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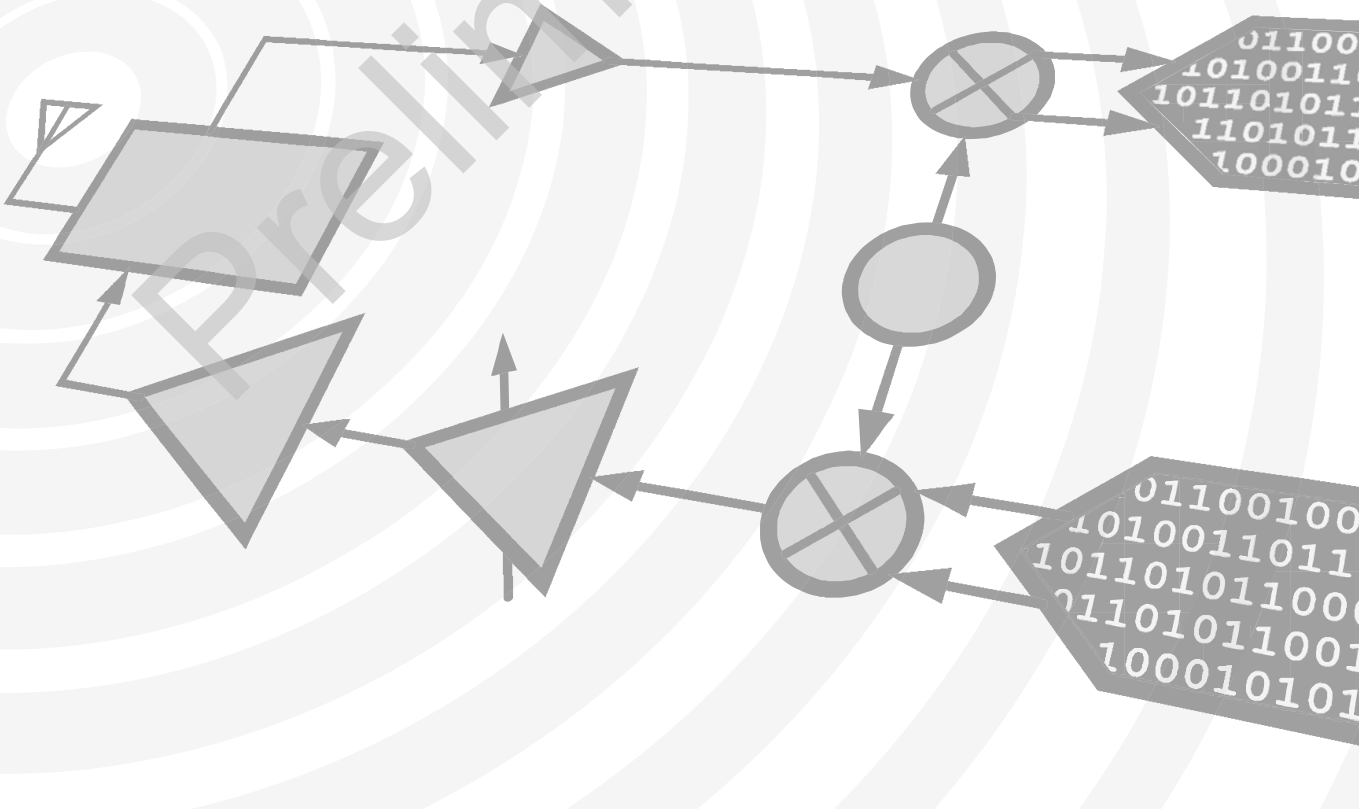
Analog Devices Welcomes Hittite Microwave Corporation



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v00.1115

GaAs MMIC FUNDAMENTAL MIXER, 11 - 20 GHz

Typical Applications

The HMC554ALC3B is ideal for:

