

LXK6037: 0.7-6.0GHz Low- Noise Amplifier**Applications**

- Low noise amplifier for GSM/CDMA/WCDMA/LTE
- other ultra low noise application

Features

- Ultra-low Noise Figure: 0.5 ~1.3 dB
- Bandwidth of high gain
- Frequency band: 0.7 to 6.0GHz
- High OIP3: 35dBm
- Single, positive DC supply voltage and low current
- Temperature compensation
- 2.0 x 2.0 8-pin DFN lead-free package

Product Description

The LXK6037 is an economical, easy-to-use GaAs MMIC Low Noise Amplifier (LNA). The LNA has low noise and high linearity and covering 0.7 to 6.0GHz. The combination of high gain, high linearity and low noise makes the LXK6037 ideal for cellular infrastructure for 2G/3G/4G, wireless data systems and other systems in the 0.7 to 6.0G GHz frequency range. single supply 2.0x2.0x0.75mm 8-pin TSLP lead-free package surface mount plastic package.

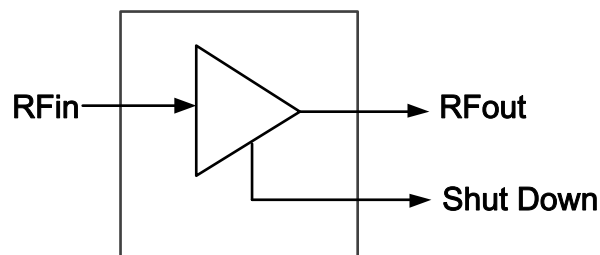


Figure 1. LXK6037 Functional Diagram

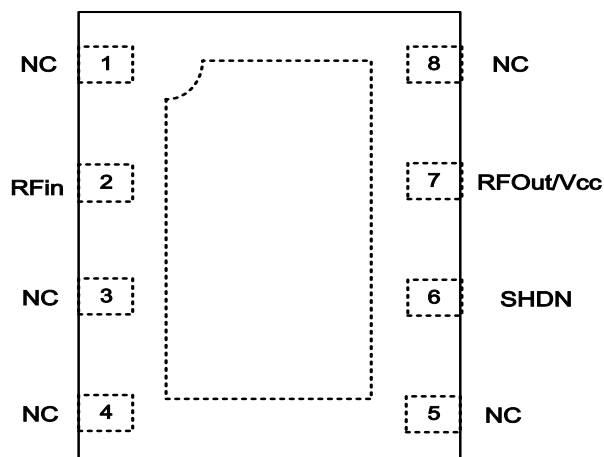


Figure 2. L XK6037 Pinout - 8 Pin 2x2 QFN (Top View)

Table1.Pin Names and Descriptions

Pin	Name	Description
2	RFin	RF input. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.
6	SHDN	Shut down
7	RFOut	RF output and DC voltage is present on this pin, therefore a DC blocking capacitor is necessary for proper operation.
1, 3, 4, 5, 8	NC	No Connect or GND

Table2.Absolute Maximum Ratings

Parameters	Rating	Units
Max Device Voltage(V_{DD})	6.0	V
Max Device Current(I_D)	150	mA
Max RF Input Power	10	dBm
Max Operating Dissipated Power	0.35	W
Storage Temperature	-40 to 125	°C
Operating Temperature	-40 to 85	°C
Junction Temperature	150	°C
Electrostatic Discharge, Human Body Model	1000	V

Table3. Typical Electrical Specifications ($T_A=+25^{\circ}C$, $V_{DD}=5.0V$)

Parameter		Specification			Units
		Min.	Typ.	Max.	
Operational Frequency Range		700		6000	MHz
Small Signal Gain	0.9GHz		25		dB
	1.9GHz		20		
	2.6GHz		18		
	3.5GHz		15		
	4.9GHz		13		
	5.8GHz		12		
Output P1dB	0.9GHz		21		dBm
	1.9GHz		20		
	2.6GHz		20		
	3.5GHz		21		
	4.9GHz		21		
	5.8GHz		21		
OIP3	0.9GHz		35		dBm
	1.9GHz		35		
	2.6GHz		35		
	3.5GHz		37		
	4.9GHz		37		
	5.8GHz		35		
Input Return Loss				-8	dB
Output Return Loss				-8	dB
Reverse Isolation				-27	dB
Noise Figure	0.9GHz		0.5		dB
	1.9GHz		0.5		
	2.6GHz		0.5		
	3.5GHz		0.8		
	4.9GHz		1.0		
	5.8GHz		1.3		
Device Operating Voltage			+5.0		V
Device Operating Current					
SHDN=0V			75		mA
SHDN=3.3V			<1		uA

