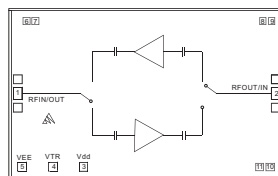


性能特点

- 工作频率：0.8~3.5GHz
- 噪声系数：3.5dB（发射路）/3.0dB（接收路）
- 增益：25dB（发射路）/13dB（接收路）
- 增益平坦度：±1dB
- P1dB输出功率：19dBm（发射路）/19.5dBm（接收路）
- 饱和输出功率：20dBm（发射路）/20dBm（接收路）
- 输出IP3：31dBm（发射路）/32dBm（接收路）
- 工作电压：5V @ 100mA（发射路）/5V @ 75mA（接收路）
- 输入/输出阻抗：50Ω
- 芯片尺寸：3.2mmx2.0mmx0.07mm
- 详细规范号：Q/AT 24927-2018

功能框图



概述

BW1790是一款工作于0.8~3.5GHz的GaAs单片集成双向放大器芯片，发射路在+5V、100mA工作电流下，可提供25dB增益，19dBm的P1dB输出功率；接收路在+5V、75mA工作电流下，可提供13dB增益，19.5dBm的P1dB输出功率

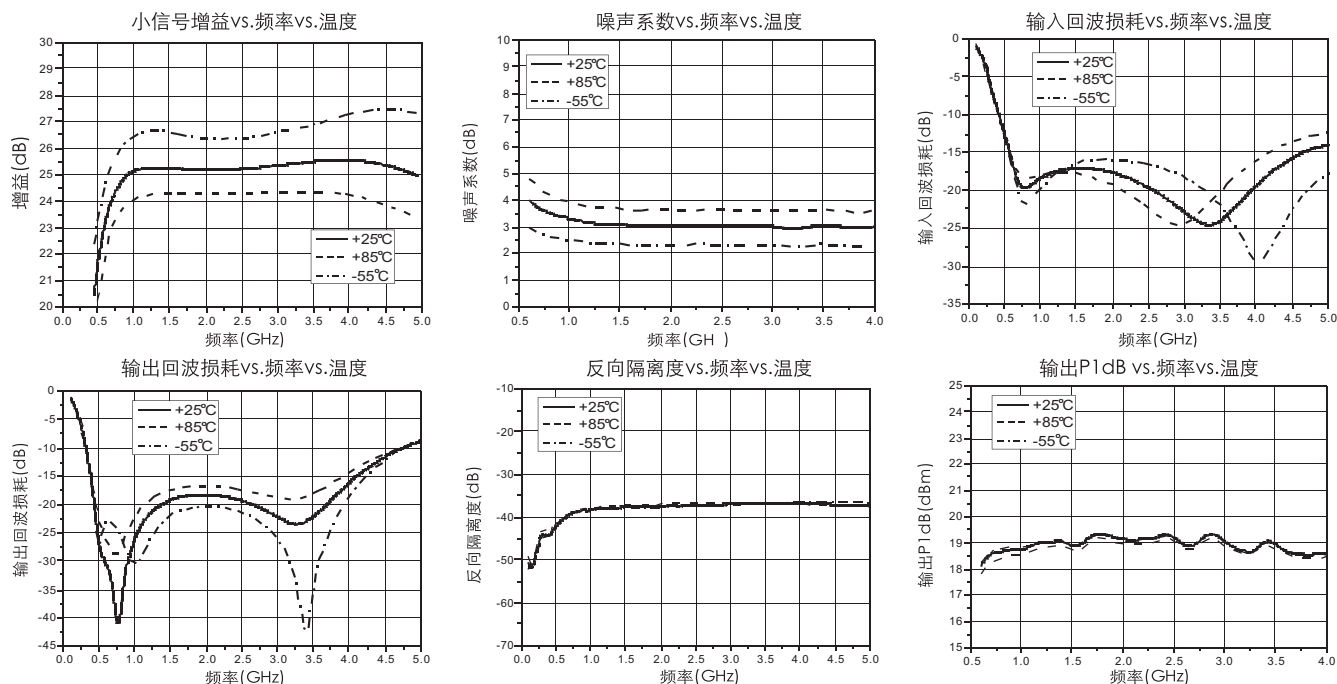
该芯片采用了片上通孔金属化工艺，保证良好接地，不需要额外的接地措施，使用简单方便。芯片背面进行了金属化处理，适用于共晶烧结或导电胶粘接工艺。

