

产品介绍

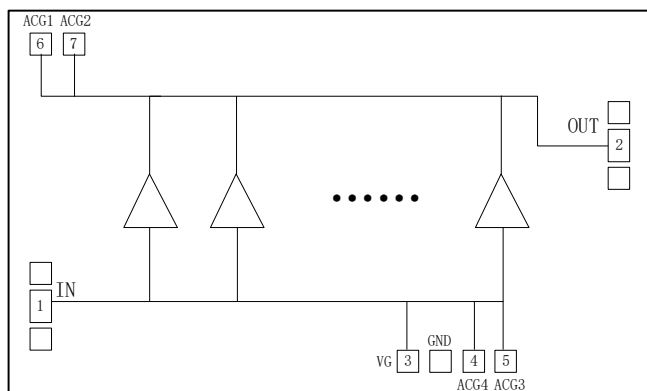
YPA136-0020B1 是一款性能优良的宽带 GaAs 功率放大器芯片，频率范围覆盖 0.1~20GHz，可在 $VD=+12\sim+15V$ ，连续波和脉冲模式下使用。连续波模式下， $VD=+15V$ 时，小信号增益典型值 15dB，输出 3dB 压缩功率典型值 32dBm，功率附加效率典型值 22%。

该芯片采用了片上通孔金属化工艺，保证良好接地，不需要额外的接地措施，使用简单方便。芯片背面进行了金属化处理，为保证应用可靠性，需采用共晶烧结工艺。

关键技术指标

- 频率范围：0.1-20GHz
- 小信号增益 (CW)：15dB
- 输出1dB压缩功率 (CW)：31.5dBm
- 功率附加效率@P1dB (CW)：22%
- 输出3dB压缩功率 (CW)：32dBm
- 功率附加效率@P3dB (CW)：23%
- 输入回波损耗：15dB
- 输出回波损耗：15dB
- 供电 (CW)：420mA@+15V
- 芯片尺寸：2.95mm×1.75mm×0.10mm

功能框图



电性能表 ($T_A=+25^{\circ}C$, $VD=+15V$, $VG=-0.55V^*$, $IDQ=420mA$, CW 模式)

参数名称	符号	最小值	典型值	最大值	单位
频率范围	Freq	0.1	—	20	GHz
小信号增益	Gain	13.5	15	—	dB
输入回波损耗	RL_IN	—	15	—	dB
输出回波损耗	RL_OUT	—	15	—	dB
输出1dB压缩功率	OP1dB	30	31.5	—	dBm
功率附加效率@P1dB	PAE	12	22	—	%
动态电流@P1dB	IDD	—	0.45	0.55	A
输出3dB压缩功率	OP3dB	30.5	32	—	dBm
功率附加效率@P3dB	PAE	15	23	—	%
动态电流@P3dB	IDD	—	0.48	0.6	A
静态工作电流*	IDQ	—	420	—	mA

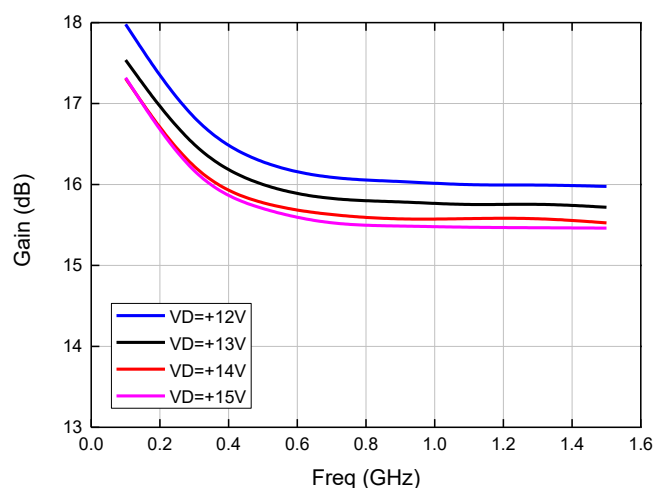
* 在-1~-0.1V范围内调节VG，使静态工作电流为420mA。参考值：VG=-0.55V。

使用限制参数

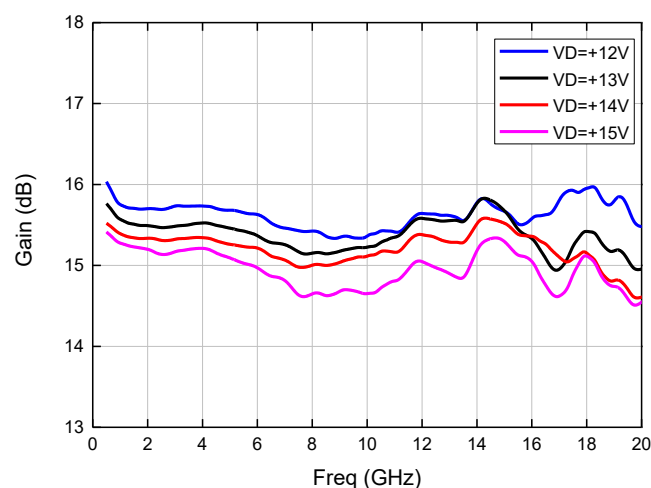
最大漏极工作电压	+16V
最小栅极工作电压	-2.5V
最大输入功率	+26dBm
贮存温度	-65°C~+150°C
工作温度	-55°C~+125°C

测试曲线 (VG=-0.55V, CW模式, 无特殊说明时: TA=+25°C)

