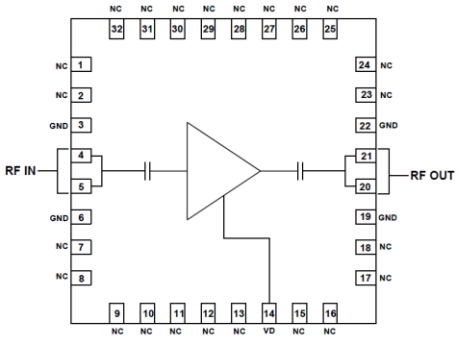
4.5 – 6.0 GHz Low Noise Amplifier

Features

- **Frequency Range: 4.5-6.0 GHz**
- **20dB Nominal Gain**
- **Noise Figure: 1.7 dB(Typ)**
- **Input Return Losses : 8dB(Typ)**
- **Output Return Loss : 15dB(Typ)**
- **Output P1dB ~ 13dBm @ 4V Operation**
- **Self-bias 2V operation**
- **DC decoupled Input and Output**
- **32 Lead 5X5 mm QFN Package**

Functional Diagram



Typical Applications

- Radar
- Military
- Test Equipment and Sensors.

Description

The ASL1026P5 is a Low Noise Amplifier MMIC packaged in QFN package of 5mm x 5mm, it is designed to operate over the frequency band of 4.5 to 6.0 GHz. The LNA uses 2 stages of amplification and provides ~20dB of gain with noise figure ~1.7dB over the band. The amplifier is matched to 50ohms over the entire operating bandwidth having input & output return losses are 8dB and 15dB respectively. The amplifier operates on a +2V DC supply with a minimal current consumption of 40mA (Typ). The LNA has higher P1 dB of 13dBm over the entire operating frequency band at 4V operation.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum	Units
Positive DC voltage	+6	V
RF input power	+20	dBm
Supply Current	100	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 @ TA = 25 oC, Zo = 50Ω,
VD = +2V, Total Current=40mA.

Parameter	Min.	Typ.	Max.	Units
Frequency	4.5		6.0	GHz
Gain (1)	-	20	-	dB
Gain Flatness(1)	-	±0.5	-	dB
Noise Figure (1)	1.4	1.7	1.9	dB
Input Return Loss (1)	6	8	-	dB
Output Return Loss (1)	12	15	-	dB
Output Power (P_1dB) (1)		7(1)/13(2)		dBm
Supply Voltage		2		V
Supply Current		40		mA

Note:

1. Electrical specifications as measured in test fixture.
2. 13dBm P1dB can be achieved by operating drain supply voltage is at 4V@55mA.

