

BSTLN197-0004

0.02-4GHz low noise amplifier chip

I. Product Introduction

BSTLN197-0004 is a low noise amplifier chip with excellent performance. The frequency range covers 0.02~4GHz.

Used under $V_D=+3V/+5V$. When $V_D=+5V$, the small signal gain is 20dB, the noise figure is 0.9dB, and the output 1dB compression power is 17.5dBm. The amplifier adopts 2×2mm surface mount leadless plastic package, and the surface of the pin pad is tinned, which is suitable for reflow soldering installation

II. Main Parameters

2.1. Functional Block Diagram

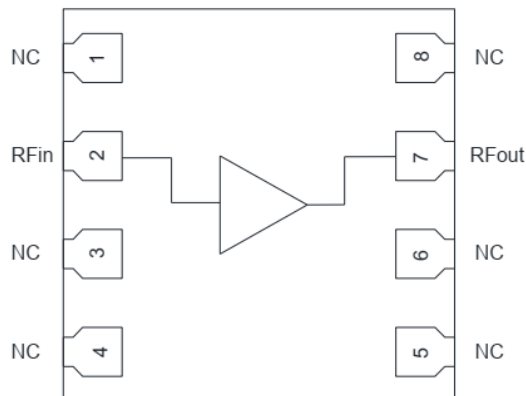


Figure 1

2.2. Key technical indicators

- Frequency range: 0.02-4GHz
- Small signal gain: 20dB
- Output 1dB compression power: 17.5dBm
- Noise figure: 0.9dB
- Input return loss: 15dB
- Output return loss: 9dB
- Power supply: +5V@52mA
- Chip size: 2.00mm × 2.00mm × 0.75mm

2.3. Electrical performance table (TA = +25°C, VD = +5V)

Table 1

PARAMETER NAME	SYMBOL	MINIMUM	TYPICAL VALUE	MAXIMUM	UNIT
Frequency range	Freq	0.02	—	4	GHz
Small Signal Gain	Gain	17.5	20	—	dB
Noise Figure	NF	—	0.9	1.3	dB
Output 1dB compression power	OP1dB	14	17.5	—	dBm
Input return loss	RL_IN	—	15	—	dB
Output return loss	RL_OUT	—	9	—	dB
Static operating current	IDQ	—	52	—	mA

2.4. Absolute maximum ratings

PARAMETER	VALUE
Maximum operating voltage	+6V
Maximum input power	+20dBm
Storage temperature	-65°C ~ +150°C
Operating temperature	-55°C ~ +125°C

III. Test curve

(TA = +25 °C)

