

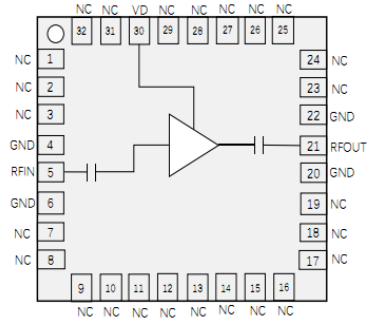
Performance Features

- Broadband width: 1GHz~24GHz
- Low noise: 2.5dB typical
- Small signal gain: 14.2dB typical
- Output P1dB: 13dBm typical
- Output IP3: 24dBm typical
- Package size: 5mm*5mm

Typical Applications

- Point-to-Point Communication
- Point-to-Multipoint Communication
- Instrumentation

Functional Block Diagram



Overview

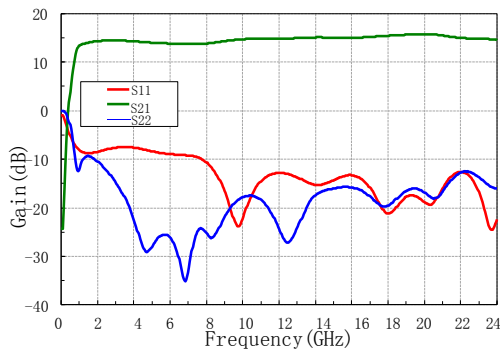
The CWA072SP5 is a 1GHz~24GHz low-noise broadband amplifier manufactured in GaAs process. The amplifier is self-biased and has 50Ω matched loads at the input and output.

Electrical performance table (TA=+25°C)

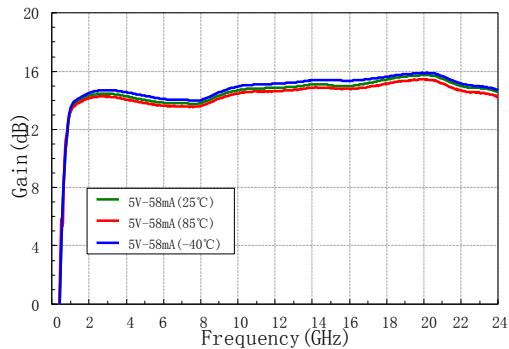
Parameter Name	Description	Minimum value	Typical values	Maximum value	Unit
Operating frequency		1~24			GHz
Gain			14.2		dB
Gain Flatness			±0.7		dB
Input Return Loss			12		dB
Output Return Loss			16		dB
Output power 1dB compression point			13		dBm
Output IP3			24		dBm
Noise factor			2.5		dB
Operating current			58		mA
Operating Voltage	VD	4.75	5	5.25	V

Test curve (VD=5V, ID=58mA)