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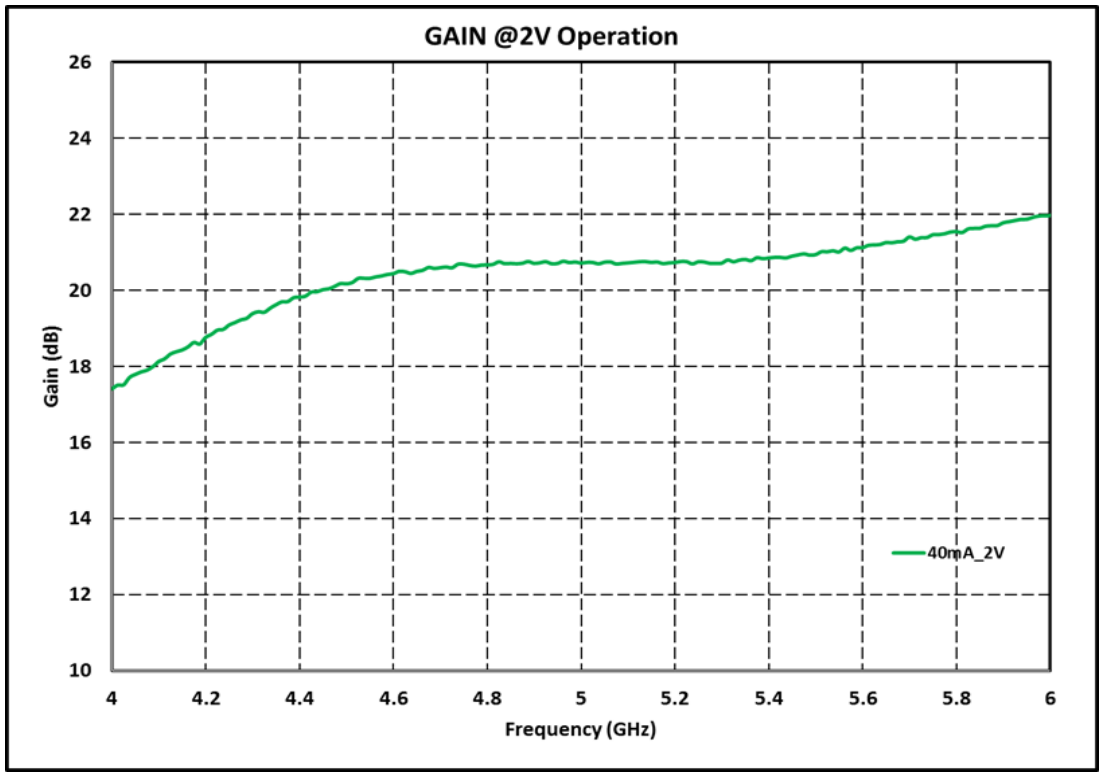
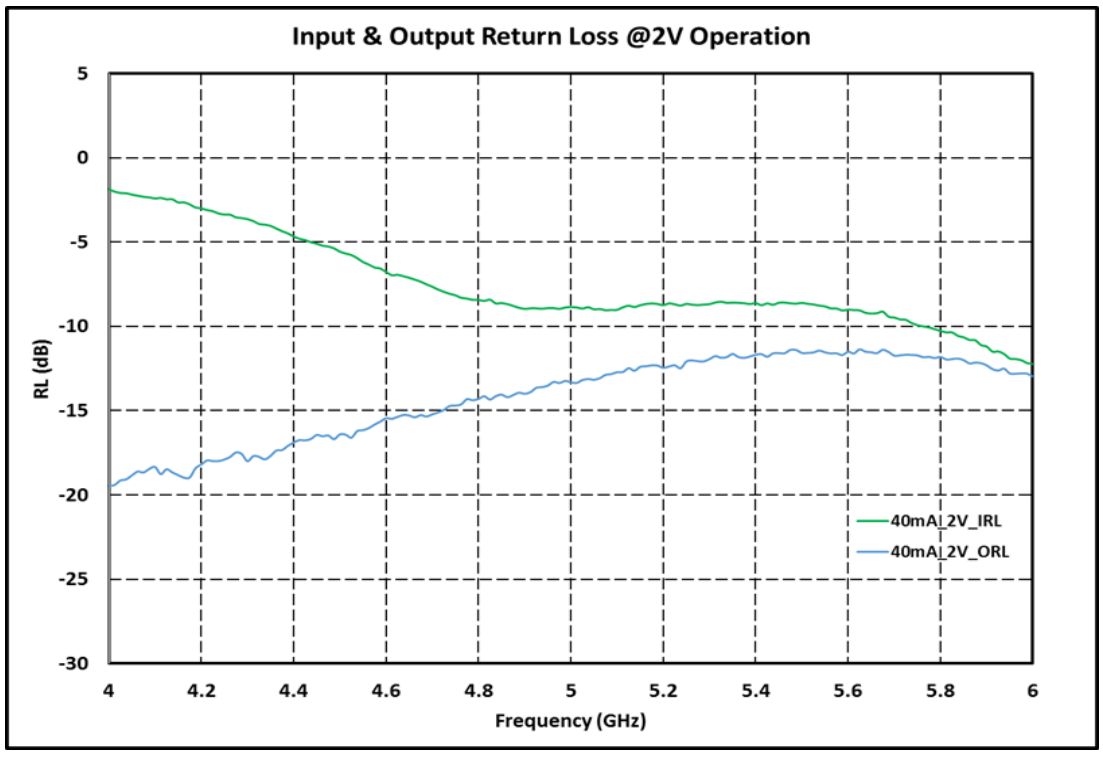
Test fixture data@ T_A = 25 ºC, Z_o =50 Ω

