

GaAs MMIC FUNDAMENTAL MIXER, 7 - 34 GHz

Typical Applications

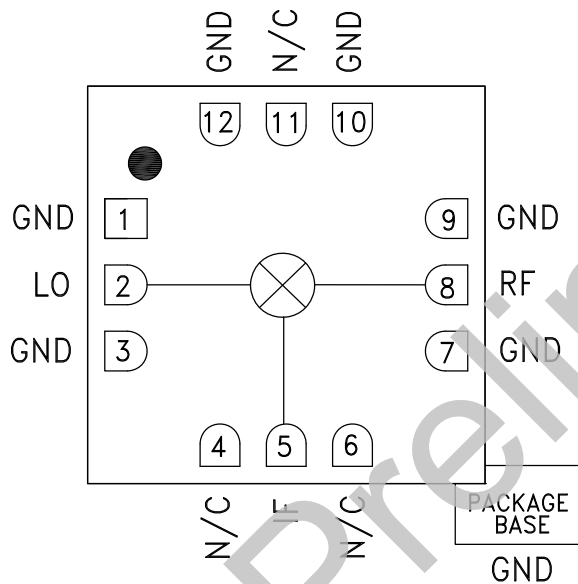
The HMC774ALC3B is ideal for:

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

Features

- Passive: No DC Bias Required
- Input IP3: +22 dBm
- LO/RF Isolation: 35 dB
- Wide IF Bandwidth: DC - 8 GHz
- 12 Lead Ceramic 3x3 mm SMT Package: 9mm²

Functional Diagram



General Description

The HMC774ALC3B is a general purpose double balanced mixer in a leadless RoHS compliant SMT package that can be used as an upconverter or downconverter between 7 and 34 GHz. This mixer requires no external components or matching circuitry. The HMC774ALC3B provides excellent LO to RF and LO to IF suppression due to optimized balun structures. The mixer operates best with LO drive levels above +15 dBm. The HMC774ALC3B eliminates the need for wire bonding, allowing use of surface mount manufacturing techniques.

Electrical Specifications, $T_A = +25^\circ\text{C}$, $IF = 0.5\text{ GHz}$, $LO = +15\text{ dBm}$ *

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO	7 - 20			20 - 34			GHz
Frequency Range, IF	DC - 8			DC - 8			GHz
Conversion Loss		10	13		11	14	dB
LO to RF Isolation		35			35		dB
LO to IF Isolation	20	30		25	40		dB
RF to IF Isolation	7	10		14	20		dB
IP3 (Input)		20			22		dBm
IP2 (Input)		45			48		dBm
1 dB Gain Compression (Input)		12			13		dBm

*Unless otherwise noted, all measurements performed as downconverter, $IF = 0.5\text{ GHz}$.

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Absolute Maximum Ratings

RF / IF Input	+21 dBm
LO Drive	+27 dBm
Channel Temperature	150 °C
Continuous Pdiss (Ta = 85 °C) (derate 2.9 mW/°C above 85 °C)	189 mW
Thermal Resistance (channel to ground paddle)	343 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

MxN Spurious Outputs

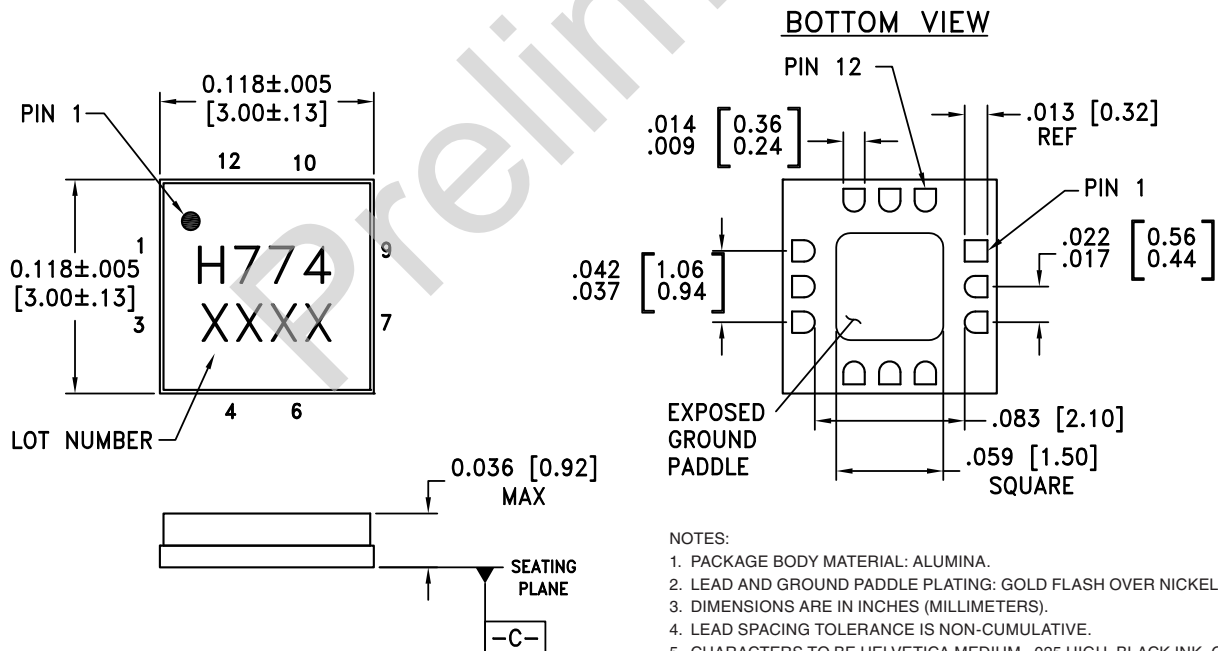
mRF	nLO				
	0	1	2	3	4
0	xx	10	39	xx	xx
1	5	0	37	43	xx
2	30	49	47	55	68
3	xx	74	62	45	63
4	xx	xx	xx	77	71

RF = 17.5 GHz @ -10 dBm
LO = 18 GHz @ +15 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: GOLD FLASH OVER 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.