

High IP3

# Low Noise Amplifier

ZRL-2400LN+

50Ω

1000 to 2400 MHz

## Features

- High IP3, +39 dBm typ.
- Low Noise figure, 1.2 dB typ.
- Broadband flat gain response
- Internal voltage regulated
- Over-voltage and transient protected

## Applications

- PCS, UMTS, GSM, cellular, wireless data
- Defense communications
- Satellite communications



Generic photo used for illustration purposes only

Case Style: FJ893

| Connectors | Model       |
|------------|-------------|
| SMA        | ZRL-2400LN+ |

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Electrical Specifications at 25°C

| Parameter                                       | Condition (MHz)                           | Min.           | Typ.                 | Max.                 | Units |
|-------------------------------------------------|-------------------------------------------|----------------|----------------------|----------------------|-------|
| Frequency Range                                 |                                           | 1000           |                      | 2400                 | MHz   |
| Noise Figure <sup>3</sup>                       | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | 1.2<br>1.0<br>1.2    | 2.0<br>1.4<br>1.4    | dB    |
| Gain                                            | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | 29<br>26<br>24 | 32<br>30<br>28       | —<br>—<br>—          | dB    |
| Gain Flatness                                   | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | ±1.1<br>±1.3<br>±1.6 | ±2.0<br>±2.2<br>±2.2 | dB    |
| Output Power at 1dB compression                 | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | 21<br>23<br>23 | 23<br>24<br>24       | —<br>—<br>—          | dBm   |
| Output Power at 3dB compression                 | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | 25.3<br>26.0<br>26.0 | —<br>—<br>—          | dBm   |
| Output third order intercept point <sup>1</sup> | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | +37<br>+39<br>+40    | —<br>—<br>—          | dBm   |
| Input VSWR                                      | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | 1.6<br>1.2<br>1.2    | —<br>—<br>—          | :1    |
| Output VSWR                                     | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | 1.4<br>1.2<br>1.2    | —<br>—<br>—          | :1    |
| Active Directivity                              | 1000 - 1400<br>1400 - 1900<br>1900 - 2400 | —<br>—<br>—    | 13<br>16<br>16       | —<br>—<br>—          | dB    |
| DC Supply Voltage <sup>2</sup>                  |                                           | —              | 12                   | —                    | V     |
| Supply Current                                  |                                           | —              | 470                  | 520                  | mA    |

1. 1 MHz tone spacing.

2. Unit is internally voltage regulated for 6.5 to 17VDC input voltage range.

3. 2.2 dB max at frequency 1000-1050 MHz.

## Maximum Ratings

| Parameter                  | Ratings                                    |
|----------------------------|--------------------------------------------|
| Operating Temperature      | -40°C to 80°C case<br>-40°C to 60° ambient |
| Storage Temperature        | -55°C to 100°C                             |
| DC Voltage                 | +17V                                       |
| Input RF Power (no damage) | +10 dBm                                    |

Permanent damage may occur if any of these limits are exceeded.

## Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

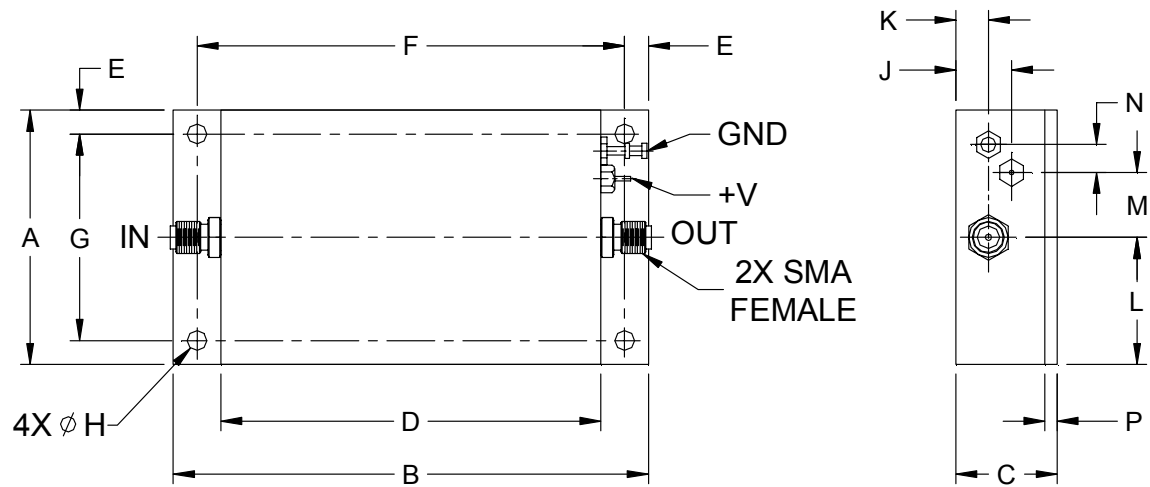
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



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Outline Drawing



Outline Dimensions (inch mm)

