

## SL3019VS Class AB 300-2000MHz

Sep.15, 2025

### Introduction

This amplifier is designed with Innogrations 50V Gan transistor.

### Demo and Transistor

|               |                            |
|---------------|----------------------------|
| Frequencyband | : 300-2000MHz              |
| Application   | : Multi Market             |
| Configuration | : Class AB                 |
| Test Signal   | : CW                       |
| Transistor    | : SL3019VS                 |
| Date code     | : 252306                   |
| PCB           | : FSD1020T,DK=10.2 ; 20mil |

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  $V_{DS} = 50V/42V$  ,  $I_{dq} = 140mA$ ,all measurements unless otherwise noted.**

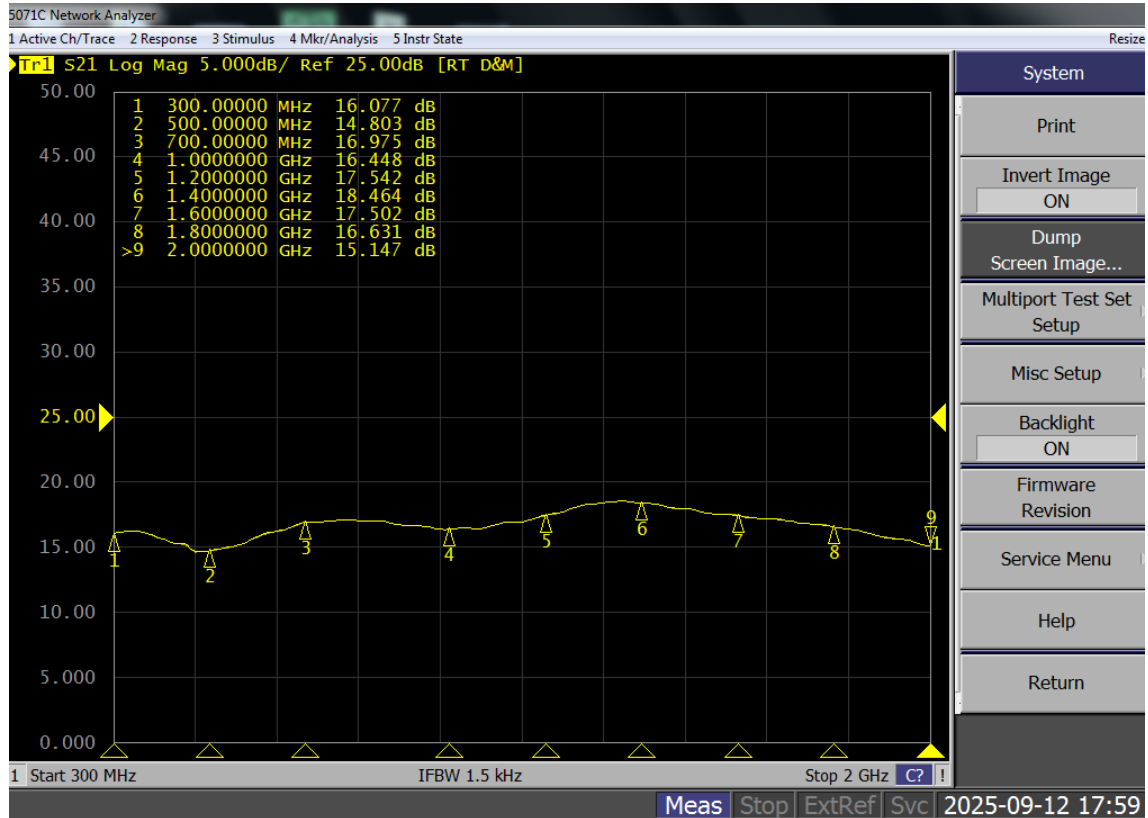
## TC-25-33

## SL3019VS: 300-2000MHz

### 1. Network Results

#### Test Condition

$V_{ds}=50V$ ,  $V_{gs}=-3.13V$ ,  $I_{dq}=200mA$ , Input Power = 0dBm



## Test Results

### 2. Summary @ Bench 2(Chengdu)

#### (1) Test Condition

Signal mode : CW

Frequency : 300-2000MHz

$V_{gs} = -3.18V$ ,  $V_{ds} = 42V$ ,  $I_{dq} = 140mA$

| SL3019VS VGS=-3.18V VDS=42V IDQ=140mA CW |               |             |            |              |              |        |              |              |
|------------------------------------------|---------------|-------------|------------|--------------|--------------|--------|--------------|--------------|
| Freq<br>(MHz)                            | Psat<br>(dBm) | Psat<br>(W) | IDS<br>(A) | Pin<br>(dBm) | Gain<br>(dB) | Eff(%) | 2nd<br>(dBc) | 3rd<br>(dBc) |
| 300                                      | 52.13         | 163.3       | 7.30       | 39.00        | 13.13        | 53.26  | -12.00       | -16.10       |
| 400                                      | 52.12         | 162.9       | 7.20       | 38.25        | 13.87        | 53.88  | -12.90       | -15.30       |
| 500                                      | 52.04         | 160.0       | 7.23       | 38.10        | 13.94        | 52.68  | -9.50        | -16.50       |
| 600                                      | 51.97         | 157.4       | 6.97       | 39.00        | 12.97        | 53.77  | -10.00       | -16.70       |