Test Conditions: $V_{DD}=5V$, $I_D=75mA$ Typ., OIP3 Tone Spacing=1MHz, Pout per tone=+5dBm, $T_A=25^{\circ}C$, $Z_S=Z_L=50\Omega$

Table 4. Recommended Operating Conditions

Symbol	Parameter	Min.	Typ.	Max.	Units
f	Operating frequency	700		6000	MHz
V _{CC}	Supply voltage for LNA	4.5	5	5.5	V
SHDN	Enable voltage				V
High		2.5	3.3	3.5	
low		0	0	0.2	
T _A	Operating temperature	-40	25	85	°C

Table 5. Mode Control Logic

SHDN Voltage (V)	Description
0	LNA is enabled
3.3	LNA is disabled

Performance Charts (V_{DD} = 5.0 V, I_D = 75 mA, T_A = 25°C)

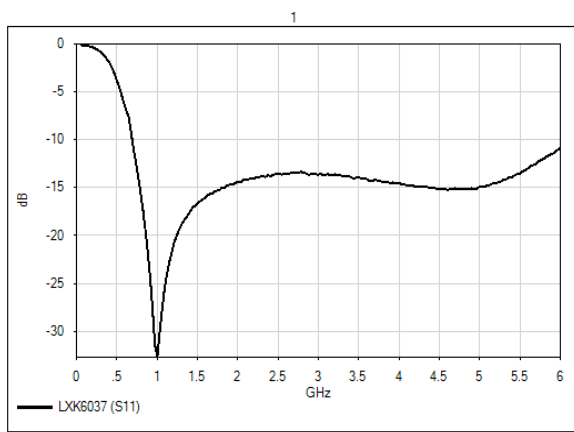


Chart.1 Input Return Loss

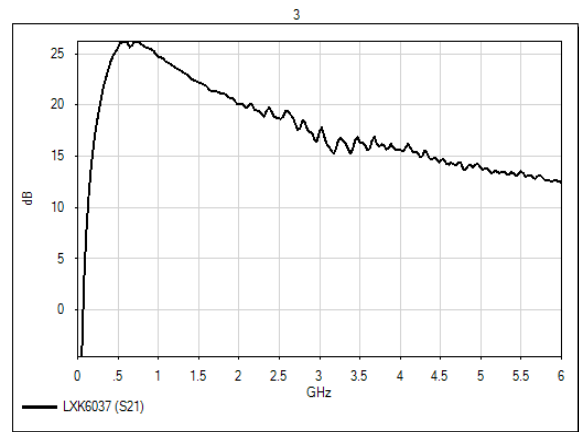


Chart.2 Gain

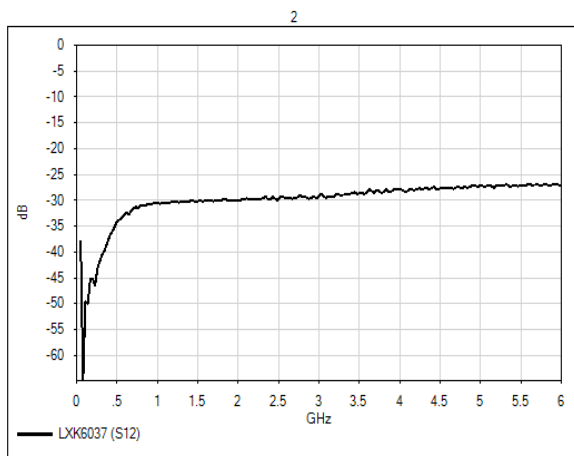


Chart.3 Reverse Isolation

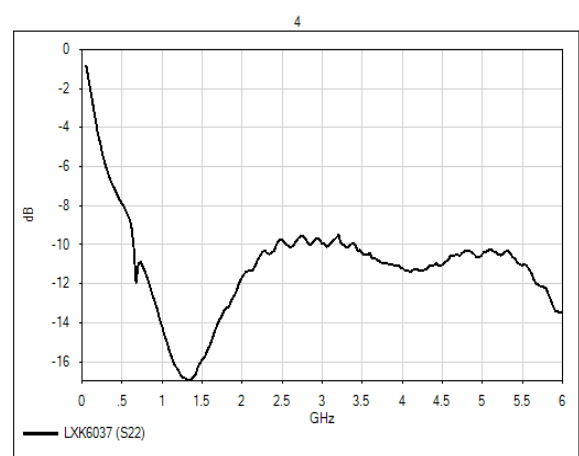


Chart.4 Output Return Loss

Table6. Typical Electrical Specifications ($T_A=+25^{\circ}C$, $V_{DD}=3.3V$)

