

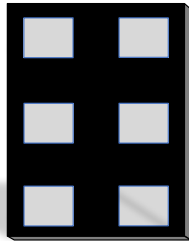


LXLN16U DataSheet

LNA for Global Navigation Satellite System(GNSS)

LXLN16U

杭州灵芯微电子有限公司 | 浙江省杭州市钱塘新区白杨街道 6 号大街 260 号 19 幢 506 室



Product Features

- High Gain:17.5dB
- Low noise figure 0.85dB@1575.42MHz
- Low operation current 7.0 mA & PD current Less than 1uA
- Single supply voltage range 1.5V to 3.0V
- Small package: 1.1mmx0.7mmx0.45mm
- Low cost BOM
- Lead -Free and RoHS-Compliant

Product Applications

- Automotive Navigation
- Personal Navigation Device (PND)
- Cell Phone with GPS
- MID/PAD with GPS

Product Description

LXLN16U high gain, low noise amplifier (LNA) is Dedicated to GPS, GLONASS Galileo and Beidou Standards. This product has an extremely low noise figure of 0.85dB, 17.5dB gain and excellent Linearity.

LXLN16U works under a 1.5V to 3.0V single power supply while consumes 7.0 mA current, in Power down (PD) mode, the power consumption Will be reduced to less than 1uA.

LXLN16U uses a small 1.1mmx0.9mmx0.45mmDFN 6-pin package.

Application circuit

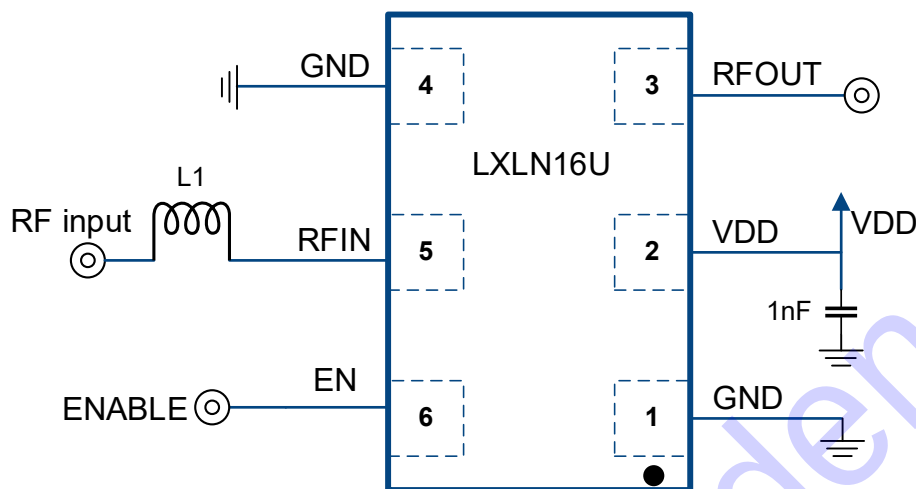


Figure 1 LXLN16U Application circuit

Table 1:

Number	Vendor	Type	Part Number
L1	Murata	Wired inductor,high Q	LQW15AN10N, 10nH

Pin-out Information

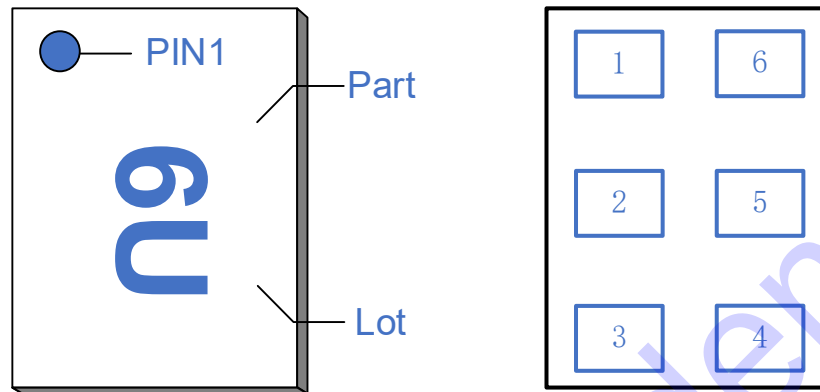


Figure 2 Pin-out Information

Table 2: Pin Description

Pin #	Name	I/O	Description
1	GND	AG	Analog VSS
2	VDD	AP	Power supply, 1.5~3.0V
3	RFOUT	AO	LNA output
4	GND	AG	Analog VSS
5	RFIN	AI	LNA input from antenna
6	EN	DI	Pull high enable, pull low into power down mode

