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2.4 - 2.5 GHz LNA With Bypass

Description

The LX5563 is a low noise amplifier (LNA) for WLAN applications in the 2.412 to 2.472 GHz frequency range. It operates with a single voltage supply of 3.3V, and features both high gain and bypass modes.

The LNA is fully matched on both the input and output ports; no external inductors or matching is required. It includes all bias circuitry and operates with a digital control signal. Only one external bypass capacitor on the supply line is required.

The LNA is packaged in a 1.5x1.5x0.5 mm dual-flat no-leads (DFN) package.

Features

- 2.412GHz to 2.472GHz frequency range
- Single 3.3V operation
- 14dB gain in high gain mode; 7dB loss in bypass mode
- 1.3dB noise figure
- Input IP3 = +7.5 dBm (high gain)
- Input P1dB = -3 dBm (high gain) or +18dBm (bypass)
- Single control enables LNA in high gain mode, or places LNA into bypass mode.

Applications

- 2.4GHz Wi-Fi RF front ends
- 802.11 b/g/n/ac radios
- Laptops, Tablets
- Smartphones
- Wireless Access Points
- Routers

Block Diagram

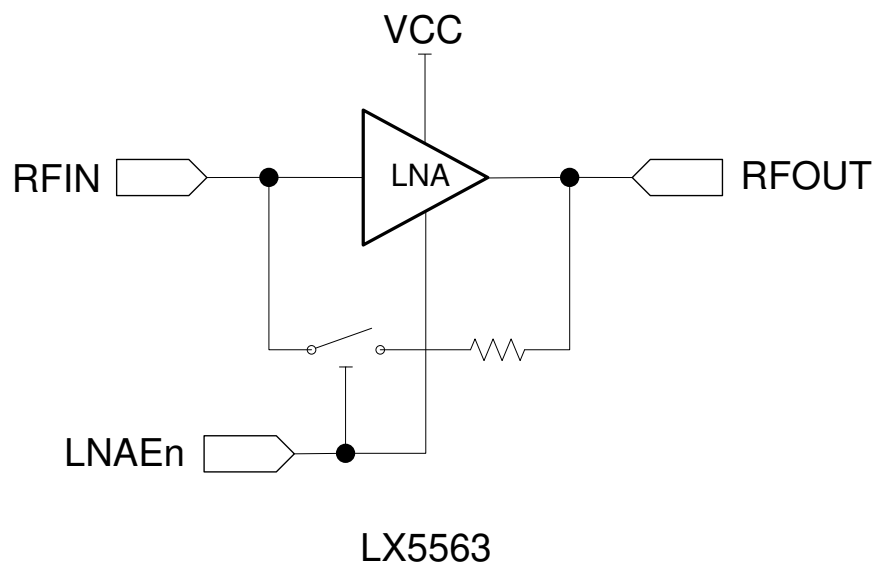


Figure 1 · Functional Block Diagram

Pin Configuration

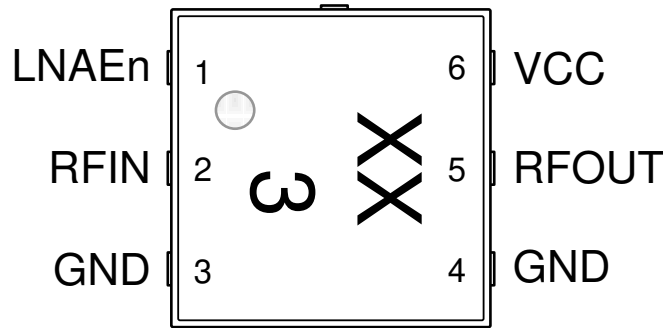


Figure 2 · Pinout

- Top view XX = Encoded date code
- 1.5 x 1.5 x 0.5mm DFN package

Ordering Information

Ambient Temperature	Type	Package	Part Number	Packaging Type
0°C to 70°C	RoHS2 compliant, Pb-free	DFN 1.5x1.5 - 6L	LX5563LL	Bulk / Tube
			LX5563LL -TR	Tape and Reel

Pin Description

Pin Number	Pin Designator	Description
1	LNAEn	LNA Enable/Bypass mode select
2	RFIN	RF input. This pin is AC coupled to the transistor; no DC blocking is required.
3	GND	Ground
4	GND	Ground
5	RFOUT	RF output. This pin is AC coupled to the transistor; no DC blocking is required.
6	VCC	3.3V Supply voltage

Absolute Maximum Ratings

Parameter	Value	Units
DC Supply Voltage, RF off	4	V
RF input power	+10	dBm
Operational ground slug temperature	0 to 70	°C
Storage temperature range	-65 to 150	°C

Note: Stresses in excess of these absolute ratings may cause permanent damage. The device is not implied to be functional under these conditions.

