

BSTLN162-0224

2-24 GHz Low-Noise Amplifier

Data Sheet

I. Product Introduction

BSTLN162-0224 is a high-performance low-noise amplifier chip with a frequency range of 2 to 24 GHz, a small-signal gain of 18.5 dB, a noise figure of 2 dB, an output 1dB compression power of 17 dBm, a saturated output power of 19 dBm, and an output third-order intermodulation power of 28.5 dBm. This chip uses an on-chip through-hole metallization process to ensure good grounding, eliminating the need for additional grounding measures and making it easy to use.

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

II. Key Technical Indicators

- | | |
|---|-------------------|
| • Frequency range: | 2-24GHz |
| • Small signal gain: | 18.5dB |
| • Noise figure: | 2dB |
| • Input return loss: | 16dB |
| • Output return loss: | 17dB |
| • Output 1dB compression power: | 17dBm |
| • Saturated output power: | 19 dBm |
| • Output third-order intermodulation power: | 28.5 dBm |
| • Power supply: | +5V@65mA |
| • Chip size: | 3.0mm×1.3mm×0.1mm |

III. Functional Block Diagram

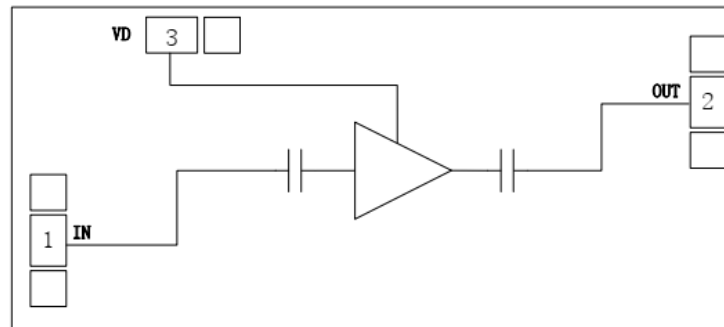


Figure 1

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

Table 1

PARAMETER NAME	SYMBOL	MINIMUM	TYPICAL VALUES	MAXIMUM	UNIT
Frequency range	Freq	2	—	24	GHz
Small signal gain	Gain	15	18.5	20	dB
Noise Figure	NF	—	2	3.9	dB
Output 1dB compression power	OP1dB	10	17	—	dBm
Saturated output power *	Psat	17.5	19	—	dBm
Output third-order intermodulation power *	OIP3	21.5	28.5	—	dBm
Input return loss	RL_IN	—	16	—	dB
Output return loss	RL_OUT	—	17	—	dB
Quiescent operating current	Id	—	65	—	mA
* OIP3@Pout=4dBm/tone, Psat test OP5dB.					

V. Absolute Maximum Ratings

Table 2

PARAMETER	LIMIT VALUE
Maximum operating voltage	+7V
Maximum input power	+20dBm
Storage temperature	-65 $^{\circ}\text{C}$ ~+150 $^{\circ}\text{C}$
Operating temperature	-55 $^{\circ}\text{C}$ ~+125 $^{\circ}\text{C}$

