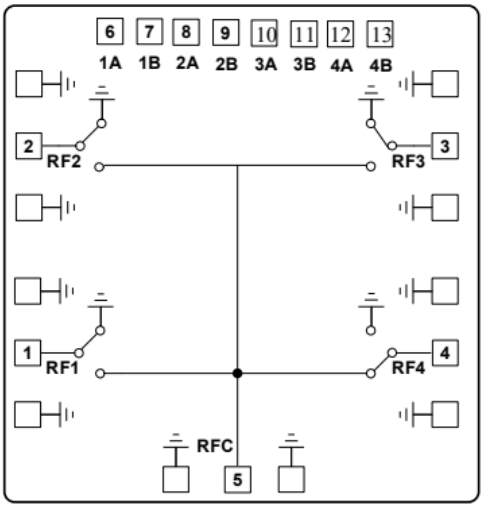
V1.0.0

GaAs pHEMT MMIC
SP4T Reflective Switch
0.1-6GHz

Features

- SP4T Reflective design
- Isolation: 31dB
- Insertion Loss: 2.0dB
- Input P-0.1: 48dBm@ 0.1GHz
- Input P-0.3: 42dBm@ 6GHz
- Switching Time: 20ns
- Input/Output: 50 Ohm matched
- Die Size: 2.00x2.00x 0.1 mm

Functional Block Diagram



Typical Applications

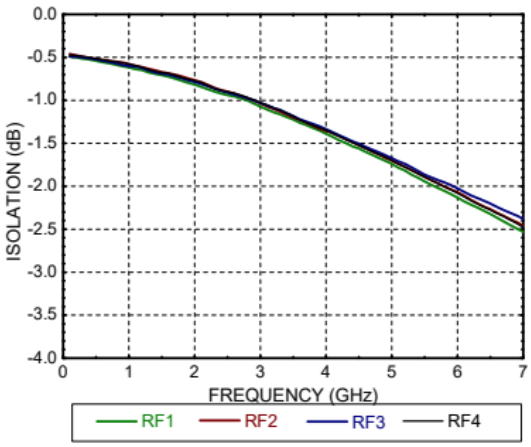
- TTL compatible driver included
- Fast Switching Speed
- Low Insertion Loss and High Isolation
- Customization available upon request

Electrical Specifications

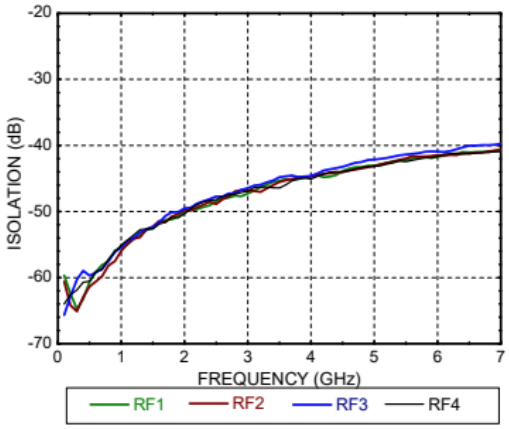
TA = +25ºC, VCTL=0/-40V

Parameters	Min.	Typ.	Max.	Units
Frequency		**0.1-6**		**GHz**
Insertion Loss		**2.0**		**dB**
On-state Return Loss(RFC)		**10**		**dB**
On-state Return Loss(RF1/RF2)		**10**		**dB**
Off-state Return Loss		**2**		**dB**
Off-state Isolation		**40**		**dB**
Input power 0.1dB Compression@0.1GHz		**48**		**dBm**
Input power 0.3dB Compression@6GHz		**42**		**dBm**
Switching Time		**20**		**ns**

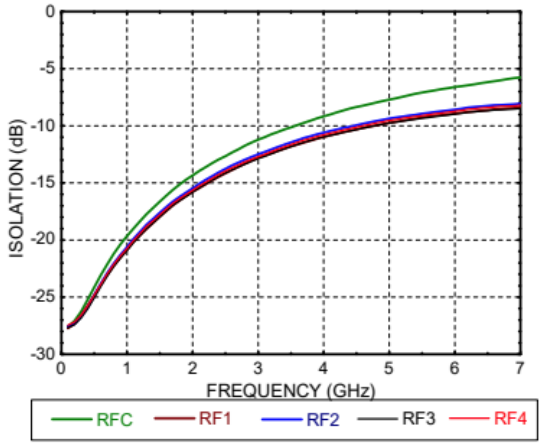
Insertion Loss



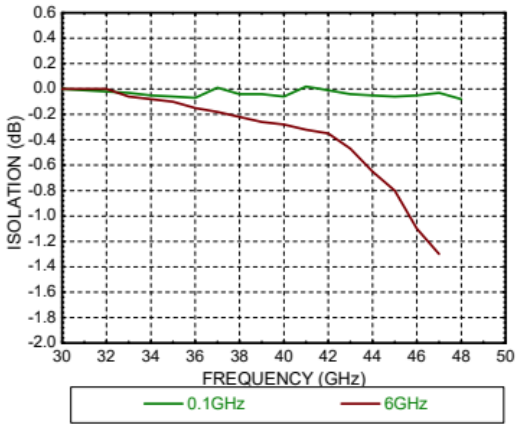
Isolation



Return Loss (ON State)

