

HIGH SPEED IC SOLUTIONS

Analog & Mixed-Signal ICs, Modules, Subsystems & Instrumentation

High Speed Logic, TIAs, LIAs, Optical Driver Amps & Data Converters

100G Ethernet Solutions ◆

OC-768 Solutions ◆

OC-192 Solutions ◆

Software Defined Radio ◆

Digital Receivers ◆

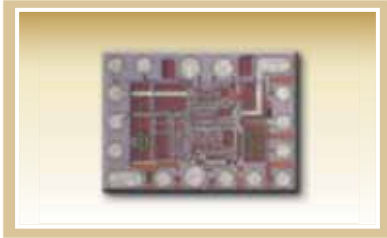
Radar, EW & ELINT Systems ◆

Medical & Industrial Instrumentation ◆

Broadband Test & Measurement ◆

TRANSIMPEDANCE & LIMITING AMPS

HMC690 - 10 Gbps Transimpedance Amplifier (TIA) Chip



Features

- 1.25 k Ohm Differential Gain
- +3.3V Single Power Supply
- 11 pA/√Hz Input Referred Noise Density
- 3 mA p-p Overload
- Average Input Power Monitoring
- Output Offset Adjustment

Applications

- SONET OC-192 and SDH STM-64 Transponders
- 10 Gbps Ethernet
- Broadband Instrumentation
- Short, Intermediate and Long Reach Optical Receiver Modules

Part Number	Data Rate (Gbps)	Function	Transimpedance (k Ohm)	Input Overload (mApp)	Small Signal Bandwidth (GHz)	Deterministic Jitter (ps)	Noise (pA/√Hz)	Package
HMC690	1 - 10	10 Gbps Transimpedance Amplifier	1.25	3	7.5	< 10	11	Chip

Full data specifications are available at www.hittite.com

HMC750LP4E - 12.5 Gbps Limiting Amplifier (LIA) SMT - New Product line!



Features

- Supports Data Rates up to 12.5 Gbps
- Integrated DC Offset Correction
- 2mV p-p input Sensitivity
- Very Low RMS Jitter Degradation
- Adjustable Differential Saturated O/P Voltage Swing up to 880 mVpp

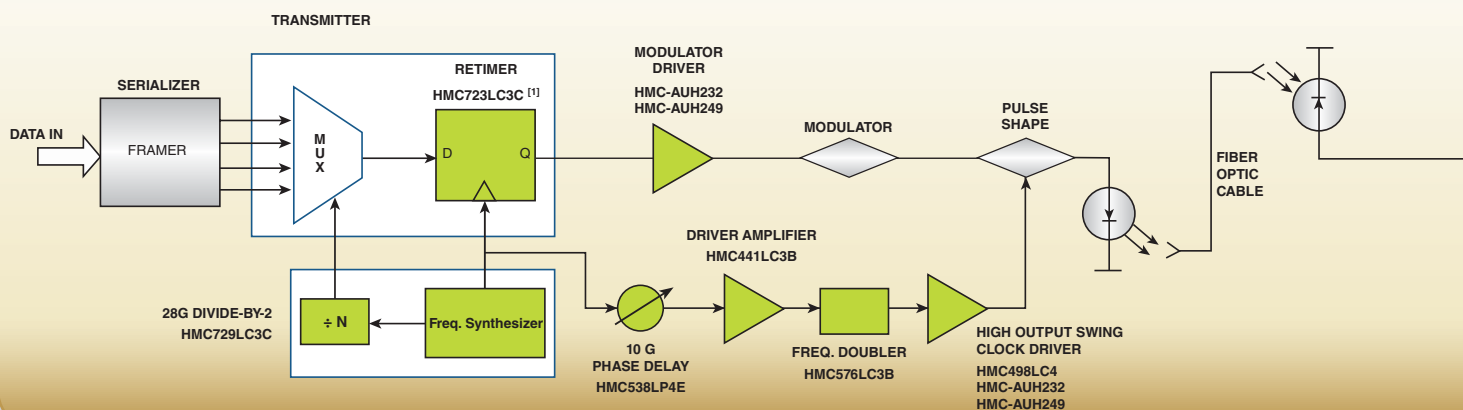
Applications

- OC-192 Receivers
- 10 Gbps Ethernet Receivers
- 10 Gbps Fiber Channel Receivers
- Broadband Test & Measurement

