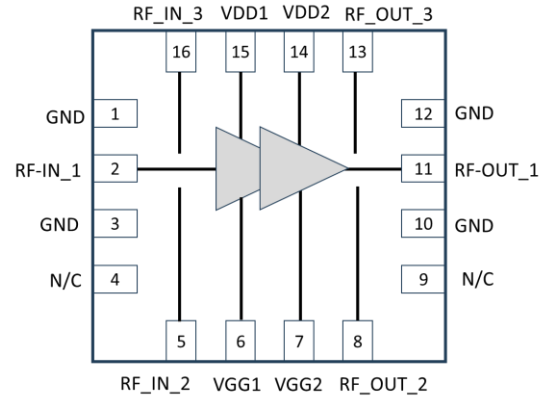


### Features:

- RF Frequency: 12 to 24 GHz
- Small signal gain: 16.9/14.3/11.5 dB
- Input return loss: 14.1/13.7/10.2 dB
- Output return loss: 12.6/16.2/14.5 dB
- Noise figure: 1.8/2.3/2.4 dB
- Output P1 dB: 19.7/21.2/21.2 dBm
- Saturated output power: 21.8/25/24.1 dBm
- DC drain bias voltage: 4 V
- Dc supply current: 127.6 mA
- 100 nm GaAs pHEMT Technology
- Die Size: 0.9mm\*1.78mm

### Functional Block Diagram



### Description:

RFTLN20 is a two-stage low-noise amplifier with flat gain over wide bandwidth, low Noise Figure, high isolation, stability, and high linearity. The LNA is designed to operate from 12-24 GHz using a 0.1 um GaAs pHEMT process.

The designed LNA, bias current, and gain can be set with the gate bias to allow the user to customize the current, gain, and NF value to fit the application.

The LNA offers 1.8 dB, 2.3 dB, and 2.4 dB noise figures, 16.9 dB & 14.3 dB, 11.5 dB of small signal gain, with low noise figure, along with the flexibility of setting current and gain, making this LNA an ideal front-end amplifier in 5G and SATCOM applications. Results are shown with all parasitic & coupling effects at the desired frequency.

### Pin Configuration

Pin No.	Pin Name	Description
2	RF_IN 1	RF Input 1
5	RF_IN 2	RF Input 2
16	RF_IN 3	RF Input 3
11	RF_OUT 1	RF Output 1
8	RF_OUT 2	RF Output 2
13	RF_OUT 3	RF Output 3
1,3,10,12	GND	Ground
6	VGG 1	Gate Voltage 1
7	VGG 2	Gate Voltage 2
15	VDD 1	Drain Voltage 1
14	VDD 2	Drain Voltage 2

### Applications :

- Satellite Communications
- Radar
- Automotive radar
- Astronomical observations

### Deliver ables:

- Sample Ready Packaged Die
- Test Results
- Product Datasheet

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### Electrical Specification:

Freq=12-20 GHz, VDD1= VDD2=4V, VGG1=VGG2=-0.5V, ID= 128.4mA, Zo=50 Ω

Parameters	Test Condition	Units	Typ
Gain	12-16 GHz	dB	16.9
	16-20 GHz		14.3
	20-24GHz		11.5
Output P1 dBm	12-16 GHz	dBm	19.7
	16-20 GHz		21.2
	20-24GHz		21.2
OIP3 Pin= -10 dBm Δf = 50MHz	12-16 GHz	dBm	32
	16-20 GHz		34.2
	20-24GHz		35.3
Noise Figure	12-16 GHz	dB	1.8
	16-20 GHz		2.3
	20-24GHz		2.4
Input Return Loss	12-16 GHz	dB	14.1
	16-20 GHz		13.7
	20-24GHz		10.2
Output Return Loss	12-16 GHz	dB	12.6
	16-20 GHz		16.2
	20-24GHz		14.5
<b>Operating Bias Conditions</b>			
Drain Current (Id)	-	mA	127.6
Drain Voltage (VDD)		V	4
Gate Voltage (VGG)	-	V	-0.5

