

## 性能特点

频率范围：13~20GHz

增益：25 dB

P<sub>-1dB</sub>: 24dBm@V<sub>dd</sub>=+5V

27.5dBm@V<sub>dd</sub>=+8V

Psat: 25.5dBm@V<sub>dd</sub>=+5V

28.5dBm@V<sub>dd</sub>=+8V

PAE@P<sub>-1dB</sub>: 34%@V<sub>dd</sub>=+8V

PAE@Psat: 37% @V<sub>dd</sub>=+8V

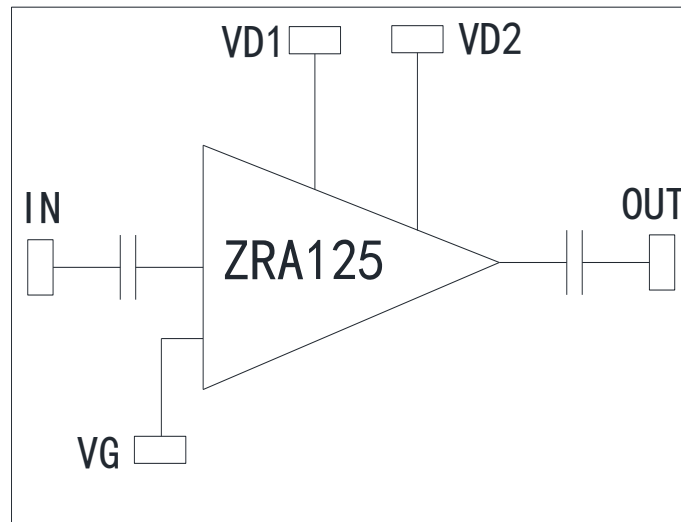
直流供电：V<sub>dd</sub>= +5V ~ +8V;

V<sub>g</sub>= -2V ~ 0V

芯片尺寸：2.55mm×0.86mm×0.1mm

## 产品简介

ZRA125 是一款 GaAs pHEMT MMIC 放大器芯片，其工作频率覆盖 13~20GHz，线性增益大于 24 dB，饱和输出功率大于 28.5dBm，PAE 可到达 34%以上。



芯片功能框图

## 1. 性能参数表

### 1.1 电参数 (TA=+25°C, Vdd=8V, Idd=190mA\*)

指标	最小值	典型值	最大值	单位
频率范围	13~20			GHz
小信号增益	23	25	27	dB
输入回波损耗	9	12	25	dB
输出回波损耗		15	25	dB
P <sub>-1dB</sub>	27	28	28.5	dBm
Psat	27.7	29	29.5	dBm
PAE (@Psat)		37		%
静态电流		190		mA

\*调整 Vg 以实现 Idd=190mA, Vg 调整范围-2 到 0V

### 1.2 允许最大参数范围

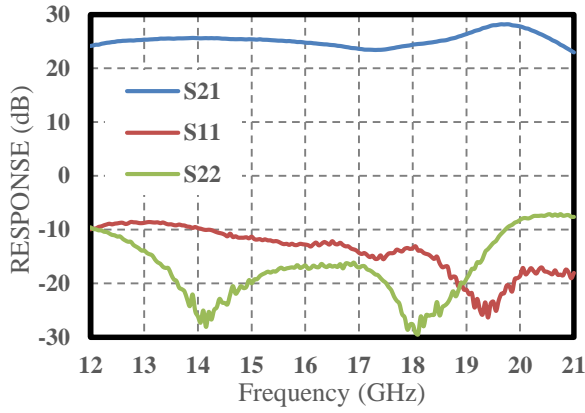
参数名称	参数说明	最大范围		单位
		最小值	最大值	
Vdd	直流供电	-	+8.5	V
Vg	直流供电	-4	0	V
Operating Temperature	工作温度	-40	+85	°C
Junction Temperature (TJ)	结温	-	150	°C