General Electrical Characteristics

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
VCC	Operating voltage		3	3.3	3.6	V
VIH	Logic high	LNAEn	VCC-1.1		3.6	V
VIL	Logic low	LNAEn	0		0.8	V
	ESD	All pins, HBM	1500			V

Note: The device may be operated safely over these conditions. However, performance is guaranteed only over the conditions defined in the electrical specifications. Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

Application Information

The LX5563 is fully matched on both RF ports. No external matching is required. An external decoupling capacitor is recommended on the supply line, as shown in [Figure 4](#).

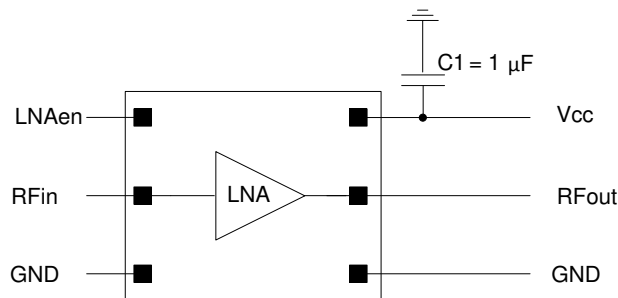
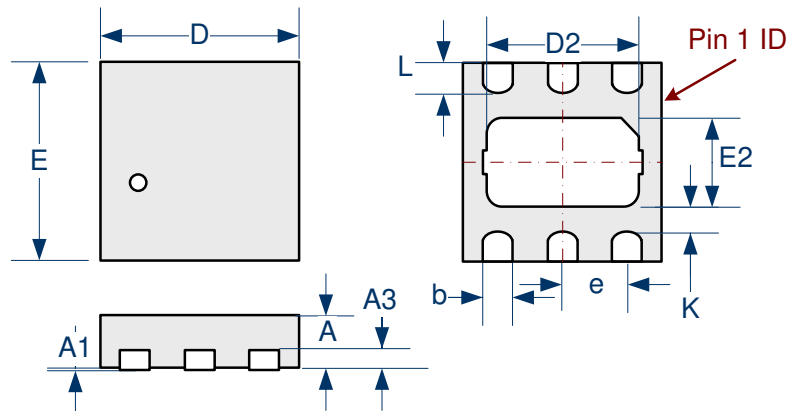


Figure 3 · Application Schematic

Figure 4 · Application Schematic

Package Outline Dimensions

The package is halogen free and meets RoHS2 and REACH standards.



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.41	0.50	0.016	0.020
A1	0.0	0.05	0.0	0.002
A3	0.15 REF		0.006 REF	
b	0.18	0.30	0.07	0.012
D	1.50 BSC		0.059 BSC	
D2	1.05	1.30	0.041	0.051
E	1.50 BSC		0.059 BSC	
E2	0.55	0.80	0.022	0.031
e	0.50 BSC		0.20 BSC	
K	0.15	-	0.006	-
L	0.125	0.225	0.005	0.009

Figure 5 · 6 Pin DFN Package Dimensions

Recommended PCB Footprint

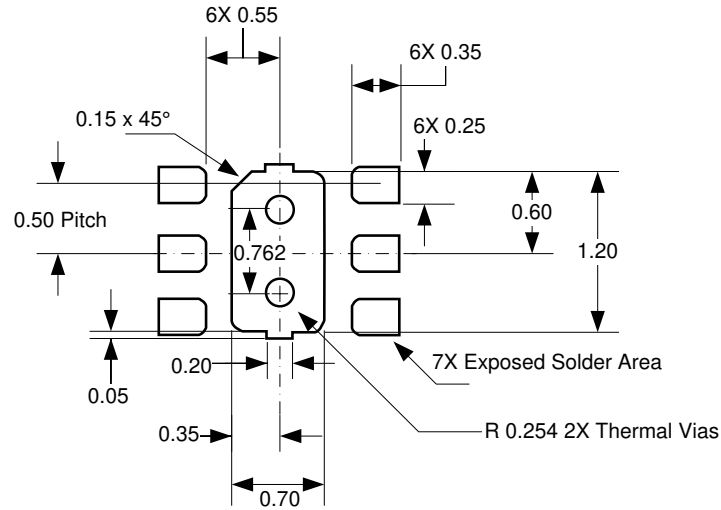


Figure 6 · PCB Layout Footprint (Top View)

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