ANALOG DEVICES

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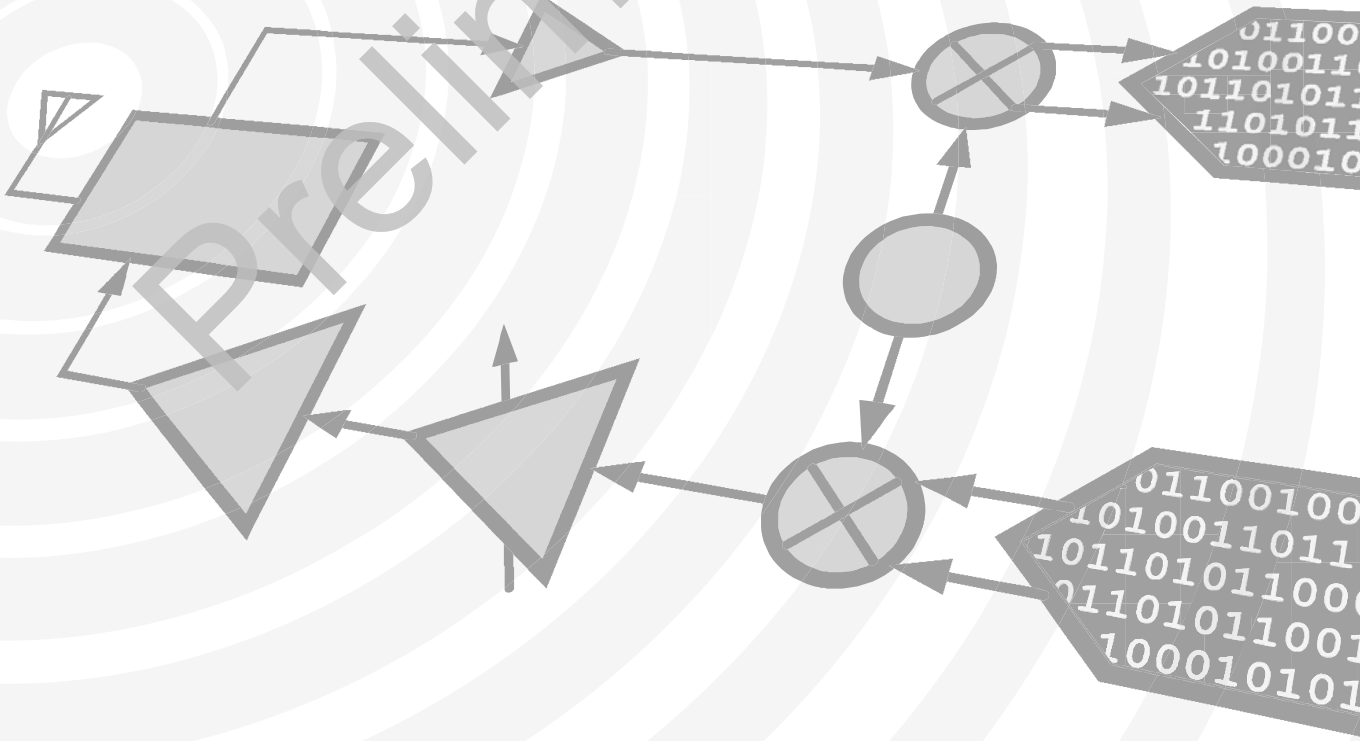

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HMC1048ALC3B

v00.1115

GaAs MMIC DOUBLE-BALANCED MIXER, 2 - 18 GHz

Typical Application

The HMC1048ALC3B is ideal for:

- Ka-band Transponders
- Point-to-Multi-Point Radios & VSAT
- Test Equipment & Sensors
- Military End-Use

Features

Passive: No DC Bias Required

High Input IP3: 23 dBm

LO/RF Isolation: 38 dB

LO/IF Isolation: 28 dB

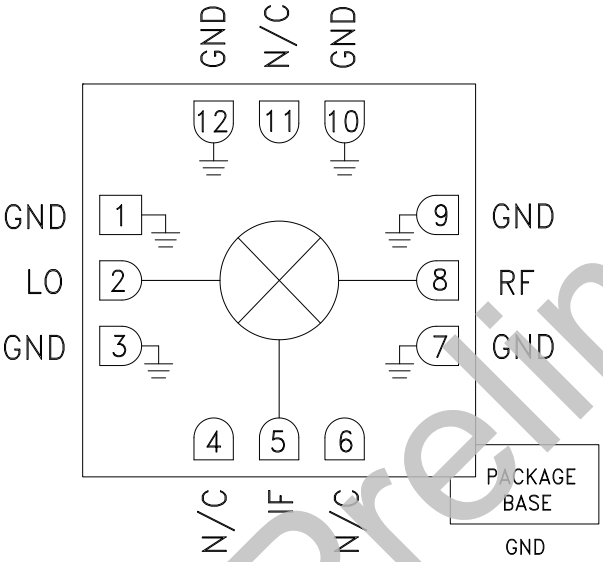
RF/IF Isolation: 15 dB

IF Bandwidth: DC - 4 GHz

Downconverter Applications

12 Lead Ceramic 3 x 3 mm SMT Package: 9 mm^2

Functional Diagram



General Description

The HMC1048ALC3B is a general purpose double balanced mixer that can be used as a downconverter with DC to 4 GHz at the IF port and 2 to 18 GHz at the RF port. This mixer requires no external components or matching circuitry. The HMC1048ALC3B provides excellent LO/RF, LO/IF and RF/IF isolation The mixer operates with LO drive levels from +9 dBm to +17 dBm. The HMC1048ALC3B eliminates the need for wire bonding and allows the use of surface mount manufacturing techniques.

