PLF20A

GaAs p-HEMT LNA

Features

- 1920 - 2170MHz
- 14 dB Gain at 1920MHz
- +29.0 dBm Output IP3
- 0.8 dB Noise Figure
- No matching circuit needed
- Low power consumption (3V/35mA)
- Surface mount type

Applications

- LNA for WCDMA/UMTS
- Repeater
- Base Station
- Mobile Infrastructure

Functional Diagram

Function	Pin No.
RF IN	2
RF OUT	5
Vcc	6
Ground	1,3,4

Description

The PLF20A 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 PLF20A 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 PLF series provide the most suitable solutions for LNA in communication systems.

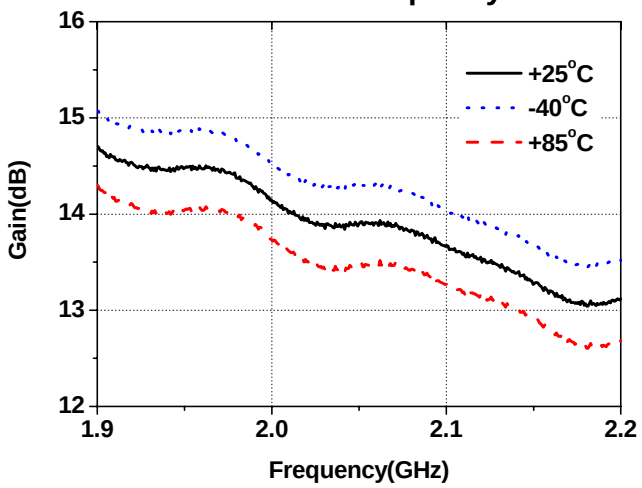
Specifications

Symbol	Parameters	Units	Freq.	Min.	Typ.	Max.
S21	Gain	dB	1920 MHz 2170 MHz		14.4 13.4	
S11	Input Return Loss	dB	1920 MHz 2170 MHz		-18 -18	
S22	Output Return Loss	dB	1920 MHz 2170 MHz		-10 -9	
P1dB	Output Power @1dB compression	dBm	1920 MHz 2170 MHz		14 14	
OIP3	Output Third Order intercept	dBm	1920 MHz 2170 MHz		29.0 29.0	
NF	Noise Figure	dB	1920 MHz 2170 MHz		0.8 0.8	
V / I	Supply voltage / current	V/mA			3.0/35	

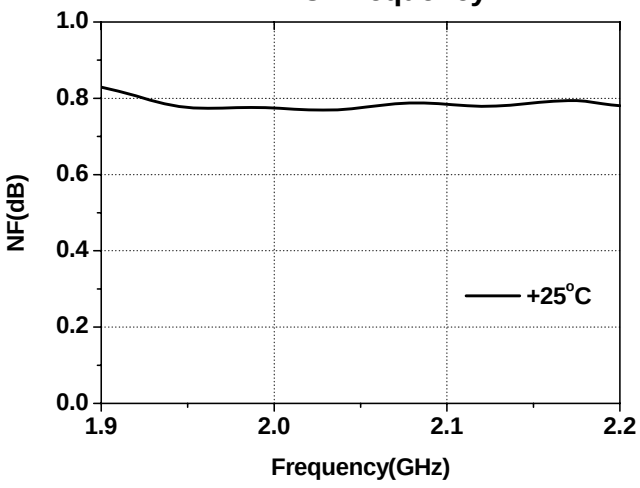
Test Conditions : T=25°C, Supply Voltage=+3.0V, 50ohm System, OIP3 measured with two tones at an output power of +0dBm/tone separated by 1MHz.

