH250	HMC635
	HMC606	HMC606	HMC606	HMC606	HMC606	HMC-ALH216
	HMC606LC5	HMC606LC5	HMC606LC5	HMC606LC5	HMC606LC5	HMC-ALH311
	HMC619	HMC633	HMC633	HMC633	HMC634	HMC-ALH445
	HMC619LP5E	HMC633LC4	HMC633LC4	HMC633LC4	HMC634LC4	HMC-ALH476
	HMC633	HMC634	HMC634	HMC634	HMC659	HMC-AUH232
	HMC633LC4	HMC634LC4	HMC634LC4	HMC634LC4	HMC-ALH102	HMC-AUH249
	HMC634	HMC-C050	HMC-C050	HMC-C050	HMC-C050	HMC-AUH256
	HMC634LC4	HMC-ALH102	HMC-ALH102	HMC-ALH102	HMC-ALH216	HMC-AUH312
	HMC659	HMC-ALH435	HMC-ALH435	HMC-ALH216	HMC-ALH435	
	HMC-C050	HMC-ALH444	HMC-ALH482	HMC-ALH435	HMC-ALH445	
	HMC-ALH102	HMC-ALH482	HMC-AUH232	HMC-ALH476	HMC-ALH476	
	HMC-ALH435	HMC-AUH232	HMC-AUH249	HMC-ALH482	HMC-ALH482	
	HMC-ALH444	HMC-AUH249	HMC-AUH312	HMC-AUH232	HMC-AUH232	
	HMC-ALH482	HMC-AUH312		HMC-AUH249	HMC-AUH249	
	HMC-AUH232			HMC-AUH312	HMC-AUH256	
	HMC-AUH249				HMC-AUH312	
	HMC-AUH312					
Attenuator: Analog	HMC346LP3E	HMC346LP3E	HMC346LP3E	HMC346LC3B	HMC346LC3B	HMC812LC4
	HMC812LC4	HMC812LC4	HMC812LC4	HMC812LC4	HMC-C053	HMC-VVD102
	HMC-C053	HMC-C053	HMC-C053	HMC-C053	HMC-VVD102	
Divide-by-2	HMC361S8GE	HMC364S8GE	HMC492LP3E	HMC492LP3E	HMC492LP3E	
Divide-by-4	HMC362S8GE	HMC365S8GE	HMC493LP3E	HMC493LP3E	HMC447LC3	HMC447LC3
Divide-by-8	HMC363S8GE	HMC363S8GE	HMC494LP4E	HMC494LP4E		
Multiplier: Active X2	HMC368LP4E	HMC368LP4E	HMC368LP4E	HMC368LP4E	HMC448LC3B	HMC448LC3B
	HMC575LP4E	HMC573LC3B	HMC573LC3B	HMC573LC3B	HMC576	HMC576
	HMC561LP3E	HMC561LP3E	HMC561LP3E	HMC561LP3E	HMC576LC3B	HMC576LC3B
Multiplier: Active X4		HMC443LP4E	HMC370LP4E	HMC370LP4E		
				HMC-XDH158		
Multiplier: Passive X2	HMC189AMS8E	HMC189AMS8E	HMC204MS8GE	HMC204MS8GE	HMC204MS8GE	HMC205
I/Q Downconverter / Rx I/Q Upconverter/Tx	HMC567LC5	HMC568LC5	HMC869LC5	HMC570	HMC571	HMC572
				HMC570LC5	HMC571LC5	HMC572LC5
I/Q Mixer / IRM	HMC520LC4	HMC521LC4	HMC521LC4	HMC522LC4	HMC523	HMC523
	HMC525LC4	HMC527LC4	HMC527LC4	HMC528LC4	HMC523LC4	HMC523LC4
	HMC620					HMC524
	HMC620LC4					HMC-MDB172
Mixer: Fundamental	HMC129LC4	HMC144LC4	HMC144LC4	HMC144LC4	HMC144LC4	HMC260LC3B
	HMC144LC4	HMC411MS8GE	HMC411MS8GE	HMC260LC3B	HMC260LC3B	HMC292LC3B
	HMC219MS8E	HMC412MS8GE	HMC412MS8GE	HMC412MS8GE	HMC292LC3B	
	HMC220MS8E	HMC553	HMC553	HMC554	HMC554	
	HMC553	HMC553LC3B	HMC553LC3B	HMC554LC3B	HMC554LC3B	
	HMC553LC3B	HMC558	HMC558	HMC558	HMC-C051	
	HMC558	HMC558LC3B	HMC558LC3B	HMC558LC3B		
	HMC558LC3B	HMC-C051	HMC-C051	HMC-C051		
	HMC663LC3	HMC663LC3				

MARKET & APPLICATION GUIDE

A selection of components, see the full product listing starting on page 10.

