# ADIC920

V0

## 性能特点

- 工作频率：5 - 7 .5 GHz
- 发射路增益：8 dB
- 接收路增益：19 dB
- RX噪声特性：2.5 dB @ 6.5 GHz
- TX 1dB压缩点输出功率：16 dBm
- RX 1dB压缩点输出功率：6 dBm
- 静电防护等级：HBM Class 1B
- 12-pin 3.0 mm x 3.0 mm x 0.75 mm QFN leadless package

## 产品简介

ADIC920是一款高集成度的前端模块(FEM)，内部集成有两个分别控制发射和接收路通断的单刀双掷开关，一个低噪声放大器和一个功率放大器，可广泛应用于UWB定位和通信系统。

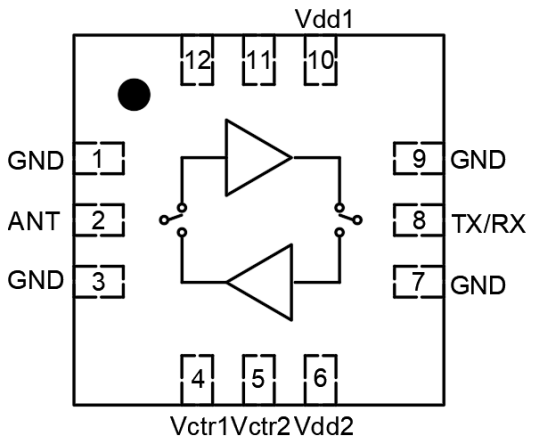
发射和接收的模式转换通过两个控制电压实现，该芯片可适用于TDD系统。为确保芯片有更低的功耗，发射模式下低噪声放大器处于关闭状态，而在接收模式下功率放大器处于关闭状态。

芯片封装采用 12-pin 3.0 mm x 3.0 mm x 0.75 mm Quad-Flat-Non-Lead (QFN) 。

## 推荐工作条件

| | |
|---|---|
| 工作电压 Vdd1和Vdd2 | +3.3 V |
| 控制电压 Vctr1和Vctr2 | +3.3 V |

## 引脚定义




俯视透视图

| 引脚编号 | 符号 | 功能描述 |
|---|---|---|
| 2 | ANT | 连接去天线 |
| 4 | Vctr1 | 控制电压（3.3 V/0 V) |
| 5 | Vctr2 | 控制电压(3.3 V/0 V) |
| 6 | Vdd2 | PA供电电压(3.3 V) |
| 8 | TX/RX | PA的输入/LNA的输出 |
| 10 | Vdd1 | LNA供电电压(3.3 V) |
| 其它 | GND | 接地 |

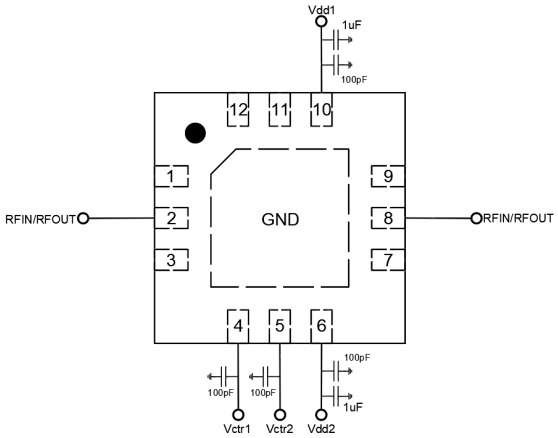
ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

关注公众号

## 极限参数

| 名称 | 值 |
|---|---|
| 工作电压 Vdd1 和 Vdd2 | +7 V |
| 控制电压 Vctr1 和 Vctr2 | +7 V |
| TX 路输入功率 (50 Ω 负载) | 20 dBm |
| RX 路输入功率 (50 Ω 负载) | 0 dBm |
| 最大烧结温度 | 150 ℃ |
| 工作环境温度 | -45 ℃~+125 ℃ |
| 储存温度 | -45 ℃~+150 ℃ |
| 静电防护等级 (ESD) | Class 1B（HBM） |

## 应用电路




## 真值表

| Vctr1 | Vctr2 | TX | RX |
|---|---|---|---|
| 高 | 低 | 关 | 开 |
| 低 | 高 | 开 | 关 |

