

## 2-18GHz 2Watt GaN Driver Amplifier

### Features

- ◆ Frequency Range: 2 - 18GHz
- ◆ Gain: 8dB(Typ.)
- ◆ Output P1dB: 33dBm
- ◆ Psat: 35dBm
- ◆ Return Losses: >9dB
- ◆ GaN Technology
- ◆ 7x7mm 28 Lead QFN Plastic Package
- ◆ DC decoupled input and output
- ◆ Dual bias operation

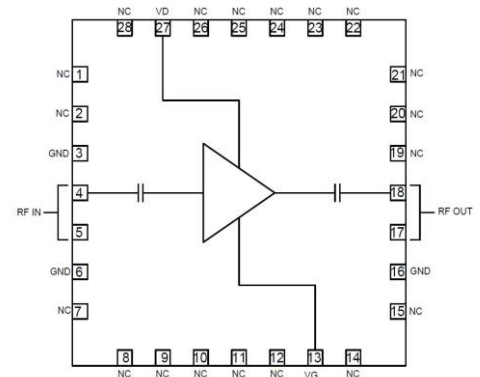
### Typical Applications

- ◆ Radar
- ◆ Military & Space
- ◆ Instrumentation

### Description

The ASL4046P7 is a Gallium nitride broad band Power Amplifier which covers frequency range from 2-18GHz. It features 8dB Gain with input and output return losses better than 9dB (typ) over the operating frequency band. This amplifier features wide bandwidth, flat gain with saturated output power greater than 35dBm over the bandwidth. The circuit grounds are provided through on chip vias to the back side metallization.

### Functional Diagram



### Absolute Maximum Ratings<sup>1</sup>

Parameter	Absolute Maximum	Units
Drain supply voltage	+35	volts
Drain current ( $I_{dq}$ )	1	A
RF input power at $V_d=25V$	35	dBm
Operating temperature	-50 to +85	°C
Storage Temperature	-65 to +150	°C

