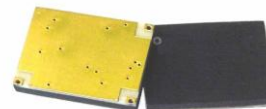


2000 ~ 2600 MHz Super Low Noise Amplifier¹



RLAS2026A is an ultra low noise figure, wideband, and unconditionally stable SMT packaged amplifier with exceptionally low input and output VSWR. The amplifier offers typical 0.60 dB noise figure, 20 dB input and output return losses, 26.0 dB gain, and 12 dBm output P_{1dB} over the 3G and ISM frequency bands from 2000 MHz to 2600 MHz. It is most suitable for receivers, wireless data communications, and other measurement applications.



RLAS2026A is designed to meet the rugged standards of MIL-STD-202 and MIL-STD-883.

RLAS2026A is **RoHS** compliant. A connectorized version is also available.

Key Features:

Wide frequency range: 2000 ~ 2600 MHz
 Ultra low noise: 0.60 dB
 VSWR: 1.25:1
 Impedance: 50 Ohm
 Unconditional stable: $k > 1$
 Single DC Supply: 55 mA @ +5.0V
 MTBF²: >600,000 hrs (68 Years)
 Small Size: 0.50"x0.35"x0.08" (SMT package)
 Built-In Functions: DC blocks at input and output ports, temperature compensation circuitry

Absolute Maximum Ratings³:

Parameters	Symbol	Value	Units
DC Power Supply Voltage	V_{dd}	7	V
Drain Current	I_{dd}	80	mA
Total Power Dissipation	P_{diss}	500	mW
RF Input Power	$P_{In,Max}$	10	dBm
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{STG}	-65 ~ 150	°C
Maximum Operating Temperature	$T_{O,MAX}$	-55 ~ 100	°C

Electrical Specifications: (at room temperature)

Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
Gain	S_{21}	2.0 ~ 2.6 GHz	24	26	27	dB
Gain Variation	ΔG	2.0 ~ 2.6 GHz		+/- 0.75	+/- 1.0	dB
Input VSWR	$VSWR_1$	2.0 ~ 2.6 GHz		1.25	1.4	
Output VSWR	$VSWR_2$	2.0 ~ 2.6 GHz		1.25	1.4	
Reverse Isolation	S_{12}	2.0 ~ 2.6 GHz	35	37		dB
Noise Figure	NF	2.0 ~ 2.6 GHz		0.60	0.80	dB
Output Power @ 1dB Gain Comp. Point	P_{1dB}	2.0 ~ 2.6 GHz	11	12.5		dBm
Output IP3	OIP3	2-Tone, Pout 0 dBm each, 1 MHz separation		N/A		dBm
Current Consumption	I_{dd}	$V_{dd} = +5.0$ V	50	55	60	mA
Power Supply Voltage	V_{dd}		+4.7 ⁴	+5.0	+5.3	V
Thermal Resistance	$R_{th,c}$	Junction to case			215	°C/W
Operating Temperature	T_o		-40		+85	°C
Maximum Average RF Input Power	$P_{IN,MAX}$	2.0 ~ 2.6 GHz			10	dBm

¹ Specifications are subject to change without notice.

² MTBF: Mean Time Between Failure, Per TR-NWT-000332, ISSUE 3, SEPTEMBER, 1990, T=40 °C

³ Operation of this device above any one of these parameters may cause permanent damage.

⁴ The lower DC supply voltage reduces the LNA performance.

Frequency Response

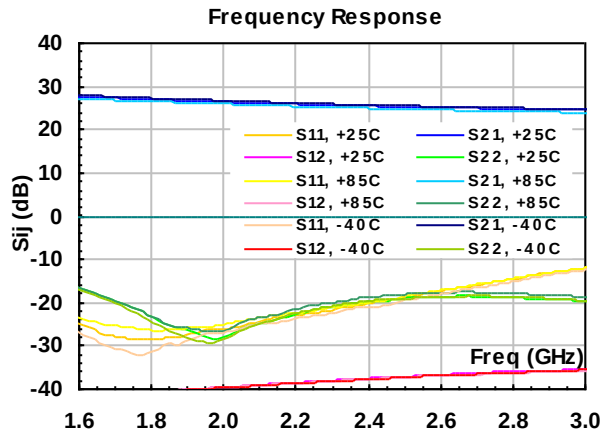


FIG. 1 Small signal performance.

