

BSTLN109-0004C

0.1-3.5GHz low noise amplifier chip

I. Product Introduction

BSTLN109-0004C is a low noise amplifier chip with excellent performance, and the frequency range covers 0.1-3.5GHz, small signal gain 31.5dB, noise figure 0.7dB, output 1dB compression power 19.5dBm.

The amplifier uses 4×4mm surface mount leadless ceramic tube shell, the pin pad surface is gold-plated, suitable for reflow soldering installation.

II. Main Parameters

2.1. Functional Block Diagram

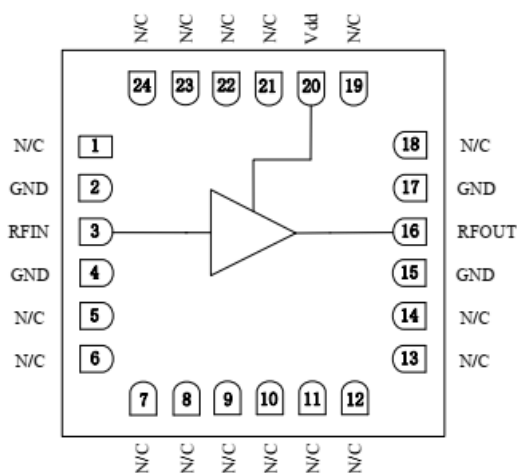


Figure 1

2.2. Key technical indicators

- Frequency range: 0.1-3.5GHz
- Small signal gain: 31.5dB
- Noise figure: 0.7dB
- Input Return Loss: 16.5dB
- Output return loss: 17dB
- Output 1dB compression power: 19.5dBm

- Power supply: +5V@77.9mA
- Chip size: 4.0mm×4.0mm×0.85mm

2.3. Electrical performance ($T_A = +25^\circ\text{C}$, $V_D = +5\text{V}$)

Table 1.

PARAMETER NAME	SYMBOL	MINIMUM	TYPICAL VALUE	MAXIMUM	UNIT
Frequency range	Freq	0.1	—	3.5	GHz
Small Signal Gain	Gain	30.5	31.5	32	dB
Gain Flatness	ΔG	—	± 0.75	—	dB
Noise Figure	NF	0.6	0.7	0.8	dB
Output 1dB compression power	OP1dB	18.8	19.5	20.2	dBm
Input return loss	RL_IN	10	16.5	—	dB
Output return loss	RL_OUT	13.5	17	—	dB
Static operating current	Id	—	77.9	—	mA

2.4. Absolute maximum ratings

PARAMETER	VALUE
Maximum operating voltage	+7V
Maximum input power	+20dBm
Storage temperature	-65°C~+150°C
Operating temperature	-55°C~+125°C