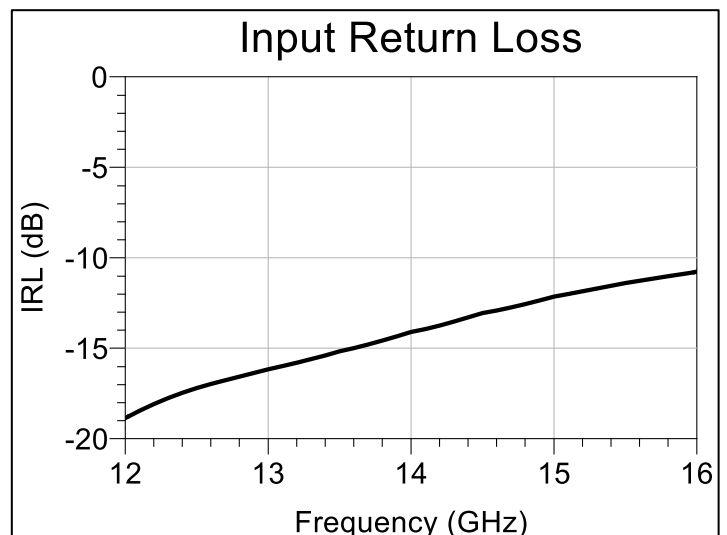
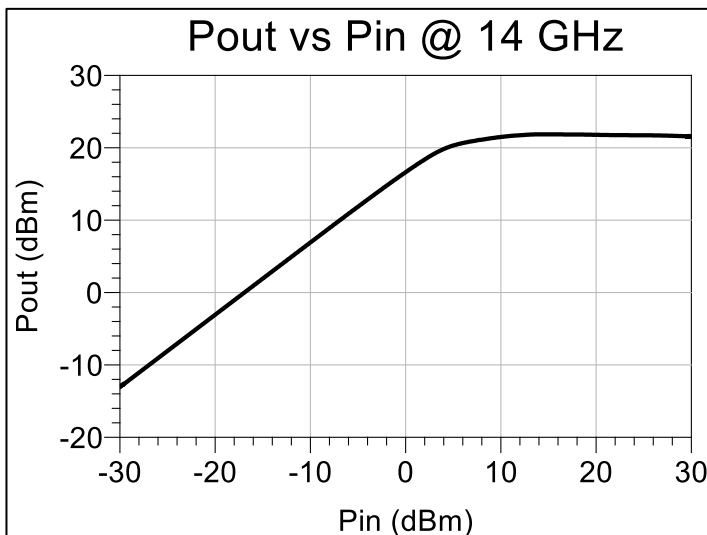
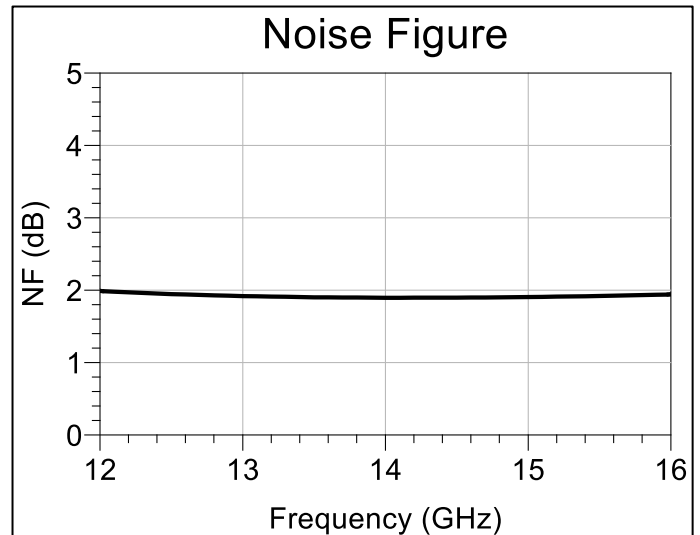
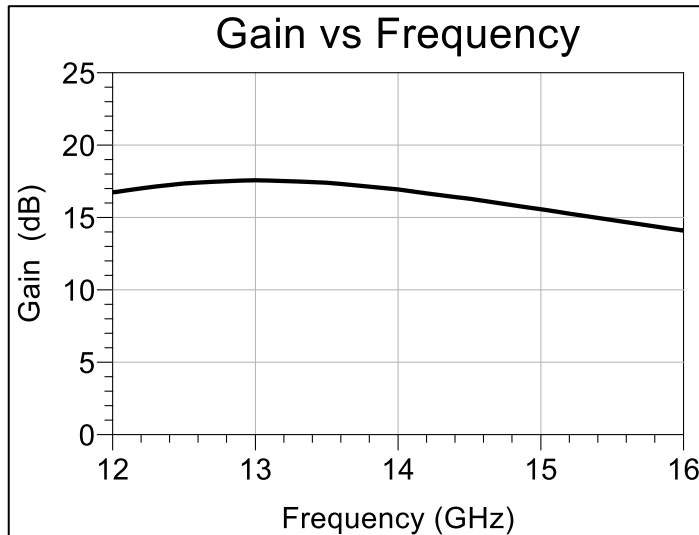
# Low Noise Amplifier