### 1.3 推荐工作范围 (TA=+25°C)

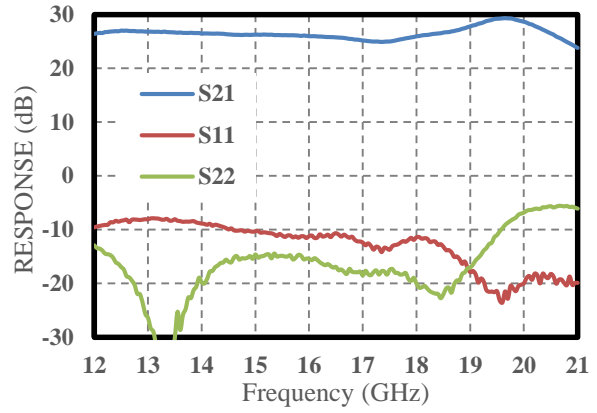
Vdd(V)	Id(mA)
+5	163
+7	179
+8	190

注：放大器将在以上所示的整个电压范围工作。调整 Vg 以在 Vdd=+8V@Id=190mA。

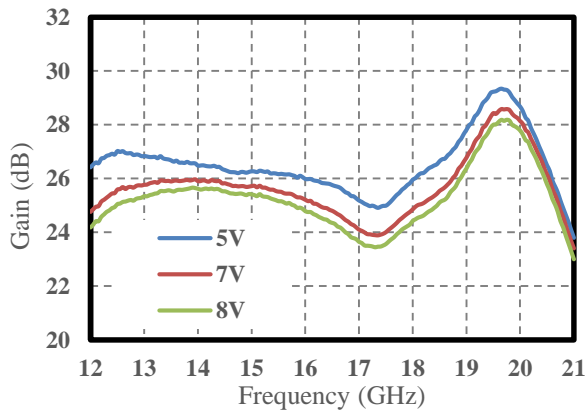
### 2. 典型性能参数



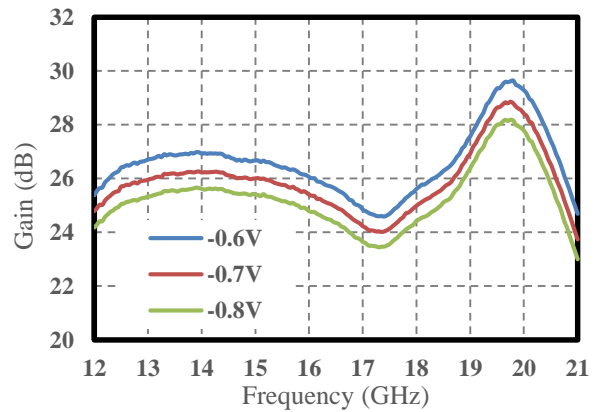
**Gain & Return Loss (Vdd=8V,  
Id=190mA)**



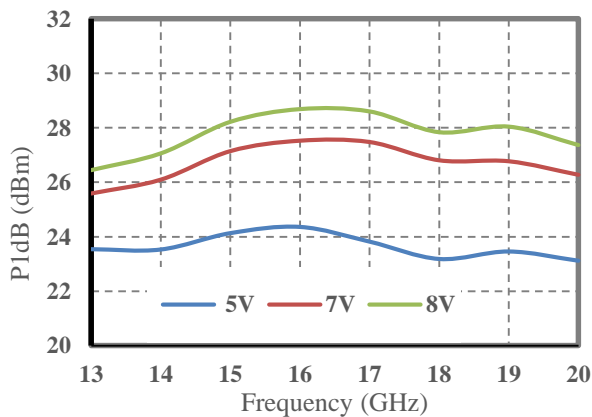
**Gain & Return Loss (Vdd=5V,  
Id=163mA)**



