GTAH80025G2*2 Class AB 4000~8000MHz

Mar. 21, 2024

Introduction

This amplifier is designed with Innogration 28V GaN transistor GTAH80025G2, please find more product information of its datasheet

Demo and Transistor

Frequency band	:	4000~8000MHz
Application	:	Multi Market
Configuration	:	Class AB
Test Signal	:	Pulse/CW
Transistor	:	GTAH80025G2 V0 *2
Date code	:	231003S-02/231003S-03
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 and CW.

Note：The PA is tested with a supply voltage of V_{DS} = 28V , V_{GS}= -2.48V , I_{dq} = 200mA, all measurements unless otherwise noted.

Test Results

1. Summary @ Bench1(Chengdu)

Test Condition

(1) V_{ds} = 28V， V_{gs} = -2.48V， I_{dq} = 200 mA；
CW

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	Gain(dB)	Eff(%)
4000	41.4	46.3	42.2	4.9	53.0
4100	41.4	46.7	46.5	5.3	57.0
4200	41.3	46.4	43.3	5.0	51.8
4300	41.4	46.3	42.9	5.0	46.8
4400	41.4	46.8	48.0	5.4	46.9
4500	41.4	47.4	54.5	5.9	48.3
4600	41.4	47.3	54.0	5.9	46.9
4700	41.4	47.5	56.1	6.1	44.3
4800	41.4	47.8	59.6	6.3	42.0
4900	41.4	48.0	62.5	6.6	42.9
5000	41.3	48.3	67.5	7.0	43.1
5100	41.3	48.3	66.8	6.9	44.3
5200	41.4	48.3	66.8	6.9	44.9
5300	41.4	48.2	66.5	6.9	46.9
5400	41.4	48.4	68.5	7.0	48.2
5500	41.4	48.2	65.9	6.8	48.8
5600	41.4	48.0	63.5	6.7	46.6
5700	41.4	48.0	62.8	6.6	45.4
5800	41.4	48.0	62.8	6.6	43.6
5900	41.4	47.9	61.4	6.4	42.1
6000	41.5	47.5	56.0	6.0	37.7
6100	41.4	47.4	55.0	6.0	35.6
6200	41.4	47.4	55.0	6.0	35.0
6300	41.4	47.7	58.2	6.3	36.0
6400	41.4	47.3	53.8	5.9	33.9
6500	41.4	48.1	64.0	6.7	36.4
6600	41.4	48.1	63.8	6.7	39.0
6700	41.3	48.4	68.5	7.1	43.2
6800	41.2	47.8	60.0	6.6	42.8
6900	41.1	47.2	52.0	6.0	38.7
7000	41.1	47.1	51.6	6.0	36.2
7100	41.2	46.8	47.8	5.6	34.1
7200	41.2	46.9	48.8	5.7	32.2
7300	41.2	47.1	50.7	5.9	31.9
7400	41.1	47.5	56.4	6.4	34.1
7500	41.1	47.3	53.6	6.2	30.6
7600	40.1	47.6	57.9	7.6	31.4
7700	40.1	48.1	64.1	8.0	35.2
7800	40.1	48.2	66.2	8.2	38.1
7900	41.1	48.0	62.5	6.9	39.4
8000	41.0	46.8	48.0	5.8	38.9