电性能表 (TA = +25℃, 50Ω system, Vdd = 5V, Idq = 100mA（发射路）/75mA（接收路）)

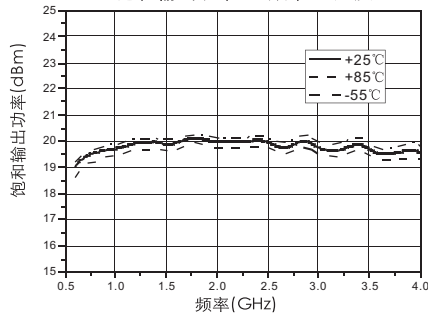
符号	参数	最小值	典型值(发射/接收)	最大值	单位
Frequency	工作频率	0.8	-	3.5	GHz
Gain	增益	-	25/13	-	dB
ΔG	增益平坦度	±1.0			dB
NF	噪声系数	-	3.5/3.0	-	dB
IRL	输入回波损耗	-	17/17	-	dB
ORL	输出回波损耗	-	17/14	-	dB
P1dB	1dB压缩点输出功率	-	19/19.5	-	dBm
Psat	饱和输出功率	-	20/20	-	dBm
OIP3	三阶交调点输出功率	-	31/32	-	dBm
Idd	工作电流	-	100/75	-	mA

芯片均经过在片100%直流与RF测试

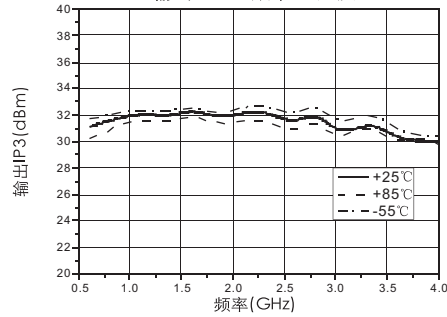
测试曲线(发射路：端口2→1)