Part Number	Data Rate (Gbps)	Function	Small Signal Bandwidth (GHz)	Differential Gain (dB)	Deterministic Jitter (ps p-p)	Additive Random Jitter (ps rms)	Supply Current	Package
HMC750LP4E	12.5	Limiting Amplifier	11	44	5	0.2	+5V @ 106mA	LP4

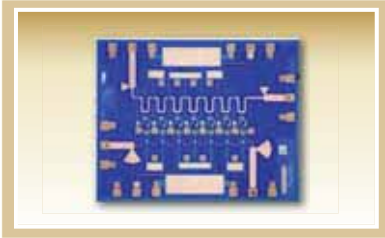
Full data specifications are available at www.hittite.com

Generic Fiber Optic Transceiver



OPTICAL DRIVER AMPLIFIERS

HMC-AUH232 - Microwave & Optical Driver Amplifiers Operate to 65 GHz



Features

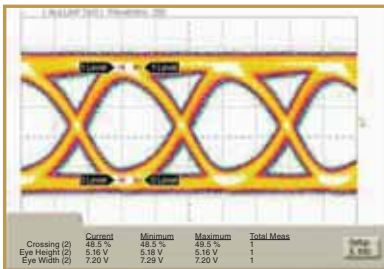
- Small Signal Gain: 12 dB
- Output Voltage up to 8 Vpp
- Single-Ended I/Os
- High Speed Performance: 46 GHz 3dB Bandwidth
- Low Power Dissipation: 0.9W

Applications

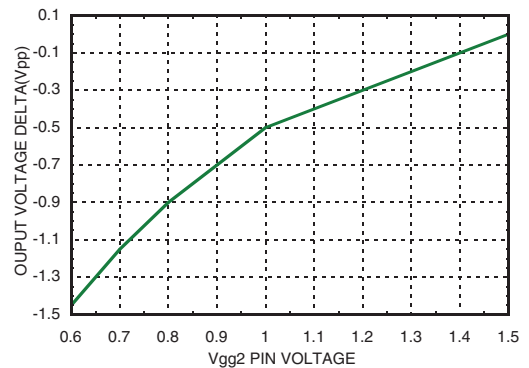
- 40 Gbps Lithium Niobate / Mach-Zehnder Fiber Optic Modulations
- Broadband Gain Block for Test & Measurement
- Broadband Gain Block for RF Applications

HMC-AUH232 Eye Diagram

PRBS = 2³¹-1, 7.3V Input, Data Rate = 40 Gbps



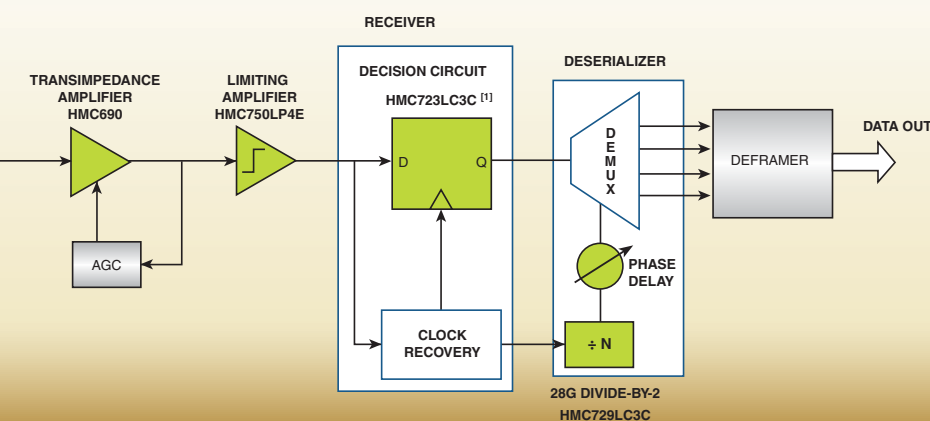
Output Voltage Delta vs. Control Voltage



