

## 2000 ~ 2600 MHz Super Low Noise Amplifier<sup>1</sup>

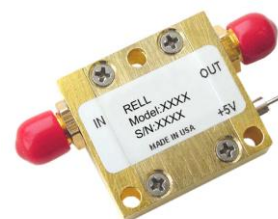


RLAC2026A is an ultra low noise figure, wideband, and unconditionally stable amplifier with exceptionally low input and output VSWR. The amplifier offers typical 0.60 dB noise figure, 20 dB input and output return losses, 26.0 dB gain, and 12 dBm output  $P_{1dB}$  over the 3G and ISM frequency bands from 2000 MHz to 2600 MHz. It is most suitable for receivers, wireless data communications, and other measurement applications.

RLAC2026A is designed to meet the rugged standards of MIL-STD-202, MIL-STD-883, and MIL-STD-810F.

Lead-Tin and **RoHS** compliant versions are both available.

A surface mount package version is also available, RLAS2026A.



### 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  
 MTBF<sup>2</sup>: >600,000 hrs (68 Years)  
 Small Size: 1.00"x1.08"x0.41" (27.4x25.4x10.4mm)  
 Built-In Functions: DC blocks at input and output ports, temperature compensation circuitry

### Absolute Maximum Ratings<sup>3</sup>:

| 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                      | $\Delta G$   | 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 <sup>4</sup> | +5.0     | +5.3    | V    |
| Operating Temperature               | $T_o$        |                                           | -40               |          | +85     | °C   |
| Maximum Average RF Input Power      | $P_{IN,MAX}$ | 2.0 ~ 2.6 GHz                             |                   |          | 10      | dBm  |

<sup>1</sup> Specifications are subject to change without notice.

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

<sup>3</sup> Operation of this device above any one of these parameters may cause permanent damage.

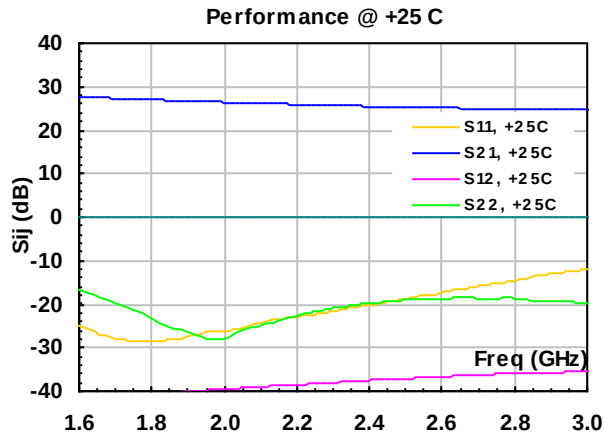
<sup>4</sup> The lower DC supply voltage reduces the LNA performance.

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

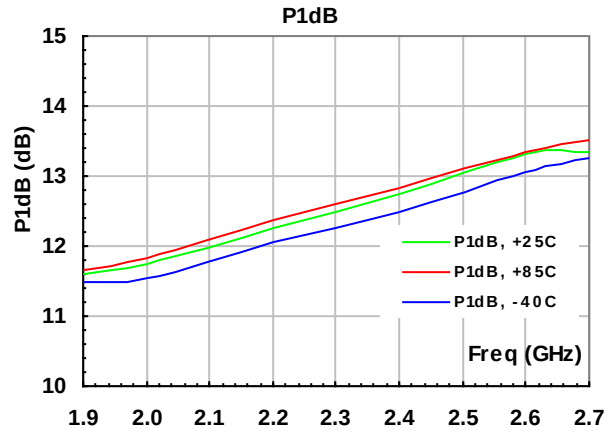
Or visit [www.richardsonrfpd.com](http://www.richardsonrfpd.com). See important product notice on last page of this document.