MICROWAVE & MILLIMETERWAVE RADIO, 7 to 23 GHz

Function	7 / 8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz
Mixer: Sub-Harmonic				HMC258LM3	HMC258LC3B HMC258LM3 HMC337	HMC264LC3B HMC338LC3B
PLLs: Synthesizer ICs	HMC698LP5E HMC699LP5E HMC700LP4E HMC701LP6CE					
Switch	HMC547LP3E HMC641	HMC607 HMC641	HMC547LP3E HMC641	HMC607 HMC641	HMC547LP3E HMC641	
Signal Generator	HMC-T2000					
VCO & PLO: **Requires X2 or X4	HMC466LP4E HMC505LP4E HMC506LP4E HMC532LP4E HMC586LC4B HMC587LC4B	HMC513LP4E HMC515LP5E HMC534LP4E HMC582LP5E HMC588LC4B HMC735LP5E	HMC513LP4E HMC529LP4E HMC584LP5E	HMC529LP4E HMC531LP5E HMC535LP5E HMC632LP5E HMC736LP4E HMC737LP4E	HMC429LP4E**	HMC431LP4E** HMC738LP4E HMC739LP4E
VGA: Analog	HMC694 HMC694LP4E	HMC694 HMC694LP4E	HMC694 HMC694LP4E	HMC694 HMC694LP4E	HMC694 HMC694LP4E	

MICROWAVE & MILLIMETERWAVE RADIO, 26 to 86 GHz

Function	26 / 28 GHz	32 / 38 GHz	32 - 43 GHz	44 - 66 GHz	71 - 86 GHz
Low Noise Amplifier	HMC341LC3B HMC517LC4 HMC519LC4 HMC635 HMC693	HMC263 HMC566 HMC635 HMC693	HMC-ALH376	HMC-ALH382	HMC-ALH459 HMC-ALH509
Driver Amplifier	HMC383LC4 HMC499LC4 HMC635LC4	HMC300LM1 HMC383LC4 HMC635LC4	HMC-APH403 HMC-APH473 HMC-APH510	HMC-ABH209 HMC-ABH241 HMC-ABH403	HMC-AUH317 HMC-AUH318 HMC-AUH320
Power Amplifier	HMC499LC4 HMC693 HMC-APH196 HMC-APH460 HMC-APH462 HMC-APH596 HMC-APH608	HMC693 HMC-ABH264 HMC-APH403 HMC-APH473 HMC-APH510 HMC-APH596	HMC693 HMC-ABH264 HMC-APH403 HMC-APH473 HMC-APH510 HMC-AUH256	HMC-ABH209 HMC-ABH241 HMC-ABH403	HMC-ALH508 HMC-AUH317 HMC-AUH318 HMC-AUH320
Wideband (Distributed) Amplifiers	HMC-ALH140 HMC-ALH216 HMC-ALH244 HMC-ALH311 HMC-ALH313 HMC-ALH364 HMC-ALH369 HMC-ALH445 HMC-ALH476 HMC-AUH232 HMC-AUH249 HMC-AUH256 HMC-AUH312	HMC635 HMC-ALH140 HMC-ALH244 HMC-ALH310 HMC-ALH313 HMC-ALH364 HMC-ALH369 HMC-ALH376 HMC-ALH445 HMC-ALH476 HMC-AUH232 HMC-AUH249 HMC-AUH256	HMC-ALH140 HMC-ALH244 HMC-ALH310 HMC-ALH313 HMC-ALH364 HMC-ALH369 HMC-ALH376 HMC-ALH445 HMC-AUH232 HMC-AUH249 HMC-AUH256 HMC-AUH312	HMC-ALH376 HMC-AUH312	
Attenuator: Analog	HMC712LP3CE HMC812LC4 HMC-VVD102	HMC-VVD106	HMC-VVD106	HMC-VVD106	HMC-VVD104
Divide-by-4	HMC447LC3				
Multiplier: Active x2	HMC448LC3B HMC577LC4B HMC578LC3B HMC598	HMC449LC3B HMC578LC3B HMC579 HMC598	HMC598	HMC598 HMC-XDH158	
Multiplier: Active x4					
Multiplier: Passive x2 / x3	HMC331	HMC331			

A selection of components, see the full product listing starting on page 10.

