BSTLN166-0812

8-12GHz low-noise amplifier chip

Data Sheet

I. Product Introduction

BSTLN166-0812 is a low-noise amplifier chip with excellent performance. It covers a frequency range of 8~12GHz, a small signal gain of 21dB, a noise figure of 0.95dB, an output 1dB compression power of 12.5dBm, and a saturated output power of 13dBm.

The chip uses on-chip through-hole metallization technology to ensure good grounding, without the need for additional grounding measures, and is simple and convenient to use.

The back side is metallized and suitable for eutectic sintering or conductive adhesive bonding.

II. Key Technical Indicators

- Frequency range: 8-12GHz
- Small signal gain: 21dB
- Noise figure: 0.95dB
- Input return loss: 15dB
- Output return loss: 15dB
- Output 1dB compression power: 12.5dBm
- Saturated output power: 13dBm
- Power supply: +5V@36mA
- Chip size: 1.60 mm × 1.10 mm × 0.10 mm

III. Functional Block Diagram

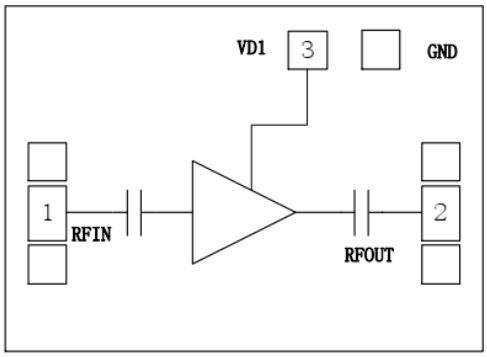

Figure 1.

IV. Electrical Performance Table (T_A = +25 ℃, V_D = +5V)

Table 1.

PARAMETER NAME	SYMBOL	MINIMUM	TYPICAL VALUES	MAXIMUM	UNIT
Frequency range	Freq	8	—	12	GHz
Small signal gain	Gain	20.8	21	21.5	dB
Gain flatness	ΔG	—	±0.35	—	dB
Noise Figure	NF	0.9	0.95	1	dB
Output 1dB compression power	OP1dB	11.5	12.5	13	dBm
Saturated output power	Psat	12.5	13	14	dBm
Input return loss	RL_IN	13	15	—	dB
Output return loss	RL_OUT	13	15	—	dB
Quiescent operating current	Id	—	36	—	mA

V. Absolute Maximum Ratings

Table 2.

PARAMETER	LIMIT VALUE
Maximum operating voltage	+8V
Maximum input power	+20dBm
Storage temperature	-65℃~+150℃
Operating temperature	-55℃~+125℃