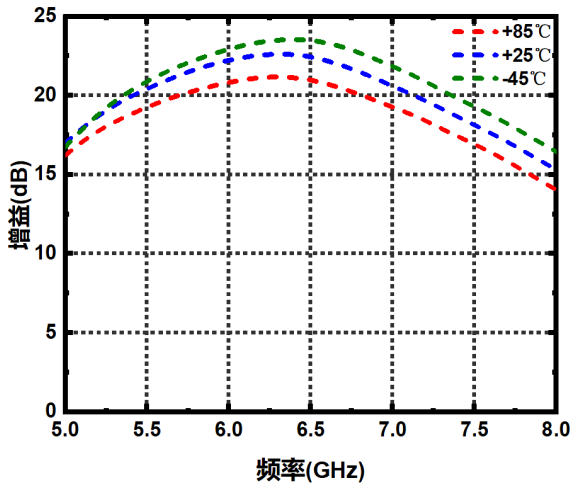
High = 3.3 V；Low = 0 V

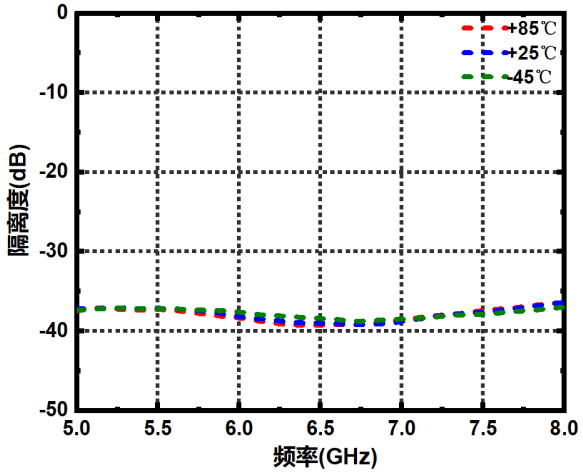
## 电性能表（Vdd1 = 3.3 V，Vdd2 = 3.3 V，Vctr1 = 3.3 V / 0 V，Vctr2 = 3.3 V / 0 V）

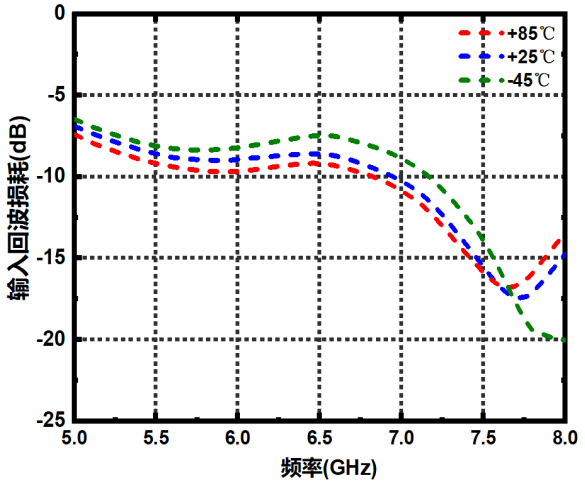
| 指标 | 最小值 | 典型值 | 最大值 |
|---|---|---|---|
| **发射模式电性能**（Vdd1 = 3.3 V，Vdd2 = 3.3 V，Vctr1 = 0 V，Vctr2 = 3.3 V） | | | |
| 频率（GHz） | 5 | - | 7.5 |
| Tx 增益（dB） | 6 | 8 | 11 |
| Tx 1dB压缩点输出功率（dBm） | 14 | 16 | 18 |
| TX 工作电流 Id2(mA) | 35 | 55 | 75 |
| RX 工作电流 Id1(mA) | 0 | 0.8 | 1.6 |
| **接收模式电性能**（Vdd1 = 3.3 V，Vdd2 = 3.3 V，Vctr1 = 3.3 V，Vctr2 = 0 V） | | | |
| 频率（GHz） | 5 | - | 7.5 |
| Rx 增益（dB） | 16 | 20 | 24 |
| Rx 噪声特性（dB） | 2.5 | 3 | 3.5 |
| Rx 1dB压缩点输出功率（dBm） | 0 | 3.5 | 7 |
| RX 工作电流 Id1 (mA) | 13 | 20 | 27 |
| TX 工作电流 Id2 (mA) | 0 | 0.8 | 1.6 |
| **开关性能** | | | |
| RX to TX(ns) | - | 500 | - |
| TX to RX(ns) | - | 500 | - |