MICROWAVE & MILLIMETERWAVE RADIO, 26 to 86 GHz

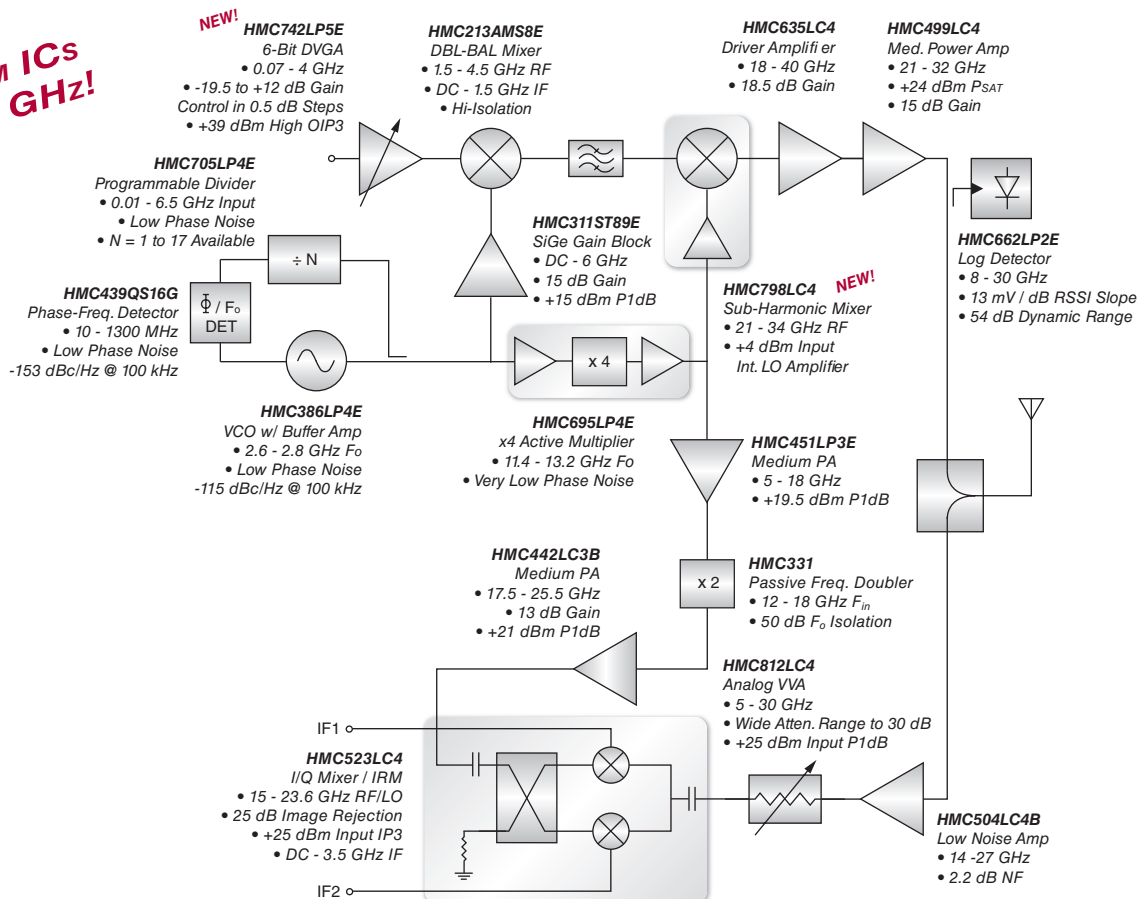
Function	26 / 28 GHz	32 / 38 GHz	32 - 43 GHz	44 - 66 GHz	71 - 86 GHz
I/Q Receiver	HMC572 HMC572LC5				
I/Q Mixer / IRM	HMC524 HMC524LC3B HMC-MDB172	HMC404 HMC555 HMC556	HMC-MDB171 HMC-MDB172	HMC-MDB171 HMC-MDB207	
Mixer: Fundamental	HMC292LC3B HMC329LC3B HMC557 HMC557LC4 HMC560 HMC560LM3	HMC294 HMC329LM3 HMC560 HMC560LM3		HMC-MDB169	
Mixer: Sub-Harmonic	HMC264LC3B HMC265LM3 HMC338LC3B HMC798LC4	HMC338 HMC339 HMC798LC4		HMC-MDB218	
Power Detectors	HMC662LP3E				
Switch				HMC-SDD112	HMC-SDD112
VCO & PLO: **Requires X2 or X4	HMC515LP5E** HMC531LP5E** HMC639LP4E HMC739LP4E	HMC505LP4E HMC506LP4E			
Switch				HMC-SDD112	HMC-SDD112
VCO & PLO: **Requires X2 or X4	HMC515LP5E** HMC531LP5E**	HMC505LP4E HMC506LP4E			