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RFTLN20

## Typical Performance Curves (12-16 GHz):



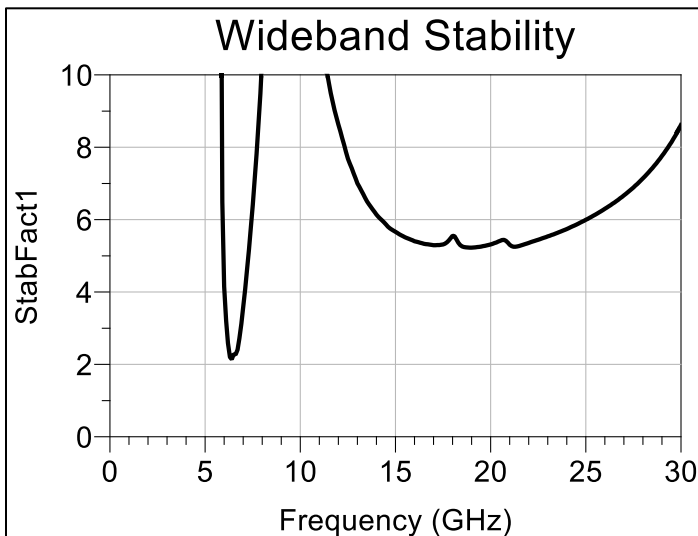
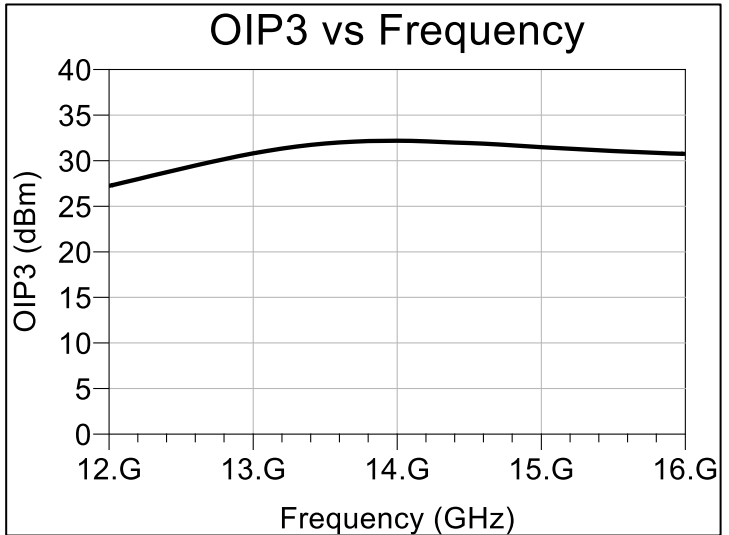
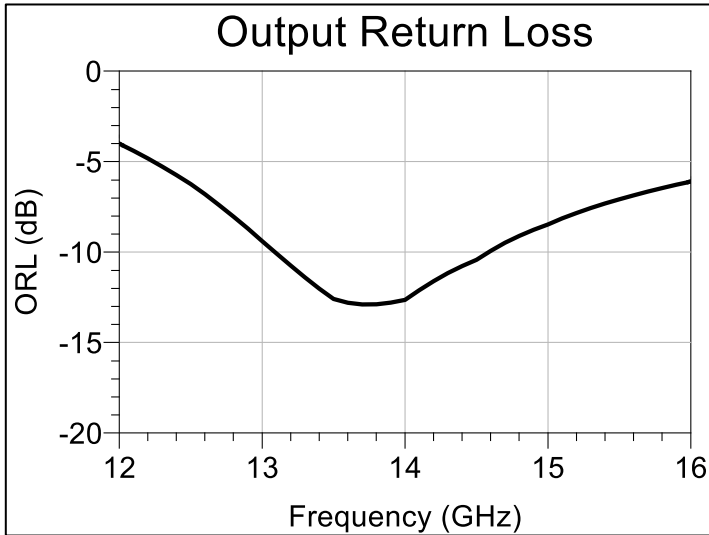
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# Low Noise Amplifier



