# MILLER MMIC

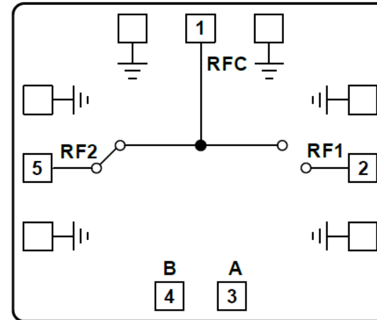
# MMS140

V1.0.0

*GaAs pHEMT MMIC*
*SPDT Reflective Switch*
*DC-18GHz*

## Features
- SPDT Reflective design
- Isolation: 30dB
- Insertion Loss: 1.6dB
- Input P-1: +39dBm@RFC port
- +36.5dBm@ RF1/RF2 port
- Maximum input power：
  10W@RFC port
  5W@ RF1/RF2 port
- Die Size: 1.25x1.11x 0.1 mm

## Functional Block Diagram



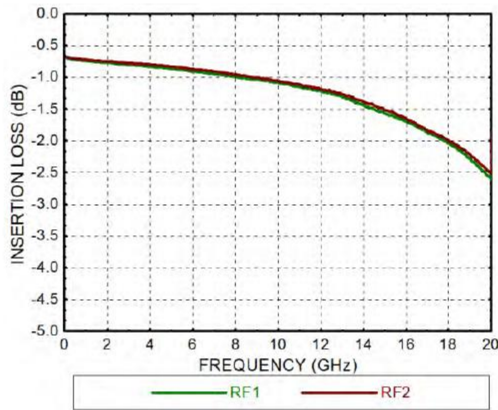

## Typical Applications
- TTL compatible driver included
- Fast Switching Speed
- Low Insertion Loss and High Isolation
- Customization available upon request

## Electrical Specifications
**TA = +25°C, VCTL=0/-5V**

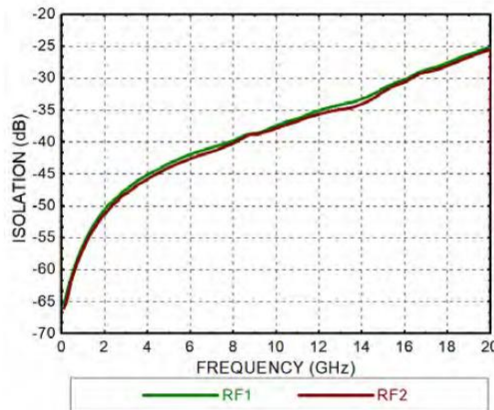
| Parameters | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Frequency | | DC-18 | | GHz |
| Insertion Loss | | 1.6 | | dB |
| Isolation | | 30 | | dB |
| Return Loss (ON State) | | 15 | | dB |
| RFC port input power 1dB Compression@1-18GHz | | 39 | | dBm |
| RFX port input power 1dB Compression@1-18GHz | | 36.5 | | dBm |
| RFC port maximum input power | | 40 | | dBm |
| RFX port maximum input power | | 37 | | dBm |
| Switching Speed | | 650 | | ns |

