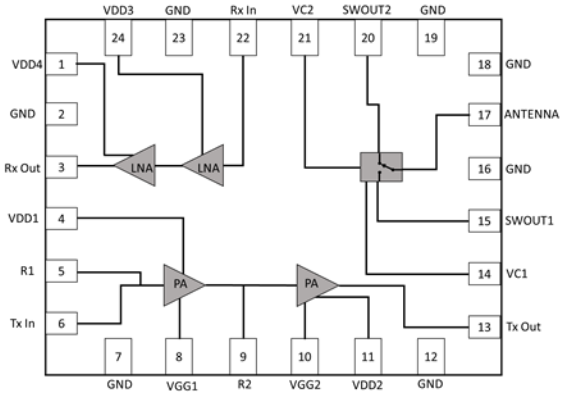
Front End Module

PRE-RELEASE DATASHEET RFFEM06S

Features:

- RF Frequency: 2-6 GHz
- Tx Gain : 23.2 dB
- Rx Gain : 27.2 dB
- Rx Noise Figure : 1 dB
- Tx Output P1dB (OP1dB) : 23 dBm
- Rx Output P1dB (OP1dB) : 11.8 dBm
- Tx Current = 355.1 mA , Rx Current = 48.4 mA
- Tx Voltage = 4 / -0.5 V , Rx Voltage = 4 / -0.5 V
- 0.1um GaAs pHEMT Technology
- Die Size:1.2 mm*1.45 mm

Functional Block Diagram



Description:

RFFEM06S is a Front-End Module that operates from 2 – 6 GHz and it is used to drive the high-power amplifier. The amplifier provides Tx Gain = 23.2 dB, and Rx Gain = 27.2 dB the input and output are matched to 50 ohms with off-chip DC blocking capacitors.

The device is specifically designed for 2-6 GHz frequency in Bluetooth, Radar Systems, WiFi, IoT, and SATCOM Applications.

The Technology used to design Front End Module is 0.1um GaAs pHEMT Process.

Applications:

- Bluetooth
- Radar Systems
- SATCOM
- IoT
- Wi-Fi

Pin Configuration

Pin No.	Pin Name	Description
1,4,11,24	VDD	Drain Voltage
2,7,12,16,18,19,23	GND	Ground
3	Rx Out	Receiver Output
5,9	R	
6	Tx In	Transmitter Input
8,10	VGG	Gate Voltage
13	Tx Out	Transmitter Output
14,21	VC	Voltage Control
15,20	SWOUT	Switch Output
17	ANTENNA	
22	Rx In	Receiver Input

Deliverables:

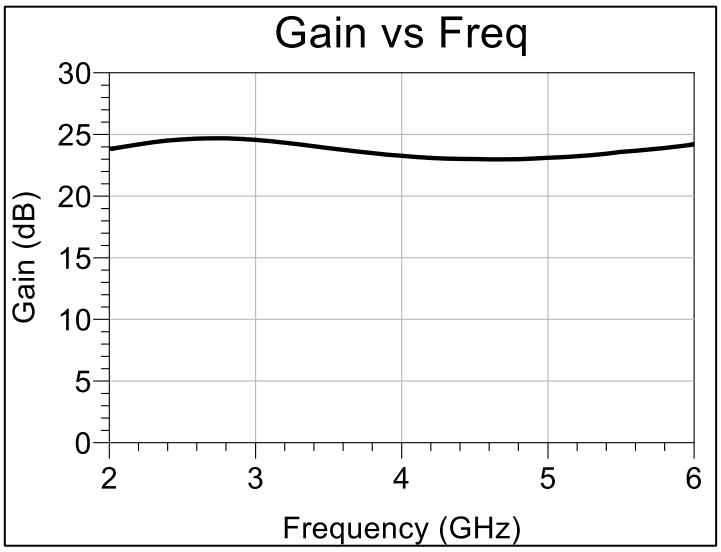
- Sample Ready Die
- Product Datasheet

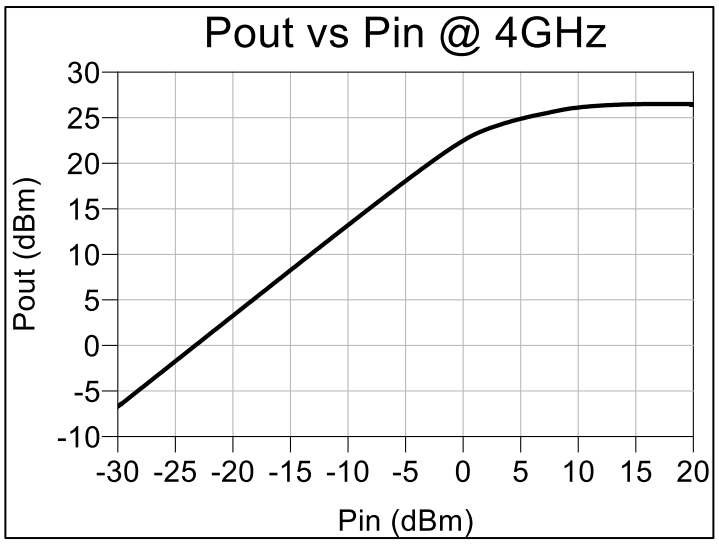
Electrical Specification:

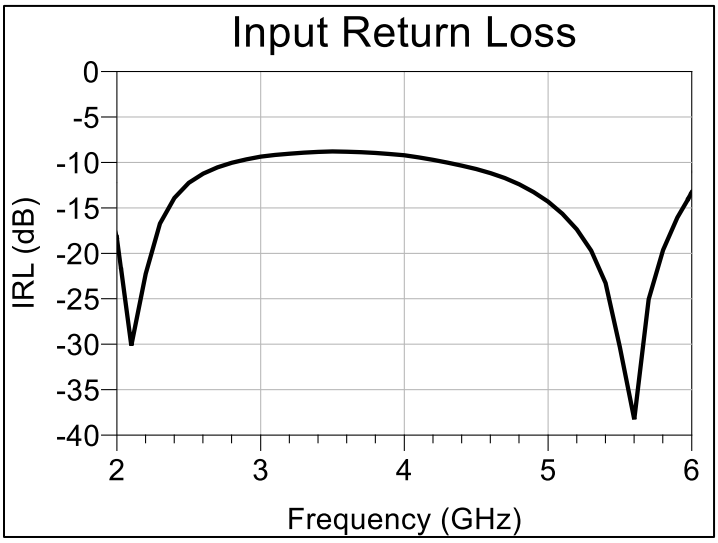
Freq= 2 - 6 GHz, Tx Voltage = 4 / -0.5 V, Rx Voltage = 4 / -0.5 V, Tx Current =355.1 mA, Rx Current =48.4 mA, Zo=50 Ω

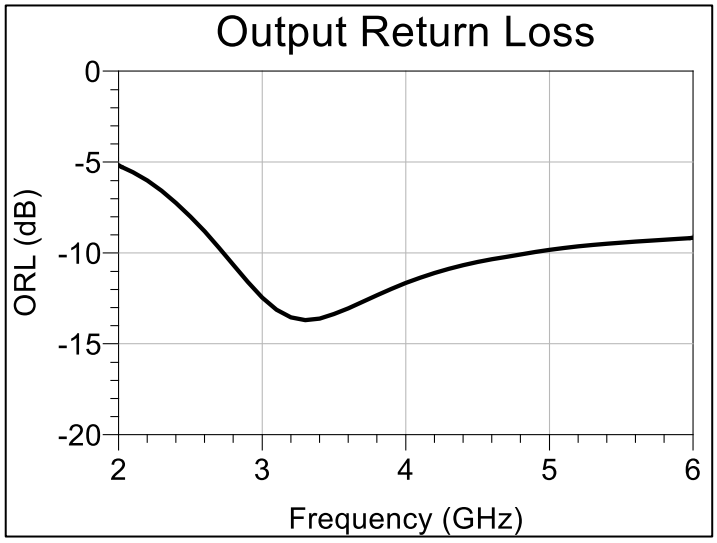
Parameters	Test Condition	Units	TX	RX
Gain	2 GHz	dB	23.7	24
	4 GHz		23.2	27.2
	6 GHz		24	18.8
Output P1 dB	2 GHz	dBm	-	-
	4 GHz		23	11.8
	6 GHz		-	-
OIP3 Pin= 1 dBm Δf = 50MHz	2 GHz	dBm	-	-
	4 GHz		32.8	22.8
	6 GHz		-	-
Noise Figure	2 GHz	dB	-	1.3
	4 GHz		-	1
	6 GHz		-	2.7
Input Return Loss	2 GHz	dB	18.2	3.4
	4 GHz		9.2	5.5
	6 GHz		13.3	2.9
Output Return Loss	2 GHz	dB	5.19	16
	4 GHz		11.65	13
	6 GHz		9.17	7.2
Operating Bias Conditions				
Drain Current (Id)	-	mA	355.1 / 48.4	
Drain Voltage (VDD)	-	V	Rx = 4 Tx = 4	
Gate Voltage (VGG)	-	V	Rx = -0.5, Tx =-0.5	