VI. Test Curve (VD=+5V)

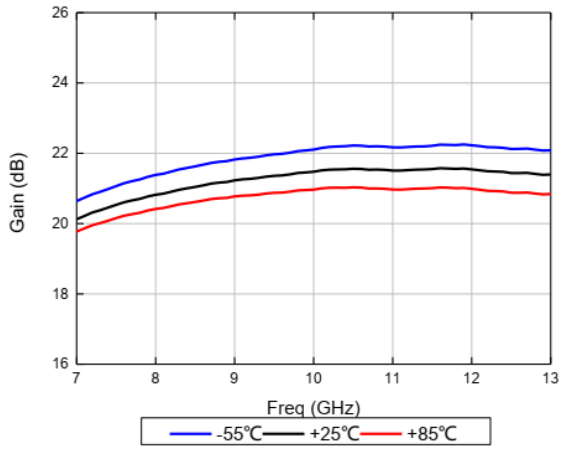

Figure 2. Small signal gain

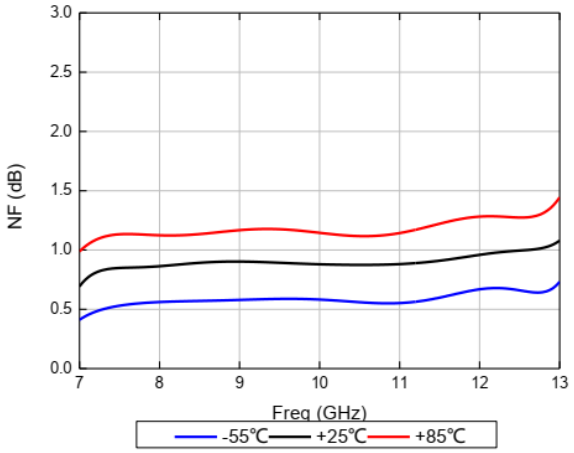

Figure 3. Noise Figure

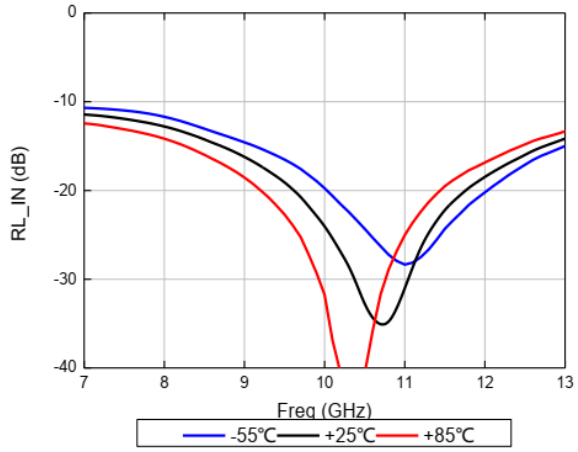

Figure 4. Input return loss

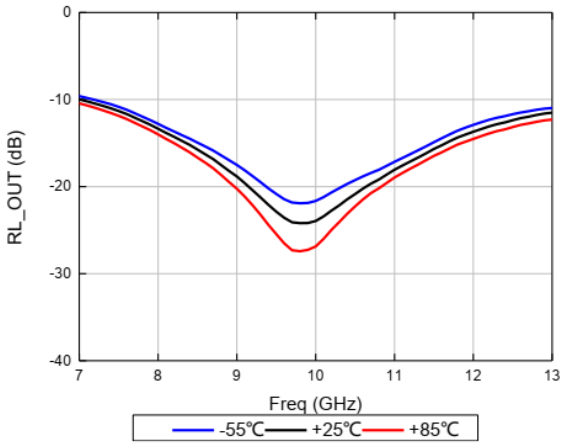

Figure 5. Output return loss

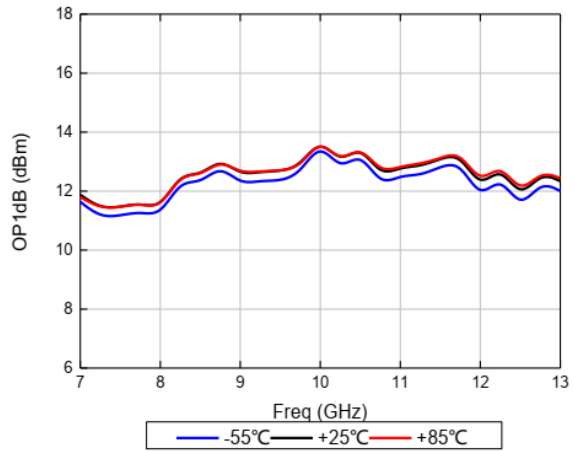

Figure 6. Output 1dB compression power

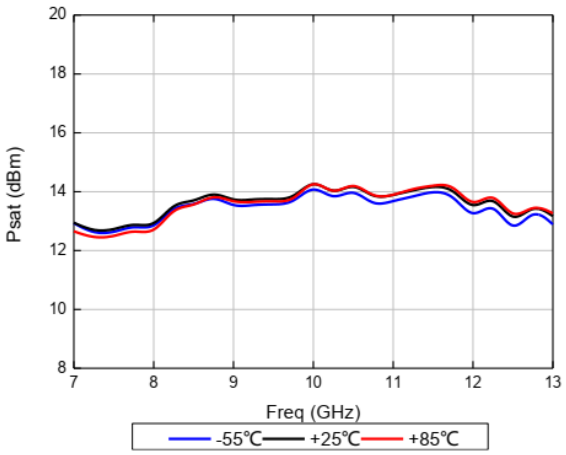

Figure 7. Saturated output power

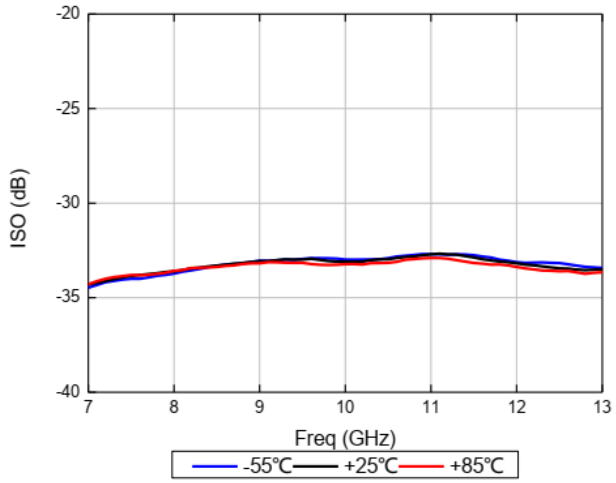

Figure 8. Isolation

VII. Chip Port Diagram (Unit: μm)

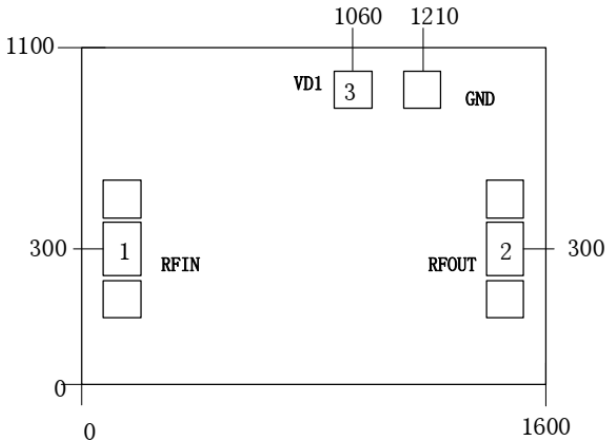

Figure 9.

VIII. Port Definition

Table 3.

SERIAL NUMBER	PORT NAME	DEFINITION	SIGNAL OR VOLTAGE
1	RFIN	RF signal input, no external DC blocking capacitor required	RF