V_d = +2V, Total Current =40mA





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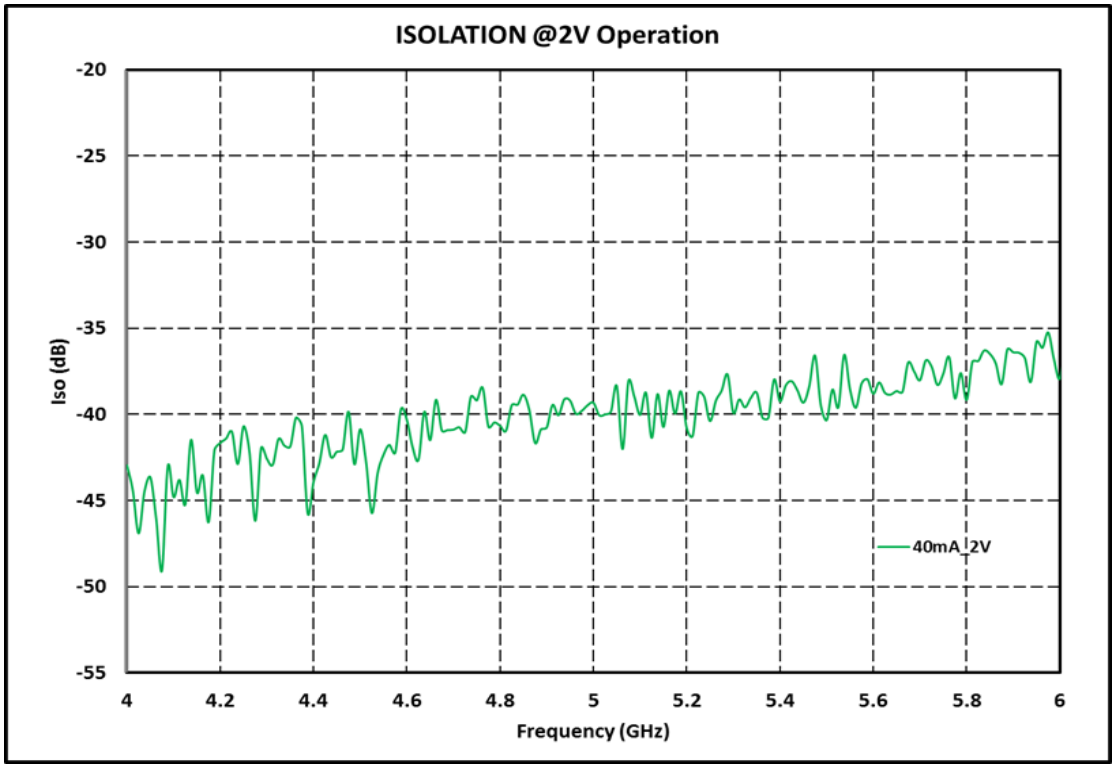