Typical RF Performance

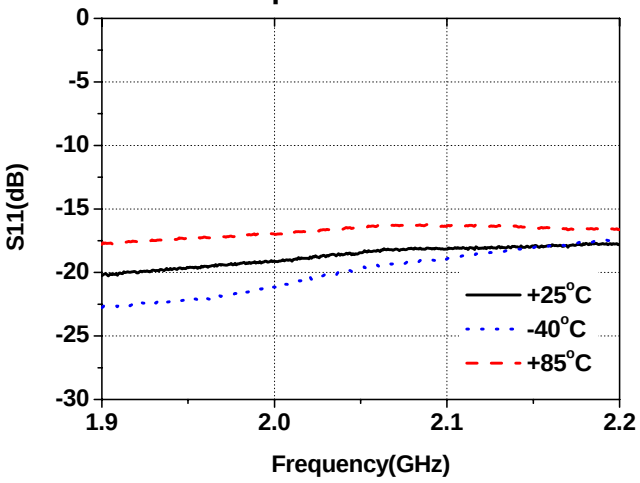
Gain vs. Frequency



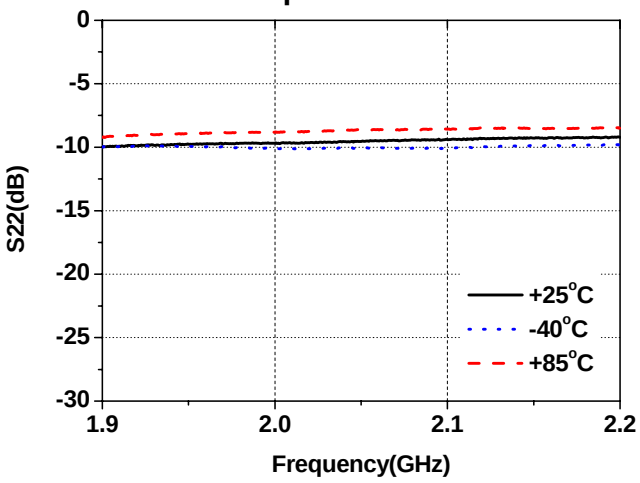
NF vs. Frequency



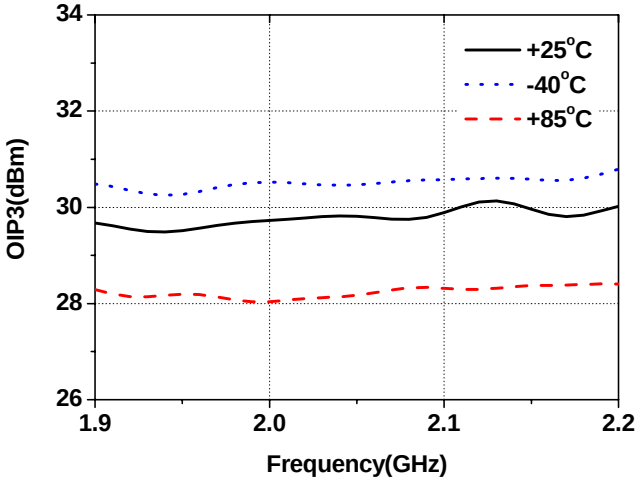
Input Return Loss



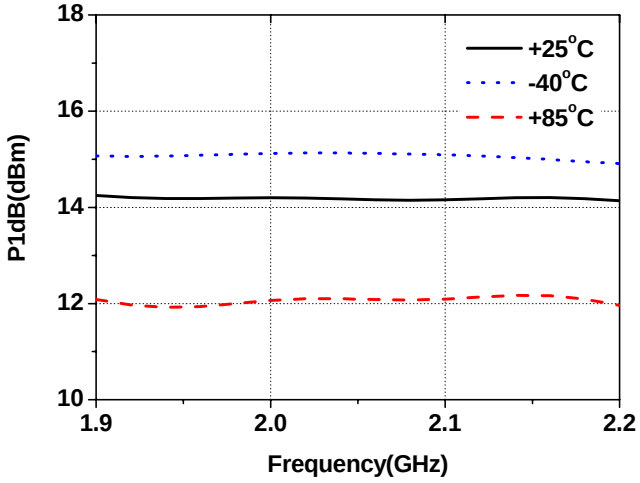
