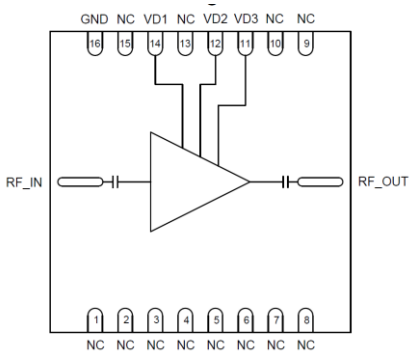
18 – 40 GHz Low Noise Amplifier

Features

- **Frequency Range : 18-40 GHz**
- **Nominal Gain : 16 dB**
- **Noise Figure : 4.5 dB**
- **Output P1dB : 8 dBm**
- **Self-bias operation**
- **DC decoupled Input and Output**
- **Package Dimension: 5mm x 5mm x 0.6mm**

Functional diagram



Typical Applications

- Radar
- Military
- Test Equipment and Sensors.

Description

The ASL1036P5 is a Low Noise Amplifier MMIC packaged in QFN package size of 5mm x 5mm x 0.6mm, It is designed to operate over the frequency band of 18 to 40 GHz. The LNA uses 3 stages of amplification and provides 16dB of gain with noise figure better than 4.5dB over the band. The amplifier is matched to 50ohms over the entire operating bandwidth having input & output return losses better than 10dB. The LNA has P1 dB of 8dBm over the entire operating frequency band. The amplifier operates on a single 4V DC supply with a current consumption of 100mA (typ).The LNA die is fabricated using InGaAs pHEMT technology.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum	Units
Positive DC voltage	+6	V
RF input power	+20	dBm
Supply Current	200	mA
Operating Temperature	-55 to +85	^{o}C
Storage Temperature	-65 to +150	^{o}C

1. Operation beyond these limits may cause permanent damage to the component

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Electrical Specifications[(1)] @ T_A = 25 °C, Z_o = 50Ω,

Parameter	Min.	Typ.	Max.	Units
Frequency	18		40	GHz
Gain	-	16	-	dB
Gain Flatness	-	±1.5	-	dB
Noise Figure	3.5	4.5	5.0	dB
Input Return Loss	7	10	-	dB
Output Return Loss	-	10	-	dB
Output Power (P_1dB)		8		dBm
Supply Voltage		4		V
Supply Current		100		mA

Note:

1. Electrical specifications as measured on PCB mounted QFN package.

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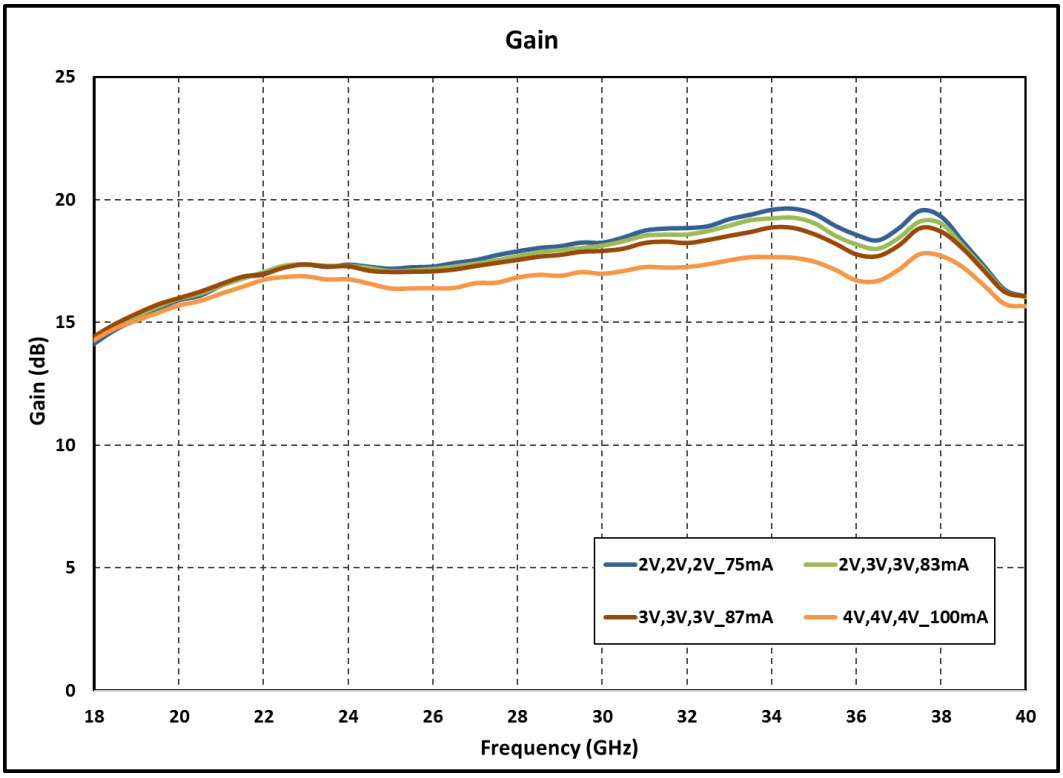
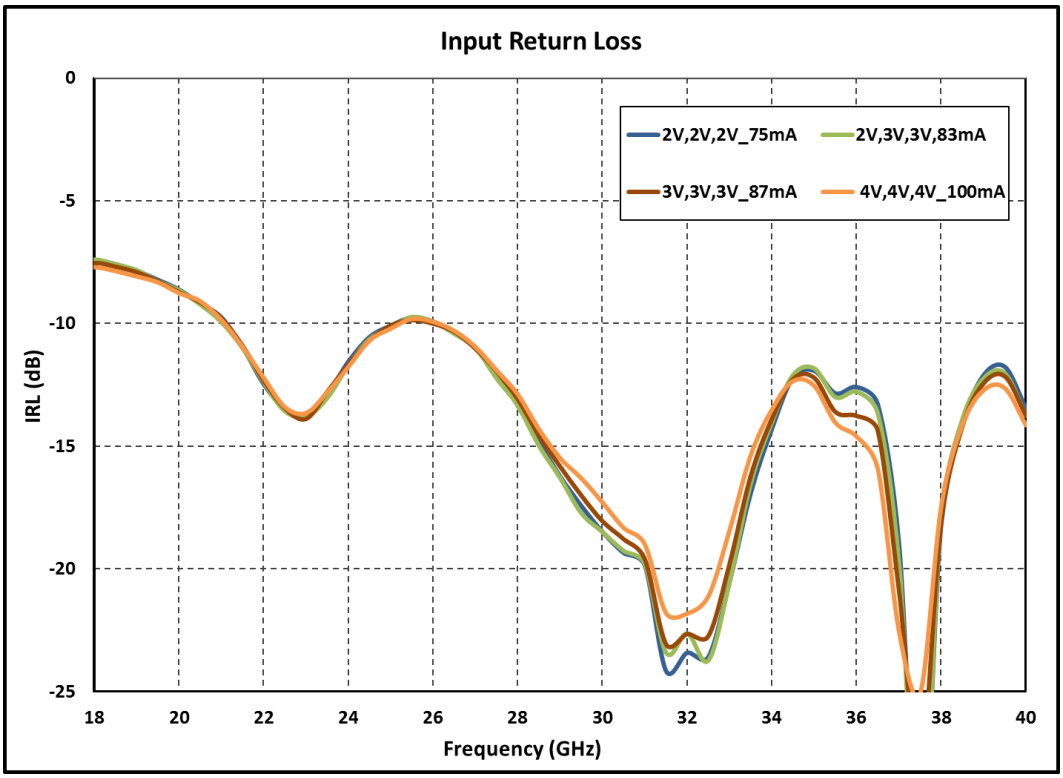
Test Fixture data