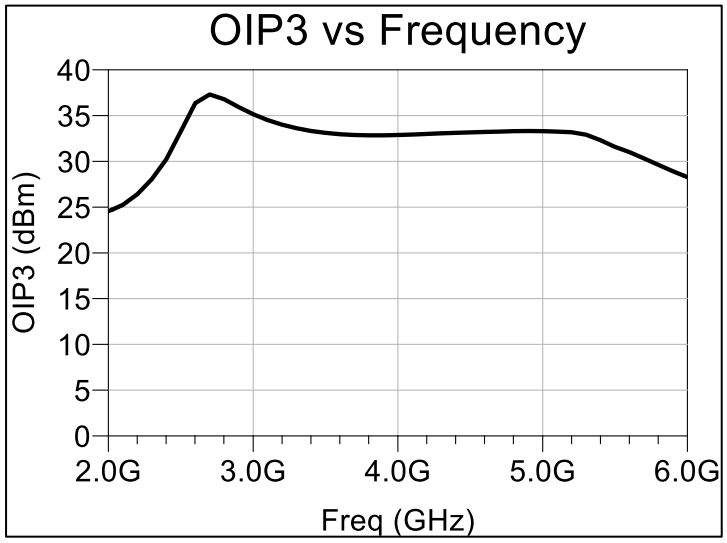
Typical Performance Curves (Tx):

