STAH58095F4C*2 Class AB 5~6GHz

Feb. 20, 2024

Introduction

This amplifier is designed with Innogration 28V GaN transistor STAH58095F4C, please find more product information of its datasheet

Demo and Transistor

Frequencyband	:	5~6GHz
Application	:	Multi Market
Configuration	:	Class AB
Test Signal	:	Pulse/CW
Transistor	:	STAH58095F4C*2
Date code	:	240327
PCB	:	Rogers 4350B

The amplifier has been characterized under the following conditions:

- Network Analyzer plots for gain and IRL.
- The output power measurement using Pulse.

Note：The PA is tested with a supply voltage of V_{DS} = 28V , V_{GS}= -3.14V , I_{dq} = 200mA, all measurements unless otherwise noted.

Test Results

1. Summary @ Bench1(Chengdu)

(1) Test Condition

V_{ds} = 28V， V_{gs} = -3.14V， I_{dq} = 200 mA

Signal mode: Pulse 100us,10%; Frequency: 5~6GHz

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
5000	43.7	53.1	203.7	1.38	9.4	52.9
5100	43.5	53.4	218.8	1.47	9.9	53.2
5200	43.6	53.7	232.3	1.54	10.1	53.9
5300	43.7	53.7	236.6	1.55	10.1	54.5
5400	44.1	53.7	236.6	1.52	9.7	55.5
5500	43.6	53.5	223.9	1.47	9.9	54.3
5600	43.5	53.5	223.9	1.53	10.0	52.3
5700	43.1	53.5	223.9	1.53	10.4	52.4
5800	42.9	53.4	218.8	1.47	10.5	53.0
5900	43.0	53.2	209.4	1.39	10.3	53.8
6000	42.6	53.2	206.5	1.38	10.5	53.6

(2) Test Condition

V_{ds} = 28V， V_{gs} = -3.14V， I_{dq} = 200 mA

Signal mode: CW; Frequency: 5~6GHz

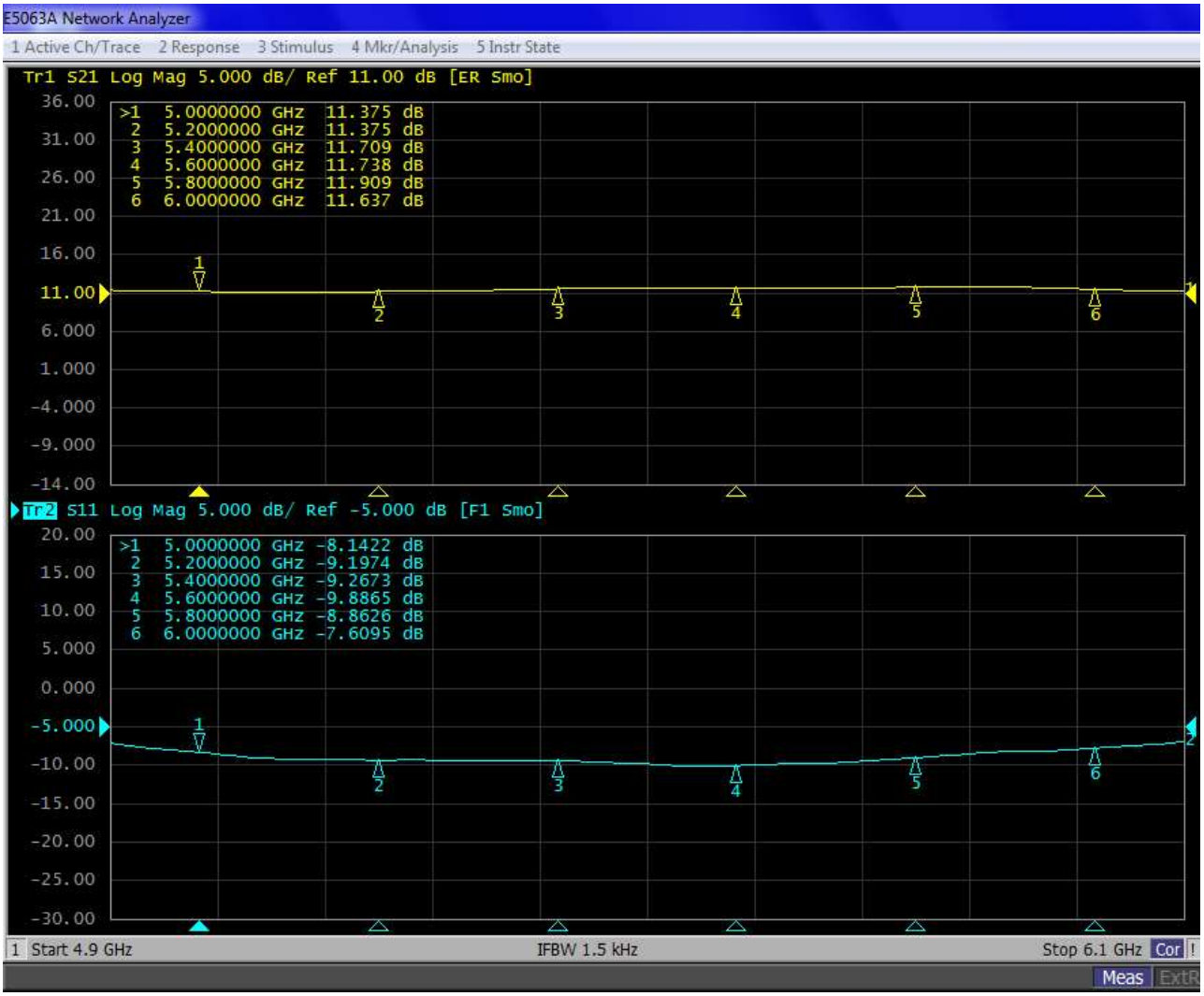
Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
5000	43.0	52.8	189.2	12.93	9.7	52.3
5100	42.6	52.9	195.4	13.47	10.3	51.8
5200	42.6	53.1	203.7	13.94	10.5	52.2
5300	42.9	53.3	211.8	14.22	10.3	53.2
5400	43.5	53.5	221.3	14.47	9.9	54.6
5500	42.9	53.1	202.8	13.70	10.1	52.9
5600	42.8	53.1	203.7	14.13	10.3	51.5
5700	42.6	53.0	200.9	14.09	10.5	50.9
5800	42.4	53.0	197.2	13.76	10.6	51.2
5900	42.5	52.8	191.0	12.97	10.3	52.6
6000	42.2	52.7	187.5	12.83	10.6	52.2

