

性能特点

- 频率范围: 9.5 ~ 16 GHz
- 小信号增益: 19.5 dB
- P1dB 输出功率: 24.5dBm@Vd = +6V
25.6dBm@Vd = +8V
- Psat 输出功率: 25.5dBm@Vd = +6V
26.6dBm@Vd = +8V
- Bias: Vd = 6V, Id = 105mA
Vd = 8V, Id = 115mA
- 芯片尺寸: 1.50mm×0.91mm× 0.1mm

产品简介

ZRA1293D 是一款 Ku 波段功率放大器，采用 GaAs 工艺制造。其工作频率覆盖范围 9.5~16GHz，小信号增益为 19.5dB，饱和输出功率 25.5dBm。

应用领域

- 点对点无线电
- Ku 频段 VSAT

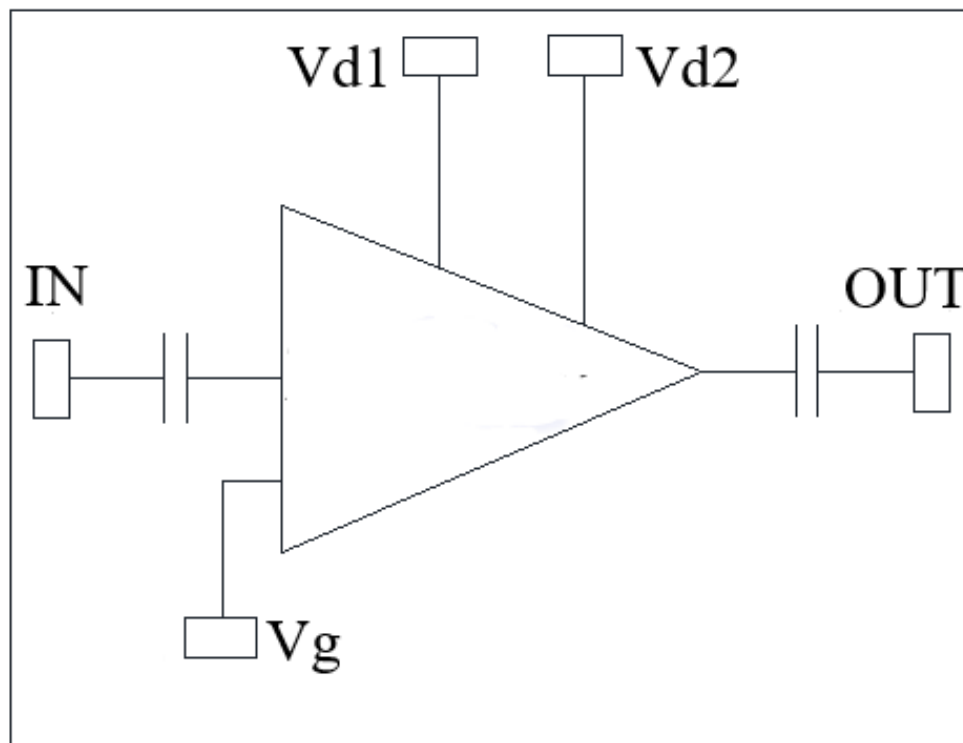


Figure 1. Functional Block Diagram

目录

性能特点.....	1
产品简介.....	1
应用领域.....	1
1. 性能参数.....	3
1.1. 电参数.....	3
1.2. 允许最大参数范围.....	3
1.3. ESD 等级.....	3
1.4. 推荐工作条件.....	4
2. 典型性能特点.....	4
3. 管脚信息.....	9
3.1. 管脚描述.....	9
4. 外形尺寸.....	10
5. 建议装配示意图.....	11
6. 历史版本.....	12

1. 性能参数

1.1. 电参数

除非状态特殊说明，所有参数均在 $V_d = 6V$, $I_d = 105mA$, $T_A = 25^\circ C$ 条件下测试得出。

参数名称	最小值	典型值	最大值	单位
Frequency Range	9.5		16	GHz
Gain	18.8	19.5	20.5	dB
Input Return Loss	12	20		dB
Output Return Loss	15.5	16		dB
Output P1dB@Vd=6V	23.6	24.5	25	dBm
Output P1dB@Vd=8V	25.6	25.6	26.5	dBm
Saturated Output Power(P_{sat}) @Vd=6V	24	25.5	25.6	dBm
Saturated Output Power(P_{sat}) @Vd=8V	26	26.6	26.8	dBm
OIP3(POUT/Tone= 12.5dBm, 1MHz tonespacing)	27.1	29.1	30.1	dBm
Gain Temperature Coefficient		-0.018		dB/°C
Power Temperature Coefficient		-0.01		dB/°C