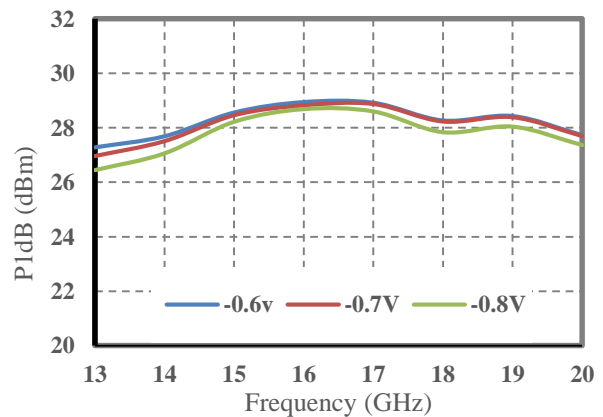
**Gain vs. Vd**



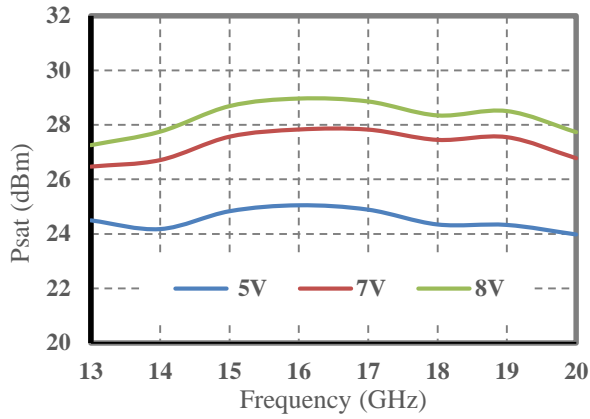
**Gain vs. Vg (Vdd=8V)**



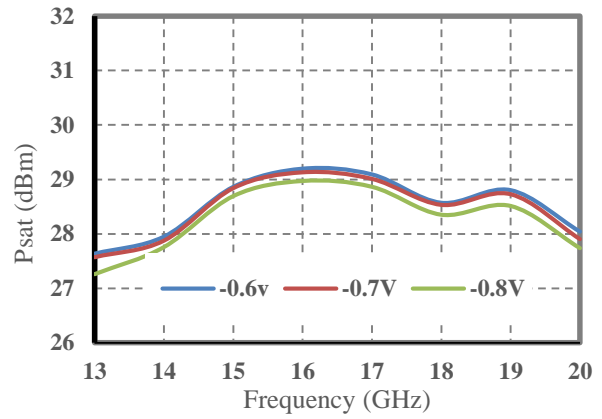
**P1dB vs. Vd**



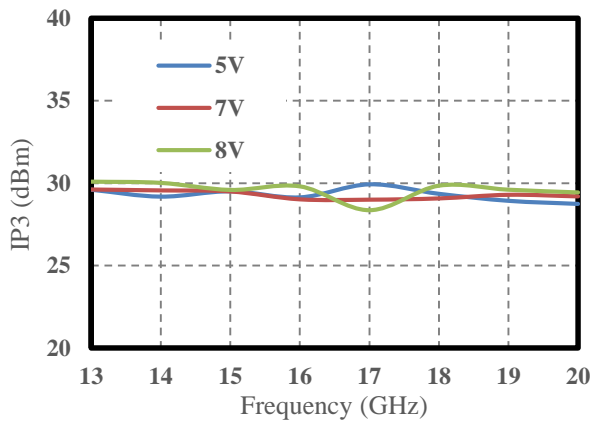
**P1dB vs. Vg (Vdd=8V)**



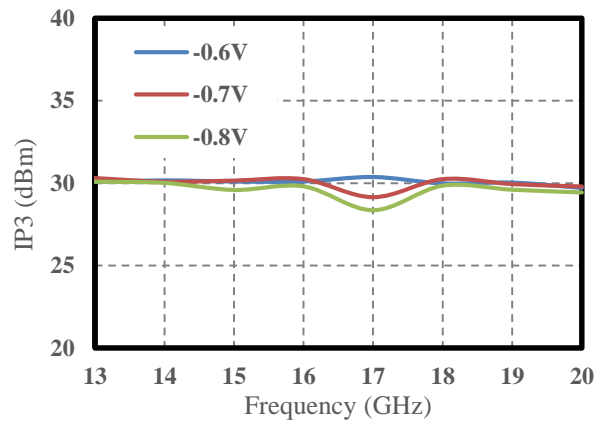