VI. Test curve ($V_D=+5V$)

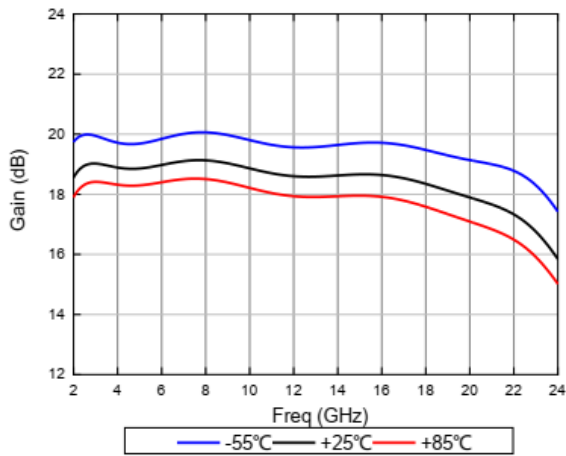


Figure 2. Small signal gain

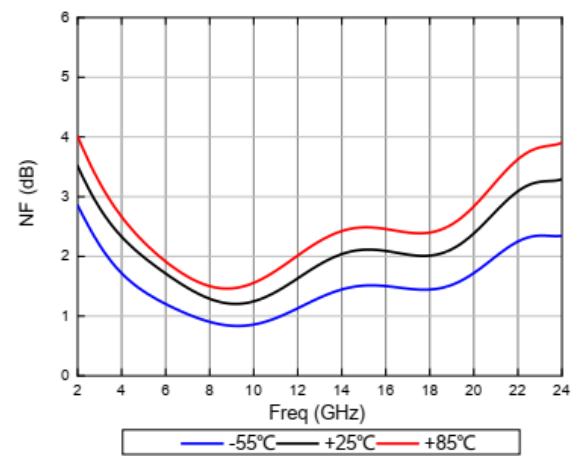


Figure 3. Noise Figure

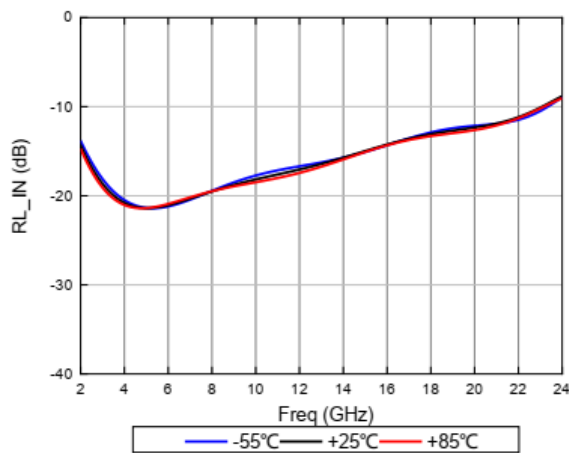


Figure 4. Input return loss

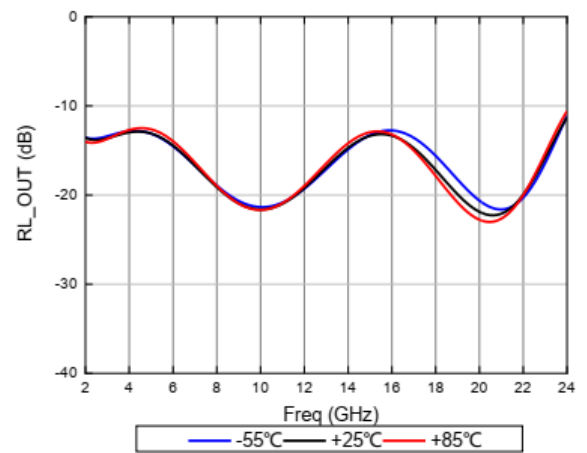


Figure 5. Output return loss

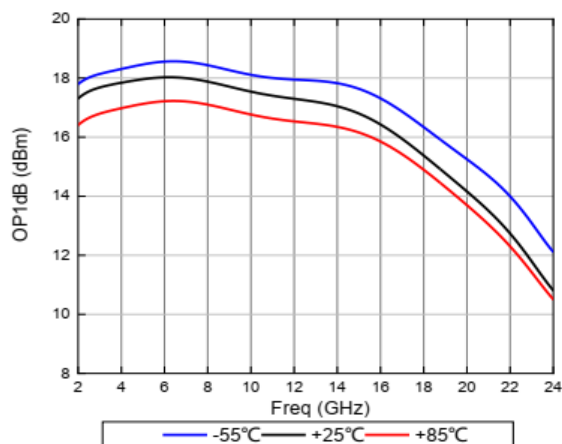


Figure 6. Output 1dB compression power

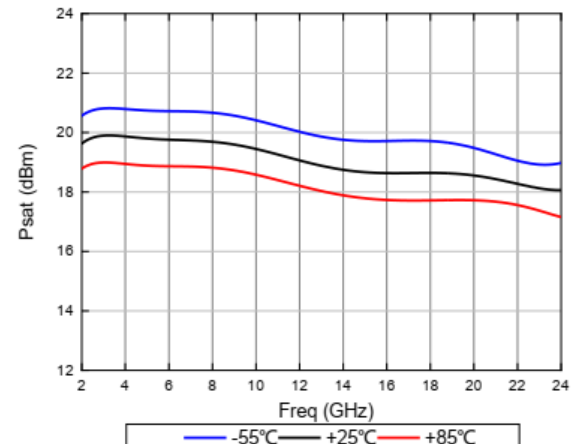


Figure 7. Saturated output power

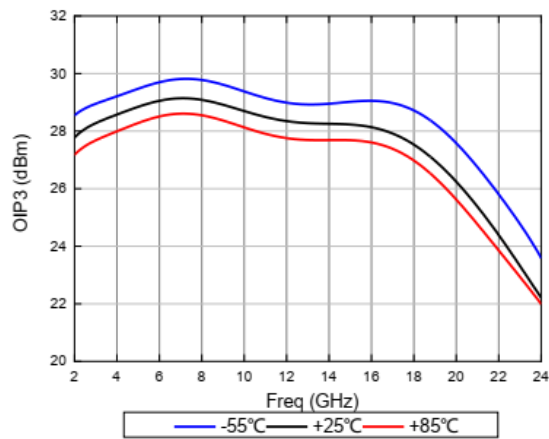


Figure 8. Output third-order intermodulation power
(OIP3@Pout=4dBm/tone)

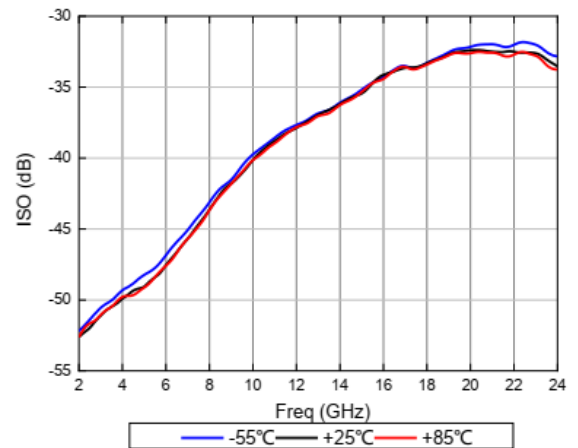


