

Application Report SK1285RVS^{V0} X2 960-1225MHz**SK1285RVS^{V0} X2 Class AB 960-1225MHz****Introduction**

This amplifier is designed with Innogration 50V GaN transistor using 2 pcs of SK1285RVS to have >1500W pulsed CW output across 960 to 1225MHz. If customer wants to duplicate the same design, please order SK1285RVS.

Demo and Transistor

Frequency band :960-1225MHz
Application : Avionics
Configuration : Class AB
Test Signal :Pulse
Transistor : SK1285RVS^{V0} X2
Date code :223314S-03, 223314S-04;
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% &300uS width 30% cycle.

Note: The PA is tested with a supply voltage of $V_{DS}=50V$, $V_{gs1}=-3.31V$, $I_{dq1}=150mA$ $V_{gs2}=-3.35V$, $I_{dq2}=150mA$, all measurements unless otherwise noted.

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Test Results:

1. Pulsed CW performance across the band

VDS=50V VGS1=-3.31V, IDQ1=150mA; VGS2=-3.35V, IDQ2=150mA;

Signal mode: Pulse, 20uS width, 10%; Frequency: 960-1225MHz

Pout = P_{sat} dB

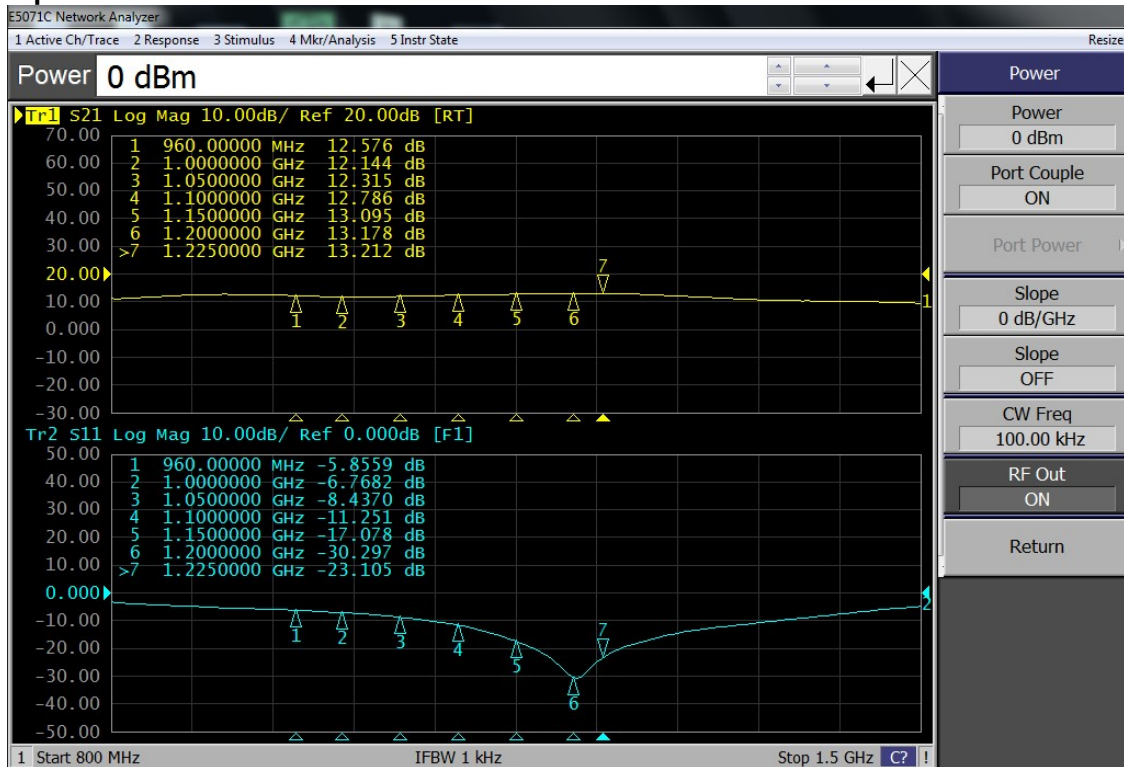
| Freq(MHz) | Pin(dBm) | Psat(dBm) | Psat(W) | IDS(A) | Gain(dB) | Eff(%) |
|-----------|----------|-----------|---------|--------|----------|--------|
| 960 | 49.6 | 61.85 | 1531.09 | 5.63 | 12.25 | 54.39 |
| 1000 | 48.9 | 62.24 | 1674.94 | 6.3 | 13.34 | 53.17 |
| 1050 | 49 | 62.23 | 1671.09 | 6.31 | 13.23 | 52.97 |
| 1100 | 48.8 | 62.4 | 1737.80 | 6.03 | 13.6 | 57.64 |
| 1150 | 48.6 | 62.33 | 1710.02 | 5.95 | 13.73 | 57.48 |
| 1200 | 48.3 | 62.38 | 1729.82 | 5.67 | 14.08 | 61.02 |
| 1225 | 48.3 | 62.05 | 1603.25 | 5.3 | 13.75 | 60.50 |