Optical Driver Amplifier Product Line

Part Number	Frequency (GHz)	Function	Gain (dB)	Group Delay Variation (ps)	Additive Jitter (ps)	P1dB (dBm)	Output Voltage Level (Vpp)	Package
HMC-AUH232	DC - 45	Wideband Optical Driver	14	± 10	0.4	16.5	8	Chip
HMC-AUH249	DC - 35	Wideband Optical Driver	15	± 10	-	21	8	Chip
HMC-AUH312	0.5 - 65	Wideband Optical Driver	10	-	-	-	2.5	Chip

Full data specifications are available at www.hittite.com



Legend

- Current custom and standard Hittite Microwave products.
- Custom integration and development available. Contact FO@hittite.com for inquiries.

This Transceiver Chain is generic for 10 Gbps, 40 Gbps, 4 x 25 Gbps => 100 Gbps
Current Hittite products are targeting 10 Gbps, 40 Gbps and 100 G Ethernet operating at 28 Gbps

HIGH SPEED DIGITAL LOGIC

HMC-C060 - 43 Gbps, D-Type Flip-Flop Module



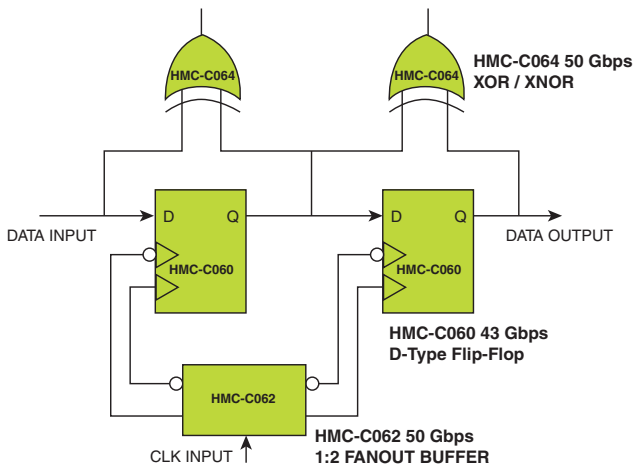
Features

- Supports Data Rates up to 43 Gbps
- Less than 200 fs Additive RMS Jitter
- Hermetically Sealed Housing with 1.85 mm connectors
- -40 °C to +70°C Operating Temperature

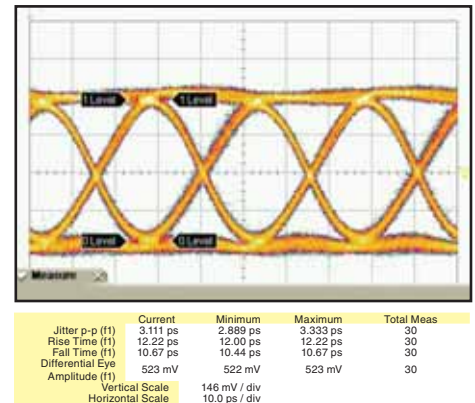
Applications

- OC-768 & SDH STM-256 Equipment
- Serial Data Transmission up to 43 Gbps
- Digital Logic Systems up to 43 Gbps
- Broadband Test & Measurement

