

Broadband Low Noise RF Amplifier (LNA)

30kHz-20GHz, 14dB Gain



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Features

- Frequency: **30kHz-20GHz**
- Psat: +15dBm
- Vout=3.5Vpp
- Small signal gain: 14dB
- Single Power Supply

Applications

- Optical Modulator Driver
- 5G Communication
- Test Equipment
- ROF (RF Over Fiber)
- Radar Communication



The LAND series broadband amplifiers offer high gain, excellent linearity, low input/output return loss, and a flat gain response, making them ideal for driving optical modulators. The 30kHz-20GHz broadband amplifier delivers an output power of +15dBm with a noise figure (NF) of 3.5dB, functioning both as a power amplifier and a low-noise amplifier. It requires +9V/120mA DC power and is equipped with a 2.92mm female connector.

Specifications

Parameter	Min	Typical	Max	Unit
Frequency	0.000030		20	GHz
Small Signal Gain(10MHz-15GHz)	12	14		dB
Small Signal Gain (15-20GHz)	10	12		dB
P1dB (2.8VPP)		+13		dBm
Psat (Vin=0.8Vpp, 3.5Vpp)		+15		dBm
Drain Supply(Note1)		+9	+12	V
Vc (Note2)	0	0.5	1	V
Current		120		mA
NF(1-20GHz)		3.5		dB
Group Delay		300		ps
Input Return Loss		-7		dB
Output Return Loss		-7		dB
Spec Temp		25		°C
Drain Supply		+15		V
VC		+2		V
RF Input Power		+10		dBm
Input Voltage		2		Vpp
Operating Temperature	-40		+85	°C
Storage Temperature	-55		+125	°C
Input Port		2.92mm Female		
Output Port		2.92mm Male		
Case Material		Copper		
Finish		Gold Plated		
Package Sealing		Epoxy Sealed		
Weight		95		g
Size		SEE OUTLINE		

Note 1: Same RF Performance with Vdd +9 to 12V.

Lower Power Supply is recommended due to lower power consumption.

Note 2: Vc is used for Eye diagram crossing tuning, apply 0.5V for normal operation.

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Rev 10/15/24

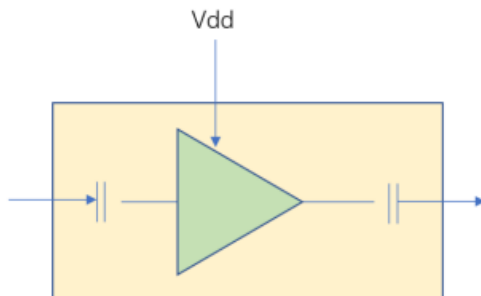
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Diagram Block



SISO: Single-End Input, Single-End Output

Pin Description

Item	Description
RF Input	RF input port, 2.92mm Female, Compatible with SMA Directly. DC Block inside
RF Output	RF Output port, 2.92mm Male, Compatible with SMA Directly. DC Block inside
Vdd	Power Supply, +9V typical. +12V Max
Vc	Crossing tuning 0.5V for normal operation, 0-2V tuning range.