(2) V_{ds} = 32V， V_{gs} = -2.48V， I_{dq} = 200 mA

CW

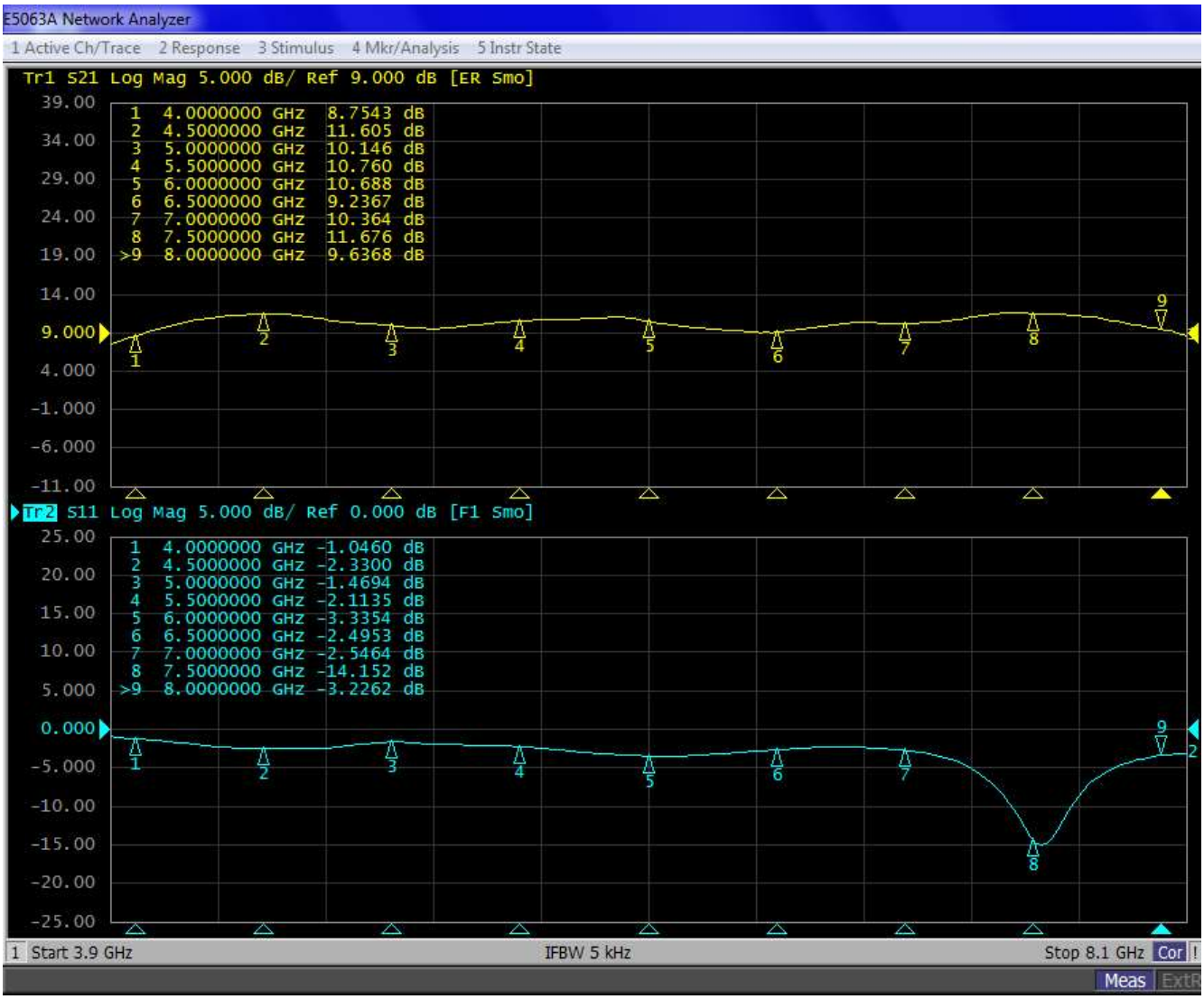
Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	Gain(dB)	Eff(%)
4000	41.4	47.0	50.2	5.7	50.5
4100	41.4	47.6	57.5	6.3	55.5
4200	41.3	47.4	55.1	6.1	57.0
4300	41.4	47.4	54.7	6.0	32.9
4400	41.4	47.9	61.0	6.4	48.5
4500	41.4	48.4	68.7	6.9	49.5
4600	41.4	48.3	68.1	7.0	48.4
4700	41.4	48.5	70.0	7.0	45.9
4800	41.4	48.7	73.5	7.2	43.3
4900	41.4	48.7	74.6	7.4	42.4
5000	41.3	48.9	77.8	7.6	41.9
5100	41.3	48.8	76.0	7.5	42.4
5200	41.4	48.8	76.6	7.5	43.5
5300	41.4	48.8	76.0	7.5	44.8
5400	41.4	48.9	77.8	7.6	46.8
5500	41.4	48.9	78.3	7.6	49.0
5600	41.4	48.8	75.5	7.4	47.2
5700	41.4	48.8	75.5	7.4	46.3
5800	41.4	48.8	75.9	7.4	44.7
5900	41.4	48.8	75.5	7.3	43.7
6000	41.5	48.4	68.9	6.9	39.1
6100	41.4	48.2	66.4	6.8	36.4
6200	41.4	48.1	64.3	6.7	34.9
6300	41.4	48.3	67.5	6.9	35.4
6400	41.4	47.8	60.1	6.4	32.4
6500	41.4	48.5	70.1	7.1	34.3
6600	41.4	48.4	69.0	7.0	36.6
6700	41.3	49.0	79.1	7.7	42.2
6800	41.2	48.6	72.1	7.4	43.3
6900	41.1	48.1	64.0	6.9	40.3
7000	41.1	48.1	63.8	6.9	37.6
7100	41.2	47.7	58.7	6.5	36.0
7200	41.2	47.8	59.7	6.6	33.9
7300	41.2	47.9	61.4	6.7	32.7
7400	41.1	47.9	61.9	6.8	31.7
7500	41.1	48.0	63.0	6.9	30.3
7600	40.1	48.2	66.7	8.2	30.6
7700	40.1	48.7	74.0	8.6	34.0
7800	40.1	48.9	76.9	8.8	37.0
7900	41.1	48.6	72.6	7.6	38.5
8000	41.0	47.6	58.1	6.6	38.6