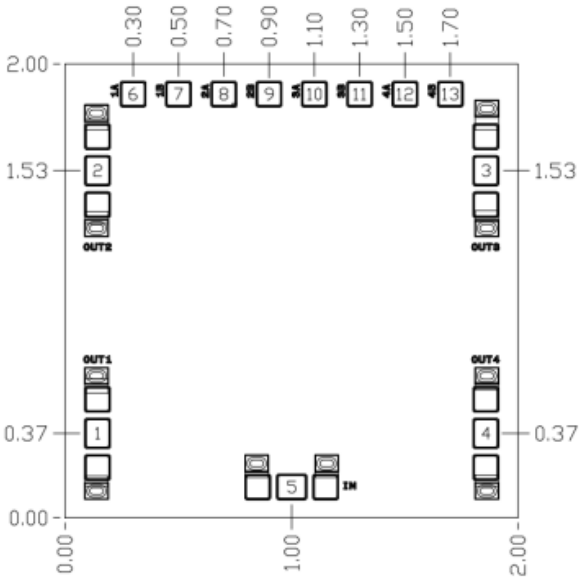


Insertion Loss Compression vs Input Power (Normalized)



Outline Drawing:

All Dimensions in mm



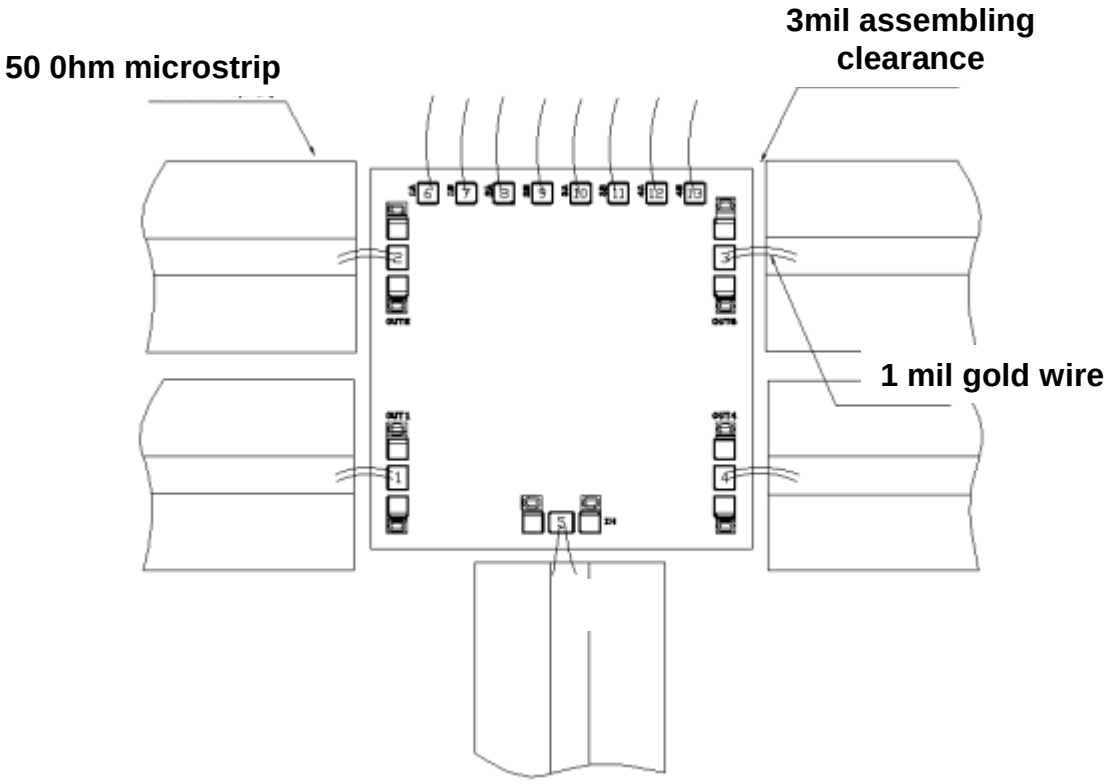
Pad Description

PAD	Function	Description
5	RFC	The pad is DC coupling and matched to 50Ω. If RF voltage is not 0V, then blocking capacitor is required externally.
1-4	RF1-RF4	The pad is DC coupling and matched to 50Ω. If RF voltage is not 0V, then blocking capacitor is required externally.
6-13	1A-4B	0/-40 V Control Pad
Die Bottom	GND	Die bottom must be connected to RF/DC ground.

True Table

1A	1B	2A	2B	3A	3B	4A	4B	state
0V	-40V	-40V	0V	-40V	0V	-40V	0V	RF1 ON
-40V	0V	0V	-40V	-40V	0V	-40V	0V	RF2 ON
-40V	0V	-40V	0V	0V	-40V	-40V	0V	RF3 ON
-40V	0V	-40V	0V	-40V	0V	0V	-40V	RF4 ON

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. Control voltage: -50V
2. Control current:2mA
3. Maximum input power: +47dBm
   (Continuous wave, 50Ω, withstands for 20 minutes)
4. Storage temperature: -65℃ to +150℃
5. Operating temperature: -55℃ to +85℃