Note: DI (digital input), DO (digital output), DIO (digital bidirectional), A (analog input), AO (analog output), A/O (analog bidirectional), AP (analog power), AG (analog ground)

Absolute Maximum Conditions

Parameters	Minimum	Maximum	Units
Power Supply	-0.3	3.3	V
Other Pin to GND	-0.3	VDD+0.3	V
RF input power		+15	dBm
Device Operating Temperature	-40	+85	°C
Soldering Temperature (reflow)		+260	°C
Human Body Model ESD	-2000	+2000	V
Charge Device Mode ESD	-500	+500	V

Note: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. *Exceeding any of the limits listed here may result in permanent damage to the device.*

DC Characteristics

Parameters	Test Condition	Min.	Typ.	Max.	Units
Supply voltage		1.5	2.8	3.0	V
Supply current	EN=High	6.0	7.0	13.0	mA
	VDD=1.8V	3.0	4.0	5.5	
	EN=Low			1	μA
EN Input High		0.8			V
EN Input Low				0.6	V

(Typically VDD = 2.8 V, T_A = +25 °C, Unless Otherwise Noted)

AC Characteristics

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
RF Operating frequency	Fre	None		1575.42		MHz
Power Gain	G		16.0	17.5	18.5	dB
Noise Figure	NF		0.75	0.85	1.0	dB
Input Return Loss	[S11]	Note1		-6.5		dB
Output Return Loss	[S22]			-10		dB
Reverse Isolation	ISO	Note1		-27		dB
VSWR	-	Note1		2.7		
Input Power 1-dB Compression Point	P1dB	1575MHz	-12	-9		dBm
		900MHz	-8	-6		
		2400MHz	-8	-5		
Input Out-Band IP3	OIP3	Note4	-1	3		dBm
Input Out-Band IP2	OIP2	Note5	2	6		dBm
Stability	KF	Note3	1.0			

(Typically VDD = 2.80 V, TA = +25 °C, all data measured on Lingchip' s EVB, Unless Otherwise Noted)

Note1: sweep power -30dBm, 1575.42MHz

Note2: jammed signal @ 850MHz, -20dBm

Note3: frequency range 500MHz-5GHz

Note4: f1 = 1712.7 MHz, -20dBm, f2 = 1850 MHz, -65dBm, IIP3= (2*P1+P2+ Gain1575MHz -IM3)/2

Note5: f1 = 824.6 MHz, -25dBm, f2 = 2400 MHz, -32dBm, IIP2 = P1+P2-(IM2-Gain1575MHz)

Note6: Beidou frequency range B1: 1559.052MHz---1591.788MHz

Parameters	Symbol	Test Condition	Min.	Typ.	Max.	Units
RF Operating frequency	Fre	None		1575.42		MHz
Power Gain	G			16.0		dB
Noise Figure	NF			0.99		dB
Input Return Loss	[S11]	Note1		-5.5		dB
Output Return Loss	[S22]			-12		dB
Reverse Isolation	ISO	Note1		-26		dB
VSWR	-	Note1		3.0		
Input Power 1-dB Compression Point	P1dB	1575MHz	-13	-10		dBm
		900MHz	-3	0		
		2400MHz	-8	-5		
Input Out-Band IP3	OIP3	Note4	-3	1		dBm
Input Out-Band IP2	OIP2	Note5	-2	2		dBm
Stability	KF	Note3	1.0			

(Typically VDD = 1.80 V, T_A = +25 °C, all data measured on Lingchip's EVB, Unless Otherwise Noted)

Note1: sweep power -30dBm, 1575.42MHz

Note2: jammed signal @ 1.8GHz & 950 MHz, -30dBm

Note3: frequency range 500MHz-5GHz

Note4: f1=1574.5MHz, f2=1575.5MHz, -30dBm

Note5: f1=2400MHz, f2=2000MHz, -30dBm IP3=pin-(IM3-Gain1575MHz)/2

Note6: f1=2475MHz, f2=900MHz, -30dBm, IP2=pin-(IM2- Gain1575MHz), IMD2 referred to input port.