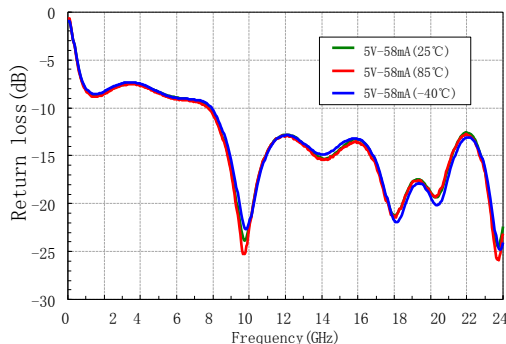
Gain and return loss



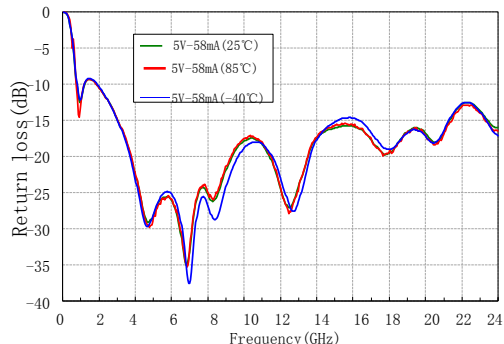
Gain vs. temperature



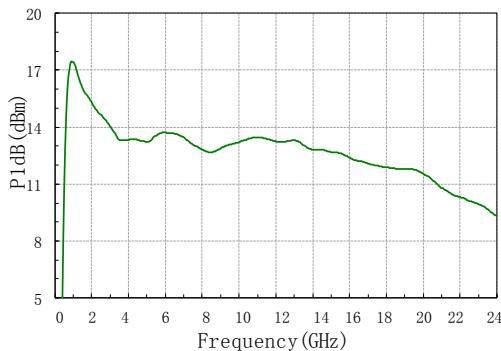
Input return loss vs. temperature



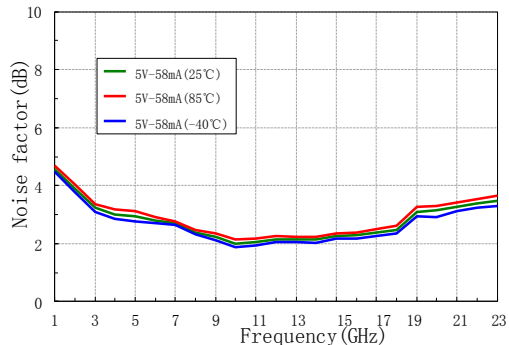
Output return loss vs. temperature



P1dB VS Frequency

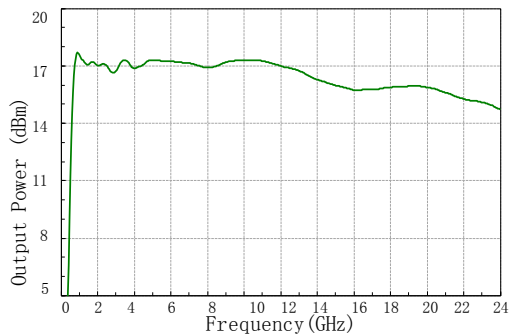


Noise factor vs. temperature



Test curve (VD=5V, ID=58mA)

Saturated output power vs. frequency



Working parameters

Operating temperature	-40°C~+85°C
Leakage pressure v_D	4.75V~5.25V
Current I_D	58mA

Absolute maximum rating

Storage temperature	-65°C~+150°C
Leakage pressure VD	9V
ESD-HBM	TBD

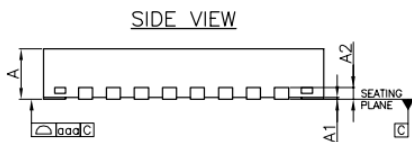
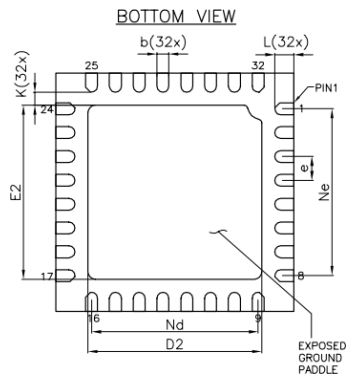
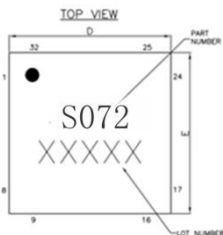
Package Information

Model	Packaging Materials	Solder plate plating	MSL level (1)	Package identification (2)	Environmental requirements
CWA072SP5	Green resin compounds	NiPdAuAg	MSL 3	S072 XXXXX	RoHS compliant

(1) Maximum reflow temperature 260° C

(2) XXXXX is the lot number

Dimension



Dimension Table (unit:mm)			
Symbol	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.20Ref		
b	0.18	0.25	0.30
D	4.90	5.00	5.10
D2	3.50	3.65	3.75
e	0.50BSC		
Ne	3.50BSC		
Nd	3.50BSC		
E	4.90	5.00	5.10
E2	3.50	3.65	3.75
K	0.20	---	---
L	0.30	0.40	0.50
aaa	0.08		