| 700                                      | 52.20         | 166.0       | 6.56       | 38.16        | 14.04        | 60.23  | -12.00       | -15.50       |
| 800                                      | 52.05         | 160.3       | 6.40       | 37.50        | 14.55        | 59.64  | -14.00       | -18.70       |
| 900                                      | 52.12         | 162.9       | 6.30       | 37.20        | 14.92        | 61.58  | -21.30       | -20.00       |
| 1000                                     | 52.41         | 174.2       | 6.87       | 38.32        | 14.09        | 60.37  | -20.70       | -14.80       |
| 1100                                     | 51.74         | 149.3       | 6.33       | 38.00        | 13.74        | 56.15  | -17.40       | -15.40       |
| 1200                                     | 52.61         | 182.4       | 7.97       | 39.10        | 13.51        | 54.49  | -29.40       | -27.80       |
| 1300                                     | 52.53         | 179.1       | 7.55       | 37.50        | 15.03        | 56.47  | -27.50       | -27.80       |
| 1400                                     | 51.80         | 151.4       | 6.60       | 36.50        | 15.30        | 54.60  | -16.10       | -32.10       |
| 1500                                     | 51.79         | 151.0       | 5.97       | 37.20        | 14.59        | 60.22  | -18.30       | -32.80       |
| 1600                                     | 51.42         | 138.7       | 5.40       | 38.40        | 13.02        | 61.14  | -16.40       | -39.00       |
| 1700                                     | 51.19         | 131.5       | 5.53       | 38.20        | 12.99        | 56.63  | -22.00       | -47.30       |
| 1800                                     | 51.72         | 148.6       | 6.24       | 38.20        | 13.52        | 56.70  | -42.60       | -40.50       |
| 1900                                     | 51.90         | 154.9       | 6.54       | 38.80        | 13.10        | 56.39  | -55.00       | -23.80       |
| 2000                                     | 51.52         | 141.9       | 5.64       | 38.25        | 13.27        | 59.91  | -28.00       | -29.20       |