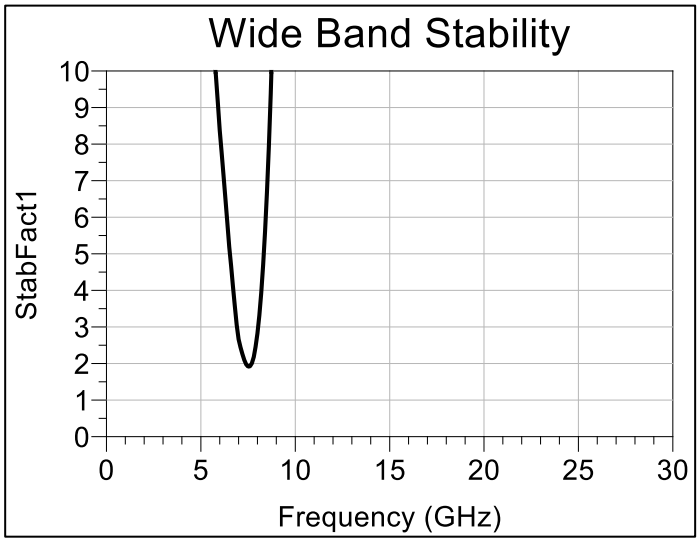




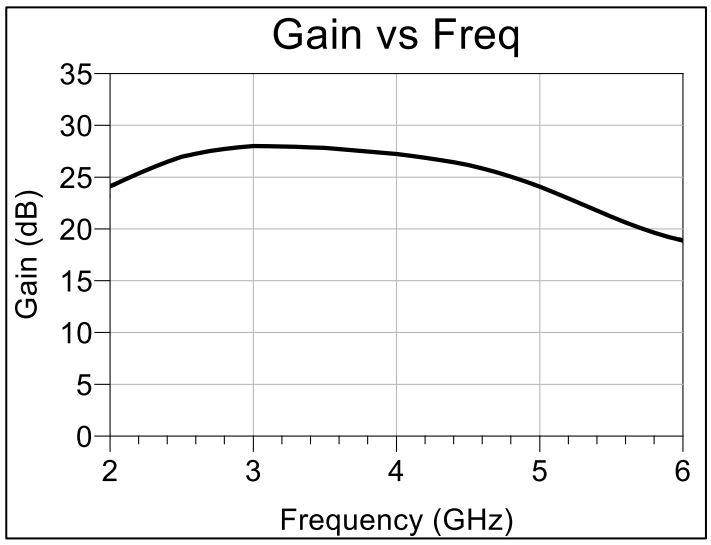


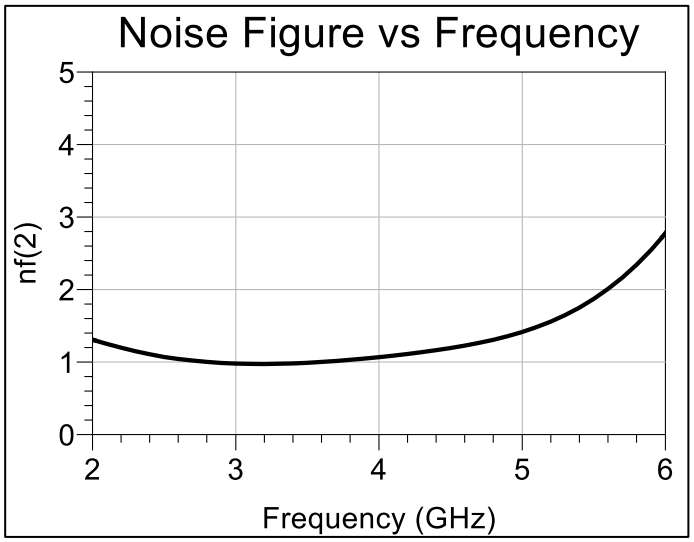


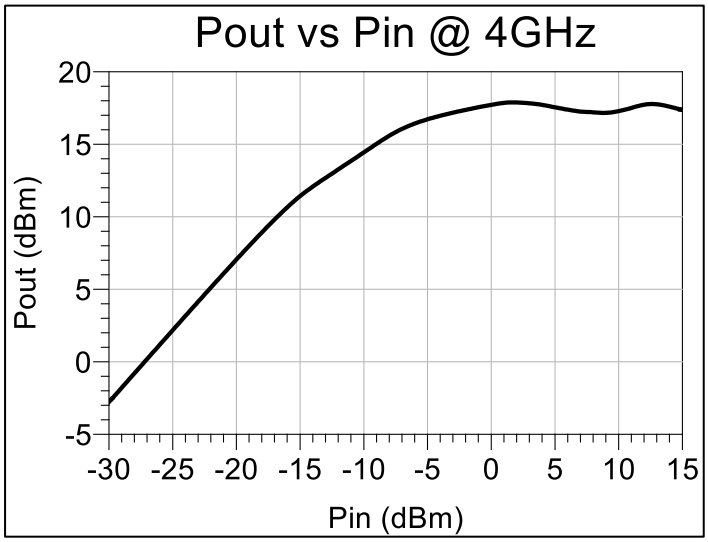


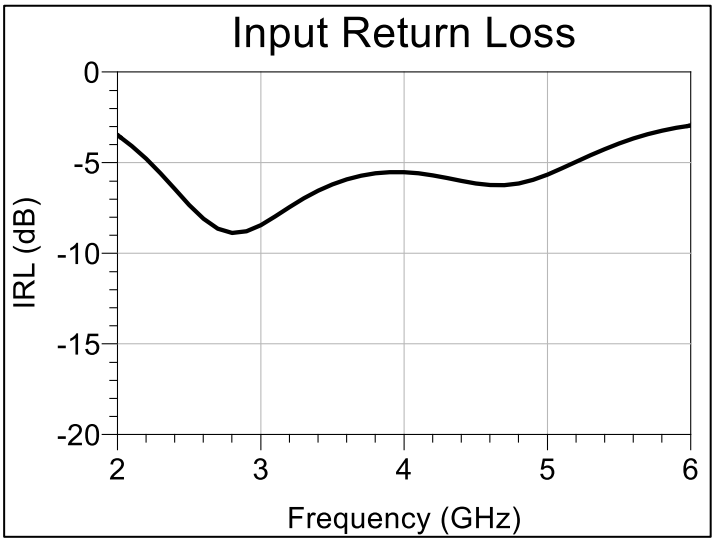


