Driver Amplifier

PRODUCT DATASHEET RFDA06_EV1

Features:

- RF Frequency: 2-6 GHz
- Small signal gain: 24.8 dB
- Output P1dB: 23.5 dBm
- Saturated Output Power: 30 dBm
- DC drain bias voltage: 5V
- DC supply current: 110 mA
- DC Gate Bias Voltage: -0.5V
- 0.1um GaAs pHEMT Technology
- Die Size: 0.9 mm * 1.45 mm

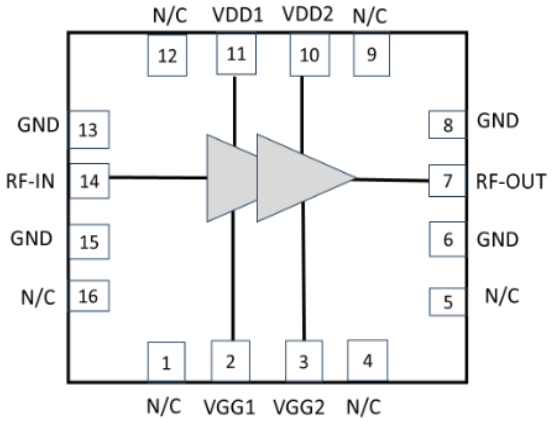
Applications:

- Wireless Communication System
- SATCOM
- RADAR
- Aerospace & Defense Systems

Deliverables:

- Sample Ready Die
- Product Datasheet

Functional Block Diagram:



Pin Configuration:

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

Description:

RFDA06 is a two-stage driver amplifier designed for operation in the 2-6 GHz frequency range and intended for driving high-power amplifiers.

Although optimized for 2-6 GHz operation, wafer-level measurement results demonstrate useful gain performance up to 12 GHz, enabling its use in higher-frequency RF and microwave applications.

The amplifier is fabricated using a 0.1 µm GaAs pHEMT process. The results presented in this datasheet include all relevant parasitic and coupling effects at the specified frequencies.

Electrical Specification:

Freq= 2 - 6 GHz, VDD1=VDD2= 5V, VGG1=VGG2= -0.5 V, ID= 110 mA, Zo=50 Ω

Parameters	Test Condition	Units	Typ
Gain	2 GHz	dB	19.8
	4 GHz		24.8
	6 GHz		19.8
Output P1 dB	2 GHz	dBm	
	4 GHz		23.5
	6 GHz		
OIP3 Pin = 1 dBm Δf = 50MHz	2 GHz	dBm	
	4 GHz		30.9
	6 GHz		
Noise Figure	2 GHz	dB	
	4 GHz		1.5
	6 GHz		
Input Return Loss	2 GHz	dB	9
	4 GHz		19
	6 GHz		8
Output Return Loss	2 GHz	dB	12
	4 GHz		19
	6 GHz		14.8
Operating Bias Conditions			
Drain Current (Id)	-	mA	110
Drain Voltage (VDD)	-	V	5
Gate Voltage (VGG)	-	V	-0.5