**Psat vs. Vd**



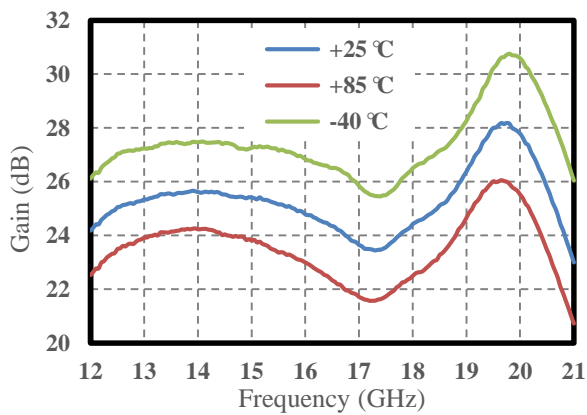
**Psat vs. Vg (Vdd=8V)**



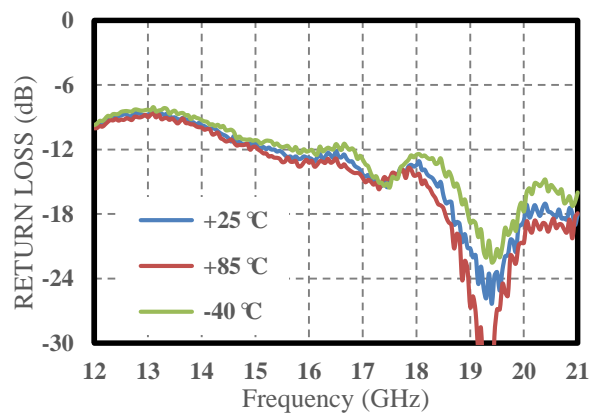
**OIP3 vs. Vd (Pout=P1dB-12dB)**



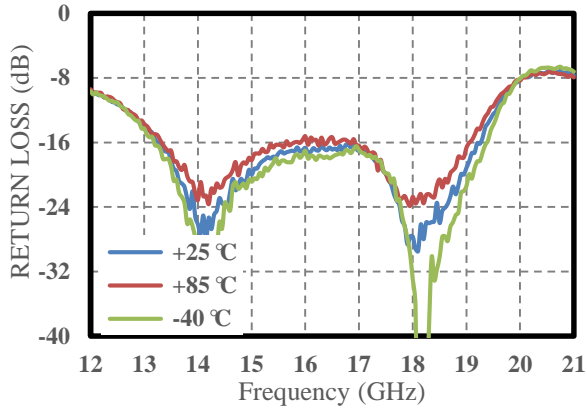
**OIP3 vs. Vg (Pout=P1dB-12dB)**



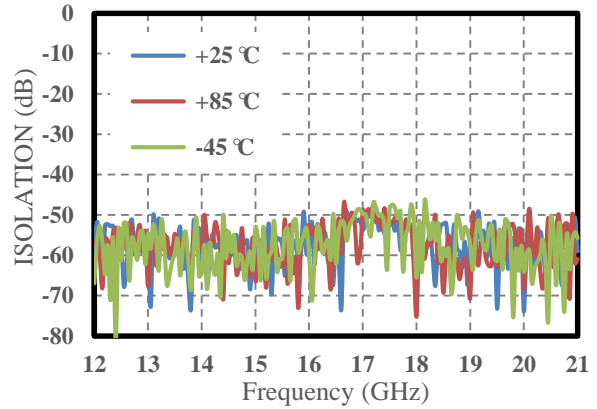
