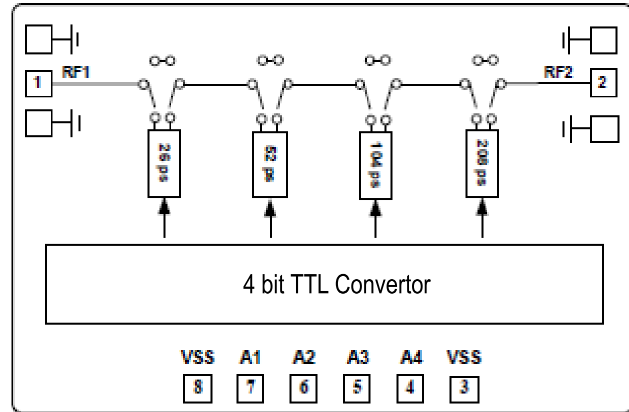
V1.0.0

GaAs pHEMT MMIC
4-Bit True Time Delay
1-12GHz

Features

- Delay Range: 26ps-390ps
- Minimum Delay: 26 ps / 90 ° @ 9.6 GHz
- Delay Accuracy RMS: ±2ps
- Delay phase accuracy： ±4°
- Insertion Loss: 9dB
- Phase Shift Amplitude Modulation: ±0.5 dB
- Input/Output: 50 Ohm
- Die Size: 2.55x 2.5 x 0.075 mm

Functional Block Diagram



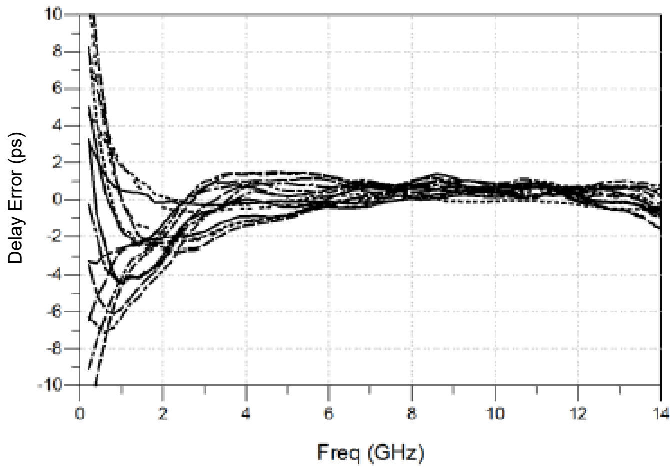
Typical Applications

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

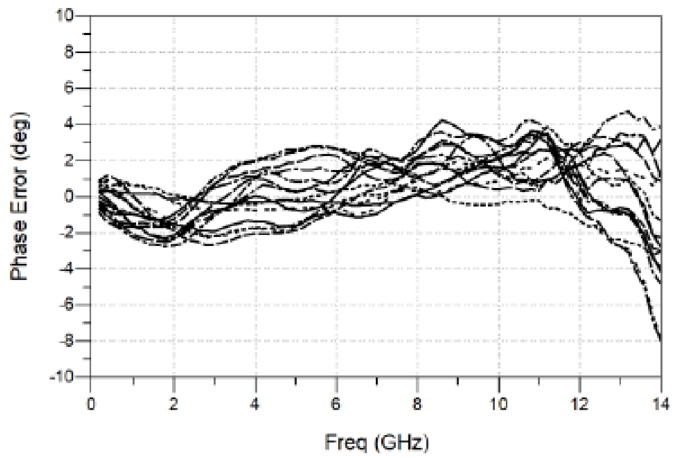
Electrical Specifications
TA = +25°C, Vctl = 0/+5V

Parameters	Min.	Typ.	Max.	Units
Frequency		1-12		GHz
Insertion Loss		9		dB
Time Delay Accuracy RMS		±2		ps
Phase Shift Amplitude Modulation		±0.5		dB
Input and Output SWR		1.4		-
Input 1dB Compression		24		dBm
Switching Time		30		ns

