

DESCRIPTION

The LX5560 is a low noise amplifier (LNA) for WLAN applications in the 4.9-6.0 GHz frequency range. This LNA is manufactured with an InGaAs Enhancement mode pseudomorphic HEMT (E-pHEMT) process.

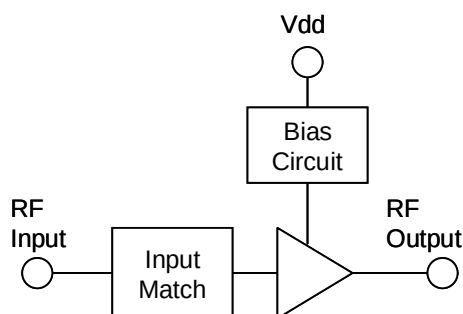
It operates with a single positive voltage supply of 3.3V, with noise figure(NF) of 1.7dB while maintaining input third order intercept point(IIP3) of up to +6dBm.

The LNA is implemented with bias circuit and input matching circuit on chip, resulting in simple external circuit. In addition, the on-chip bias circuit provides stable performance of gain, NF and current for voltage variation compared to a general resistor-network bias circuit.

The LX5560 is available in a 12-pin 2mmx2mm micro-lead package(MLPQ-12L).

KEY FEATURES

- 0.5μm InGaAs E-mode pHEMT
- 4.9 - 6GHz Operation
- Single 3.3V Supply
- Gain ~ 12dB
- Noise Figure ~ 1.7dB
- Input IP3 ~ +6dBm
- Input P1dB ~ +2dBm
- On-Chip Bias Circuit
- On-Chip Input Match
- Simple Output Match
- 2x2mm² MLPQ 12 Pin
- Low Profile 0.5mm

BLOCK DIAGRAM

APPLICATIONS

- Wireless LAN 802.11a
- WiMax

IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

PRODUCT HIGHLIGHT

PACKAGE ORDER INFO
LL
Plastic MLPQ
12 pin

RoHS Compliant / Pb-free

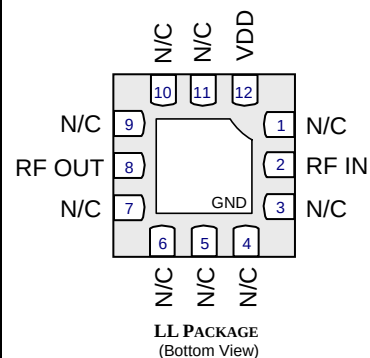
LX5560LL

Note: Available in Tape & Reel. Append the letters "TR" to the part number. (i.e. LX5560LL-TR)

ABSOLUTE MAXIMUM RATINGS

DC Supply Voltage, RF Off.....	4 V
Drain Current	40 mA
Total Power Dissipation.....	0.15 W
RF Input Power.....	+10 dBm
Operation Ambient Temperature Range	-40°C to +85°C
Storage Temperature Range.....	-65°C to 150°C
Package Peak Temp. for Solder Reflow (40 seconds maximum exposure) ...	260°C (+0 -5)

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of specified terminal.

