

GaAs monolithic integrated driver amplifier

42~47GHz 20dBm

key indicator

- Frequency range: 42~47GHz
- Gain: 18dB
- Output P_{1dB}: 20dBm Typ. 18dBm Min.
- Working voltage: +5V/-Vg
- Output IP₃: 27dBm@44GHz
- Balanced amplifier
- Chip size: 2.1mm×1.25mm×0.1mm

typical application

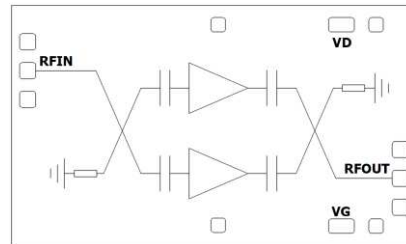
- Wireless infrastructure
- RF/Microwave Circuit
- High-density MCM components

Product Introduction

AY1512 amplifier operating frequency is 42~47GHz, gain is 18dB, output IP₃ is 27dBm, output P_{1dB} 20dBm, working voltage +5V, current 200mA, the amplifier is a balanced structure, both input and output ports are in operation and non-operation Can maintain better matching characteristics

The surface of the chip is protected by a passivation layer, which has good environmental adaptability

Functional block diagram



Electrical performance (T_A=25°C, V_D=+ 5V, I_D=200mA, Z₀=50Ω)

index	Minimum	Typical value	Max	unit
frequency	42 ~ 47			GHz
Gain	15	18	24	dB
Gain flatness	-	-	± 2	dB
Reverse isolation	-	-45	-	dB
Input/output standing wave ratio	-	1.6	2.5	:one
Noise Figure	-	9	12	dB
Output P _{1dB}	18	20	-	dBm
Output IP ₃	-	27 *	-	dBm
Working current	-	200	370	mA
Supply voltage	5	-	6	V
Thermal resistance	28			°C / W

*Pin/Tone=-10dBm fc=44GHz, Δf=4MHz

Absolute maximum rating

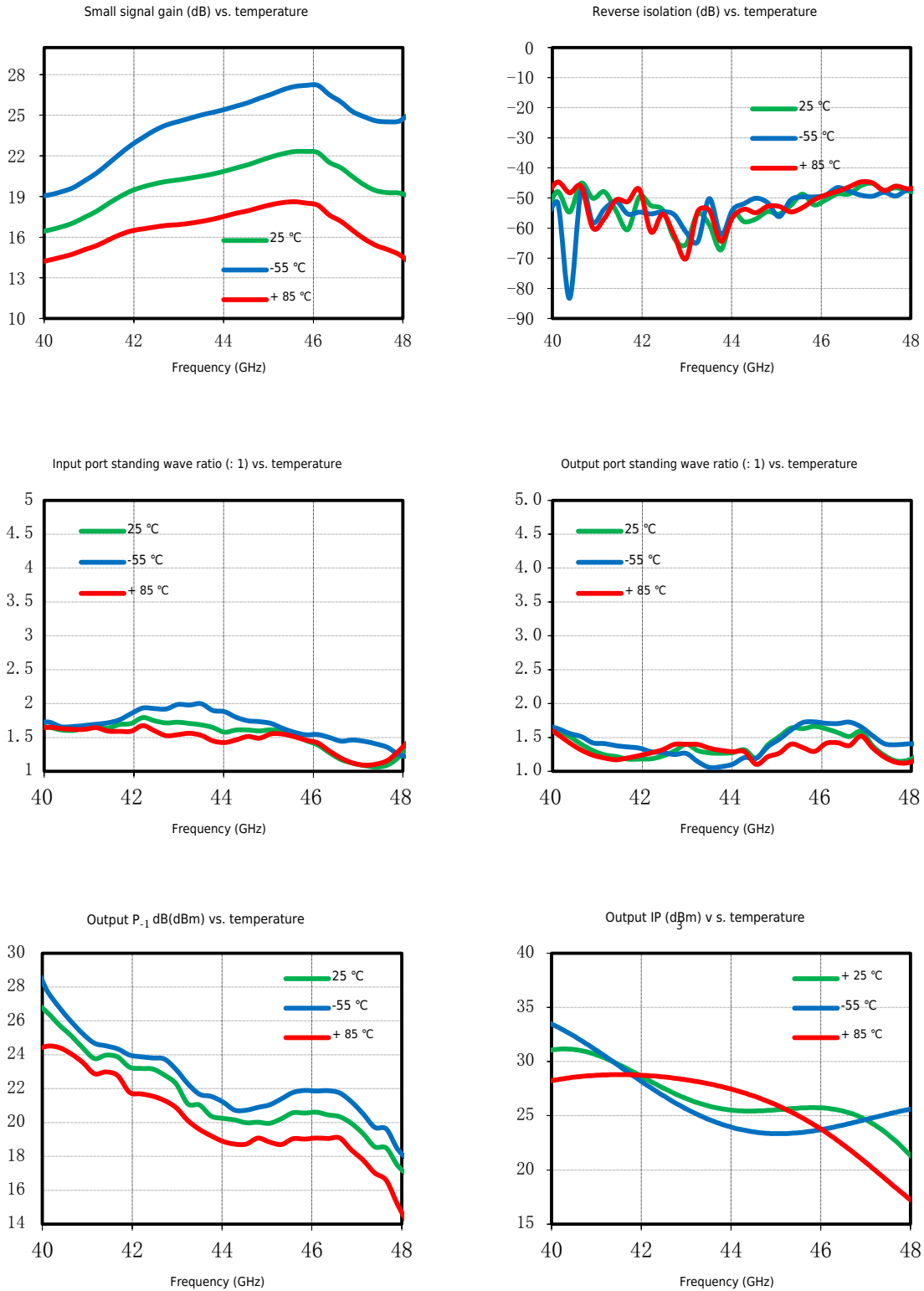
Maximum input power	+12dBm, CW 1min	Operating temperature	-55 °C ~ + 85 °C
Channel temperature	150 °C	Storage temperature	-55 °C ~ + 150 °C
Supply voltage	6.5V		