43 Gbps Hogge Phase Detector for Clock & Data Recovery



HMC-C060 Output Eye Diagram @ 43 Gbps



A Selection of In-Stock High Speed Digital Logic Including 11 New Products

	Part Number	Data / Clock Rate (Gbps / GHz)	Function	Rise / Fall Time (ps)	Deterministic Jitter (ps)	Differential Output Voltage Swing (Vpp)	DC Power Consumption (mW)	DC Power Supply (Vdc)	Package
	HMC724LC3C	13 / 13	Fast Rise Time 1:2 Fanout Buffer	19 / 18	2	1.1	300	-3.3	LC3C
New!	HMC744LC3C	13 / 13 [1]	Fast Rise Time 1:2 Fanout Buffer	22 / 20	2	0.6 - 1.1	290	+3.3	LC3C
New!	HMC-C062	50 / 30	1:2 Fanout Buffer	9.5 / 11	2	0.5	452	-3.3	C-13
	HMC728LC3C	13 / 13	2:1 Selector	17 / 15	2	1.1	250	-3.3	LC3C
New!	HMC748LC3C	13 / 13 [1]	2:1 Selector	22 / 22	2	0.6 - 1.2	250	+3.3	LC3C
New!	HMC-C065	50 / 25	AND / NAND / OR / NOR	9 / 10	2	0.5	560	-3.3	C-13
	HMC726LC3C	13 / 13	Fast Rise Time AND / NAND / OR / NOR	19 / 18	2	1.1	230	-3.3	LC3C
New!	HMC746LC3C	13 / 13 [1]	Fast Rise Time AND / NAND / OR / NOR	22 / 21	2	0.6 - 1.1	230	+3.3	LC3C
New!	HMC-C060	43 / 43	D Type Flip-Flop	9 / 10	1.5	0.5	580	-3.3	C-13
New!	HMC-C061	50 / 25	Double Edge Triggered D Type Flip-Flop	8.5 / 10	1.5	0.5	690	-3.3	C-13
	HMC727LC3C	13 / 13	Fast Rise Time D Type Flip-Flop	19 / 17	2	1.1	260	-3.3	LC3C
New!	HMC747LC3C	13 / 13 [1]	Fast Rise Time D Type Flip-Flop	22 / 20	2	0.7 - 1.3	264	+3.3	LC3C
	HMC729LC3C	26 - 26	T Flip-Flop w/Reset	18 / 17	2	1.1	270	-3.3	LC3C
New!	HMC749LC3C	26 / 26 [1]	T Flip-Flop w/Reset	18 / 17	2	0.6 - 1.1	270	+3.3	LC3C
	HMC706LC3C	13 / 13 [1]	NRZ-to-RZ Converter	15 / 13	2	0.3 - 1.2	594	+3.3	LC3C
	HMC725LC3C	13 / 13	XOR / XNOR	19 / 18	2	1.1	230	-3.3	LC3C
New!	HMC-C064	50 / 25	XOR / XNOR	6.5 / 10	2	0.5	550	-3.3	C-13
New!	HMC745LC3C	13 / 13 [1]	Fast Rise Time XOR / XNOR	21 / 19	2	0.6 - 1.2	240	+3.3	LC3C

[1] These devices feature programmable output voltage. Full data specifications are available at www.hittite.com

DATA CONVERTERS

High Speed Comparators & Track-and-Hold Amplifier



Features

- Low Jitter: <1ps rms
- Low Power Dissipation
- Resistor Programmable Hysteresis
- Supports 10 Gbps & 10 GHz Data Clock/Rates

Applications

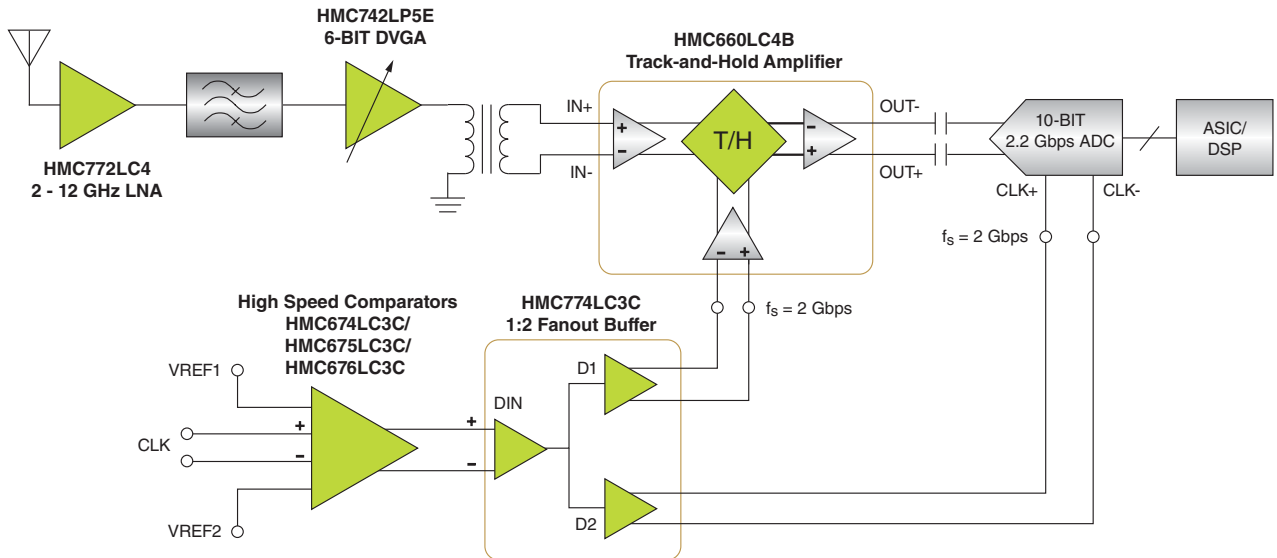
- Broadband Test & Measurement
- ATE
- Digital Receiver Systems
- Clock & Data Restoration
- High Speed Trigger Circuits