**Gain vs. Temp**



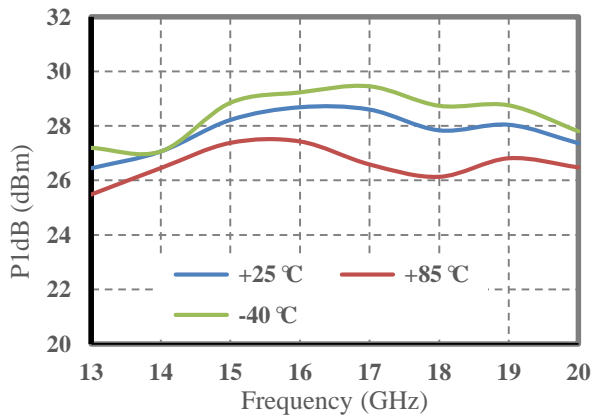
**S11 vs. Temp (Vdd=8V)**



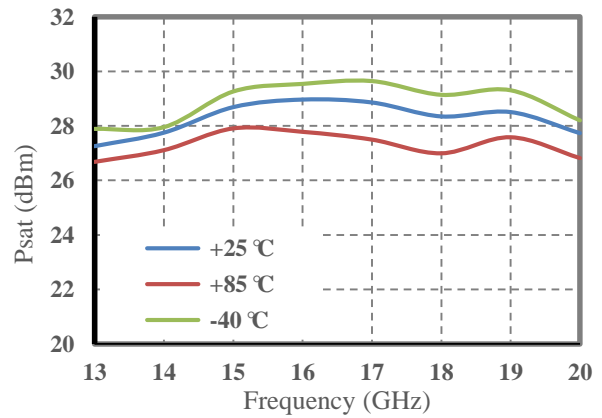
**S22 vs. Temp (Vdd=8V)**



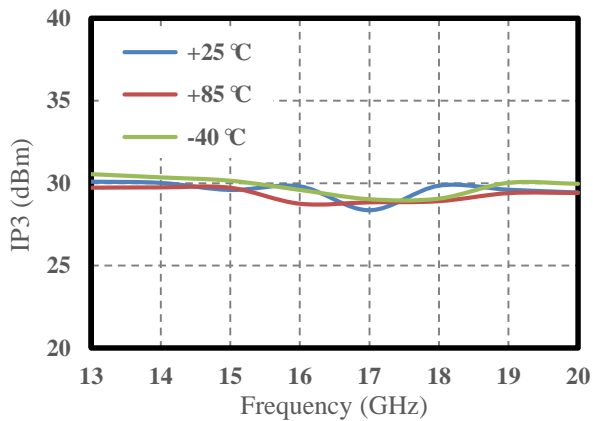
**Isolation vs. Temp (Vdd=8V)**



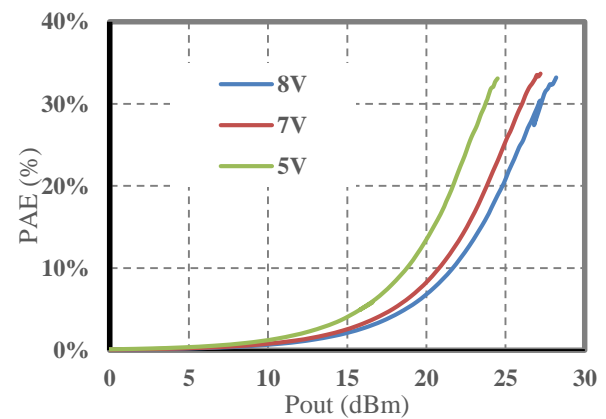
**P1dB vs. Temp (Vdd=8V)**



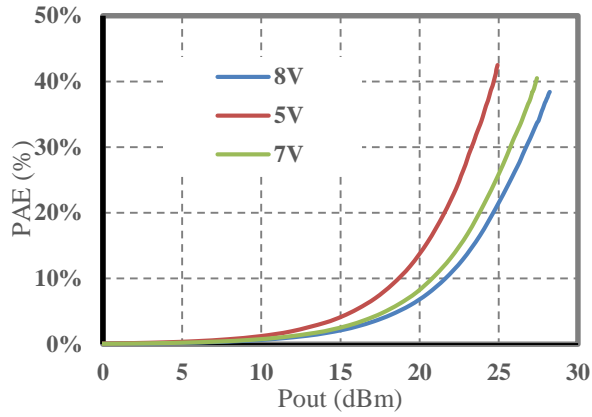
