V1.0.0

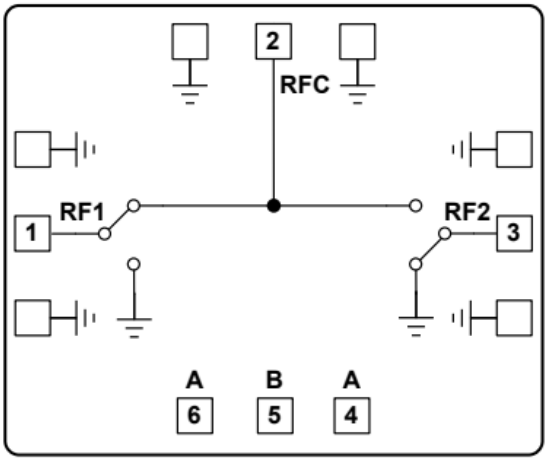
GaAs pHEMT MMIC
SPDT Reflective Switch
7-17GHz



## Features

- SPDT Reflective design
- Isolation: 40dB
- Insertion Loss: 1.4dB
- Input P-0.3: 45.5dBm@7GHz
- 44.5dBm@17GHz
- Switching Time: 30ns
- Input/Output: 50 Ohm matched
- Die Size: 1.90x2.00x 0.08 mm

## Functional Block Diagram




## Typical Applications

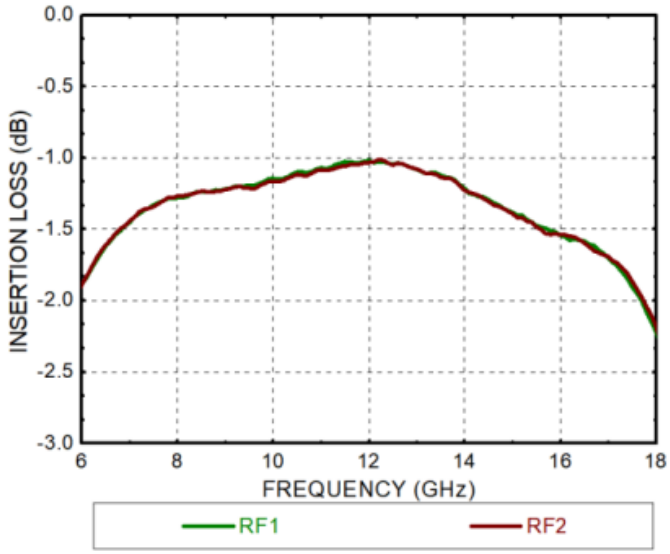
- TTL compatible driver included
- Fast Switching Speed
- Low Insertion Loss and High Isolation
- Customization available upon request

## Electrical Specifications

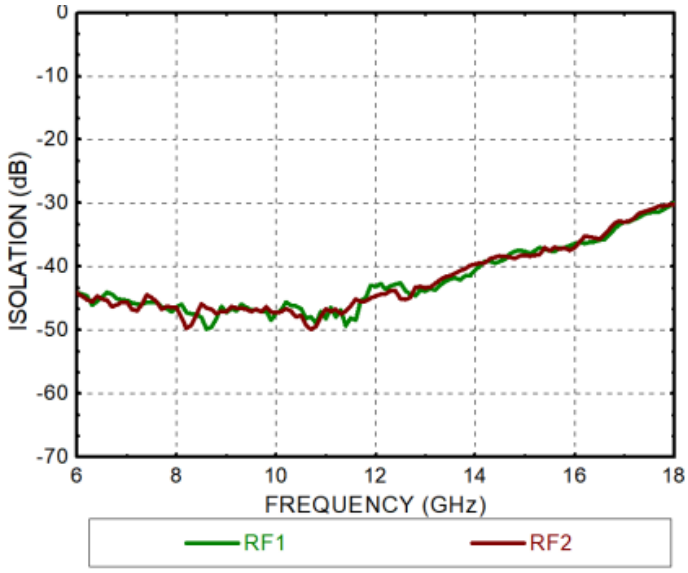
**TA = +25°C, VCTL=0/-40V**

| Parameters | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| Frequency | | 7-17 | | GHz |
| Insertion Loss | | 1.4 | | dB |
| On-state Return Loss(RFC) | | 15 | | dB |
| On-state Return Loss(RF1/RF2) | | 15 | | dB |
| Isolation | | 40 | | dB |
| Input power 0.3dB Compression@7GHz | | 45.5 | | dBm |
| Input power 0.3dB Compression@17GHz | | 44.5 | | dBm |
| Switching Time | | 30 | | ns |