Parameter	Specification			Units
	Min.	Typ.	Max.	
Operational Frequency Range	700		6000	MHz
Small Signal Gain	0.9GHz		24	dB
	1.9GHz		19	
	2.6GHz		17	
	3.5GHz		15	
	4.9GHz		12.5	
	5.8GHz		11.5	
Output P1dB	0.9GHz		18	dBm
	1.9GHz		18	
	2.6GHz		18	
	3.5GHz		19	
	4.9GHz		19	
	5.8GHz		17	
OIP3	0.9GHz		29	dBm
	1.9GHz		29	
	2.6GHz		29	
	3.5GHz		30	
	4.9GHz		30	
	5.8GHz		29	
Input Return Loss			-8	dB
Output Return Loss			-8	dB
Reverse Isolation			-27	dB
Noise Figure	0.9GHz		0.5	dB
	1.9GHz		0.5	
	2.6GHz		0.5	
	3.5GHz		0.8	
	4.9GHz		1.0	
	5.8GHz		1.2	
Device Operating Voltage		+3.3		V
Device Operating Current				
SHDN=0V		40		mA
SHDN=3.3V		<1		uA

Test Conditions: $V_{DD}=3.3V$, $I_D=40mA$ Typ., OIP3 Tone Spacing=1MHz, Pout per tone=+5dBm, $T_A=25^{\circ}C$, $Z_S=Z_L=50\Omega$

Table 7. Recommended Operating Conditions

Symbol	Parameter	Min.	Typ.	Max.	Units
f	Operating frequency	700		6000	MHz
V _{CC}	Supply voltage for LNA	3.0	3.3	3.6	V
SHDN	Enable voltage				V
High		2.5	3.3	3.5	
low		0	0	0.2	
T _A	Operating temperature	-40	25	85	°C

Table 8. Mode Control Logic

SHDN Voltage (V)	Description
0	LNA is enabled
3.3	LNA is disabled

Performance Charts (V_{DD} = 3.3 V, I_D = 40 mA, T_A = 25°C)

