STBV25500BY2 x2 Class C 2400~2500MHz

January 06, 2026

Introduction

This amplifier is designed with Innogration 50V GaN transistor， 2 piece of STBV25500BY2 combined to reach 900W CW

Demo and Transistor

Frequency band :	2400~2500MHz
Application :	RF Energy
Configuration :	Class C
Test Signal :	Pulse/CW
Transistor :	STBV25500BY2X2
Date code :	254917S-01, 254917S-02
PCB :	Rogers tc350, r = 3.5, thickness 30 mils

The amplifier has been characterized under the following conditions:

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

Note: The PA is tested with a supply voltage of V_{ds} =50V/48V， V_{gs} = -4.8V，all measurements unless otherwise noted.

Test Results

1. Summary @ Bench (Chengdu)

(1) Test Condition

V_{gs}= -4.8V， V_{ds}= 50V

Signal mode： Pulse Width=100us, Duty Cycle= 10%，

Frequency： 2400-2500MHz

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)
2400	44.41	60.21	1049.5	3.03	15.8	69.3
2420	43.43	60.32	1076.5	3.05	16.9	70.6
2440	44.09	60.22	1052.0	3.00	16.1	70.1
2450	44.4	59.96	990.8	2.85	15.6	69.5
2475	44.63	59.92	981.7	2.82	15.3	69.6
2500	44.74	59.95	988.6	2.88	15.2	68.6

(2) Test Condition

V_{gs}= -4.8V， V_{ds}= 50V，

Signal mode： CW， Frequency： 2400-2500MHz

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)
2400	45.01	60.18	1042.3	30.31	15.2	68.8
2420	44.03	60.29	1069.1	30.55	16.3	70.0
2440	44.79	60.14	1032.8	29.79	15.4	69.3
2450	45.1	59.99	997.7	28.86	14.9	69.1
2475	45.33	59.87	970.5	28.20	14.5	68.8
2500	45.54	59.98	995.4	29.30	14.4	67.9

(3) Test Condition

V_{gs}= -4.8V， V_{ds}= 48V

Signal mode： Pulse Width=100us, Duty Cycle= 10%，

Frequency： 2400-2500MHz

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)
2400	44.27	59.87	970.5	2.89	15.6	70.0
2420	43.23	60.02	1004.6	2.93	16.8	71.4
2440	43.95	59.92	981.7	2.90	16.0	70.5
2450	44.26	59.66	924.7	2.75	15.4	70.1
2475	45.13	59.62	916.2	2.73	14.5	69.9
2500	44.99	59.65	922.6	2.79	14.7	69.0

(4) Test Condition

V_{gs}= -4.8V， V_{ds}= 48V

Signal mode： CW

Frequency： 2400-2500MHz

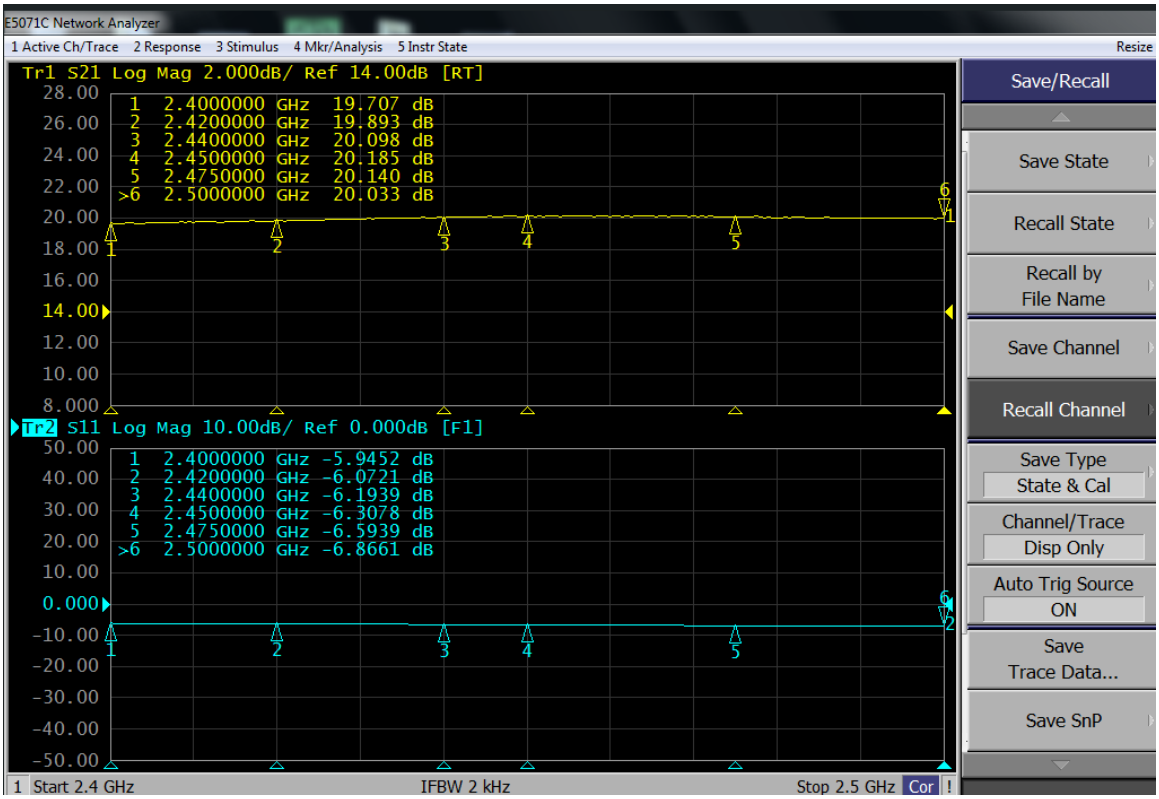
Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)
2400	45.01	59.85	966.1	28.99	14.8	69.4
2420	44.03	59.96	990.8	29.29	15.9	70.5
2440	44.79	59.84	963.8	28.78	15.1	69.8
2450	45.1	59.68	929.0	27.90	14.6	69.4
2475	45.33	59.56	903.6	27.37	14.2	68.8
2500	45.54	59.64	920.4	28.28	14.1	68.0

