Main Features:
- Frequency Range: 2 to 4 GHz.
- Typical values: \( P_{sat} \) 43 dBm, Gain 43 dB
- RF connectors (I/O): SMA Female
- D-sub 9 connector 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

ERZ-HPA-0200-0400-43
The ERZ-HPA-0200-0400-43 is a High Power Amplifier providing an output power of 43 dBm with a gain of 43 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></td>
<td>Min</td>
<td>Typ</td>
</tr>
<tr>
<td>Frequency</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Output Power (Psat)</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>-</td>
<td>±1</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>VSWR input</td>
<td>1.0:1</td>
<td>1.3:1</td>
</tr>
<tr>
<td>VSWR output</td>
<td>1.2:1</td>
<td>1.8:1</td>
</tr>
<tr>
<td>Switch ON/OFF time</td>
<td>-</td>
<td>150/350</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>Power Consumption (/Psat)</td>
<td>-</td>
<td>105</td>
</tr>
</tbody>
</table>

Specifications at a case temperature of 25°C
Output Power

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

Figure 2: ERZ-HPA-0200-0400-43 Psat

Figure 2 shows output power Vs input power measurement at room temperature (25°C).

Figure 2: ERZ-HPA-0200-0400-43 Pout vs Pin.
Power Gain

Figure 3 shows the power gain at Psat measurement as a function of frequency at different temperatures.

Gain Vs Input Power

Figure 4 shows gain measurement Vs input power at different frequencies.
Small Signal Gain

Figure 5 shows the small signal gain measurement as a function of frequency at room temperature (25°C).

Gain Flatness over Frequency & Temperature

Figure 6 shows small signal gain flatness over frequency and temperature at -40°C, 25°C and 70°C.
Input Matching

Figure 7 shows input VSWR as a function of frequency at room temperature (25°C).

Output Matching

Figure 8 shows output VSWR as a function of frequency at room temperature (25°C).
High Power Amplifier
ERZ-HPA-0200-0400-43

Mechanical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>125x95x22 (LxWxH)</td>
<td>mm</td>
</tr>
<tr>
<td>Weight</td>
<td>475 +/-10%</td>
<td>grams</td>
</tr>
<tr>
<td>RF Connectors</td>
<td>IN/OUT: SMA (F)</td>
<td>-</td>
</tr>
<tr>
<td>DC &amp; Control Connector</td>
<td>D-sub 9 Male</td>
<td>-</td>
</tr>
</tbody>
</table>

Outline Drawing

Figure 9: ERZ-HPA-0200-0400-43 Outline Drawing
DC & Control Interface

Power supply characteristics

- Input Voltage: 28 ±4 VDC

Control characteristics

- TTL command (ON/OFF function).
- Temperature & Current monitoring.

Table below shows D-sub 9 connector (Male) pinout:

<table>
<thead>
<tr>
<th>PIN</th>
<th>LABEL</th>
<th>SIGNAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VCC</td>
<td>+28V Power Source</td>
<td>Power Supply</td>
</tr>
<tr>
<td>2</td>
<td>VCC</td>
<td>+28V Power Source</td>
<td>Power Supply</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>EN</td>
<td>LVTTL Enable</td>
<td>OFF (0V to 0.8V); ON (2V to 5.5V);</td>
</tr>
<tr>
<td>5</td>
<td>TEMP</td>
<td>Temperature Monitor</td>
<td>Vo = −11.69 mV/°C × T + 1.8663 V</td>
</tr>
<tr>
<td>6</td>
<td>PGND</td>
<td>Power Ground</td>
<td>Power Ground</td>
</tr>
<tr>
<td>7</td>
<td>PGND</td>
<td>Power Ground</td>
<td>Power Ground</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>Ground</td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>I_SEN</td>
<td>Current SENSE</td>
<td>Vo= 0.1V/A</td>
</tr>
</tbody>
</table>

Figure 10: D-sub 9 Connector (Front view)
Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum DC Voltage</td>
<td>+32 VDC</td>
</tr>
<tr>
<td>Maximum RF Input Power</td>
<td>17 dBm</td>
</tr>
<tr>
<td>Operation temperature (at case)</td>
<td>-40º to 85 ºC</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-55º 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>-40ºC, 25 ºC, 85 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 70ºC</td>
</tr>
</tbody>
</table>

Environmental Specifications (By Design)

Operating Temperature: -40 to +85 ºC (MIL-STD-810F, method 520.2)
Storage Temperature: -55 to +125 ºC (MIL-STD-810F, method 520.2)
Vibration: 8g rms (MIL-STD-810F, method 514.5)
Shock: 20g, 11ms, saw-tooth (MIL-STD-810F, method 516.5)
Acceleration: 15g (MIL-STD-810F, method 513.5)

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