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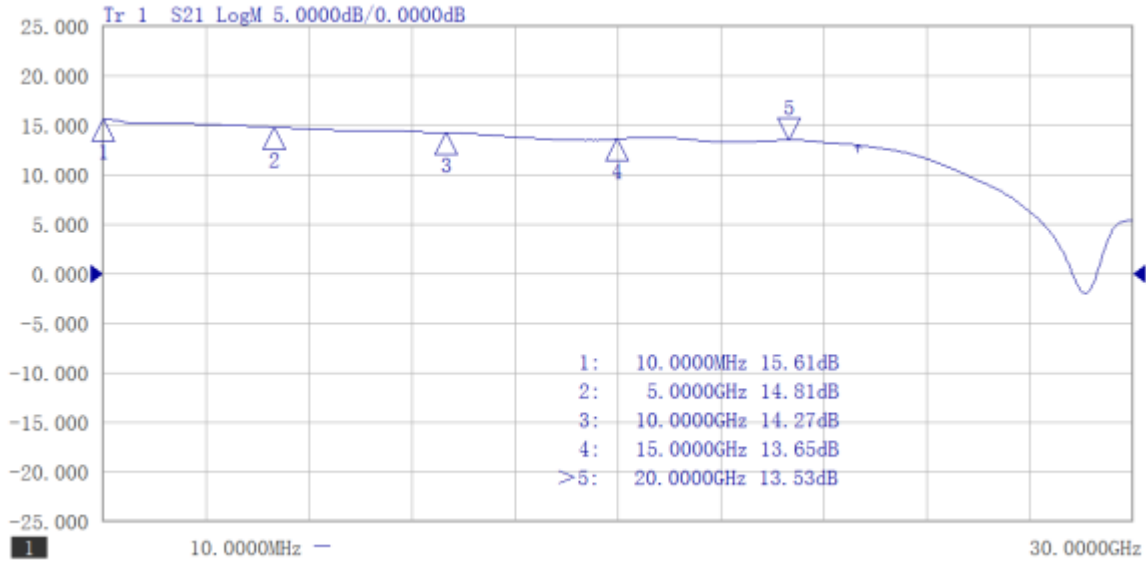
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Test Data (25°C) Please note that test curves will vary slightly from unit to unit

Gain vs Frequency



Return Loss vs Frequency



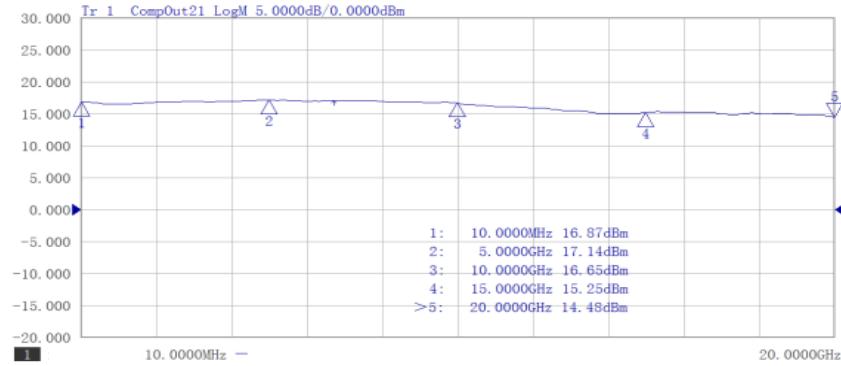
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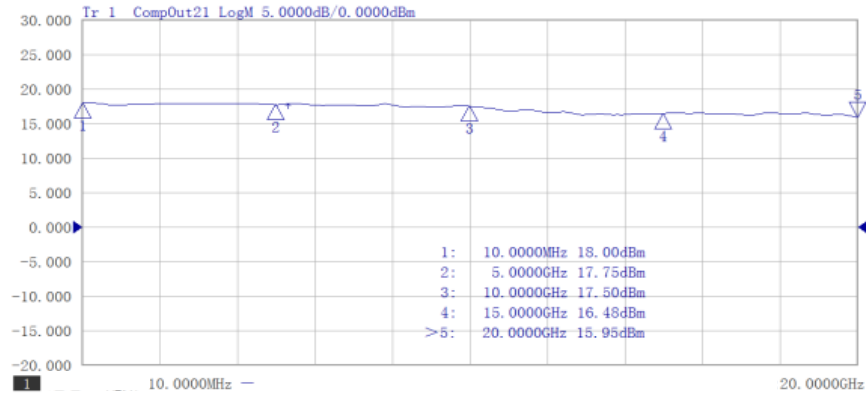