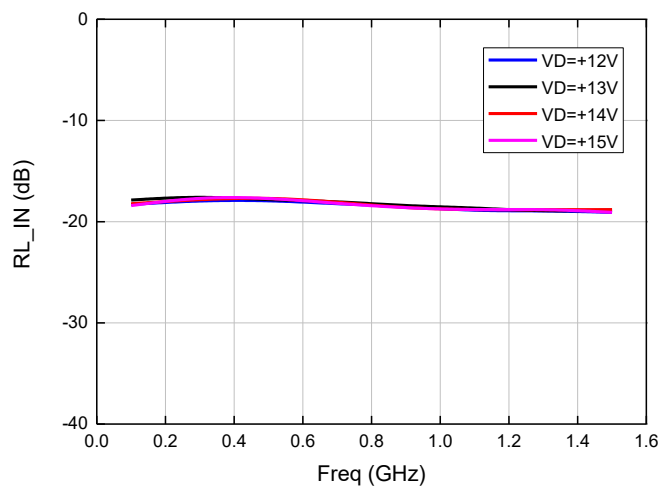
小信号增益



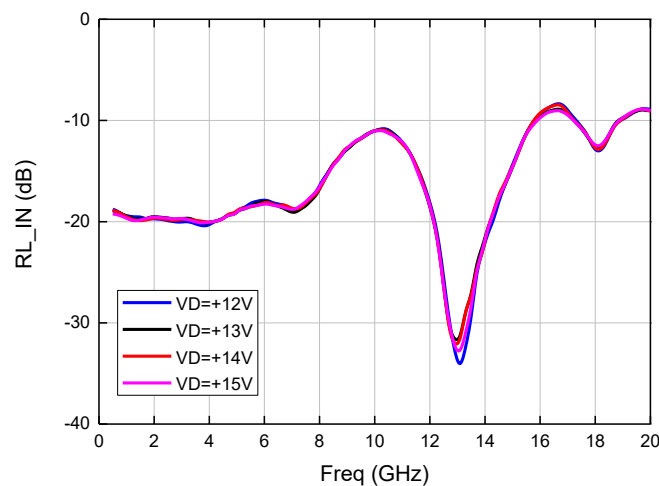
小信号增益



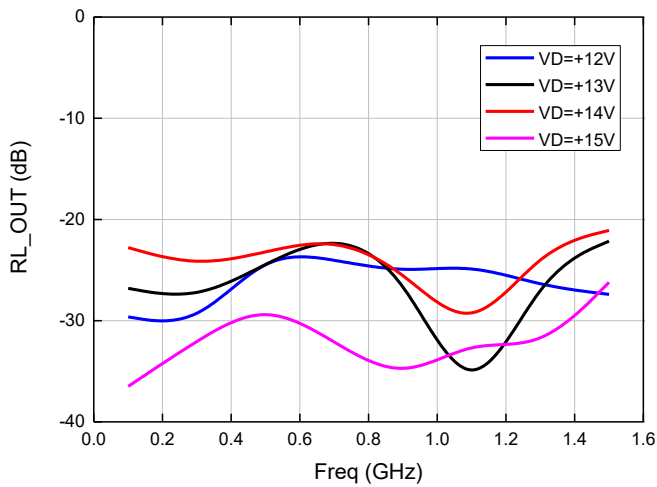
输入回波损耗



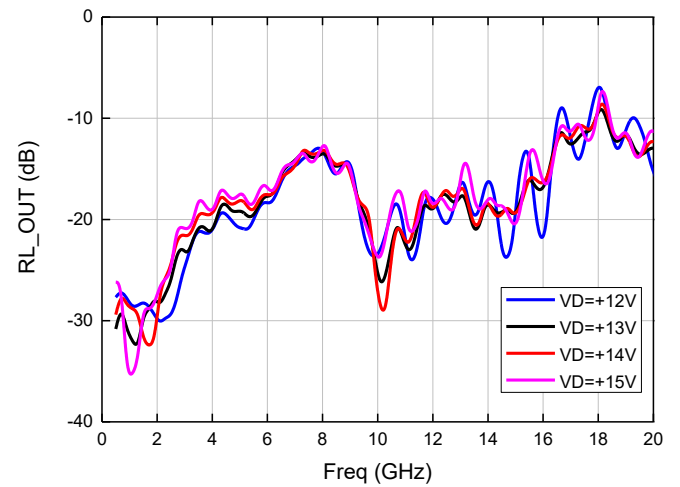
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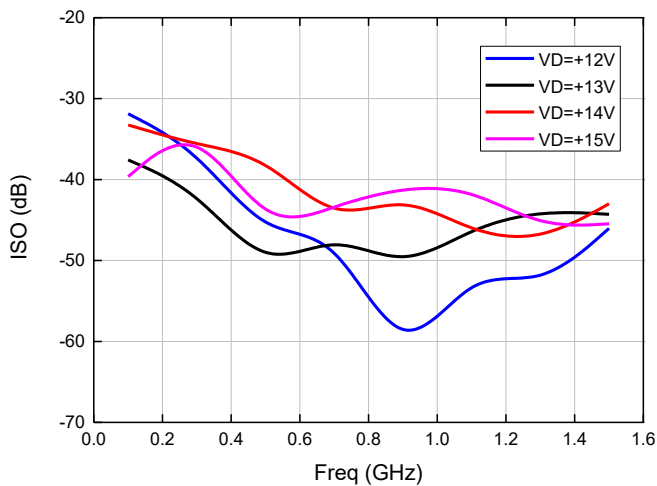
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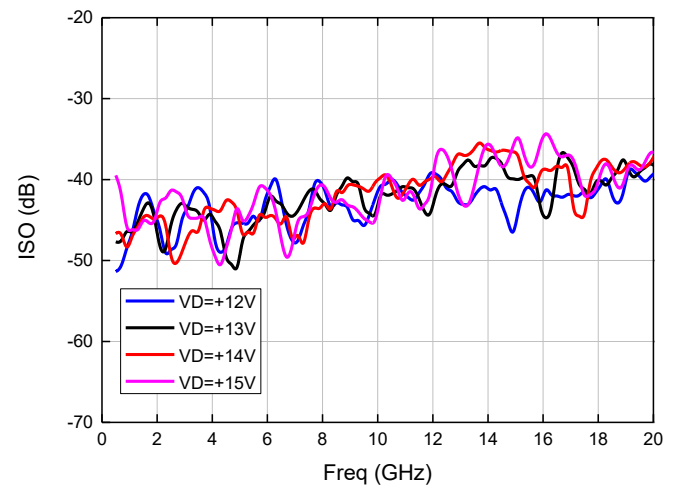
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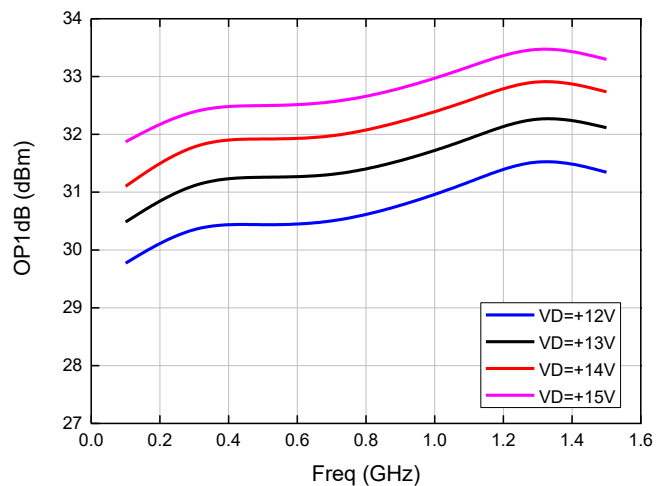
反向隔离度



