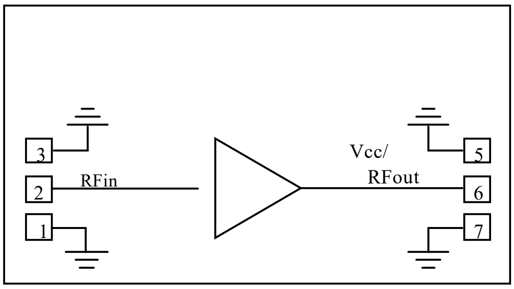
HX10217C-106A GaAs MMIC Wideband Low Noise Amplifier Chip, Operating Range: DC to 6GHz

Performance Features

- Frequency range: DC to 6GHz
- Small signal gain: 31.2dB@1.0GHz
- Noise coefficient: 2.5dB
- (Output) 1dB compression power: 7.0dBm@1GHz
- +5V@25mA (static)
- Chip dimensions: 0.52mm × 0.52mm × 0.08mm

functional block diagram



Product Overview

The HX10217C-106A is a broadband low-noise amplifier chip fabricated using GaAs HBT technology, operating across a frequency range from DC to 6GHz. It features a linear gain exceeding 25dB, an in-band noise figure below 3.5dB, and excellent input/output matching at 50Ω. The chip employs backside via grounding and is powered by a single +5V supply with a static operating current of 25mA. During operation, external DC-blocking capacitors and choke inductors are required for circuit integration.

DC current parameters (TA = +25°C)

Metric	Symbol	Representative value	Unit
Working voltage	V_{cc}	5	V
Quiescent current	I_{cc}	25	mA

electrical parameter：

Metric	Symbol	Frequency	Least value	Representative value	Crest value	Unit
Linear gain	Gain	0.1GHz	20	31.5		dB
		1.0GHz		31.2		
		2.0GHz		30.2		
		4.0GHz		27.5		
		6.0 GHz		25.0		
1dB compressed output power	P-1dB	1.0GHz	6.0	7.0		dBm
		4.0GHz		8.8		
Input standing wave	VSWR(in)	0.1-6.0GHz		1.2	1.6	-
Output standing wave	VSWR(out)	0.1-6.0GHz		1.6	2.0	-
Noise factor	NF	0.5-6.0GHz		2.5	3.5	dB

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

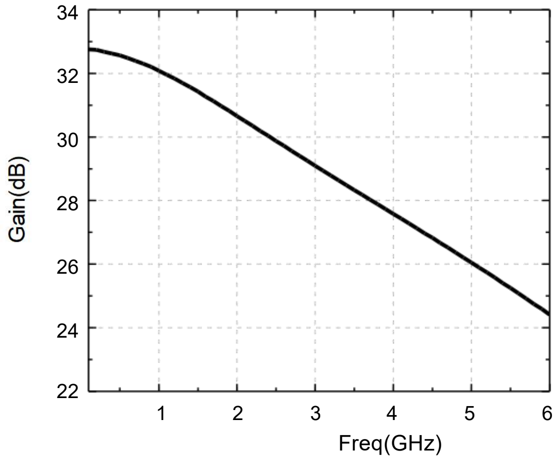
2) Unless otherwise specified, the curve test conditions in this manual are as follows: Vcc=+5V, TA=+25℃, ZS=ZL=50 Ω, and a wide-band Bias-Tee is applied during testing.

Use restricted parameters

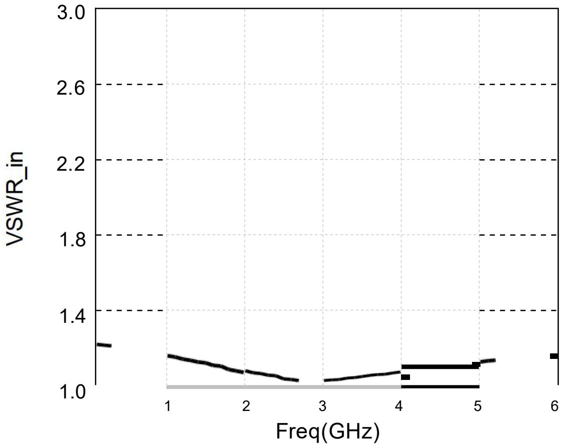
Parameter	Symbol	Limit value
Maximum operating current	I_{EE}	40mA
Maximum operating voltage	V_c	+5.5V
Maximum input power (CW)	P_p	0dBm
Storage temperature	T_{STG}	-65℃~+150℃
End-use temperature	T_{op}	-55℃~+125℃

