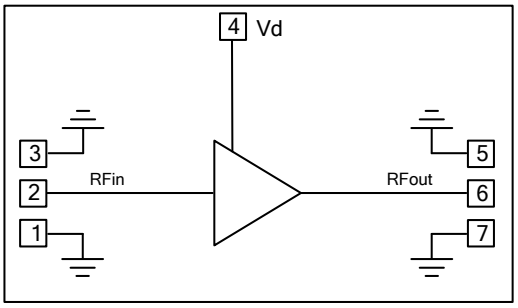
HX1004C-2838A/HX1004C-2838AM GaAs
MMIC low noise amplifier chip, 2.8GHz～3.8GHz

Performance Features

- Frequency range: 2.8 GHz to 3.8 GHz
- Gain: 23dB
- Noise coefficient: 1.3 dB
- Output 1dB compressed power: 12dBm
- DC power supply: +5V @45mA
- Chip dimensions: 2.00mm × 1.50mm × 0.07mm

functional block diagram



Product Overview

The HX1004C-2838A/HX1004C-2838AM is a low-noise amplifier chip based on GaAs HEMT technology, fabricated using the 0.13μm GaAs low-noise PHEMT MMIC process. It operates within a frequency range of 2.8GHz to 3.8GHz, featuring a linear gain of 23dB, noise figure of 1.3dB, and P-1 power of 12dBm. The chip employs backside via grounding with a typical operating voltage of Vd=+5V. It is primarily designed for applications in microwave receiver front-ends and communication systems.

DC current parameters (T_A= +25℃)

Metric	Symbol	Least value	Representative value	Crest value	Unit
Drain operating voltage	Vd	-	5	-	V
Static drain current	Id	-	45	-	mA

Microwave electrical parameters (T_A= +25℃, Vd = +5V)

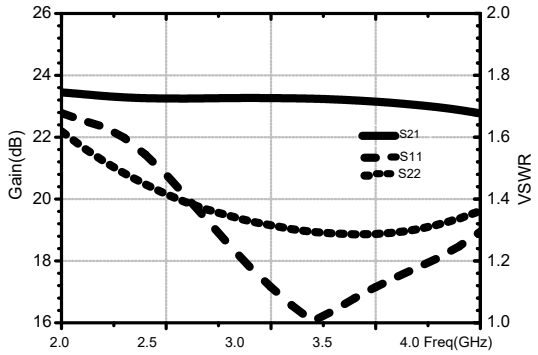
Metric	Symbol	Least value	Representative value	Crest value	Unit
Frequency range	f	2.8～3.8			GHz
Gain	Gain		23		dB
Gain flatness	△Gain		±0.3		dB
Noise factor	NF		1.3		dB
Output 1dB compressed power	P_{-1}		12		dBm
Input standing wave	VSWR(in)		1.2	1.6	-
Output standing wave	VSWR(out)		1.4	1.8	-

Limit usage parameters

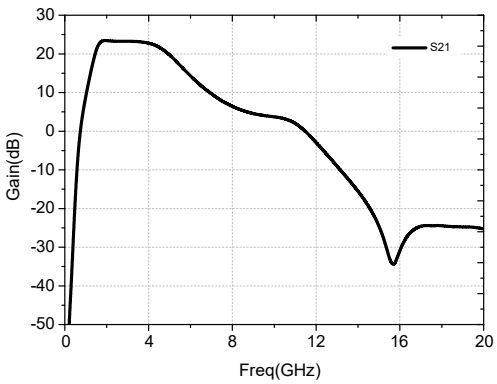
Parameter	Symbol	Extreme
Maximum drain-source voltage	Vd	+6V
Maximum input power (CW)	P_p	+15dBm
Storage temperature	T_{STG}	-65℃～+150℃
End-use temperature	T_{op}	-55℃～+125℃
Maximum operating channel temperature	T_{op}	+175℃

Typical curve (Vd=+5V)

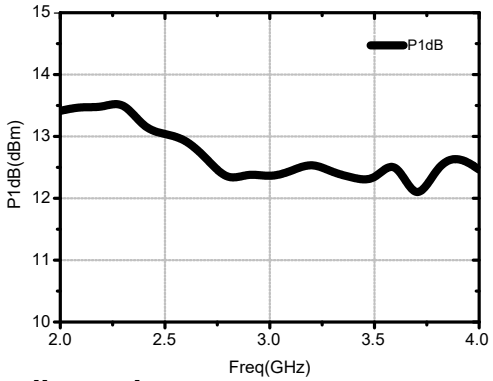
Gain and Input/Output Standing Waves vs. Frequency



