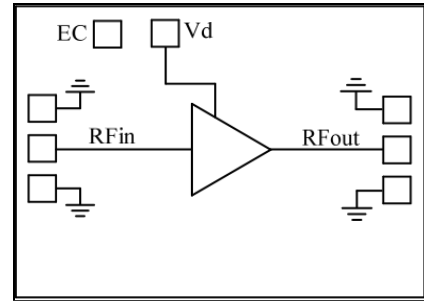
HX10308C-0527 GaAs MMIC Wideband Low Noise Amplifier Chip, Operating Range: 0.5GHz to 2.7GHz

Performance Features

- Frequency range: 0.5 GHz to 2.7 GHz
- Small signal gain: 23dB
- Noise coefficient: 1.0dB
- (Output) 1dB compression power: 10dBm@1GHz
- +5V@60mA (static)
- Chip dimensions: 2.00mm × 2.10mm × 0.07mm

functional block diagram



Product Overview

The HX10308C-0527 is a broadband low-noise amplifier chip fabricated using GaAs EPHEMT technology, operating within a frequency range of 0.5GHz to 2.7GHz. It features a linear gain of 23dB, an in-band noise figure below 1dB, and excellent input/output matching at 50**Ω**. The chip employs backside via grounding and is powered by a single +5V supply with a static operating current of 45mA. Built-in DC-blocking capacitors are integrated for input and output circuits.

DC current parameters (TA = +25°C)

Metric	Symbol	Least value	Representative value	Crest value	Unit
Working voltage	V_D		5		V
Quiescent current	I_D		45		mA

electrical parameter：

Metric	Symbol	Least value	Representative value	Crest value	Unit
	f	0.5~2.7			GHz
Linear gain	Gain	20	23	-	dB
Noise	NF	-	0.9	-	dB
1dB compressed output power	P-1dB	5	10	-	dBm
Input standing wave	VSWR(in)	-	1.5	2.0	-
Output standing wave	VSWR(out)	-	1.3	1.8	-

Note: 1) All chips have undergone in-chip 100% DC testing and 100% RF testing.

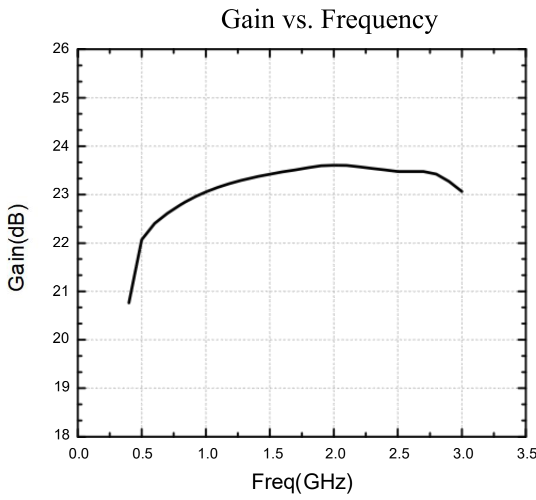
2) Unless otherwise specified, the curve test conditions in this manual are as follows: Vd=+5V, TA=+25℃, ZS=ZL=50Ω.

Use limit parameters

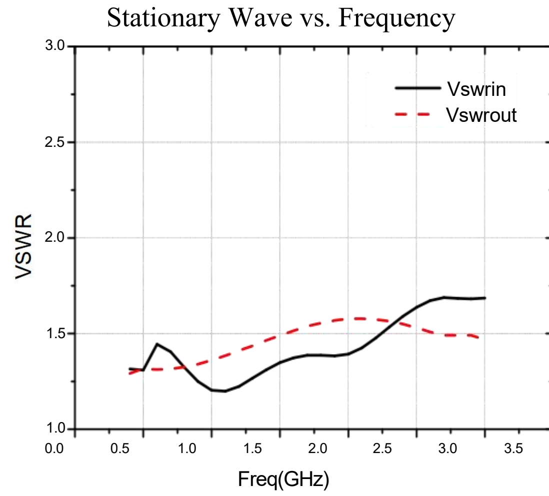
Parameter	Symbol	Limit value
Maximum operating current	I_D	70mA
Maximum operating voltage	V_D	+6.0V
Maximum input power (CW)	P_p	15dBm
Storage temperature	T_{STG}	-65℃~+150℃
End-use temperature	T_{op}	-55℃~+125℃

Typical curve (TA=25°C)