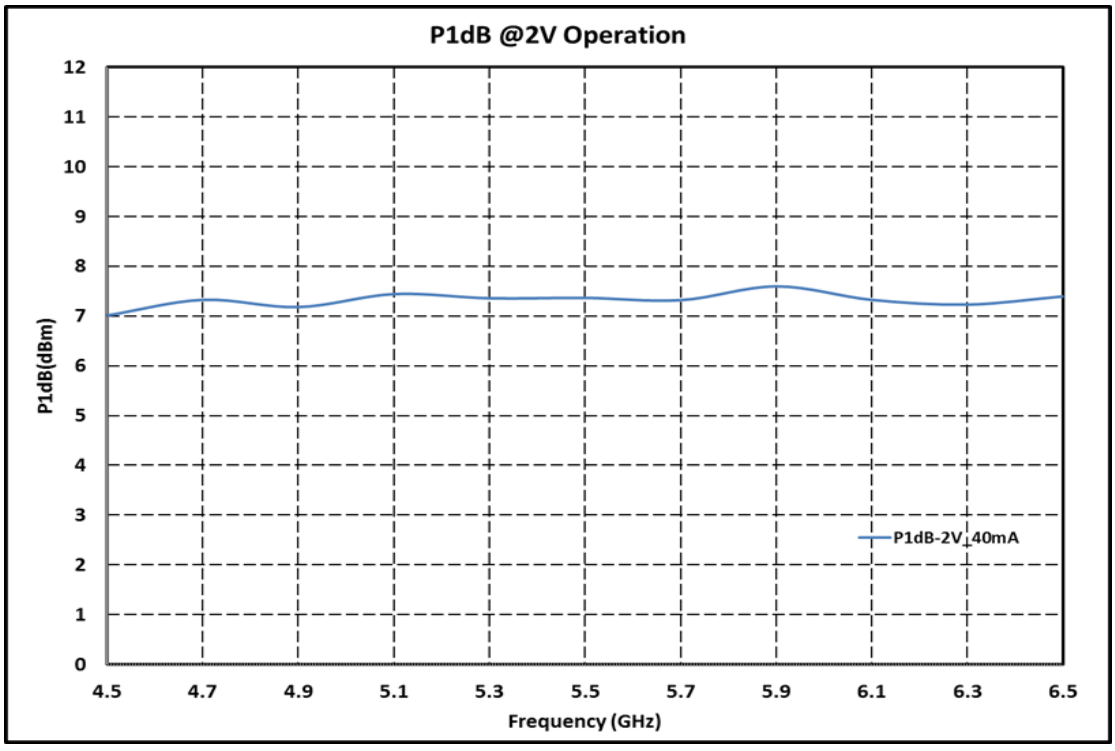

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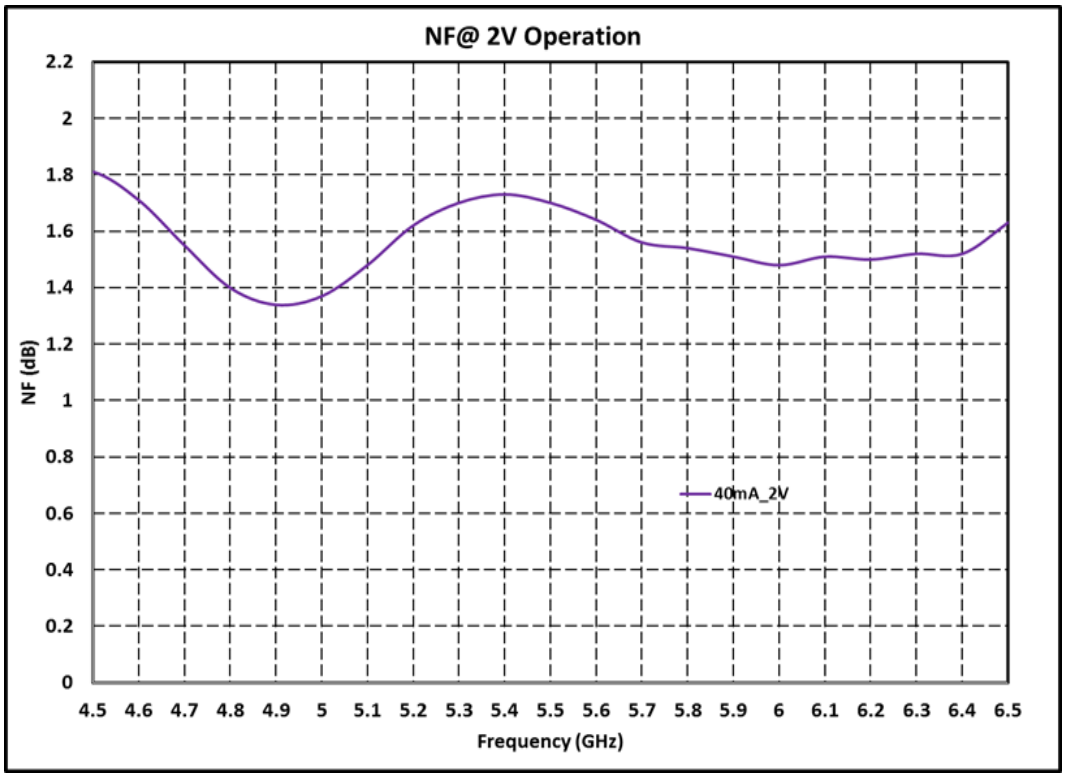