2. Network Results

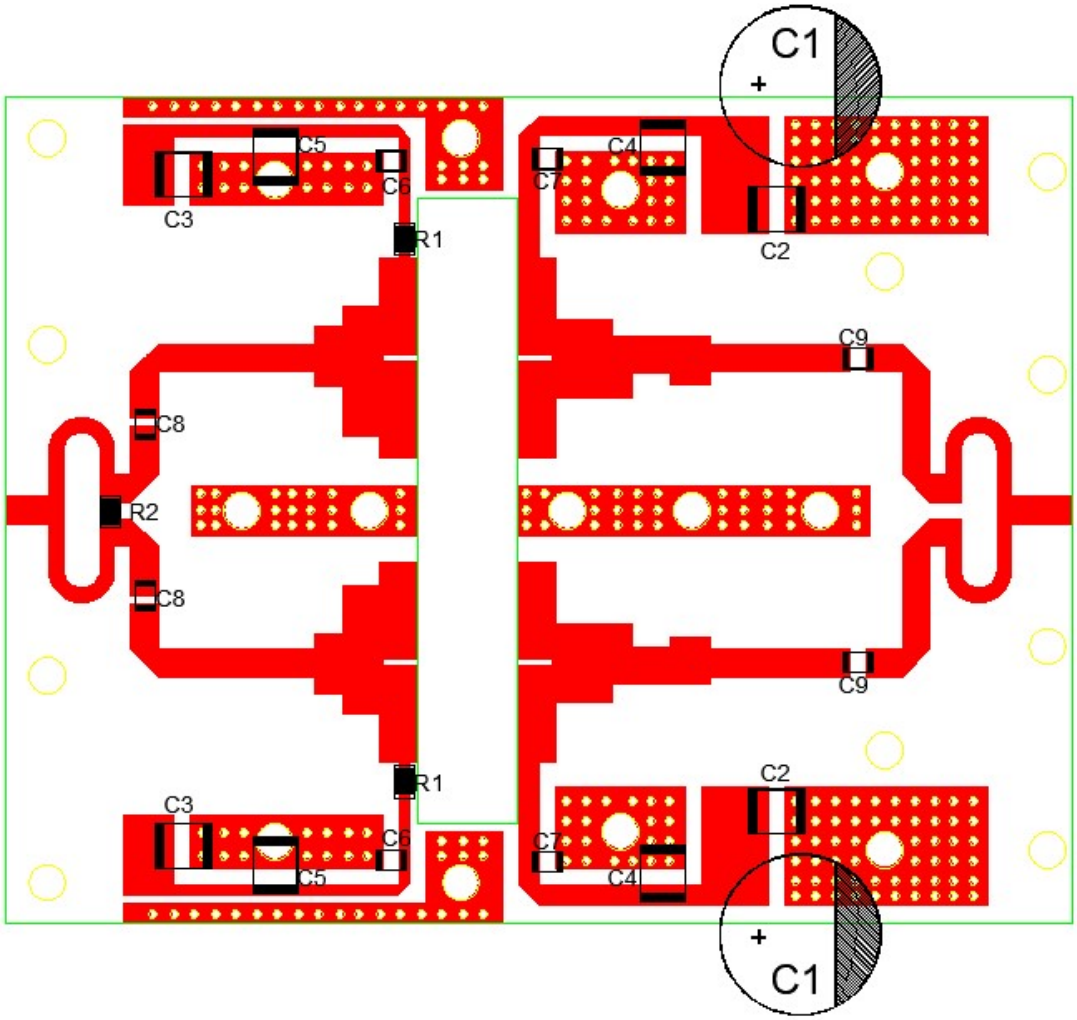
Test Condition

V_{gs} = -3.08V， V_{ds} = 28 V， I_{dq}= 400mA

input power = 0 dBm



BOM of Test Circuit



Component	Description	Suggested Manufacturer
C1	1000uF/63V	
C2,C3,C4,C5	10uF	1210
C6,C7,C8,C9	3pF	MQ300805C0G2E3R0BNDR
R1	Chip Resistor,10Ω	0805
R2	Chip Resistor,100Ω	1206
PCB	Rogers 4350B, Er = 3.48, thickness 30 mils, 1oz copper	