Representative Set of Curves

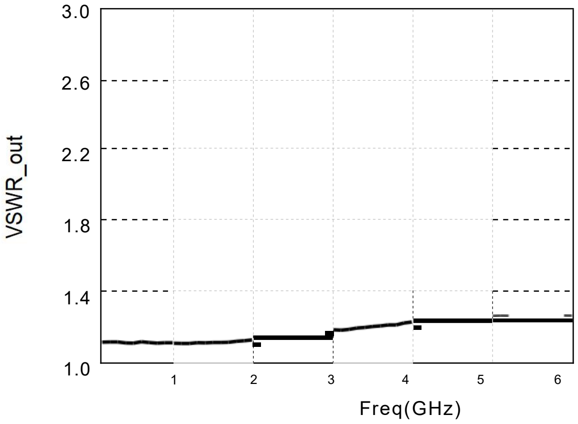
Gain vs. Frequency



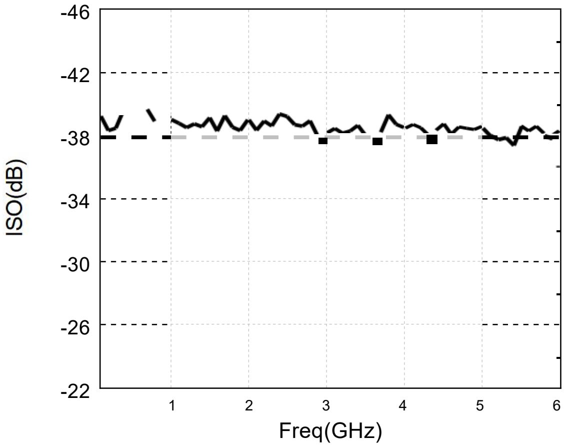
Enter standing wave vs. frequency



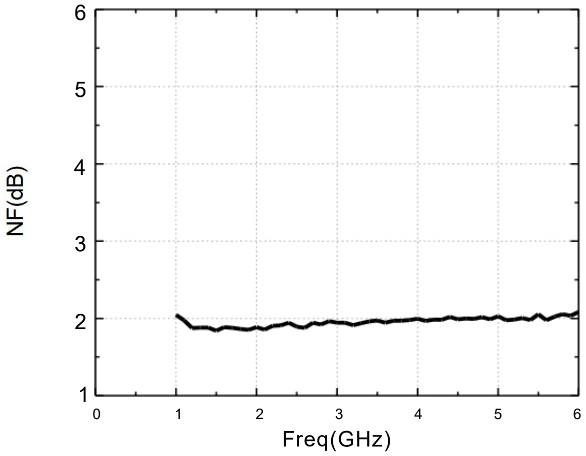
Output standing wave vs. frequency



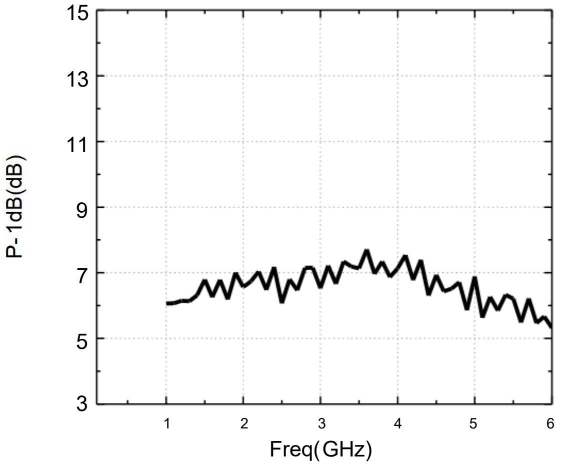
Reverse isolation vs. frequency



Noise coefficient vs. frequency

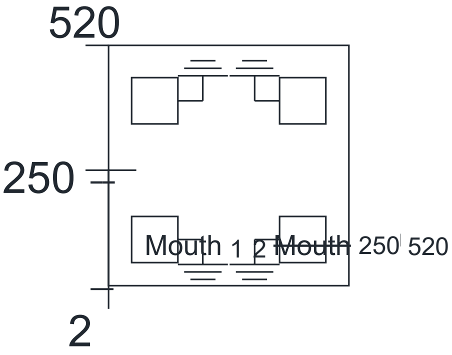


P1dB vs. Frequency



External dimensions and pressure point arrangement diagram HX10217

C-106A external dimensions

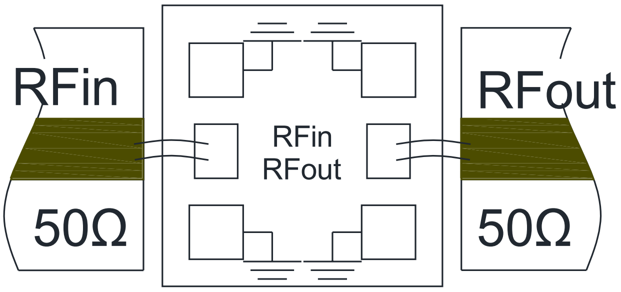


Note: All units in the figure are in micrometers (μm); dimensional tolerance is ±50μm.

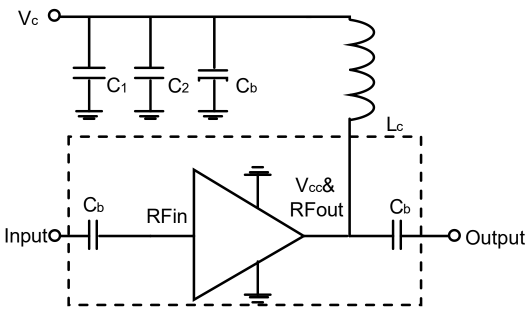
Pressure Point Arrangement Diagram

Serial number	Symbol	Function	Size
1	RFin	Input pressure point	80×100μm^2
2	V_{cc}&RFout	Charge & Output Bonding Pressure Point	80×100μm^2

Recommended assembly drawing



Typical Applications



Order number	Symbol	Function	Recommended value	
			0.05-0.5GHz	0.5-3.5GHz
1	C_b	Shunt capacitor	8200pF	68pF
2	L_c	Choke inductor	1200nH	82nH
3	C1	Shunt capacity	4.7μF	
4	C2	Shunt capacity	1000pF	

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.

This product is sensitive to static electricity. Please take anti-static precautions during use.