**Features**
- Isolation: 48dB @ 20GHz
- Insertion Loss: 1.9dB @ 20GHz
- Absorptive design
- Die Size: 1.5 x 1 x 0.1 mm

**Typical Applications**
- TTL compatible driver included
- Fast Switching Speed
- Low Insertion Loss and High Isolation
- Customization available upon request

**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>DC - 20</td>
<td></td>
<td>20GHz</td>
<td></td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>1.9</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>48</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Return Loss (ON State)</td>
<td>22</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Return Loss (OFF State)</td>
<td>22</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input 1dB Compression (P1dB)</td>
<td>25</td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Switching Speed</td>
<td>15</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

TA = +25°C, Vctl = 0/-5V
**MM113 GaAs pHEMT MMIC SPST DC-20GHz**

- **Insertion Loss**
  - Frequency (GHz): 0, 5, 10, 15, 20
  - Insertion Loss (dB): -1, -3, -5, -7, -9

- **Isolation**
  - Frequency (GHz): 0, 5, 10, 15, 20
  - Isolation (dB): -64, -62, -60, -58, -56

- **Return Loss (ON State)**
  - Frequency (GHz): 0, 5, 10, 15, 20
  - Return Loss (dB): -20, -18, -16, -14, -12

- **Return Loss (OFF State)**
  - Frequency (GHz): 0, 5, 10, 15, 20
  - Return Loss (dB): -20, -22, -24, -26, -28

- **MMS112 GaAs pHEMT MMIC SPST Absorptive Switch DC-20GHz**
**Outline Drawing:**
All Dimensions in mm

<table>
<thead>
<tr>
<th>PAD</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 3</td>
<td>RF1, RF2</td>
<td>The pad is DC coupled to 50 ohms. If the RF level is not 0V, then the blocking capacitor is required externally.</td>
</tr>
<tr>
<td>4, 5</td>
<td>B, A</td>
<td>When A=0V, B=-5V, the RF1, RF2 is “ON” state; When A=-5V, B=0V, This is “OFF” state.</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>Optional end of switch control.</td>
</tr>
<tr>
<td>Die Bottom</td>
<td>GND</td>
<td>Die bottom must be connected to RF/DC ground</td>
</tr>
</tbody>
</table>
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. RF input power: +30dBm
2. Storage temperature: -65°C to +175°C
3. Operating temperature: -55°C to +85°C

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