1.2. 允许最大参数范围

参数名称	参数值 / 范围	单位
Drain Voltage (Vd)	+8.5	V
Gate Voltage Range (Vg)	-4 to 0	V
Drain Current (Id)	220	mA
Power Dissipation (PDISS)	1.8	W
RF Input Power, CW, 50Ω, T = 25°C	15	dBm
Junction Temperature	170	°C
Soldering Temperature (30s, max.)	260	°C
Storage Temperature	-65 to 150	°C

以上参数仅表示应力范围，并不意味在这些条件下的功能操作。芯片在以上所列参数范围外工作可能造成芯片永久性损坏。

1.3. ESD 等级

参数名称	参数值	等级
Human Body Model (HBM)	±250V	Class-1A

1.4. 推荐工作条件

Vd(V)	Id(mA)
+5	100
+6	105
+7	110
+8	115

2. 典型性能特点

除非状态特殊说明，所有参数均在 $V_d = 6V$, $I_d = 105mA$, $T_A = 25^\circ C$ 条件下测试得出。

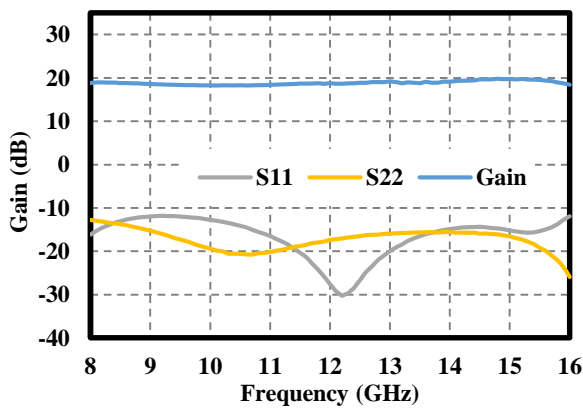


Figure 2. Gain & Return Loss

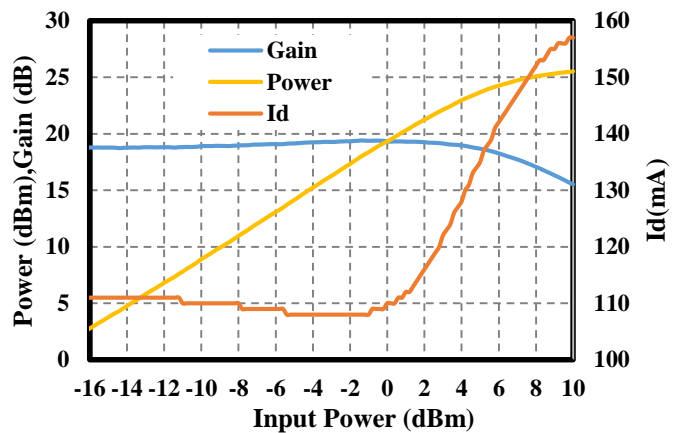


Figure 3. Power, Gain, Id vs. Input Power @ 13 GHz

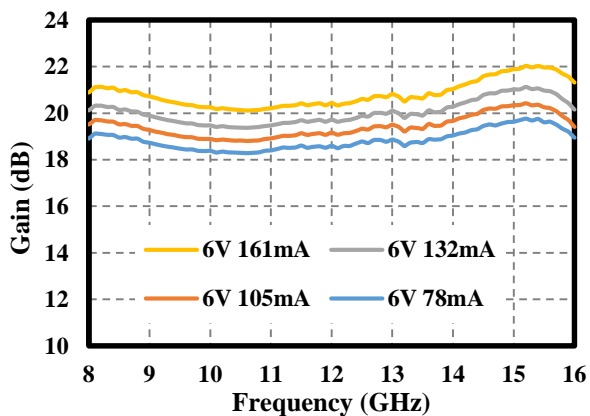


Figure 4. Gain vs. Id

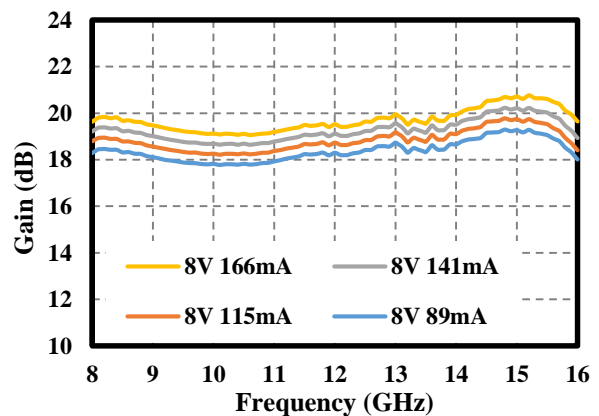


Figure 5. Gain vs. Id

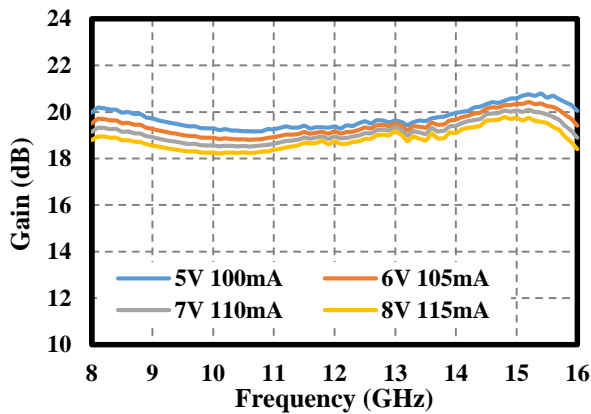


Figure 6. Gain vs. Vd

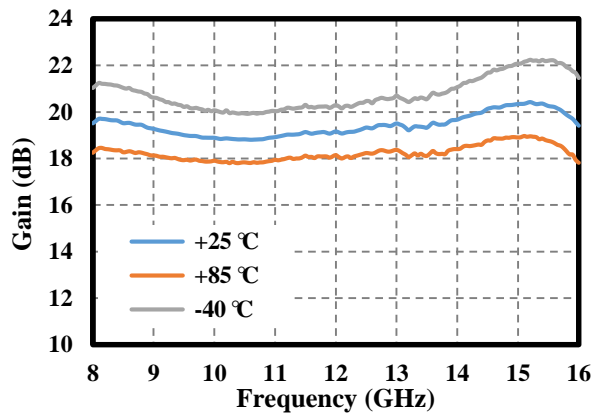