Output Return Loss



Output IP3 vs. Frequency



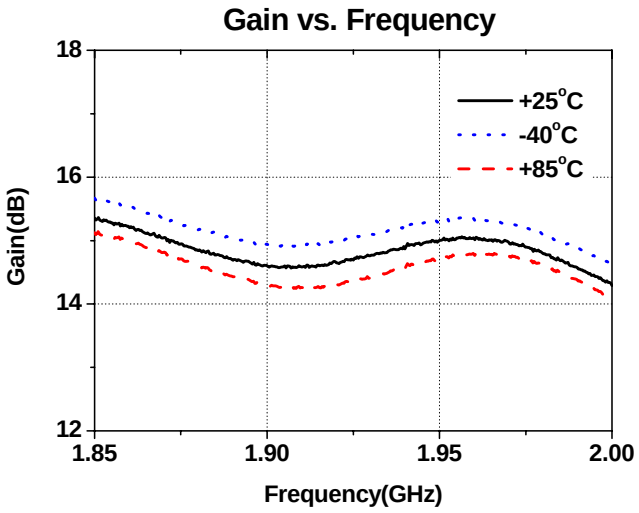
P1dB vs. Frequency

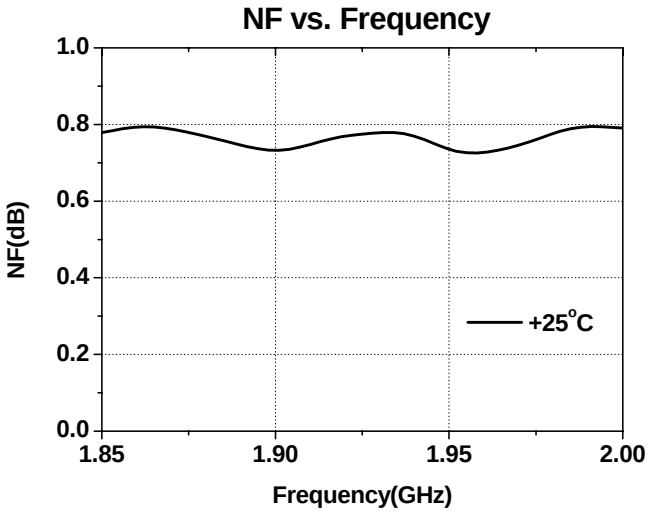


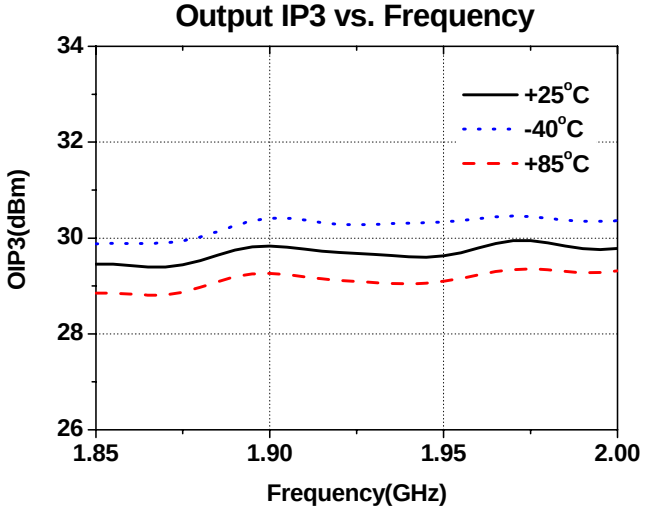
Typical RF Performance for 1850 - 2000MHz Tuned Application Circuit