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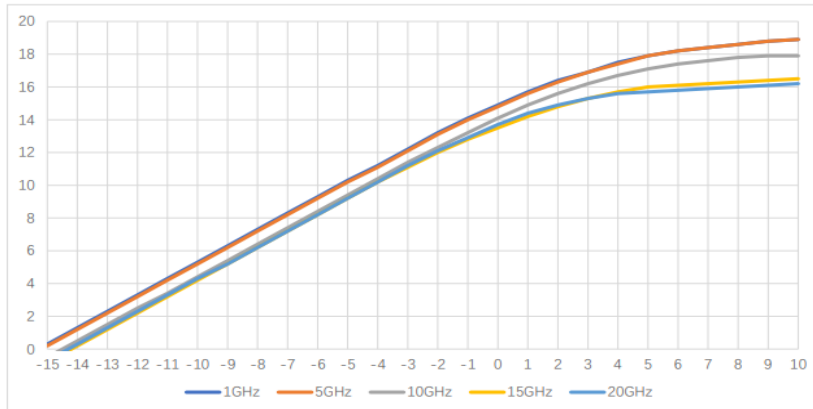
P1db vs Frequency



P3db vs Frequency



Pout vs Pin



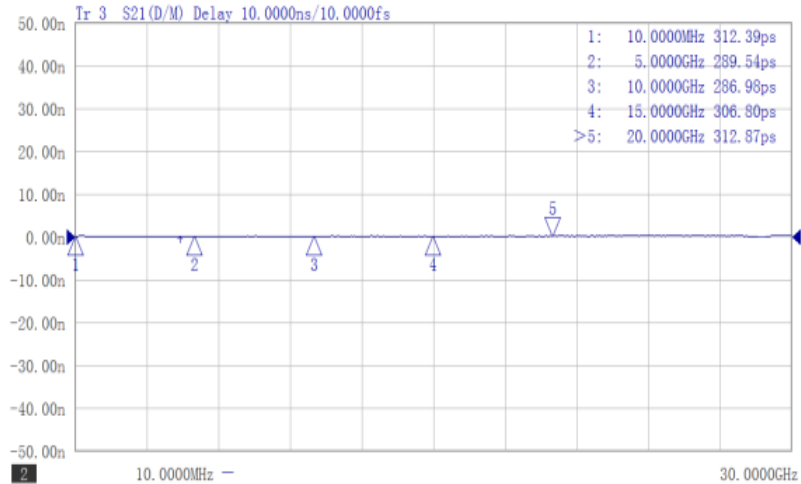
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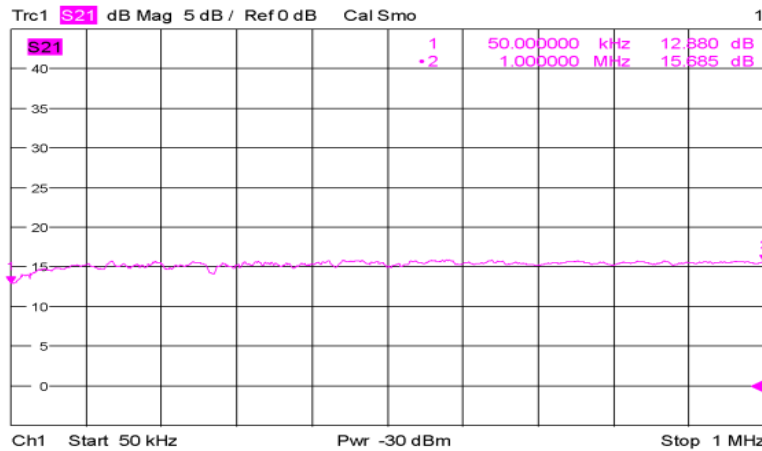