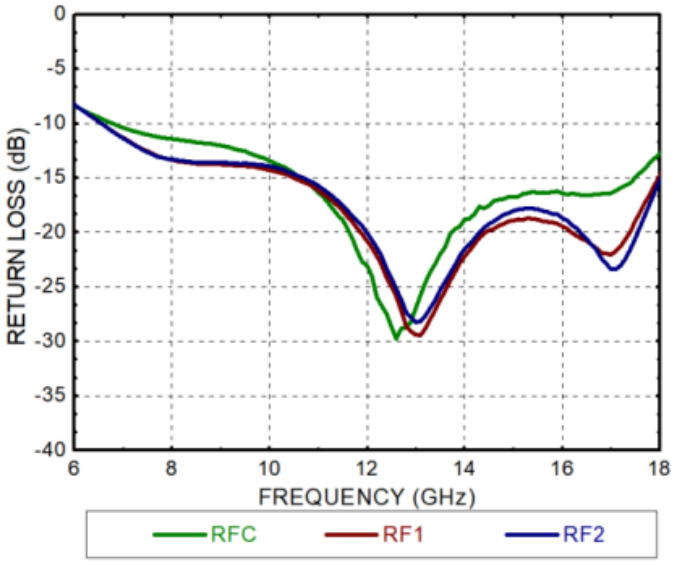
## Insertion Loss



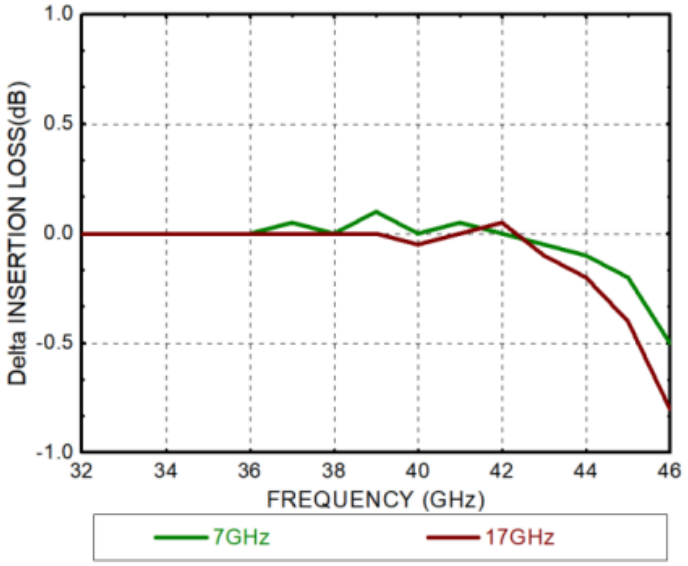

## Isolation




## Return Loss (ON State)

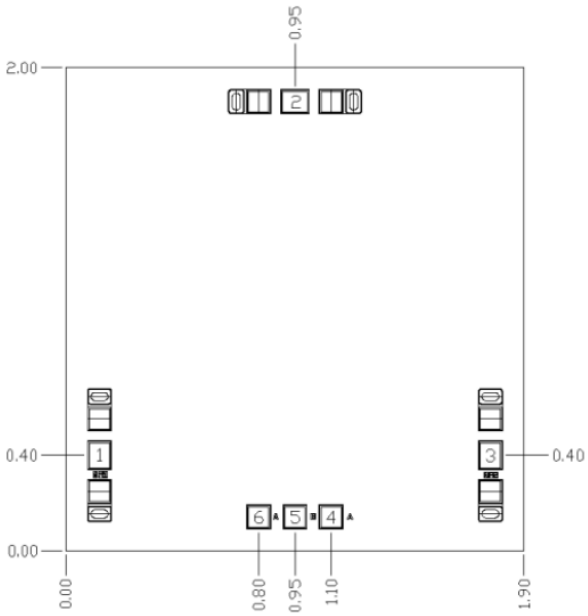



## Insertion Loss Compression vs Input Power (Normalized)



## Outline Drawing:

All Dimensions in mm



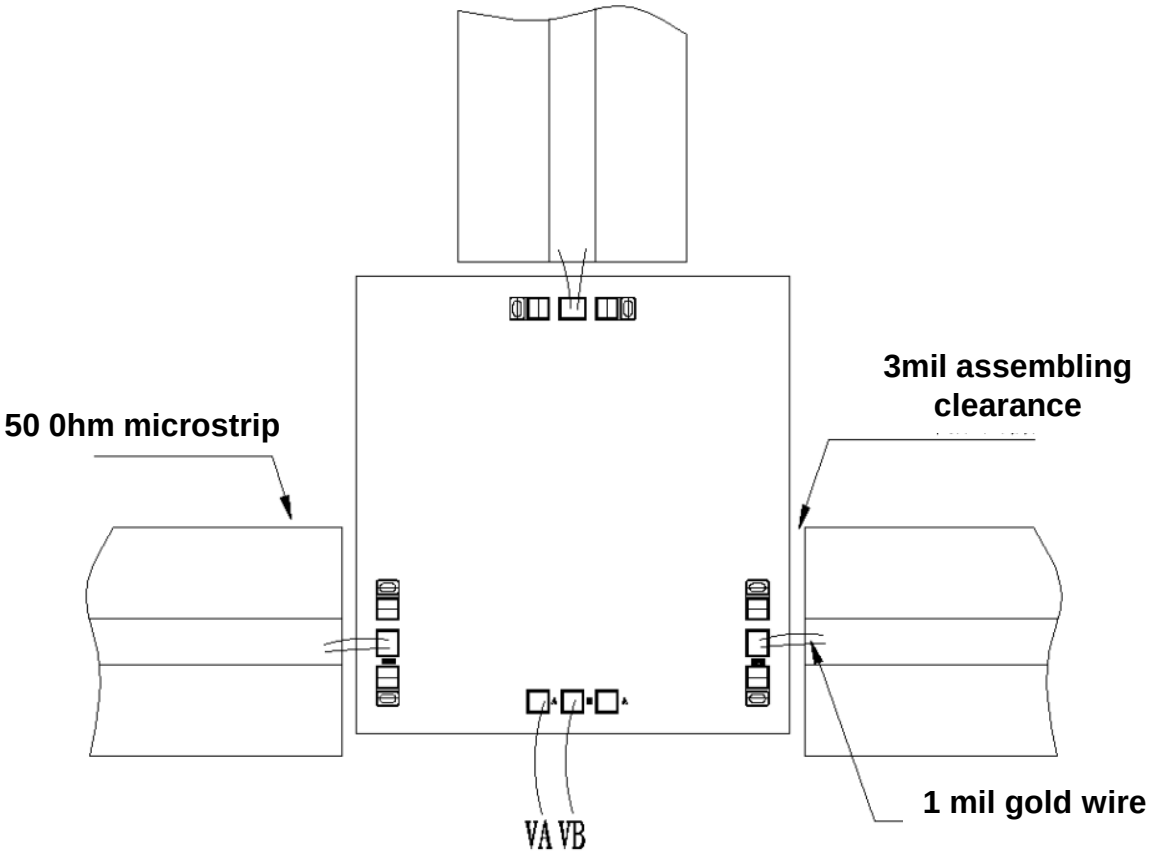

## Pad Description

| PAD | Function | Description |
|---|---|---|
| 2 | RFC | The pad is DC coupling and matched to 50Ω.<br>If RF voltage is not 0V, then blocking capacitor is required externally. |
| 1,3 | RF1,RF2 | The pad is DC coupling and matched to 50Ω.<br>If RF voltage is not 0V, then blocking capacitor is required externally. |
| 4,6 | A | When A=-40V, B=0V, then RF1 is “ON” state, RF2 is “OFF” state;<br>When A=0V, B=-40V, then RF1 is “OFF” state, RF2 is “ON” state. |
| 5 | B | |
| Die Bottom | GND | Die bottom must be connected to RF/DC ground. |

## True Table

| Function | A | B |
|---|---|---|
| RFC-RF1 | -40V | 0V |
| RFC-RF2 | 0V | -40V |

## Assembly Drawing




**Notes:**

1. Die thickness: 80um
2. Typical bond pad is 100*100 $\mu m^2$
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. Control voltage: -50V
2. Control current: ±2mA
3. Maximum input power: +46dBm
(Continuous wave, 50Ω, withstands for 20 minutes)
4. Storage temperature: -65℃ to +150℃
5. Operating temperature: -55℃ to +85℃