Power Amplifier

PRODUCT DATASHEET RFPA12

Features:

- RF Frequency: 8 - 12 GHz
- Small signal gain: 17.5 dB
- Output P1dB: 25.6 dBm
- Saturated Output Power: 28.2 dBm
- DC drain bias voltage: 1.9 V
- DC gate bias voltage: -0.6 V
- DC supply current: 150 mA
- 0.1um GaAs pHEMT Technology
- Die Size: 1.15 mm * 1.78 mm

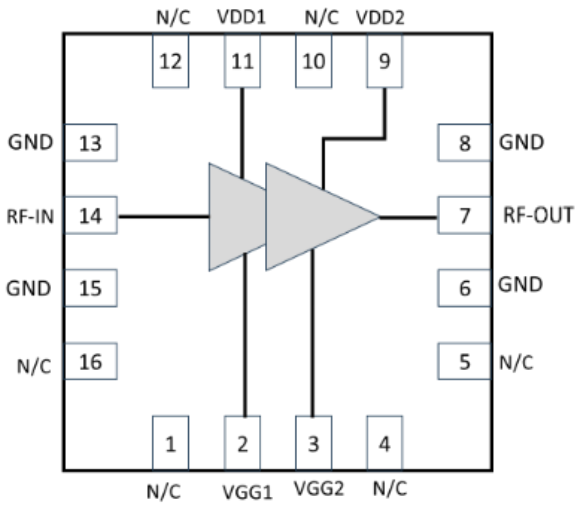
Applications:

- Satellite communication
- Electronic warfare systems
- Military communication systems

Deliverables:

- Sample Ready Die
- Product Datasheet

Functional Block Diagram



Pin Configuration:

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

Description:

RFPA12 is a two-stage power amplifier that operates from 8-12 GHz, and it is used to drive the high-power amplifier. The amplifier provides 17.5 dB of small signal gain. The input and output are matched to 50 ohms via on-chip DC-blocking capacitors.

The device is specifically designed for use in 8-12 GHz frequency in Fixed Wireless Broadband, Microwave Link, Wi-Fi, IoT, Radar Systems, and SATCOM Applications.

The Technology used to design PA is a 0.1um GaAs pHEMT Process.

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Electrical Specification:

Freq= 8-12 GHz, VDD1=VDD2= 1.9V, VGG1= VGG2= -0.6 V, ID= 150 mA, Zo=50 Ω

Parameters	Test Condition	Units	Typ
Gain	8 GHz	dB	17
	10 GHz		17.5
	12 GHz		17.5
Output P1 dB	8 GHz	dBm	
	10 GHz		25.6
	12 GHz		
OIP3 Pin= -4 dBm Δf = 100 kHz	8 GHz	dBm	
	10 GHz		35.5
	12 GHz		
Input Return Loss	8 GHz	dB	16.5
	10 GHz		11.5
	12 GHz		9.5
Output Return Loss	8 GHz	dB	2.5
	10 GHz		14.5
	12 GHz		10.5
Operating Bias Conditions			
Drain Current (Id)	-	mA	150
Drain Voltage (VDD)	-	V	1.9
Gate Voltage (VGG)	-	V	-0.6