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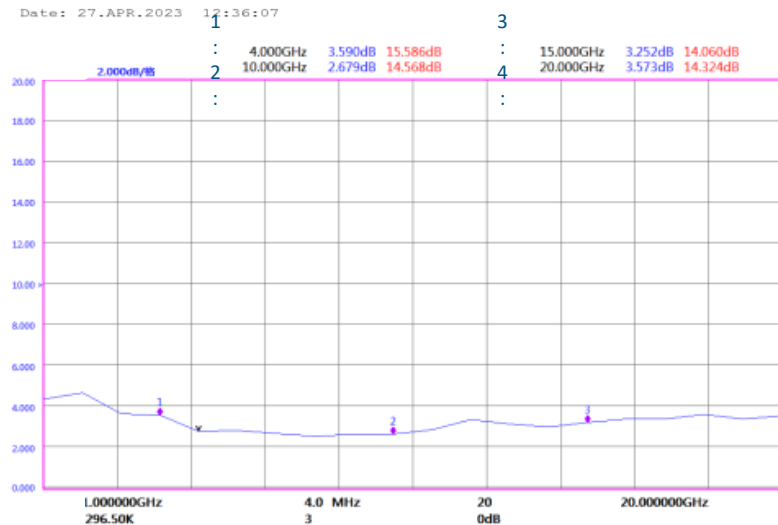
Group Delay vs Frequency



Low End Frequency Gain test



NF vs Frequency



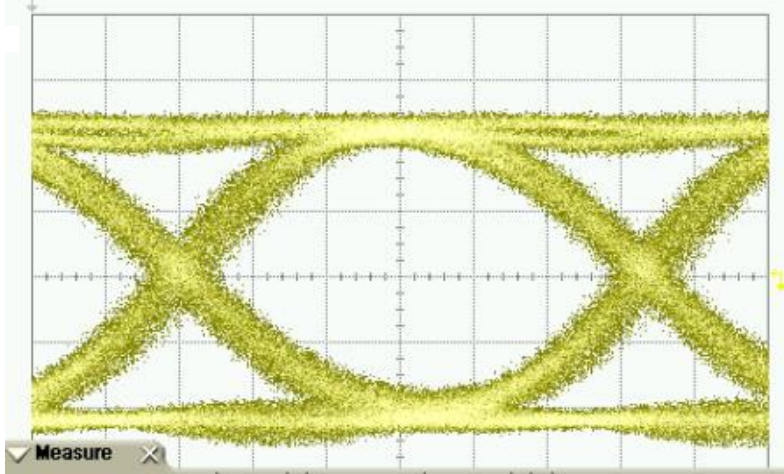
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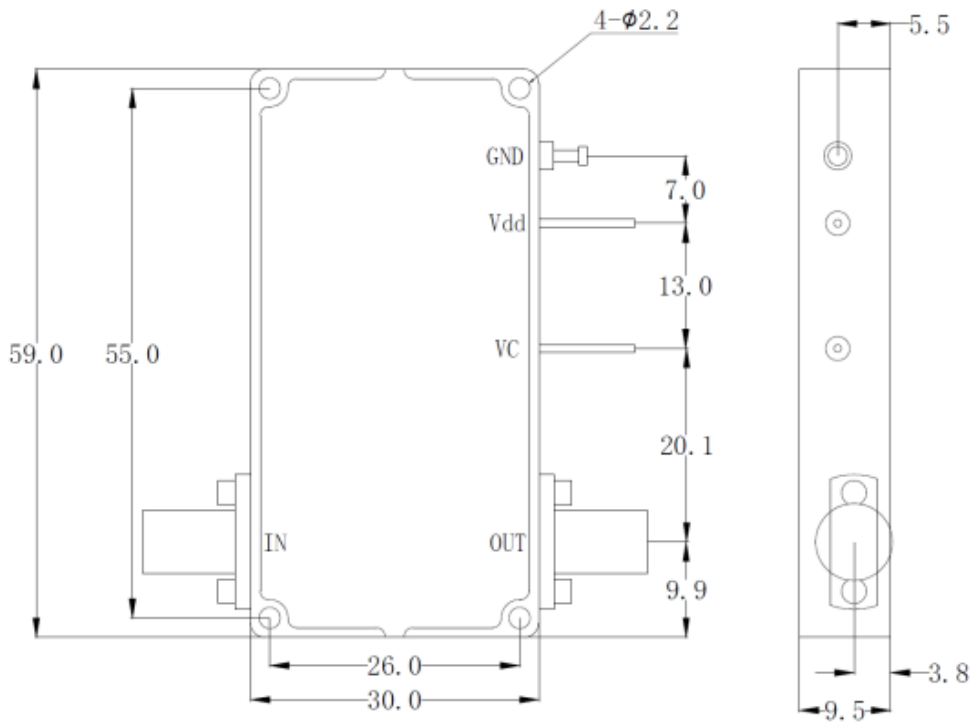