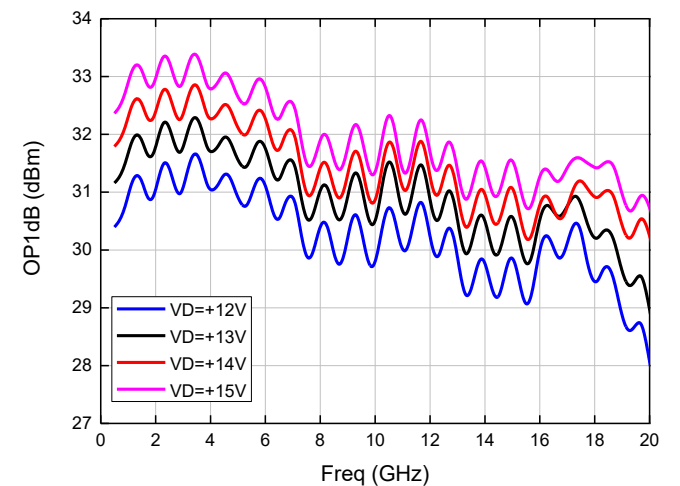
反向隔离度



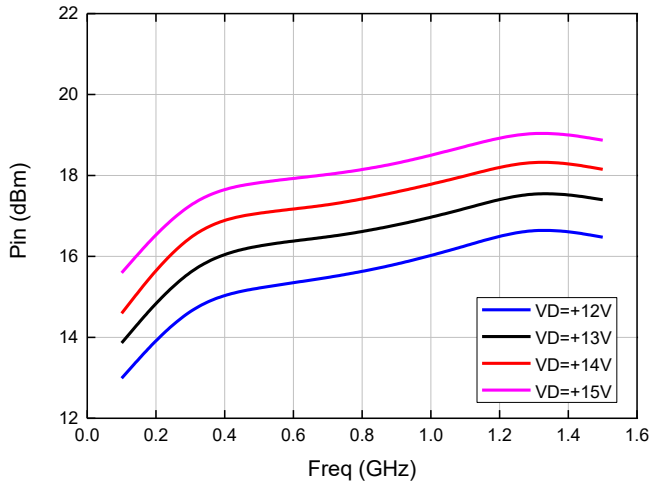
输出1dB压缩功率



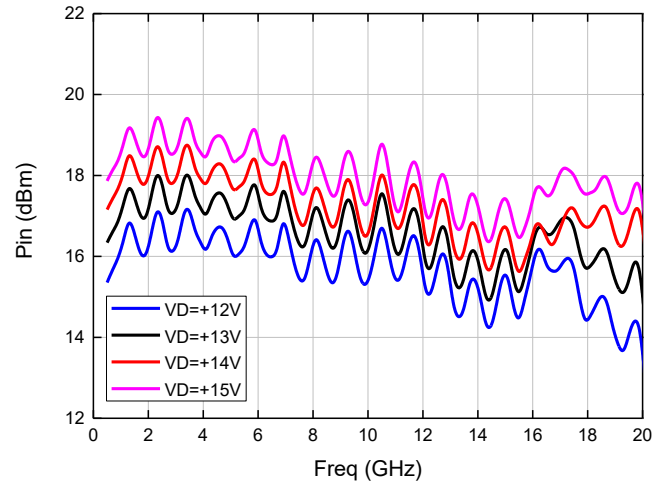
输出1dB压缩功率



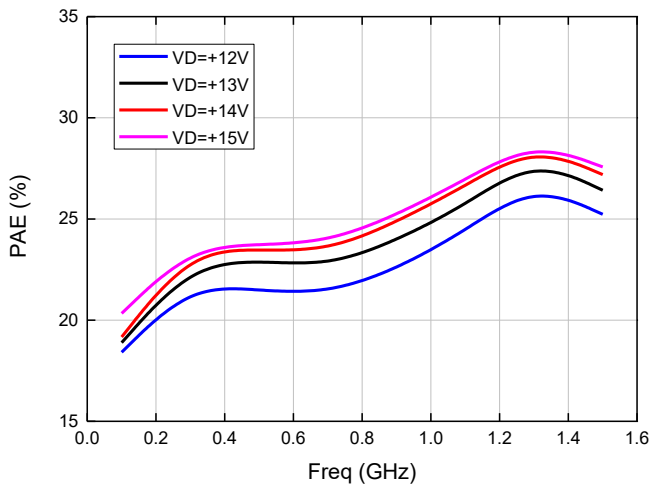
输入功率@P1dB



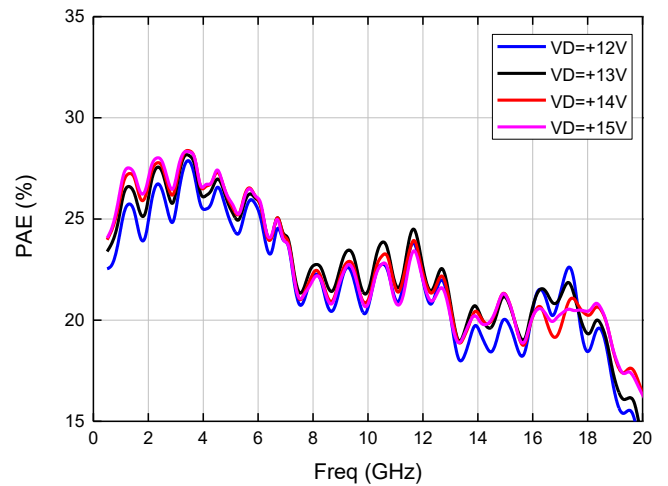
输入功率@P1dB



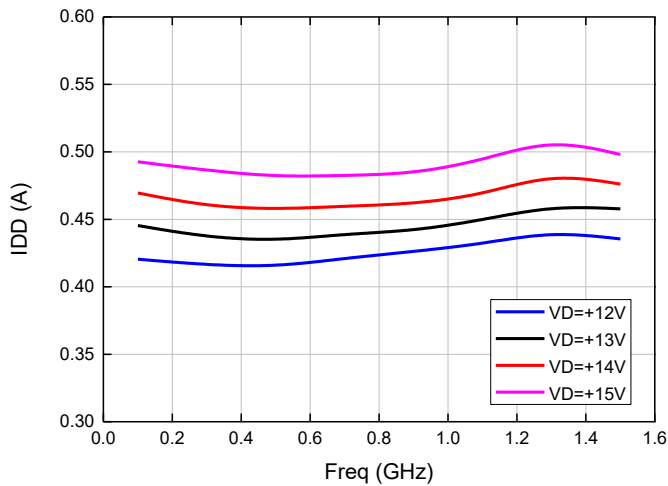
功率附加效率@P1dB



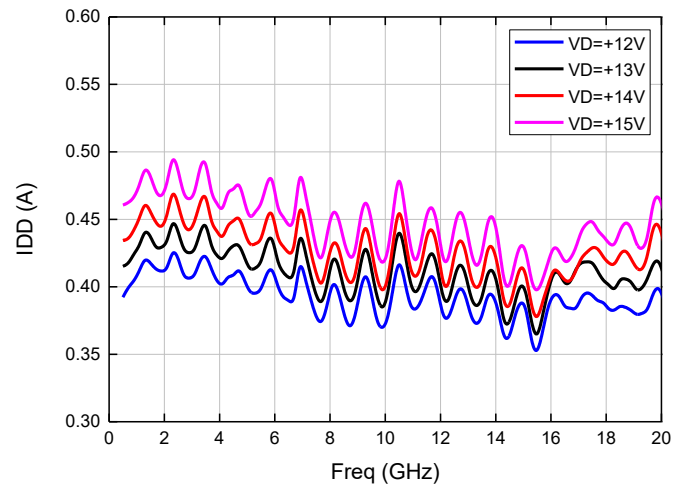
功率附加效率@P1dB



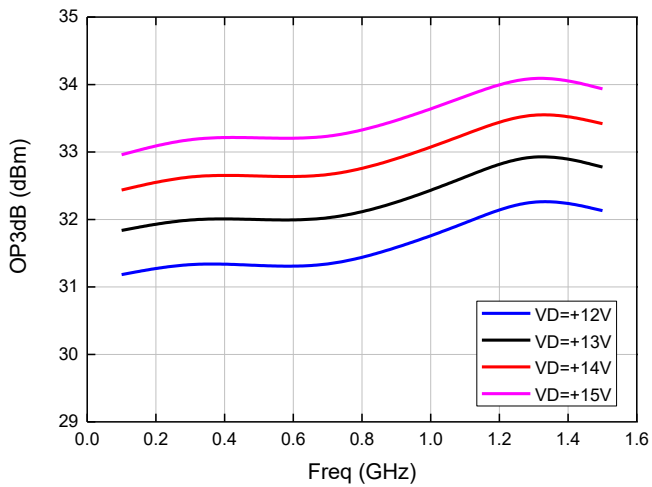
动态电流@P1dB



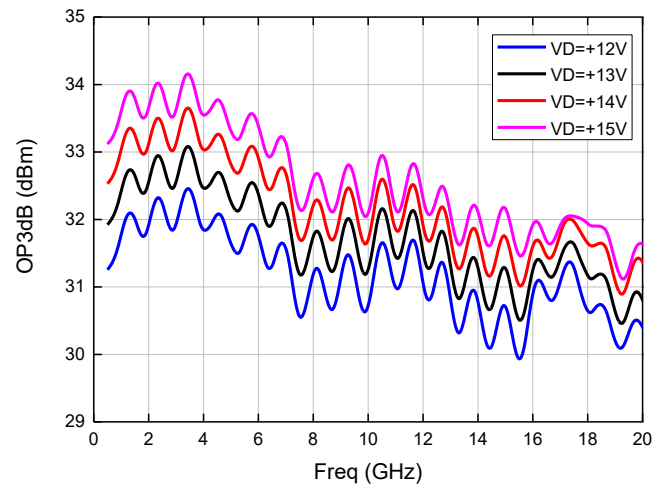
动态电流@P1dB



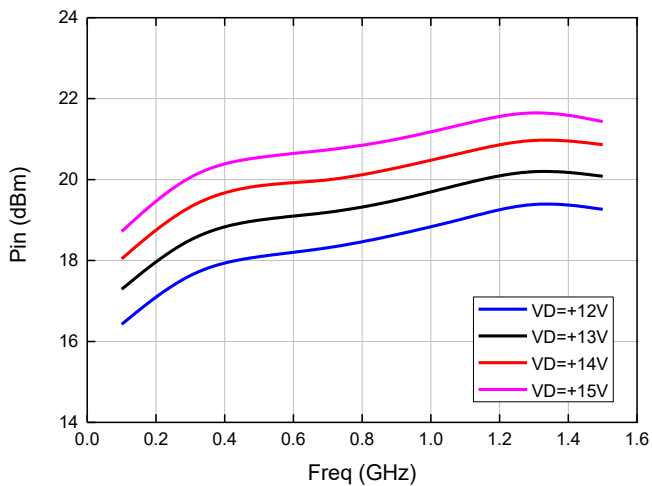