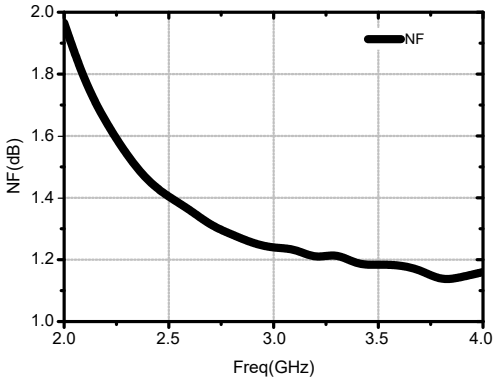
Broadband Linear Gain vs. Frequency



Output 1dB compression point power vs. frequency

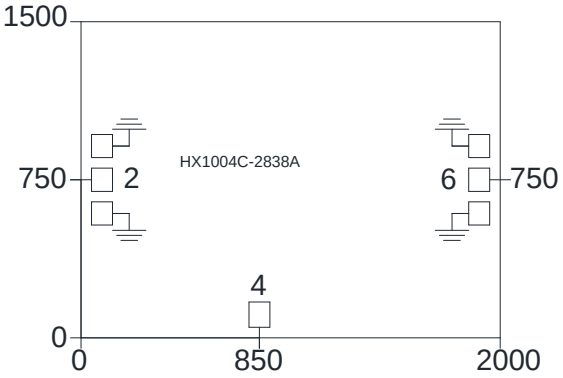


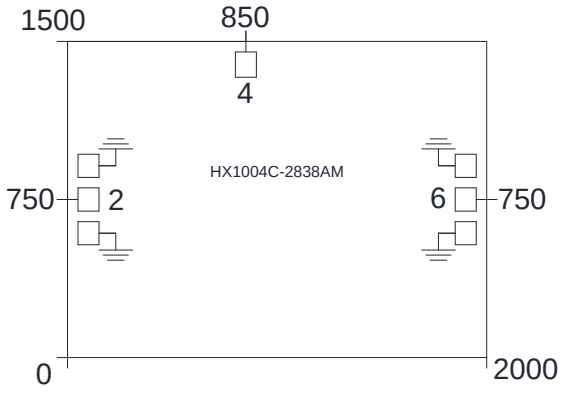
Noise coefficient vs. frequency



outline dimension

The external dimensions of HX1004C-2838A/ HX1004C-2838AM





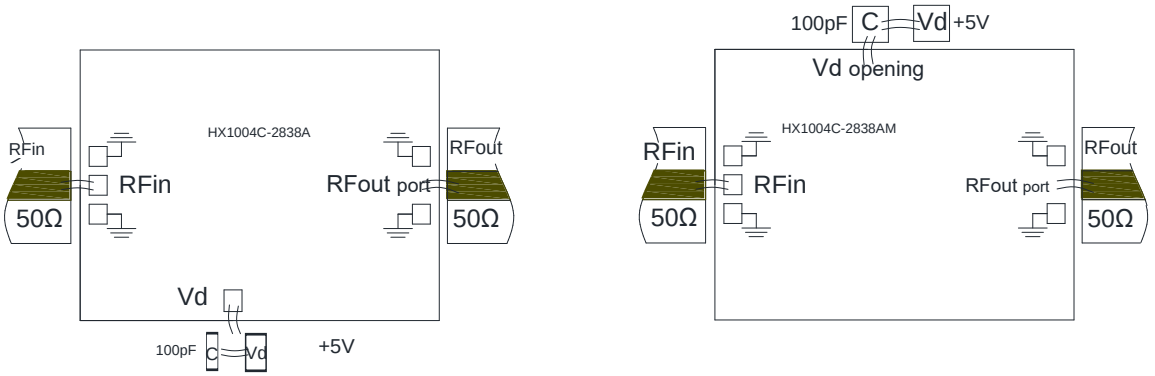
Note: All units in the figure are micrometers (μm).

The dimensional tolerance is ± 100 μm.

Definition of Bonding Pressure Point

Pressure point number	Function symbol	Functional description	Size
2	RFin	Radio frequency signal input terminal	100×110μm²
6	RFout	Radio frequency signal output terminal	100×110μm²
4	Vd	Feed terminal of amplifier leakage voltage	100×120μm²
1,3,5,7	GND	Grounding pressure point for probe testing	100×110μm²

Recommended Assembly Drawing



Matters Need Attention

1) For use in environmental purification systems;
2) GaAs materials are brittle, and the chip surface is highly susceptible to damage (avoid direct contact with the surface). Handle with extreme caution during use.
3) Use two bonding wires (25μm diameter gold wires) for input and output connections. The bonding wires should be as short as possible, not exceeding 300μm in length.
4) The input and output are connected with a DC-blocking capacitor.
5) Use 80/20 gold-tin solder for sintering. The sintering temperature should not exceed 300°C, and the sintering time should be as short as possible, not exceeding 30 seconds.
6) This product belongs to electrostatic-sensitive devices. Prevent static electricity during storage and use.
7) Store in a dry, nitrogen atmosphere;
8) Do not attempt to clean the chip surface using dry or wet chemical methods;
9) If you have any questions, please contact the supplier.

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