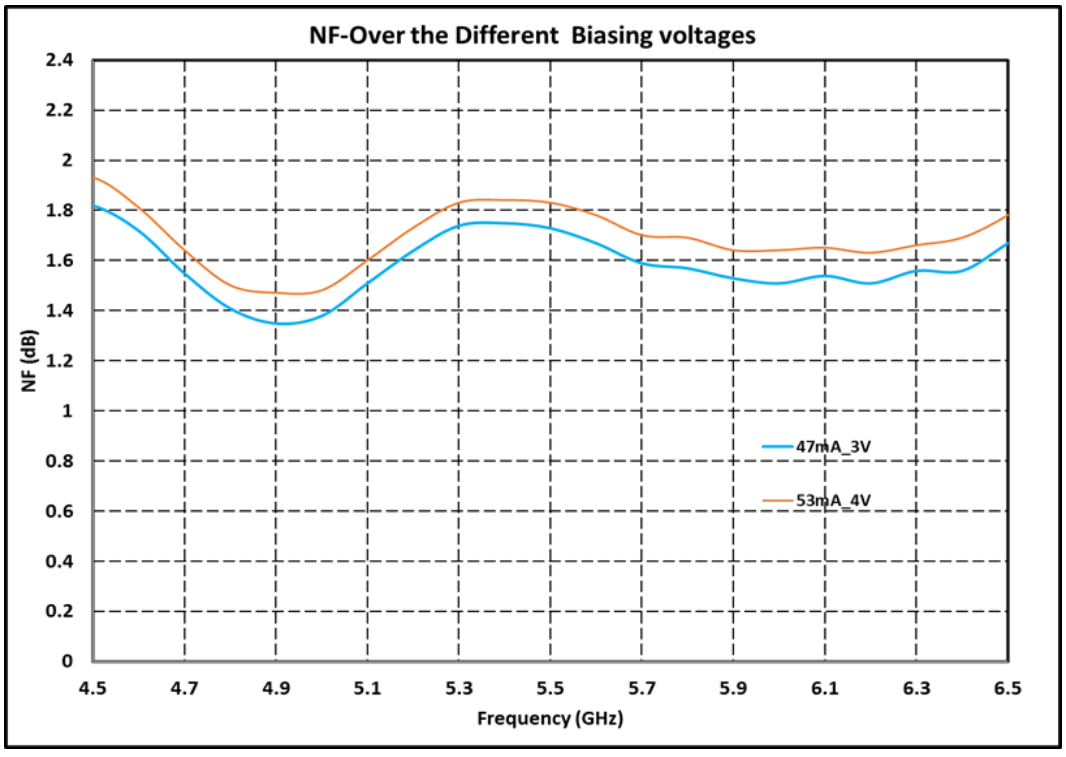

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