PLN20

GaAs p-HEMT LNA

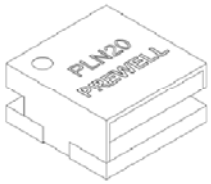
Features

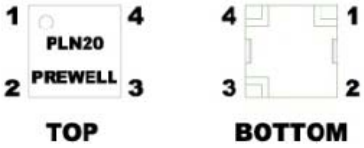
- 1750 - 2170MHz
- 15.0 dB Gain at 1750MHz
- +27.0 dBm Output IP3
- 0.8 dB Noise Figure at 1750MHz
- 5.5x5.5 size / No matching circuit needed
- Low power consumption (3V/35mA)
- Surface mount type

Applications

- LNA for PCS
- Repeater
- Base Station
- Mobile Infrastructure

Functional Diagram





Function	Pin No.
RF IN	1
RF OUT	3
Vcc	4
Ground	2

Description

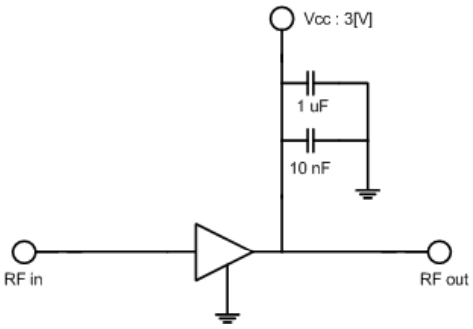
The PLN20 is a high performance GaAs p-HEMT LNA (Low Noise Amplifier). The amplifier features high linear performance, low noise figure, low power consumption and high reliability. The PLN20 operates from a single voltage supply and no matching circuit needed. The device is a superior performance p-HEMT amplifier that offers high dynamic range in a low cost miniature surface mount type with metal cover. These PLN series provide the most suitable solutions for LNA in communication systems.

Specifications

Symbol	Parameters	Units	Freq.	Min.	Typ.	Max.
S21	Gain	dB	1750 MHz 2170 MHz		15.0 13.0	
S11	Input Return Loss	dB	1750 MHz 2170 MHz		-18 -18	
S22	Output Return Loss	dB	1750 MHz 2170 MHz		-10 -10	
P1dB	Output Power @1dB compression	dBm	1750 MHz 2170 MHz		14 14	
OIP3	Output Third Order intercept	dBm	1750 MHz 2170 MHz		27.0 27.0	
NF	Noise Figure	dB	1750 MHz 2170 MHz		0.8 0.85	
V / I	Device Voltage / Current	V/mA			3.0/35	

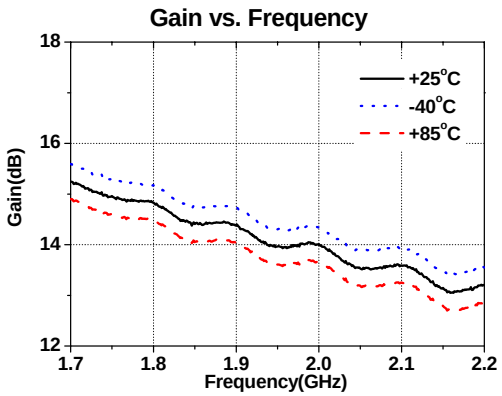
Test Conditions : T=25°C, Supply Voltage=+3.0V, 50ohm System, OIP3 measured with two tones at an output power of 0dBm/tone separated by 1MHz.

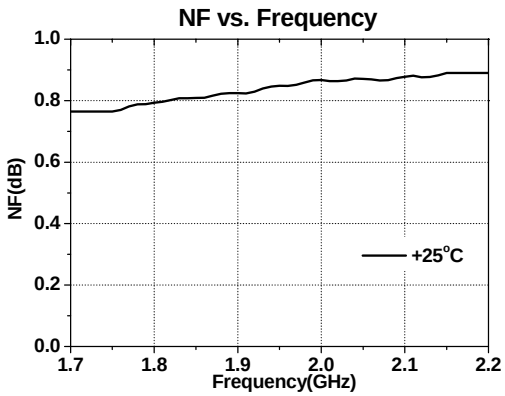
Application Circuit

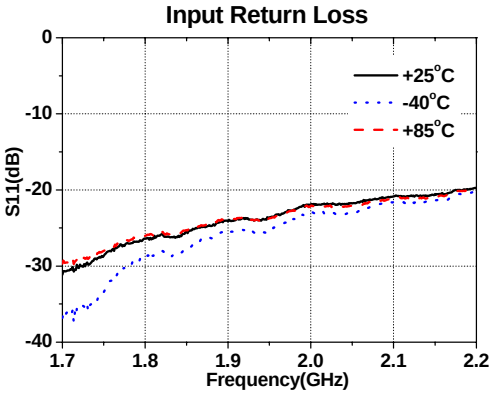


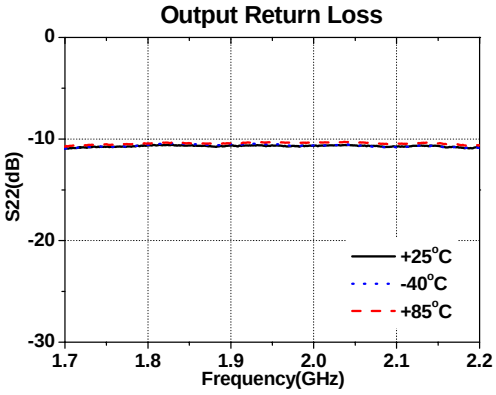
1. Bypass Capacitors(10nF & 1uF) should be added for bypassing the AC noise
2. No matching circuit needed

