High Power Amplifier

ERZ-HPA-7500-8300-27

Main Features:
- Frequency Range: 75 to 83 GHz.
- Typical values: $P_{1\text{dB}}$ 24 dBm, Gain 17 dB
- RF connectors (I/O): WR12
- Solder filtered pins for DC connection
- Several mounting options
- Gold plated compact aluminum housing
- Hi-reliability and dedicated screening/environmental tests available under request

Typical applications:
- Industrial / Laboratory
- Satcom / Telecom
- Space / Aerospace / Military

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The ERZ-HPA-7500-8300-27 is an E Band High Power Amplifier providing 24 dBm and a gain of 17 dB. The compact size and modularity makes it ideal for a wide range of applications.

Performance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Min 75 Typ - Max 83</td>
<td>GHz</td>
</tr>
<tr>
<td>Output Power (P1dB)</td>
<td>21 24 27</td>
<td>dBm</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>15 17 20</td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>- ±2 -</td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>- - -</td>
<td>dB</td>
</tr>
<tr>
<td>VSWR input</td>
<td>1.2:1 1.5:1 2.2:1</td>
<td>-</td>
</tr>
<tr>
<td>VSWR output</td>
<td>1.2:1 1.8:1 2.3:1</td>
<td>-</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>8 12 16</td>
<td>V</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>- 9 -</td>
<td>W</td>
</tr>
<tr>
<td>RF Connectors</td>
<td>WR12 IN/OUT</td>
<td>-</td>
</tr>
</tbody>
</table>

Specifications at 12V a case temperature of 25°C
Output Power at 1 dB Compression

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

![Figure 1: ERZ-HPA-7500-8300-27 P1dB](image)

Small Signal Gain

Figure 2 shows the small signal gain measurement as a function of frequency at room temperature (25°C).

![Figure 2: ERZ-HPA-7500-8300-27 Small Signal Gain](image)
Input and Output Matching

Figure 3 and Figure 4 show input (S11) and output (S22) VSWR as a function of frequency at room temperature (25°C).

Figure 3: ERZ-HPA-7500-8300-27 Input Matching

Figure 4: ERZ-HPA-7500-8300-27 Output Matching
Measures 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</td>
<td>25°C ± 1°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>70% ± 10%</td>
</tr>
<tr>
<td>DUT Warm up time</td>
<td>30 min</td>
</tr>
<tr>
<td>Test equipment warm up</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Voltage</td>
<td>16 VDC</td>
</tr>
<tr>
<td>Maximum Input Power (CW)</td>
<td>13 dBm</td>
</tr>
<tr>
<td>Operation temperature (at case)</td>
<td>-35°C to 75°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-55°C to 125°C</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.
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Mechanics and Housing
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

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

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