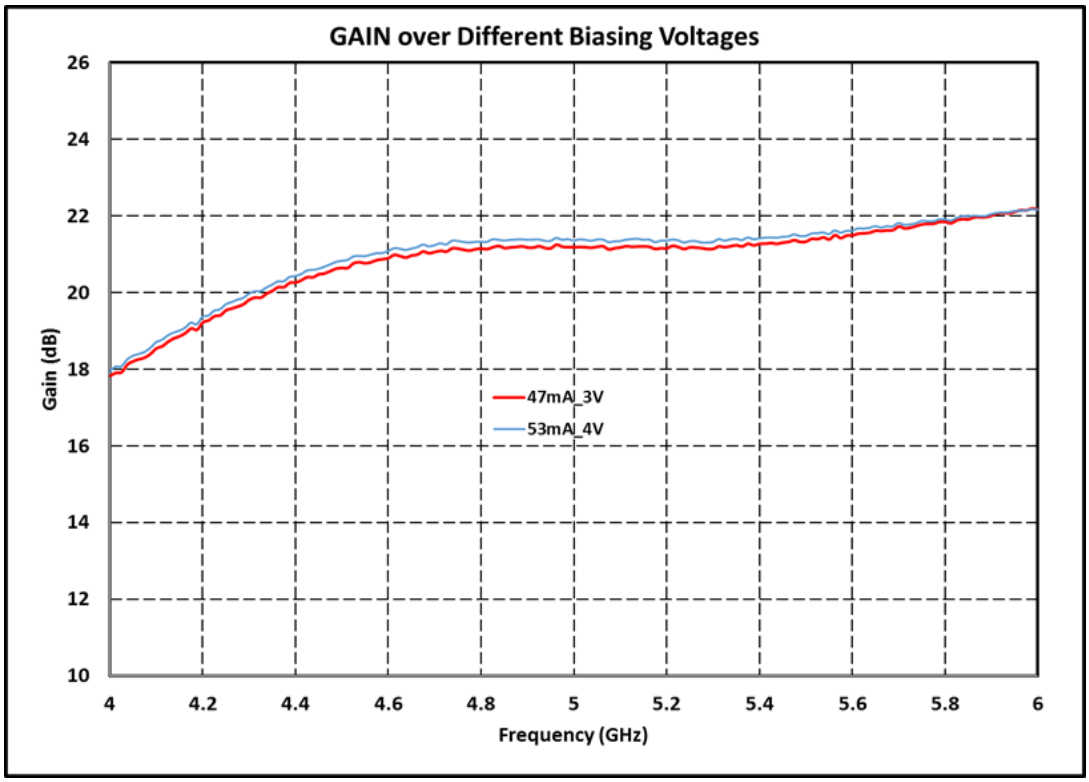
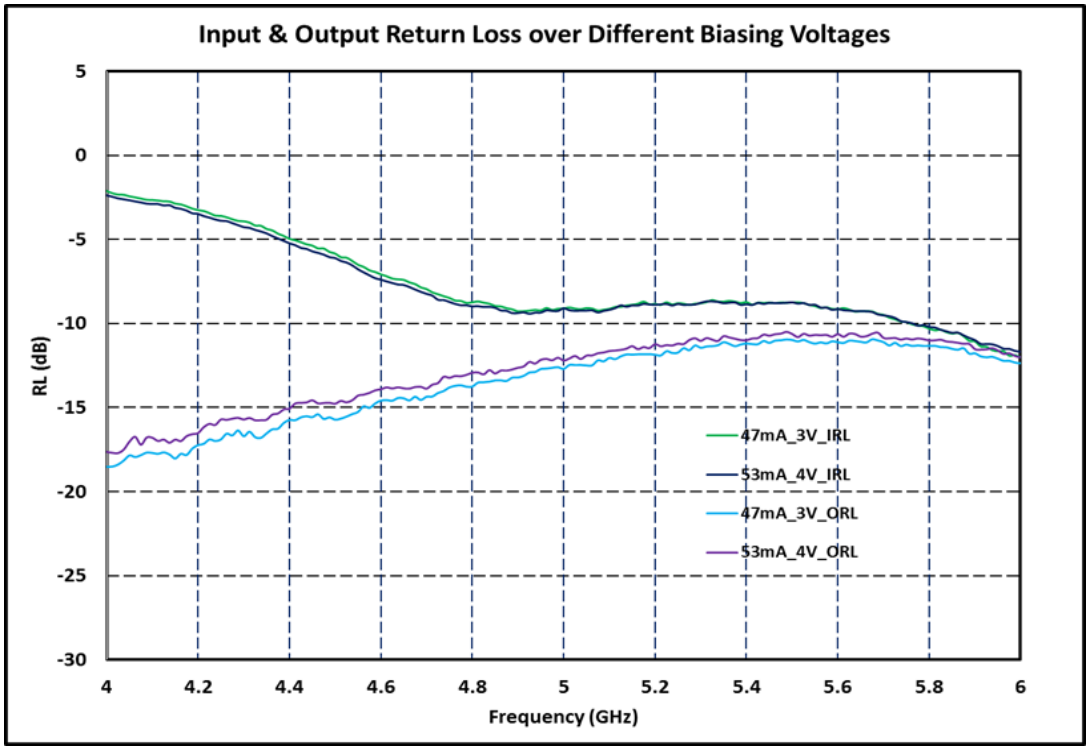
At Different Biasing Conditions