High Speed Comparator Product Line

Part Number	Function	Input Clock Rate (GHz)	Deterministic Jitter (ps)	DC Power Consumption (mW)	Vcc, Vee Power Supply (Vdc)	Package
HMC674LC3C	Latched Comparator-RSPECL	9.3	2	140	+3.3, -3.0	LC3C
HMC675LC3C	Latched Comparator-RSCML	10	2	100	+3.3, -3.0	LC3C
HMC676LC3C	Latched Comparator-RSECL	10	2	120	+3.3, -3.0	LC3C

Full data specifications are available at www.hittite.com

Wideband EW Receiver



Features

- 4.5 GHz Input Bandwidth
- 9-Bit T/H Mode Linearity
- 3 GS/s Maximum Clock Rate
- Ultra Clean Waveforms, Minimal Glitching
- >60 dB Hold Mode Feedthrough Rejection

Applications

- RF ATE
- Digital Sampling Oscilloscopes
- RF Demodulation Systems
- Digital Receiver Systems
- Software Defined Radio

High Linearity Track-and-Hold Amplifier

Part Number	Function	Input Freq. (GHz)	Single Tone THD/SFDR (dB)	Max. Clock Rate (GS/s)	Output Noise (mV RMS)	Hold Mode Feed Through Rejection (dB)	Package
HMC660LC4B	Track-and-Hold Amplifier	0.02 - 4.5	-66 / 67	3	0.95	>60	LC4B

Full data specifications are available at www.hittite.com

Connecting Our World Through Integrated Solutions

What We Do

Hittite Microwave Corporation is an innovative designer and manufacturer of analog and mixed-signal ICs, Modules, Subsystems and Instrumentation for 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 750 products across 20 product lines:

<i>Amplifiers</i>	<i>High Speed Digital Logic</i>	<i>Passives</i>	<i>Signal Generators</i>
<i>Attenuators</i>	<i>Interface</i>	<i>Phase Shifters</i>	<i>Switches</i>
<i>Data Converters</i>	<i>Limiting Amplifiers</i>	<i>PLLs</i>	<i>Transimpedance Amplifier</i>
<i>Freq. Dividers & Detectors</i>	<i>Mixers</i>	<i>Power Detectors</i>	<i>VGAs</i>
<i>Freq. Multipliers</i>	<i>Mods. & Demodulators</i>	<i>Sensors</i>	<i>VCOs & PLOs</i>

We also design and supply highly integrated custom ICs, Modules, Subsystems and Instrumentation that combine 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 and radar applications for the following markets:



Automotive
Telematics & Sensors



Broadband
CATV, DBS, 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
C³, ECM & EW



Space
Payload Electronics



Test & Measurement
Commercial / Industrial
Sensors & Test Equipment

Every component is backed by Hittite Microwave's commitment to total quality. HMC is ISO 9001:2000 and ISO/TS 16949:2002 certified. Every Hittite employee and subcontractor is responsible for maintaining the highest level of quality. We are constantly working towards improvement of our procedures and processes, thus providing our customers with products that meet or exceed all requirements, are delivered on-time and function reliably throughout their useful life.

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Hittite Offers Military & Space Screening & Lot Qualification for These High Speed IC Products