

GTAH58140F4*2 Class AB 5~6GHz

Mar. 12, 2024

Introduction

This amplifier is designed with Innogrations 28V GaN transistor, GTAH58140F4, please find more product information of its datasheet

Demo and Transistor

Frequency band	: 5~6GHz
Application	: Multi Market
Configuration	: Class AB
Test Signal	: Pulse/CW
Transistor	: GTAH58140F4*2
Date code	: 231115
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 $V_{DS} = 28V$, $V_{GS} = -2.70V$, $I_{dq} = 100mA$, all measurements unless otherwise noted.

Test Results

1. Summary @ Bench1(Chengdu)

(1) Test Condition

$$V_{ds} = 28V, V_{gs} = -2.70V, I_{dq} = 100 \text{ mA}$$

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

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
5000	44.5	53.3	213.8	1.50	8.8	51.0
5100	44.7	53.6	226.5	1.59	8.8	51.0
5200	44.5	53.6	231.2	1.63	9.2	50.8
5300	45.4	53.8	239.9	1.67	8.4	51.4
5400	44.9	53.6	231.2	1.61	8.7	51.3
5500	45.4	53.5	224.9	1.51	8.2	53.2
5600	44.9	53.6	226.5	1.52	8.7	53.2
5700	44.5	53.7	234.4	1.56	9.2	53.7
5800	44.9	53.8	239.9	1.59	8.9	53.9
5900	45.3	53.4	217.3	1.50	8.0	51.7
6000	46.2	53.3	212.3	1.46	7.0	51.9

(2) Test Condition

$$V_{ds} = 28V, V_{gs} = -2.70V, I_{dq} = 100 \text{ mA}$$

Signal mode: CW; Frequency: 5~6GHz

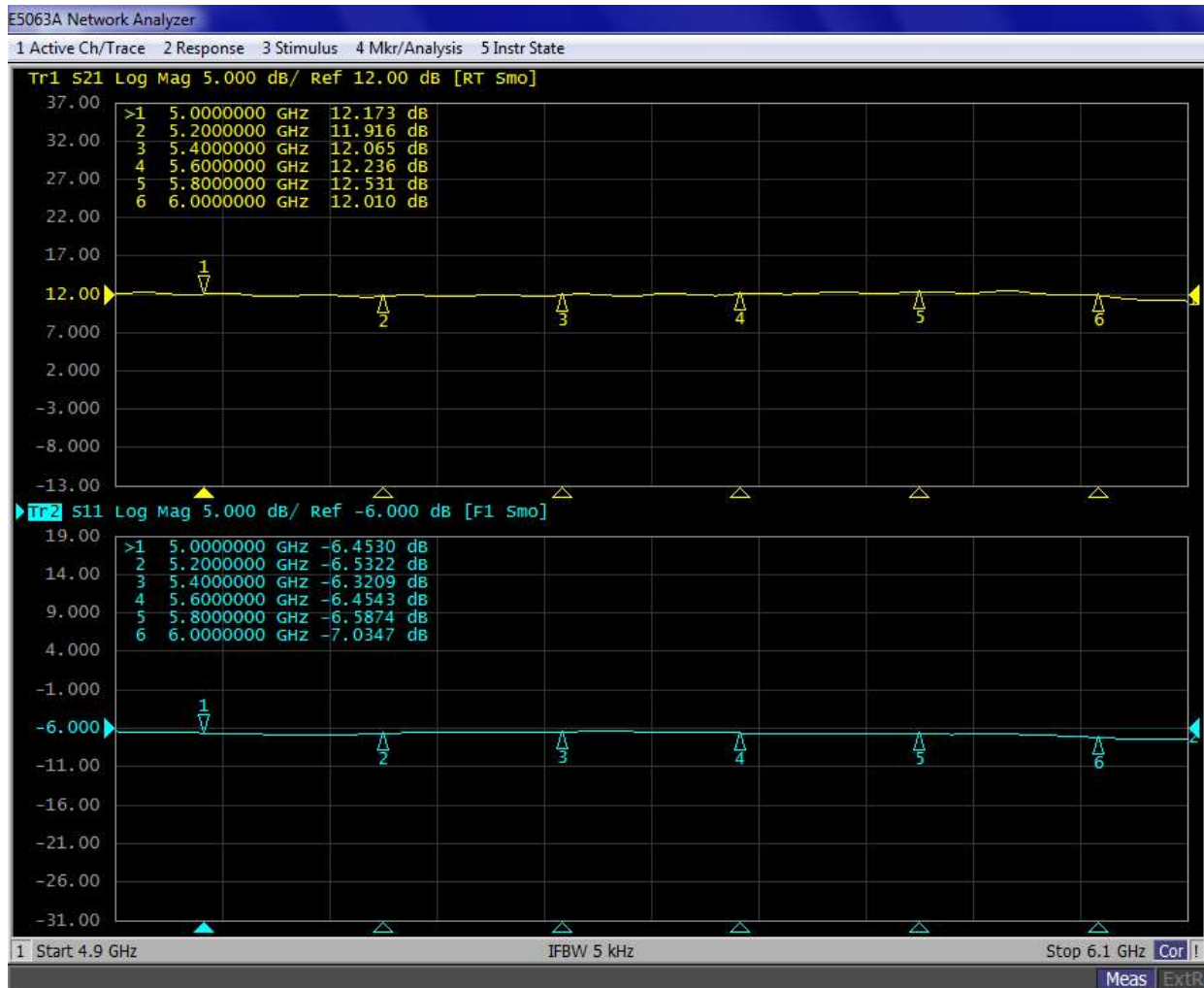
Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
5000	44.9	53.2	210.9	14.81	8.3	50.8
5100	44.4	53.3	213.3	15.35	8.9	49.6
5200	44.1	53.3	213.8	15.51	9.2	49.2
5300	45.0	53.6	230.1	16.20	8.6	50.7
5400	44.6	53.4	218.3	15.45	8.8	50.5
5500	45.0	53.4	217.3	15.00	8.3	51.7
5600	44.5	53.3	214.3	14.87	8.8	51.5
5700	44.6	53.4	218.8	15.14	8.9	51.6
5800	44.5	53.6	226.5	15.64	9.1	51.7
5900	45.1	53.2	208.9	14.81	8.1	50.4
6000	45.9	53.1	204.2	14.61	7.2	49.9