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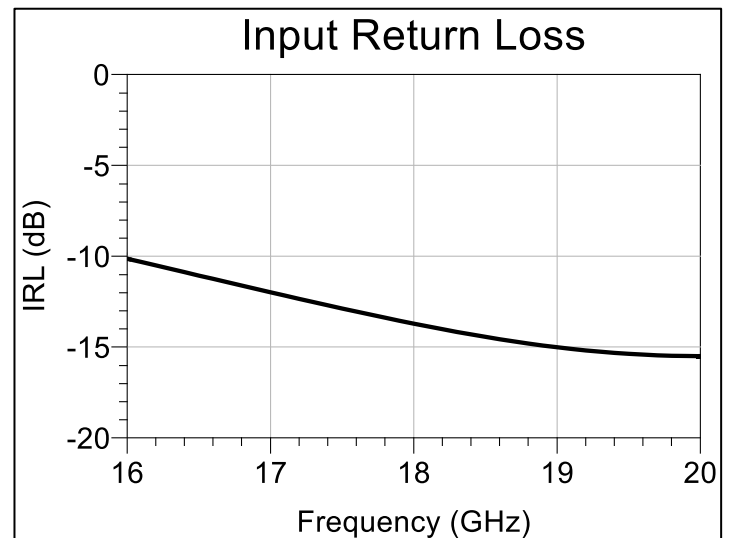
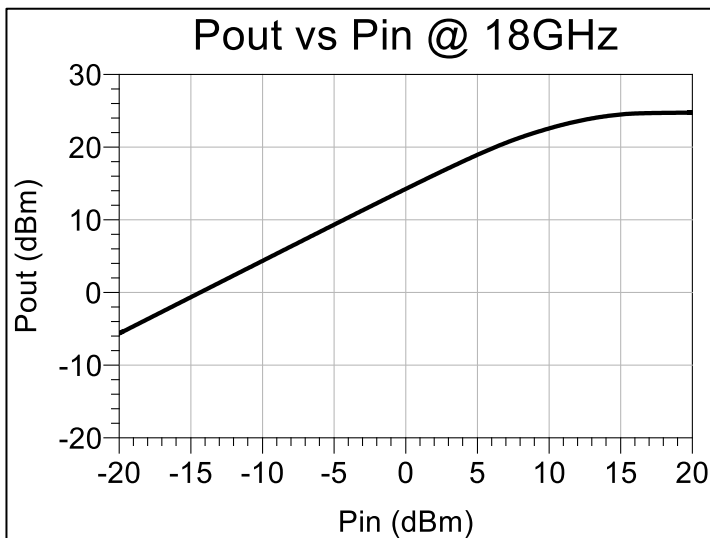
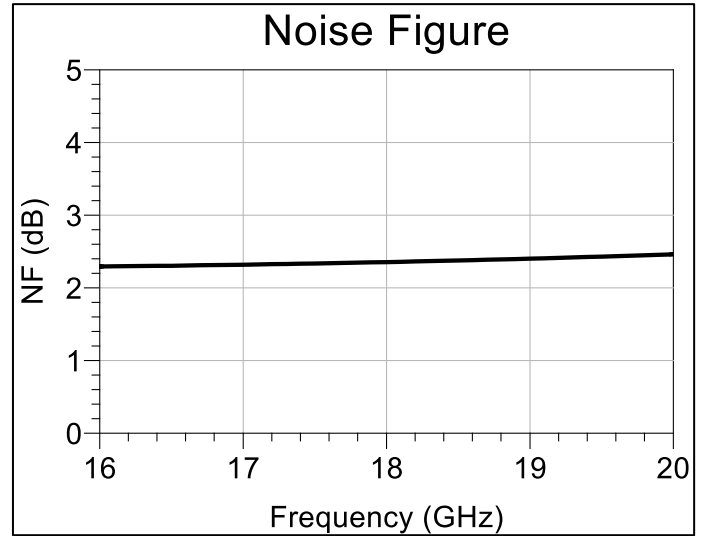
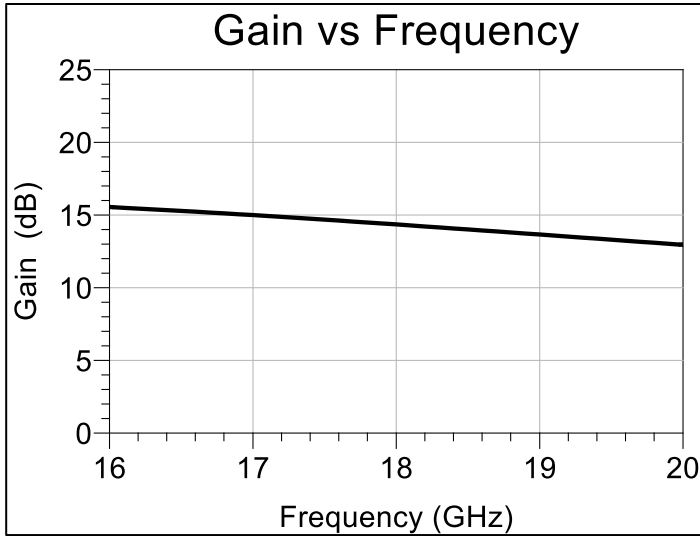
# Low Noise Amplifier