MARKET & APPLICATION GUIDE

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

DOUBLE UPCONVERSION & DIRECT DOWNCONVERSION

**CUSTOM ICs
TO 110 GHz!**



HITTITE'S HIGH FREQUENCY LO SOURCE ALTERNATIVES

PLL & VCO CHIPSET

HMC702LP6CE
Fractional-N Synthesizer (PLL)
• 10 KHz to 14 GHz
• Low Phase Noise: -103 dBc
• -227 FOM Integer Mode

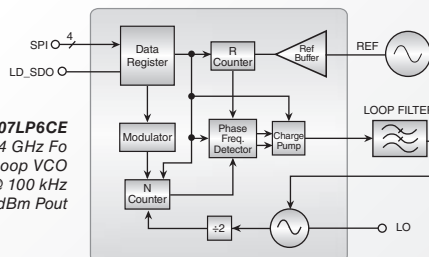


HMC584LP5E
VCO with Fo/2 & Fo/4 Output
• 12.5 - 13.9 GHz Fo
• Low Phase Noise
-110 dBc/Hz @ 100 kHz
• +10 dBm Pout

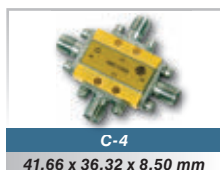
PLL WITH INTEGRATED VCO IC (see pg. 9)

NEW!

HMC807LP6CE
• 12.4 - 13.4 GHz Fo
• -110 dBc/Hz Open Loop VCO
Phase Noise @ 100 kHz
• +8 dBm Pout



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.

VISIT US AT WWW.HITTITE.COM

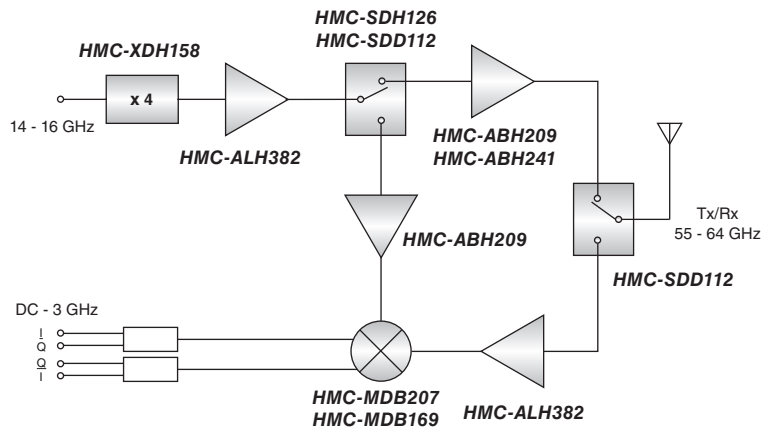
APRIL 2010

MICROWAVE & MILLIMETERWAVE

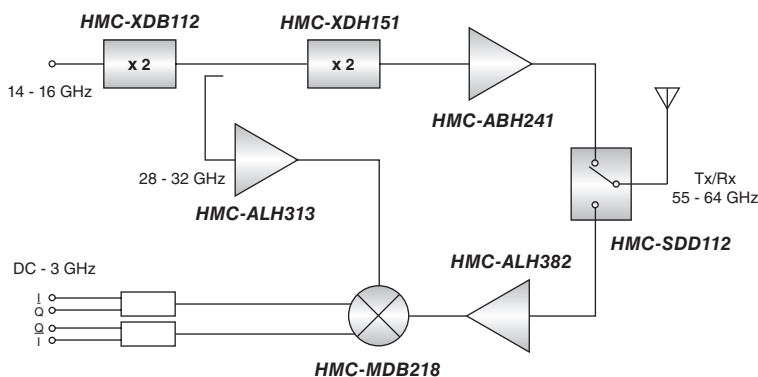
60 GHz Tx/Rx CHIPSET

FEATURES:

- ◆ < 4 dB LNA Noise Figure
- ◆ +18 dBm Psat PA Output Power
- ◆ Sub-Harmonic Option Available
- ◆ I/Q or Double-Balanced Mixer Products Available



