

Application Report SK1685VS X2 1200-1400MHz**SK1685VS X2 Class AB 1200-1400MHz****Introduction**

This amplifier is designed with Innogrations 50V GaN transistor using 2 pcs of SK1685VS to have >1500W pulsed CW output across 1200 to 1400MHz.

If customer wants to duplicate the same design, please order SK1685VS.

Demo and Transistor

Frequency band :1200-1400MHz
Application : L band/Multi Market
Configuration : Class AB
Test Signal :Pulse
Transistor : SK1685VS X2
Date code :213425S;
PCB : 20mil Rogers4350B

The amplifier has been characterized under the following conditions:

- Network Analyzer plots for gain and IRL.
- P1dB and P3dB Peak power measurement using the Pulse, 20uS width, 10%;

Note: The PA is tested with a supply voltage of $V_{DS}=50V$, $V_{gs1}=-3.31V$, $I_{dq1}=200mA$ $V_{gs2}=-3.24V$, $I_{dq2}=200mA$, all measurements unless otherwise noted.

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Test Results:

1. Summary

VDS=50V VGS1=-3.31V, IDQ1=2000mA; VGS2=-3.24V, IDQ2=200mA;

Signal mode: Pulse, 20uS width, 10%; Frequency: 1200-1400MHz

Pout = P_sat dB

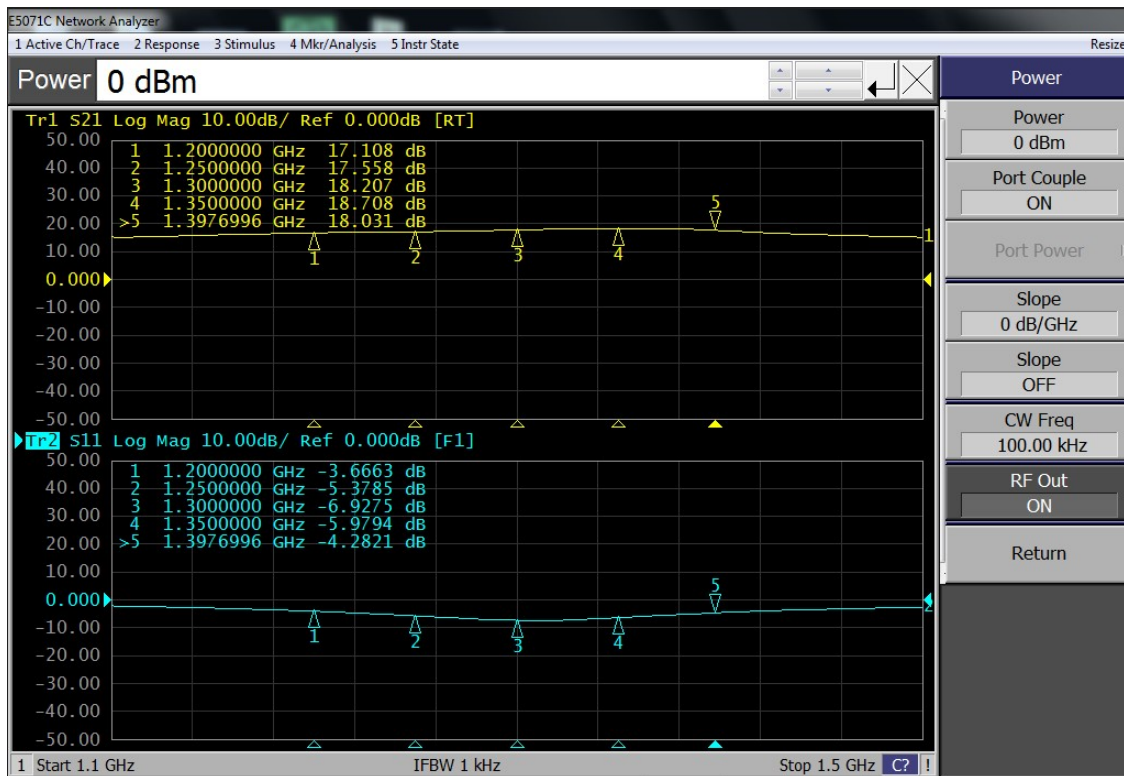
Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)
1200	45	62.31	1702.16	5.91	17.31	57.60
1250	44.9	62.42	1745.82	6.1	17.52	57.24
1300	44.8	62.43	1749.85	5.87	17.63	59.62
1350	44.9	62.15	1640.59	5.5	17.25	59.66
1400	46	62.05	1603.25	5.49	16.05	58.41

2. Network Results

Test Condition:

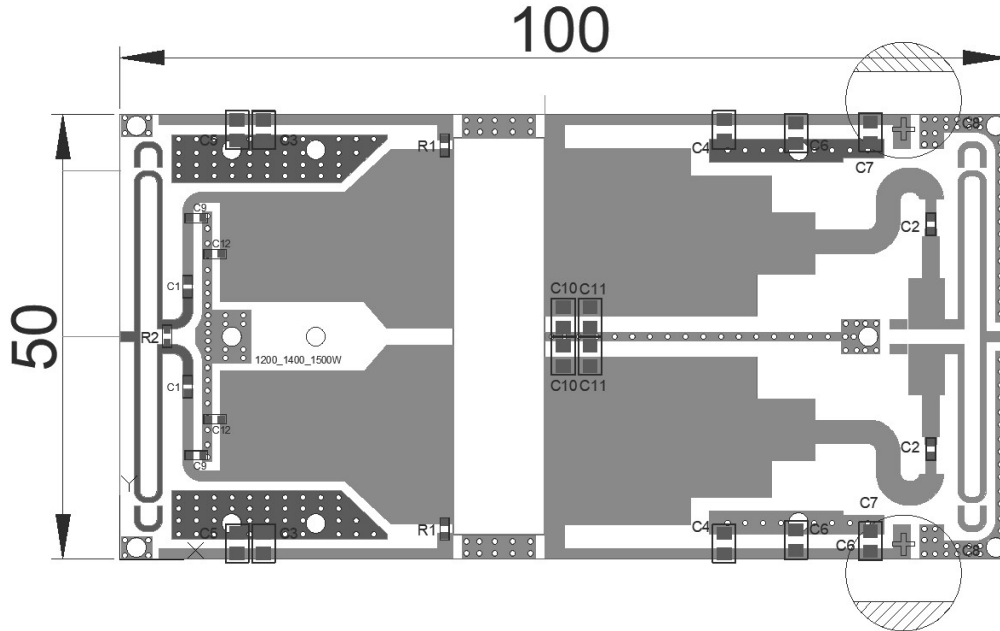
VDS=50V, VGS1=-3.25V, IDQ1=500mA ; VGS2=-3.19V; IDQ2=500mA, IDQ2=500mA

Input Power = 0dBm



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Test Circuit (Layout file upon request)



Component	Description	Suggested Manufacturer
C1,C2	30pF	Beijing YNMQ200805,
C9,	0.8pF	Beijing YNMQ200805,
C12	1.2pF	Beijing YNMQ200805
C3, C4	30pF	Beijing YNMQ101111
C10	3.3pF	Beijing YNMQ101111
C11	2pF	Beijing YNMQ101111
C5, C6,C7	10uF	10uF/50V
C8	4700 uF	4700 uF/63V
R1	Chip Resistor,10 Ω	1206
R2	Chip Resistor,100 Ω	1206
PCB	20mil thick, εr=3.48, Rogers RO4350B, 1 oz. copper	