Vd, Vd2,Vd3 @ different Bias Voltages, Total Current = 80mA min, T_A = 25 ^oC





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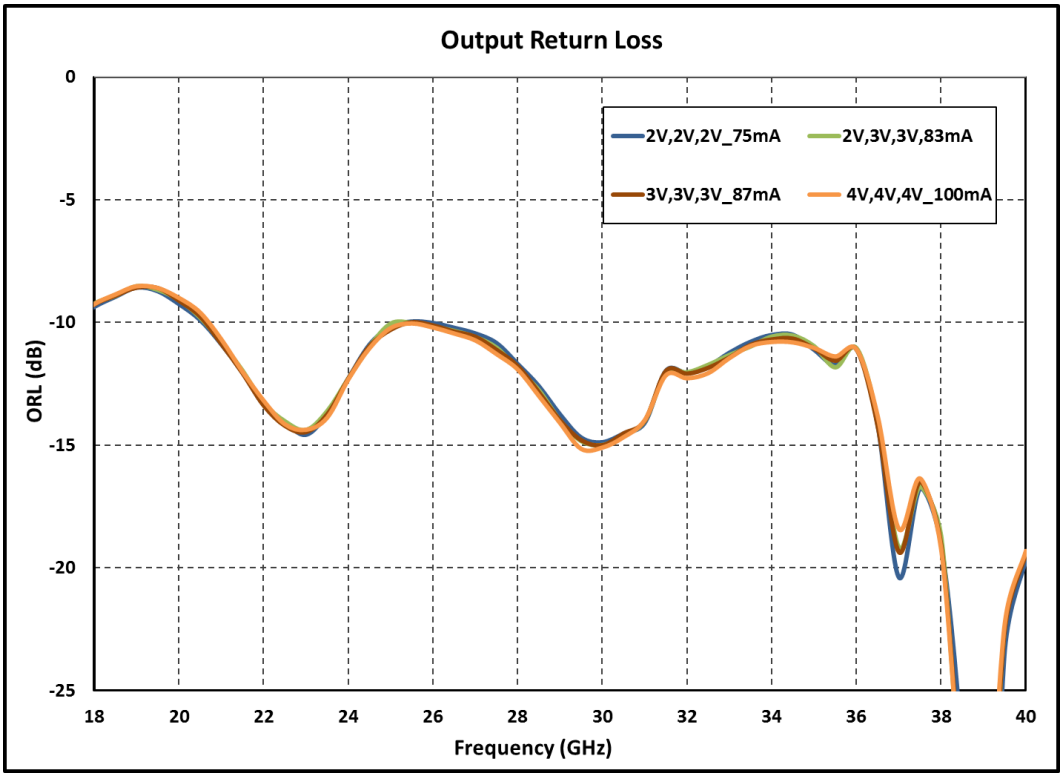

