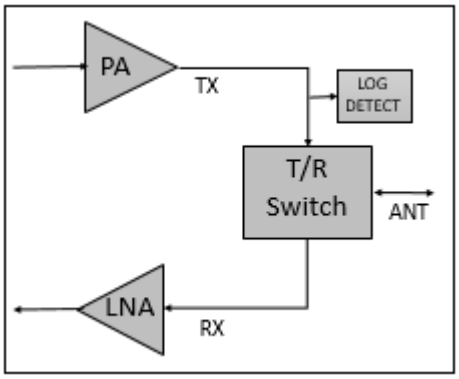
Front End Module

PRE-RELEASE DATASHEET RFFEM07C

Features:

- RF frequency: 2 to 7 GHz
- TX return losses: 13.5 dB/14 dB
- RX return losses: 13 dB/24 dB
- TX Gain: 28.4 dB
- RX Gain : 24 dB
- Noise figure: 1.85 dB
- Tx output p1dB: 22.3 dBm
- Rx Output p1 dB:20 dBm
- DC Drain bias Voltage:4V
- DC Gate bias voltage: -0.65 V
- DC Supply Current : TX:320 mA /Rx :58 mA
- 0.1um GaAs pHEMT Technology

Functional Block Diagram:



Description:

RFFEM07C is a high performance fully integrated RF front end module (FEM) design for use in 2 - 7 GHz for Wi-Fi 6 , Bluetooth, Zigbee, IoT application. RFFEM07C is designed for ease of use & maximum flexibility.

TX performance is focused on high linearity, gain and low IM3 levels. RX performance is focused on low Noise Figure, high gain. This simplifies the total front-end solution by reducing the bill of materials, system foot print, and manufacturing cost.

Wi-Fi 6 Front End Module integrates RF SPDT Switch, Driver amplifier in TX Path and RF SPDT Switch, LNA in RX Path into a single devices. This integrated chip is designed using 0.1um GaAs pHEMT process.

Application:

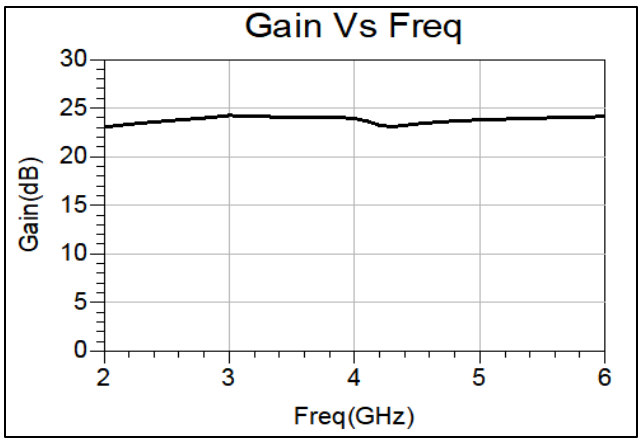
- Wi-Fi 6
- Bluetooth Application
- Zigbee
- Satellite Communication
- TDD/FDD System
- Internet of Things

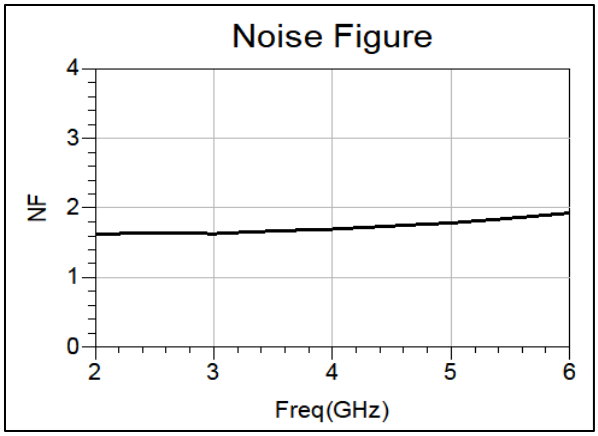
Electrical Specification:-

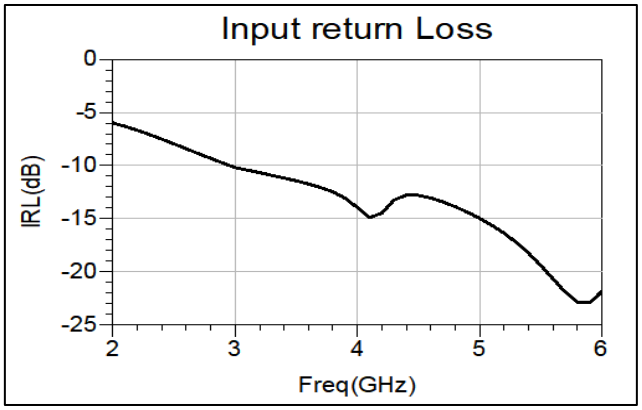
Recieve Mode: RX_IN to RX_OUT.