PACKAGE PIN OUT


RoHS / Pb-free NiPdAu Lead Finish

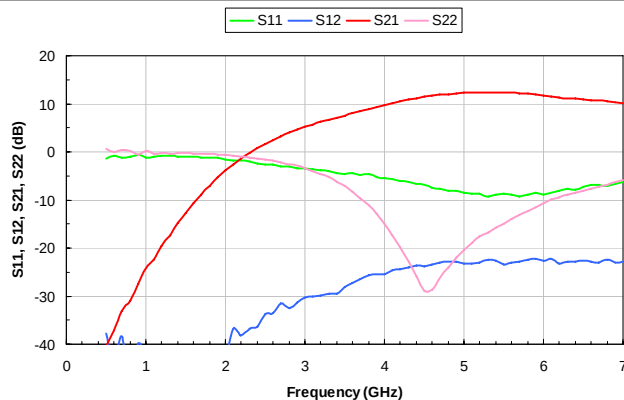
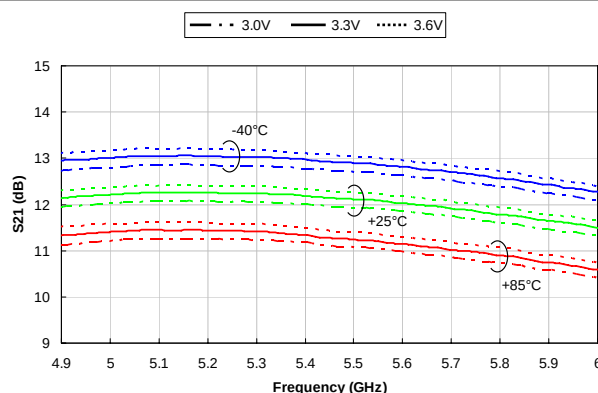
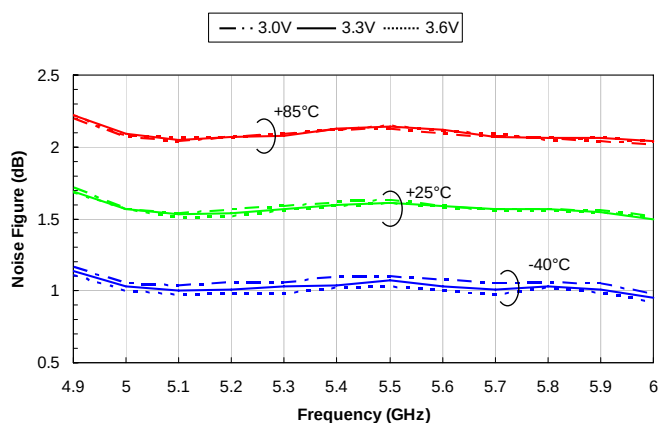
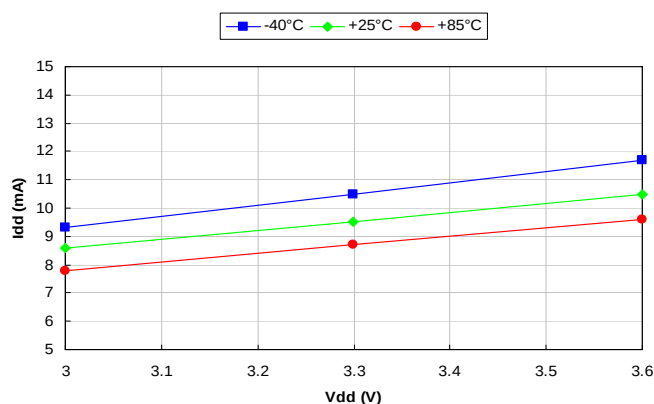
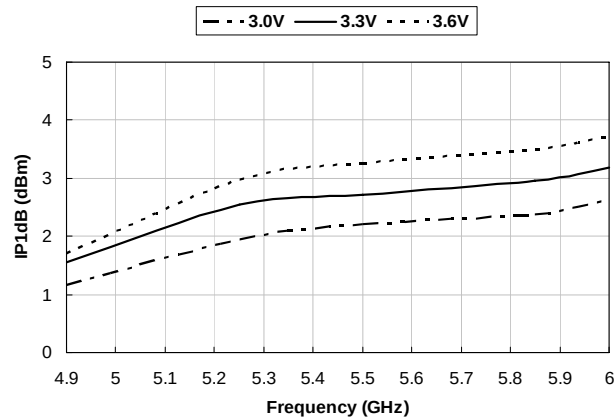
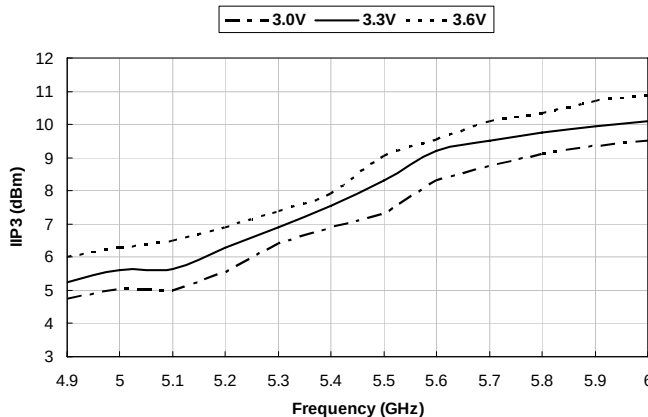
FUNCTIONAL PIN DESCRIPTION