Figure 7. Gain vs. Temp

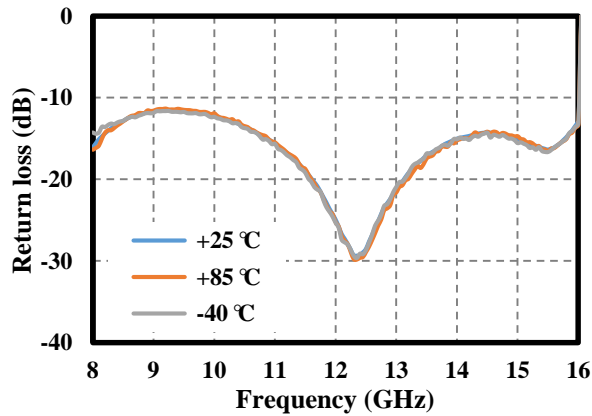


Figure 8. Input Return loss

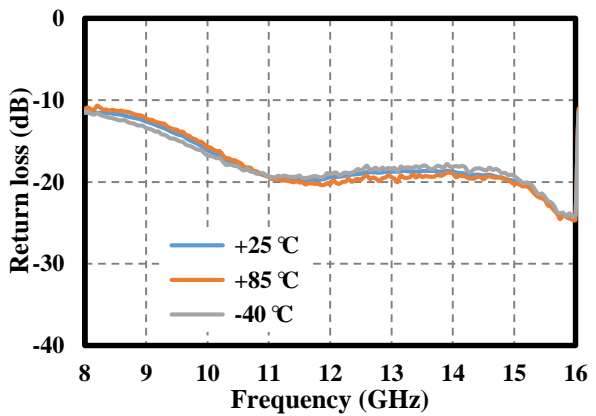


Figure 9. Output Return loss

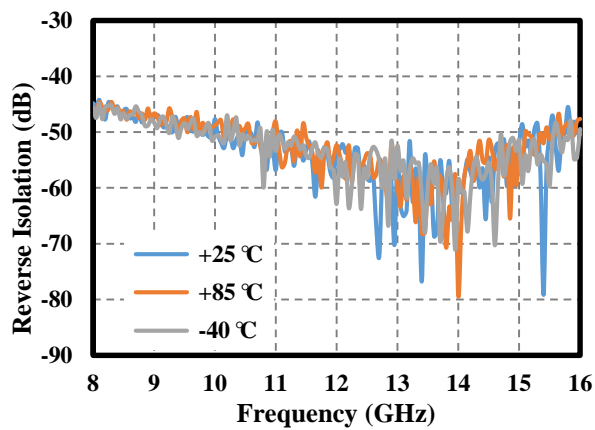


Figure 10. Reverse Isolation

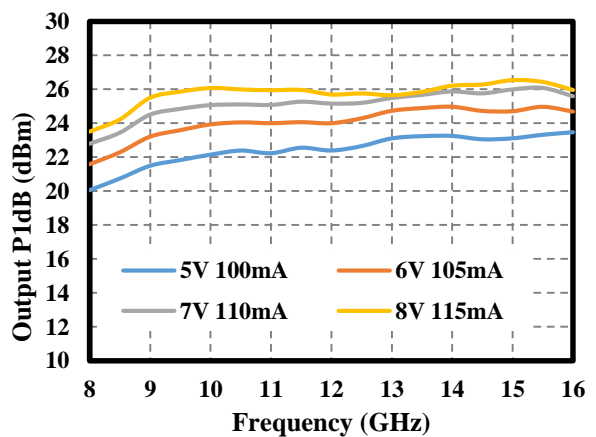


Figure 11. P1dB vs. Vd

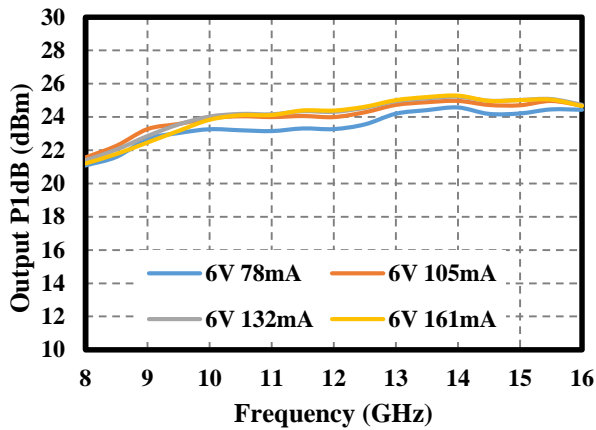


Figure 12. P1dB vs. Id

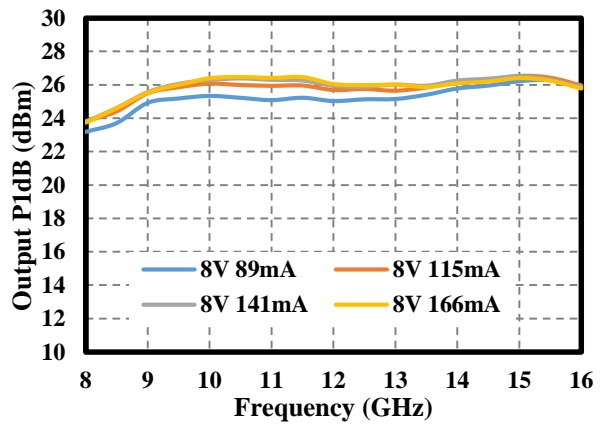


Figure 13. P1dB vs. Id

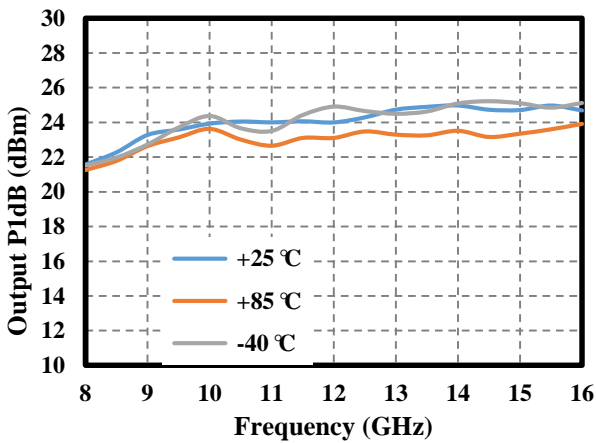


