MMS117

Features
- Frequency: DC-18GHz
- Insertion Loss: 1.5dB
- Isolation: 50dB
- Input/Output SWR at On State: 1.15
- Input/Output SWR at Off State: 1.4
- Input/Output: 50Ω
- Die Size: 1.6 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

<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></td>
<td>DC-18</td>
<td></td>
<td>GHz</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td></td>
<td>1.5</td>
<td>1.8</td>
<td>dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>42</td>
<td>50</td>
<td>50</td>
<td>dB</td>
</tr>
<tr>
<td>Input/Output Return Loss at On State (ON)</td>
<td></td>
<td>23/23</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input/Output Return Loss at Off State (OFF)</td>
<td></td>
<td>20/20</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Output 1dB Compression (P1dB)</td>
<td></td>
<td>26</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Switching Speed</td>
<td></td>
<td>10</td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>
**Insertion Loss vs. Operating Frequency**

```
Frequency (GHz)

0  2  4  6  8  10  12  14  16  18  20
-3 -2 -1  0  1  2  3  4  5  6  7
```

**Isolation vs. Operating Frequency**

```
Frequency (GHz)

0  2  4  6  8  10  12  14  16  18  20
-60 -50 -40 -30 -20 -10  0
```

**Return Loss vs. Operating Frequency (ON)**

```
Frequency (GHz)

0  2  4  6  8  10  12  14  16  18  20
-50 -40 -30 -20 -10  0
```

**Return Loss vs. Operating Frequency (OFF)**

```
Frequency (GHz)

0  2  4  6  8  10  12  14  16  18  20
-30 -20 -10  0
```
## Pad Description

<table>
<thead>
<tr>
<th>Pad</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF IN</td>
<td>Signal input terminal, connected to 50Ω circuit; blocking capacitor not integrated internally.</td>
</tr>
<tr>
<td>2</td>
<td>RF OUT</td>
<td>Signal output terminal, connected to 50Ω circuit; blocking capacitor not integrated internally.</td>
</tr>
<tr>
<td>3, 4</td>
<td>Voltage Control</td>
<td>On/Off 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>
Truth Table

<table>
<thead>
<tr>
<th>VS</th>
<th>VP</th>
<th>IN-OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>0V</td>
<td>-5V</td>
<td>ON</td>
</tr>
<tr>
<td>-5V</td>
<td>0V</td>
<td>OFF</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. Control voltage: -8V to +0.5V
2. Maximum input power: +30dBm
3. Operating temperature: -55°C to +85°C
4. Storage temperature: -65°C to +150°C