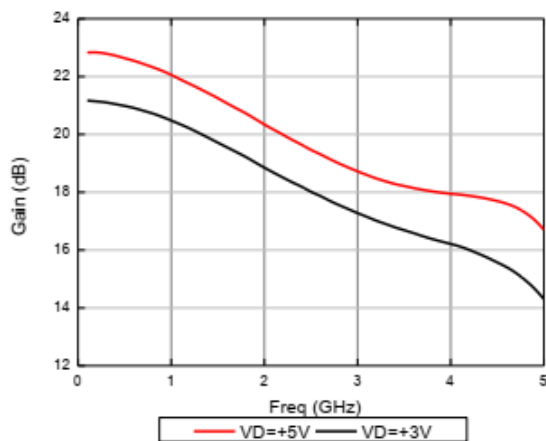


Figure 2. Small signal gain

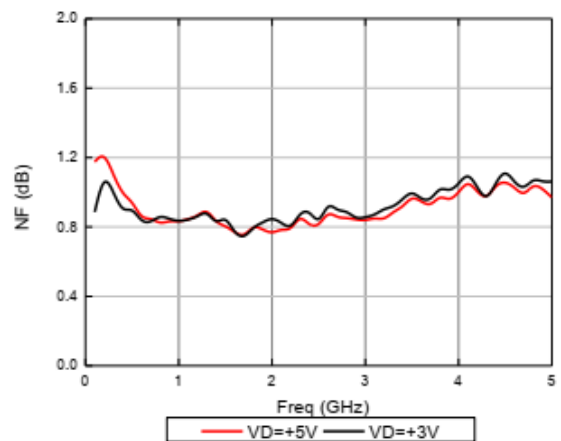


Figure 3. Noise figure

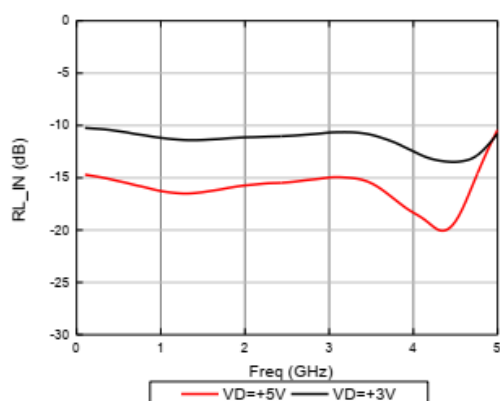


Figure 4. Input return loss

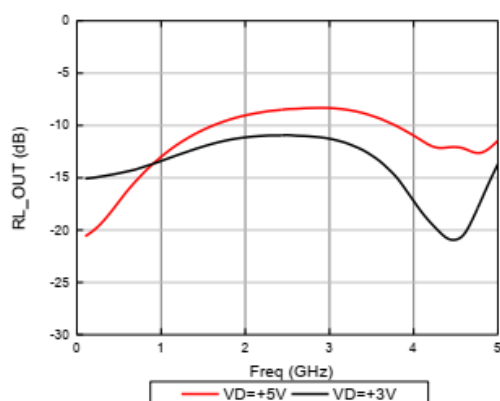


Figure 5. Noise figure

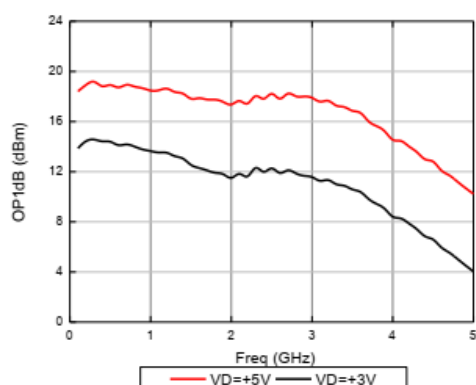


Figure 6. Output 1dB compression power

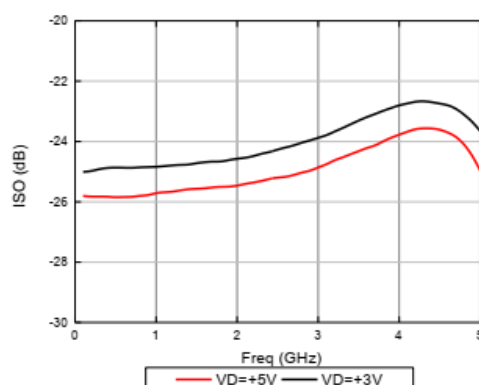


Figure 7. Reverse isolation

IV. Appearance structure diagram (unit: mm)

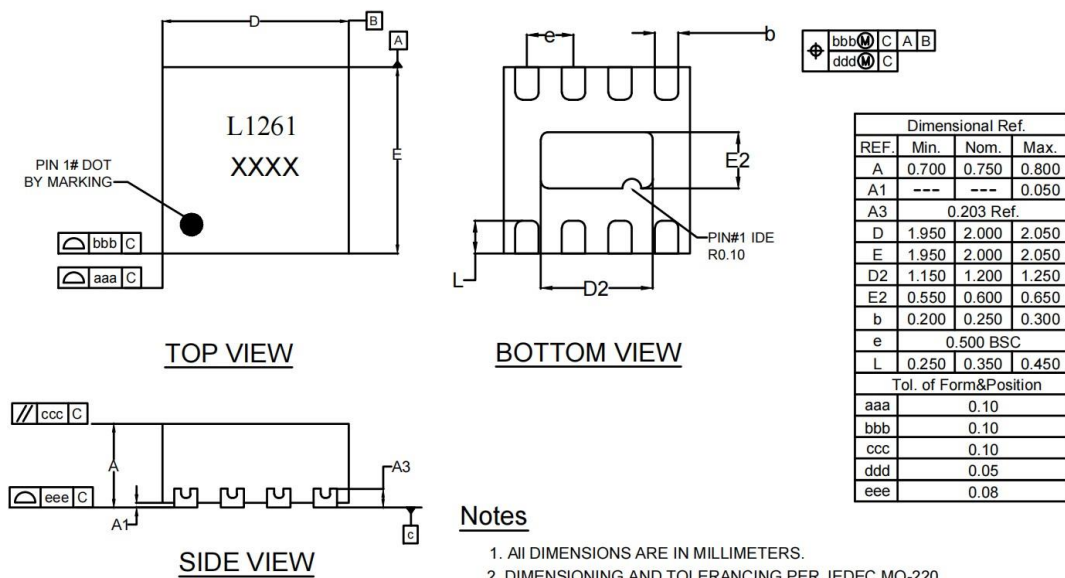


Figure 8

V. Pin Definition

SERIAL NUMBER	PIN NAME	DEFINITION	SIGNAL OR VOLTAGE
2	RFin	RF signal input terminal, external DC blocking capacitor is required	RF
7	RFout/VD	RF signal output terminal, external DC blocking capacitor is required	RF/DC
1, 3~6, 8	NC	Floating, recommended to be grounded	/
/	ePAD	The bottom of the chip needs to be well grounded to RF and DC	/

VI. Application Circuit

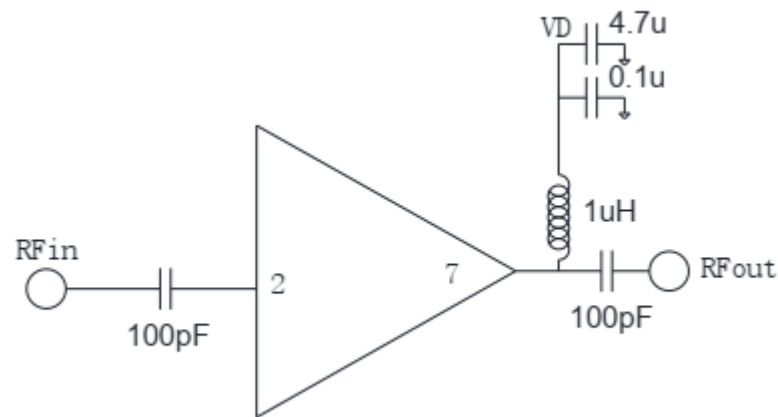


Figure 9

VII. Precautions

- Assemble and use in a clean environment;
- Sealing material: Low-pressure injection molding plastic that complies with RoHS regulations;
- Lead frame material: copper alloy;
- Lead surface plating: 100% matte tin;
- Maximum reflow peak temperature: 260°C;
- This product is an electrostatically sensitive device, please be careful to prevent static electricity during storage and use;
- Store in a dry, nitrogen environment;
- Do not attempt to clean the chip surface with dry or wet chemical methods.