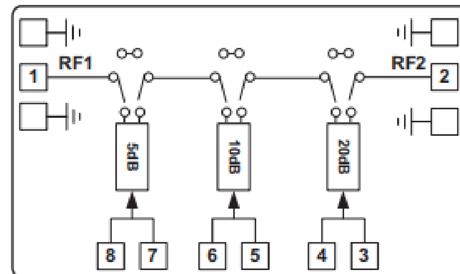
GaAs pHEMT MMIC
3-Bit Digital Control Attenuator
0.5-18 GHz

Features

- Attenuation Range:5dB- 35dB
- Attenuation Accuracy: ±0.2dB
- Insertion Loss : 4.5dB
- Attenuation Additional Phase Shift: ±6°
- Impedance: 50Ω
- Die Size: 2.0 x 1.0 x 0.1 mm

Functional Block Diagram



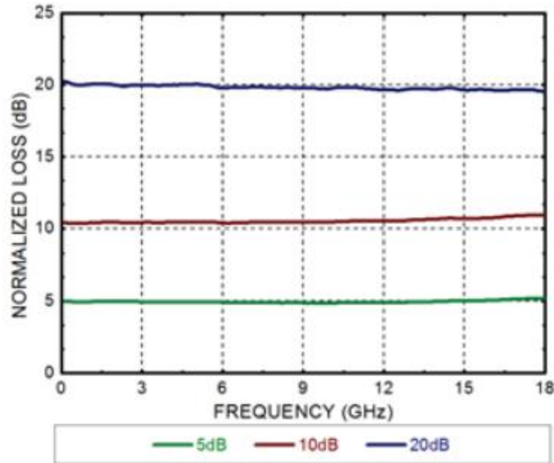
Typical Applications

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

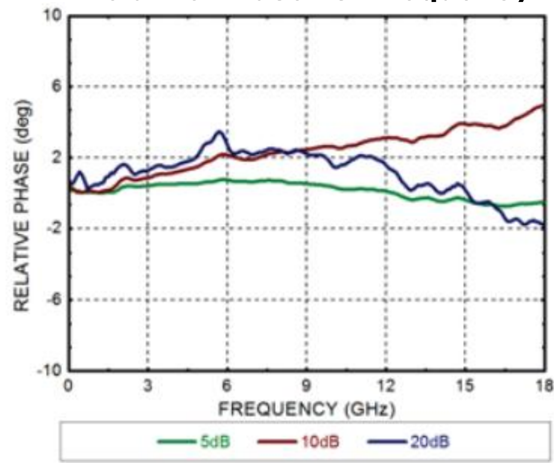
Electrical Specifications

TA = +25°C, Vctl = 0/-5V

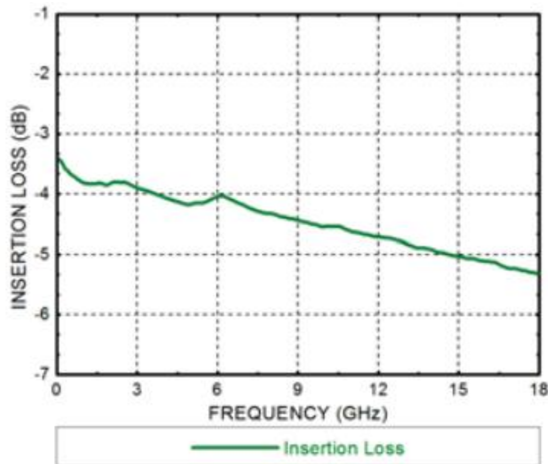
Parameters	Min.	Typ.	Max.	Units
Frequency		0.5-18		GHz
Insertion Loss		4.5		dB
Attenuation Range	5		35	dB
Return Loss (Direct State)		16		dB
Return Loss (Attenuation State)		15		dB
Input 1dB Compression (P1dB)		24		dBm
Switching Speed		30		ns



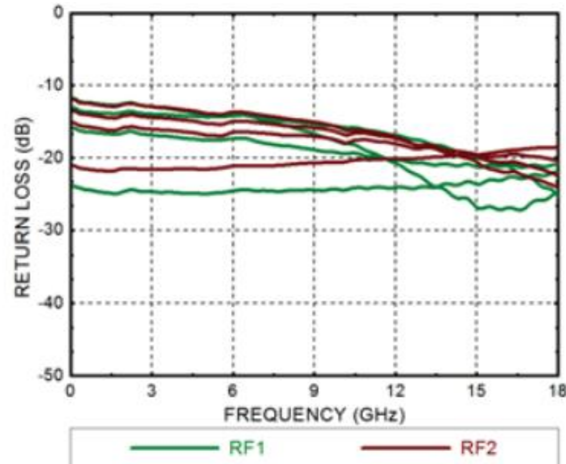
Attenuation
NORMALIZED LOSS (dB)
FREQUENCY (GHz)
5dB
10dB
20dB



