The PE15A1033 is a low phase noise amplifier that operates across the frequency range from 7 GHz to 11 GHz. The design utilizes GaAs HBT MMIC technology and exhibits ultra low phase noise of -170 dBc/Hz @ 1 kHz offset frequency. The design also exhibits high dynamic range with typical performance that includes 9 dB of small signal gain, 6 dB noise figure, up to +25 dBm of output power at P1dB, +33 dBm output IP3, while using a +7V single DC supply. The wideband distributed amplifier design input/output ports are internally matched to 50 ohms and are DC blocked. The drop-in package is hermetically sealed with field replaceable SMA connectors and has an operating temperature range of -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

## Features
- Low Phase Noise Amplifier
- Wide frequency band
- Highly Linear GaAs HBT MMIC Technology
- Phase Noise -170 dBc/Hz @ 1KHz offset
- Gain 9 dB
- High Output IP3 +33 dBm
- P1dB up to +25 dBm
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -54°C to +85°C Operating Temperature

## Applications
- Electronic Warfare
- Microwave Radio
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

## Electrical Specifications (TA = +25°C, DC Voltage = 7Vdc, DC Current = 300mA)

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>7</td>
<td></td>
<td>11</td>
<td>GHz</td>
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<tr>
<td>Small Signal Gain</td>
<td>9</td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Output at 1 dB Compression Point</td>
<td>+22</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Output 3rd Intercept Point</td>
<td>+33</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Operating DC Voltage</td>
<td>7</td>
<td></td>
<td></td>
<td>Volts</td>
</tr>
<tr>
<td>Operating DC Current</td>
<td>300</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-55</td>
<td></td>
<td>+85</td>
<td>°C</td>
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Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: 33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA PE15A1033
TECHNICAL DATA SHEET

Performance by Frequency

<table>
<thead>
<tr>
<th>Description</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>7 - 11</td>
<td></td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Vdc Range</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>V</td>
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<tr>
<td>Gain</td>
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<td></td>
<td>dB</td>
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<tr>
<td>Gain Variation Over Temperature</td>
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<td></td>
<td>dB/°C</td>
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<tr>
<td>Noise Figure</td>
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<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Input Return Loss</td>
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<td></td>
<td>dB</td>
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<tr>
<td>Output Return Loss</td>
<td>15</td>
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<td>dB</td>
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<tr>
<td>Output Power For 1 dB Compression (P1dB)</td>
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<td>22</td>
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<td>dBm</td>
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<tr>
<td>Saturated Output Power (Psat)</td>
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<td></td>
<td>dBm</td>
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<tr>
<td>Output Third Order Intercept (IP3)</td>
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<td></td>
<td>dBm</td>
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<td>Phase Noise @ 100 Hz, Psat, 9 GHz</td>
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<td>-160</td>
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<td>dBc/Hz</td>
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<td>dBc/Hz</td>
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<td>dBc/Hz</td>
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<td>Supply Current</td>
<td>300</td>
<td>360</td>
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<td>mA</td>
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</tbody>
</table>

Mechanical Specifications

Size

- Length: 1.14 in [28.96 mm]
- Width: 1.9 in [48.26 mm]
- Height: 0.56 in [14.22 mm]
- Weight: 0.408 lbs [185.07 g]
- Connector Option: Field Replaceable
- Input Connector: SMA Female
- Output Connector: SMA Female

Environmental Specifications

Temperature

- Operating Range: -55 to +85 deg C
- Storage Range: -65 to +150 deg C

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33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA

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<table>
<thead>
<tr>
<th>Technical Spec</th>
<th>Specification</th>
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<tr>
<td>Temperature Cycling</td>
<td>MIL-STD-883, Method 101C, Cond B</td>
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<tr>
<td>Hermetic Seal</td>
<td>Gross Leak MIL-STD-883 Method 1014C1/Fine Leak</td>
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<tr>
<td>ESD Sensitivity</td>
<td>MIL-STD-883, Method 1014A2, 5 x 10^-8 atm cc</td>
</tr>
<tr>
<td>Compliance Certifications</td>
<td>ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.</td>
</tr>
</tbody>
</table>

Plotted and Other Data

Notes:
- Values at +25 °C, sea level

Functional Block Diagram

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33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA

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Typical Performance Data

Broadband, Gain & Return Loss

Gain vs. Temperature

Input Return Loss vs. Temperature

Output Return Loss vs. Temperature

Reverse Isolation vs. Temperature

Noise Figure vs. Temperature

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Output P1dB vs. Temperature

Output Psat vs. Temperature

Output IP3 vs. Temperature

Phase Noise at Pout = 10 dBm @ 9 GHz

Phase Noise at Pout = P1dB @ 9 GHz

Phase Noise at Pout = Psat @ 9 GHz

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33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA

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PE15A1033

33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.
PE15A1033 CAD Drawing

33 dBm IP3, 22 dBm P1dB, 7 GHz to 11 GHz, Low Phase Noise Amplifier 9 dB Gain, SMA