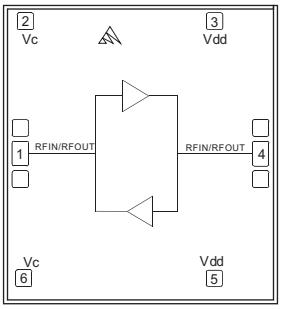
性能特点

- 工作频段：1~5GHz
- 噪声系数：5dB
- 增益：19dB
- 增益平坦度：±1.5dB
- P1dB输出功率：16dBm
- 饱和输出功率：17dBm
- 输出IP3：27dBm
- 单电源工作：+5V @ 70mA
- 输入/输出阻抗：50 Ω
- 芯片尺寸：1.70mm×2.3mm×0.07mm

功能框图



概述

BW590是一款工作于1 - 5 GHz的GaAs单片集成双向放大器芯片，在+5V、70mA工作电流下，可提供19dB的增益和16dBm的P1dB输出功率。

该双向放大器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。

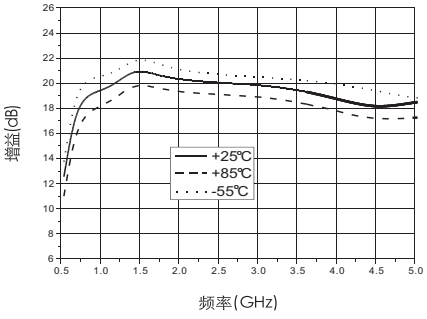
电性能表 (T_A =+25℃, 50Ωsystem, Vdd=+5V, Idd=70mA)

符号	参数	最小值	典型值	最大值	单位
Frequency	工作频率	1	-	5	GHz
Gain	增益	-	19dB	-	dB
△G	增益平坦度	±1.5dB			dB
NF	噪声系数	-	5	-	dB
IRL	输入回波损耗	-	10	-	dB
ORL	输出回波损耗	-	13	-	dB
P1dB	1dB压缩点输出功率	-	16	-	dBm
Psat	饱和输出功率	-	17	-	dBm
OIP3	三阶交调点输出功率	-	27	-	dBm
Idd	工作电流	-	70	-	mA