2. Network Results

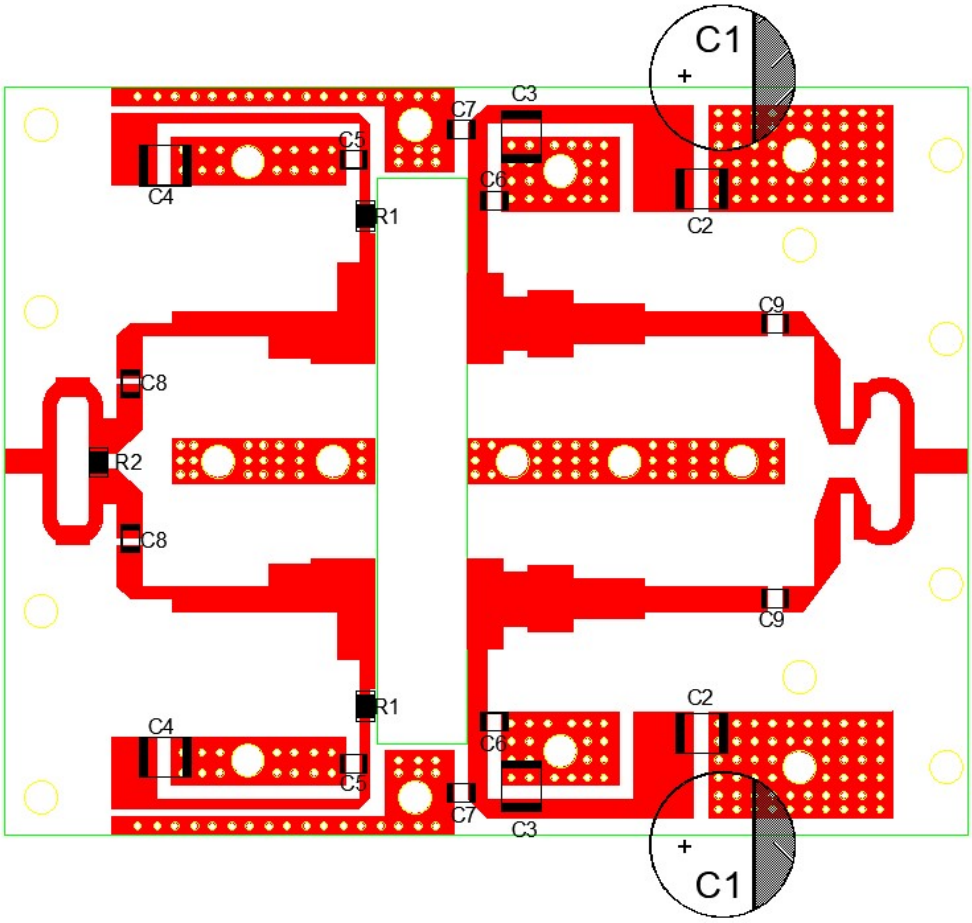
Test Condition

V_{gs} = -2.40 V， V_{ds} = 28 V， I_{dq} = 420 mA

input power = 0 dBm



BOM of Test Circuit



Component	Description	Suggestion
C1	470uF/63V	
C2, C3, C4	10uF	1210
C7	100pF	0603
C5, C6, C8, C9	2.4pF	0805
R1	Chip Resistor,10Ω	0603
R2	Chip Resistor,100Ω	1206
PCB	Rogers 4350B, Er = 3.48, thickness 30 mils, 1oz copper	