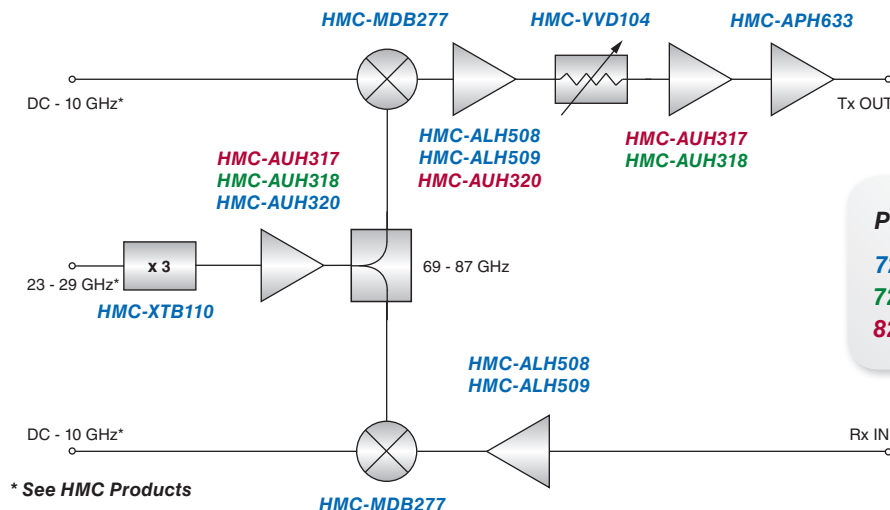
SUB-HARMONIC OPTION FOR 60 GHz CHIPSET



APPLICATIONS:

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

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



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.

MILITARY & SPACE

High Reliability Solutions for Land, Sea, Air & Space

MILITARY LEVEL COMPONENTS, MODULES & SUBSYSTEMS

- Class B screening on standard & custom product die and SMT packaging.
- Design, production & screening of highly integrated MIC sub-assemblies for major defense OEMs.
- Military & Space Upscreening to Customer Specifications.

Military Solution Inquiries: MIL@hittite.com



Class B Screening & Qualification

- VI to Method 2010B & 2017H
- Bond Pull & Die Shear Test
- Solderability Test
- High Temp Burn-In Test
- Vibration Stress Test
- Temp Cycle Stress Test
- Constant Acceleration Stress Test
- Fine & Gross Hermeticity Test
- Serialized Test Data
- ESD Characterization

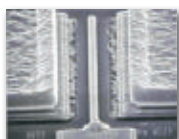
SPACE LEVEL COMPONENTS, MODULES & SUBSYSTEMS

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

- Class S screening on standard & custom product die and SMT packaging.
- Military & Space Upscreening to Customer Specifications.
- Qualified by major spacecraft OEMs worldwide.
- Over 45,000 S-Level components currently operational on dozens of commercial, scientific & military spacecraft.

Space Solution Inquiries: SPACE@hittite.com



FET Channel SEM



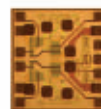
Serialized Die
in GEL-PAK



Hermetic
SMT Package



Hermetic Modules



Chip (Die)

**Contact Us Today With Your High Reliability
Mixed-Signal RF, Microwave & Millimeterwave Requirements!**

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 **NEW!**

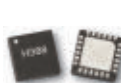
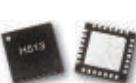
Design engineers can order pre-packaged MMIC Designer's Kits which enable them to quickly assess which Hittite product is the best choice for their application. The end result is a design that goes to layout more quickly and with fewer subsequent changes.

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 and variable gain amplifiers. Including: HMC743LP6CE and HMC792LP4E			

PACKAGE INFORMATION

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	 QS16 / QS16G 6.0 x 4.9 x 1.5 mm	 QS24 6.0 x 8.7 x 1.6 mm
 LC3 / LC3B 3.0 x 3.0 x 1.0 mm	 LC3C 3.0 x 3.0 x 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	 LH250 Hermetic 6.35 x 6.35 x 1.27 mm	 LH5 Hermetic 5.0 x 5.0 x 1.0 mm	 G8 Hermetic 10.2 x 4.6 x 1.8 mm	 G7 Hermetic 16.1 x 17.3 x 1.7 mm
 G16 Hermetic 10.4 x 10.4 x 1.7 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-7 192.3 x 106.7 x 35.0 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

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.