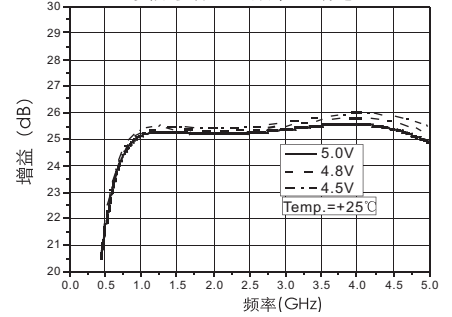
饱和输出功率 vs. 频率 vs. 温度



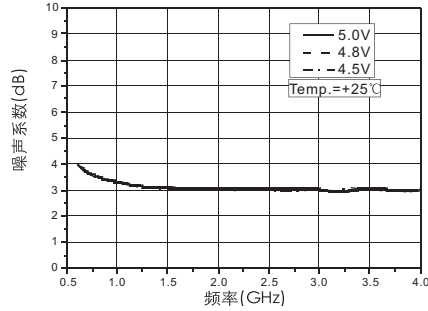
输出IP3 vs. 频率 vs. 温度



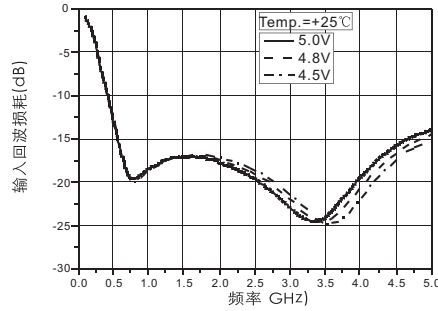
小信号增益 vs. 频率 vs. 漏电压



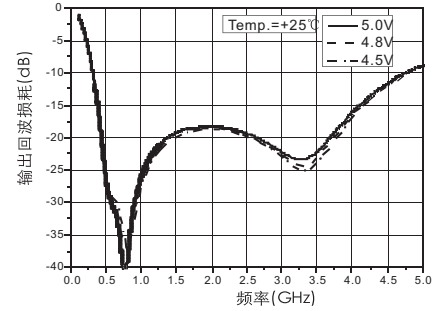
噪声系数 vs. 频率 vs. 漏电压



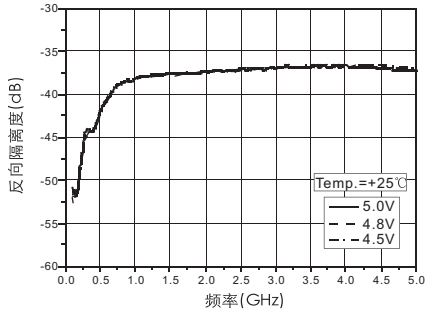
输入回波损耗 vs. 频率 vs. 漏电压



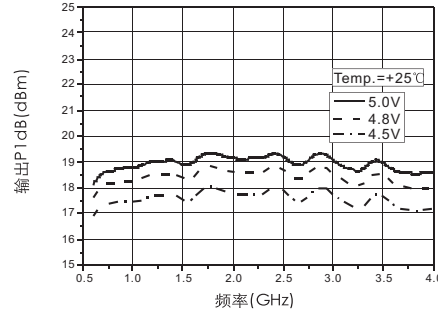
输出回波损耗 vs. 频率 vs. 漏电压



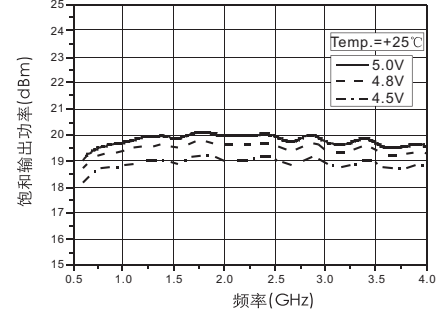
反向隔离度 vs. 频率 vs. 漏电压



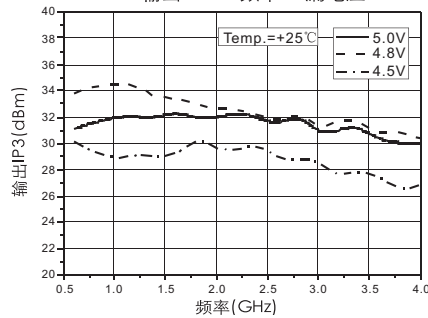
输出P1dB vs. 频率 vs. 漏电压



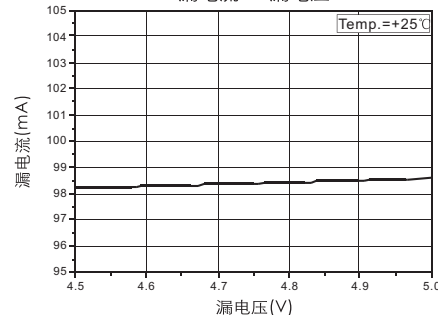