**TC-25-33**
**SL3019VS: 300-2000MHz**

Signal mode : CW

Frequency : 300-2000MHz

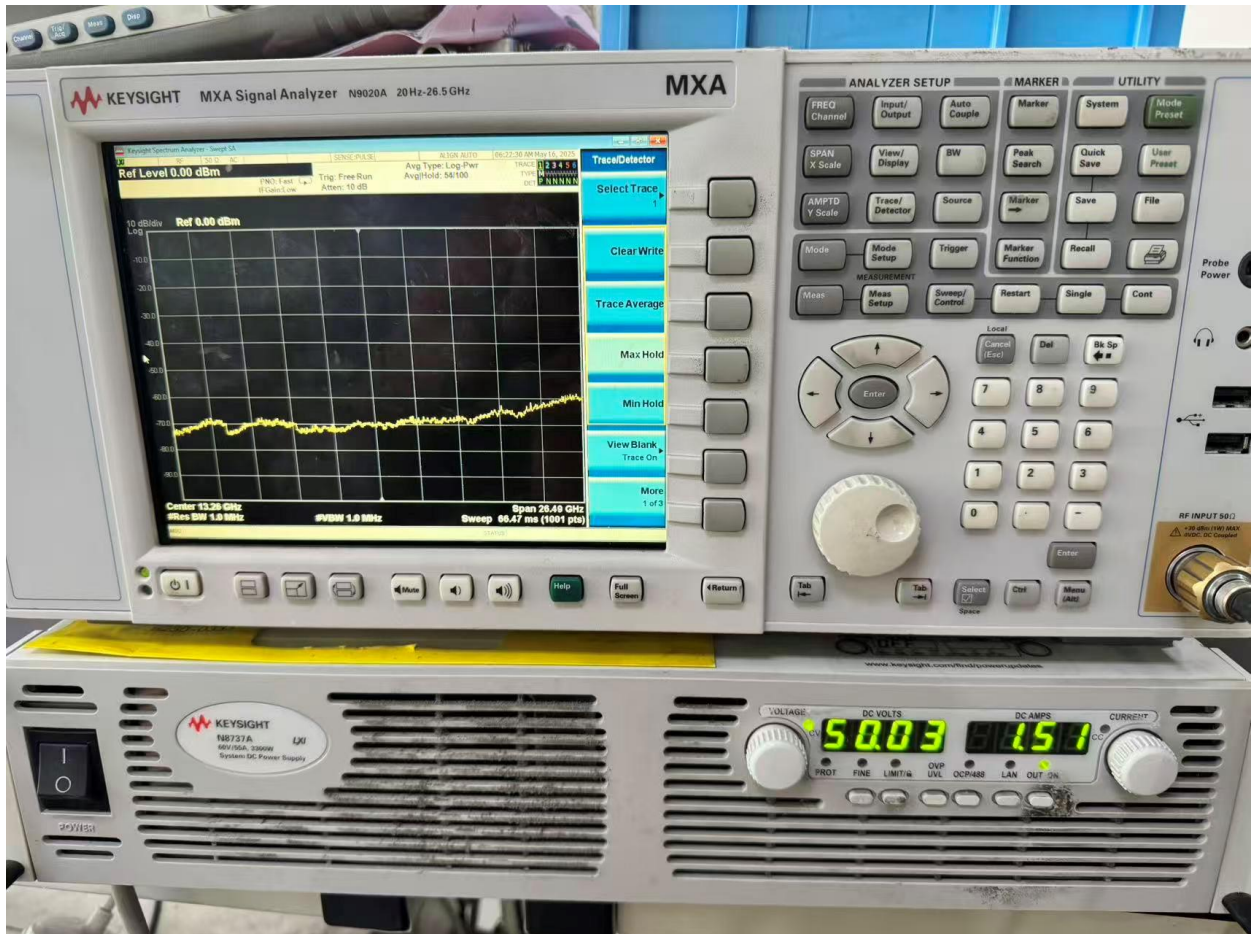
$V_{gs} = -3.18V$ ,  $V_{ds} = 50V$ ,  $I_{dq} = 140mA$

| SL3019VS VGS=-3.18V VDS=50V IDQ=140mA CW |            |          |         |           |           |        |
|------------------------------------------|------------|----------|---------|-----------|-----------|--------|
| Freq (MHz)                               | Psat (dBm) | Psat (W) | IDS (A) | Pin (dBm) | Gain (dB) | Eff(%) |
| 300                                      | 52.69      | 185.8    | 7.62    | 39.00     | 13.69     | 48.76  |
| 400                                      | 52.56      | 180.3    | 7.42    | 38.25     | 14.31     | 48.60  |
| 500                                      | 52.37      | 172.6    | 7.17    | 38.10     | 14.27     | 48.14  |
| 600                                      | 52.39      | 173.4    | 7.18    | 39.00     | 13.39     | 48.30  |
| 700                                      | 52.86      | 193.2    | 6.89    | 38.16     | 14.70     | 56.08  |
| 800                                      | 52.85      | 192.8    | 6.84    | 37.50     | 15.35     | 56.36  |
| 900                                      | 52.96      | 197.7    | 6.74    | 37.20     | 15.76     | 58.66  |
| 1000                                     | 53.26      | 211.8    | 7.36    | 38.85     | 14.41     | 57.56  |
| 1100                                     | 52.40      | 173.8    | 6.62    | 39.00     | 13.40     | 52.50  |
| 1200                                     | 53.17      | 207.5    | 8.40    | 40.00     | 13.17     | 49.40  |
| 1300                                     | 53.05      | 201.8    | 7.75    | 37.50     | 15.55     | 52.09  |
| 1400                                     | 52.65      | 184.1    | 7.10    | 36.50     | 16.15     | 51.85  |
| 1500                                     | 52.58      | 181.1    | 6.45    | 37.20     | 15.38     | 56.17  |
| 1600                                     | 52.46      | 176.2    | 5.86    | 38.40     | 14.06     | 60.14  |
| 1700                                     | 52.29      | 169.4    | 5.95    | 38.70     | 13.59     | 56.95  |
| 1800                                     | 52.42      | 174.6    | 6.55    | 38.20     | 14.22     | 53.31  |
| 1900                                     | 52.71      | 186.6    | 6.97    | 38.80     | 13.91     | 53.55  |
| 2000                                     | 52.37      | 172.6    | 6.12    | 38.25     | 14.12     | 56.40  |

