**Features**
- Frequency: DC-20GHz
- Small Signal Gain: 13dB
- Noise Figure: 2.0dB typ./4.5dB max.
- P1dB: 16dBm
- Psat: 18dBm
- Power supply: +8V/60mA
- Input/Output: 50Ω
- Die Size: 2.5 x 1.6 x 0.1 mm

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

**Electrical Specifications**
*TA = +25°C, Vd = +8V*

<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>DC-20</td>
<td></td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>11.5</td>
<td>13</td>
<td>14.5</td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>±1.5</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>1.5</td>
<td>2.0</td>
<td>4.5</td>
<td>dB</td>
</tr>
<tr>
<td>Output 1dB Compression (P1dB)</td>
<td>14</td>
<td>16</td>
<td>16.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Saturated Output Power (Psat)</td>
<td>14.5</td>
<td>18</td>
<td>18.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td></td>
<td>19</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td></td>
<td>19</td>
<td></td>
<td>dB</td>
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<tr>
<td>Static Current</td>
<td></td>
<td>60</td>
<td></td>
<td>mA</td>
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</tbody>
</table>
MM241PD
GaAs MMIC
0.5 - 18 GHz

V1.0.0

1-bit Digital Control Attenuator – MMIC
0.5 - 18 GHz

Gain vs. Frequency

Noise Figure vs. Frequency

Gain & Return Loss vs. Frequency

Reverse Isolation vs. Frequency

P1dB vs. Frequency

Psat vs. Frequency

Low Noise Amplifier - MMIC DC-20GHz
### 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, blocking capacitor required.</td>
<td><img src="image" alt="RF IN" /></td>
</tr>
<tr>
<td>7</td>
<td>VDD</td>
<td>Amplifier drain bias; external 100pF bypass capacitor required.</td>
<td><img src="image" alt="VDD" /></td>
</tr>
<tr>
<td>5</td>
<td>RF OUT</td>
<td>RF signal output terminal, blocking capacitor required.</td>
<td><img src="image" alt="RF OUT" /></td>
</tr>
<tr>
<td>8</td>
<td>VG</td>
<td>Amplifier gate bias; external 100pF bypass capacitor required.</td>
<td><img src="image" alt="VG" /></td>
</tr>
<tr>
<td>2, 3, 4, 6, 9, die bottom</td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground.</td>
<td><img src="image" alt="GND" /></td>
</tr>
</tbody>
</table>

### Outline Drawing:
All Dimensions in μm
Assembly Drawing

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: +12V
2. Maximum input power: +18dBm
3. Operating temperature: -55°C to +85°C
4. Storage temperature: -65°C to +150°C