Main Features:

- Frequency Range: 0.5 to 18 GHz.
- Noise Figure: 3 dB, Gain 14 dB.
- RF connectors (I/O): SMA Female
- DC voltage through out RF connector
- Several mounting options
- Painted coating on aluminum housing
- Hi-reliability and dedicated screening/environmental tests available under request

**ERZ-LNA-0050-1800-14-4**

The ERZ-LNA-0050-1800-14-4 is a Low Noise Amplifier providing a gain of 18 dB with a noise figure below 4 dB. The compact size and modularity makes it ideal for a wide range of applications.

**Typical applications:**

- Industrial / Laboratory
- Satcom / Telecom
- Space / Aerospace / Military

**Performance**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0.5 - 18</td>
<td>GHz</td>
</tr>
<tr>
<td>Output Power (P1dB)</td>
<td>12 - 16</td>
<td>dBm</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>12 - 16</td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>±2</td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>2.0 - 4.5</td>
<td>dB</td>
</tr>
<tr>
<td>VSWR input</td>
<td>1.0:1 - 2.0:1</td>
<td>dB</td>
</tr>
<tr>
<td>VSWR output</td>
<td>1.0:1 - 2.0:1</td>
<td>-</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>12 - 18</td>
<td>V</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>1.0</td>
<td>W</td>
</tr>
<tr>
<td>RF Connectors</td>
<td>SMA Female</td>
<td>-</td>
</tr>
</tbody>
</table>

Specifications at a case temperature of 25°C at 12 V
Small Signal Gain

Figure 1 shows small signal gain measurement as a function of frequency at, room temperature (+25°C).

\[
\text{Gain (dB)} = \begin{cases} 
\text{max} & \text{at } f = 18.000 \text{ GHz} \\
& G = 16.0 \text{ dB} \\
\text{min} & \text{at } f = 0.500 \text{ GHz} \\
& G = 33.0 \text{ dB}
\end{cases}
\]

Figure 1: ERZ-LNA-0050-1800-14-4 Small Signal Gain

Gain flatness over frequency and temperature

The next figure shows small signal gain flatness over frequency and temperature at -40 ºC, 25 ºC and 85 ºC.

Figure 2: ERZ-LNA-0050-1800-14-4 Gain flatness over temperature
Output Power (P1dB)

Figure 3 shows output power measurement at 1 dB compression as a function of frequency at room temperature (25ºC).

![Output Power at P1dB](image)

Noise Figure

Figure 4 shows the noise figure measurement as a function of frequency at room temperature (25ºC).

![Noise Figure](image)
Input and Output Matching

Figure 5 show input (S11) and output (S22) VSWR as a function of frequency at room temperature (25ºC).

Figure 5: ERZ-LNA-0050-1800-14-4 Input /Output Matching
Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage</td>
<td>+18 VDC</td>
</tr>
<tr>
<td>Maximum Input Power (CW)</td>
<td>20 dBm</td>
</tr>
<tr>
<td>Operation temperature (at case)</td>
<td>-45 to 85 ºC</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-55 to 125 ºC</td>
</tr>
</tbody>
</table>

- Stress above these ratings may cause permanent damage to the device.
- It is final user responsibility to maintain the amplifier within the specified ranges.

Measurements Conditions

All measurements provided in this report were performed at the following conditions:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (DUT ON)</td>
<td>25 ºC ± 1ºC</td>
</tr>
<tr>
<td>Humidity</td>
<td>44% ± 10%</td>
</tr>
<tr>
<td>DUT Warm up time</td>
<td>30 min</td>
</tr>
<tr>
<td>DUT minimum operation time</td>
<td>24 hours</td>
</tr>
<tr>
<td>Test equipment warm up time</td>
<td>2 hours</td>
</tr>
<tr>
<td>Additional temperature cycles</td>
<td>-40ºC to 85ºC</td>
</tr>
</tbody>
</table>

Environmental Specifications (By Design)

- Operating Temperature: -45 to +85 ºC
- Storage Temperature: -55 to 125 ºC
- Vibration: 8g rms
- Shock: 20g, 11ms, saw-tooth
- Acceleration: 15g

RoHS & REACH Compliance

This part is compliant with EU 2011/65/UE RoHS (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) and REACH (Registration, Evaluation, Authorization and restriction of Chemical substances) directives.
Documentation and Test Reports

All modules are at least delivered with: Electrical Test Report, Certificate of Conformance, Certificate of Acceptance and Origin. Optionally, units can be environmentally tested (temperature, vibration...).

Option (HS): Heat Sink

A heat sink (HS) can be provided to allow the operation of Power Amplifiers. Please note that most power amplifiers need heat sink or appropriate heat dissipation strategy.

Space / Military Usage

Most of ERZIA’s products are based on rad-hard technologies and can be manufactured and integrated according to MIL / ECSS or specific hi-rel standard-screening for space, aeronautics, military or specific hi-reliability usage.

Customization and Extended Performances

ERZIA can fully design or adapt one of the existing RF amplifiers designs according to your specifications. Please contact us for additional information.

Model Number Codification

![Model Number Diagram]

MODEL NUMBER

- **ERZ - ABC - DEFG - HIJK - LM - NO**
  - LNA
  - HPA
  - frequency minimum
  - DE (GHz)
  - FG (MHz)
  - frequency maximum
  - HI (GHz)
  - JK (MHz)
  - NF if LNA
  - Psat if HPA
  - Gain if LNA