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## Typical Performance Curves (16-20 GHz):



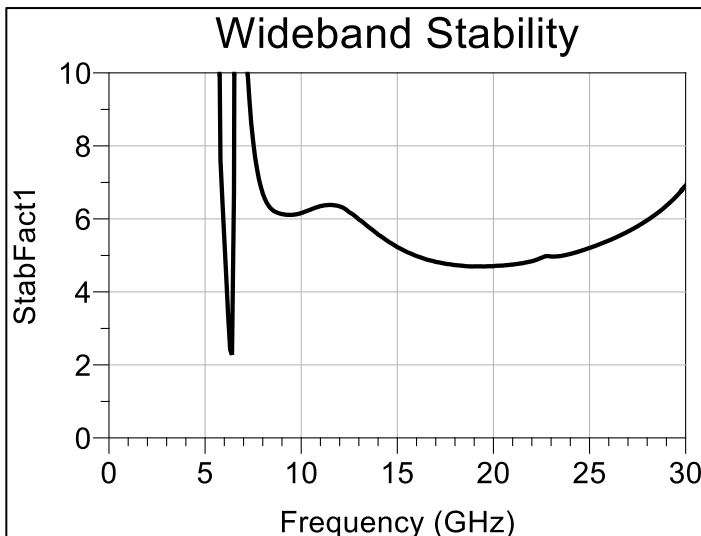
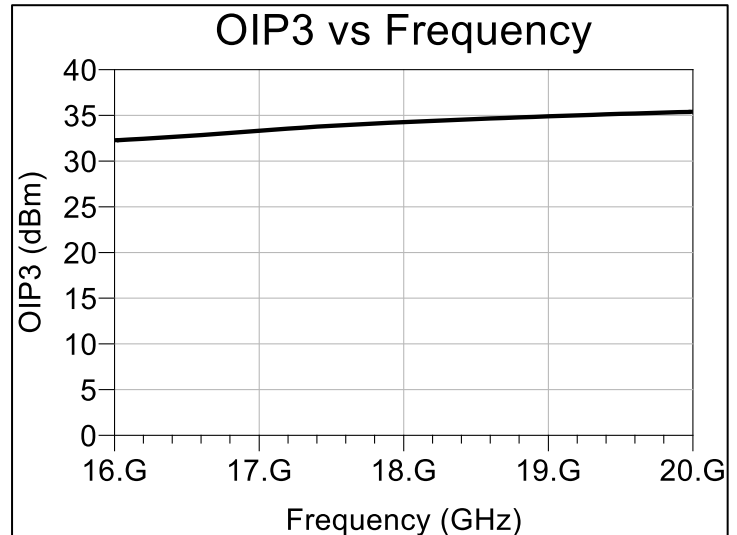
