

GaAs monolithic integrated low noise amplifier

1.0~3.5GHz

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key indicator

- Frequency range: 1.0~3.5GHz
- Gain: 24.5dB
- Noise: 1.7dB
- Single power supply operation: +5V@55mA
- Chip size: 1.4mm×1.25mm×0.1mm

typical application

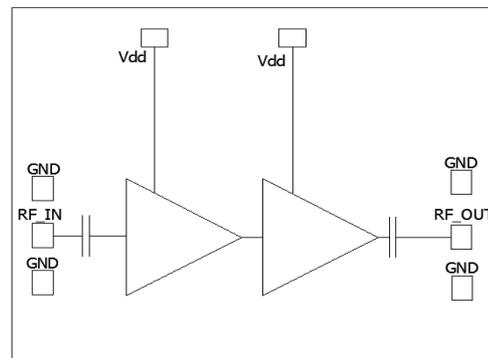
- Radar and electronic countermeasures
- RF/Microwave Circuit
- Military and aerospace
- Test measurement
- Instrumentation

Product Introduction

The AY1698 amplifier chip works at 1.0~3.5GHz and is made of GaAs technology. Under 55mA working current, it can provide 24.5dB gain, 14dBm output P_{-1} dB, and the noise in the normal temperature band is lower than 1.7dB

The chip uses an on-chip metallization process to ensure good grounding, and the back of the chip is metallized, which is suitable for eutectic sintering or conductive adhesive bonding processes.

Functional block diagram



Electrical performance ($T_A=25^\circ\text{C}, V_D=+5\text{V}, I_D=55\text{mA}, Z_0=50\Omega$)

index	Minimum	Typical value	Max	unit
frequency	1.0 ~ 3.5			GHz
Gain	-	24.5	-	dB
Gain flatness	-	2	-	dB
Reverse isolation	-	- 38	-	dB
Input/output standing wave	-	1.6	-	:1
Noise Figure	-	1.7	-	dB
Output P_{-1} dB	-	14	-	dBm
Output IP_3	-	25	-	dBm
Working current	-	55	-	mA

