ANALOG DEVICES

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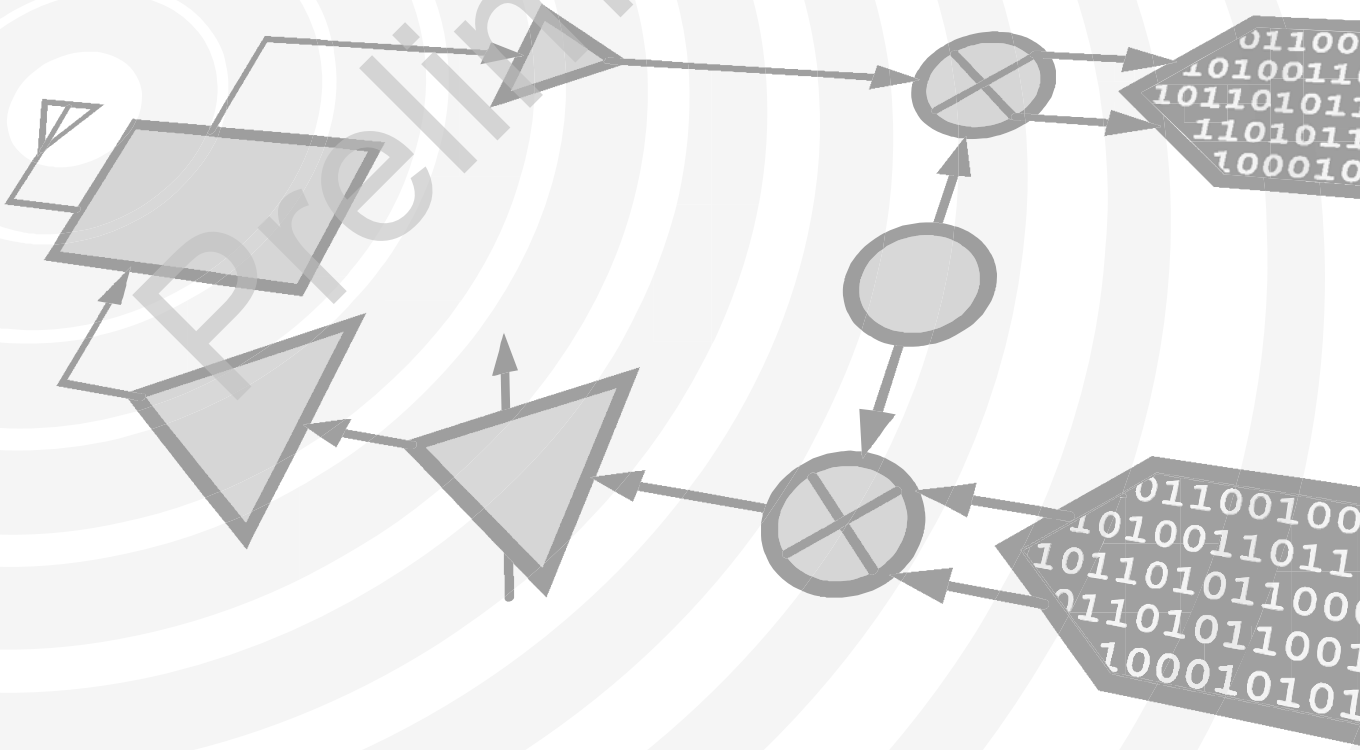

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HMC521ALC4

v00.1115

GaAs MMIC I/Q MIXER 8.5 - 13.5 GHz

Typical Applications

The HMC521ALC4 is ideal for:

- Point-to-Point and Point-to-Multi-Point Radio
- Military Radar

Features

Wide IF Bandwidth: DC - 3.5 GHz

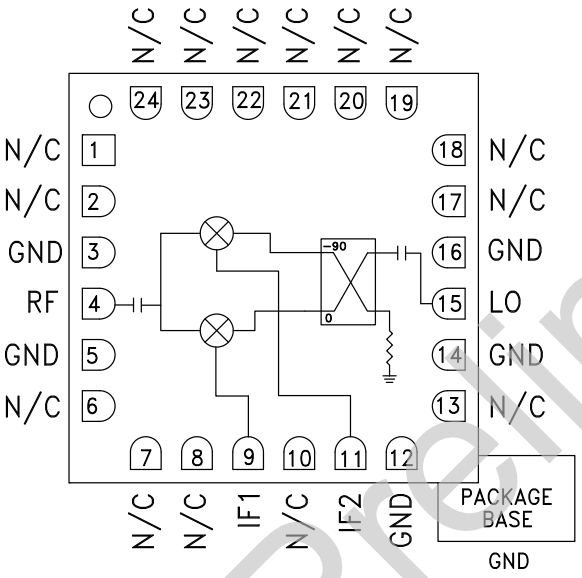
Image Rejection: 38 dB

LO to RF Isolation: 50 dB

High Input IP3: +23 dBm

24 Lead 4x4mm SMT Package: 16mm²

Functional Diagram



General Description

The HMC521ALC4 is a compact I/Q MMIC mixer in a leadless "Pb free" RoHS compliant SMT package, which can be used as either an Image Reject Mixer or a Single Sideband Upconverter. The mixer utilizes two standard Hittite double balanced mixer cells and a 90 degree hybrid fabricated in a GaAs MESFET process. A low frequency quadrature hybrid was used to produce a 100 MHz USB IF output. This product is a much smaller alternative to hybrid style Image Reject Mixers and Single Sideband Upconverter assemblies. The HMC521ALC4 eliminates the need for wire bonding allowing use of surface mount manufacturing techniques.