2	RFOUT	RF signal output, no external DC blocking capacitor required	RF
3	VD1	The LNA drain is positive and requires an external 100pF capacitor.	+5V
-	other	Test pads	-

IX. Recommended Assembly Drawing

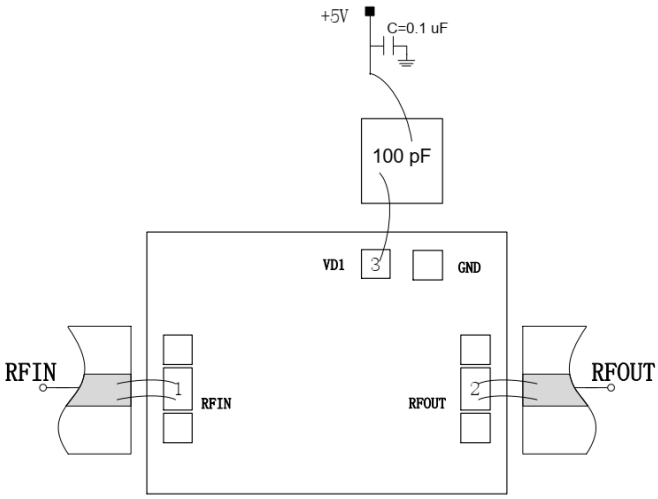

Figure 10.

X. Precautions

- Assemble and use in a clean environment;
- GaAs material is very brittle and the chip surface is easily damaged (do not touch the surface), so you must be careful when using it;
- Two bonding wires (25μm diameter gold wire) are used for input and output, and the bonding wire length is about 400μm;
- The sintering temperature should not exceed 300 °C, and the sintering time should be as short as possible, not exceeding 30 seconds;
- This product is an electrostatic 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.