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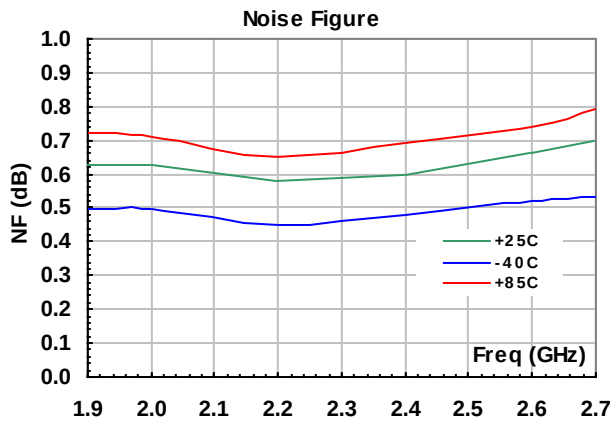
## Frequency Response



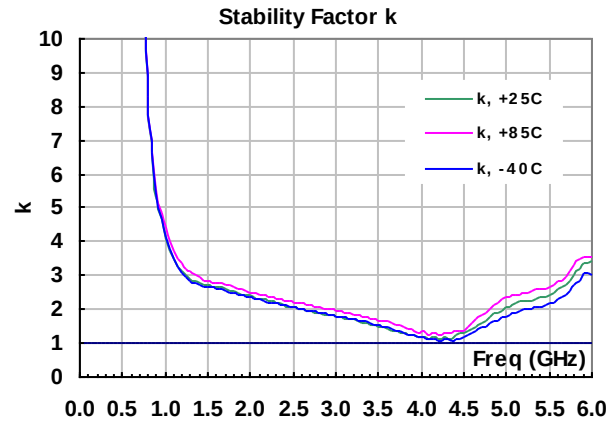
**FIG. 1** Small signal performance.



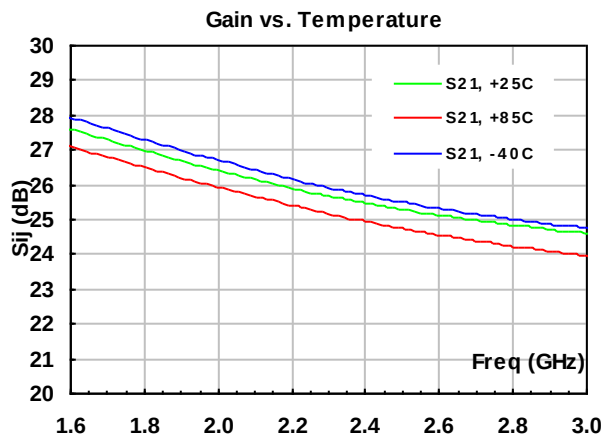
**FIG. 2** P<sub>1dB</sub> Performance at full temperature.



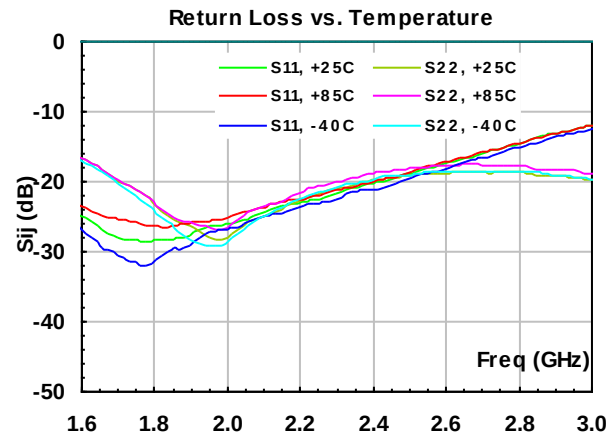
**FIG. 3** Noise figure performance at full temperature