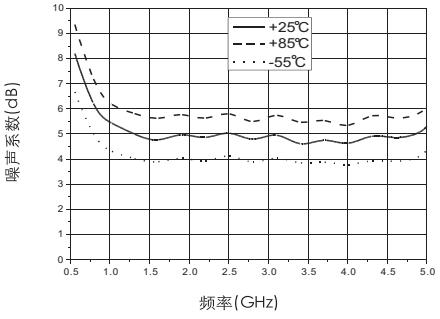
芯片均经过在片100%直流与RF测试

测试曲线

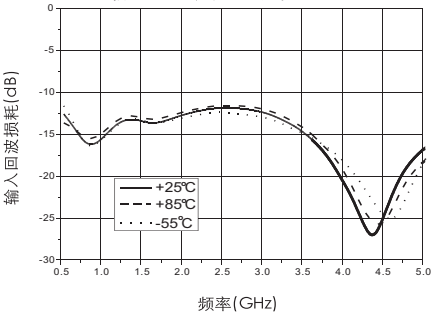
小信号增益vs.频率vs.温度



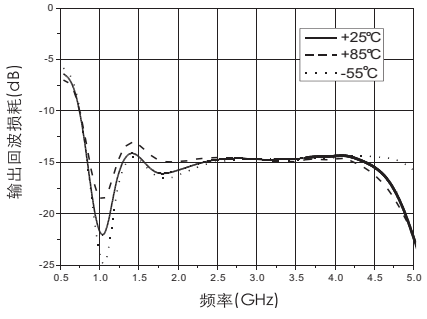
噪声系数vs.频率vs.温度



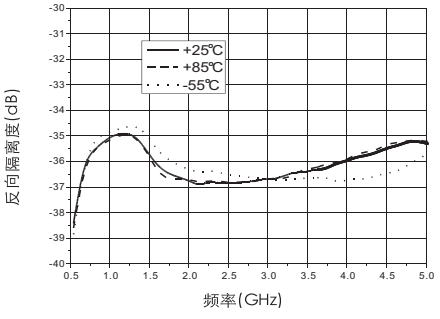
输入回波损耗vs.频率vs.温度



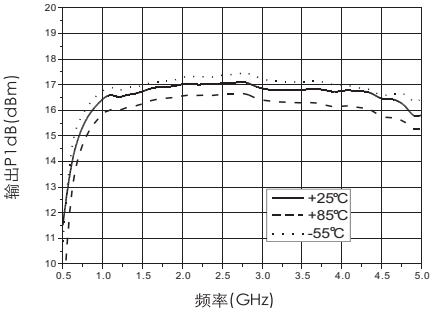
输出回波损耗vs.频率vs.温度



反向隔离度vs.频率vs.温度

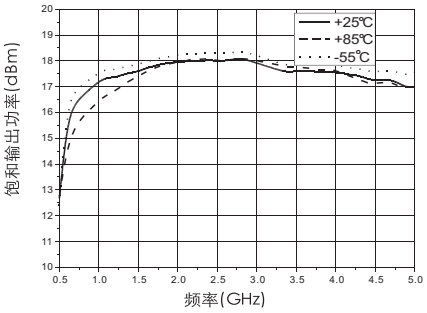


输出P1dB vs.频率vs.温度

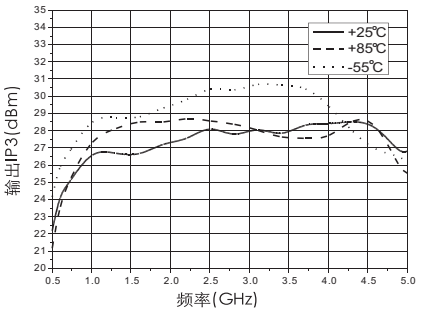


BW590型GaAs单片集成双向放大器

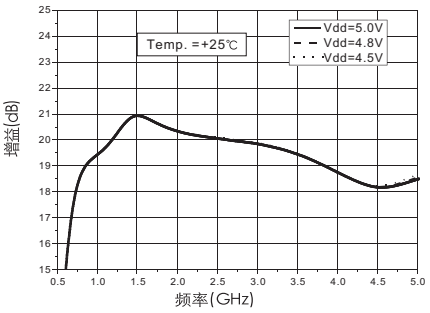
饱和输出功率 vs.频率vs.温度



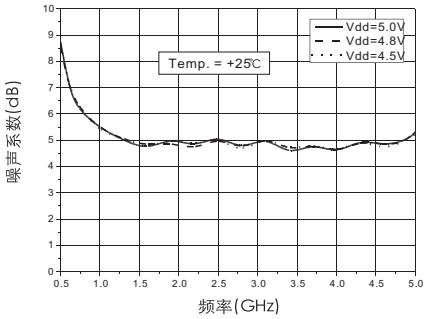
输出IP3 vs.频率vs.温度



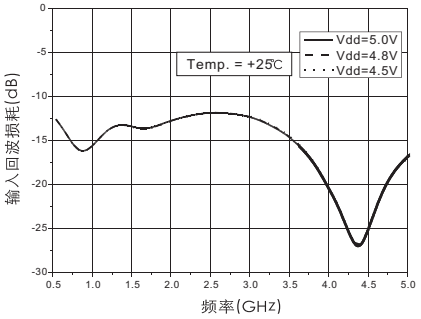
小信号增益vs.频率vs.漏电压



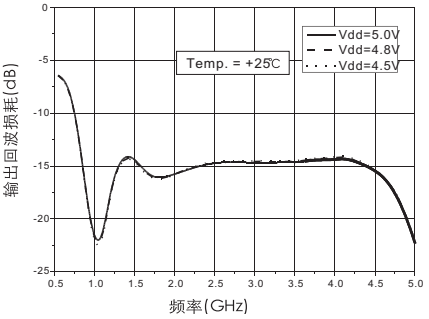
噪声系数vs.频率vs.漏电压



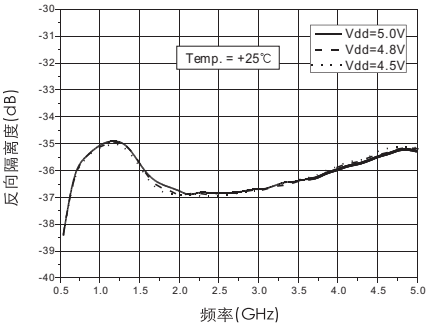
输入回波损耗vs.频率vs.漏电压



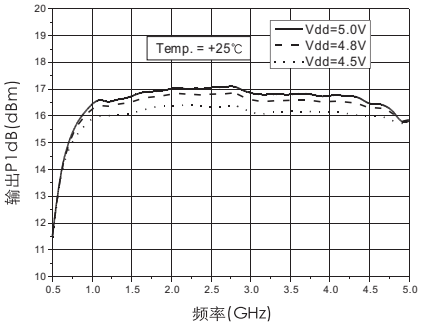