Hittite Microwave Offers Performance & Price Competitive Components

GAIN BLOCKS

Product	Competitor	Competitor P/N	Hittite P/N Package & Performance	Hittite P/N Performance
Gain Blocks	Mini-Circuits	Gali-1, Gali-19, Gali-2, Gali-21, Gali-29	HMC311ST89E	
Gain Blocks	Mini-Circuits	VAM-3, VAM-6, VAM-7, VNA-21		HMC313E
Gain Blocks	Mini-Circuits	LEE-49, LEE-59		HMC396
Gain Blocks	Mini-Circuits	LEE-39		HMC397
Gain Blocks	Mini-Circuits	LEE-19, LEE-29		HMC405
Gain Blocks	Mini-Circuits	MAR-1SM, MAR-2SM, MAR-6SM, MAR-7SM	HMC474MP86E	
Gain Blocks	Mini-Circuits	ERA-1, ERA-1SM, ERA-2, ERA-21SM, ERA-2SM, ERA-3, ERA-3SM, ERA-8SM, MAR-3SM, RAM-1, RAM-2, RAM-3, RAM-4, RAM-6, RAM-7, RAM-8	HMC476MP86E	
Gain Blocks	Mini-Circuits	MNA-3, MNA-5, VNA-23, VNA-28		HMC476MP86E
Gain Blocks	Mini-Circuits	Gali-S66	HMC476ST89E	
Gain Blocks	Mini-Circuits	ERA-33SM, MAR-4SM, MAR-8ASM, MAR-8SM	HMC478MP86E	
Gain Blocks	Mini-Circuits	MNA-7		HMC478MP86E
Gain Blocks	Mini-Circuits	Gali-3, Gali-33, Gali-39, Gali-4F, Gali-51F, Gali-52, Gali-55, Gali-5F, Gali-6F	HMC478ST89E	
Gain Blocks	Mini-Circuits	ERA-4SM, ERA-4XSM, ERA-5, ERA-6, ERA-6SM, MAV-11SM, MAV-11BSM, MAV-11A	HMC479MP86E	
Gain Blocks	Mini-Circuits	MNA-2, MNA-4, VNA-22		HMC479MP86E
Gain Blocks	Mini-Circuits	Gali-4, Gali-49, Gali-6	HMC479ST89E	
Gain Blocks	Mini-Circuits	Gali-5, Gali-51, Gali-59	HMC480ST89E	
Gain Blocks	Mini-Circuits	ERA-4, ERA-50SM, ERA-51SM, ERA-5SM, ERA-5XSM	HMC481MP86E	
Gain Blocks	Mini-Circuits	MNA-6, VNA-25		HMC481MP86E
Gain Blocks	Mini-Circuits	Gali-74	HMC482ST89E	
Gain Blocks	RFMD	SGA-4163, SGA-4263		HMC311ST89E
Gain Blocks	RFMD	NGA-586, NGA-589, NGA-686, NGA-689		HMC313E
Gain Blocks	RFMD	SGA-0163, SGA-0363, SGA-1163, SGA-1263, SGA-2163, SGB-2233, SGA-2263, SGA-2363, SGA-2463, SGB-4333		HMC474MP86E
Gain Blocks	RFMD	SGA-2186, SGA-2286, SGA-2386, SGA-2486	HMC474MP86E	
Gain Blocks	RFMD	SGA-3263, SGA-3363, SGA-3463, SGA-3563, SGB-2433, SGB-4533		HMC476MP86E
Gain Blocks	RFMD	NGA-386, SGA-3286, SGA-3386, SGA-3486, SGA-3586	HMC476MP86E	
Gain Blocks	RFMD	SGA-4186, SGA-4286, SGA-4386, SGA-4486, SGA-5386, SGA-5486, SGA-5586	HMC478MP86E	
Gain Blocks	RFMD	SGB-6433, SGB-6533		HMC478MP86E
Gain Blocks	RFMD	SGA-4363, SGA-4463, SGA-4563		HMC478ST89E
Gain Blocks	RFMD	SGA-4586, SGA-5389, SGA-5489, SGA-5589	HMC478ST89E	
Gain Blocks	RFMD	SGA-5263		HMC479ST89E
Gain Blocks	RFMD	SGA-5286	HMC479MP86E	
Gain Blocks	RFMD	SGA-5289	HMC479ST89E	
Gain Blocks	RFMD	NGA-489, SGA-6289, SGA-6389, SGA-6489, SGA-6589, SGA-7489	HMC580ST89E	
Gain Blocks	RFMD	SGA-6386, SGA-6286, SGA-6486, SGA-6586	HMC481MP86E	
Gain Blocks	RFMD	NGA-186, NGA-286, NGA-486		HMC480ST89E
Gain Blocks	RFMD	SGA-7489	HMC482ST89E	
Gain Blocks	Triquint	AH1	HMC636ST89E	
Gain Blocks	Triquint	AM-1	HMC639ST89E	
Gain Blocks	Triquint	ECG004B, ECG006F	HMC311ST89E	HMC311LP3E
Gain Blocks	Triquint	AG102, AG103	HMC580ST89E	
Gain Blocks	Triquint	AG302-63, AG303-63, ECG004F		HMC313E
Gain Blocks	Triquint	AG201-63, AG202-63, AG203-63		HMC474MP86E
Gain Blocks	Triquint	AG201-86, AG202-86, AG203-86	HMC474MP86E	
Gain Blocks	Triquint	AG302-86, AG303-86, ECG001C, ECG004C	HMC476MP86E	
Gain Blocks	Triquint	ECG001F, ACG001B		HMC476MP86E
Gain Blocks	Triquint	AG503-86, ECG002C, ECG006C	HMC478MP86E	
Gain Blocks	Triquint	ECG002F		HMC478MP86E
Gain Blocks	Triquint	ECG006B, ECG002B, SCG002B, AG503-89	HMC478ST89E	
Gain Blocks	Triquint	AG402-86, ECG040C, AG602-86, EC1119C	HMC479MP86E	
Gain Blocks	Triquint	AG402-89, ECG040B, AG602-89, EC1119B	HMC479ST89E	
Gain Blocks	Triquint	AG603-89, AG604-89, ECG050B, EC1019B	HMC480ST89E	
Gain Blocks	Triquint	AG403-86, ECG005C, ECG055C, AG603-86, AG604-86, ECG050C, EC1019C, EC1078C	HMC481MP86E	
Gain Blocks	Triquint	AG403-89, ECG005B, ECG055B	HMC481ST89E	
Gain Blocks	Triquint	EC1078B, ECG003, ECG008	HMC482ST89E	