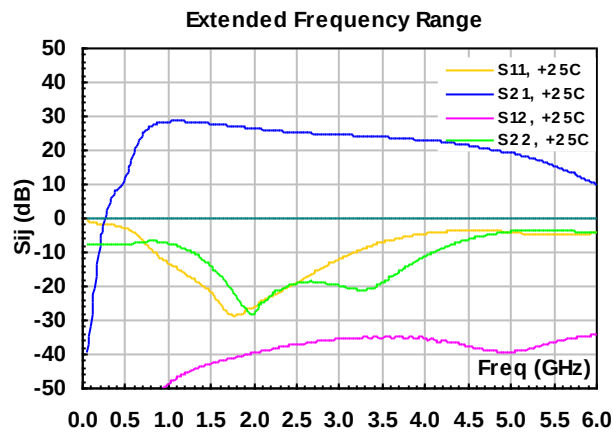
**FIG. 4** Stability factor  $k$



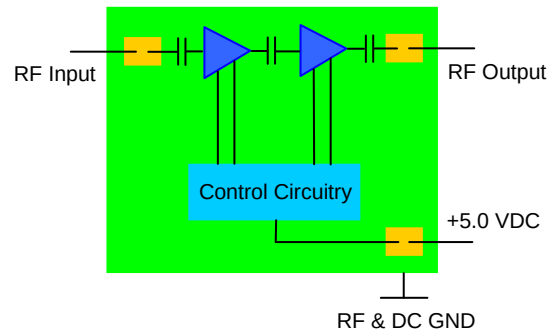
**FIG. 5** Gain vs. temperature



**FIG. 6** Return Loss vs. Temperature

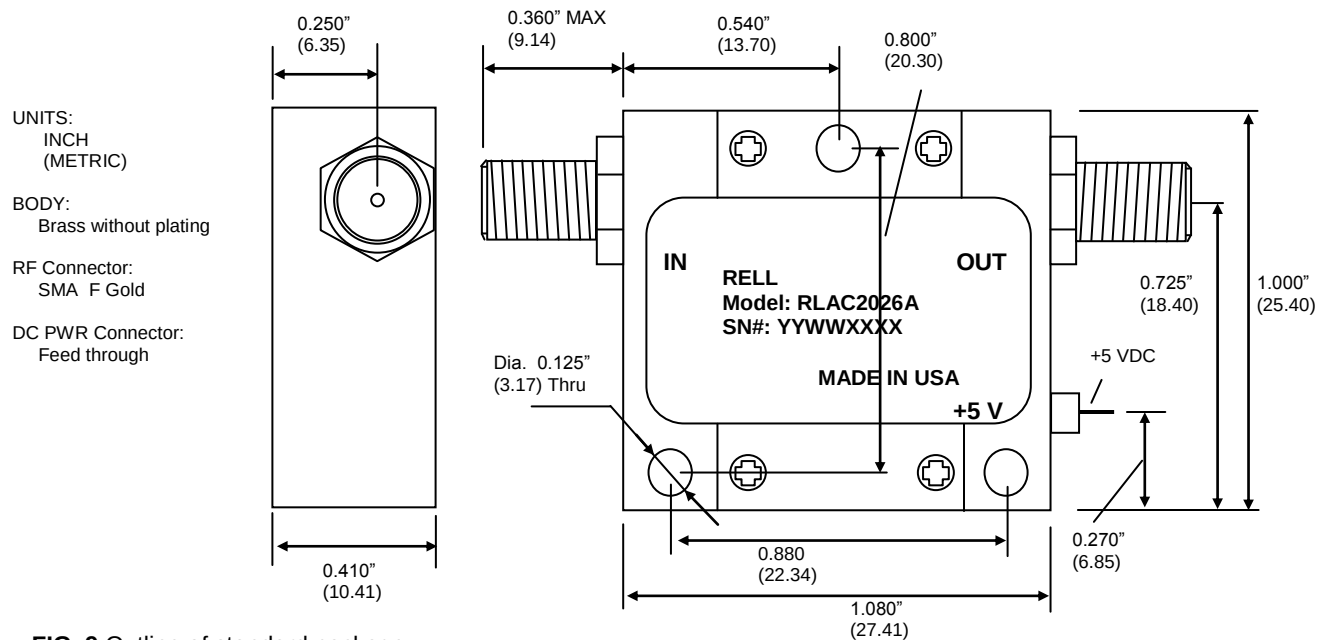


**FIG. 7** Frequency response in extended frequency



**FIG. 8** Block diagram

## Mechanical Outline: (2:1 ratio)



**FIG. 9** Outline of standard package.

## Ordering Information

| Model Number | Description |
|--------------|-------------|
| RLAC2026A    | Lead-Tin    |
| RLAC2026A-G  | RoHS        |

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**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](http://www.richardsonrfpd.com)**IMPORTANT NOTICE**

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