**Features**
- Two Working Modes: High power consumption, Low power consumption
  - Frequency: 6-18GHz
  - Gain: 21 dB @ 53 mA; 20 dB @ 33 mA
  - Noise Figure: 1.3 dB
  - P1dB: +16 dBm @ 53 mA; +13 dBm @ 33 mA
  - Self Biasing: +5 V @ 53 mA VG is suspended
    +5 V @ 33 mA VG is grounded
- Input/Output: 50Ω
- Die Size: 1.5 x 0.8 x 0.1 mm

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

**Electrical Specifications**
TA = +25°C, VDD = +5V, IDD = 53mA

<table>
<thead>
<tr>
<th>Parameters</th>
<th>VG is suspended</th>
<th>VG is grounded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6-18</td>
<td>6-18</td>
</tr>
<tr>
<td>Gain</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>±0.2</td>
<td>±0.5</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Output 1dB Compression (P1dB)</td>
<td>16</td>
<td>13.5</td>
</tr>
<tr>
<td>Saturated Output Power (Psat)</td>
<td>17.5</td>
<td>15</td>
</tr>
<tr>
<td>Output IP3</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Operating current</td>
<td>30</td>
<td>53</td>
</tr>
</tbody>
</table>
Gain @ VG Suspended

Return Loss & Reverse Isolation @ VG Suspended

Noise Figure @ VG Suspended

Output Power P₁ @ VG Suspended

Psat @ VG Suspended

OIP3 @ VG Suspended
Gain @ VG Grounded

Return Loss & Reverse Isolation @ VG Grounded

Noise Figure @ VG Grounded

Output Power $P_1$ @ VG Grounded

Psat @ VG Grounded

OIP3 @ VG Grounded
### Pad Description

<table>
<thead>
<tr>
<th>Pad</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN</td>
<td>This pad is AC coupling, 50 ohm matched</td>
</tr>
<tr>
<td>2</td>
<td>VG</td>
<td>This pad can adjust working mode; Work in high power mode when VG is suspended, work in low power mode when VG is grounded</td>
</tr>
<tr>
<td>3</td>
<td>VD</td>
<td>This pad provides the power supply voltage of the amplifier and needs to be externally connected with the 100pF bypass capacitor.</td>
</tr>
<tr>
<td>4</td>
<td>OUT</td>
<td>This pad is AC coupling, 50 ohm matched</td>
</tr>
<tr>
<td>Die bottom</td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground.</td>
</tr>
</tbody>
</table>
**MML096**

**GaAs MMIC**
**Low Noise Amplifier**
**6-18GHz**

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**Assembly Drawing**

**High Power Consumption Mode**

- 50 0hm microstrip
- 3mil assembling clearance
- 1 mil gold wire

**Low Power Consumption Mode**

- 50 0hm microstrip
- 3mil assembling clearance
- 1 mil gold wire

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**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. Power supply voltage (VD): +6V
2. RF input power: +18dBm
3. Storage temperature: -65°C to +150°C
4. Operating temperature: -55°C to +85°C