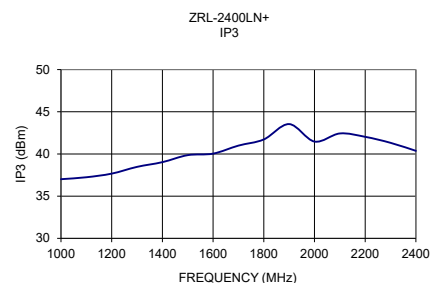
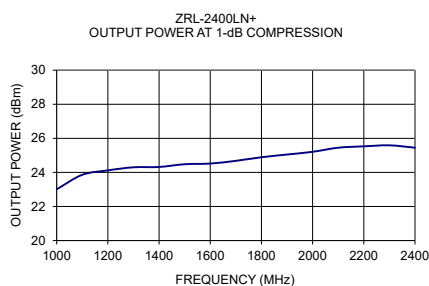
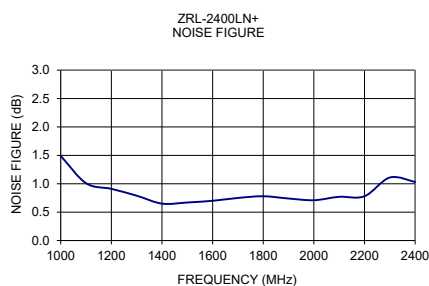
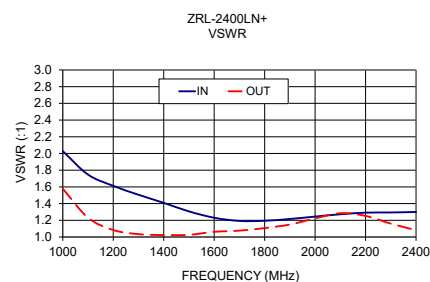
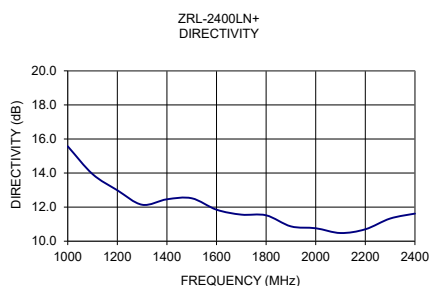
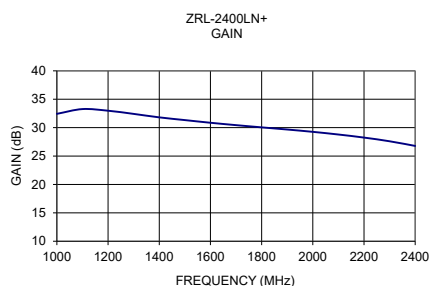
| A     | B     | C     | D     | E    | F     | G     | H     | J     | K    | L     | M     | N    | P    | wt    |
|-------|-------|-------|-------|------|-------|-------|-------|-------|------|-------|-------|------|------|-------|
| 2.00  | 3.75  | 0.80  | 3.00  | 0.19 | 3.374 | 1.624 | 0.156 | 0.44  | 0.26 | 1.00  | 0.51  | 0.22 | 0.10 | grams |
| 50.80 | 95.25 | 20.32 | 76.20 | 4.83 | 85.70 | 41.25 | 3.96  | 11.18 | 6.60 | 25.40 | 12.95 | 5.59 | 2.54 | 135   |

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| FREQUENCY<br>(MHz) | GAIN<br>(dB) | DIRECTIVITY<br>(dB) | VSWR<br>(:1) |      | NOISE<br>FIGURE<br>(dB) | POUT<br>at 1dB<br>COMPR.<br>(dBm) | OUTPUT<br>IP3<br>(dBm) |
|--------------------|--------------|---------------------|--------------|------|-------------------------|-----------------------------------|------------------------|
|                    | 12V          | 12V                 | IN           | OUT  | 12V                     | 12V                               | 12V                    |
| 1000.00            | 32.43        | 15.57               | 2.03         | 1.58 | 1.49                    | 23.01                             | 37.01                  |
| 1100.00            | 33.27        | 13.94               | 1.75         | 1.23 | 1.01                    | 23.86                             | 37.24                  |
| 1200.00            | 32.98        | 12.99               | 1.61         | 1.08 | 0.91                    | 24.12                             | 37.67                  |
| 1300.00            | 32.42        | 12.14               | 1.51         | 1.03 | 0.79                    | 24.30                             | 38.47                  |
| 1400.00            | 31.81        | 12.46               | 1.41         | 1.02 | 0.65                    | 24.32                             | 39.03                  |
| 1500.00            | 31.33        | 12.52               | 1.31         | 1.03 | 0.67                    | 24.48                             | 39.86                  |
| 1600.00            | 30.86        | 11.85               | 1.23         | 1.06 | 0.70                    | 24.52                             | 40.04                  |
| 1700.00            | 30.44        | 11.56               | 1.19         | 1.08 | 0.75                    | 24.68                             | 40.99                  |
| 1800.00            | 30.05        | 11.52               | 1.19         | 1.11 | 0.78                    | 24.89                             | 41.72                  |
| 1900.00            | 29.67        | 10.87               | 1.22         | 1.15 | 0.74                    | 25.05                             | 43.54                  |
| 2000.00            | 29.26        | 10.76               | 1.24         | 1.22 | 0.71                    | 25.21                             | 41.47                  |
| 2100.00            | 28.79        | 10.48               | 1.27         | 1.29 | 0.77                    | 25.45                             | 42.43                  |
| 2200.00            | 28.25        | 10.70               | 1.29         | 1.25 | 0.78                    | 25.53                             | 42.03                  |
| 2300.00            | 27.60        | 11.33               | 1.29         | 1.16 | 1.11                    | 25.59                             | 41.32                  |
| 2400.00            | 26.78        | 11.62               | 1.30         | 1.08 | 1.03                    | 25.45                             | 40.37                  |



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