**Features**
- Frequency: 12-19GHz
- Small Signal Gain: 19dB
- Noise Figure: 1.35dB typ.
- Noise Figure: 1.4dB max.
- P1dB: 7dBm
- Power Supply: +3.3V/25mA
- Input/Output: 50Ω
- Die Size: 1.85 x 0.9 x 0.1 mm

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

**Electrical Specifications**
\( \text{TA} = +25^\circ \text{C}, \ V_d = +3.3V \)

<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>12-19</td>
<td></td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>18.5</td>
<td>19</td>
<td>19.5</td>
<td>dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>±0.5</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>-</td>
<td>1.35</td>
<td>1.4</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>Input Return Loss</td>
<td>11</td>
<td>12</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>12</td>
<td>18</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Static Current</td>
<td>25</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
</tbody>
</table>
MML043
GaAs MMIC
Low Noise Amplifier
12-19GHz

Gain vs. Frequency

Noise Figure vs. Frequency

Input Return Loss vs. Frequency

Output Return Loss vs. Frequency

Reverse Isolation vs. Frequency

P1dB vs. Frequency
Outline Drawing:
All Dimensions in μm

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" /></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" /></td>
</tr>
<tr>
<td>3</td>
<td>VDD</td>
<td>Amplifier drain bias; external 100pF bypass capacitor required.</td>
<td><img src="image" alt="bbV" /></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" /></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: +5V
2. Maximum input power: +20dBm
3. Operating temperature: -55°C to +85°C
4. Storage temperature: -65°C to +150°C