

# Low Noise Amplifier

## PRODUCT DATASHEET

## RFLNAM12\_EV1

### Features:

- RF Frequency: 8 - 12 GHz
- Small signal gain: 22.5 dB
- Noise Figure: 1.78 dB
- Output P1dB: 17.8 dBm
- Saturated Output Power: 20.8 dBm
- DC drain bias voltage: 4 V
- DC supply current: 90 mA.
- DC Gate Bias Voltage: -0.5 V
- 0.1um GaAs pHEMT Technology.
- Die Size: 1.15 mm \* 1.78 mm.

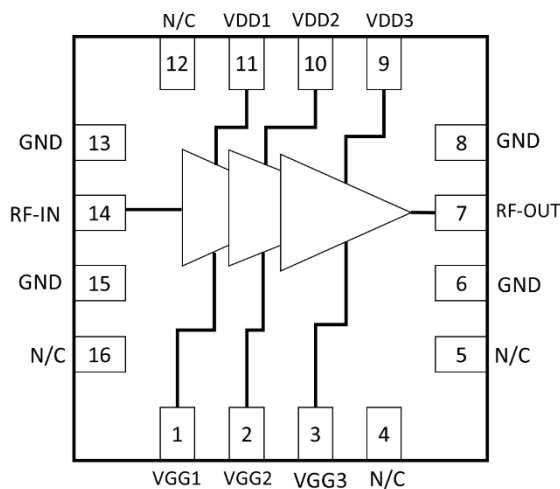
### Applications:

- Radar Systems
- SATCOM
- Electrical Warfare

### Deliverables:

- Sample Ready Die
- Test Results

### Functional Block Diagram:



### Pin Configuration:

Pin No.	Pin Name	Description
6,8,13,15	GND	Ground
11	VDD1	Drain Bias Voltage 1
10	VDD2	Drain Bias Voltage 2
9	VDD3	Drain Bias Voltage 3
1	VGG1	Gate Bias Voltage 1
2	VGG2	Gate Bias Voltage 2
3	VGG3	Gate Bias Voltage 3
14	RF-IN	RF Input
7	RF-OUT	RF Output
4,5,12,16	N/C	Not Connected

### Description:

RFLNAM12 is a three-stage Low Noise Amplifier operating from 8-12 GHz, intended for front-end signal amplification in RF receiver systems. The amplifier provides 21 dB of small-signal gain, with input and output matched to 50 ohms using on-chip DC blocking capacitors.

The device is specifically designed for use in Fixed Wireless Broadband, Microwave Links, WiFi, IoT, SATCOM, and Radar Systems Applications.

The Technology used to design the LNA is a 0.1 μm GaAs pHEMT Process.

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### Electrical Specification:

Freq= 8 - 12 GHz, VDD1=VDD2= VDD3=4V, VGG1=VGG2=VGG3= -0.5V, ID= 90 mA, Zo=50 Ω

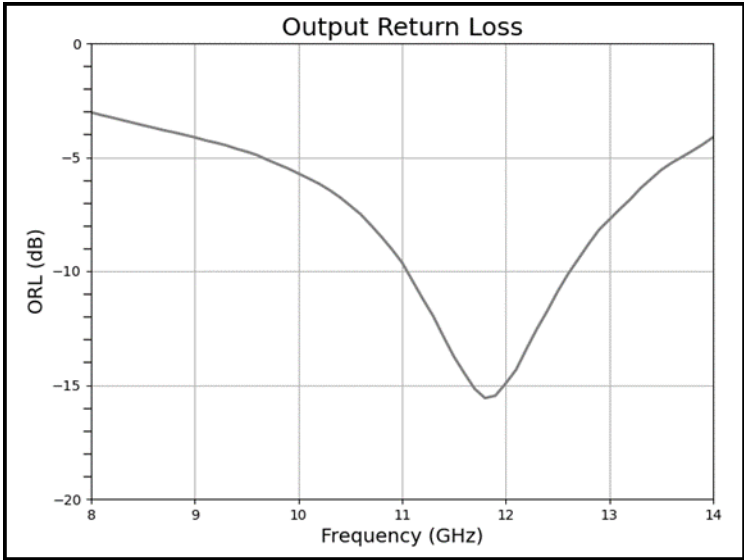
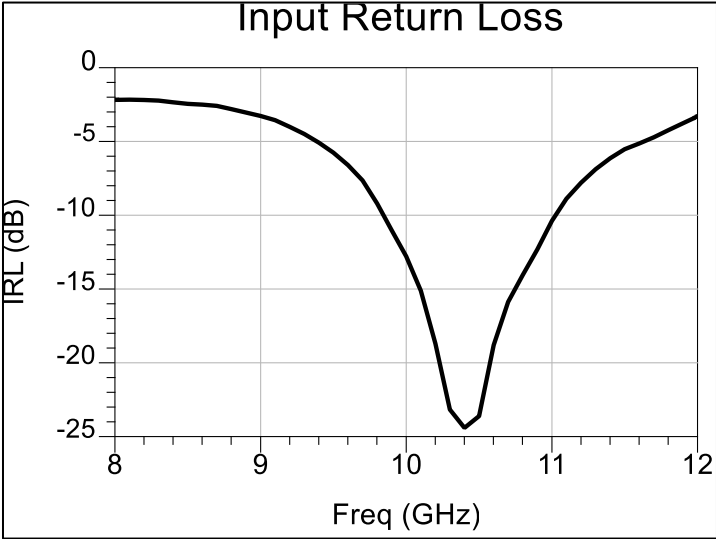
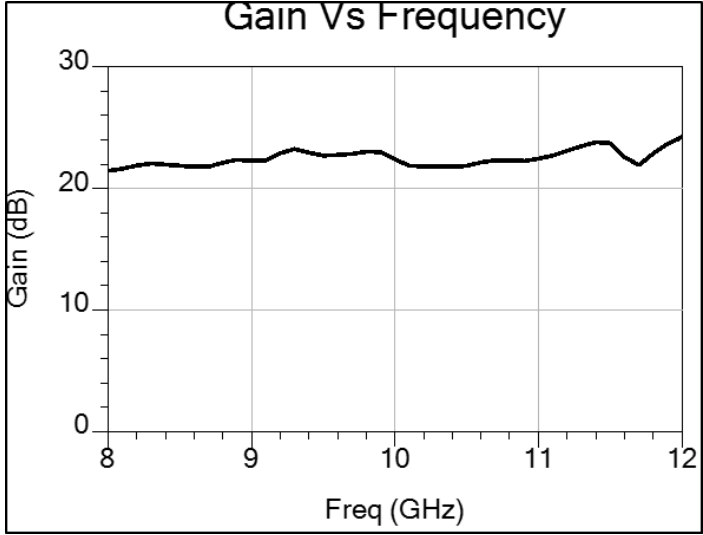
Parameters	Test Condition	Units	Typ
Gain	8 GHz	dB	21.5
	10 GHz		22.5
	12 GHz		24
Output P1 dB	8 GHz	dBm	
	10 GHz		17.8
	12 GHz		
OIP3 Pin = -23 dBm Δf = 100 kHz	8 GHz	dBm	
	10 GHz		27.2
	12 GHz		
Noise Figure	8 GHz	dB	
	10 GHz		1.78
	12 GHz		
Input Return Loss	8 GHz	dB	
	10 GHz		13
	12 GHz		
Output Return Loss	8 GHz	dB	
	10 GHz		6
	12 GHz		
<b>Operating Bias Conditions</b>			
Drain Current (Id)	-	mA	90
Drain Voltage (VDD)	-	V	4
Gate Voltage (VGG)	-	V	-0.5

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### EVB Test Results:

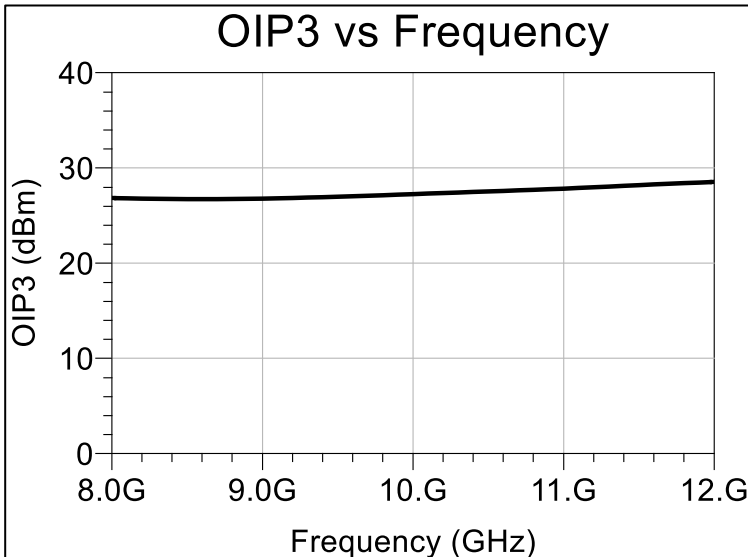
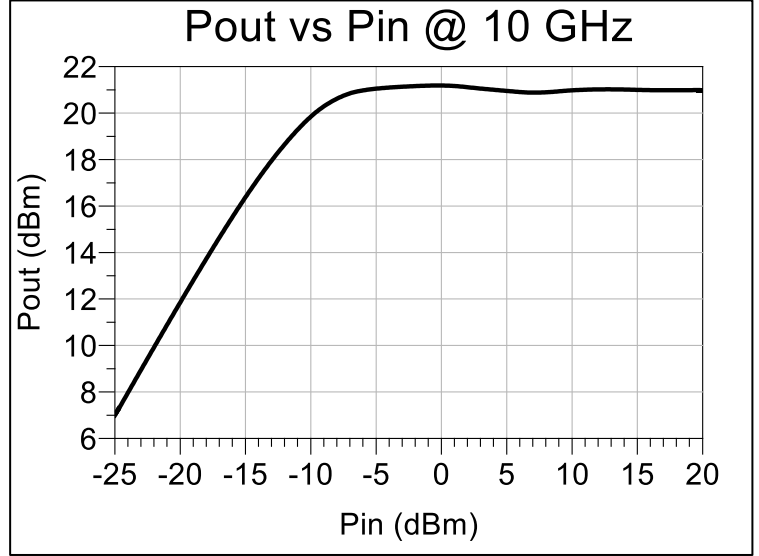
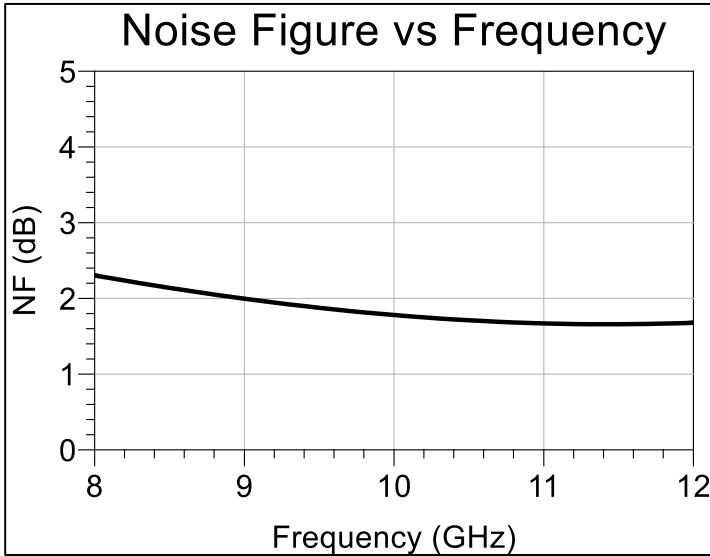