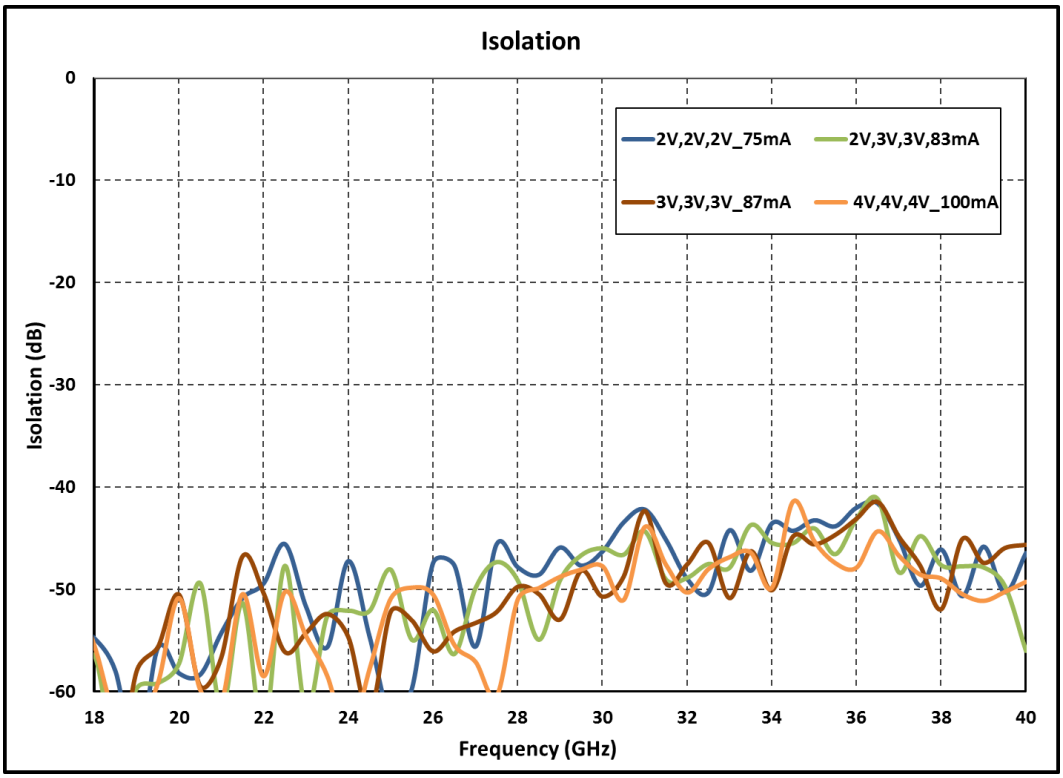

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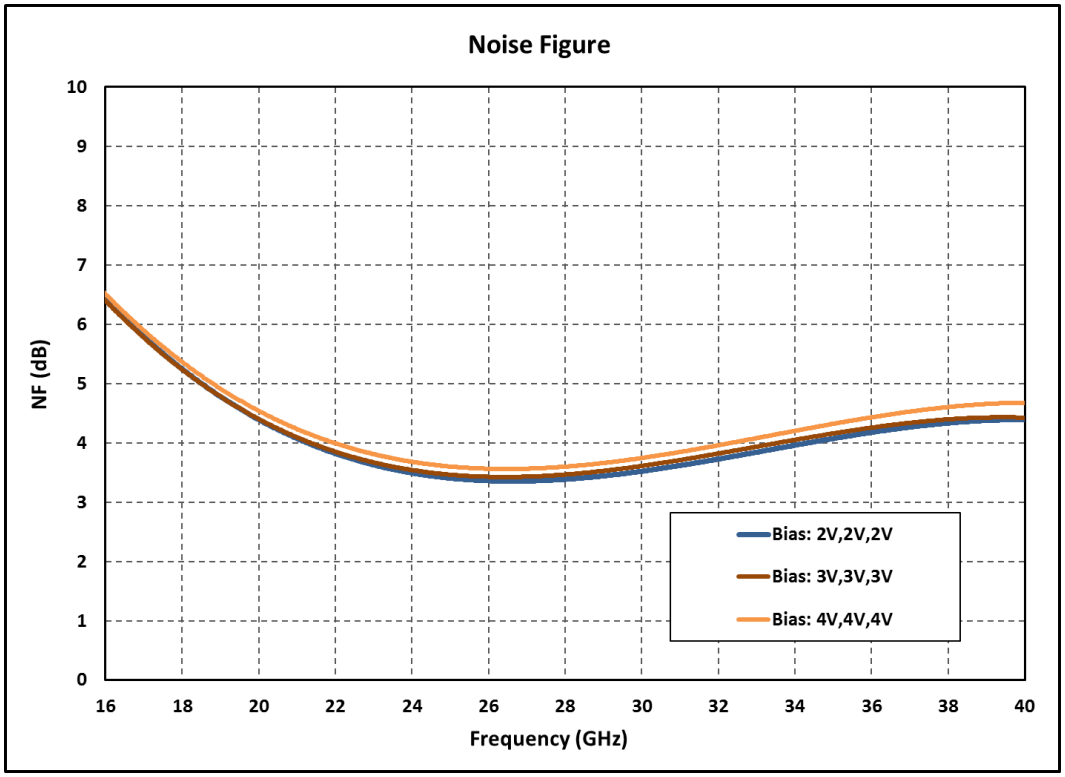