Relative Phase vs. Frequency
RELATIVE PHASE (deg)
FREQUENCY (GHz)
5dB
10dB
20dB



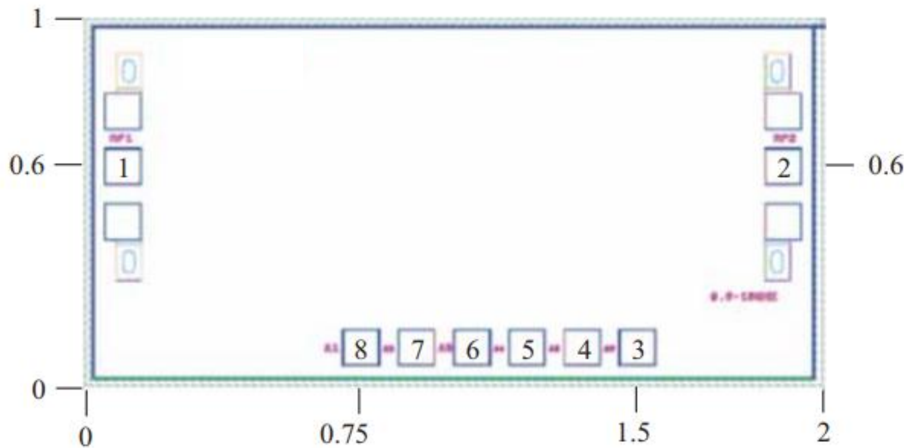
Insertion Loss
INSERTION LOSS (dB)
FREQUENCY (GHz)
Insertion Loss



Return Loss
RETURN LOSS (dB)
FREQUENCY (GHz)
RF1
RF2

Outline Drawing:

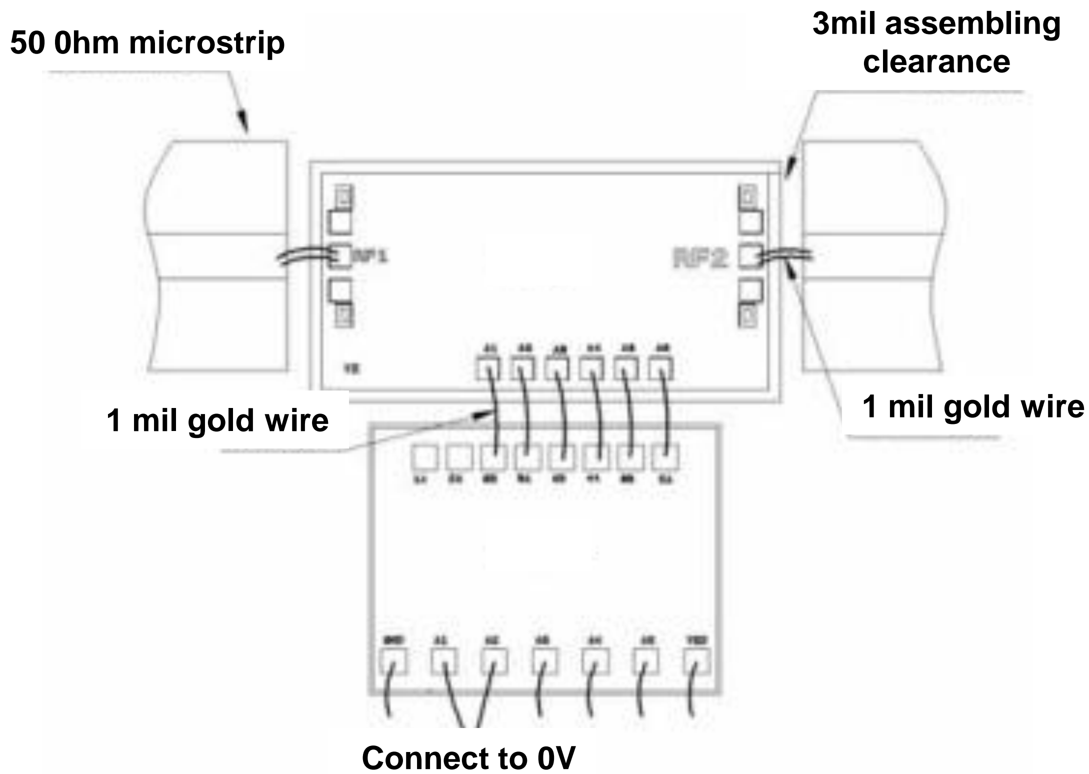
All Dimensions in mm



Pad Description

PAD	Function	Description
1	RF1	This pad is RF port and matched to 50Ω Impedance
2	RF2	This pad is RF port and matched to 50Ω Impedance
3, 4	A6, A5	A 6= -5 V, A5= 0 V, pass-through ; A6=0V, A5= -5V, decaying 20dB.
5, 6	A4, A3	A 4= -5 V, A3= 0 V, pass-through ; A4=0V, A3= -5V, decaying 10dB.
7, 8	A2, A1	A 2= -5 V, A1= 0 V, pass-through ; A2=0V, A1= -5V, decaying 5dB.
Die Bottom	GND	Die bottom must be connected to RF/DC ground

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: +24dBm
2. Storage temperature: -65℃ to +175℃
3. Operating temperature: -55℃ to +85℃