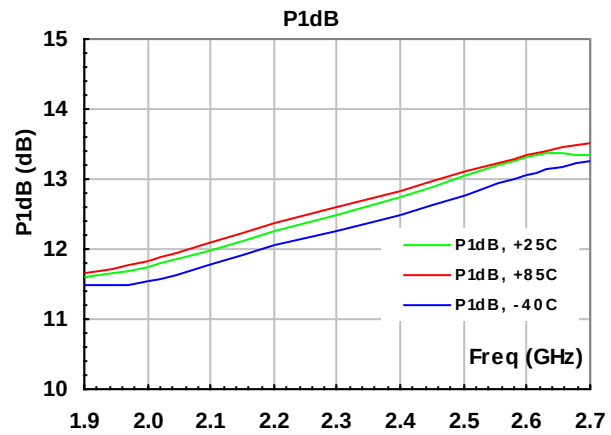


FIG. 2 P_{1dB} Performance at full temperature.

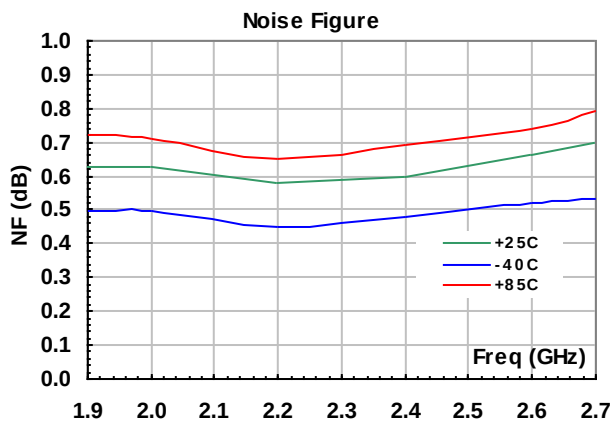


FIG. 3 Noise figure performance at full temperature

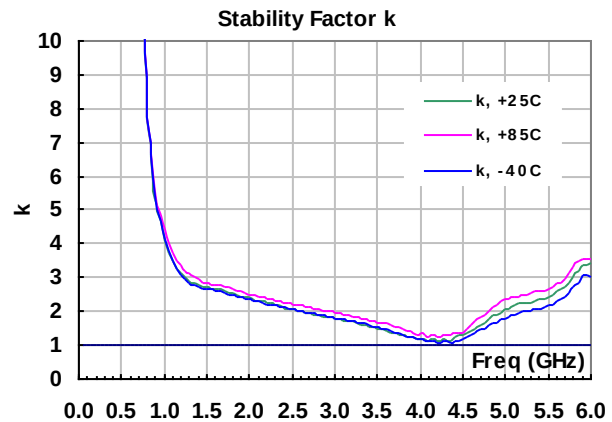


FIG. 4 Stability factor k

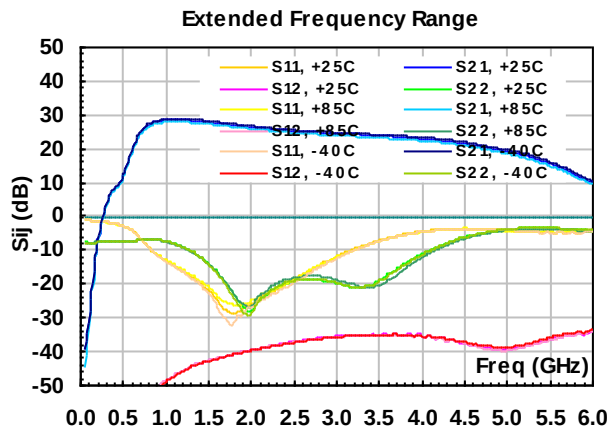


FIG. 5 Frequency response in extended frequency

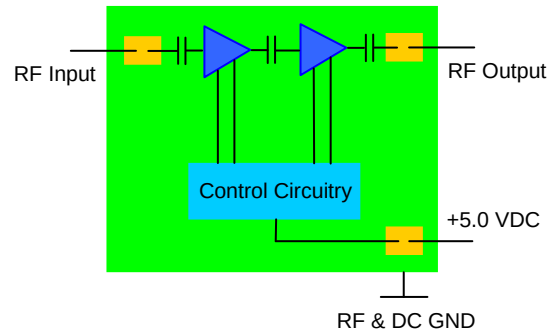
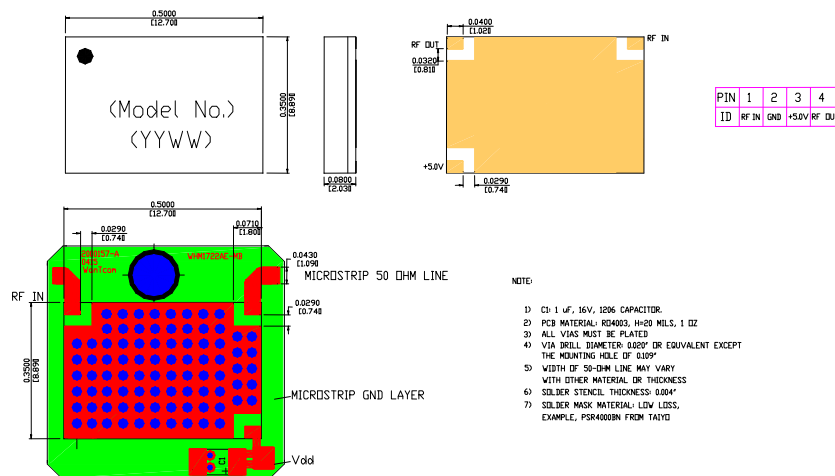


FIG. 6 Block diagram



Model Number	RLAS2026A
---------------------	-----------

Small Signal S-Parameters:

RLAS2026A, @ 25C
 S-parameters at Vdd=+5V, Idd=55mA. Last updated 9/09/04.

GHZ s MA R 50

Freq (GHz)	MAGS11	ANGS11	MAGS21	ANGS21	MAGS12	ANGS12	MAGS22	ANGS22
0.05	0.917	-21.1	0.007	-88.1	0.000084	123.9	0.412	-6.2
0.1	0.869	-31.5	0.059	-97.3	0.000068	143.9	0.412	-10.3
0.2	0.827	-57.0	0.475	-134.9	0.000019	-55.3	0.415	-21.2
0.3	0.813	-86.9	1.496	-178.0	0.000034	163.3	0.417	-32.0
0.4	0.767	-121.4	2.539	148.3	0.000100	-150.6	0.419	-43.2
0.5	0.707	-161.5	4.142	140.8	0.000090	-122.6	0.419	-54.1
0.6	0.608	149.2	9.458	118.6	0.000390	-95.6	0.429	-64.6
0.7	0.463	92.1	16.534	78.6	0.001068	-128.2	0.450	-77.4
0.8	0.338	36.2	21.853	38.8	0.001933	-159.8	0.462	-93.1
0.9	0.262	-11.9	24.666	4.1	0.002795	173.6	0.454	-109.7
1	0.217	-50.8	25.946	-25.9	0.003641	153.4	0.429	-126.3
1.1	0.184	-81.7	26.427	-52.5	0.004412	135.1	0.396	-142.6
1.2	0.154	-106.2	26.333	-76.4	0.005226	119.3	0.353	-159.1
1.3	0.129	-126.8	25.845	-98.4	0.006055	103.6	0.303	-175.1
1.4	0.105	-145.2	25.261	-118.6	0.006720	90.0	0.250	169.7
1.5	0.083	-161.3	24.608	-137.4	0.007356	77.6	0.198	156.3
1.6	0.060	-170.3	23.891	-155.2	0.007932	65.6	0.148	143.7
1.7	0.043	-170.3	23.093	-172.1	0.008590	55.8	0.101	136.1