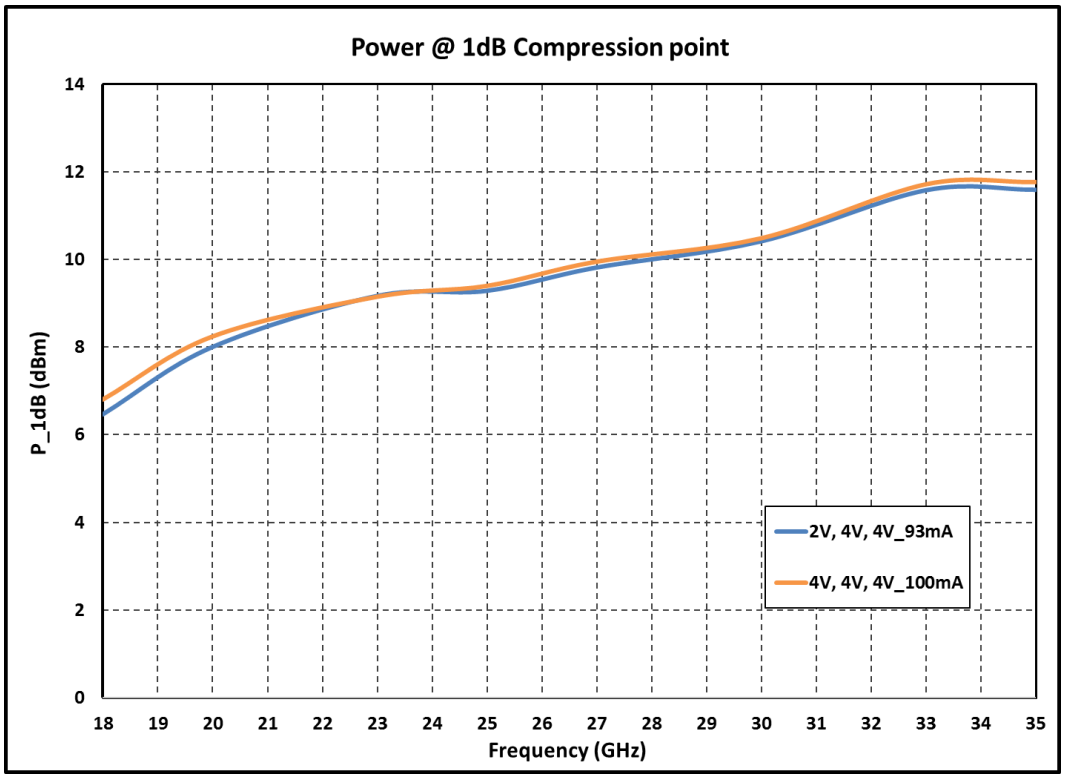

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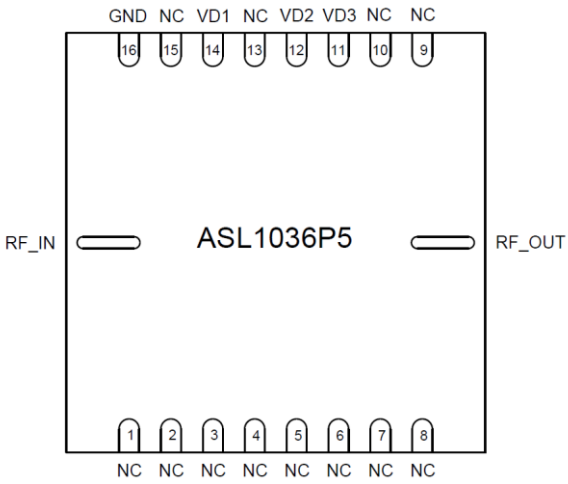
Pin Configuration Details



Pin Description:

Pin 14 : VD1
Pin 12 : VD2
Pin 11 : VD3
Pin 16 : Ground

***Package has dedicated pins for RF_IN and RF_OUT**

Remaining all other pins are NC (No Connection)

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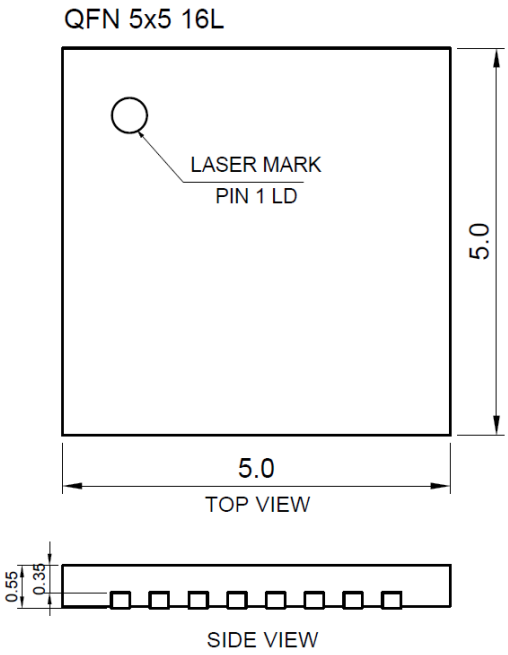
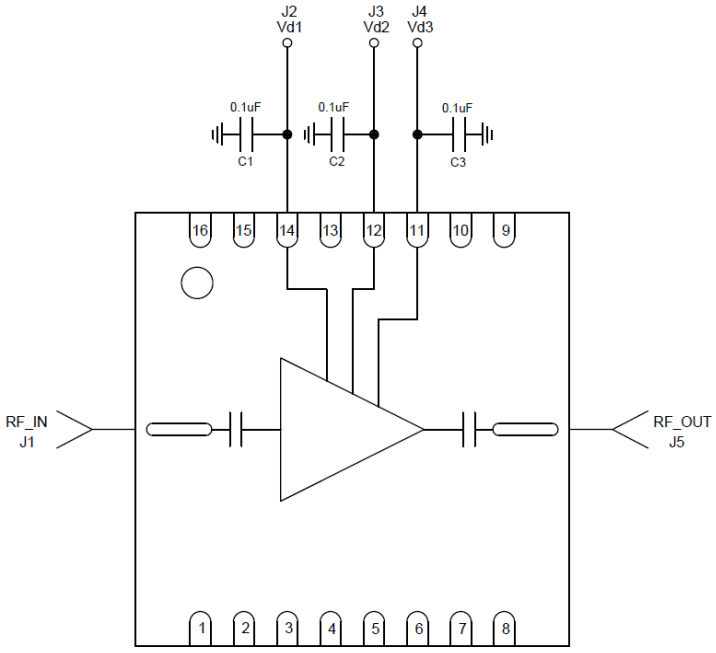
QFN package outline