MMS140 SPDT Reflective SWITCH - MMIC DC-18GHz

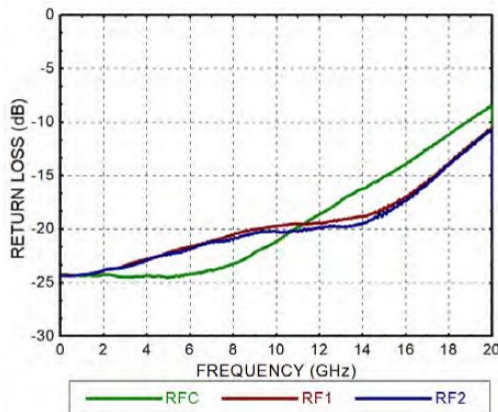
### Insertion Loss



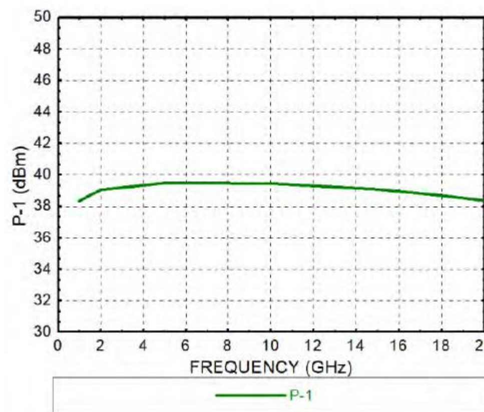

### Isolation




### Return Loss (ON State)

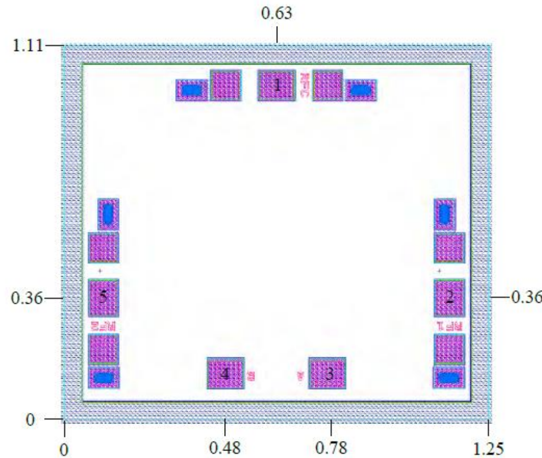



### RFC Input Power P-1



## Outline Drawing:

All Dimensions in mm



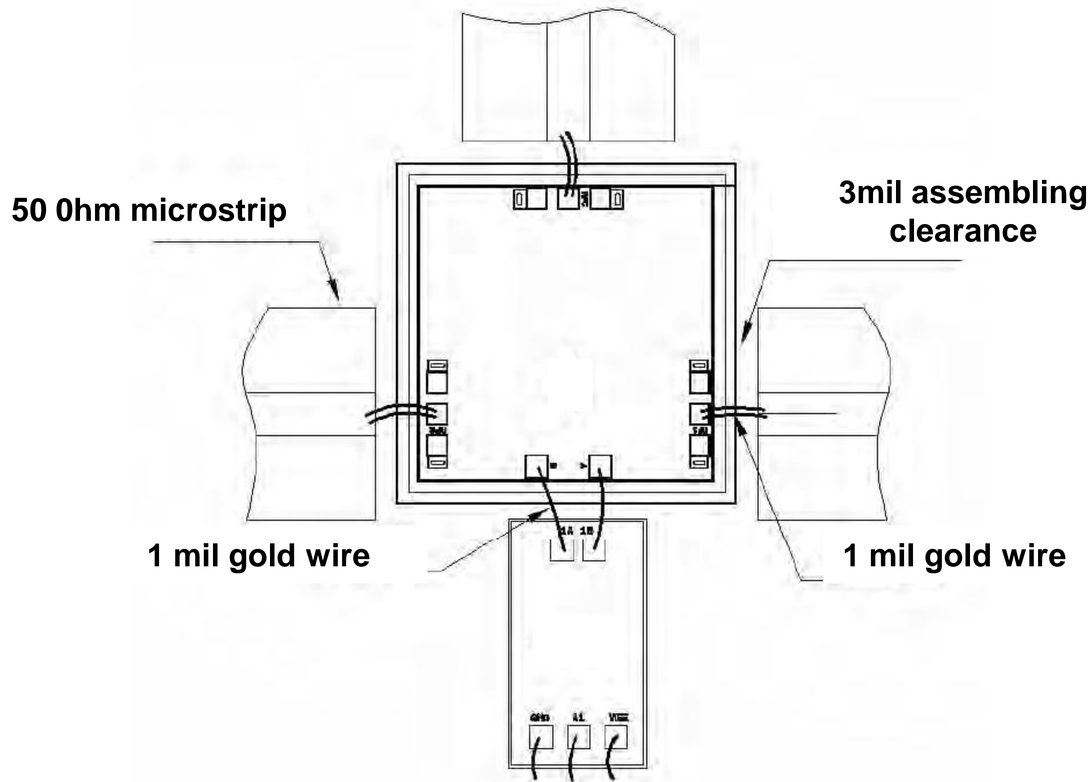

## Pad Description

| PAD | Function | Description |
|---|---|---|
| 1 | RFC | The pad is DC coupling and matched to 50Ω.<br>If RF voltage is not 0V, then blocking capacitor is required externally. |
| 2,5 | RF1,RF2 | The pad is DC coupling and matched to 50Ω.<br>If RF voltage is not 0V, then blocking capacitor is required externally. |
| 3,4 | A,B | When A=-5V, B=0V, then RF1 is “ON” state, RF2 is “OFF” state;<br>When A=0V, B=-5V, then RF1 is “OFF” state, RF2 is “ON” state. |
| Die Bottom | GND | Die bottom must be connected to RF/DC ground. |

## True Table

| Function | A | B |
|---|---|---|
| RFC-RF1 | 1 | 0 |
| RFC-RF2 | 0 | 1 |
| “0” voltage range:0~-0.2V, “1” voltage range:-3~-6V | | |

## Assembly Drawing




**Notes:**
1. Die thickness: 100um
2. Typical bond pad is 100*100 μm$^2$
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: +40dBm
2. Storage temperature: -65℃ to +150℃
3. Operating temperature: -55℃ to +85℃