Note7: Beidou frequency range B1: 1559.052MHz — 1591.788MHz

Package Outline Dimension

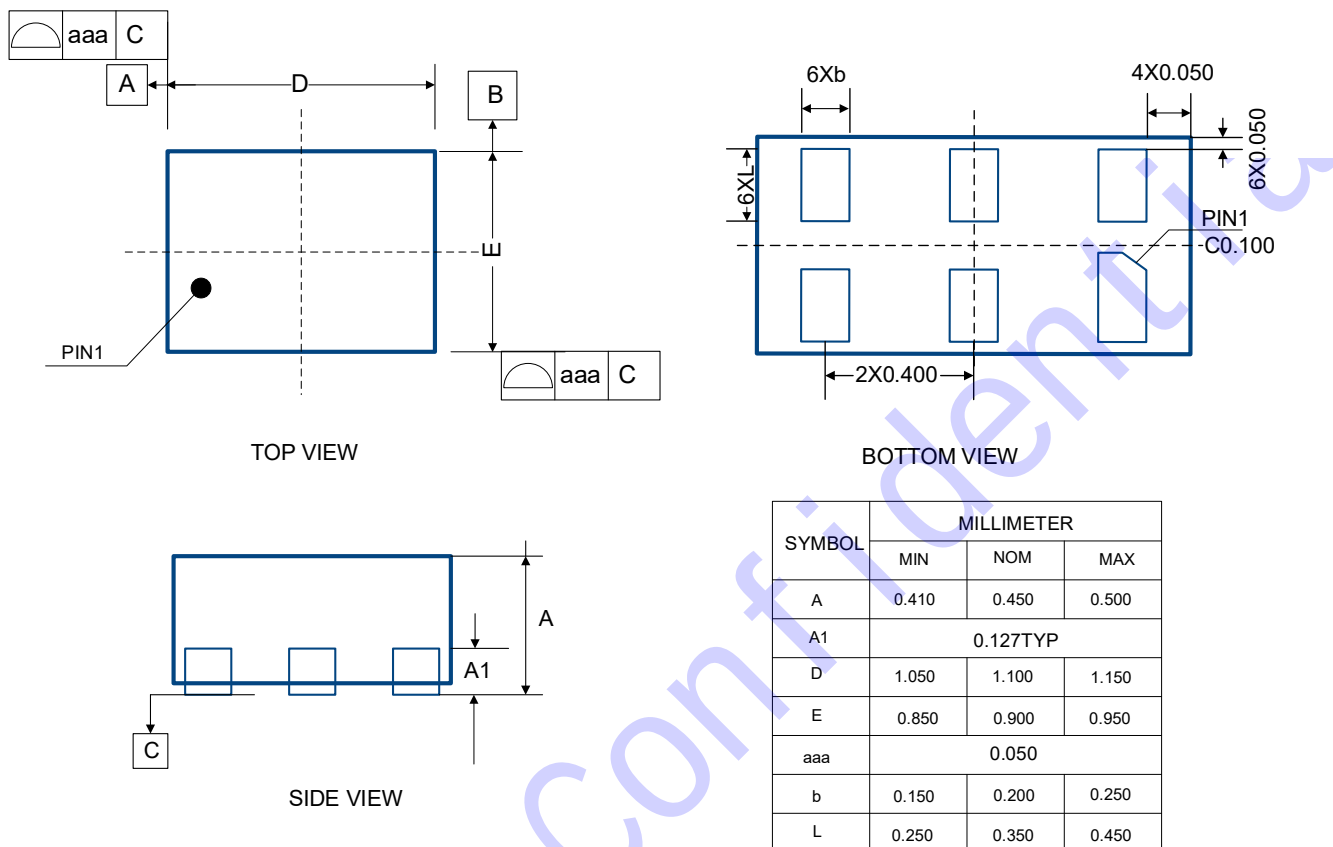


Figure 2 Package Outline Dimension

ESD Sensitivity

Integrated circuits are ESD sensitive and can be damaged by static electric charge. Proper ESD protection techniques should be applied when devices are operated.

Temperature Sensitivity

Integrated circuits are recommended to be used within -40°C to 85°C , If used beyond 85°C , may result in permanent damage to the device

RoHS Compliant

This product does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), and are considered RoHS compliant.