Application Circuit



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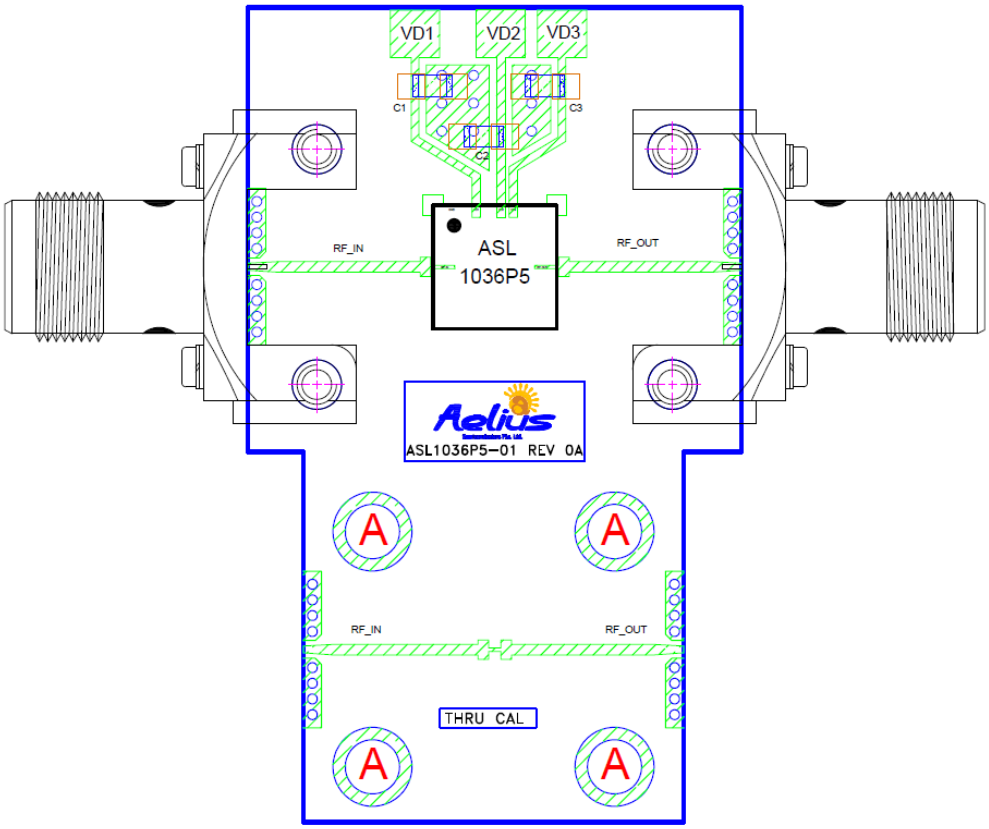
Recommended Assembly Diagram



Bill of Material

Component ID	Value	Description	Manufacturer	Part Number	QTY.
C1	0.1µF	CAP MCC 0.1UF±10% 10V 0603 X7R	Digi-Key	0603ZC104KAT2A	3

Note:

1. Input and output 50 ohm lines are on 8 mil RO4003 substrate
2. 0.1 µF capacitors may be additionally used as a second level of bypass for reliable operation

GaAs MMIC devices are susceptible to Electrostatic discharge. Proper precautions should be observed during handling, assembly & testing.

All information and Specifications are subject to change without prior notice.

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