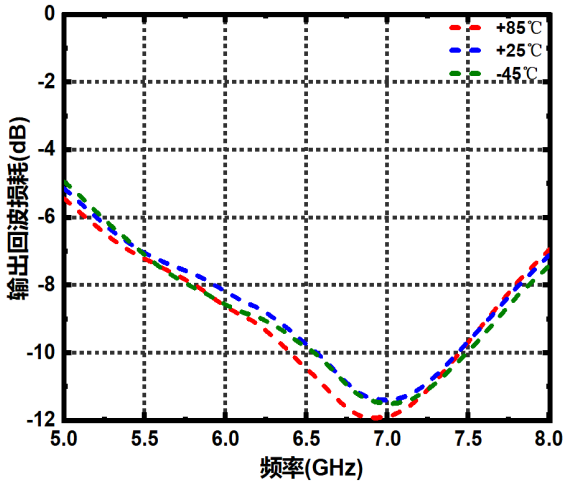
## 典型测试曲线

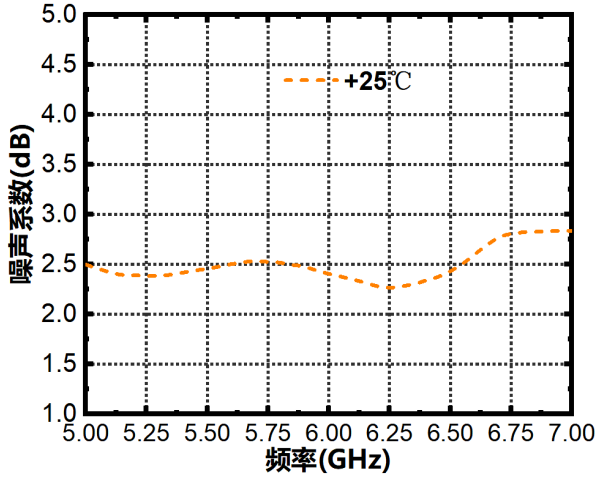
a) RX（Vdd1 = 3.3 V，Vdd2 = 3.3 V，Vctr1 = 3.3 V，Vctr2 = 0 V）