III. Test curve

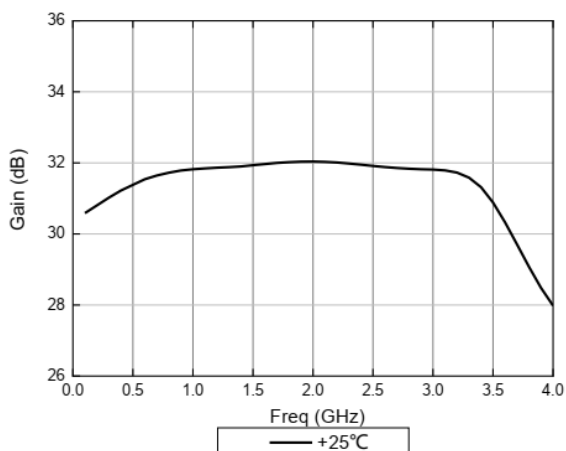


Figure 2. Small signal gain

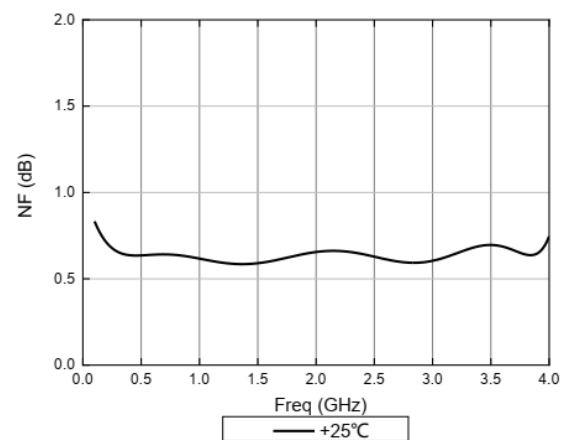


Figure 3. Noise figure

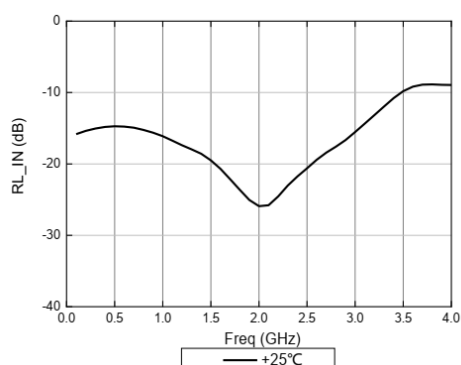


Figure 4. Input return loss

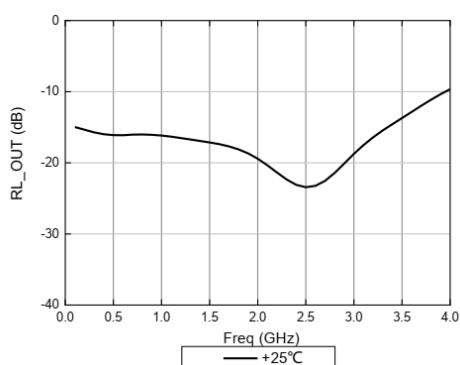


Figure 5. Output return loss

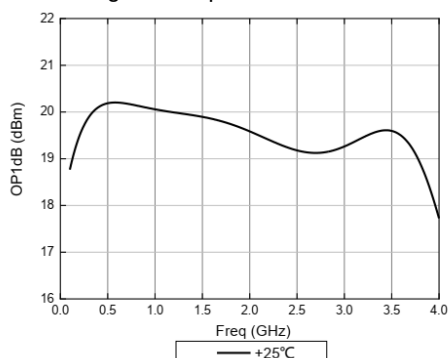


Figure 6. Output 1dB compression power

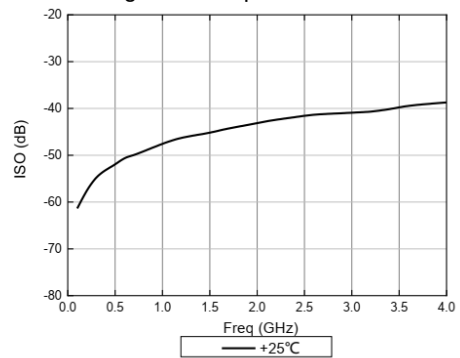


Figure 7. Isolation

IV. Appearance structure diagram (unit: mm)

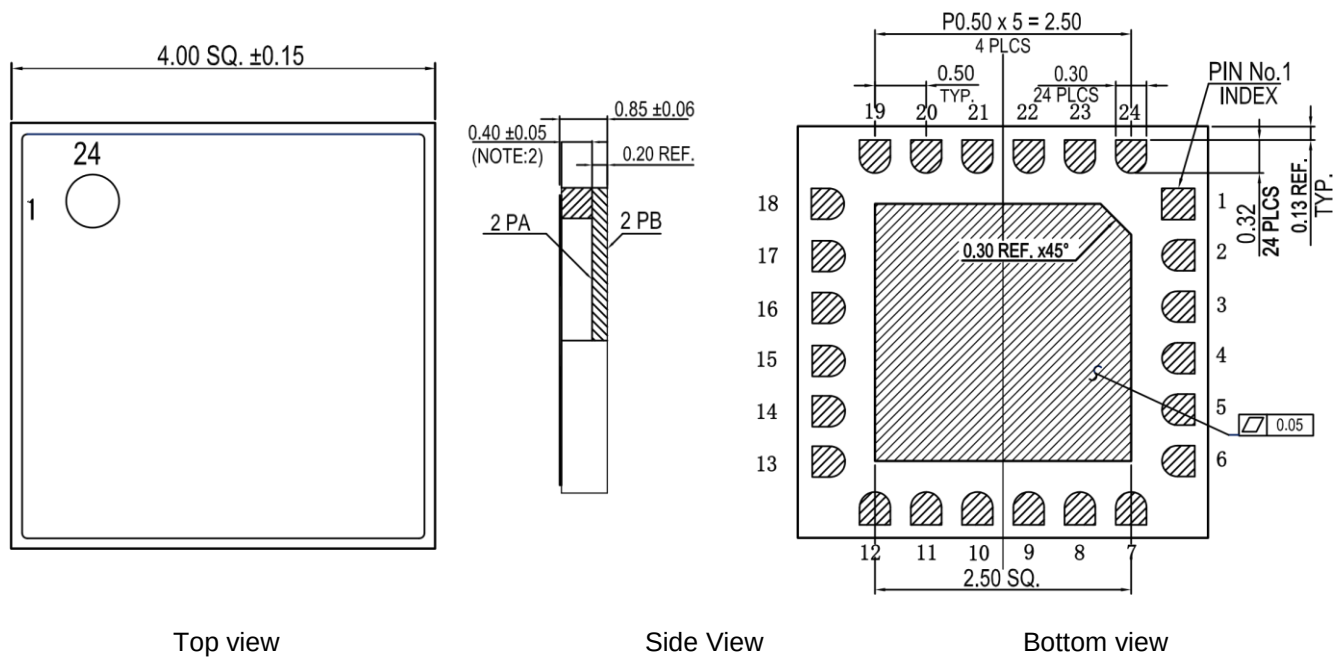
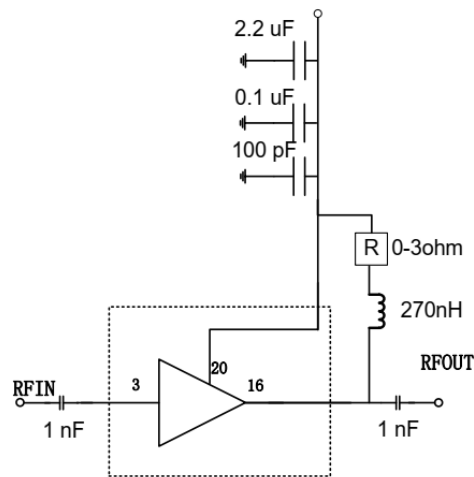


Figure 8

V. Pin Definition

PIN NUMBER	PIN NAME	DEFINITION	SIGNAL OR VOLTAGE
3	RFIN	RF signal input, requires external DC blocking capacitor	RF
16	RFOUT	RF signal output, requires external DC blocking capacitor	RF
20	V _{dd}	Low Noise Drain Bias	+5V
2, 4, 15, 17, ePAD	GND	The bottom of the chip needs to be well grounded to RF and DC	/
1, 5~14, 18, 19, 21~24	N/C	No welding required	/

VI. Recommended assembly drawing



Picture 7.

Note: R is adjustable within the range of 0-3ohm.

VII. Precautions

- Assemble and use in a clean environment;
- Sealing material: Ceramic material that meets ROHS standards;
- Lead frame material: copper alloy;
- Lead surface plating: gold, gold layer thickness greater than 1.5um;
- 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.