2. Network Results

Test Condition:

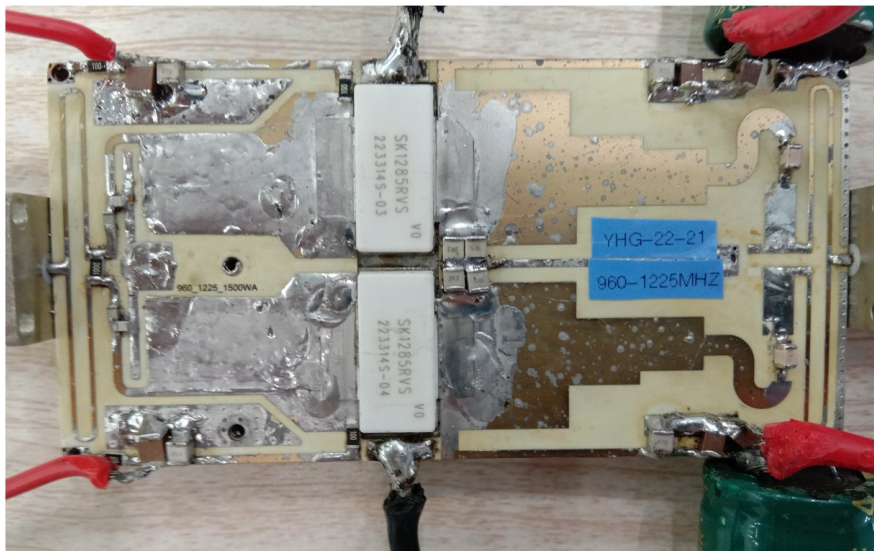
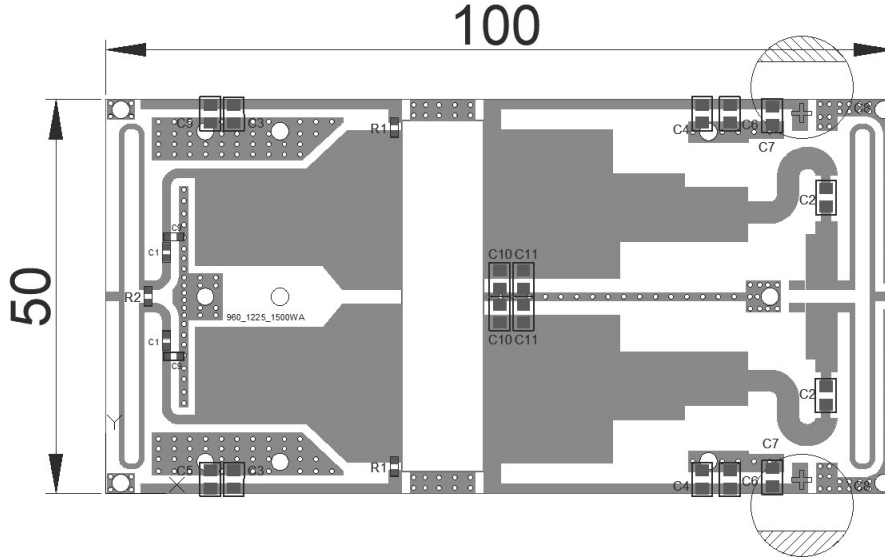
VDS=50V, VGS1=-3.16V, IDQ1=500mA ; VGS2=-3.26V; IDQ2=500mA, IDQ2=500mA

Input Power = 0dBm



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Test Circuit (Layout file upon request)



| Component | Description | Suggested Manufacturer |
|-----------|---|------------------------|
| C1, | 9.1pF | Beijing YN MQ200805, |
| C9, | 2.2pF | Beijing YN MQ200805, |
| C2 | 30pF | Beijing YN MQ101111 |
| C3, C4 | 47pF | Beijing YN MQ101111 |
| C10 | 2.2pF | Beijing YN MQ101111 |
| C11 | 1.5pF | Beijing YN MQ101111 |
| 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, $\epsilon_r=3.48$, Rogers RO4350B, 1 oz. copper | |