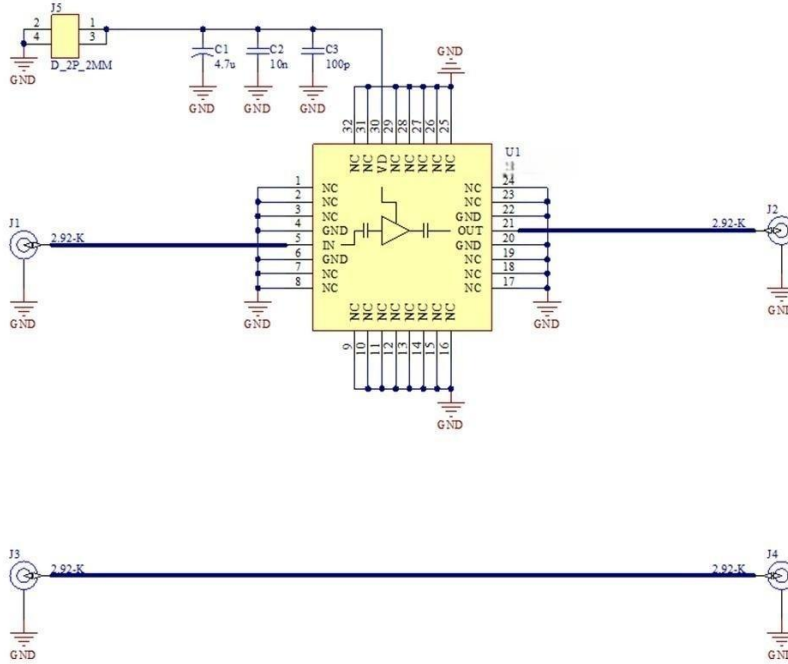
Description:

- Unit: mm
- Lead frame material: copper alloy
- Package surface warpage: not more than 0.05mm
- All ground pins should be connected to PCB RF ground

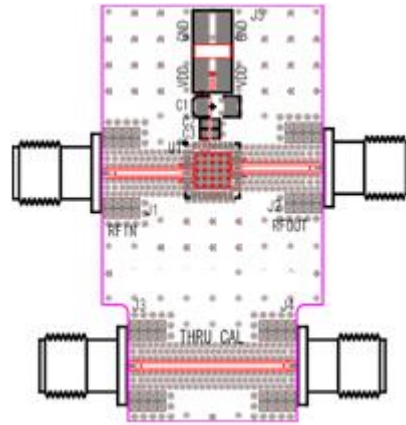
Pin Definition

Pin Number	Function Symbols	Function Description	Pin Number	Function Symbols	Function Description
1	NC	Vacant	17	NC	Vacant
2	NC	Vacant	18	NC	Vacant
3	NC	Vacant	19	NC	Vacant
4	GND	RF Ground	20	GND	RF Ground
5	RFIN	RF input	21	RFOUT	RF Output
6	GND	RF Ground	22	GND	RF Ground
7	NC	Vacant	23	NC	Vacant
8	NC	Vacant	24	NC	Vacant
9	NC	Vacant	25	NC	Vacant
10	NC	Vacant	26	NC	Vacant
11	NC	Vacant	27	NC	Vacant
12	NC	Vacant	28	NC	Vacant
13	NC	Vacant	29	NC	Vacant
14	NC	Vacant	30	VD	Pressure leakage
15	NC	Vacant	31	NC	Vacant
16	NC	Vacant	32	NC	Vacant

Evaluation Boards



Designator	Description
C1	4.7uF Tantalum Capacitor 1206
C2	10nF Multilayer Ceramic Capacitor 0402
C3	100pF Multilayer Ceramic Capacitor 0402
J1, J2, J3, J4	SMA-K connector Nanjing Aowen D360B12E01-023
J5	D_2P_2MM DC pins
U1	CWA072SP5



Circuit board material: Rogers 4350B

The circuit board of the device application should be designed according to the RF circuit design method, the signal line should be designed according to 50 ohm impedance, and the ground pin of the package shell should be grounded nearby (similar to the figure), and there should be enough ground holes to connect the top and bottom ground.