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### Typical Performance Curves:

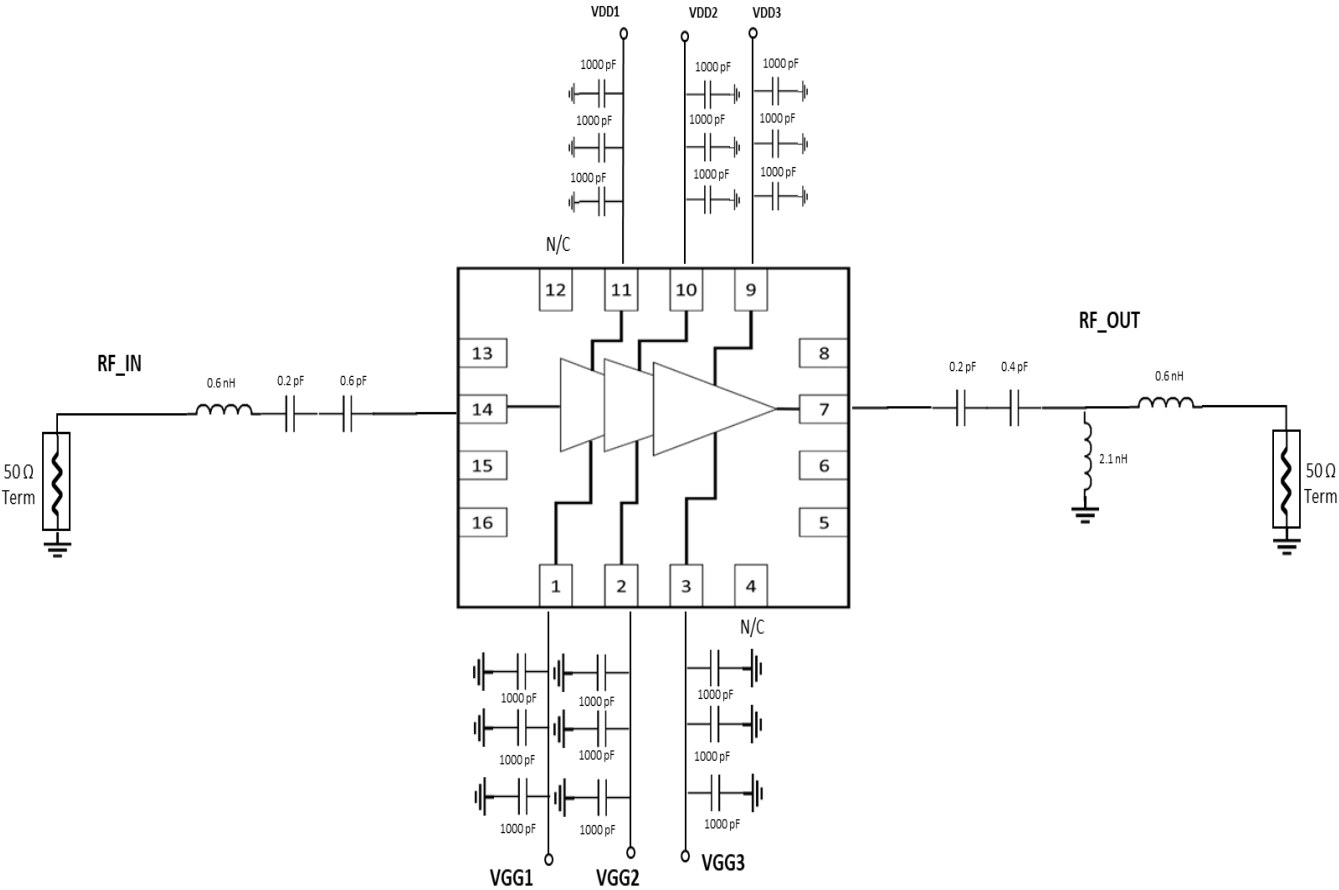


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### Application Diagram:



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