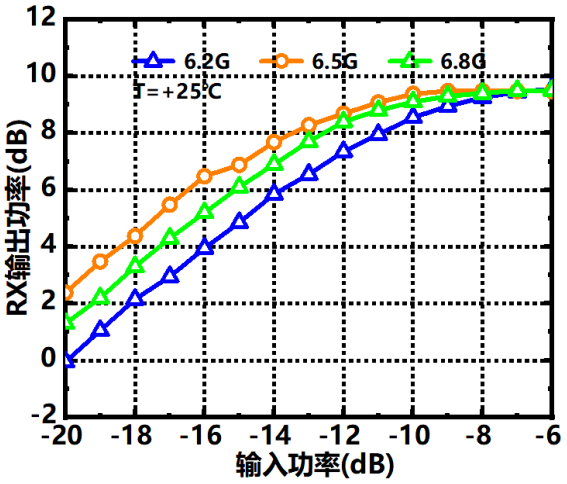


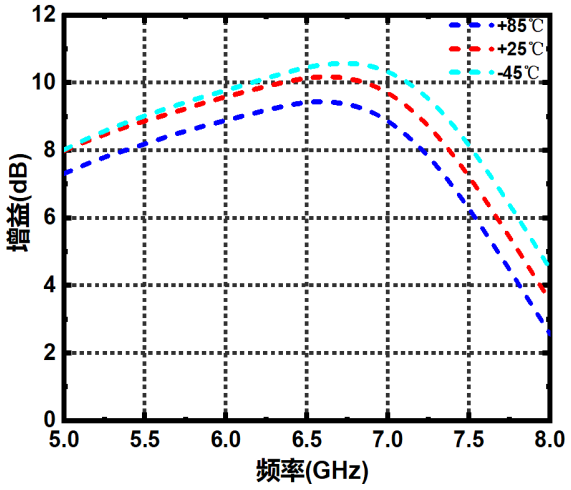



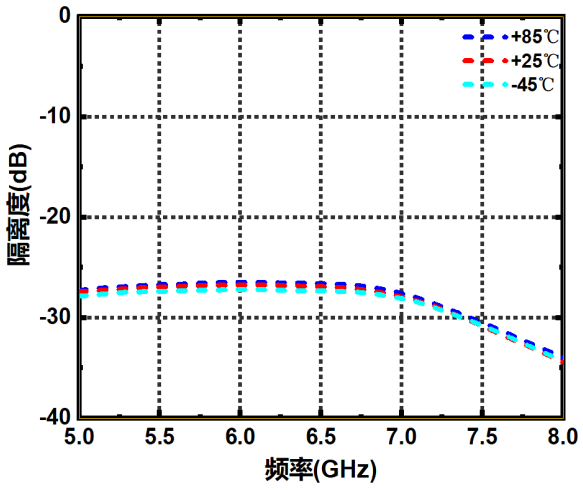



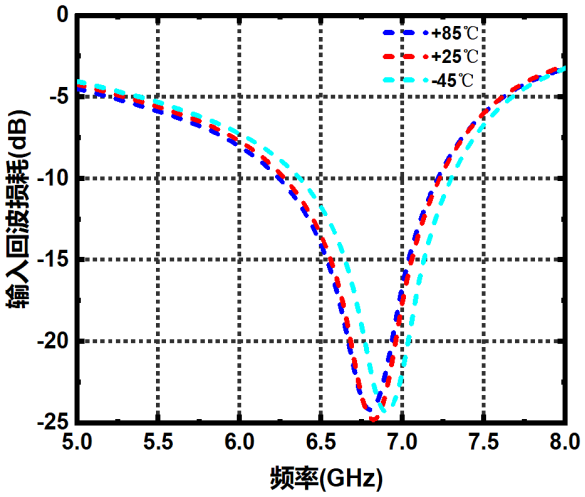



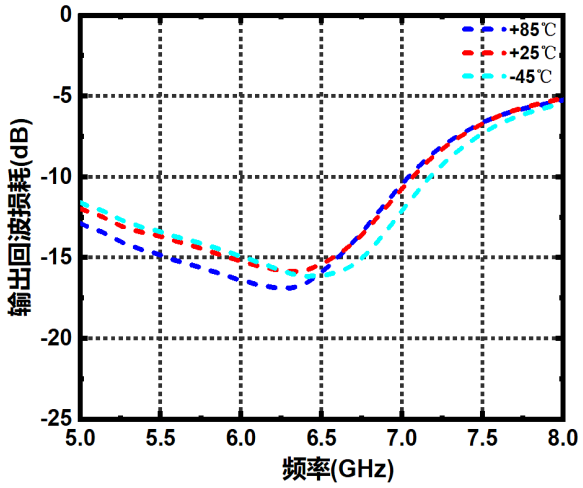



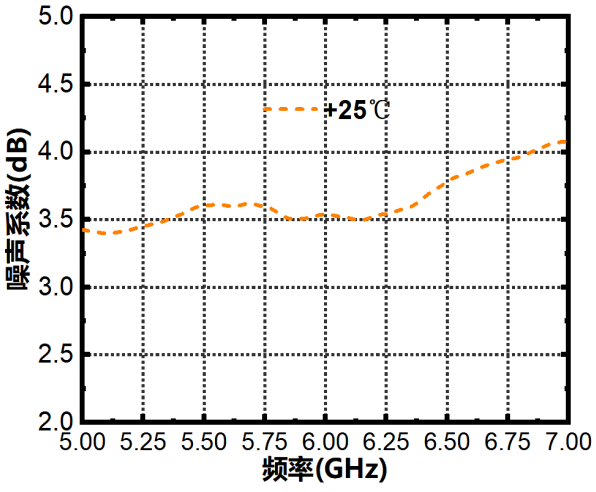
b) TX（Vdd1 = 3.3 V，Vdd2 = 3.3 V，Vctr1 = 0 V，Vctr2 = 3.3 V）