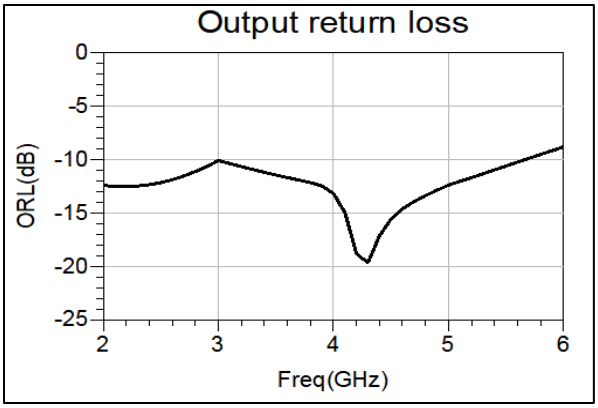
(Freq= 2-7 GHz, VDD= 4V, VGG= -0.65 V Idc= 58 mA, Zo=50Ω)

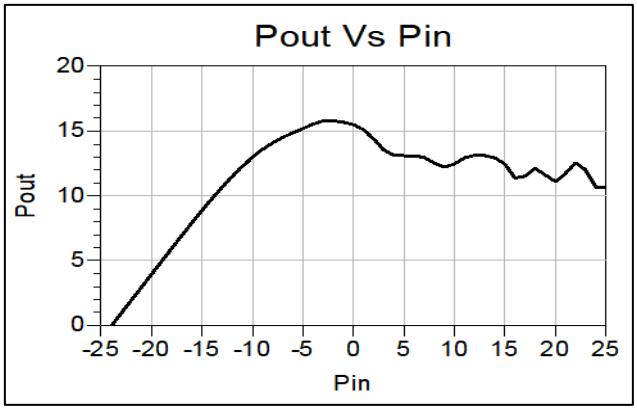
Parameter	Frequency (GHz)	Units	Typ.
RF Frequency	2-7	GHz	-
Small Signal Gain	2	dB	23
	4		24
	6		24
Output P1dB	2	dBm	
	4		
	6		
Saturated Output Power	2	dBm	
	4		
	6		
Output Third-Order Intercept, OIP3 (@Pin=-10dBm, Δf = 100MHz)	2	dBm	
	4		
	6		
Input Return Loss	2	dB	6
	4		15
	6		24
Output Return Loss	2	dB	13
	4		12
	6		9
Noise Figure	2	dB	1.4
	4		1.5
	6		1.9
Biasing Conditions			
Drain Voltage (VDD)	---	V	4
Gate Voltage (VGG)	---	V	0.65
Drain Current (Id)	---	mA	58