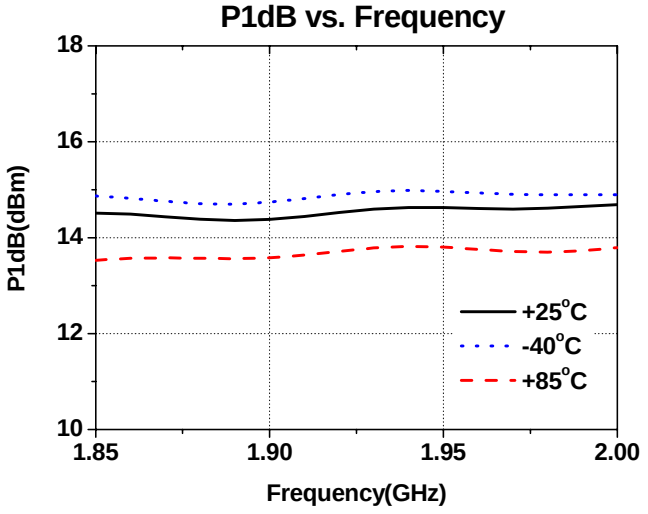
Supply Bias Voltage = 3V, Current= 35mA

Frequency	MHz	1850	2000
S21 : Gain	dB	15.0	14.0
S11 : Input Return Loss	dB	-18	-18
S22 : Output Return Loss	dB	-10	-9
Output P1dB	dBm	14.0	14.0
Output IP3 @3dBm	dBm	29.0	29.0
Noise Figure	dB	0.8	0.8







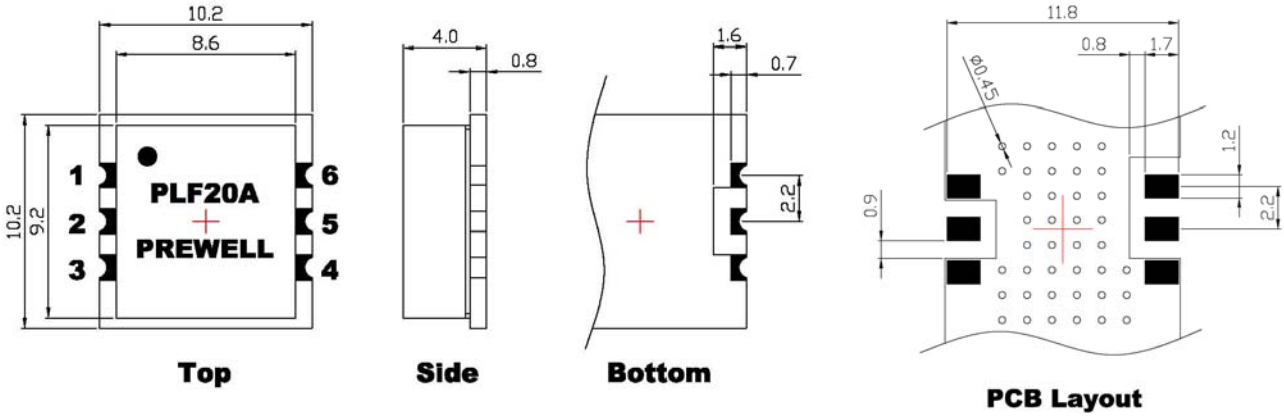


Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	+6	V
Supply Current	60	mA
RF Power Input	10	dBm
Storage Temperature	-55 to +125	°C
Ambient Operating Temperature	-40 to +85	°C

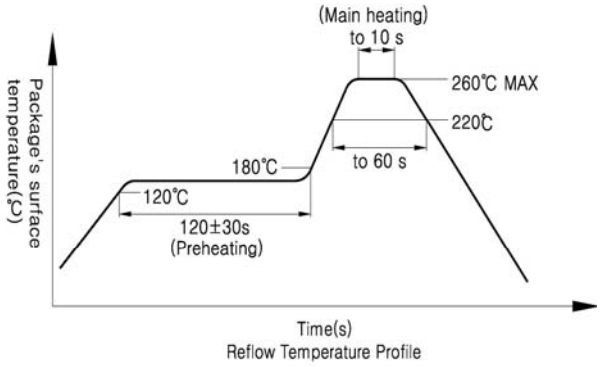
Operation of this device above any of these parameters may cause permanent damage.

Outline Drawing



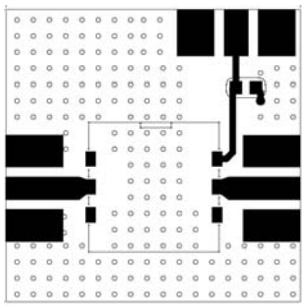
Soldering Time Profile

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



Reflow Temperature Profile

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 data sheet 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.