Figure 14. P1dB vs. Temp

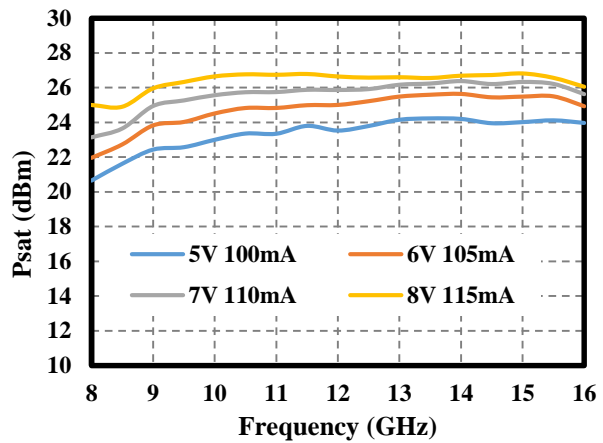


Figure 15. Psat vs. Vd

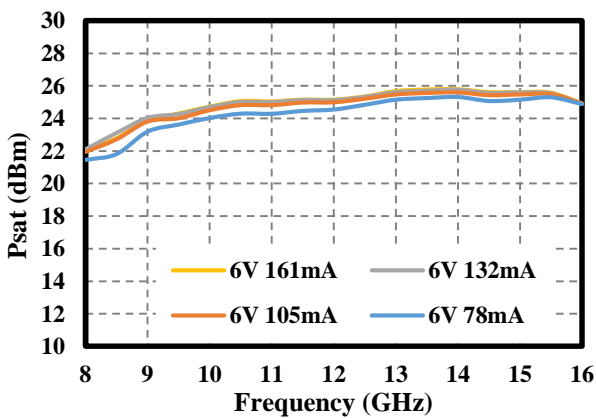


Figure 16. Psat vs. Id

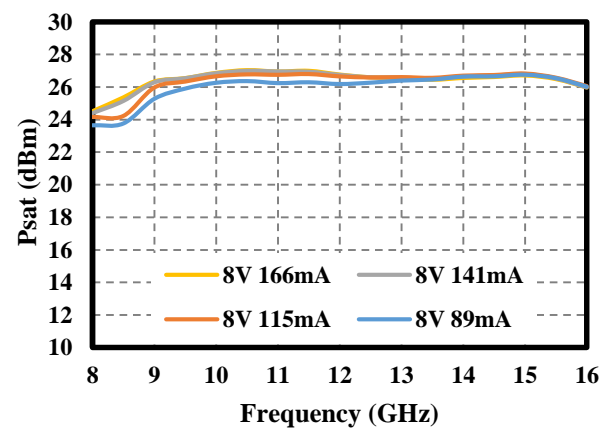


Figure 17. Psat vs. Id

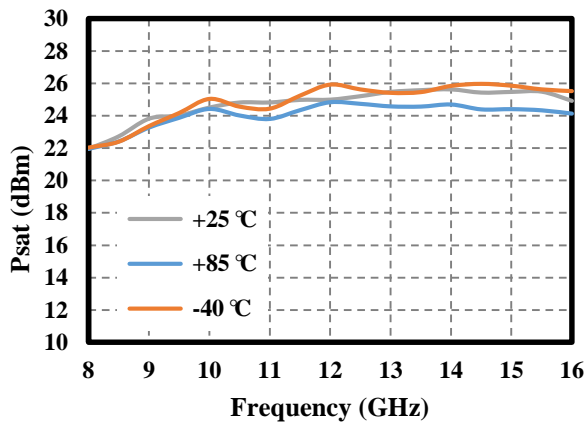


Figure 18. Psat vs. Temp

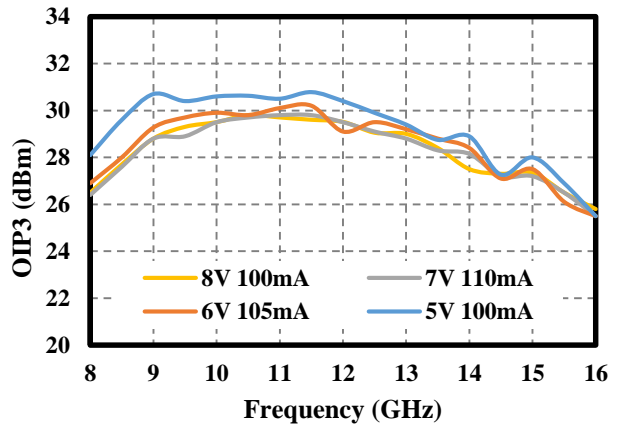


Figure 19. OIP3 vs. Vd
(Pout/Tone = 12.5 dBm)

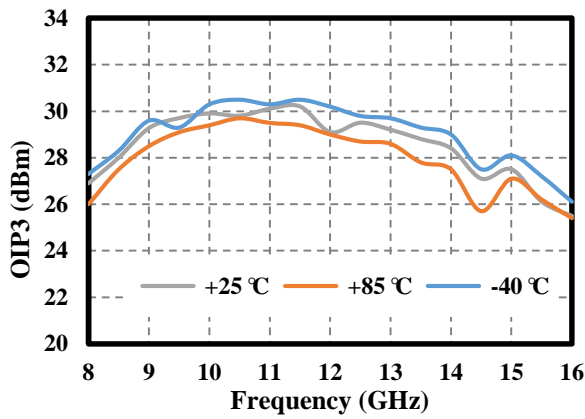


Figure 20. OIP3 vs. Temp
(Pout/Tone = 12.5 dBm)