输出3dB压缩功率



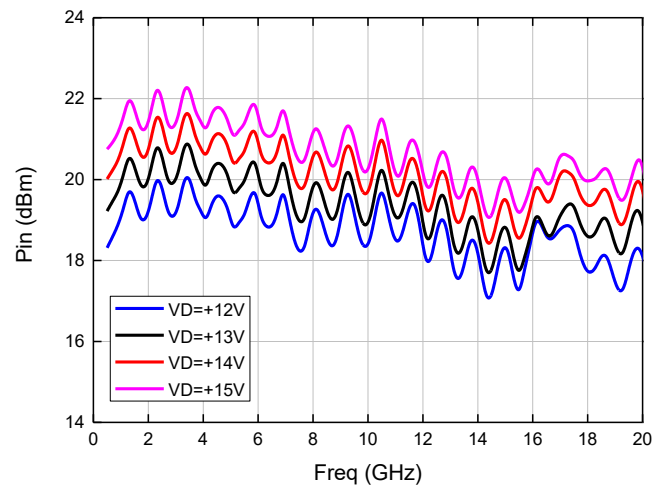
输出3dB压缩功率



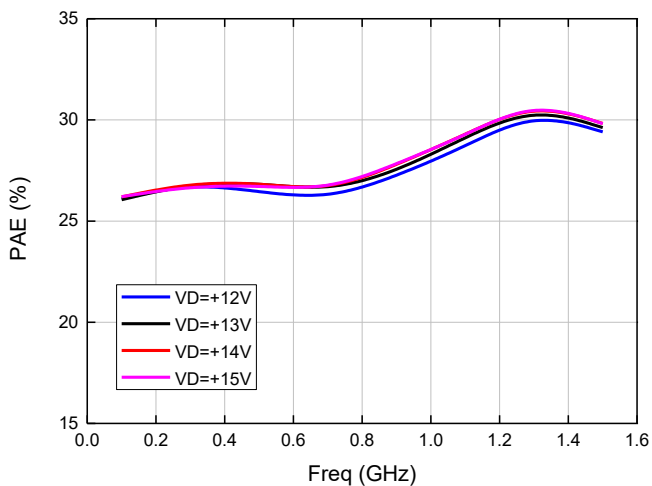
输入功率@P3dB



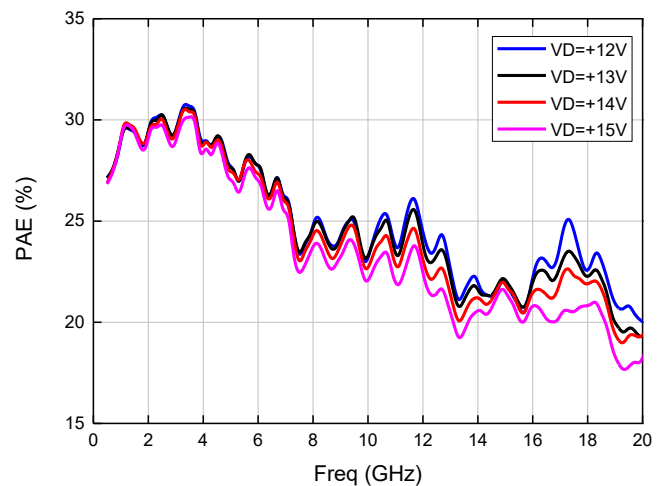
输入功率@P3dB



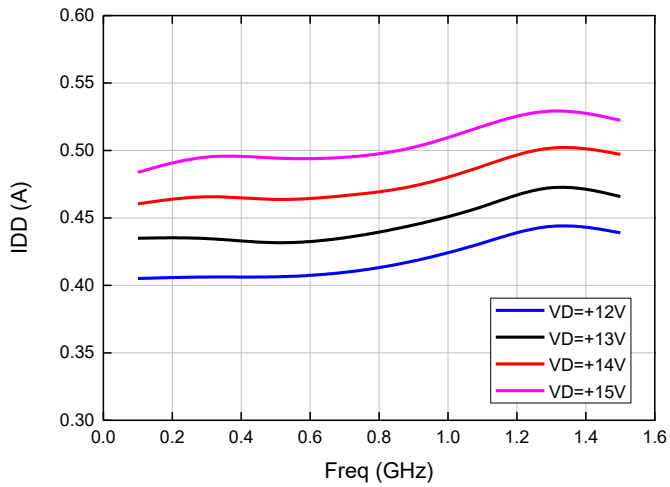
功率附加效率@P3dB



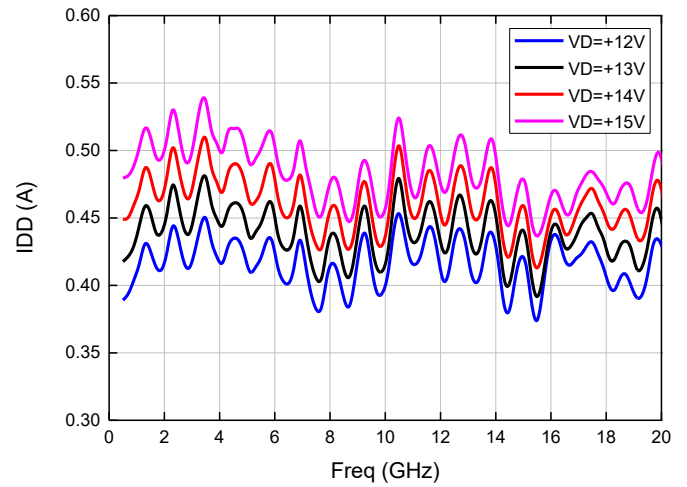
功率附加效率@P3dB



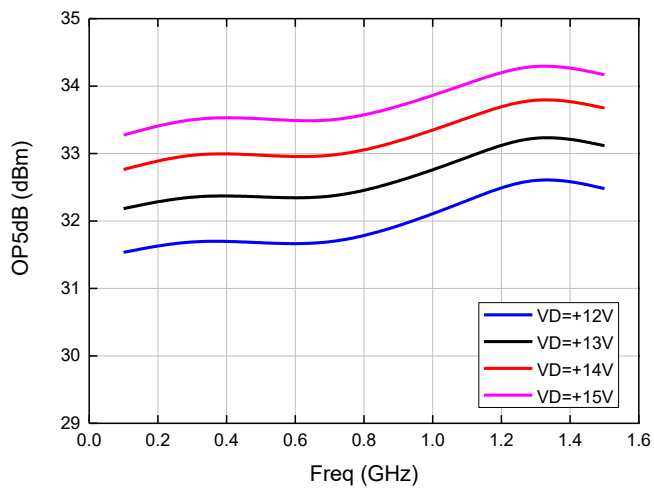
动态电流@P3dB



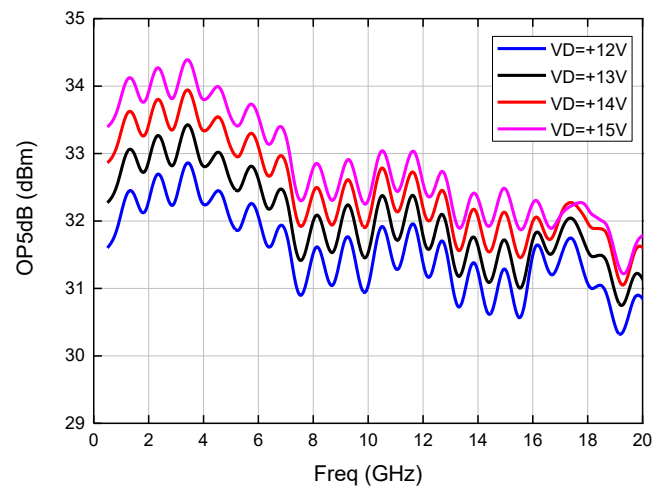
动态电流@P3dB



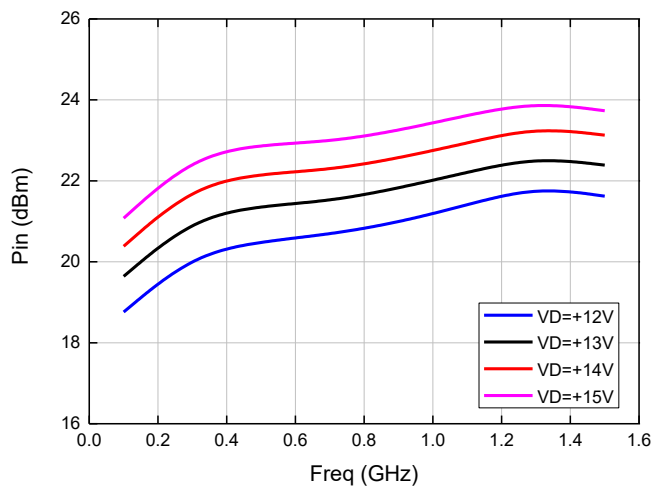
输出5dB压缩功率



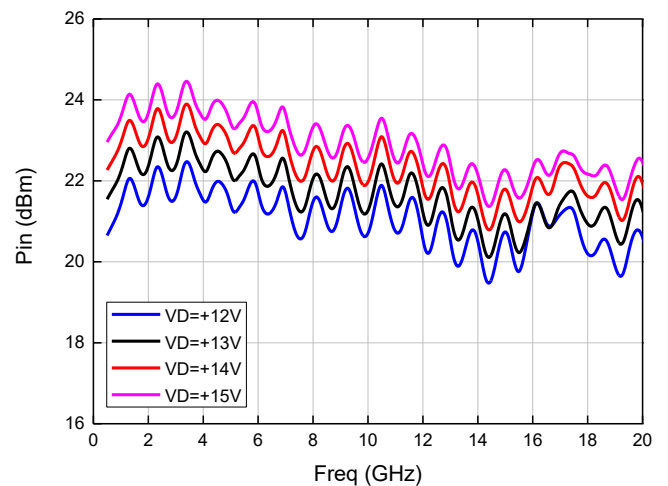
输出5dB压缩功率



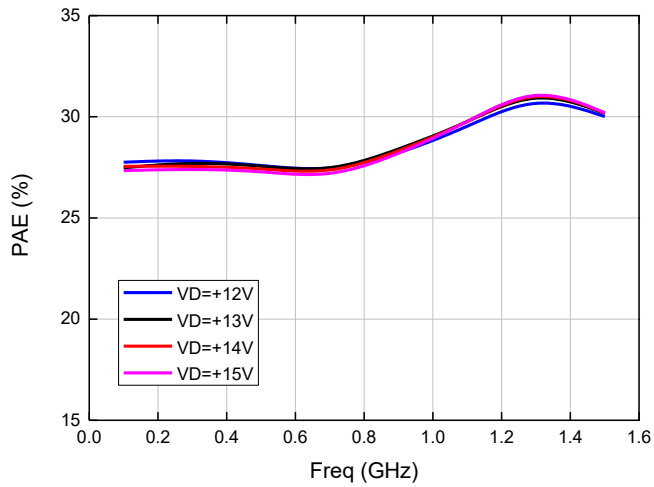
