**Features**
- Frequency: 2-4GHz
- Small Signal Gain: 29dB
- Noise Figure: 0.6dB max.
- P1dB: 7dBm
- Power Supply: +5V/15mA
- Input/Output: 50Ω
- Die Size: 1.85 x 1.25 x 0.1 mm

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

**Electrical Specifications**
TA = +25°C, Vd = +5V

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2-4</td>
<td></td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td></td>
<td>29</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td></td>
<td>±0.25</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td></td>
<td>0.6</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output 1dB Compression (P1dB)</td>
<td>6.5</td>
<td>7</td>
<td>7.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Saturated Output Power (Psat)</td>
<td>8</td>
<td>8.5</td>
<td>9</td>
<td>dBm</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>10</td>
<td>14</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>18</td>
<td>24</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Static current</td>
<td>15</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>
**MM241PD**

GaAs MMIC

0.5 - 18 GHz

**V1.0.0**

1-BIT DIGITAL CONTROL ATTENUATOR

– MMIC

0.5 - 18 GHz

**MML059**

Low Noise Amplifier

2-4GHz

**Gain vs. Frequency**

**Noise Figure vs. Frequency**

**Input Return Loss vs. Frequency**

**Output Return Loss vs. Frequency**

**Reverse Isolation vs. Frequency**

**P1dB vs. Frequency**
### Pad Description

<table>
<thead>
<tr>
<th>Pad</th>
<th>Function</th>
<th>Description</th>
<th>Equivalent Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF IN</td>
<td>RF signal input terminal, no blocking capacitor required.</td>
<td><img src="image" alt="RF IN Equivalent Circuit" /></td>
</tr>
<tr>
<td>2</td>
<td>RF OUT</td>
<td>RF signal output terminal, no blocking capacitor required.</td>
<td><img src="image" alt="RF OUT Equivalent Circuit" /></td>
</tr>
<tr>
<td>3</td>
<td>Vd</td>
<td>Amplifier drain bias; external 100pF bypass capacitor required.</td>
<td><img src="image" alt="Vdd Equivalent Circuit" /></td>
</tr>
<tr>
<td>Die bottom</td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground.</td>
<td><img src="image" alt="GND Equivalent Circuit" /></td>
</tr>
</tbody>
</table>
Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*100 μm²
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. Maximum drain voltage: +7V
2. Maximum input power: +20dBm
3. Operating temperature: -55°C to +85°C
4. Storage temperature: -65°C to +150°C