

**DESCRIPTION**

The LX5561 is a low noise amplifier (LNA) for WLAN applications in the 2.4-2.5 GHz frequency range. This LNA is manufactured with an InGaAs Enhancement mode pseudomorphic HEMT (E-pHEMT) process.

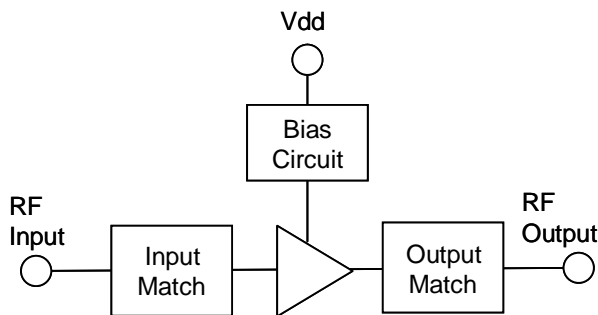
It operates with a single positive voltage supply of 3.3V, with noise figure of 1.5dB while maintaining input third order intercept point(IIP3) of up to +6.5dBm.

The LNA is implemented with bias circuit and input/output matching circuit on chip, resulting in simple external circuit on board. 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 LX5561 is available in a 12-pin 2mm x 2mm micro-lead package (MLPQ-12L).

**KEY FEATURES**

- 0.5µm InGaAs E-mode pHEMT
- 2.4 – 2.5GHz Operation
- Single 3.3V Supply
- Gain ~ 13.0dB
- Noise Figure ~ 1.5dB
- Input IP3 ~ +6.5dBm
- Input P1dB ~ +2.5dBm
- On-Chip Bias Circuit
- On-Chip Input/Output Match
- 2mm x 2mm MLPQ-12L
- Low Profile 0.5mm

**BLOCK DIAGRAM**

**APPLICATIONS**

- Wireless LAN 802.11b/g
- 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

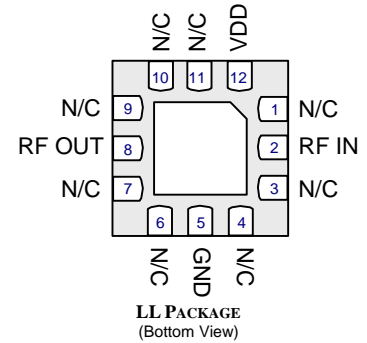
**LX5561LL**

Note: Available in Tape & Reel. Append the letters "TR" to the part number. (i.e. LX5561LL-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 .....	-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 Finish