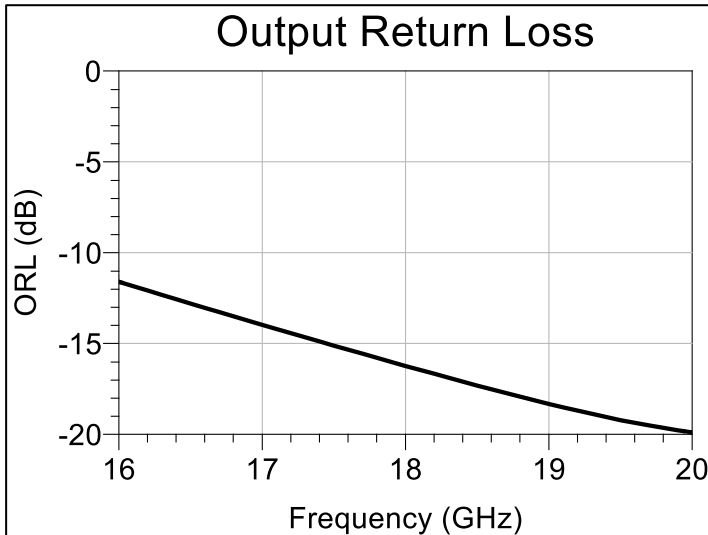
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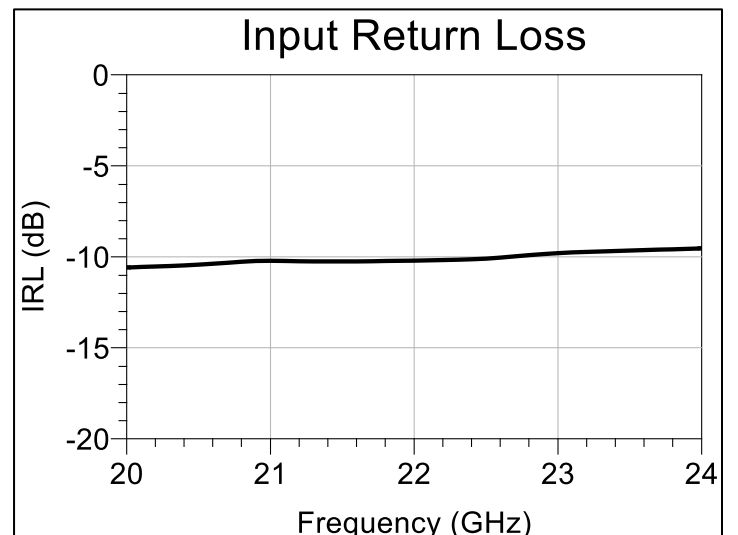
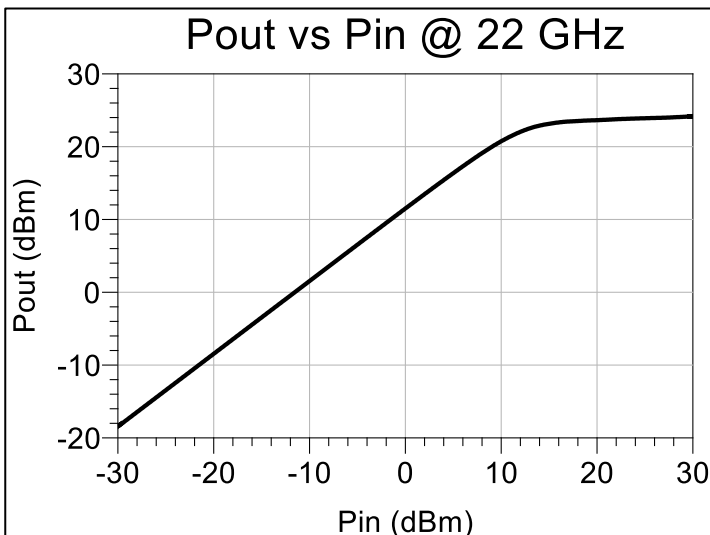