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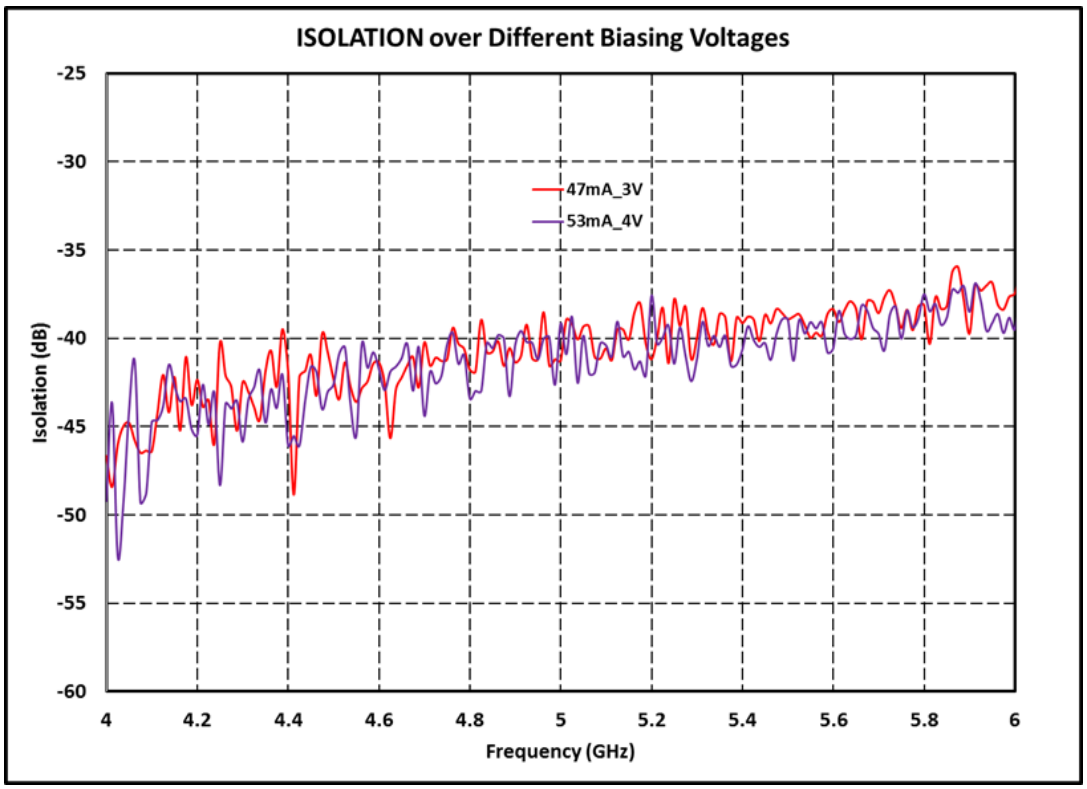