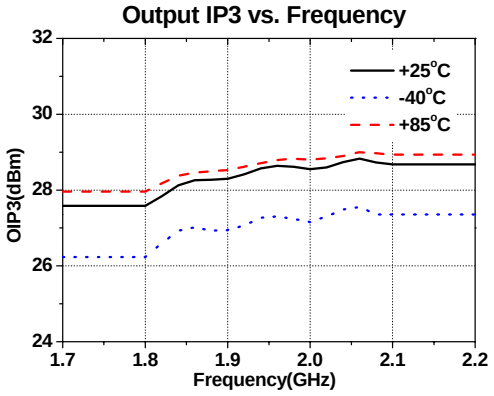
Typical RF Performance

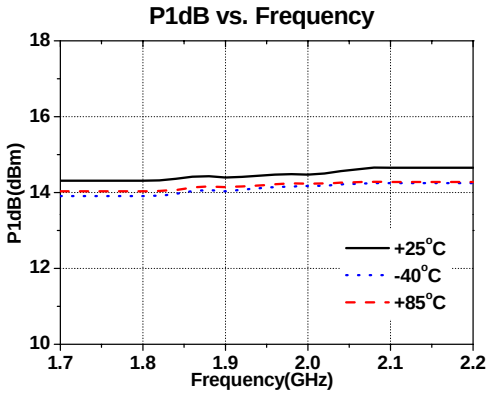










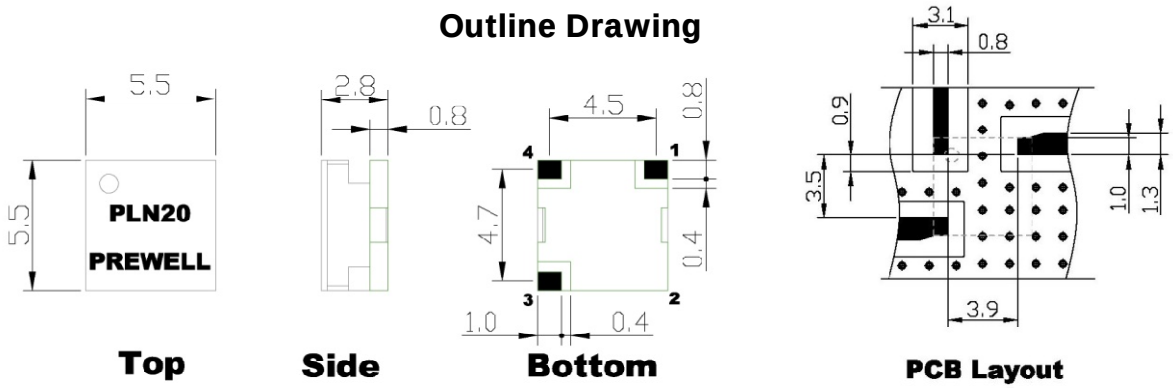


Absolute Maximum Ratings

Parameter	Rating	Unit
Device Voltage	6	V
Device Current	70	mA
RF Power Input	10	dBm
Storage Temperature	-55 to +125	°C
Ambient Operating Temperature	-40 to +85	°C

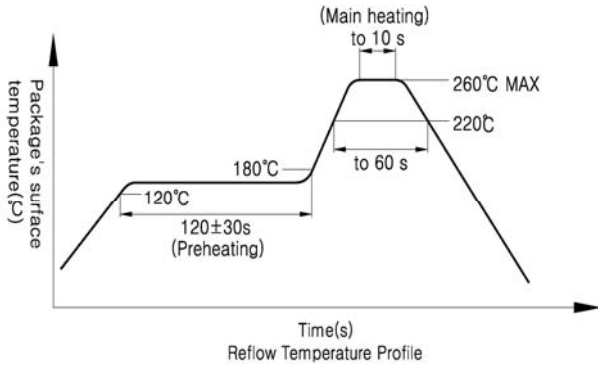
Operation of this device above any of these parameters may cause permanent damage.

Outline Drawing

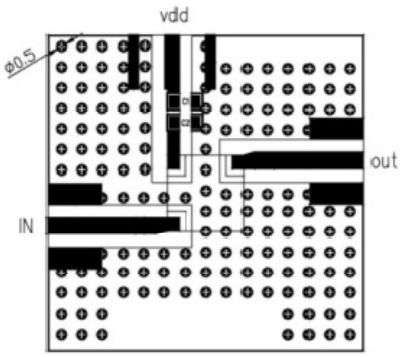


Soldering Time Profile

1. Maximum temperature: +260°C or below.
2. Time at maximum temperature: 10s or less
3. Time of temperature higher than +220°C : 60s or less
4. Preheating time at +120°C to +180°C: 120±30s
5. Maximum number of reflow process : 3times
6. Maximum chlorine content of rosin flux (percentage mass) : 0.2% or less



Evaluation Board Layout (2.3x2.3)



Mounting Instructions

1. Use a large ground pad area with many plated through-holes as shown.
2. We recommend 1 oz copper minimum.
3. Measurement for our datasheet was made on 0.8mm thick FR-4 Board.
4. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
5. RF trace width depends on the board material and construction.
6. All area of GND PAD should be connected to GND