**Psat vs. Temp (Vdd=8V)**



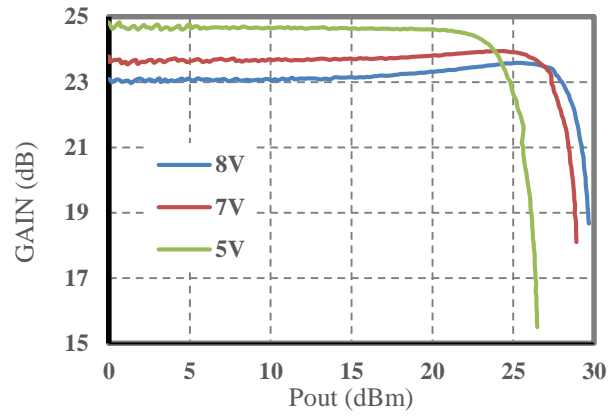
**OIP3 vs. Temp (Pout=P1dB-12dB)**



**PAE vs. Pout (Freq = 18GHz)**

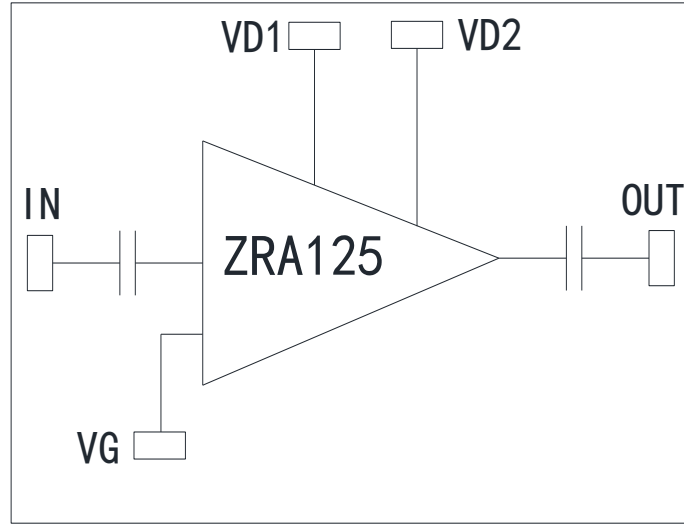


PAE vs. Pout (Freq = 14GHz)



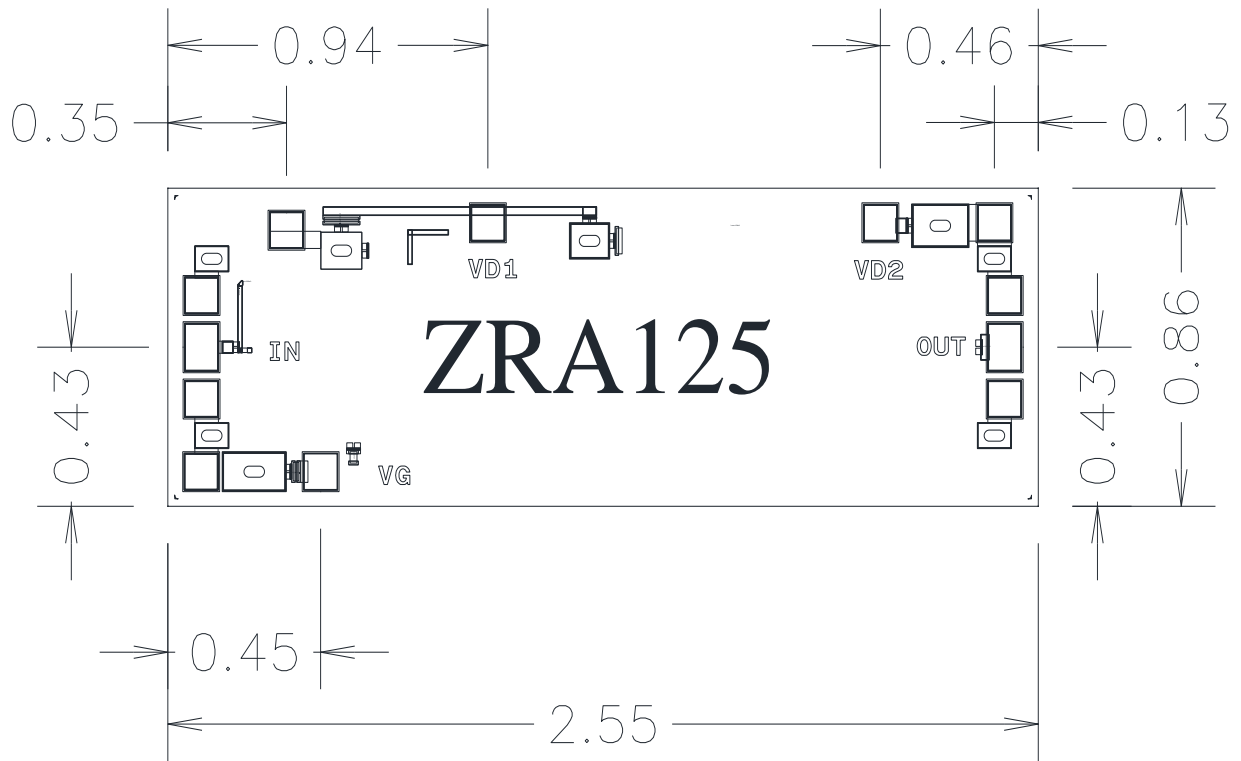
Gain vs. Pout (Freq = 18GHz)