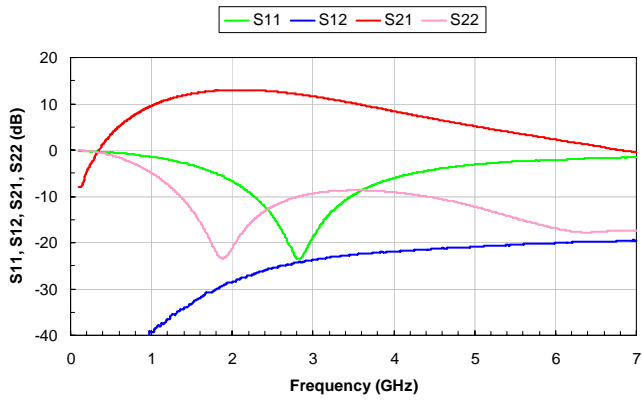
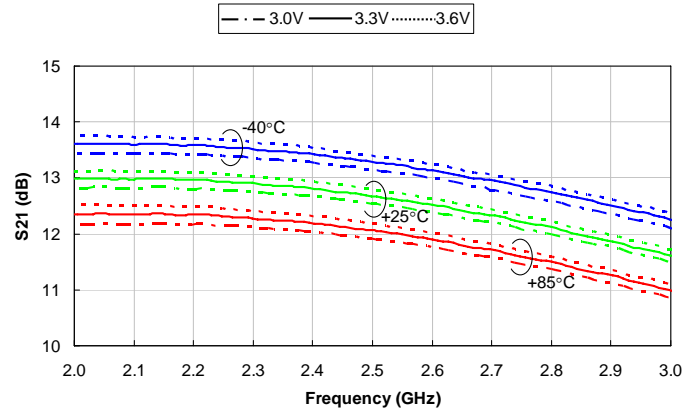
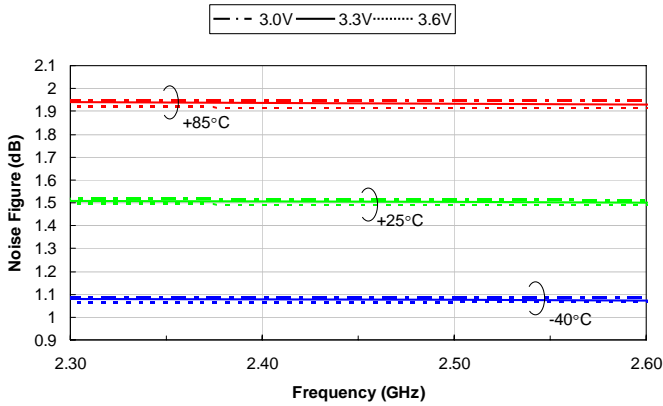
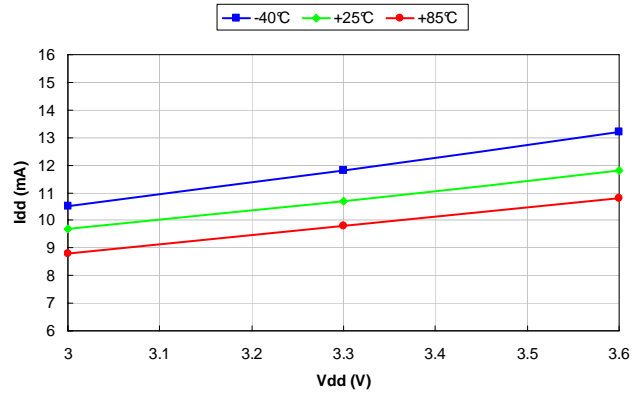
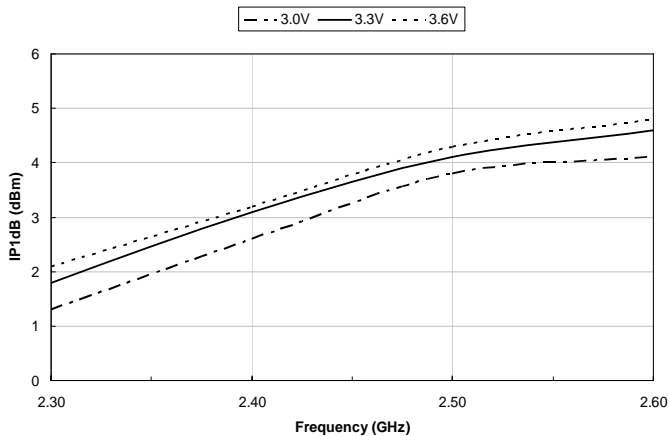
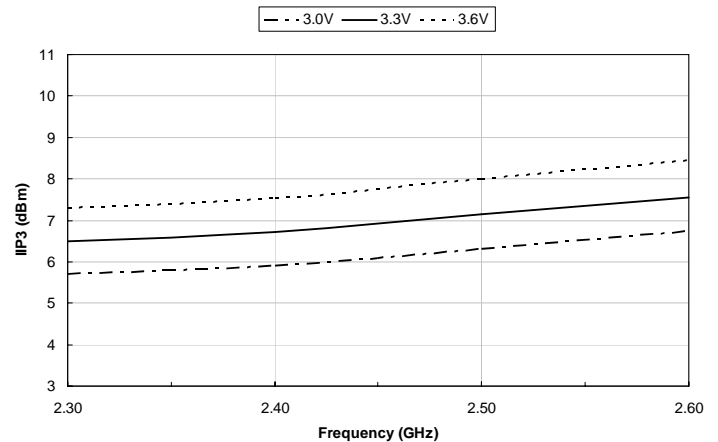
**FUNCTIONAL PIN DESCRIPTION**

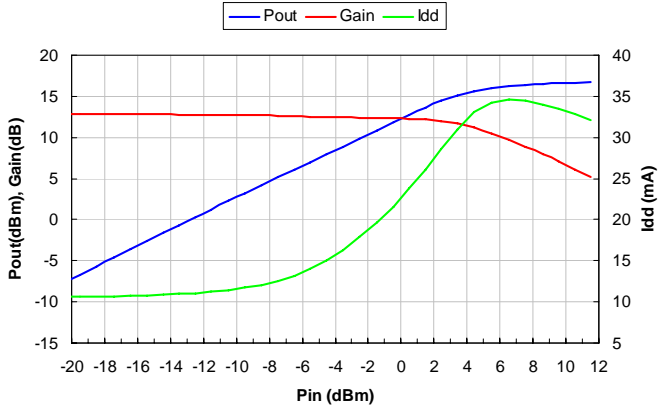
Name	Pin #	Description
RF IN	2	RF input for the low noise amplifier. This pin is AC-coupled and does not require a DC-blocking capacitor.
RF OUT	8	RF output for the low noise amplifier. This pin is AC-coupled and does not require a DC-blocking capacitor.
VDD	12	Supply voltage.
GND	5	Ground.
N/C	1,3,4,6,7,9,10,11, Center Metal	Not Connected. They can be treated either as open pins or connected to ground.