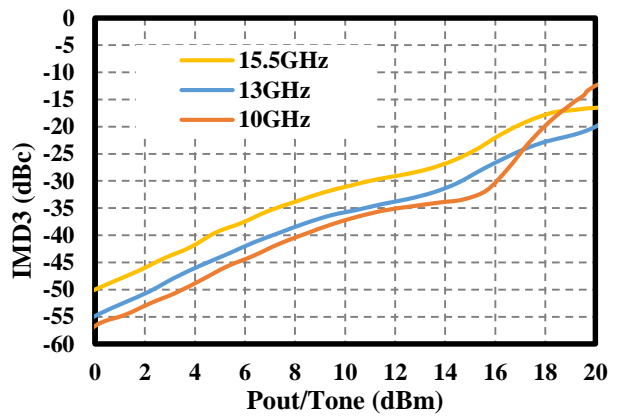


Figure 21. IMD3 vs. Pout/Tone

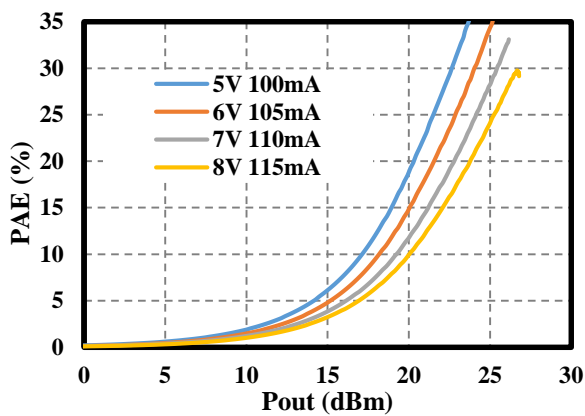


Figure 22. PAE vs. Pout @ 13GHz

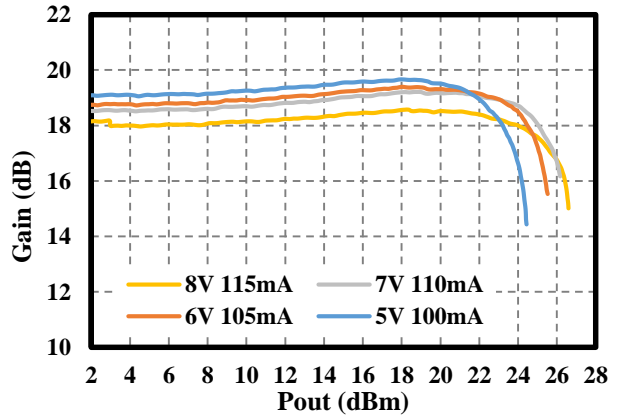


Figure 23. Gain vs. Pout @ 13GHz

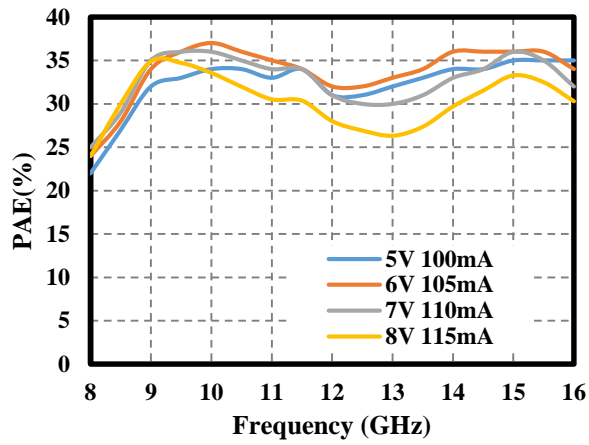