1.8	0.039	-161.4	22.242	171.6	0.009140	45.8	0.069	136.8
1.9	0.046	-160.8	21.477	156.0	0.009888	36.2	0.047	149.6
2	0.054	-170.0	20.807	141.0	0.010000	26.5	0.042	174.8
2.1	0.061	173.2	20.156	126.4	0.011000	17.7	0.060	-170.3
2.2	0.071	156.7	19.532	112.0	0.012000	8.9	0.076	-172.7
2.3	0.084	135.1	19.015	98.0	0.012000	0.1	0.091	179.7
2.4	0.097	115.1	18.576	84.1	0.013000	-8.3	0.104	168.8
2.5	0.112	93.1	18.195	70.5	0.014000	-17.3	0.112	155.8
2.6	0.133	71.4	17.815	56.9	0.014000	-26.1	0.114	142.4
2.7	0.156	51.4	17.482	43.3	0.015000	-35.1	0.116	128.4
2.8	0.184	33.0	17.198	29.7	0.016000	-44.1	0.115	112.1
2.9	0.218	14.1	16.961	16.0	0.017000	-53.1	0.108	92.7
3	0.250	-2.1	16.767	2.4	0.017000	-62.4	0.100	72.8
3.1	0.289	-19.0	16.555	-11.3	0.017000	-70.7	0.092	50.7
3.2	0.326	-34.9	16.367	-24.9	0.018000	-79.4	0.087	22.5
3.3	0.363	-49.9	16.166	-38.5	0.018000	-88.2	0.085	-8.2
3.4	0.407	-65.0	15.920	-52.3	0.018000	-96.3	0.094	-37.9
3.5	0.448	-80.2	15.704	-66.1	0.018000	-104.8	0.115	-65.8
3.6	0.485	-95.0	15.462	-79.7	0.018000	-113.8	0.140	-90.9
3.7	0.518	-108.3	15.198	-93.3	0.018000	-122.1	0.168	-112.3
3.8	0.552	-122.3	14.946	-107.0	0.018000	-128.9	0.203	-130.0
3.9	0.581	-135.7	14.647	-120.7	0.017000	-137.5	0.241	-147.1
4	0.605	-149.0	14.309	-134.2	0.017000	-148.5	0.282	-163.5
4.1	0.625	-161.9	13.878	-148.3	0.017000	-155.4	0.321	-179.3
4.2	0.644	-174.4	13.411	-162.5	0.016000	-160.4	0.364	165.3
4.3	0.655	172.8	12.937	-176.7	0.015000	-167.7	0.407	150.2
4.4	0.656	160.9	12.419	169.0	0.014000	-175.8	0.449	134.9
4.5	0.660	149.3	11.788	154.9	0.013000	-179.9	0.488	120.0
5	0.624	95.7	8.903	83.6	0.011000	170.7	0.634	48.0
5.5	0.578	55.3	5.698	7.1	0.015000	157.1	0.662	-21.6
6	0.599	15.1	3.242	-57.4	0.020000	124.5	0.611	-81.3