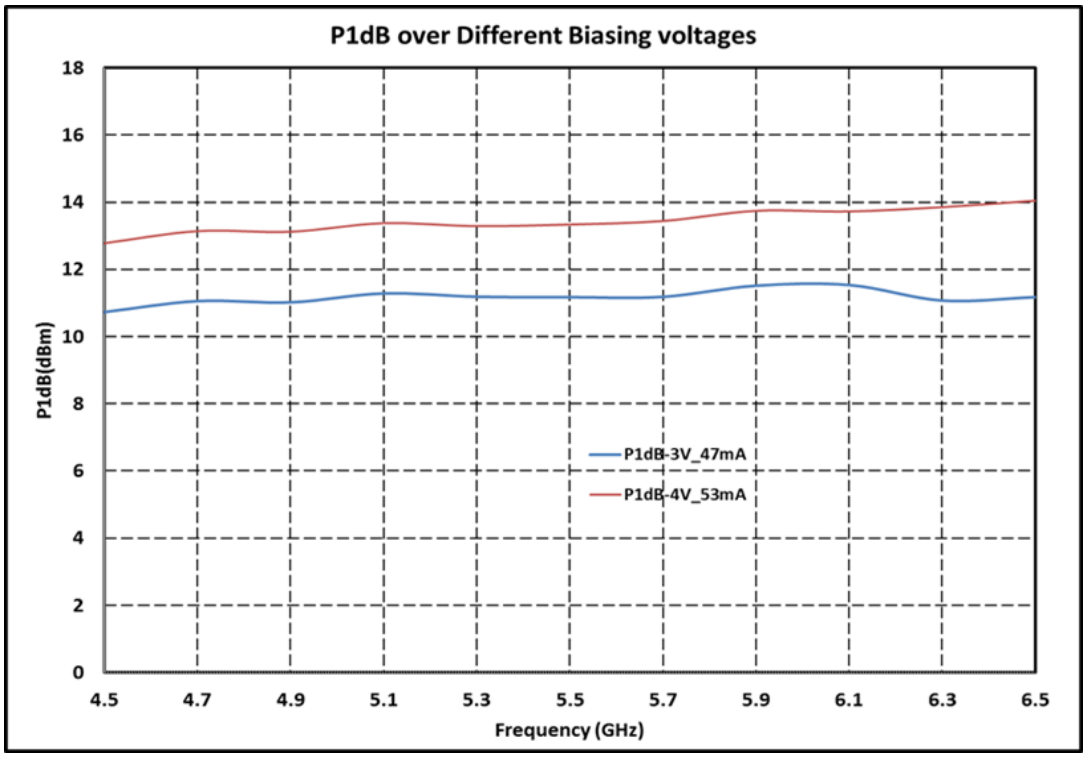

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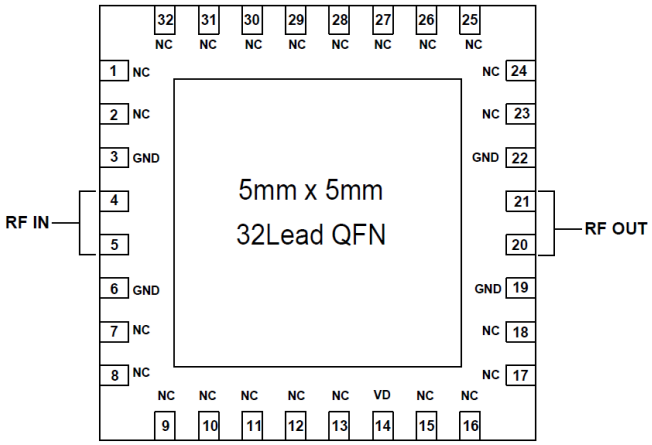
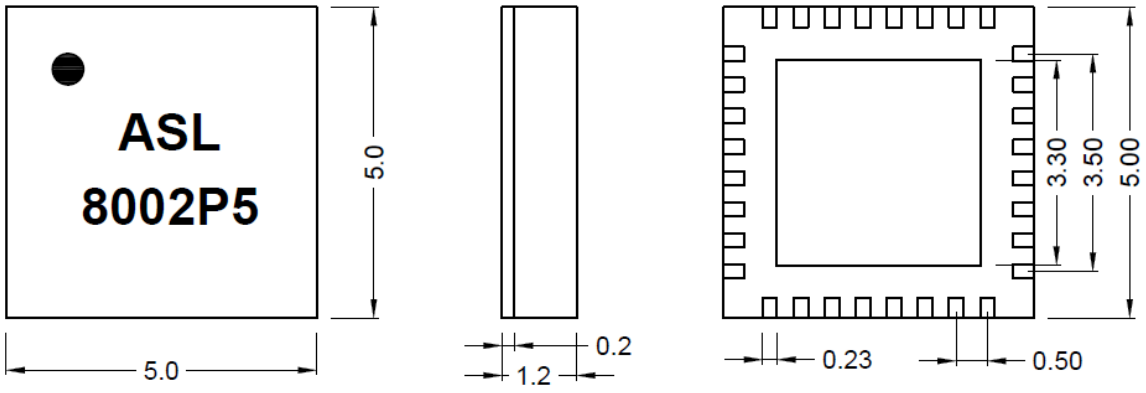
Pin Configuration Details



Pin Description:

PIN	Function	Description
14	VD	DC SUPPLY Voltage
3,6,19,22	GND	Ground
4,5	RF IN	RF Input
20,21	RF OUT	RF Output
1,2,6,7,8,9,10,11,12,13,15,16,17,18, 23,24,25,26,28,29,30,31,32	NC	No Connection

Package Outline Drawing



TOP VIEW BOTTOM VIEW

Note: All dimensions are in Millimeters.

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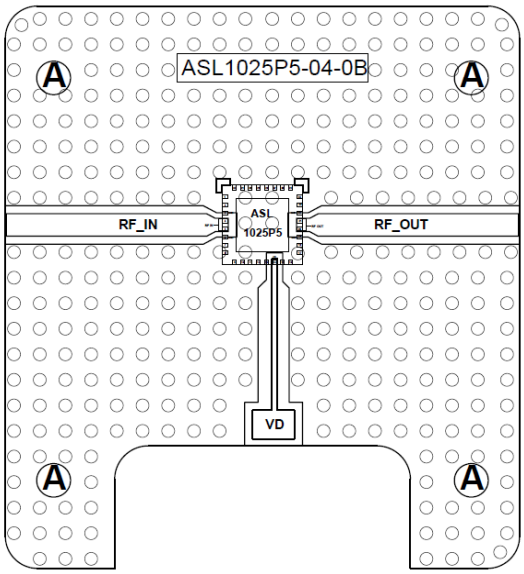
Recommended Assembly Diagram



Note:

1. Circuit board material: RT Duroid 5880
2. Input\Output signal lines have 50Ω impedance
3. No off chip components required.

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.