2. Network Results

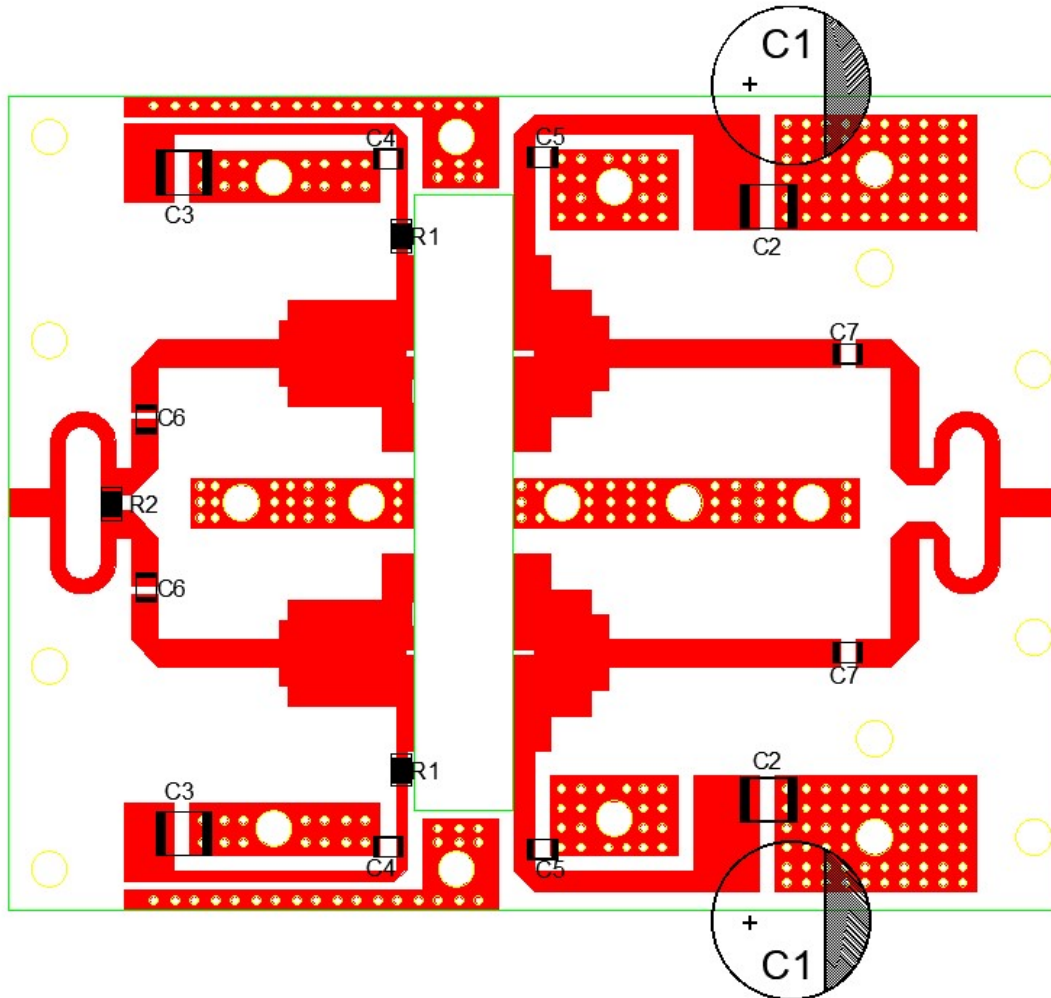
Test Condition

$$V_{gs} = -2.55V, V_{ds} = 28V, I_{dq} = 1A$$

input power = 0 dBm



BOM of Test Circuit



Component	Description	Suggestion
C1	1000uF/63V	
C2, C3	10uF	1210
C4, C5, C6, C7	3.9pF	0805
R1	Chip Resistor, 10Ω	0805
R2	Chip Resistor, 100Ω	1206
PCB	Rogers 4350B, Er = 3.48, thickness 30 mils, 1oz copper	