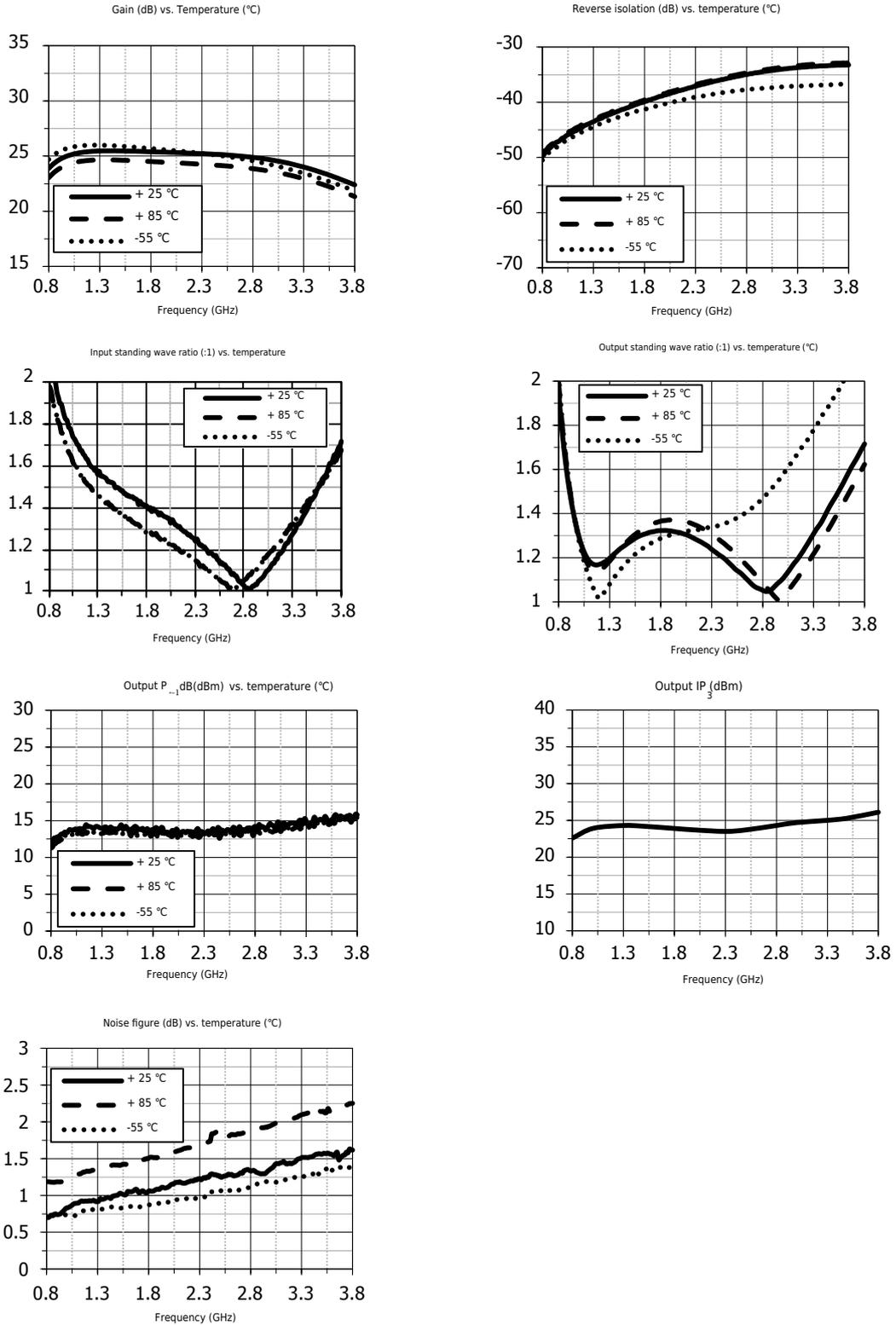
Absolute maximum rating

Maximum input power	+18dBm	Operating temperature	-55 °C ~ + 85 °C
Channel temperature	150 °C	Storage temperature	-65 °C ~ + 150 °C

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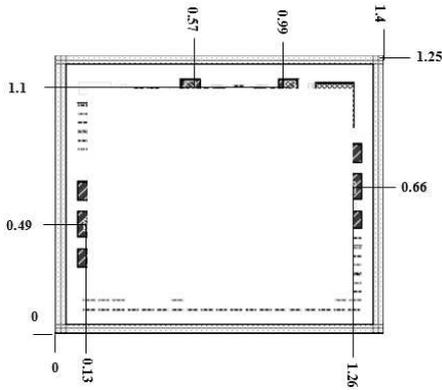
1.0~3.5GHz

Typical test curve

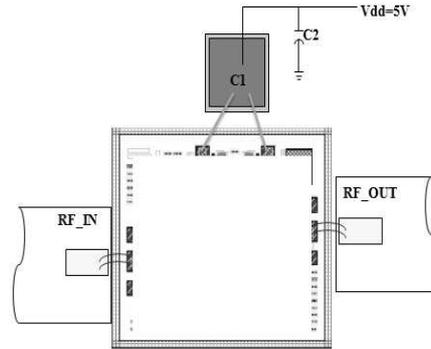


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Shape and port size (mm)



Recommended assembly drawing



Component list

serial number	Numerical value	model	manufacturer	Encapsulation
C1	100pF	CHIP CAPACITOR	Redtron	-
C2	10nF	GRM155R71H103KA88D	Murata	0402

Precautions

1. The chip is stored in a dry, nitrogen environment and used in an ultra-clean environment;
2. GaAs material is relatively brittle and cannot touch the surface of the chip, so you must be careful when using it;
3. Chips are sintered with conductive glue or alloy (the alloy temperature cannot exceed 300°C, and the time cannot exceed 30 seconds) to make it fully grounded;
4. The gap between the microwave port of the chip and the substrate should not exceed 0.05mm. Use $\Phi 25\mu\text{m}$ double gold wire for bonding. The recommended length of gold wire is 250~400 μm ;
5. The chip is sensitive to static electricity, so pay attention to anti-static during storage and use.