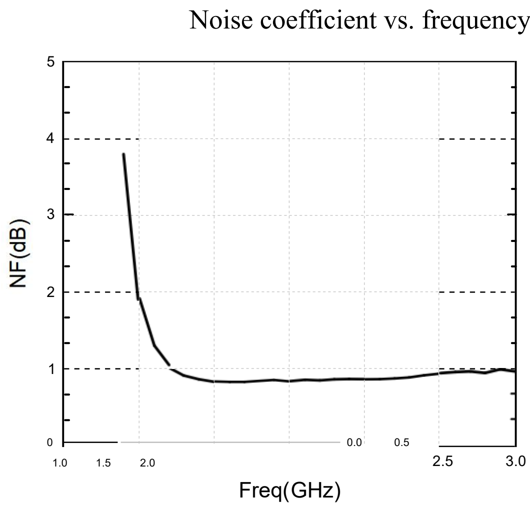
Gain vs. Frequency



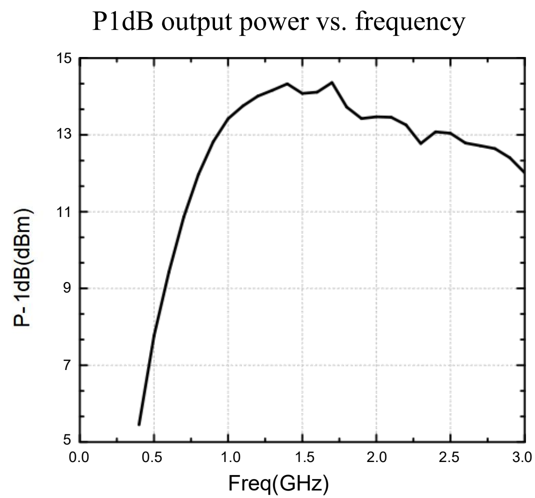
Stationary Wave vs. Frequency



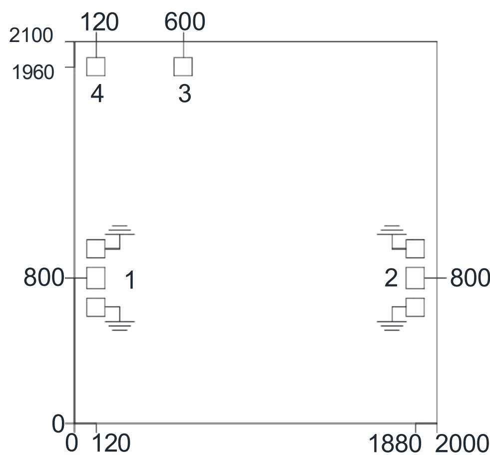
Noise coefficient vs. frequency



P1dB output power vs. frequency



External dimensions and pressure point arrangement diagram HX10308C-0527 external dimensions



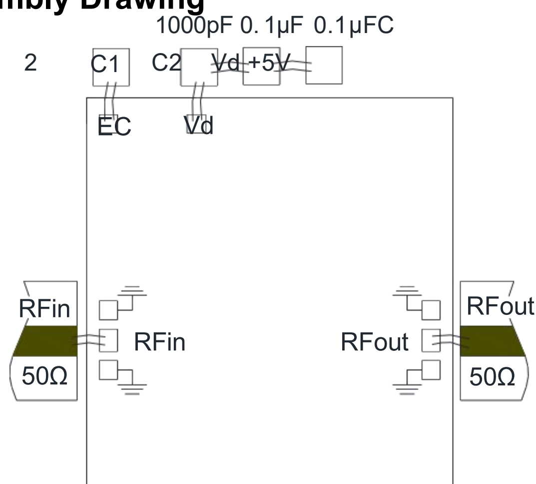
Note: All units in the figure are micrometers (μm); the chip thickness is 70μm.

The dimensional tolerance is ± 100 μm.

Pressure Point Arrangement Diagram

Serial number	Symbol	Function	Size
1	RFin	RF input voltage point, externally connected to a 50 ohm system, without DC blocking capacitor	100×120μm²
2	RFout	RF output voltage point, externally connected to a 50 ohm system, without DC blocking capacitor	100×120μm²
3	V_d	The power supply terminal of the amplifier requires an external filter capacitor.	100×100μm²
4	EC	An external low-frequency expansion capacitor voltage point is available, with an optional 4.7μF expansion capacitor to enhance stability.	100×100μm²

Recommended Assembly Drawing



Matters Need Attention

1) Single-chip circuits must be stored in a dry and clean nitrogen (N2) environment.

2) It is recommended to use gold-silver solder for sintering with Au:Sn=80%:20%, where the sintering temperature should not exceed 300°C and the duration should not exceed 30 seconds. The sintering process should avoid rapid temperature changes and require gradual temperature rise and fall.

3) It is recommended to use gold wires with a diameter of 25μm to 30μm, maintain the temperature of the bonding platform base below 250°C, minimize bonding time, and avoid rapid temperature fluctuations during the bonding process.

4) During use, the backside of the chip must be properly grounded.

5) During chip usage and assembly, attention must be paid to anti-static measures, including wearing grounded anti-static wristbands and ensuring proper grounding of sintering and bonding platforms.

6) Please contact the supplier if you have any questions.

The product is sensitive to static electricity.

Take precautions against static electricity during use.