**TC-25-33**

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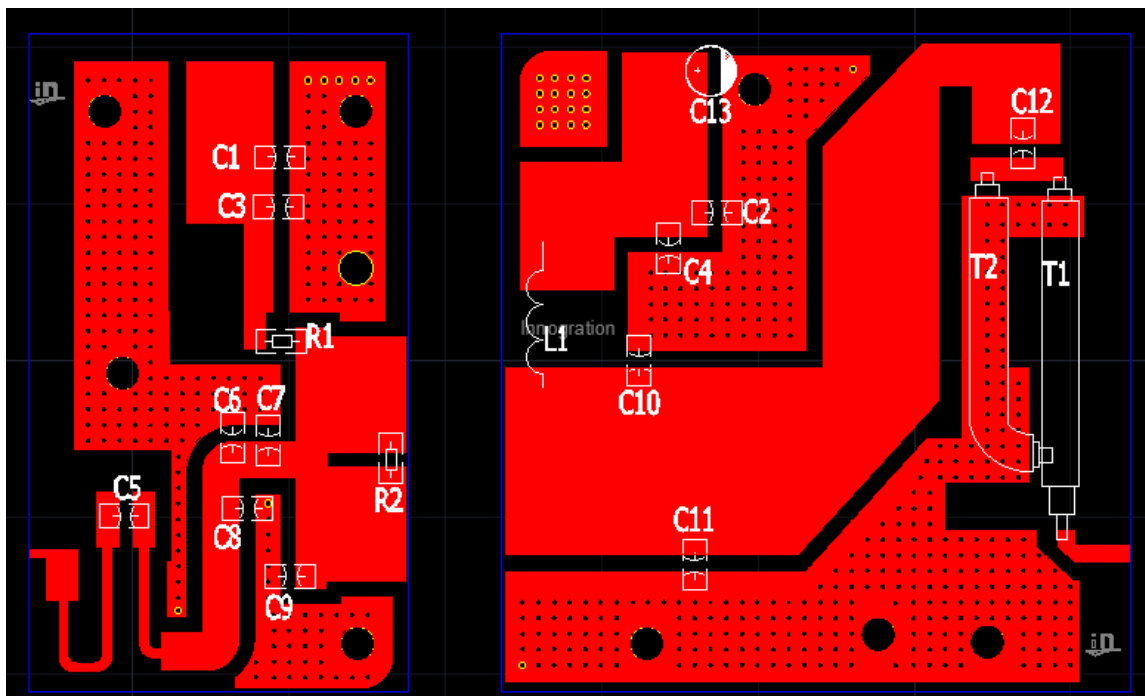
spectrum analyzer to • show no oscillation or instability issue  
Test Condition:  $V_{gs} = -3.09V$ ,  $V_{ds} = 50V$ ,  $I_{dq} = 1500mA$



**TC-25-33**

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## BOM of Test Circuit



| Component | Description                         | Suggested Manufacturer                                          |
|-----------|-------------------------------------|-----------------------------------------------------------------|
| C1~C2     | 10uF/200V-1210                      | TDK                                                             |
| C3,C4     | 68pF                                | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C5        | 39pF                                | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ400805 |
| C6        | 1.5pF                               | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C7,C9     | 2pF                                 | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C8        | 1.8pF                               | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C10       | 0.5pF                               | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C11       | 1pF                                 | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111 |
| C12       | 27pF                                | BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ300709 |
| C13       | 470uF/63V                           | Electrolytic Capacitor                                          |
| L1        | 1mm wire, 3mm innerdiameter, 4turns | DIY                                                             |
| R1        | 51 $\Omega$ -1206                   | Chip Resistor                                                   |
| R2        | 10 $\Omega$ -1206                   | Chip Resistor                                                   |
| T1,T2     | 25ohm-23mm                          | RFSFBU-086-25                                                   |
| PCB       | FSD1020T,DK=10.2 ; 20mil            |                                                                 |

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**Demo Picture**