饱和输出功率 vs. 频率 vs. 漏电压



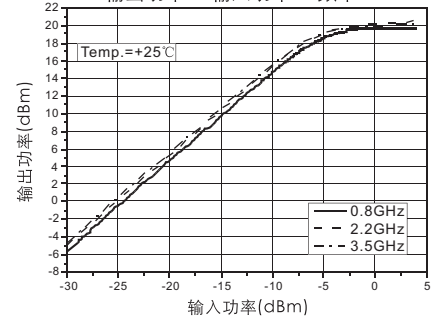
输出IP3 vs. 频率 vs. 漏电压



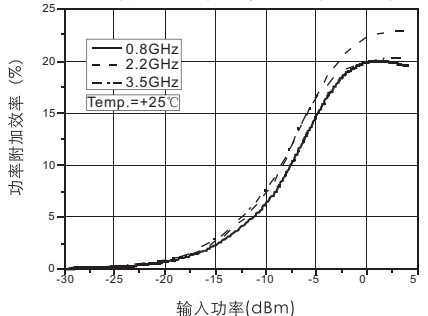
漏电流 vs. 漏电压



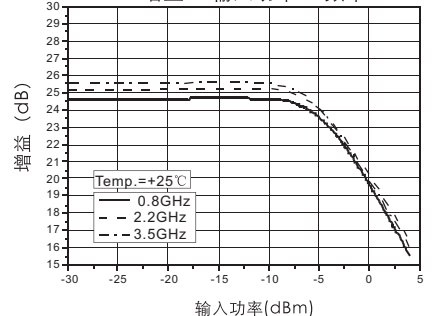
输出功率 vs. 输入功率 vs. 频率



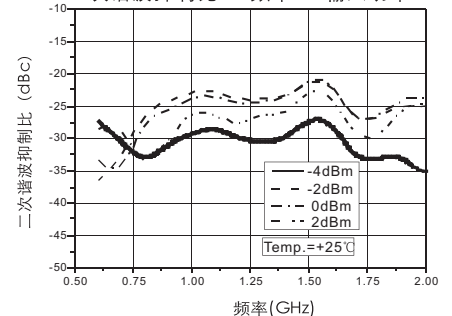
功率附加效率 vs. 输入功率 vs. 频率

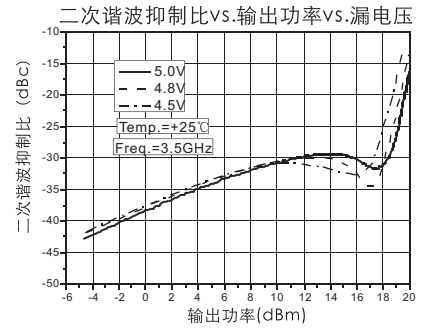
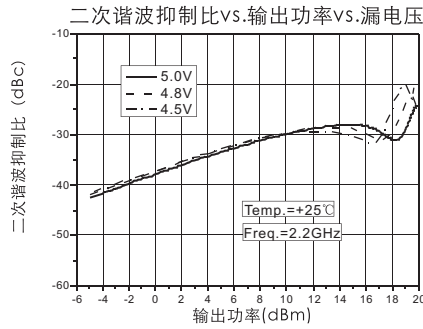
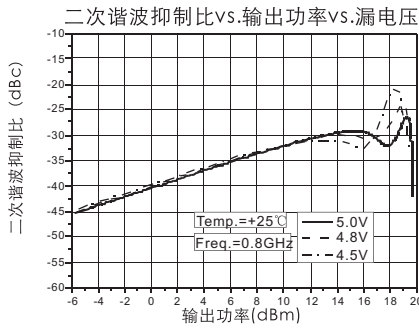


增益 vs. 输入功率 vs. 频率



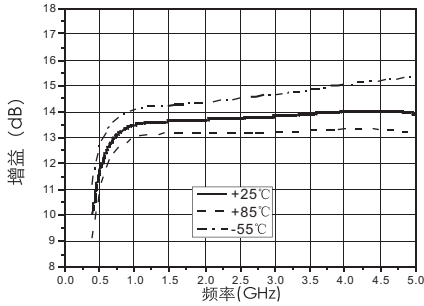
二次谐波抑制比 vs. 频率 vs. 输入功率



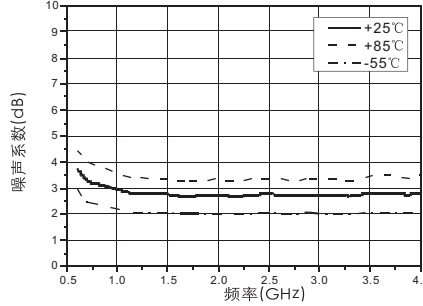


测试曲线(接收路: 端口1→2)