Electrical Specifications, T_A = +25 °C, IF= 100 MHz, LO = +15 dBm*

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF/LO		8.5 - 13.5			10.5 - 11.7		GHz
Frequency Range, IF		DC - 3.5			DC - 3.5		GHz
Conversion Loss (As IRM)		8	10		7.5	9.5	dB
Image Rejection	20	30		30	38		dB
1 dB Compression (Input)		+14			+15		dBm
LO to RF Isolation	35	45		45	55		dB
LO to IF Isolation	18	22		20	24		dB
IP3 (Input)		+23			+24		dBm
Amplitude Balance		0.3			0.1		dB
Phase Balance		4			4		Deg

** Unless otherwise noted, all measurements performed as downconverter.*

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 Phone: 781-329-4700 • Order online at www.analog.com Application Support: Phone: 1-800-ANALOG-D

Harmonics of LO

LO Freq. (GHz)	nLO Spur at RF Port			
	1	2	3	4
8.5	42	44	44	70
9.5	50	53	59	77
10.5	51	54	63	xx
11.5	47	58	66	xx
12.5	45	59	70	xx
13.5	45	57	xx	xx

LO = + 15 dBm
Values in dBc below input LO level measured at RF Port.

Absolute Maximum Ratings

RF / IF Input	+20 dBm
LO Drive	+ 27 dBm
Channel Temperature	150°C
Continuous Pdiss (T=85°C) (derate 6.9 mW/°C above 85°C)	460 mW
Thermal Resistance (R_{TH}) (junction to package bottom)	141.4 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C

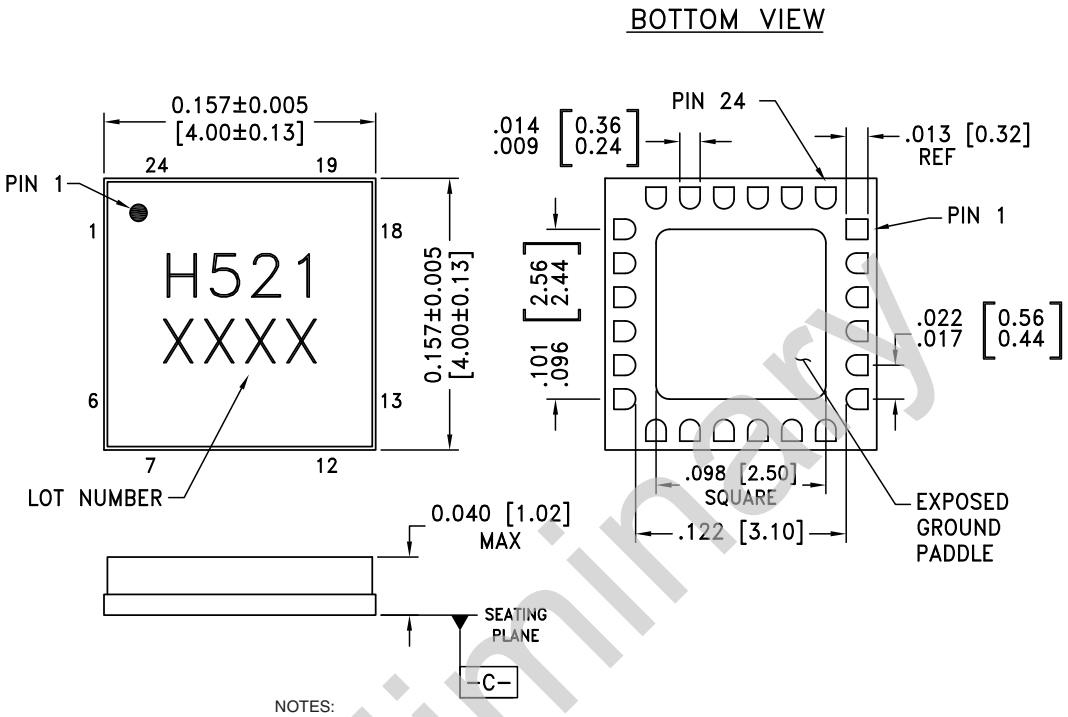
MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	-5	29	23	52
1	27	0	51	59	81
2	92	85	76	82	92
3	92	92	92	92	92
4	92	92	92	92	92

RF = 10.6 GHz @ -10 dBm
LO = 10.5 GHz @ +15 dBm
Data taken without IF hybrid
All values in dBc below IF power level

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30 - 80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKLE
3. DIMENSIONS ARE IN INCHES [MILLIMETERS]
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND