MM310 GaAs pHEMT MMIC 10-40 GHz

**Features**
- Noise Figure: 4dB
- Gain: 7.5dB
- P1dB: +13dBm
- Biasing +3V @ 40 mA
- Impedance: 50Ω
- Die Size: 1.3 x 1.0 x 0.1 mm

**Typical Applications**
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

**Electrical Specifications**

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<tbody>
<tr>
<td>Frequency</td>
<td>10 - 20</td>
<td>20 - 30</td>
<td>30 - 40</td>
<td>GHz</td>
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<tr>
<td>Gain</td>
<td>7.7</td>
<td>7.2</td>
<td>7</td>
<td>dB</td>
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<tr>
<td>Gain Flatness</td>
<td>±0.3</td>
<td>±0.2</td>
<td>±0.3</td>
<td>dB</td>
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<tr>
<td>Input Return Loss</td>
<td>18</td>
<td>15</td>
<td>12</td>
<td>dB</td>
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<tr>
<td>Output Return Loss</td>
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<td>15</td>
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<td>dB</td>
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<tr>
<td>Output 1dB Compression (P1dB)</td>
<td>14</td>
<td>14</td>
<td>13</td>
<td>dBm</td>
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<tr>
<td>Saturated Output Power (Psat)</td>
<td>16.5</td>
<td>16.5</td>
<td>15.5</td>
<td>dBm</td>
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<tr>
<td>Output Third Order Intercept (IP3)</td>
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<td>22</td>
<td>dBm</td>
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<td>Noise Figure</td>
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<td>Current</td>
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<td>40</td>
<td>40</td>
<td>mA</td>
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**Memo**
* Adjust VG (-0.6V--0V) to obtain device current.*

![Functional Block Diagram](image)
GaAs pHEMT MMIC
Low Noise Amplifier
10-40 GHz

Gain

Return Loss

Noise Figure

Output Power $P_{1}$
Outline Drawing:
All Dimensions in mm

Pad Description

<table>
<thead>
<tr>
<th>PAD</th>
<th>Function</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>IN</td>
<td>Input AC coupling 50Ω impedance.</td>
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<td>2</td>
<td>VD</td>
<td>This disc provides power supply voltage for the amplifier and requires external 100pF and 0.01μF bypass capacitor.</td>
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<tr>
<td>3</td>
<td>OUT</td>
<td>Output AC coupling 50Ω impedance.</td>
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<td>4</td>
<td>VG</td>
<td>Gate control for amplifier. Attach bypass capacitor 100pF per application circuit.</td>
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<tr>
<td></td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground.</td>
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</table>
Assembly Drawing

Connect to power supply

0.01uF

50 0hm microstrip

3mil assembling clearance

1 mil gold wire

Connect to power supply

Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*100 \( \mu m^2 \)
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads

Maximum Ratings:
1. Power supply voltage: +5V
2. RF input power: +16dBm
3. Storage temperature: -65°C to +175°C
4. Operating temperature: -55°C to +85°C