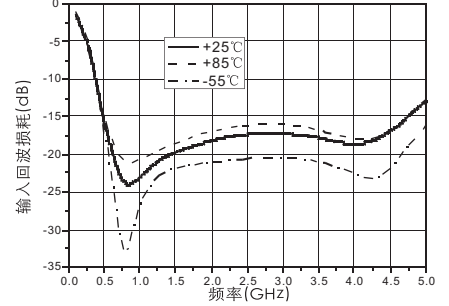
小信号增益vs.频率vs.温度



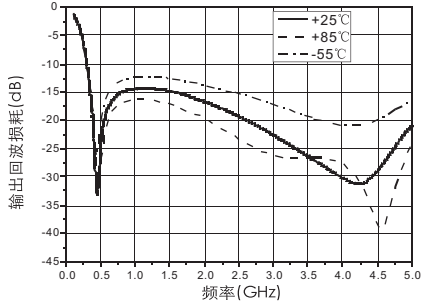
噪声系数vs.频率vs.温度



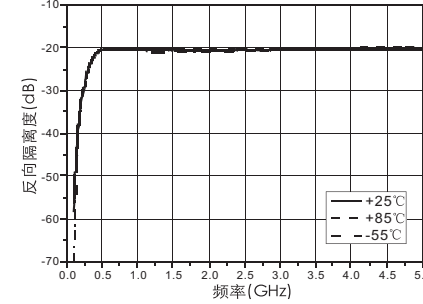
输入回波损耗vs.频率vs.温度



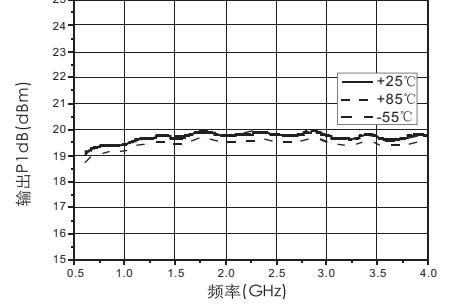
输出回波损耗vs.频率vs.温度



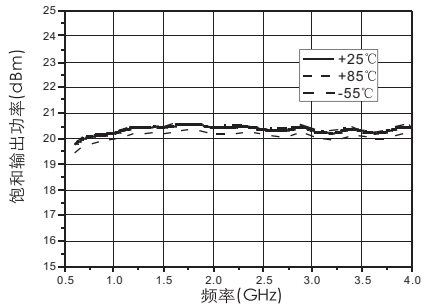
反向隔离度vs.频率vs.温度



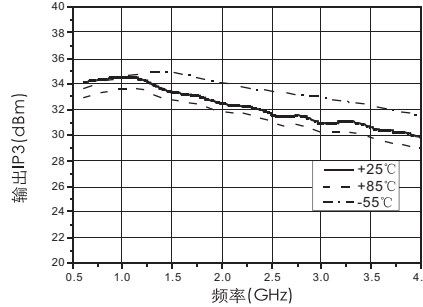
输出P1dB vs.频率vs.温度



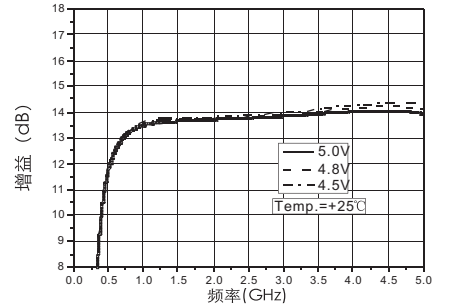
饱和输出功率 vs.频率vs.温度



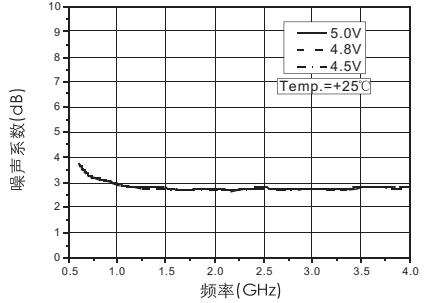
输出IP3 vs.频率vs.温度



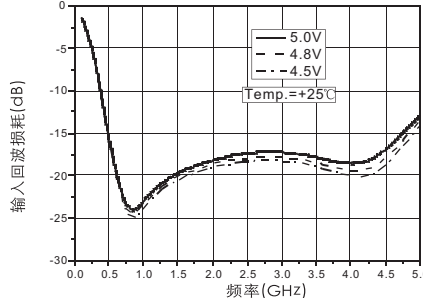
小信号增益vs.频率vs.漏电压