输出回波损耗vs.频率vs.漏电压



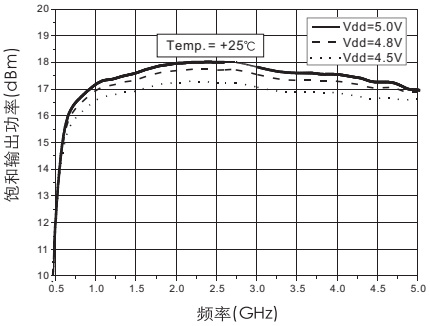
反向隔离度vs.频率vs.漏电压



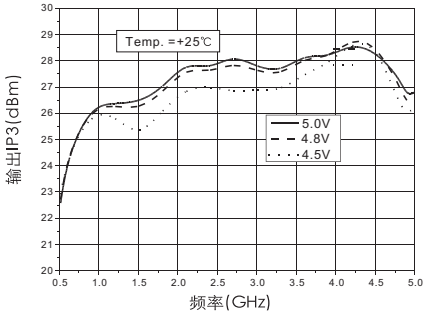
输出P1dB vs.频率vs.漏电压



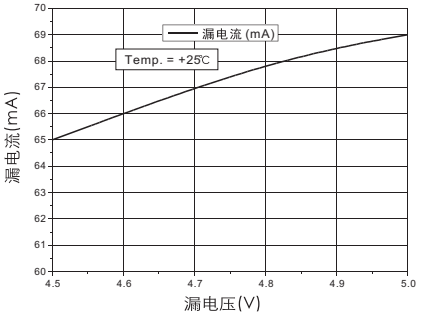
饱和输出功率 vs.频率vs.漏电压



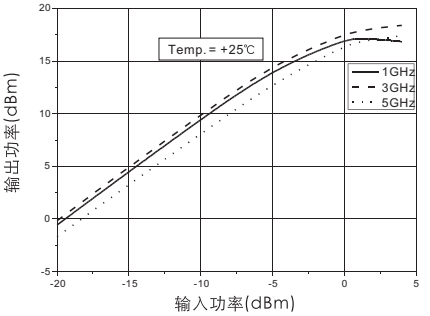
输出IP3 vs.频率vs.漏电压



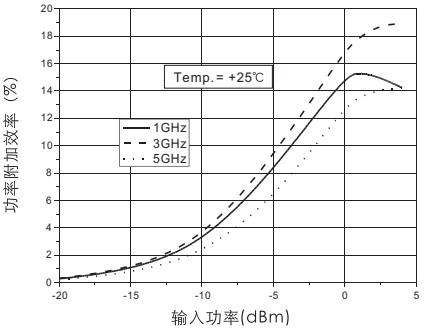
漏电流vs. 漏电压



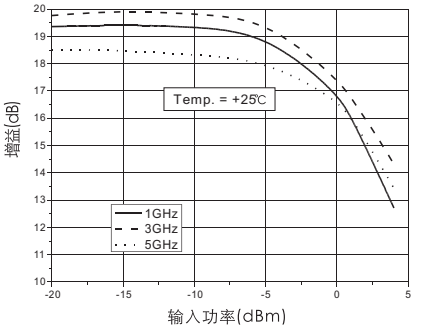
输出功率vs.输入功率vs.频率



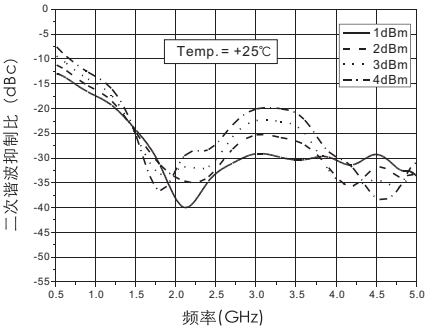
功率附加效率vs.输入功率vs.频率



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



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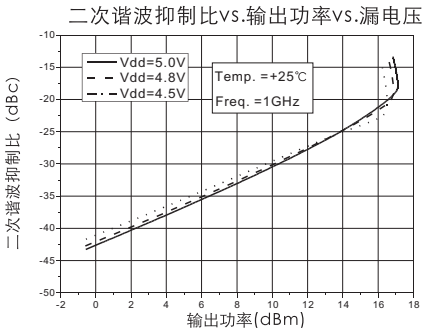
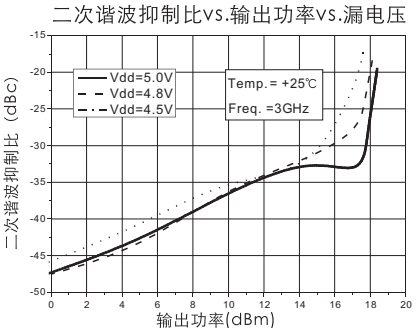
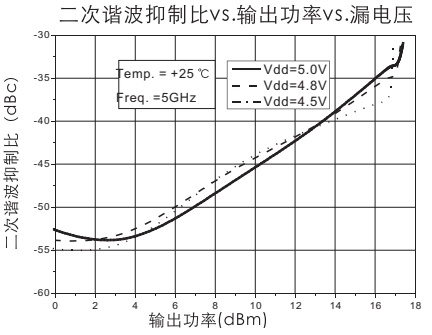
BW590型GaAs单片集成双向放大器



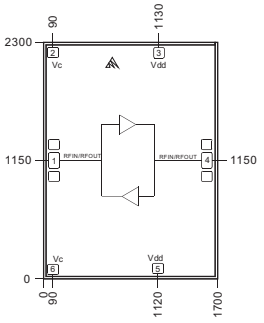




键合压点定义

压点编号	功能符号	功能描述	等效电路