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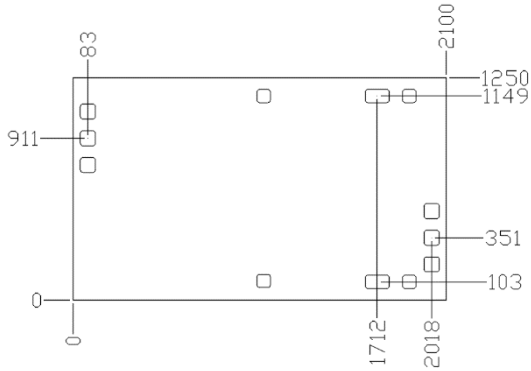
Typical performance curve

$V_D=+5V$, $I_{DQ}=200mA$, the result obtained by using the AY1512 evaluation board



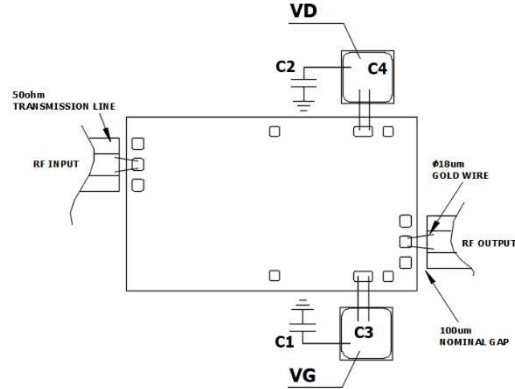
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Dimensions (μm)



RFIN, RFOUT pad size:
80x80VG/VD pad size: 140x80

Recommended assembly drawing



Component list

serial number	Numerical value	model	manufacturer	Encapsulation
C1、C2	2.2uF	-	ANY	0603
C3、C4	10pF	-	ANY	SLC

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 0.1mm. Use Φ18μm double gold wire for bonding. The recommended length of gold wire is 150~250μm;
5. The chip is sensitive to static electricity, so pay attention to anti-static during storage and use;
6. The chip's RF input and output ports have integrated DC blocking capacitors.