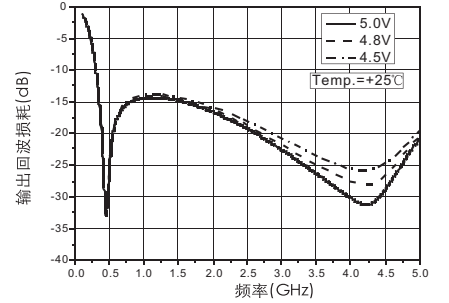
噪声系数vs.频率vs.漏电压

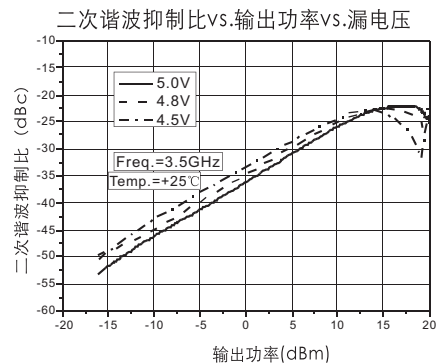
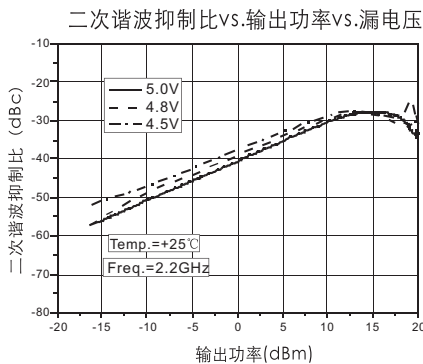
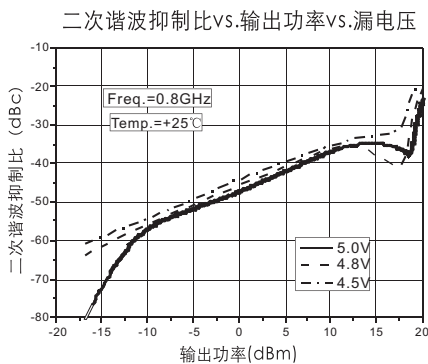
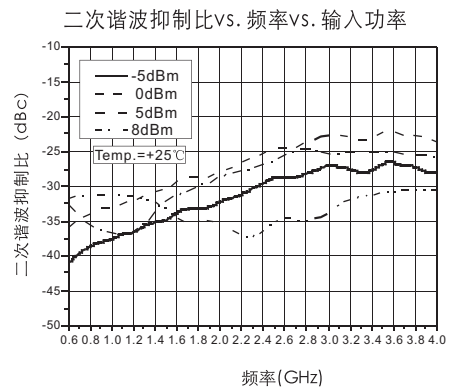
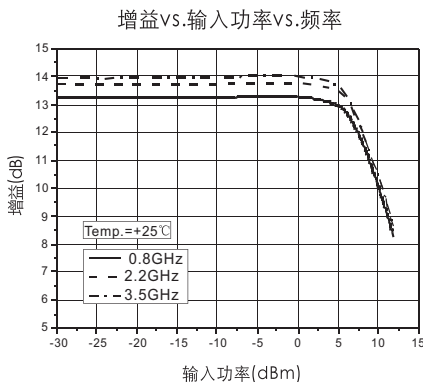
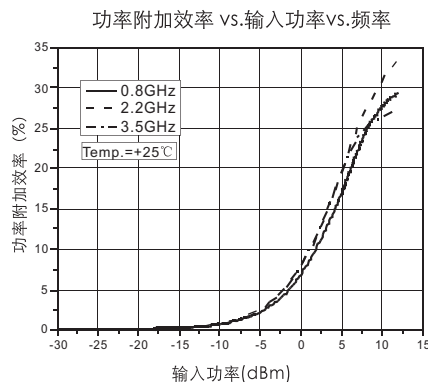
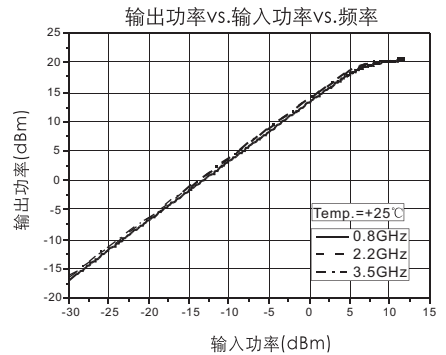
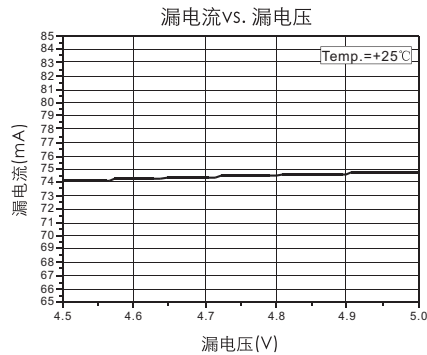
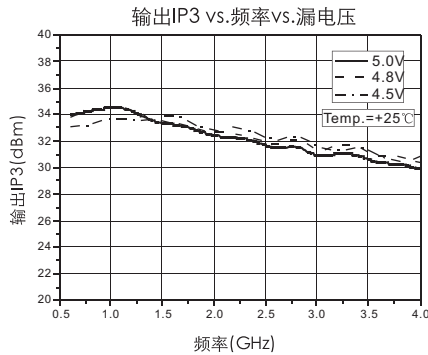
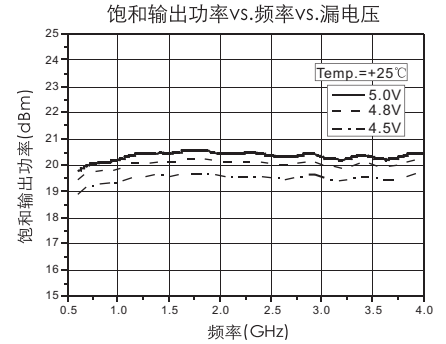
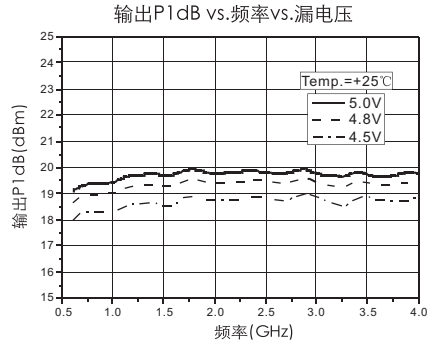
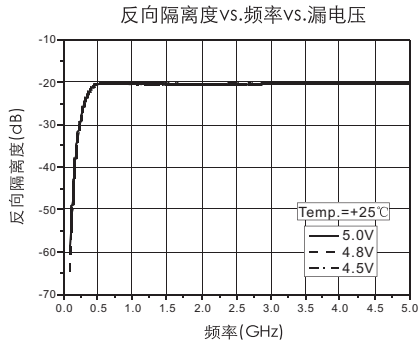