Electrical Specifications, T_A = +25 °C, Downconverter, IF = 100 MHz, LO = +13 dBm[1]

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		2 - 12			12 - 18		GHz
Frequency Range, IF		DC - 4			DC - 4		GHz
Conversion Loss		9	12		11	13	dB
LO to RF Isolation [2]	28	38		28	35		dB
LO to IF Isolation [2]	15	20		18	28		dB
RF to IF Isolation	8	15		6	12		dB
IP3 (Input)		20			23		dBm
1 dB Gain Compression (Input)		10			13		dBm

[1] Unless otherwise noted all measurements performed as an Downconverter.

[2] Fixed IF = 100 MHz.

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

MxN Spurious Outputs, Downconverter

	nLO				
mRF	0	1	2	3	4
0	x	-0.5	26.8	-2.4	29.6
1	7.5	0	16.2	18.8	28.5
2	62.2	55.2	55.5	48.1	58.3
3	65	63.7	63.6	67.7	67.3
4	63.5	67.1	65.3	68.9	69.3

RF = 2 GHz @ -10 dBm
LO = 2.1 GHz @ +13 dBm
All values in dBc below IF power level

MxN Spurious Outputs, Upconverter

	nLO				
mIF	0	1	2	3	4
0	x	-10.3	16.6	15.2	29.5
1	5.4	0	26.7	24	36.3
2	55.6	39.6	52.2	39.9	52
3	65.4	60.1	57.7	63.8	64.5
4	64.6	66.7	67.1	69.8	71.7

RF = 4 GHz @ -10 dBm
LO = 4.1 GHz @ +13 dBm
All values in dBc below RF power level

Harmonics of LO

LO Freq. (GHz)	nLO Spur at RF Port			
	1	2	3	4
2	60.76	45.98	58.15	56.06
4	39.86	31.63	49.77	43.87
6	43.29	31.08	51.66	58.58
10	39.12	31.05	62.34	64.12
12	32.53	42.18	32.52	70.08
14	45.01	53.44	41.58	NA

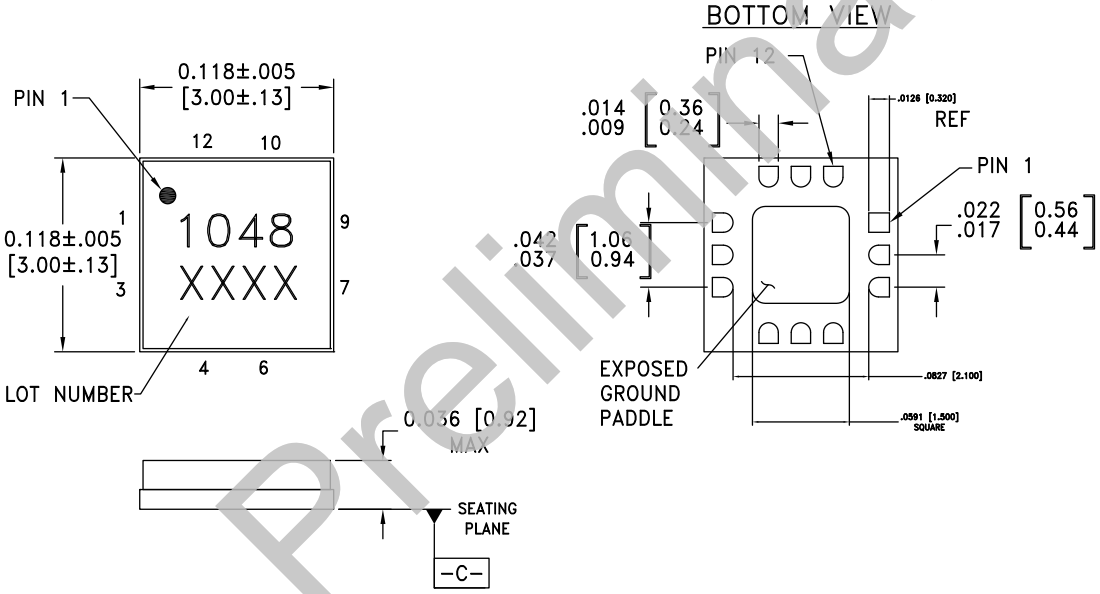
LO = + 13 dBm
Values in dBc below LO level measured at RF Port.

Absolute Maximum Ratings

RF / IF Input(LO = +18 dBm)	+15.5 dBm
LO Drive	+20 dBm
Max Junction Temperature @ 85°C w/ 19 dBm	116 °C
Continuous Pdiss (T = 85 °C) (derate 2.5 mW/°C above 85 °C)	165 mW
Thermal Resistance (R_{TH}) (junction to package bottom)	392 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 1A

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 NICKEL.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. CHARACTERS TO BE BLACK INK MARKED WITH .018"MIN to .030"MAX HEIGHT REQUIREMENTS. UTILIZE MAXIMUM CHARACTER HEIGHT BASED ON LID DIMENSIONS AND BEST FIT. LOCATE APPROX. AS SHOWN.
6. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM -C-
7. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.