输入功率@P5dB



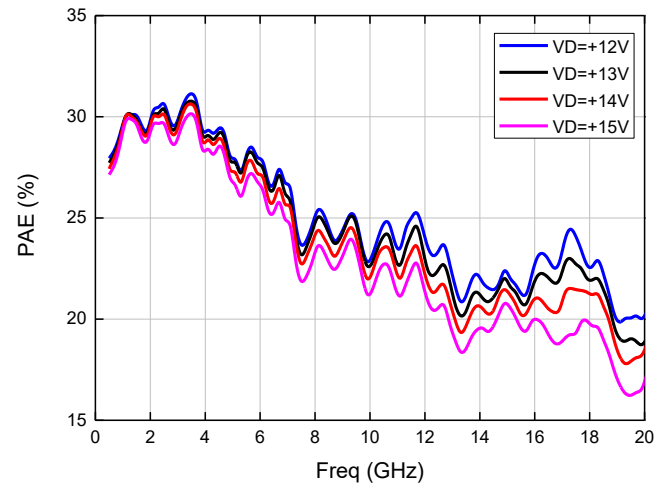
输入功率@P5dB



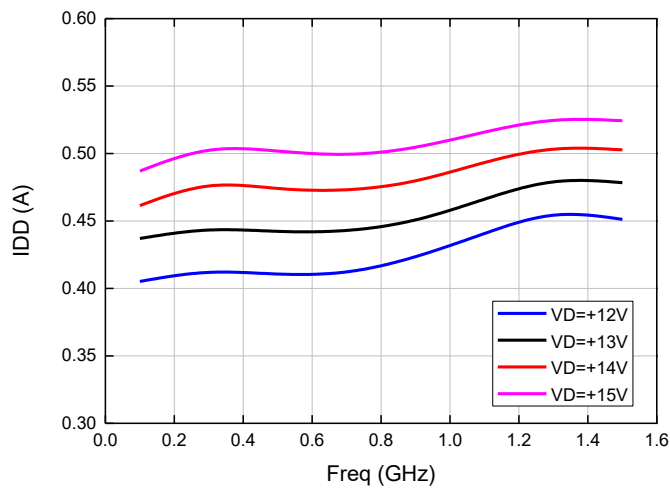
功率附加效率@P5dB



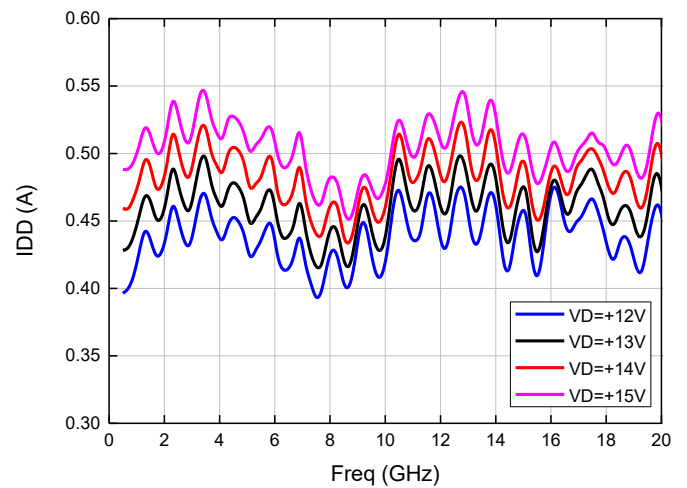
功率附加效率@P5dB



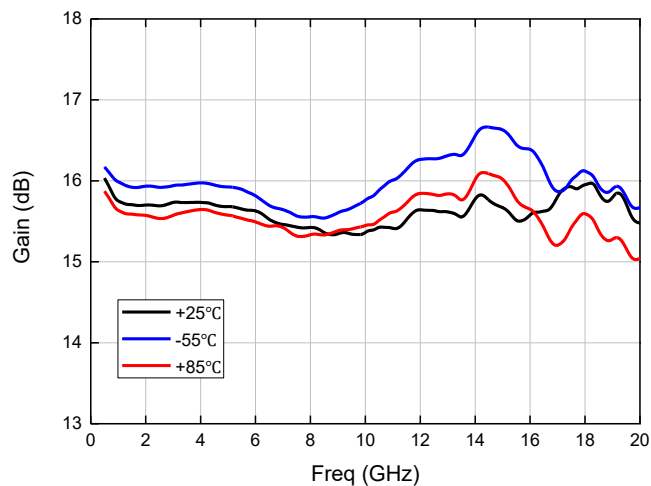
动态电流@P5dB



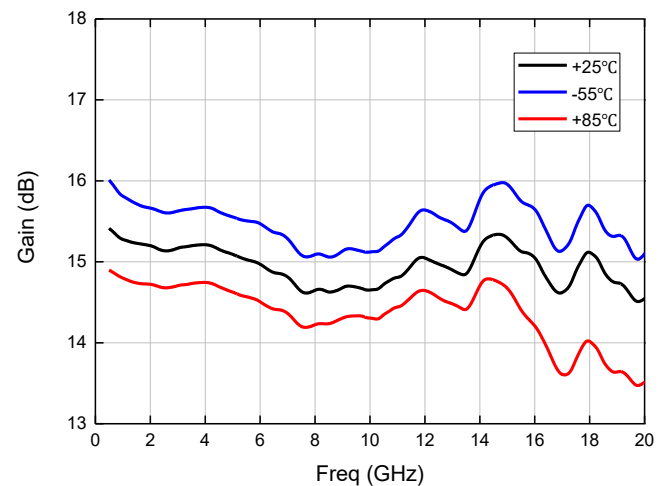
动态电流@P5dB



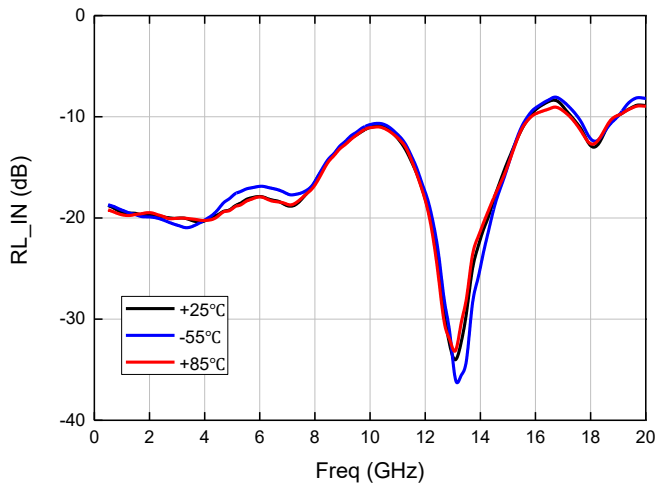
小信号增益 (VD=+12V)



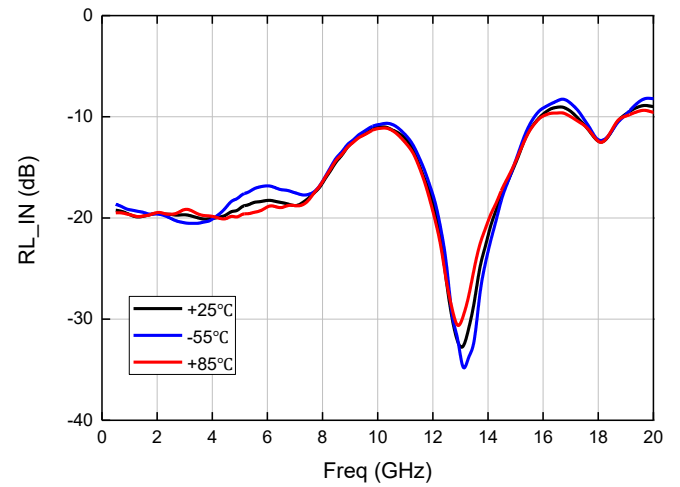
小信号增益 (VD=+15V)



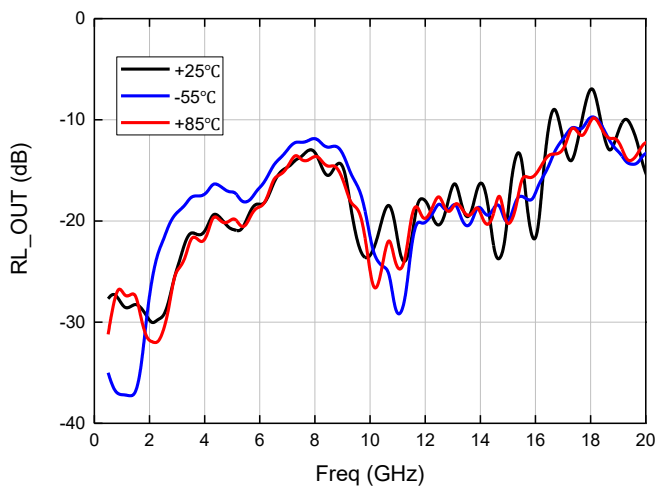
输入回波损耗 (VD=+12V)



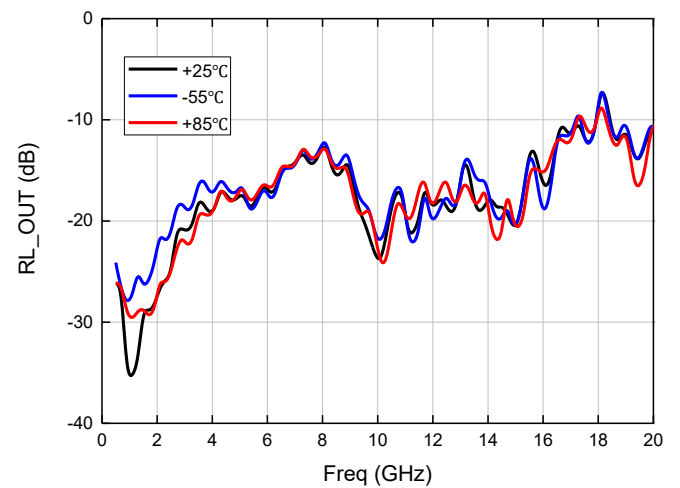
输入回波损耗 (VD=+15V)



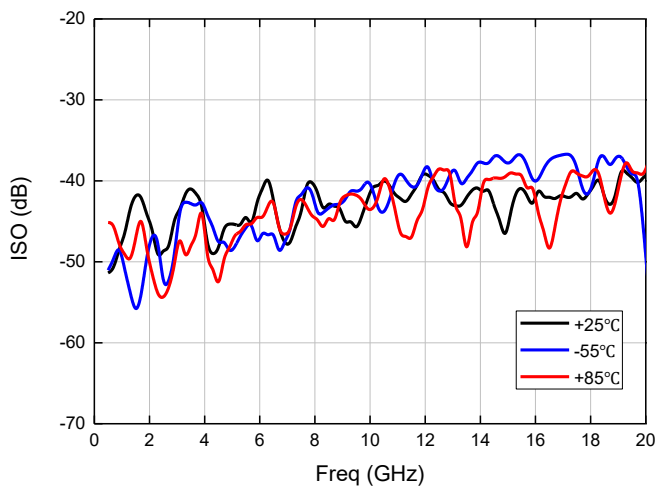
输出回波损耗 (VD=+12V)



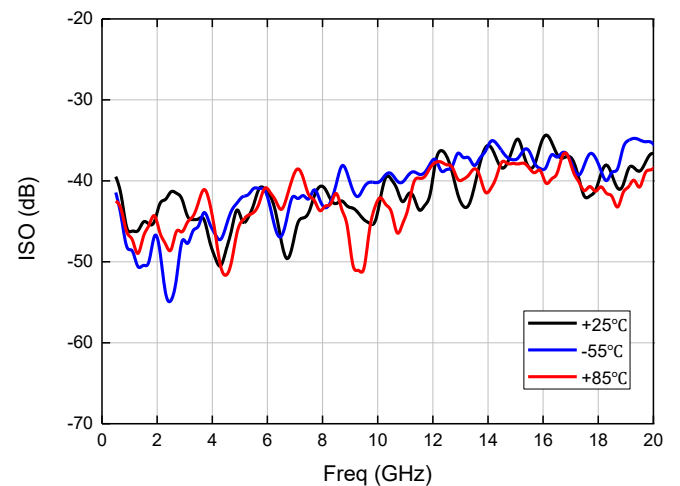
输出回波损耗 (VD=+15V)



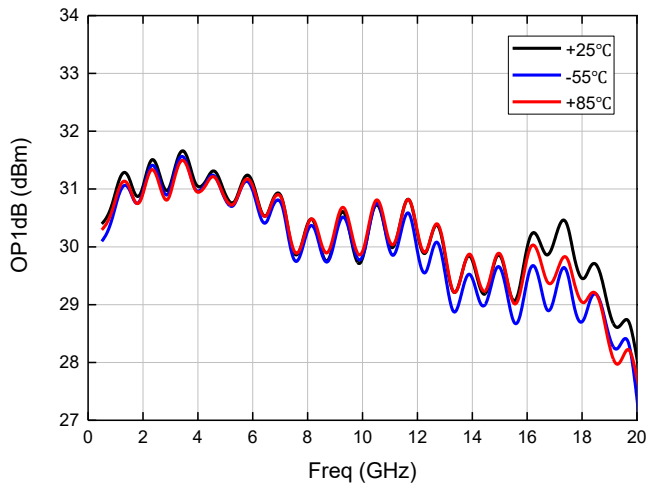
反向隔离度 (VD=+12V)



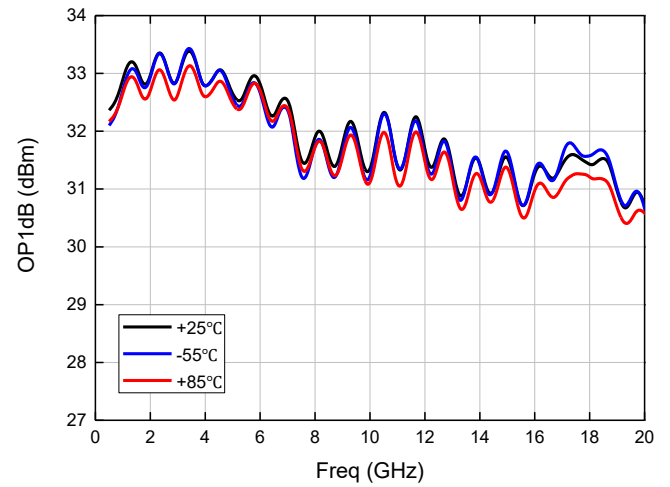
反向隔离度 (VD=+15V)



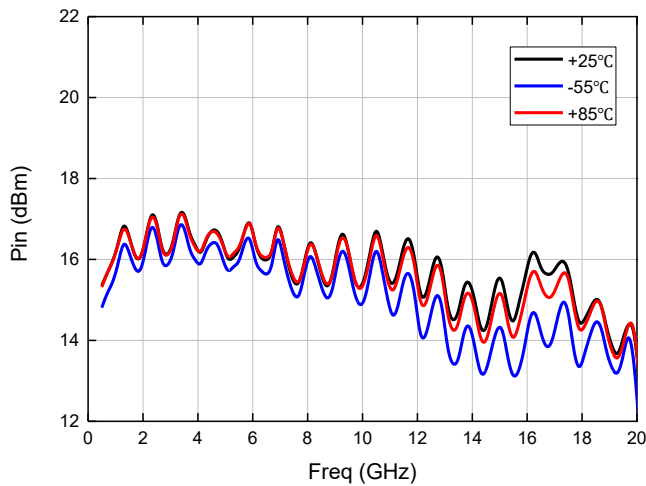
输出1dB压缩功率 (VD=+12V)



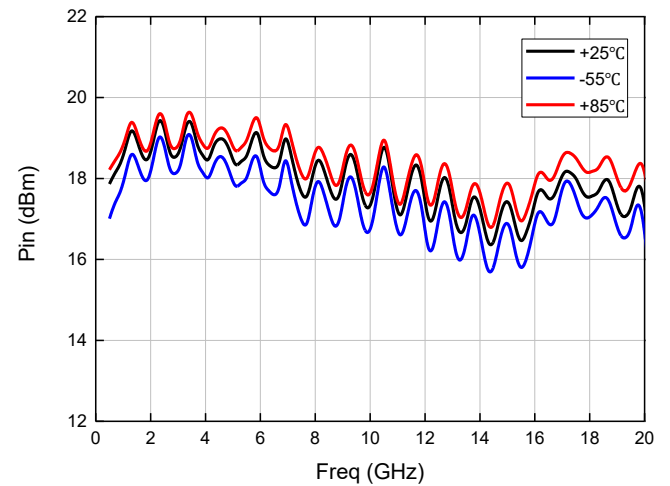
输出1dB压缩功率 (VD=+15V)



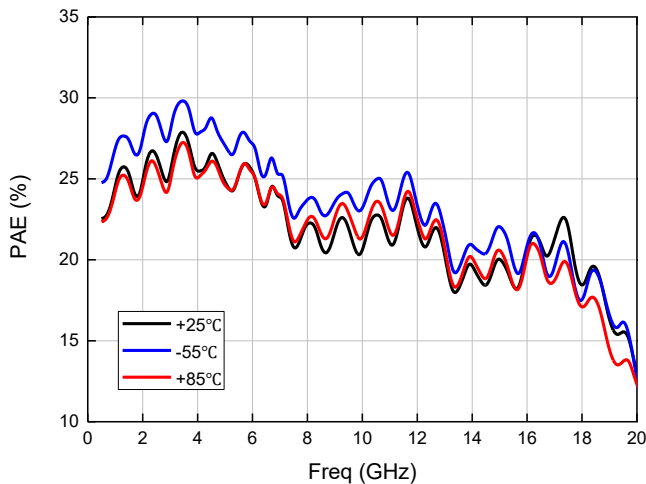
输入功率@P1dB (VD=+12V)



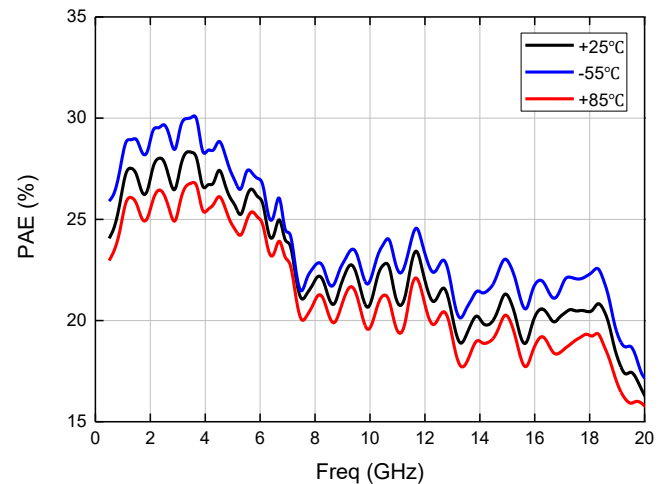
输入功率@P1dB (VD=+15V)