### 3. 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

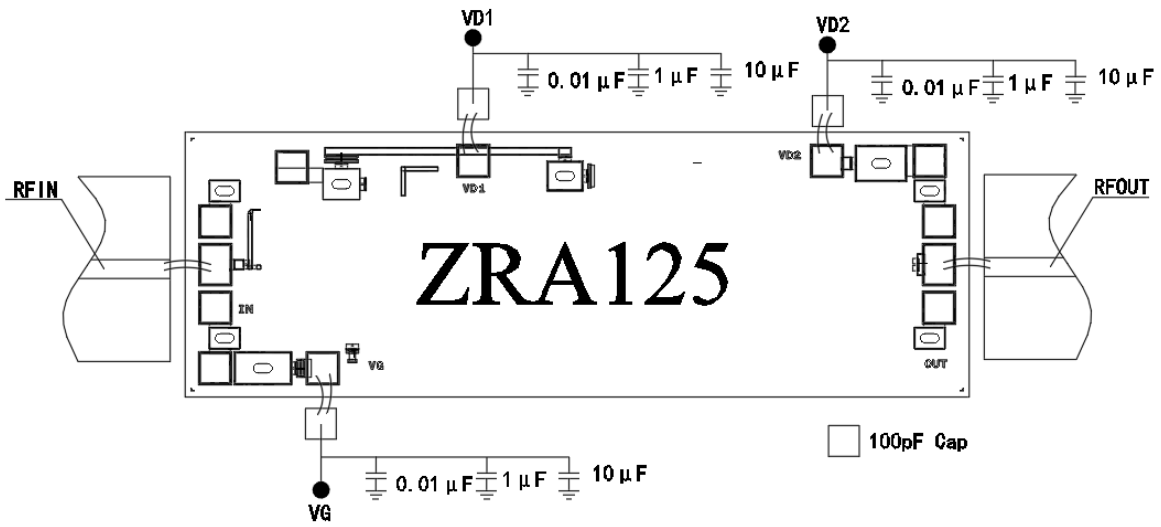


注:

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 $\pm 0.05\text{mm}$



### 5. 建议装配示意图



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

版次	修改内容	修改人	修改时间
Rev.0.4	初版发布	DX2	2023-09-01
Rev.0.5	格式、参数内容修改	YDS	2023-10-25
Rev.0.6	PAE、P1dB和Psat参数修改	YDS	2023-10-30
Rev.0.7	调整格式	DX1	2024-01-10