2. Network Results

Test Condition

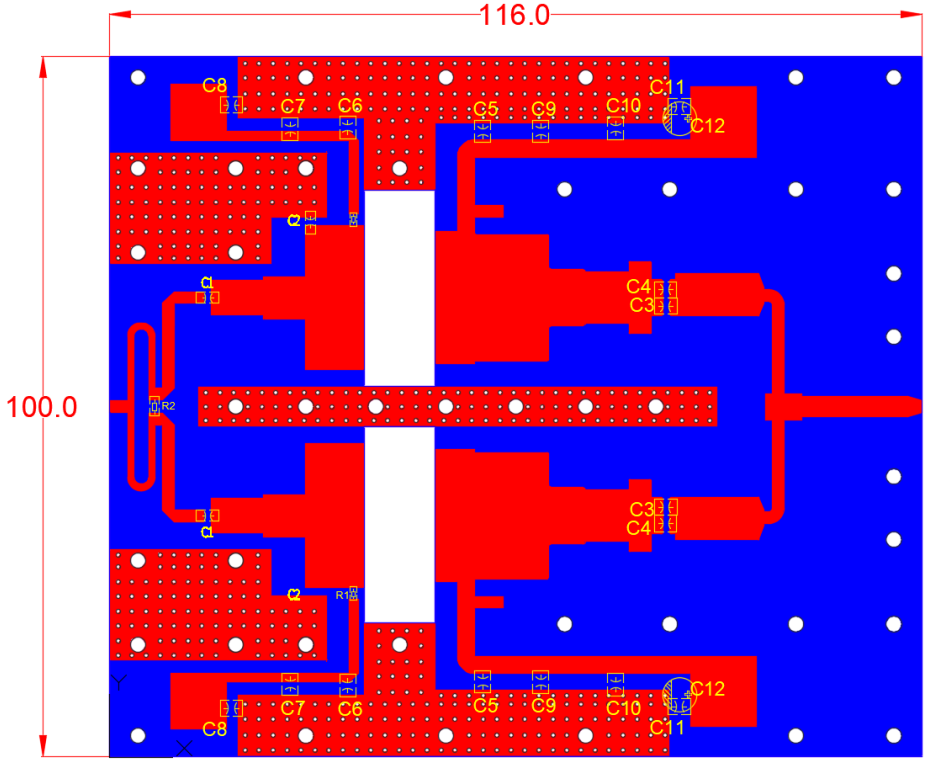
Vgs=-3.35V, Vds=50V, Idq=1000mA

input power= 0 dBm



STBV25500BY2X2

BOM of Test Circuit



Component	Description	Suggested Manufacturer
C12	470uF/63V	-
C7,C8 C9, C10, C11	10uF（1210）	-
C1	12pF(MQ300805)	
C5, C6,	12pF(MQ301111)	
C3, C4,	6.8pF(MQ301111)	
C2	0.8pF(MQ300805)	
R1	Chip Resistor,10Ω（0805）	-
R2	Chip Resistor,100Ω（1206）	-
PCB	Rogers tc350, r = 3.5, thickness 30 mils	-