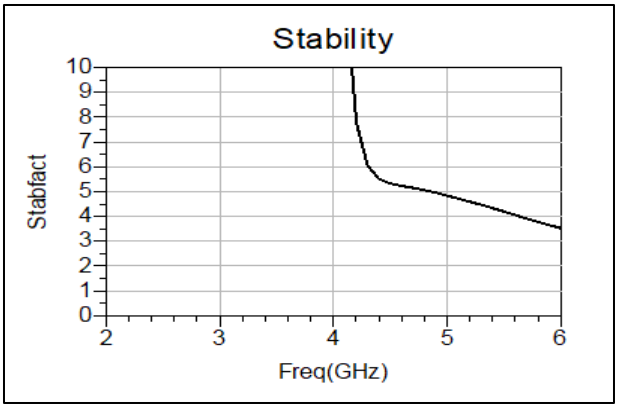








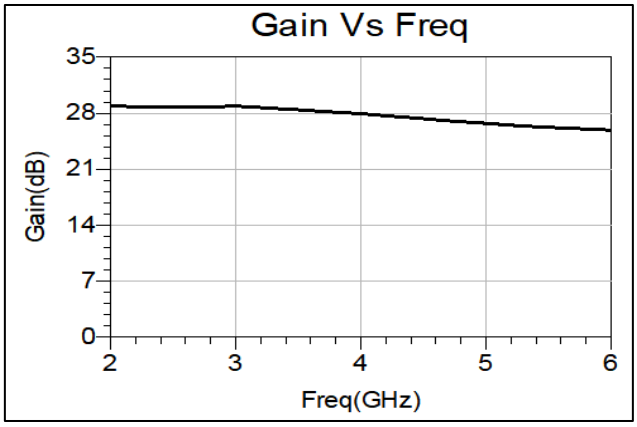


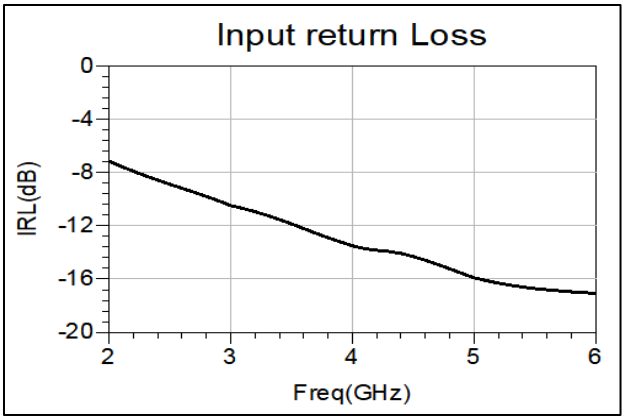


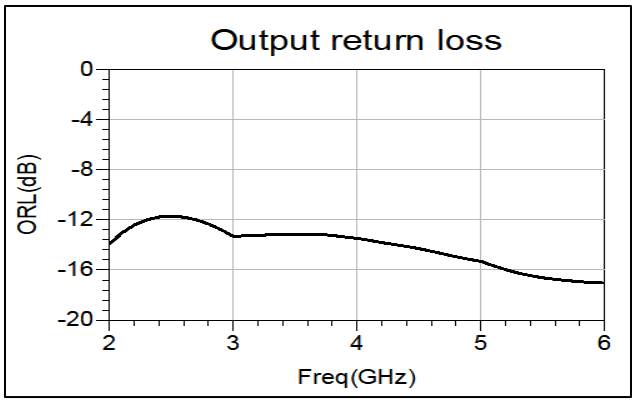
Electrical Specification:

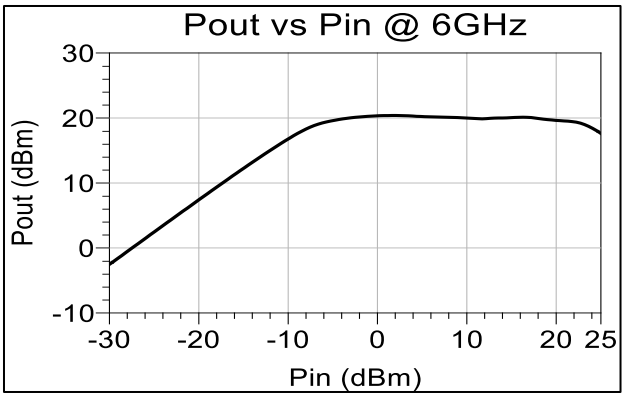
Trasmit Mode: TX_IN to TX_OUT.
(Freq= 2-7 GHz, VDD= 4V, VGG= -0.65 V Idc= 320 mA, Zo=50Ω)