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Typical Eye Diagram (Output Signal @24Gbps, Input=0.8Vpp)



Dimensions (mm)



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Vpp vs dBm at 50 Ohms System

dBm	Vpp	Vrms	Power (W)	dBm	Vpp	Vrms	Power (W)
50	200.00	70.71	100.00	14	3.17	1.12	2.51E-02
49	178.25	63.02	79.22	13	2.83	1.00	2.00E-02
48	158.87	56.17	63.10	12	2.52	0.89	1.58E-02
47	141.59	50.06	50.12	11	2.24	0.79	1.26E-02
46	126.19	44.62	39.81	10	2.00	0.71	1.00E-02
45	112.47	39.76	31.62	9	1.78	0.63	7.94E-03
44	100.24	35.44	25.12	8	1.59	0.56	6.31E-03
22	89.34	31.59	19.95	7	1.42	0.50	5.01E-03
42	79.62	28.15	15.85	6	1.26	0.45	3.98E-03
41	70.96	25.09	12.59	5	1.12	0.40	3.16E-03
40	63.25	22.36	10.00	4	1.00	0.35	2.51E-03
39	56.37	19.93	7.94	3	0.89	0.32	2.00E-03
38	50.24	17.76	6.31	2	0.80	0.28	1.58E-03
37	44.77	15.83	5.01	1	0.71	0.25	1.26E-03
36	39.91	14.11	3.98	0	0.63	0.22	1.00E-03
35	35.57	12.57	3.16	-1	0.56	0.20	7.94E-04
34	31.70	11.21	2.51	-2	0.50	0.18	6.31E-04
33	28.25	9.99	2.00	-3	0.45	0.16	5.01E-04
32	25.18	8.90	1.58	-4	0.40	0.14	3.98E-04
31	22.44	7.93	1.26	-5	0.36	0.13	3.16E-04
30	20.00	7.07	1.00	-6	0.32	0.11	2.51E-04
29	17.83	6.30	0.79	-7	0.28	9.99E-02	2.00E-04
28	15.89	5.62	0.63	-8	0.25	8.90E-02	1.58E-04
27	14.16	5.01	0.50	-9	0.22	7.93E-02	1.26E-04
26	12.62	4.46	0.40	-10	0.20	7.07E-02	1.00E-04
25	11.25	3.98	0.32	-11	0.18	6.30E-02	7.94E-05
24	10.02	3.54	0.25	-12	0.16	5.62E-02	6.31E-05
23	8.93	3.16	0.20	-13	0.14	5.01E-02	5.01E-05
22	7.96	2.82	0.16	-14	0.13	4.46E-02	3.98E-05
21	7.10	2.51	0.13	-15	0.11	3.98E-02	3.16E-05
20	6.32	2.24	0.10	-16	0.10	3.54E-02	2.51E-05
19	5.64	1.99	7.94E-02	-17	8.93E-02	3.16E-02	2.00E-05
18	5.02	1.78	6.31E-02	-18	7.96E-02	2.82E-02	1.58E-05
17	4.48	1.58	5.01E-02	-19	7.10E-02	2.51E-02	1.26E-05
16	3.99	1.41	3.98E-02	-20	6.32E-02	2.24E-02	1.00E-05
15	3.56	1.26	3.16E-02	-21	5.64E-02	1.99E-02	7.94E-06

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Ordering Information *

	0003	20	15	4	2	<input type="checkbox"/>
Prefix	Low Frequency	High Frequency	Gain	NF	P1dB	Module *
LNAD-	30kHz = 0003	20GHz = 20	15dB = 15	4.5dB = 4	12dBm = 2	No = 0 Yes = 1