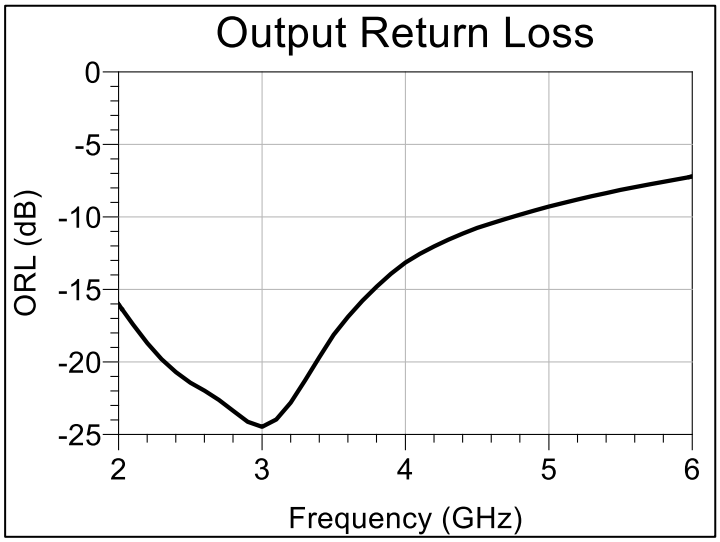
Typical Performance Curves (Rx):

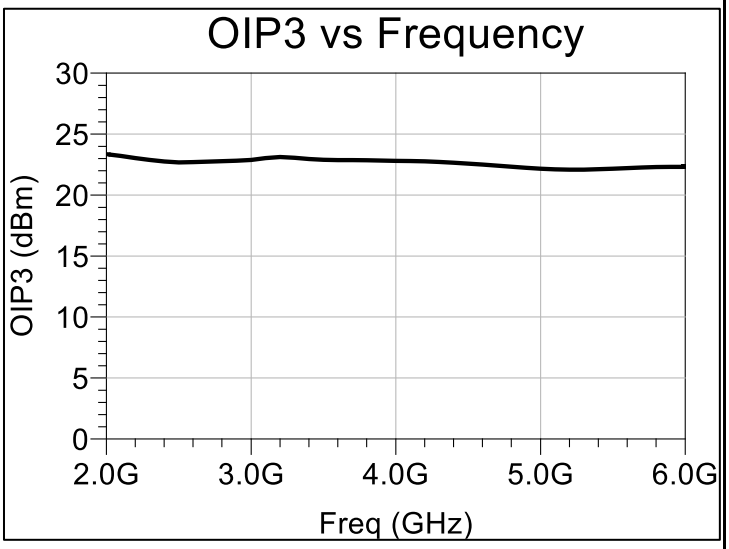


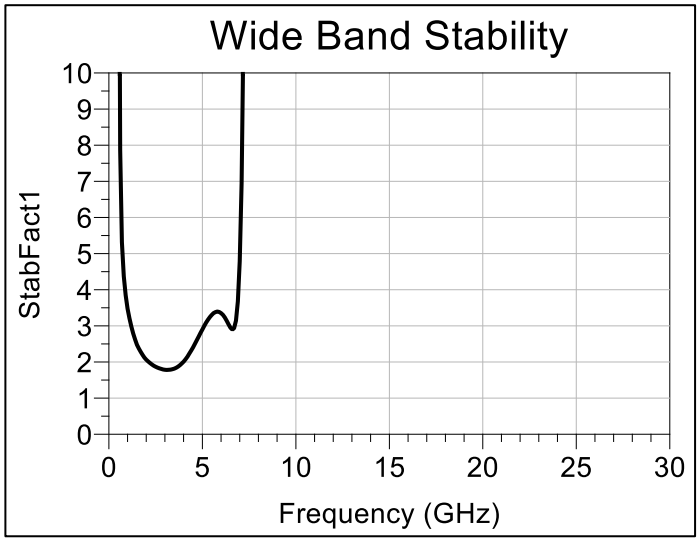












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