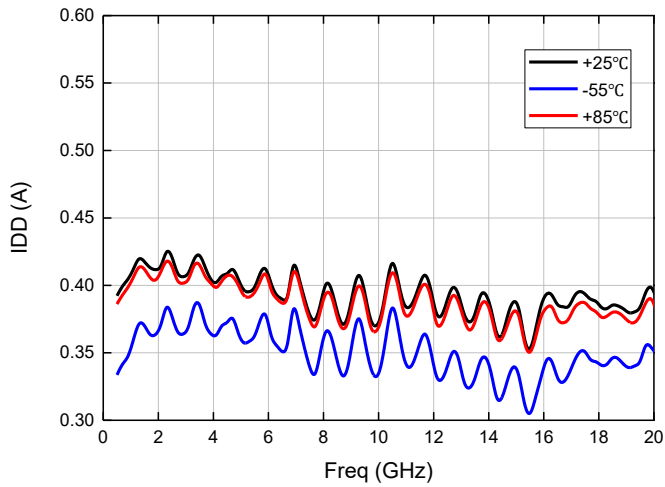
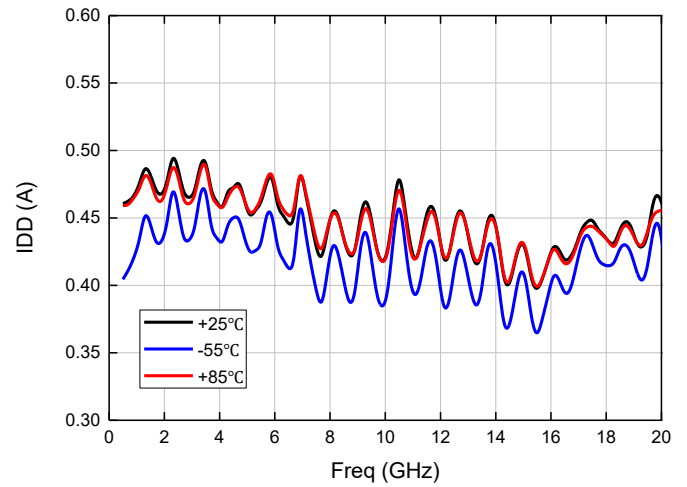
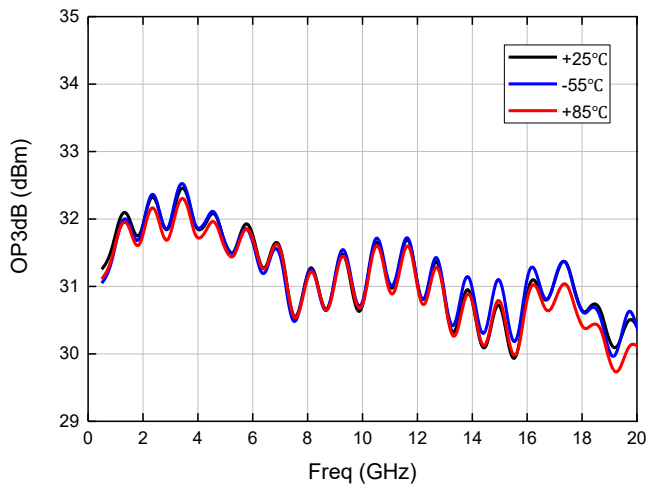
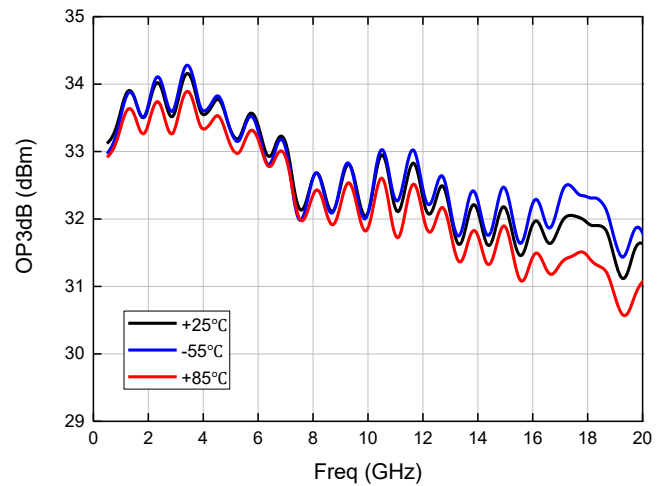
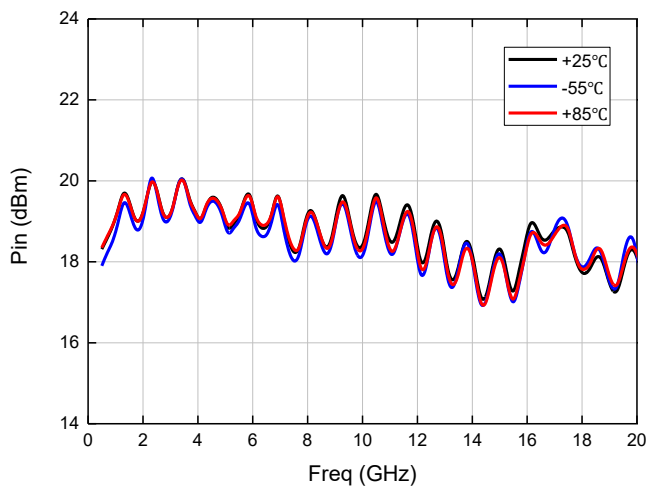
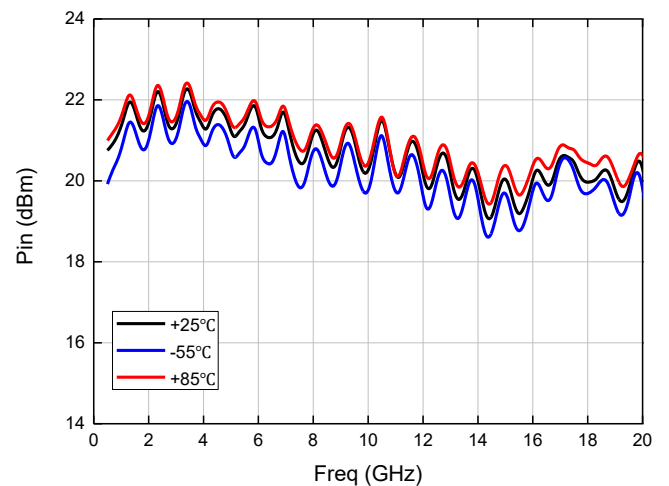


功率附加效率@P1dB (VD=+12V)

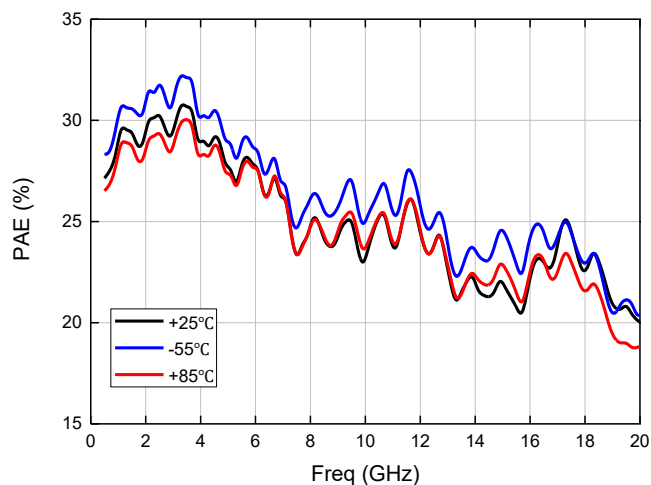


功率附加效率@P1dB (VD=+15V)

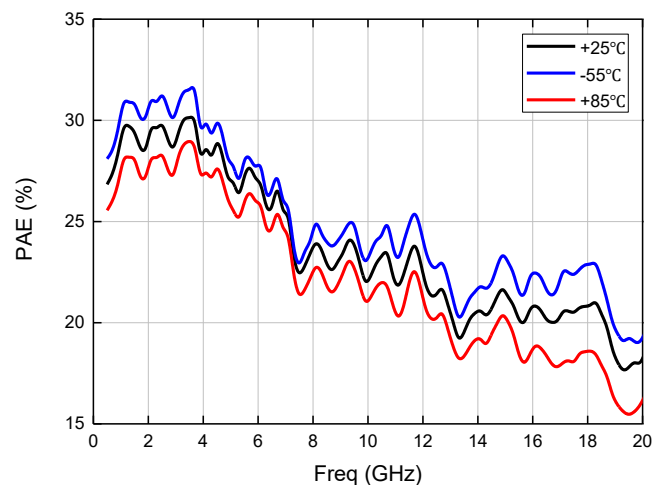


动态电流@P1dB (VD=+12V)

动态电流@P1dB (VD=+15V)

输出3dB压缩功率 (VD=+12V)