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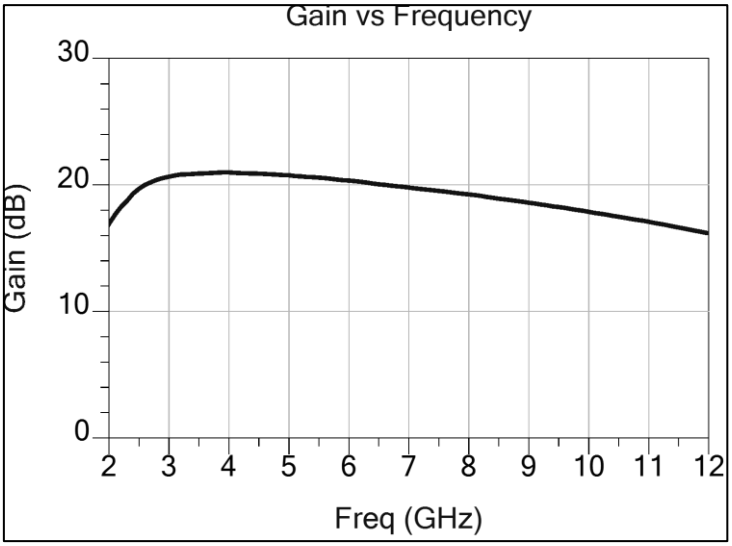
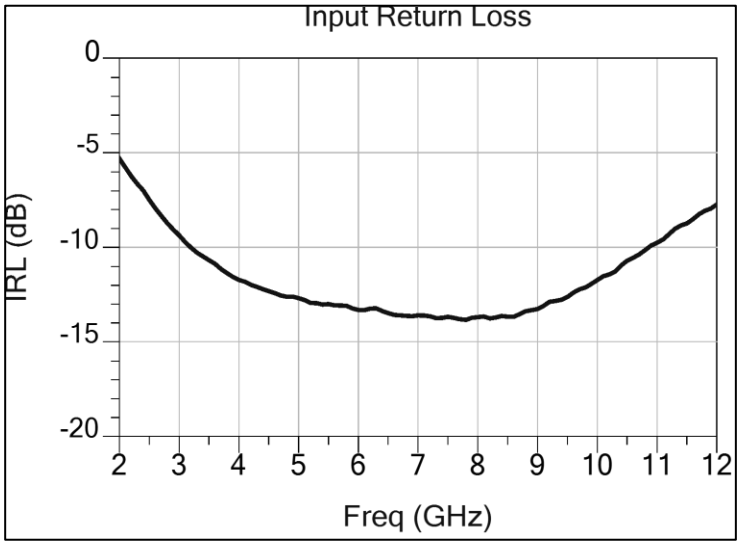
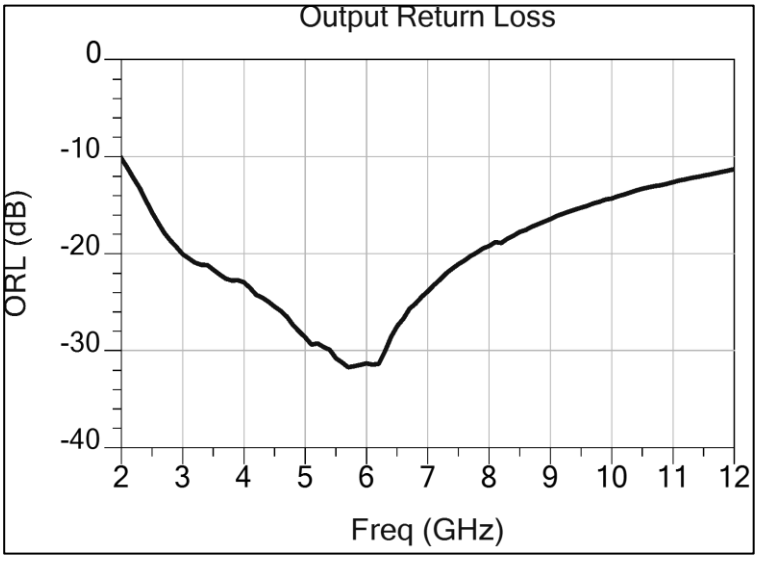
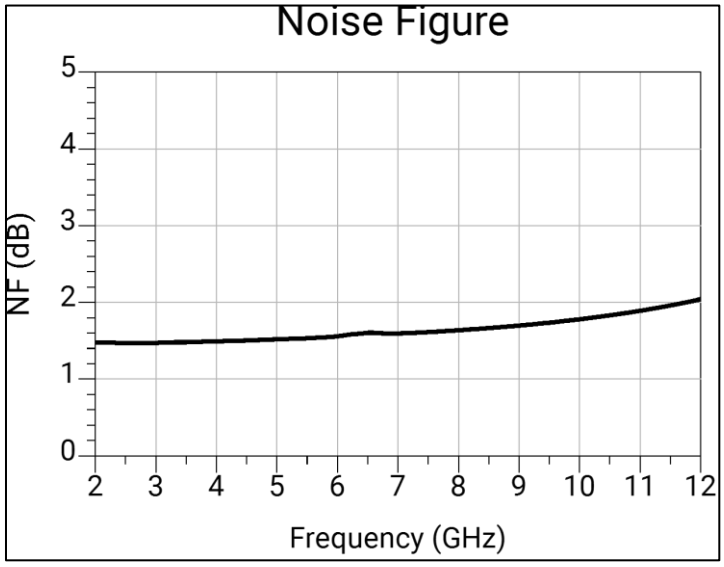
Wafer Level Measured Results:

Freq= 2 - 12 GHz, VDD1=VDD2= 5V, VGG1=VGG2= -0.3 V, ID= 60 mA



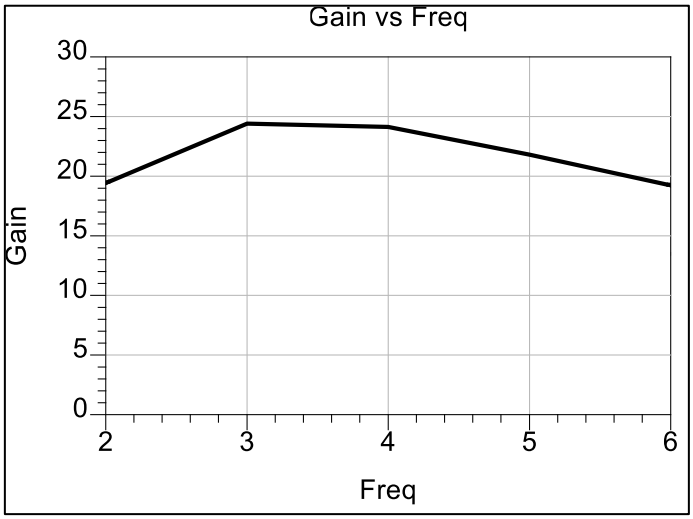


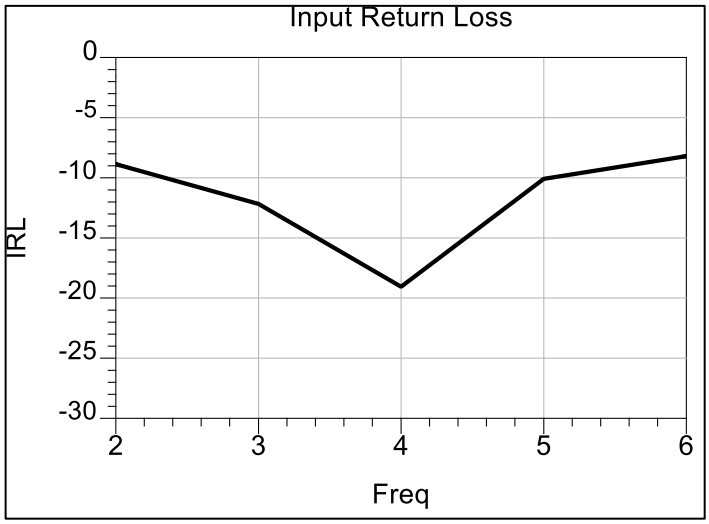


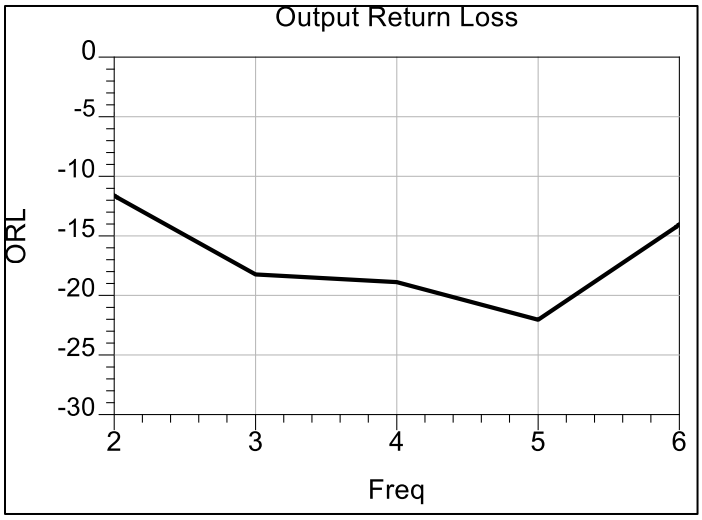


EVB Measured Results:

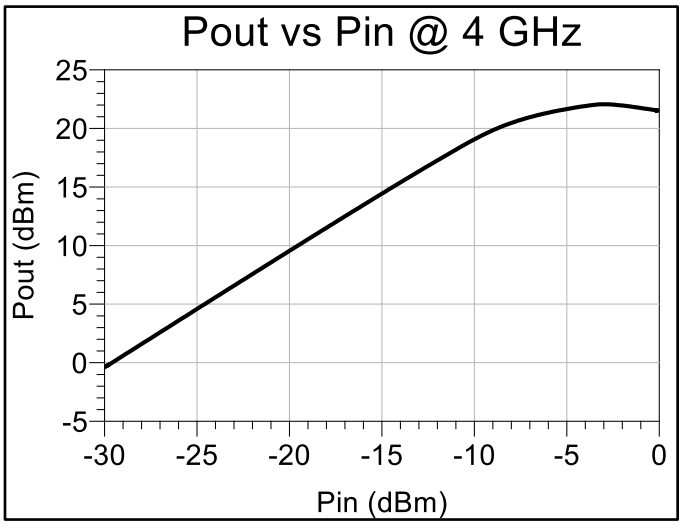
Small Signal Analysis:

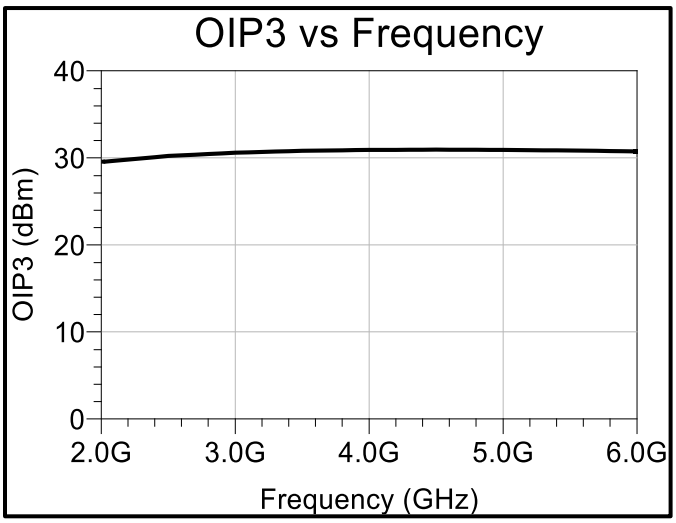




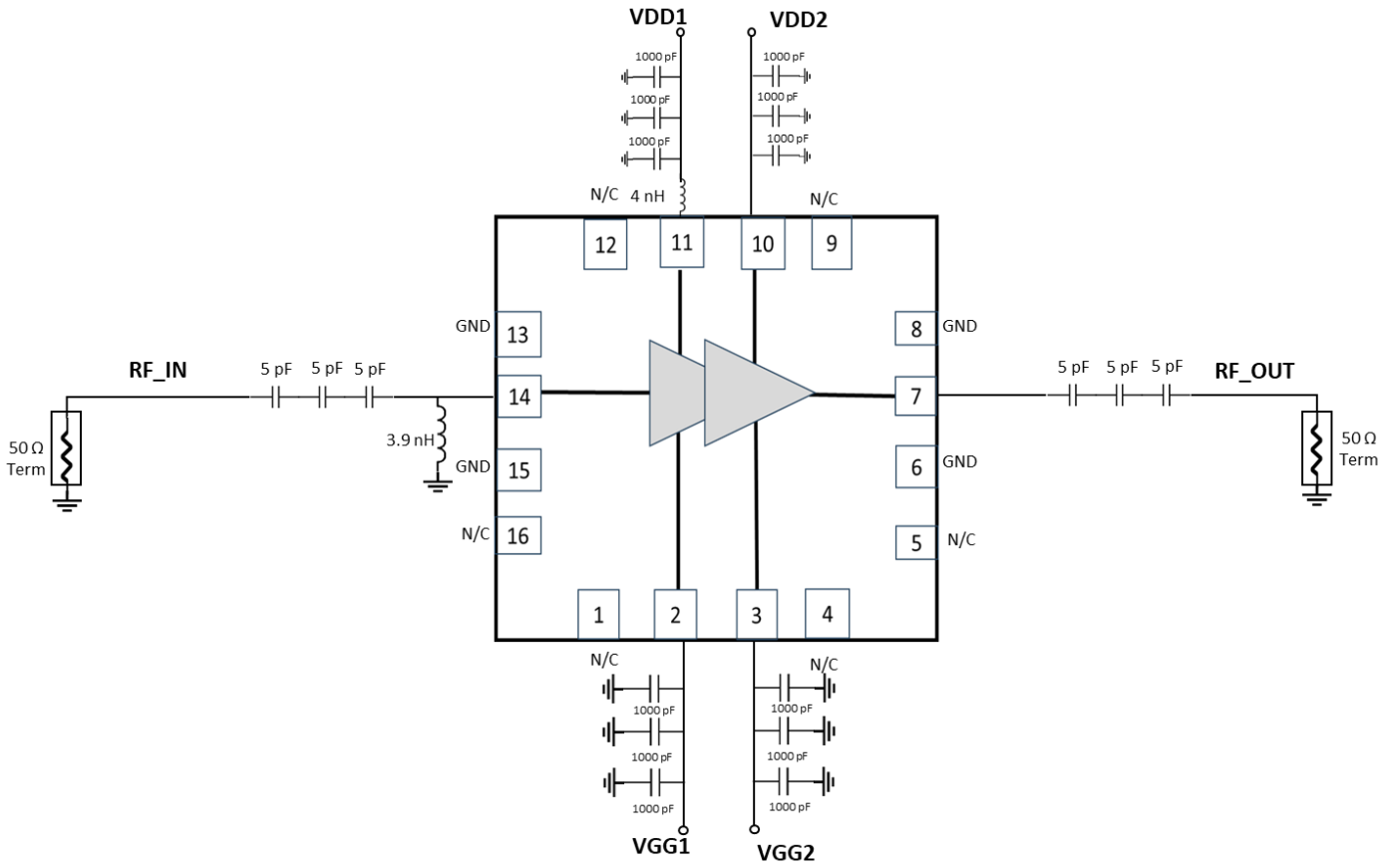


Typical Performance Curves:





Application Diagram:



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