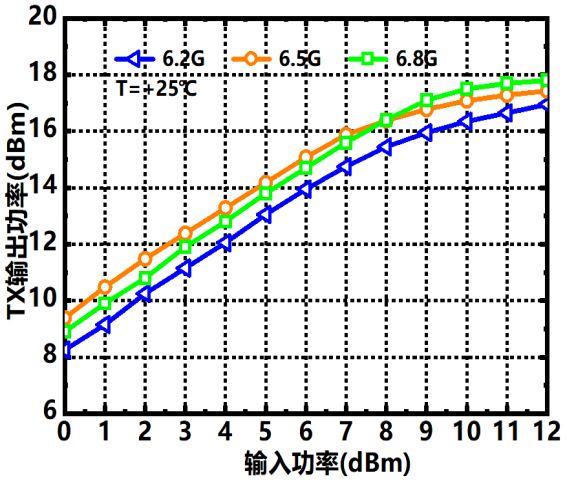


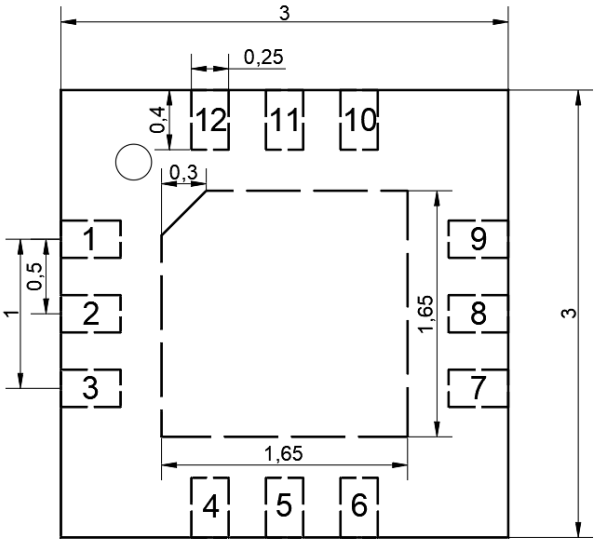



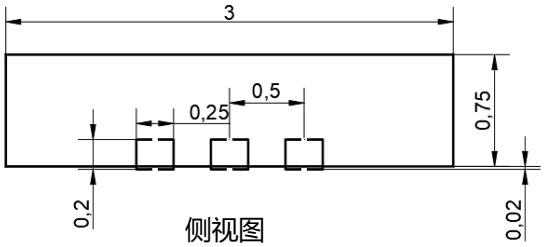



## 外形尺寸



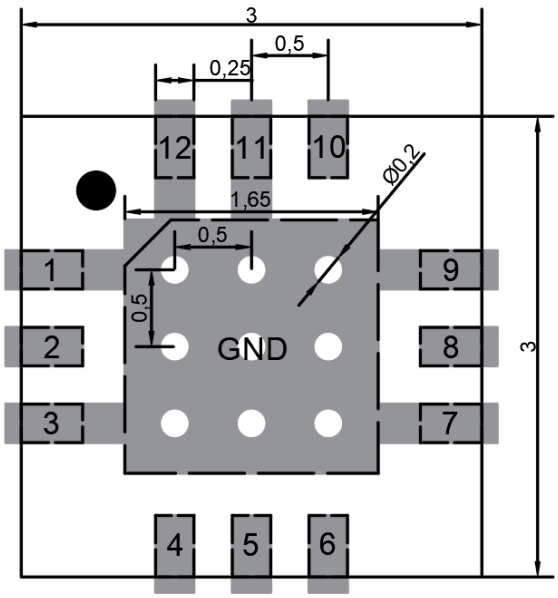

俯视透视图

单位：mm




侧视图

## 推荐引脚PCB



## Environmental Specification

| Specification | Test/Inspection Condition | Reference/Spec |
|---|---|---|
| Operating Temperature | -45° to 85°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -45° to 85° C Ambient Environment | Individual Model Data Sheet |
| Temperature Cycling | -45° to 85°C,5 cycles (Hold at each temperature for 30 minutes) | GBT 2423.22-2012<br>GJB 548B-2005 |
| Temperature Humidity | (40±2°)C/ 85% RH, 48 hours( power supplied) | GBT 2423.3-2006 |
| Solder Reflow Heat | Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak | J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1 |
| Moisture Sensitivity: Level 1 | Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS) | J-STD-020 |
| Solderability | 10X magnification9,5% coverage | JESD22-B102 |
| Mechanical Shock | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes | GBT 2423.5-2019 |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | GJB 548B-2005 |