输入回波损耗vs.频率vs.漏电压



输出回波损耗vs.频率vs.漏电压





极限参数

参数	数值
输入功率PIN, 50Ω	15dBm
漏电压Vdd	+6V
热阻Rth	30°C/W
沟道温度TCH	175°C
烧结温度 (20秒, N2保护)	320°C
储存温度	-55~+150°C
工作温度	-55~+125°C

真值表

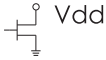
VEE	VTR	Vdd	放大状态
-5V	0V	+5V	接收路 (1→2)
-5V	5V	+5V	发射路 (2→1)



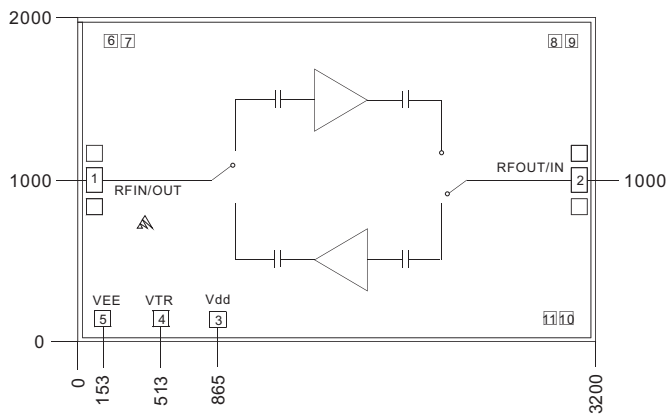
ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

MMIC

键合压点定义

压点编号	功能符号	功能描述	等效电路
1	RFIN/OUT	射频输入/输出压点，可以通过控制压点的逻辑电平控制输入/输出端口切换，若射频通路不是0V，需外接隔直电容。	-
2	RFOUT/RFIN	射频输出/输入压点，可以通过控制压点的逻辑电平控制输出/输入端口切换，若射频通路不是0V，需外接隔直电容。	-
3	Vdd	放大器漏偏压，需外置100pF旁路电容	
4	VTR	驱动器控制端口，0/+5V	-
5	VEE	驱动器驱动电压，-5V	-
6、7、8、9、10、11	NC	悬空	-
芯片背面	GND	芯片底部与射频及直流地需要良好接触	

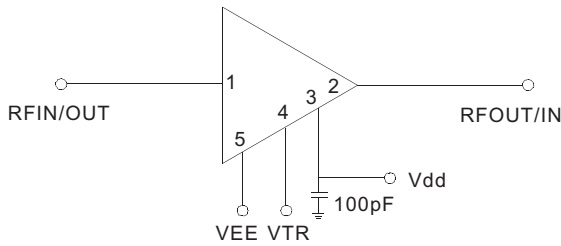
外形尺寸



说明：
1.单位：微米 2.芯片背面镀金
3.芯片背面接地 4.键合压点镀金，压点尺寸：
1、2：150umx100um； 3~5：100umx100um；
5.不能在通孔上进行键合 6.外形尺寸公差：±50um

应用信息

应用电路



装配示意图