COMPETITOR CROSS-REFERENCE

Hittite Microwave Offers Performance & Price Competitive Components

ATTENUATORS

Product	Competitor	Competitor P/N	Hittite P/N Package & Performance	Hittite P/N Performance
Digital Attenuators	Skyworks	AA100-59LF	HMC230MS8E	
Digital Attenuators	Skyworks	AA101-80	HMC274QS16E	
Digital Attenuators	Skyworks	AA106-86	HMC603MS10E	
Digital Attenuators	Skyworks	SKY12322-86	HMC306MS10E	
Digital Attenuators	Skyworks	SKY12323-303	HMC273MS8GE	
Digital Attenuators	Skyworks	SKY12324-73	HMC291E	
Digital Attenuators	Skyworks	SKY12325-350LF	HMC468LP3E	
Digital Attenuators	M/A-COM	MAATSS0002	HMC274QS16E	
Digital Attenuators	M/A-COM	MAATSS0001, MAATSS0017	HMC603QS16E	
Digital Attenuators	M/A-COM	MAATSS0012	HMC306MS10E	

HIGH SPEED ICs

Product	Competitor	Competitor P/N	Hittite P/N Package & Performance	Hittite P/N Performance
High Speed Logic	Inphi	13600DF	HMC727LC3C	
High Speed Logic	Inphi	13610XR	HMC725LC3C	
High Speed Logic	Inphi	13612OR	HMC726LC3C	
High Speed Logic	Inphi	13616CF	HMC724LC3C	
High Speed Logic	Inphi	20708SE	HMC728LC3C	
High Speed Logic	Inphi	13620TF	HMC729LC3C	
High Speed Logic	Inphi	25720TF		HMC729LC3C
High Speed Logic	Inphi	13707RZ	HMC706LC3C	

POWER DETECTORS

Product	Competitor	Competitor P/N	Hittite P/N Package & Performance	Hittite P/N Performance
Log Detectors	Analog Devices	AD8313		HMC600LP4E HMC601LP4E
Log Detectors	Analog Devices	AD8317		HMC611 HMC611LP4E
Log Detectors	Analog Devices	AD8318		HMC602LP4E HMC611LP4E
RMS Detectors	Analog Devices	AD8362		HMC610ALP4E
Log Detectors	Maxim	MAX2014,		HMC612LP4E
Log Detectors	Maxim	MAX2015		HMC600LP4E HMC601LP4E
RMS Detectors	Maxim	MAX2203		HMC610ALP4E
Log Detectors	Linear Technology	LT5534, LT5538		HMC600LP4E HMC601LP4E
Log Detectors	Linear Technology	LT5570		HMC612LP4E
RMS Detectors	Linear Technology	LT5581		HMC610ALP4E

SWITCHES

Product	Competitor	Competitor P/N	Hittite P/N Package & Performance	Hittite P/N Performance
Switches	Skyworks	AS204-80	HMC241QS16E	
Switches	Skyworks	AS196-307	HMC349LP4CE	
Switches	Skyworks	AS193-73	HMC544E	
Switches	Skyworks	AS169-73	HMC545E	
Switches	Skyworks	AS186-302	HMC435MS8GE	
Switches	M/A-COM	SW-239	HMC239S8E	
Switches	M/A-COM	SW-395		HMC544E
Switches	RFMD	SSW-124	HMC234C8	

Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#	Part #	Page#
HMC128	19	HMC286E	10	HMC389LP4E	23	HMC468LP3E	14	HMC542ALP4E	14
HMC128G8	19	HMC287MS8E	23	HMC390LP4E	23	HMC469MS8GE	11	HMC543	20
HMC129	19	HMC288MS8E	14	HMC391LP4E	23	HMC470LP3E	14	HMC543LC4B	20
HMC129G8	19	HMC290E	14	HMC392	10	HMC471MS8GE	11	HMC544E	22
HMC129LC4	19	HMC291E	14	HMC392LC4	10	HMC472LP4E	14	HMC545E	22
HMC130	19	HMC292	19	HMC392LH5	10	HMC473MS8E	13	HMC546LP2E	22
HMC135	20	HMC292LC3B	19	HMC393MS8GE	23	HMC474MP86E	11	HMC546MS8GE	22
HMC136	20	HMC292LM3C	19	HMC394LP4E	15	HMC474SC70E	11	HMC547LP3E	22
HMC137	20	HMC304MS8E	18	HMC395	11	HMC475ST89E	11	HMC548LP3E	10
HMC141 / 142	19	HMC305ALP4E	14	HMC396	11	HMC476MP86E	11	HMC549MS8GE	11
HMC141C8 / 142C8	19	HMC306MS10E	14	HMC397	11	HMC476SC70E	11	HMC550E	21
HMC141LH5	19	HMC307QS16GE	14	HMC398QS16GE	23	HMC478MP86E	11	HMC551LP4E	18
HMC143 / 144	19	HMC308E	11	HMC399MS8E	18	HMC478SC70E	11	HMC552LP4E	18
HMC144LC4	19	HMC310MS8GE	10	HMC400MS8E	18	HMC478ST89E	11	HMC553	19
HMC144LH5	19	HMC311LP3E	11	HMC401QS16GE	23	HMC479MP86E	11	HMC553LC3B	19
HMC156	16	HMC311SC70E	11	HMC402MS8E	18	HMC479ST89E	11	HMC554	19
HMC156C8	16	HMC311ST89E	11	HMC404	17	HMC480ST89E	11	HMC554LC3B	19
HMC158	16	HMC313E	11	HMC405	11	HMC481MP86E	11	HMC555	17
HMC158C8	16	HMC316MS8E	18	HMC406MS8GE	11	HMC481ST89E	11	HMC556	17
HMC168C8	18	HMC318MS8GE	10	HMC407MS8GE	11	HMC482ST89E	11	HMC557	19
HMC170C8	19	HMC320MS8GE	10	HMC408LP3E	12	HMC483MS8GE	18	HMC557LC4	19
HMC171C8	18	HMC321LP4E	22	HMC409LP4E	12	HMC485MS8GE	18	HMC558	19
HMC174MS8E	22	HMC322	22	HMC410AMS8GE	18	HMC486	12	HMC558LC3B	19
HMC175MS8E	19	HMC322LP4E	22	HMC411MS8GE	19	HMC486LP5E	12	HMC559	13
HMC182S14E	22	HMC326MS8GE	11	HMC412MS8GE	19	HMC487LP5E	12	HMC560	19
HMC183QS24E	22	HMC327MS8GE	12	HMC413QS16GE	11	HMC488MS8GE	18	HMC560LM3	19
HMC187AMS8E	16	HMC329	19	HMC416LP4E	23	HMC489LP5E	12	HMC561	15
HMC188MS8E	16	HMC329LC3B	19	HMC420QS16E	18	HMC490	10	HMC561LP3E	15
HMC189AMS8E	16	HMC329LM3	19	HMC421QS16E	18	HMC490LP5E	10	HMC562	13
HMC190AMS8E	22	HMC331	16	HMC422MS8E	18	HMC491LP3E	10	HMC564	10
HMC194MS8E	22	HMC333E	18	HMC423MS8E	18	HMC492LP3E	15	HMC564LC4	10
HMC197AE	22	HMC334LP4E	18	HMC424	14	HMC493LP3E	15	HMC565	10
HMC199MS8E	22	HMC335G16	14	HMC424G16	14	HMC494LP3E	15	HMC565LC5	10
HMC203	19	HMC336MS8GE	22	HMC424LH5	14	HMC495LP3E	20	HMC566	11
HMC204	16	HMC337	19	HMC424LP3E	14	HMC496LP3E	20	HMC566LP4E	11
HMC204C8	16	HMC338	19	HMC425	14	HMC497LP4E	20	HMC567LC5	17
HMC204MS8GE	16	HMC338LC3B	19	HMC425LP3E	14	HMC498	12	HMC568LC5	17
HMC205	16	HMC339	19	HMC426MS8E	15	HMC498LC4	12	HMC570	17
HMC207S8E	18	HMC340ALP5E	19	HMC427LP3E	23	HMC499	12	HMC570LC5	17
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