**ELECTRICAL CHARACTERISTICS**

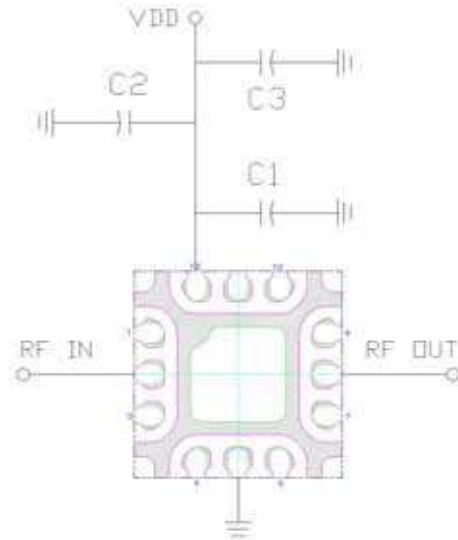
 Test conditions:  $V_{DD} = 3.3V$ ,  $I_{DD} = 10.5mA$ ,  $T_A = +25^{\circ}C$  (Room Temperature)

Parameter	Symbol	Test Conditions	LX5561			Units
			Min	Typ	Max	
Application Frequency Range	f		2.4		2.5	GHz
Small-Signal Gain	S21			13.0		dB
Noise Figure	NF			1.5	1.8	dB
Input 3 <sup>rd</sup> Order Intercept Point	IIP3	Freq. 1 = 2.412GHz, Freq. 2 = 2.432GHz		6.5		dBm
Input P1dB	IP1dB	Freq. = 2.45GHz		2.5		dBm
Input Return Loss	S11			12		dB
Output Return Loss	S22			12		dB
Supply Voltage	$V_{DD}$			3.3		V
Supply Current	$I_{DD}$			10.5		mA

**S-PARAMETER**

**GAIN OVER TEMP**

**NOISE FIGURE OVER TEMP**

**CURRENT OVER TEMP**

**INPUT P1DB (+25°C)**

**INPUT IP3 (+25°C)**


**POWER SWEEP @ 2.45GHZ**


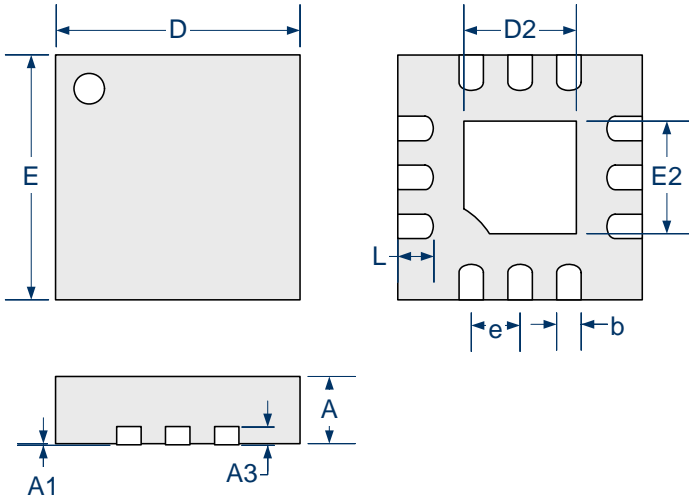
(Vdd=3.3V, Idq=10.5mA at Room Temperature)

**APPLICATION SCHEMATIC**

**BOM LIST**

Reference Designator	Part Description	Case
C1	Capacitor, 1 nF	0402
C2	Capacitor, 1 $\mu$ F	0603
C3	Capacitor, 10 $\mu$ F	0805

**NOTES**

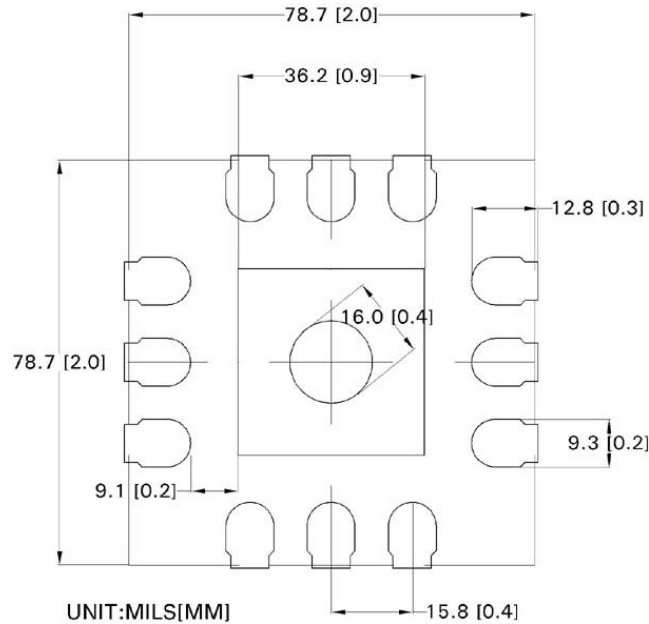
- It is recommended to place C1 at 20-50mil from MLP package outline.
- C2 and C3 are used for standalone evaluation board test only. They are not needed in final applications.

**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



**Microsemi**<sup>®</sup>

**LX5561**

**InGaAs – E-Mode pHEMT Low Noise Amplifier**

**PRODUCTION DATA SHEET**

**NOTES**

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**NOTES**