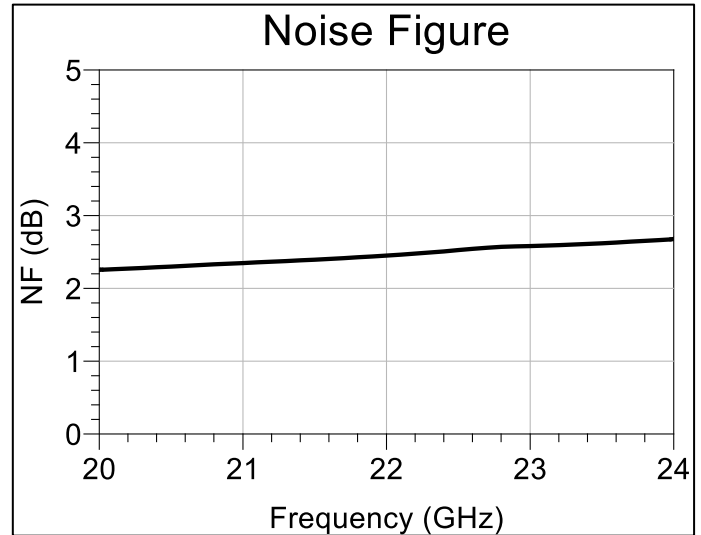
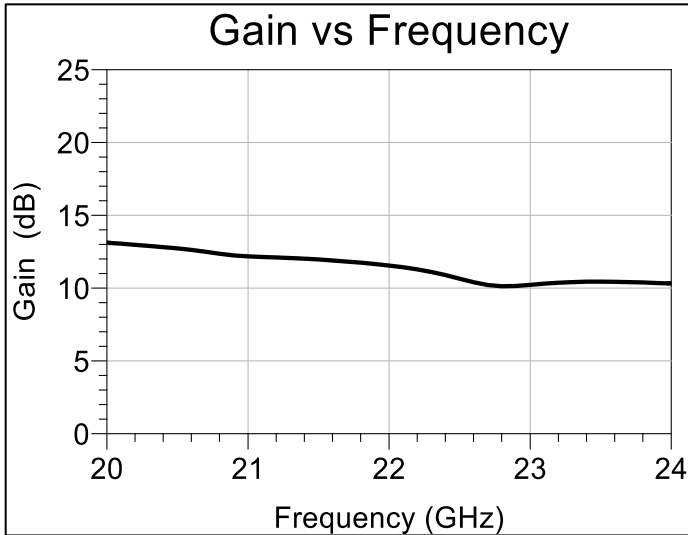
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## Typical Performance Curves (20-24 GHz):