1	RFIN/RFOUT	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，端口需外加隔直电容	RFIN/RFOUT
4	RFIN/RFOUT	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，端口需外加隔直电容	RFIN/RFOUT
2，6	Vc	控制压点，2个压点内部相连，使用时任选其一即可	–
3，5	Vdd	放大器漏偏压，需外置100pF旁路电容，2个压点内部相连，使用时任选其一即可	Vdd
芯片背面	GND	芯片底部与射频及直流地需要良好接触	GND

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、4：200umx100um；
2、3、5、6：100umx100um
5.不能在通孔上进行键合　　6.外形尺寸公差：± 50um

极限参数

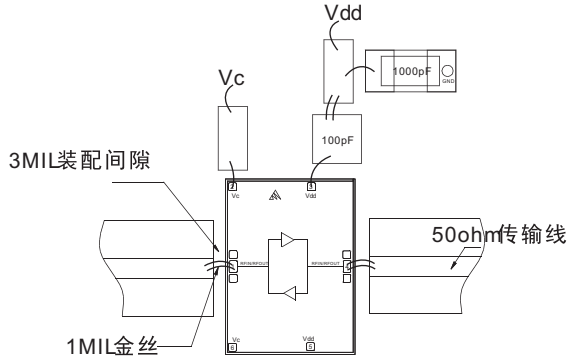
参数	数值
输入功率PIN，50Ω	+15dBm
漏电压Vdd	+6V
热阻Rth	55° C/W
沟道温度TCH	175℃
烧结温度(20秒，N2保护)	320℃
储存温度	-55 ~ +150℃
工作温度	-55 ~ +125℃

超过以上条件可能引起芯片永久性损坏。

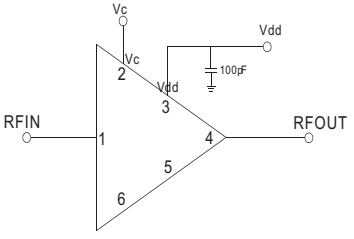
ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

装配示意图

(滤波电容要离芯片压点尽量近，尽量减小键合线长度影响)



应用电路



真值表

Vc	放大状态
0V	正向放大（1→4）
+5V	反向放大（4→1）

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