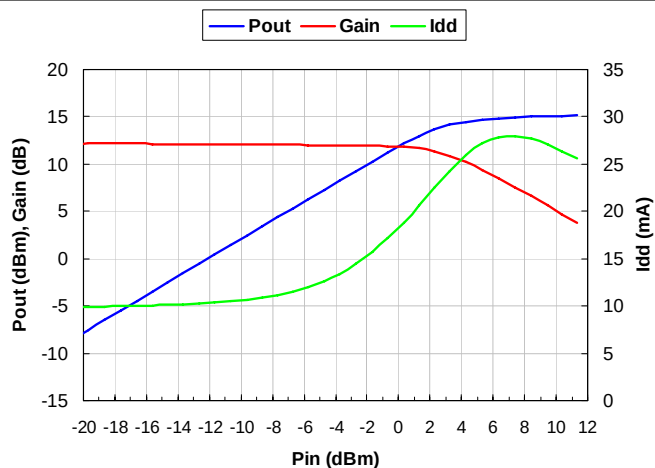
Name	Pin #	Description
RF IN	2	RF Input for the low noise amplifier. This pin is DC-shortened to GND but AC-coupled to the transistor gate.
RF OUT	8	RF Output for the low noise amplifier. This pin is AC-coupled and does not require a DC-blocking capacitor.
VDD	12	Supply Voltage.
GND	Center Metal	The center metal base of the MLP package provides both DC and RF ground.
N/C	1,3,4,5,6,7,9,10,11	Not Used. They may be treated either as open pins or connected to the ground.

ELECTRICAL CHARACTERISTICS

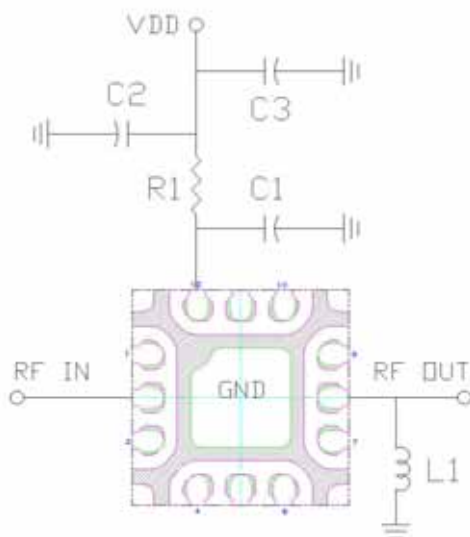
Nominal test conditions: $V_{DD} = 3.3V$, $I_{DD} = 9.5mA$, $T_A = 25^\circ C$ (Room Temperature)

Parameter	Symbol	Test Conditions	LX5560			Units
			Min	Typ	Max	
Application Frequency Range	f		4.9		6	GHz
Small-Signal Gain	S21			12		dB
Noise Figure	NF	Room Temperature		1.7	2.1	dB
Input 3 rd Order Intercept Point	IIP3	Freq. 1 = 5.25 GHz, Freq. 2 = 5.27 GHz		6		dBm
Input P1dB	IP1dB	Freq. = 5.5 GHz		2		dBm
Input Return Loss	S11			9		dB
Output Return Loss	S22			10		dB
Supply Voltage	V_{DD}			3.3		V
Supply Current	I_{DD}			9.5		mA

S-PARAMETER

GAIN OVER TEMP

NOISE FIGURE OVER TEMP

CURRENT OVER TEMP

INPUT P1dB (+25°C)

INPUT IP3 (+25°C)