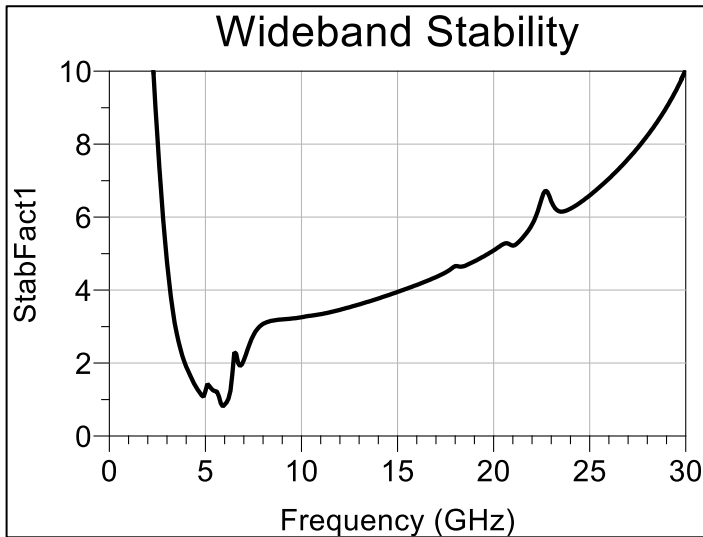
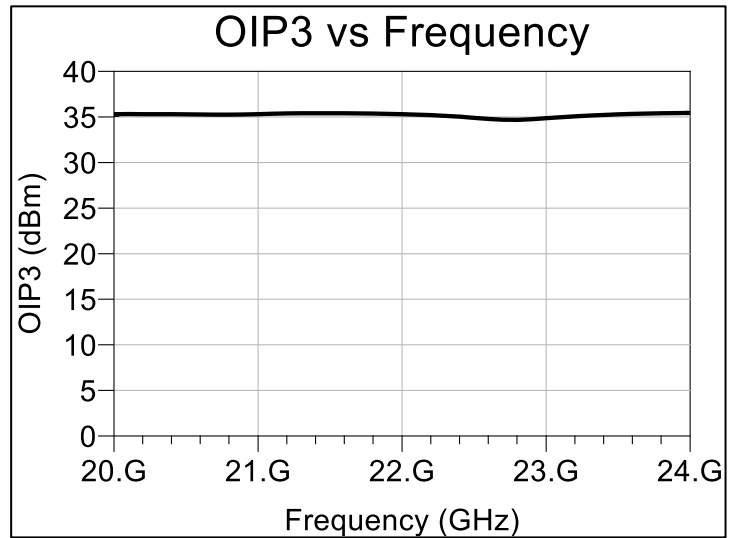
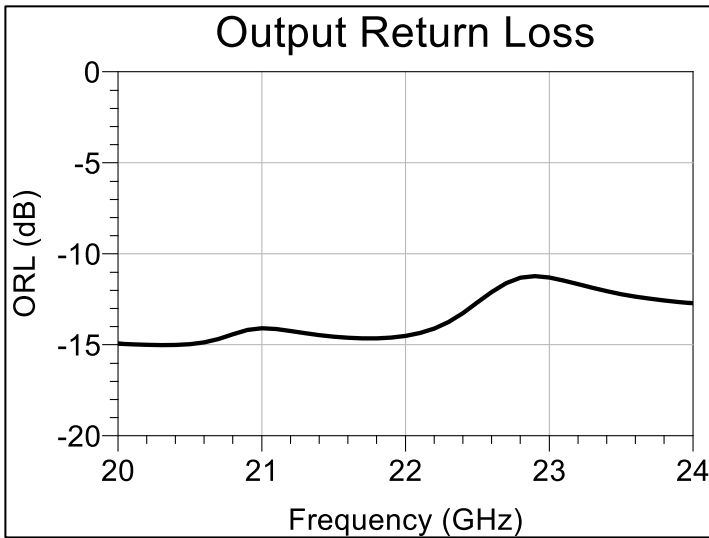
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# Low Noise Amplifier



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JUNE 2026

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