**Features**
- Attenuation Range: 16dB
- Attenuation Accuracy: ±0.2dB
- Insertion Loss: 1.8dB
- Attenuation Additional Phase Shift: ±4°
- Impedance: 50Ω
- Die Size: 1.0 x 1.0 x 0.1 mm

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

**Electrical Specifications**

<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>0.5-18</td>
<td></td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>1.8</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Attenuation Range</td>
<td>16</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Return Loss</td>
<td>20</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input 1dB Compression (P1dB)</td>
<td>24</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Switching Speed</td>
<td>30</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

**Functional Block Diagram**

**Parameters**

<table>
<thead>
<tr>
<th>TA = +25°C, Vctl = 0/-5V</th>
</tr>
</thead>
</table>
MM5002
GaAs pHEMT MMIC
1-Bit Digital Control Attenuator
0.5-18GHz

Attenuation

Relative Phase vs. Frequency

Insertion Loss

Return Loss
### Pad Description

<table>
<thead>
<tr>
<th>PAD</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF1</td>
<td>This pad is RF port and matched to 50Ω impedance.</td>
</tr>
<tr>
<td>2</td>
<td>RF2</td>
<td>This pad is RF port and matched to 50Ω impedance.</td>
</tr>
<tr>
<td>3, 4</td>
<td>A2, A1</td>
<td>A2 = -5 v, A1 = 0 v, pass-through; A2 = 0V, A1 = -5V, decaying 16dB.</td>
</tr>
<tr>
<td>Die Bottom</td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground.</td>
</tr>
</tbody>
</table>

Outline Drawing:
All Dimensions in mm

[Outline Drawing Image]
MM5002
GaAs pHEMT MMIC
1-Bit Digital Control Attenuator
0.5-18GHz

Assembly Drawing

50 0hm microstrip

3mil assembling clearance

1 mil gold wire

1 mil gold wire

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. RF input power: +24dBm
2. Storage temperature: -65℃ to +175℃
3. Operating temperature: -55℃ to +85℃