输出3dB压缩功率 (VD=+15V)

输入功率@P3dB (VD=+12V)

输入功率@P3dB (VD=+15V)


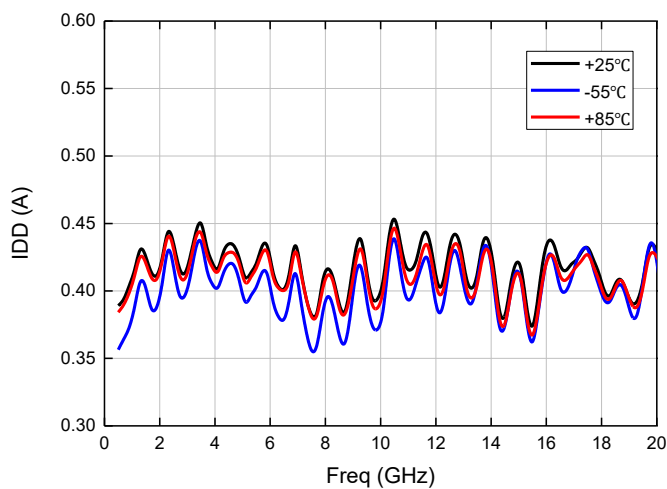
功率附加效率@P3dB (VD=+12V)



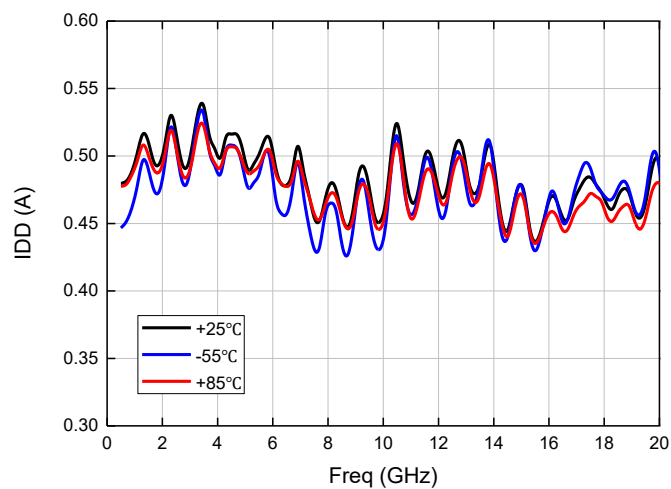
功率附加效率@P3dB (VD=+15V)



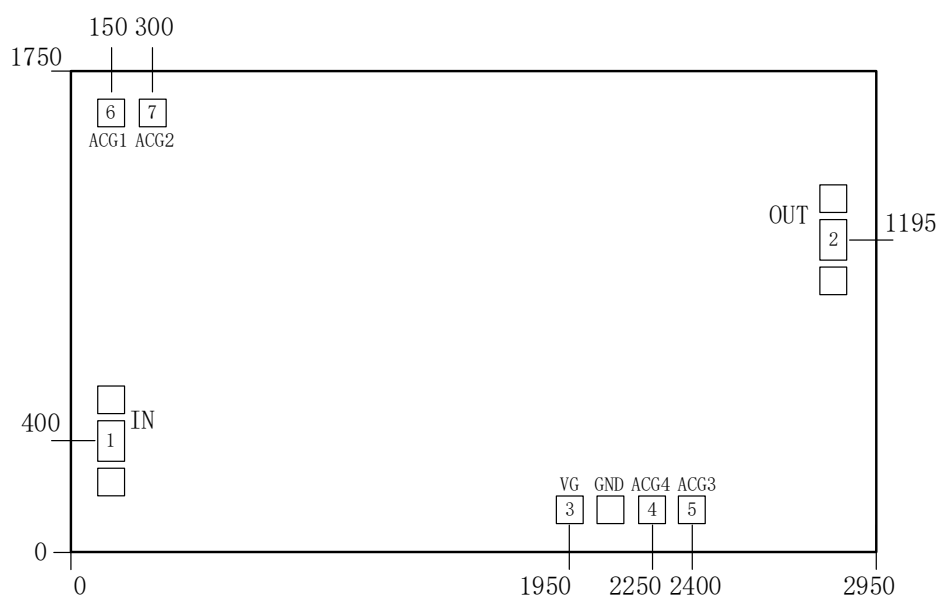
动态电流@P3dB (VD=+12V)



动态电流@P3dB (VD=+15V)



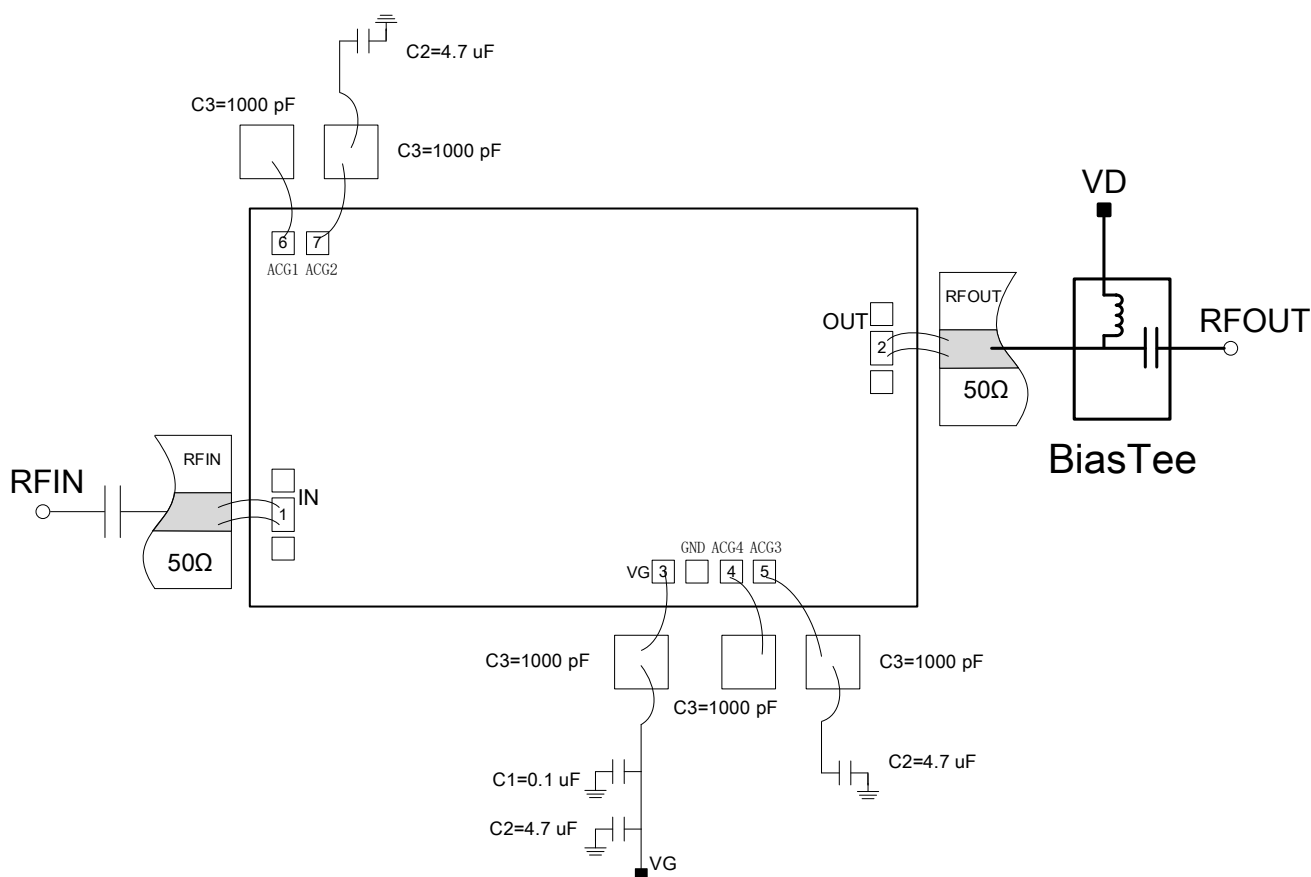
芯片端口图 (单位: μm)



端口定义

端口序号	端口名	定义	信号或电压
1	IN	射频信号输入，需外接隔直电容	RF
2	OUT	射频信号输出/VD 供电，需外接隔直电容	RF/DC
3	VG	栅极电压	DC
4、5、6、7	ACG1/2/3/4	外接低频匹配电容端口	RF

建议装配图



注意事项

- 1) 在净化环境装配使用；
- 2) GaAs 材料很脆，芯片表面很容易受损伤（不要碰触表面），使用时必须小心；
- 3) 输入输出用 2 根键合线（直径 25 μ m 金丝），键合线尽量短，不要长于 300 μ m；
- 4) 烧结温度不要超过 300 $^{\circ}$ C，烧结时间尽可能短，不要超过 30 秒；
- 5) 本品属于静电敏感器件，储存和使用时注意防静电；
- 6) 干燥、氮气环境储存；
- 7) 不要试图用干或湿化学方法清洁芯片表面。