Figure 9. Isolatio

VII. Chip Port Diagram (Unit: μm)

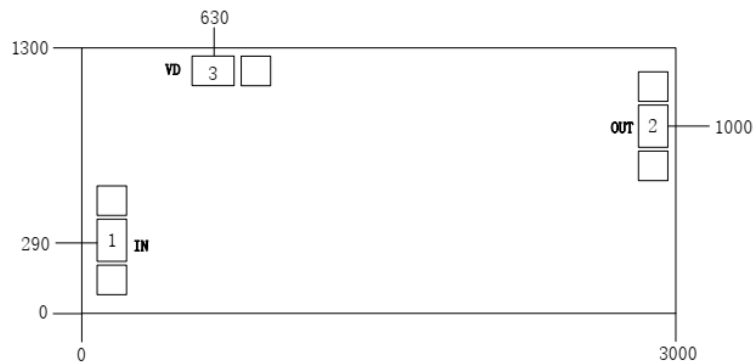


Figure 10

VIII. Port Definition

Table 3

SERIAL NUMBER	PORT NAME	DEFINITION	SIGNAL OR VOLTAGE
1	IN	RF input, no external DC blocking capacitor required	RF
2	OUT	RF output, no external DC blocking capacitor required	RF
3	VD	Positive power supply, external 100, 1000pF capacitor required	+5V

IX. Recommended Assembly Drawing

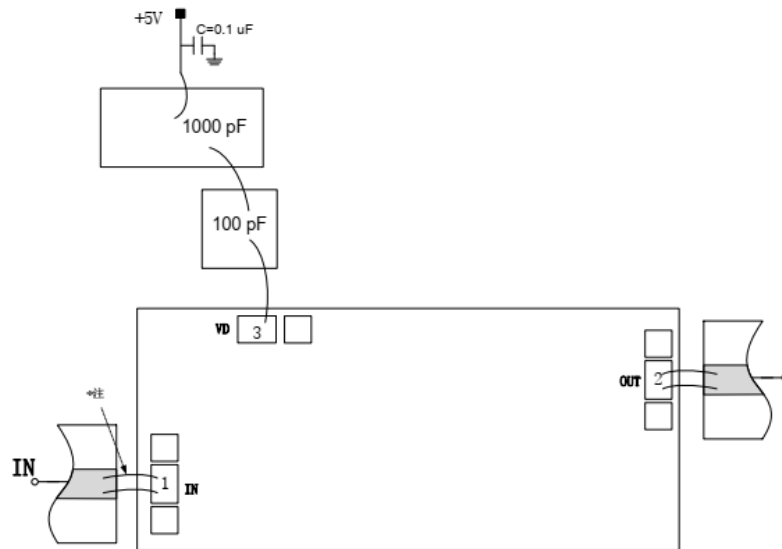


Figure 11

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 500μm;
- 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.