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

Features

High LO/RF Isolation: 46 dB

Passive Double Balanced Topology

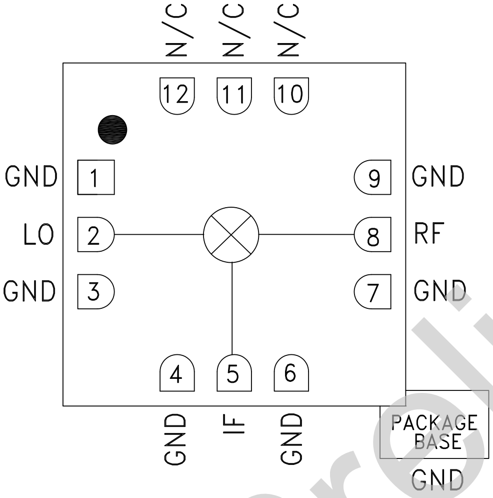
Low Conversion Loss: 7 dB

Wide IF Bandwidth: DC - 6 GHz

Robust 1,000V ESD, Class 1C

12 Lead Ceramic 3x3mm SMT Package: 9mm^2

Functional Diagram



General Description

The HMC554ALC3B is a general purpose double balanced mixer in a leadless RoHS compliant SMT package that can be used as an upconverter or downconverter between 11 and 20 GHz. This mixer is fabricated in a GaAs MESFET process, and requires no external components or matching circuitry. The HMC554ALC3B provides excellent LO to RF and LO to IF isolation due to optimized balun structures. The RoHS compliant HMC554ALC3B eliminates the need for wire bonding, and is compatible with high volume surface mount manufacturing techniques.

Electrical Specifications, T_A = +25° C, IF= 100 MHz, LO= +13 dBm*

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		12 - 16			11 - 20		GHz
Frequency Range, IF		DC - 6			DC - 6		GHz
Conversion Loss		7	9		8	11	dB
Noise Figure (SSB)		7	9		8	11	dB
LO to RF Isolation	40	46		40	46		dB
LO to IF Isolation	34	40		30	40		dB
RF to IF Isolation	18	25		15	25		dB
IP3 (Input)		18			18		dBm
IP2 (Input)		48			45		dBm
1 dB Gain Compression (Input)		11			11		dBm

*Unless otherwise noted, all measurements performed as downconverter, IF= 100 MHz.

Absolute Maximum Ratings

RF / IF Input	+25 dBm
LO Drive	+25 dBm
Channel Temperature	150 °C
Continuous Pdiss (T= 85 °C) (derate 2.32 mW/°C above 85 °C)	150 mW
Thermal Resistance (channel to ground paddle)	431 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1C

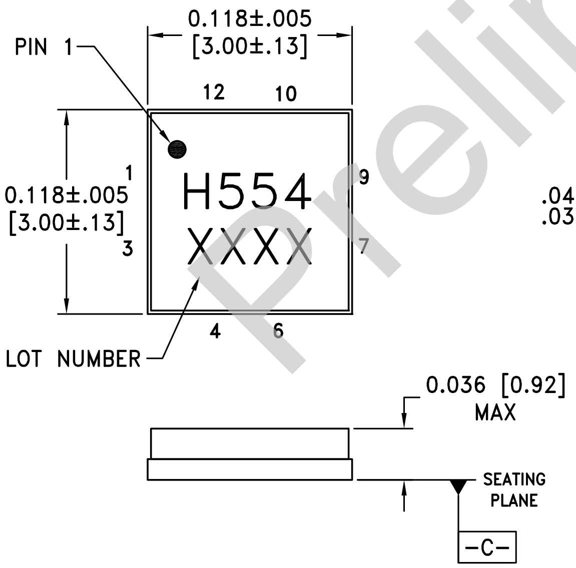
MxN Spurious Outputs

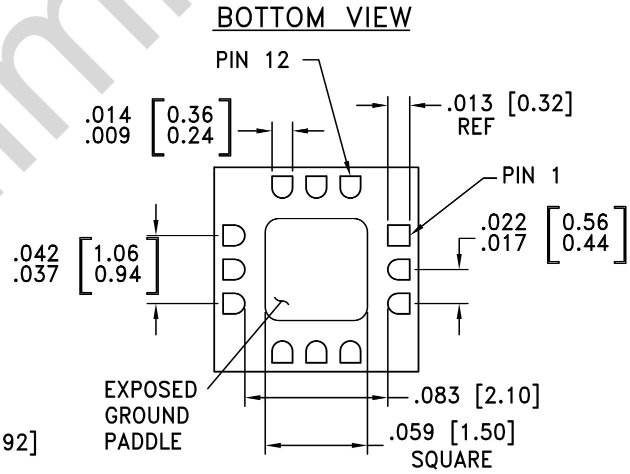
	nLO				
mRF	0	1	2	3	4
0	xx	19	25	xx	xx
1	29	0	51	55	xx
2	81	85	60	88	104
3	xx	97	98	76	99
4	xx	xx	105	98	105

RF = 15.1 GHz @ -10 dBm
LO = 15.0 GHz @ +13 dBm
All values in dBc below the IF output 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 NICKEL.
3. DIMENSIONS ARE IN INCHES (MILLIMETERS).
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. CHARACTERS TO BE HELVETICA MEDIUM, .025 HIGH, BLACK INK, OR LASER MARK LOCATED 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.