POWER SWEEP @ 5.5GHz


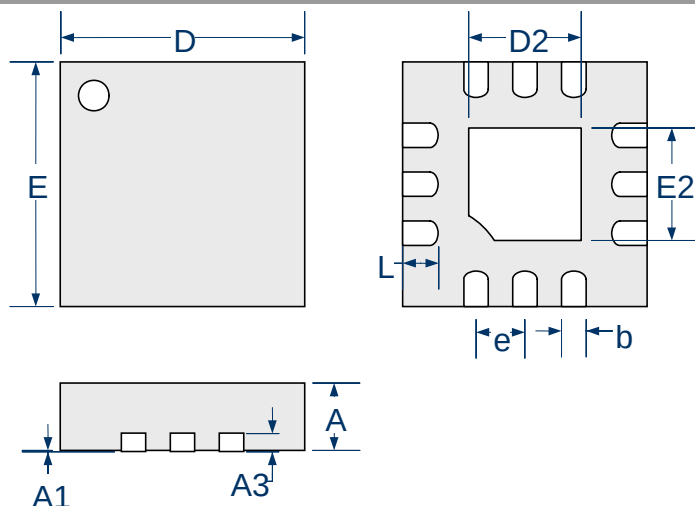
(Vdd=3.3V, Idq=9.5mA at Room Temperature)

APPLICATION SCHEMATIC

BOM LIST

Reference Designator	Part Description	Case
C1	Capacitor, 1 pF	0402
C2	Capacitor, 1 μ F	0603
C3	Capacitor, 10 μ F	0805
L1	Inductor, 1.5 nH (TOKO : LL1005-FH1N5S)	0402
R1	Resistor, 30 Ohm	0402

NOTES

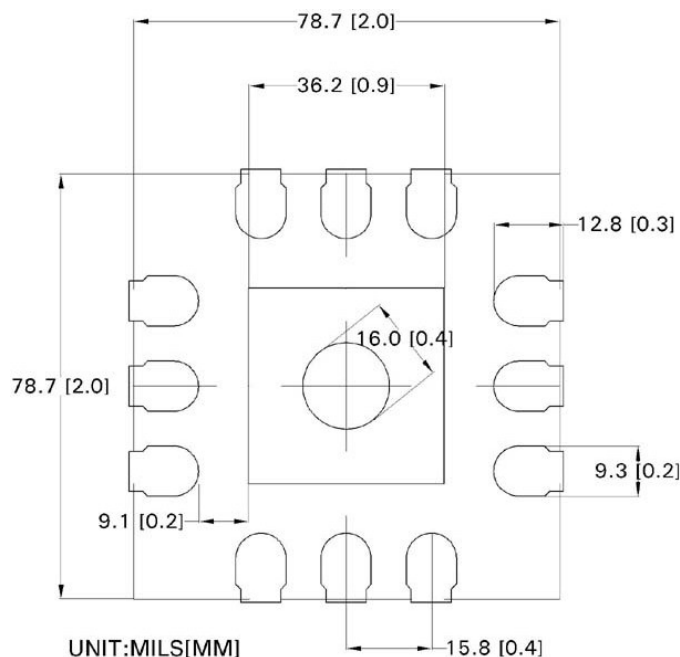
- It is recommended to place C1 at ~30mil from MLP package outline.
- It is recommended to place L1 at ~30mil from MLP package outline.
- C2 and C3 are used for standalone evaluation board test only. They can be replaced with a 1nF(0402) in final applications.

PACKAGE DIMENSIONS
LL
12-Pin MLPQ Plastic (2x2mm)


Dim	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.40	0.50	0.016	0.020
A1	0.00	0.05	0.000	0.002
A3	0.15 REF		0.006 REF	
b	0.15	0.25	0.006	0.010
D	2.00 BSC		0.079 BSC	
D2	0.77	1.02	0.030	0.040
E	2.00 BSC		0.079 BSC	
E2	0.77	1.02	0.030	0.040
e	0.40 BSC		0.016 BSC	
L	0.19	0.39	0.007	0.015

Note:

- Dimensions do not include mold flash or protrusions; these shall not exceed 0.155mm(.006") on any side. Lead dimension shall not include solder coverage.


Recommended Land Pattern



LX5560

InGaAs – E-Mode pHEMT Low Noise Amplifier

PRODUCTION DATA SHEET

NOTES

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