Figure 24. PAE vs. Vd

3. 管脚信息

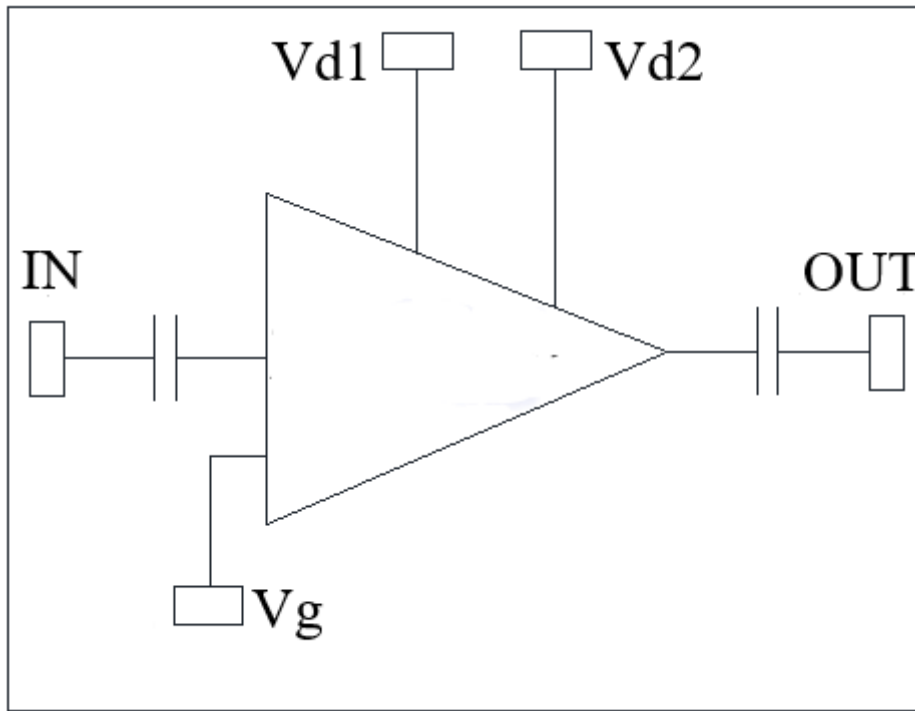


Figure 1. 管脚信息

Table 1. 管脚描述

管脚名	管脚描述
IN	射频信号输入端口
OUT	射频信号输出端口
Vg	放大器的栅极电源电压
Vd1	放大器的漏极电源电压
Vd2	放大器的漏极电源电压

4. 外形尺寸

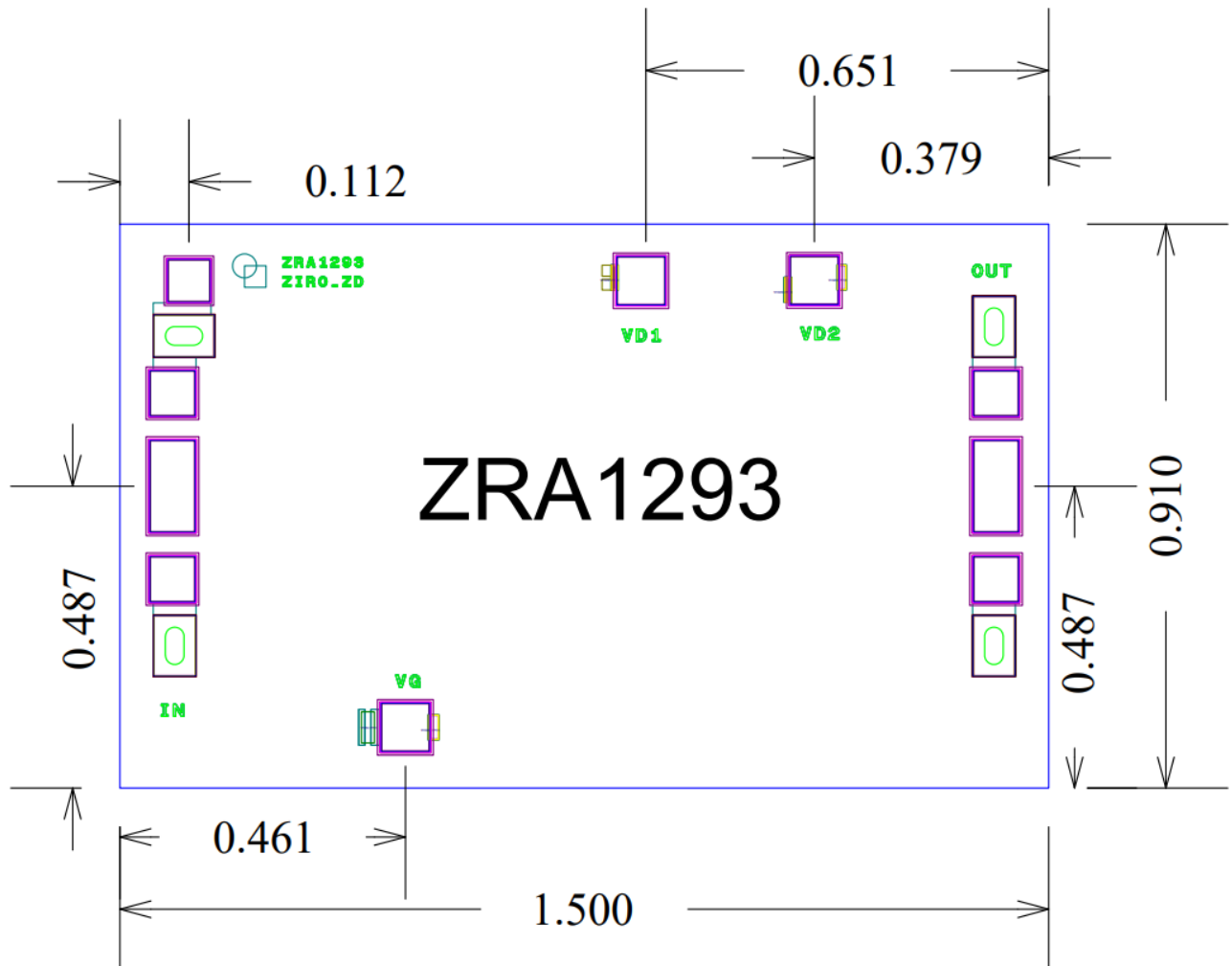


Figure 2. 外形尺寸

注:

1. 所有尺寸单位均为毫米;
2. 芯片厚度为 0.1mm;
3. 键合点金属为金;
4. 芯片背面镀金;
5. 芯片背面接地;
6. 外形尺寸公差为 $\pm 0.05\text{m}$

5. 建议装配示意图

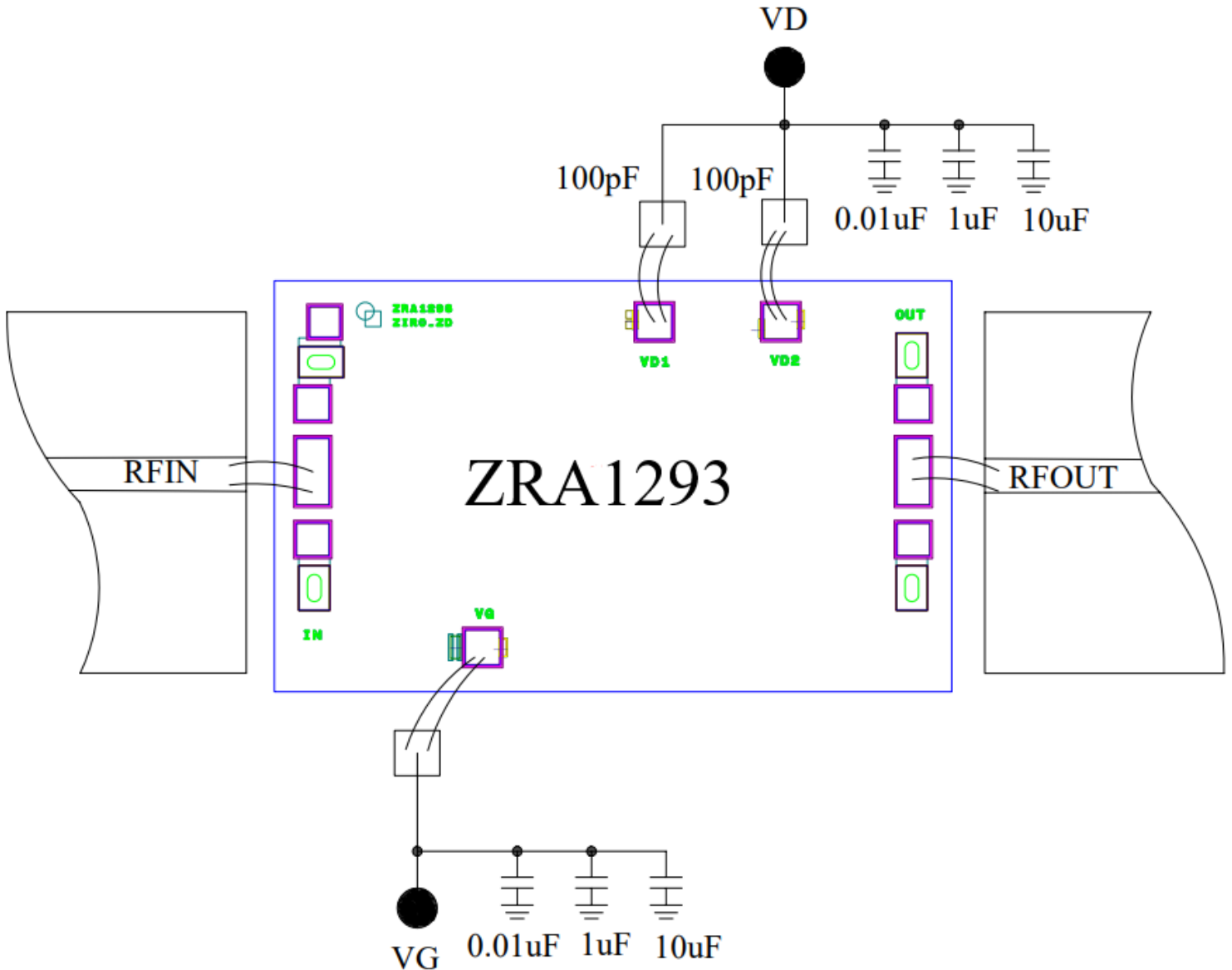


Figure 3. 装配示意图

注:

1. 须在净化间中进行装配;
2. 图中键合线为 25um 直径的金丝;
3. 射频键合点须键合 2 根金丝, 金丝长度尽量短。

6. 历史版本

Revision	Description	Modifier	Date
Rev.0.1	初始发布	YT	2023.12.08
Rev.0.2	测试数据添加	YDS	2023.12.25