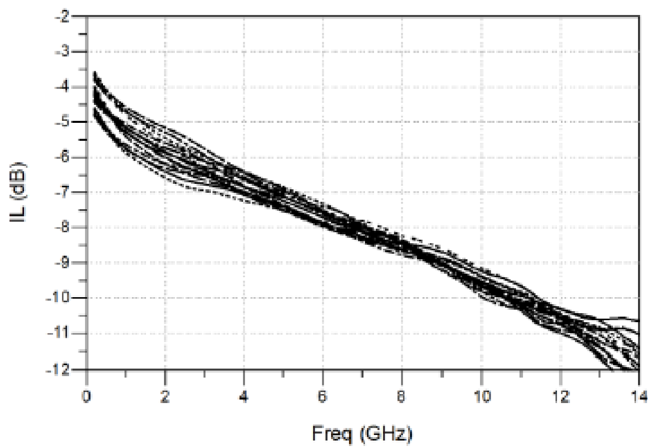
Full States Time Delay Accuracy



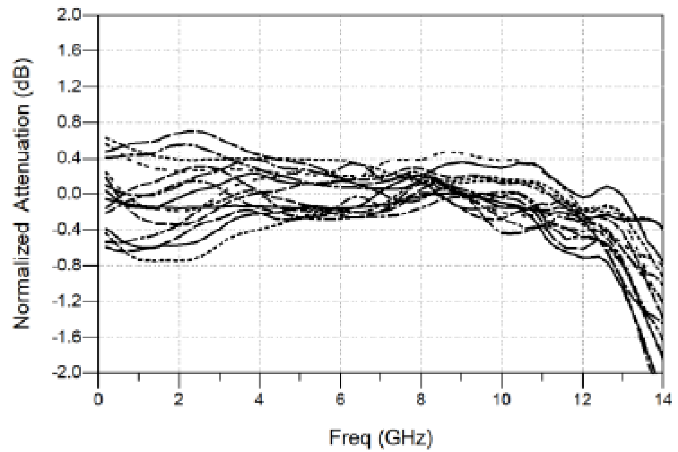
Full State Time Delay Phase Accuracy



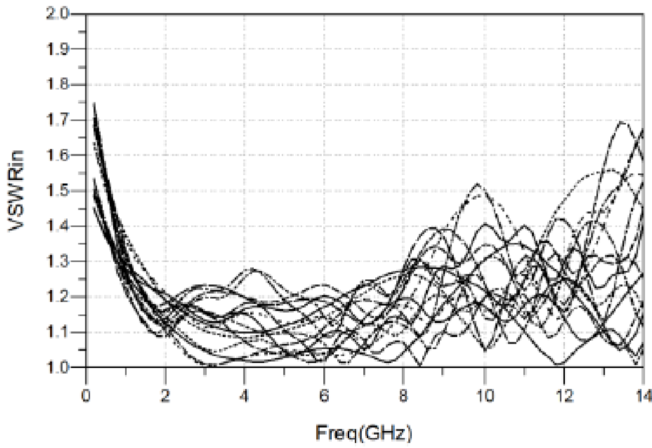
Full State Insertion Loss



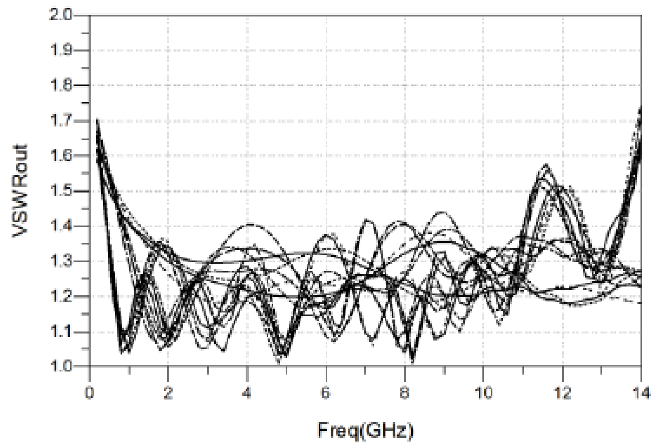
Full State Amplitude Modulation



VSWR RF1

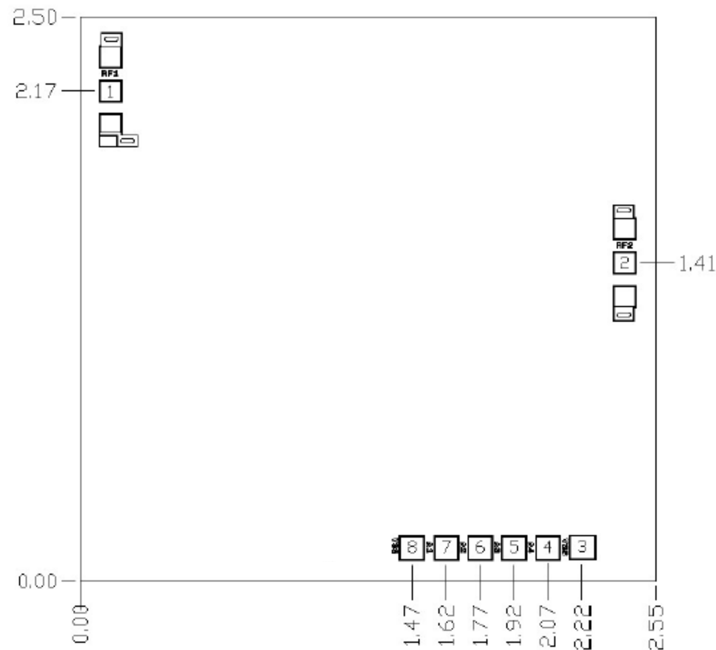


VSWR RF2



Outline Drawing:

All Dimensions in mm



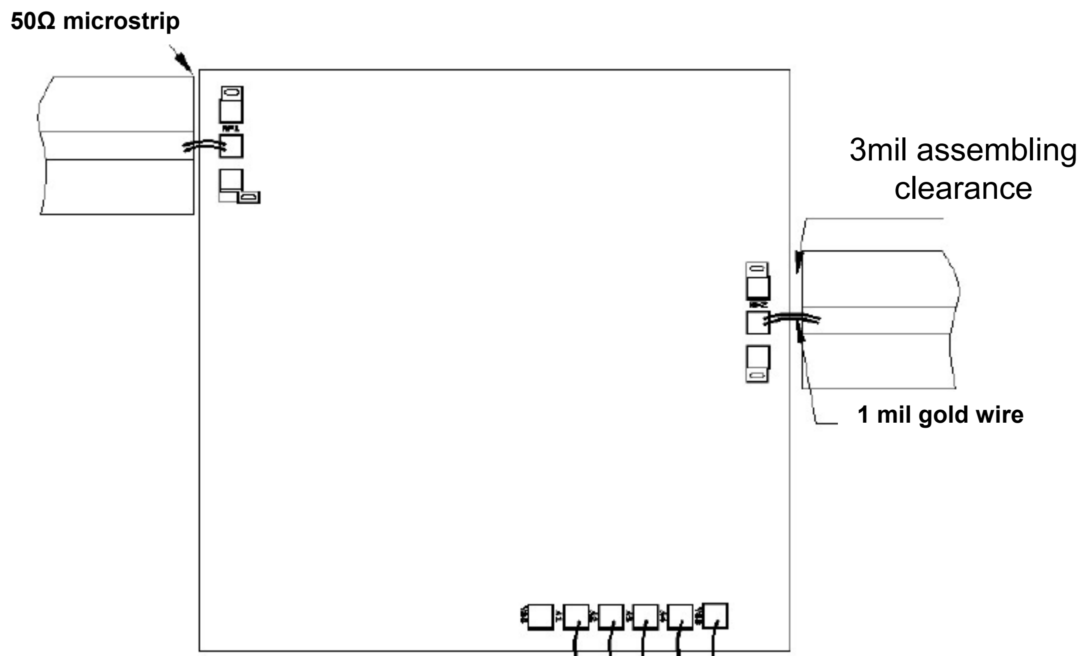
Pad Description

Pad Number	Function	Description
1， 2	RF1, RF2	RF port and DC coupled with 50 Ohm. If RF voltage is not 0V, external DC blocking capacitor is needed.
3， 8	VSS	Power supply port； choose any of them to connect -5V power supply.
4-7	A4-A1	Control signal input port; see true table.
Die bottom	GND	Die bottom must be connected to RF/DC ground.

True Value Table

	A1	A2	A3	A4
Reference State	0	0	0	0
26ps	1	0	0	0
52ps	0	1	0	0
104ps	0	0	1	0
208ps	0	0	0	1
"0" level range: 0 ~ 0.8V; "1" level range : 2.3 ~ 5V;				

Assembly Drawing



Notes:
1. Die thickness: 75um
2. Typical bond pad is 100*100 μm^2
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die is grounded
6. No connection required for unlabeled bond pads

Maximum Ratings:
1. RF input power: +24dBm
2. Storage temperature: -65℃ to +150℃
3. Operating temperature: -55℃ to +85℃