Richardson RFPD, Inc.

40W267 Keslinger Road

P.O. Box 307

LaFox, IL 60147

Telephone: (800) 737-6937

(630) 208-2700

Fax: (630) 208-2662

Internet: www.richardsonrfpd.com**IMPORTANT NOTICE**

RICHARDSON RFPD, INC. AND ITS AFFILIATES RESERVE THE RIGHT TO MAKE CHANGES TO THE PRODUCT(S) OR INFORMATION CONTAINED HEREIN WITHOUT NOTICE. RICHARDSON RFPD, INC. ASSUMES NO RESPONSIBILITY FOR ANY ERRORS WHICH MAY APPEAR IN THIS DOCUMENT.

WARRANTY INFORMATION APPLICABLE TO THE PRODUCT IDENTIFIED HEREIN IS AVAILABLE UPON REQUEST. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A WARRANTY, REPRESENTATION OR GUARANTEE OF ANY KIND. RICHARDSON RFPD, INC. EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND/OR IMPLIED INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, AND OF FITNESS FOR A PARTICULAR PURPOSE, USE OR APPLICATION.

NO PART OF THIS DOCUMENT MAY BE COPIED OR REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF RICHARDSON RFPD, INC.

WARNING

RICHARDSON RFPD, INC. PRODUCTS ARE NOT INTENDED FOR USE IN LIFE SUPPORT APPLIANCES, DEVICES OR SYSTEMS. USE OF A RICHARDSON RFPD, INC. PRODUCT IN ANY SUCH APPLICATION WITHOUT WRITTEN CONSENT IS PROHIBITED.

Available exclusively from Richardson RFPD - 800-737-6937 (U.S. & Canada) - 630-208-2700 (International)

Or visit www.richardsonrfpd.com. See important product notice on last page of this document.

Internal Richardson Document #	Origination Date: November 2004	Rev: V2 Date: April 2011	Page 5/5
--------------------------------	------------------------------------	-----------------------------	----------