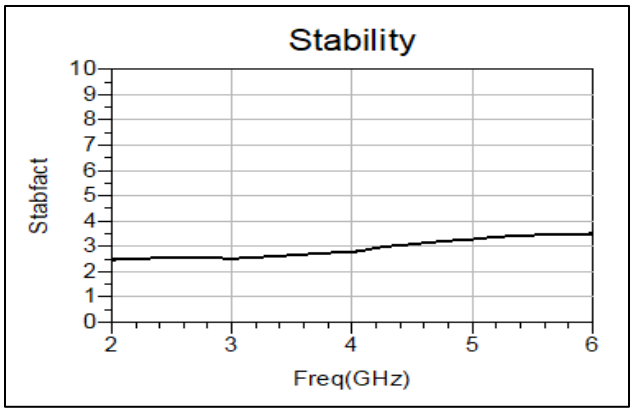
Parameter	Frequency (GHz)	Units	Typ.
RF Frequency	2-7	GHz	-
Small Signal Gain	2	dB	28.5
	4		28
	6		27
Output P1dB	2	dBm	17.8
	4		
	6		
Saturated Output Power	2	dBm	
	4		
	6		
Output Third-Order Intercept, OIP3 (@Pin=-10dBm, Δf = 100MHz)	2	dBm	
	4		
	6		
Input Return Loss	2	dB	7
	4		13
	6		17
Output Return Loss	2	dB	15
	4		13
	6		17
Noise Figure	2	dB	-
	4		-
	6		-
Biasing Conditions			
Drain Voltage (VDD)	---	V	4/-0.6
Gate Voltage (VGG)	---	V	-0.65
Drain Current (Id)	---	mA	320

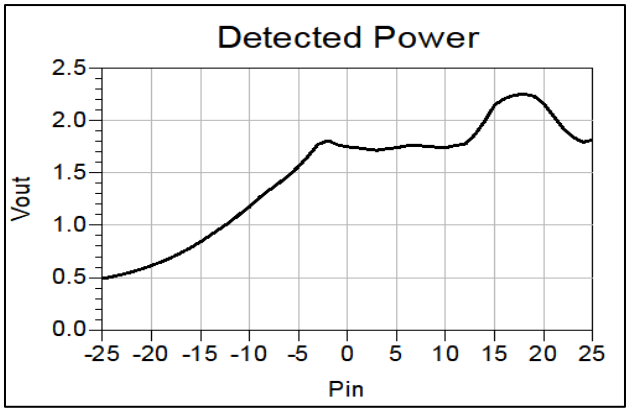


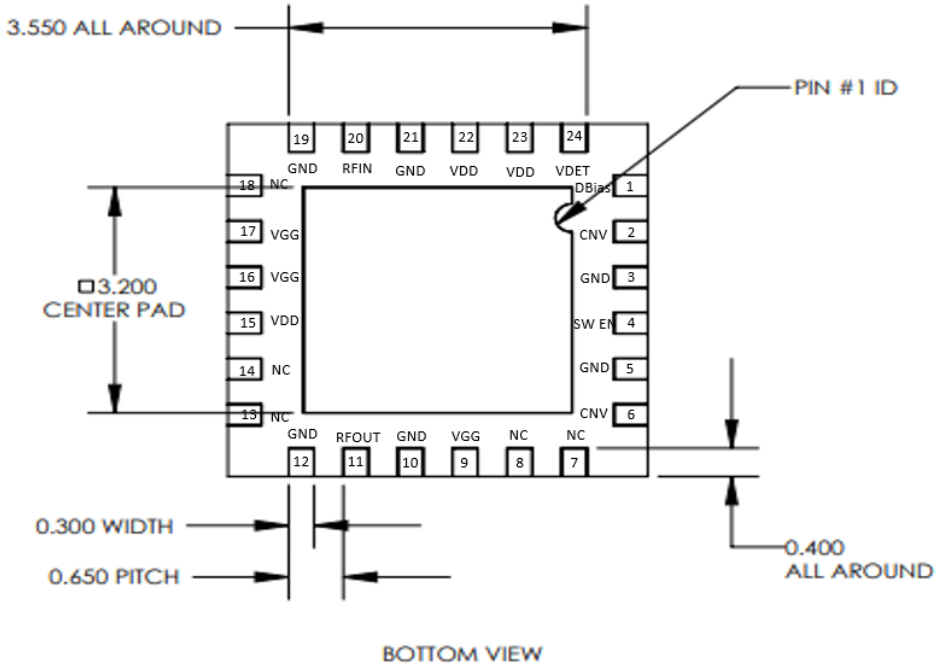












Functional Description:-

Pin number	Pin name	Description
7,8,13,14,18	NC	Not Connected
3,5,10,12,19,21	GND	RF Ground
15,22,23	VDD	Drain Bias voltage
9,16,17	VGG	Gate Bias voltage
20	RF_IN	RF Input
11	RF_OUT	RF Output
1	DBias	Detector Bias
24	VDET	Detected Voltage
2,6	CNV	Switch Control Voltage
4	SW_EN	Antenna

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