FMAM1031 is a low noise amplifier that operates across the frequency range from 1 GHz to 12 GHz. The design utilizes GaAs HBT MMIC technology. The design also exhibits high dynamic range with typical performance at 8 GHz that includes 16 dB of small signal gain, 1.75 dB noise figure, up to +17 dBm typ of output power at P1dB, +31 dBm output IP3, while using +6V DC supply and -5V 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.

This Broadband Low Noise Amplifier Module is part of Fairview Microwave’s expanding line of Amplifier offerings. These modules offer very wide Frequency Range coverage and outstanding electrical performance in the band.

**Functional Block Diagram**

**Electrical Specifications** (TA = +25°C, DC Voltage = 6Vdc, DC Current = 60mA)

<table>
<thead>
<tr>
<th>Description</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>1</td>
<td></td>
<td>12</td>
<td>GHz</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>16</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output at 1 dB Compression Point</td>
<td>+17</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>1.75</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Operating DC Voltage</td>
<td>6</td>
<td></td>
<td></td>
<td>Volts</td>
</tr>
<tr>
<td>Operating DC Current</td>
<td>60</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>
</tr>
</tbody>
</table>

**Features:**
- Low Noise Amplifier
- Wide Frequency Band
- Highly Linear GaAs HBT MMIC Technology
- Gain 16 dB
- Noise Figure 1.75 typ
- High Output IP3 +31 dBm
- P1dB up to +17 dBm
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

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

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sales@fairviewmicrowave.com
## Performance by Frequency

<table>
<thead>
<tr>
<th>Description</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>1 - 8</td>
<td></td>
<td>8 - 12</td>
<td></td>
<td></td>
<td></td>
<td>GHz</td>
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<tr>
<td>Gain</td>
<td>14</td>
<td>16</td>
<td>12</td>
<td>14</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>±1</td>
<td></td>
<td>±1.25</td>
<td></td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Gain Variation Over Temperature</td>
<td>0.005</td>
<td></td>
<td></td>
<td>0.005</td>
<td></td>
<td></td>
<td>dB/°C</td>
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<tr>
<td>Noise Figure</td>
<td>1.75</td>
<td>2.25</td>
<td>2.5</td>
<td>3</td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Input Return Loss</td>
<td>-12</td>
<td></td>
<td></td>
<td>-7</td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Output Return Loss</td>
<td>-17</td>
<td></td>
<td></td>
<td>-15</td>
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<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output Power For 1 dB Compression (P1dB)</td>
<td>17</td>
<td></td>
<td></td>
<td>14</td>
<td></td>
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<td>dBm</td>
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<tr>
<td>Saturated Output Power (Psat)</td>
<td>19</td>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td>dBm</td>
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<tr>
<td>Output Third Order Intercept (IP3)</td>
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<td></td>
<td></td>
<td>29</td>
<td></td>
<td></td>
<td>dBm</td>
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<tr>
<td>Positive Supply Current (+Idc)</td>
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<td>70</td>
<td></td>
<td>60</td>
<td>70</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>Negative Supply Current (-Idc)</td>
<td>1.5</td>
<td></td>
<td></td>
<td>1.5</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</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: 0.09 lbs [40.82 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
- Hermetic Seal: Gross Leak MIL-STD-883 Method 1014C1/Fine Leak MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc
- ESD Sensitivity: ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation.

## Compliance Certifications
(see product page for current document)

## Plotted and Other Data

**Notes:**
- Values at 25 °C, sea level
Typical Performance Data

**Broadband Gain & Return Loss**

![Broadband Gain & Return Loss graph](image)

**Gain vs. Temperature**

![Gain vs. Temperature graph](image)

**Input Return Loss vs. Temperature**

![Input Return Loss vs. Temperature graph](image)

**Output Return Loss vs. Temperature**

![Output Return Loss vs. Temperature graph](image)

**Reverse Isolation vs. Temperature**

![Reverse Isolation vs. Temperature graph](image)

**Noise Figure vs. Temperature**

![Noise Figure vs. Temperature graph](image)
1.75 dB NF Low Noise Amplifier Operating From 1 GHz to 12 GHz with 16 dB Gain, 17 dBm P1dB and SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [1.75 dB NF Low Noise Amplifier Operating From 1 GHz to 12 GHz with 16 dB Gain, 17 dBm P1dB and SMA FMAM1031](https://www.fairviewmicrowave.com/1.75db-nf-low-noise-amplifier-16db-fmam1031-p.aspx)

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1.75 dB NF Low Noise Amplifier Operating From 1 GHz to 12 GHz with 16 dB Gain, 17 dBm P1dB and SMA