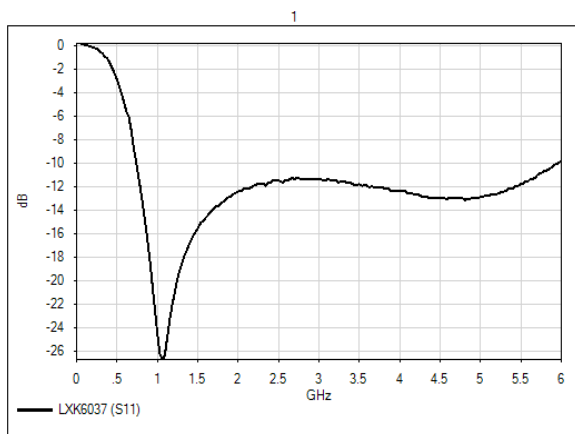


Chart.1 Input Return Loss

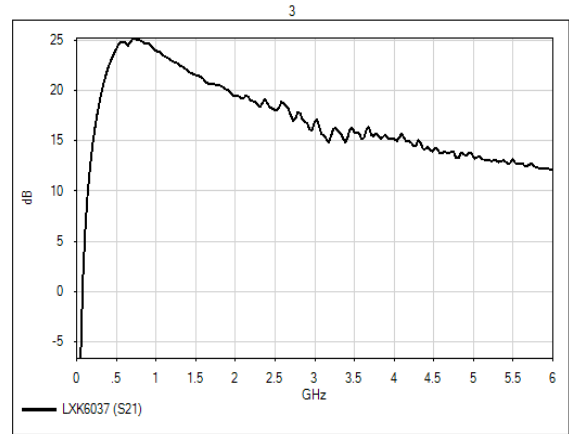


Chart.2 Gain

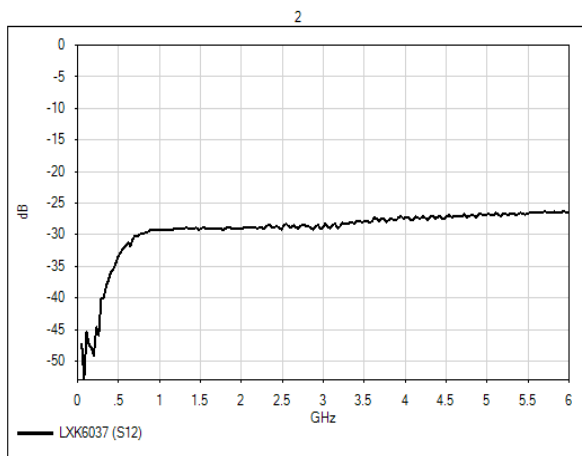


Chart.3 Reverse Isolation

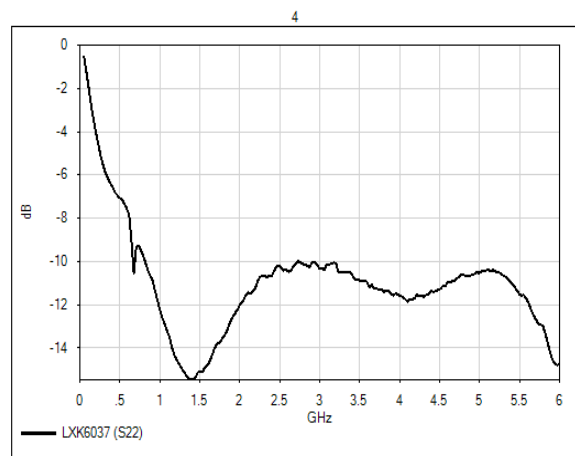


Chart.4 Output Return Loss

Application Circuit

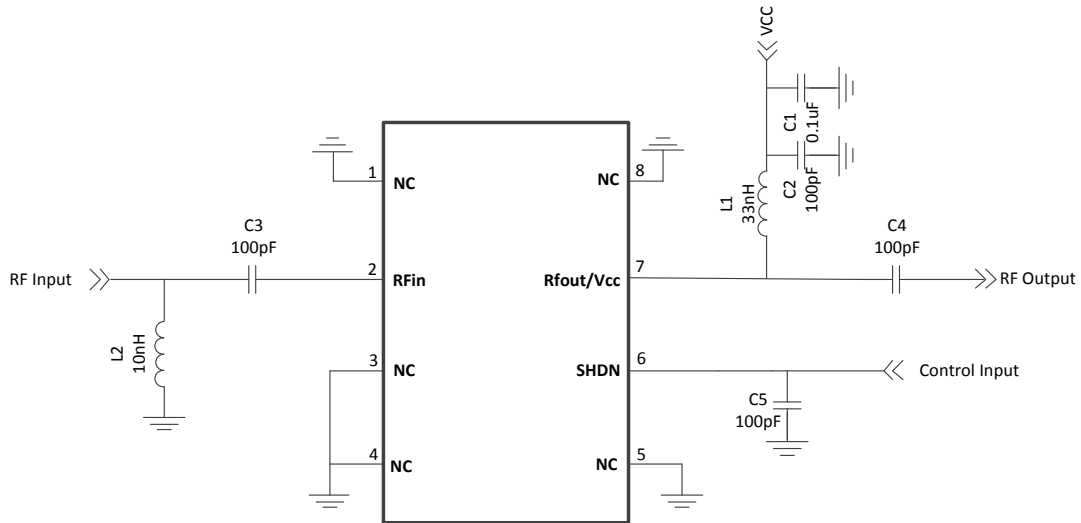


Figure 3. Application Circuit Schematic

Evaluation PCB

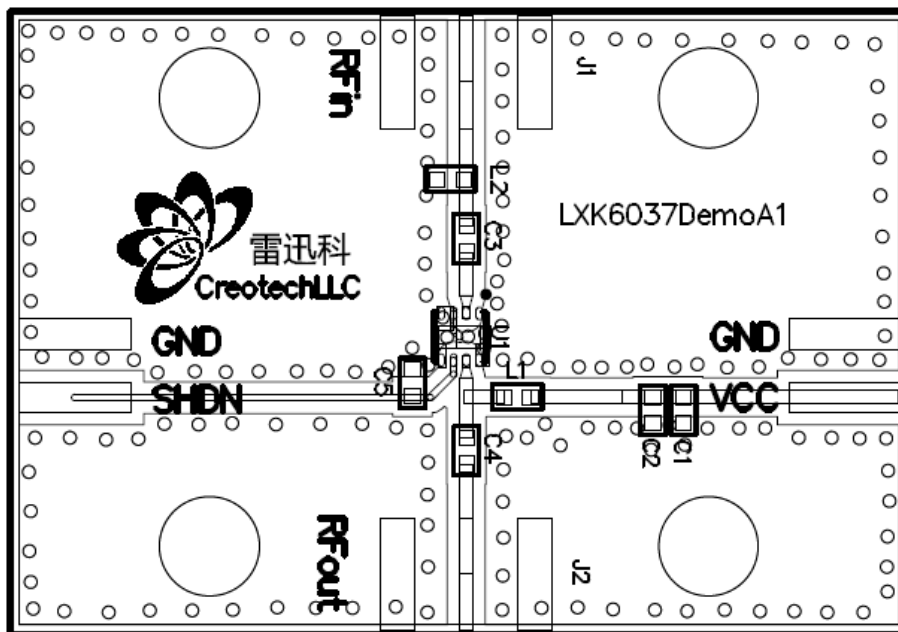
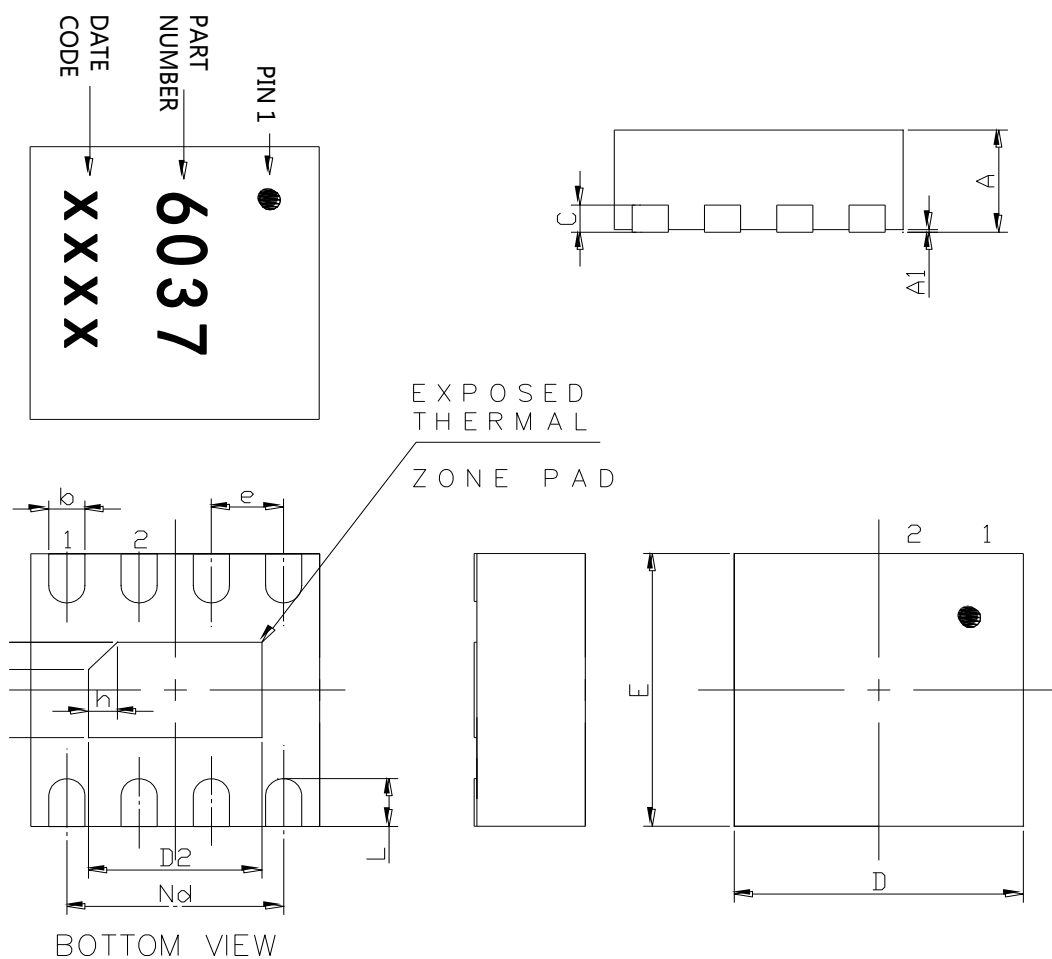


Figure 4. Application Circuit PCB Layout



SYMBOL	MILLIMETER		
	MIN	NDM	MAX
A	0.70	0.75	0.80
A1	-	0.02	0.05
b	0.18	0.25	0.30
c	0.18	0.20	0.25
D	1.90	2.00	2.10
D2	1.10	1.20	1.30
e	0.50BSC		
Nd	1.50BSC		
E	1.90	2.00	2.10
E2	0.60	0.70	0.80
L	0.30	0.35	0.40
h	0.15	0.20	0.25

Ordering Information

Part No.	Description
LXK6037	Low Noise Amplifier
EVB-LXK6037	Evaluation Board

Document Change History

Revision	Date	Notes
1.0	Sep 28, 2018	Created

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