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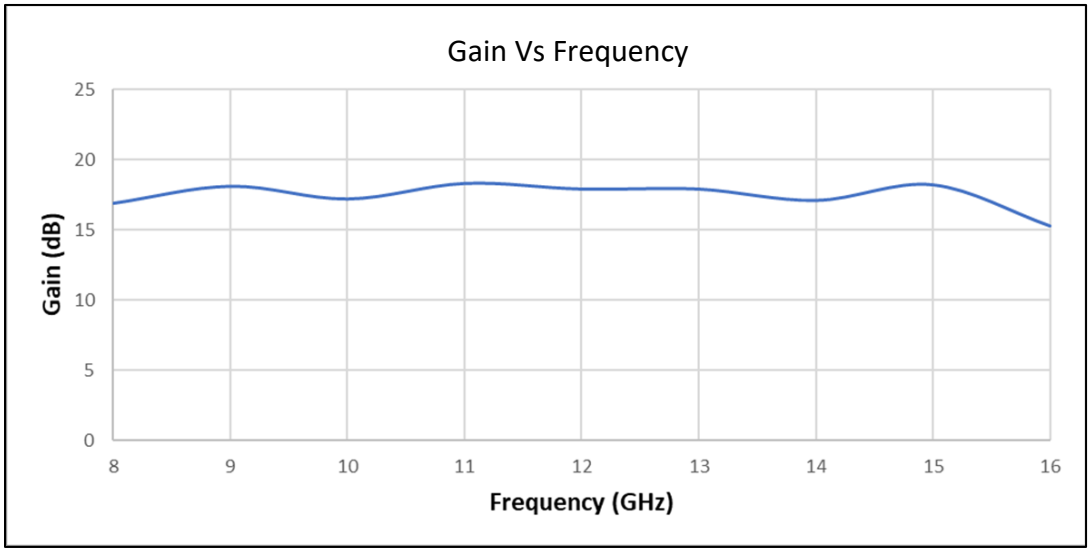
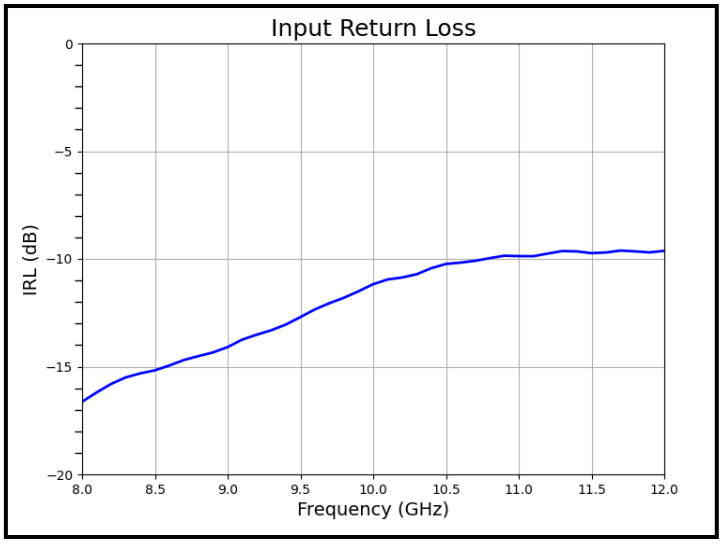
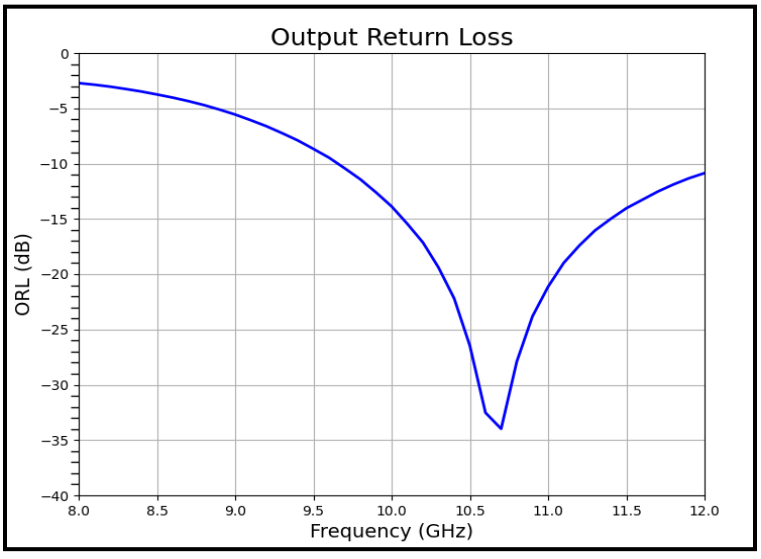
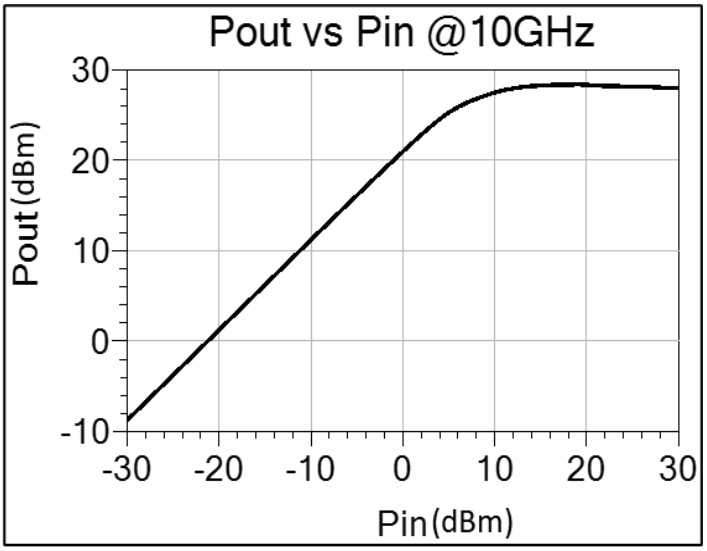
On-Wafer Performance Curves:

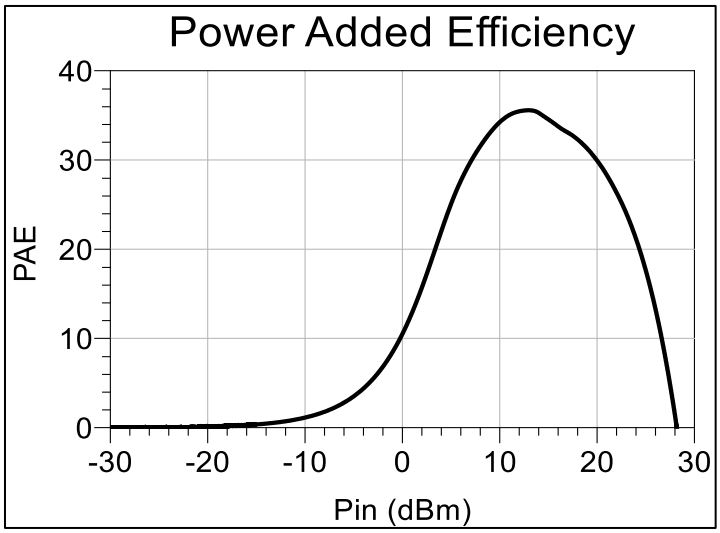


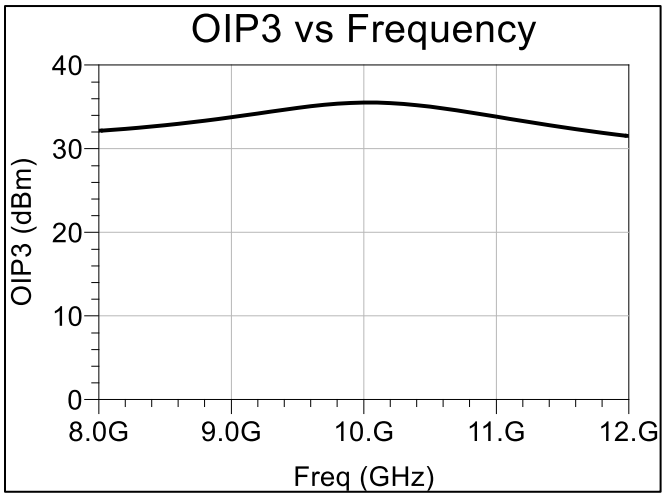




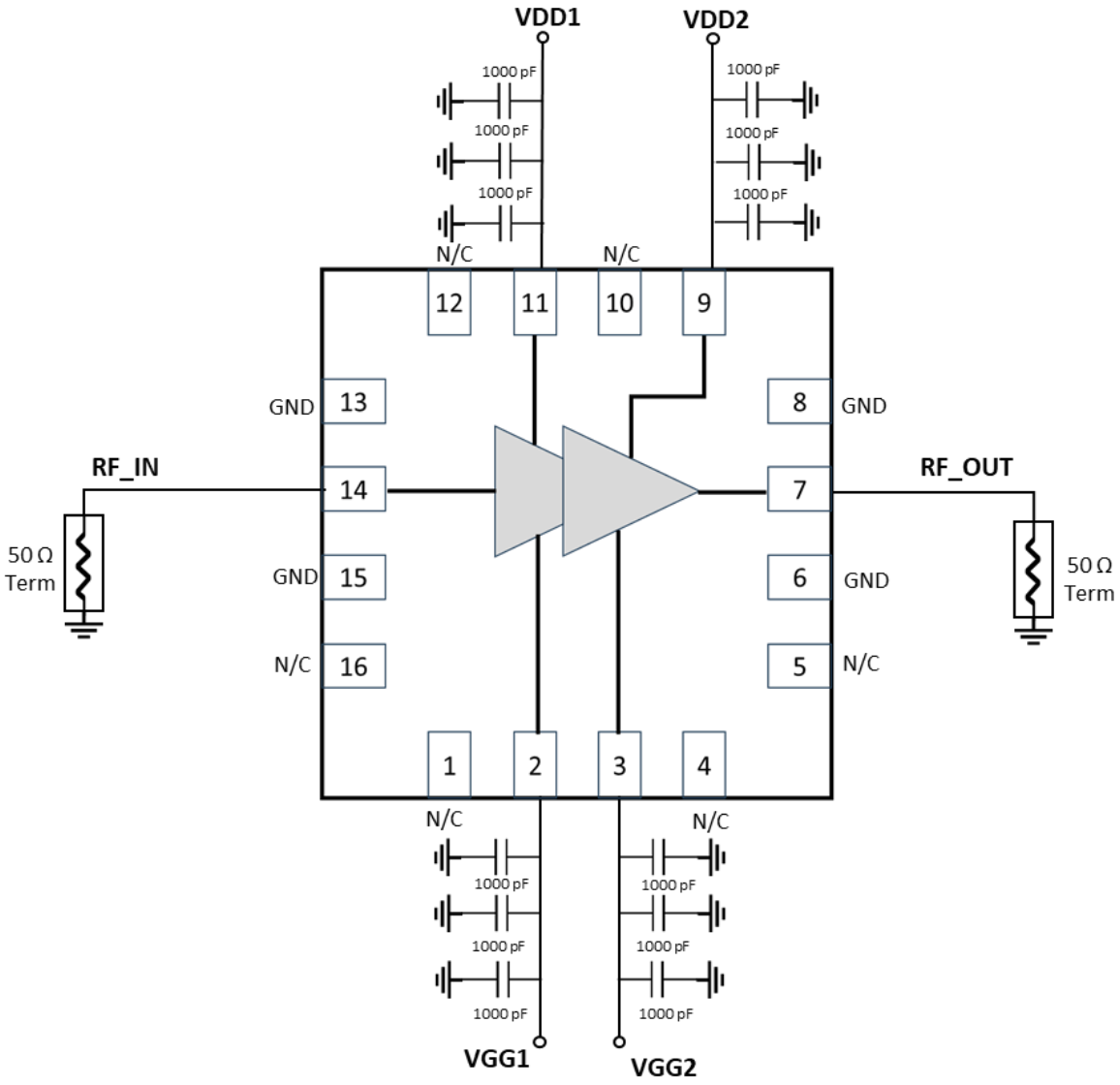
Typical Performance Curves:







Application Diagram:



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