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

**Electrical Specifications @  $T_A = 25\text{ }^\circ\text{C}$ ,  $Z_o = 50\Omega$ ,**

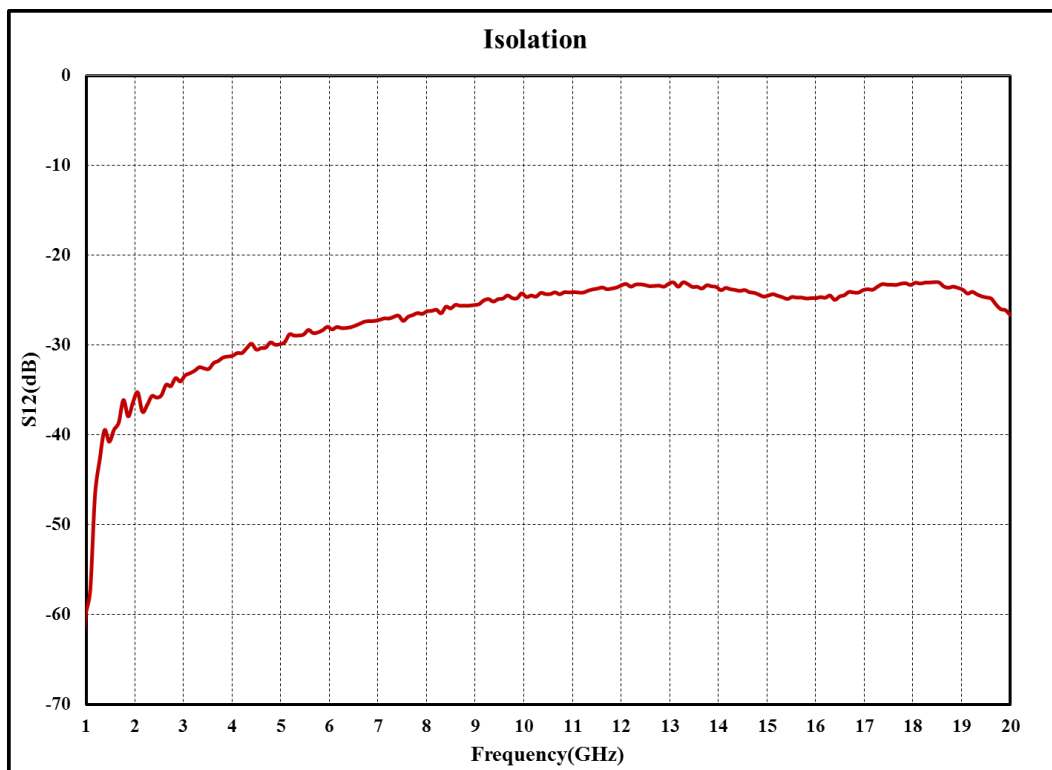
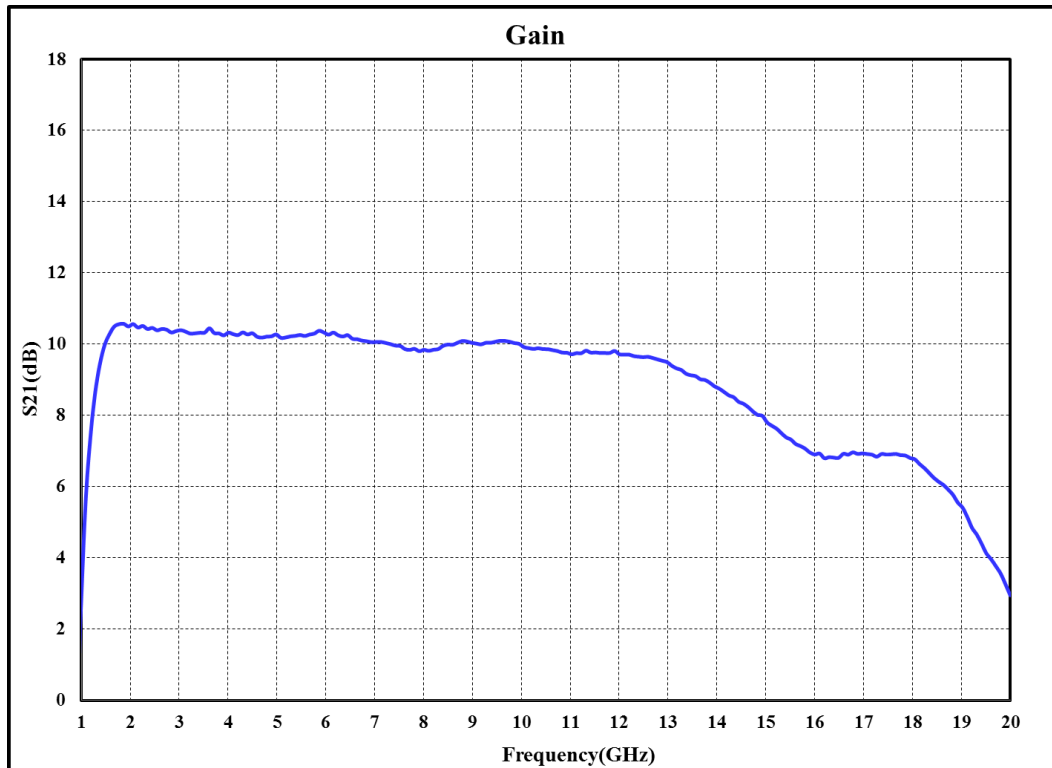
Parameter	Typical Values	Units
Frequency Range	2 - 18	GHz
Gain	8	dB
Gain Variation	$\pm 1.5$	dB
$P_{\text{sat}}$	35	dBm
P1dB	33	dBm
Input Return Loss	9	dB
Output Return Loss	9	dB
Voltage	25	V
Current( $I_{\text{dq}}$ )	600	mA

**Note:**

1. The above parameters specified are measured in 50-Ohm test fixture.
2. Adjust  $V_g$  between -4V to 0V to achieve  $I_{\text{dq}} = 600\text{mA}$  (Typical)

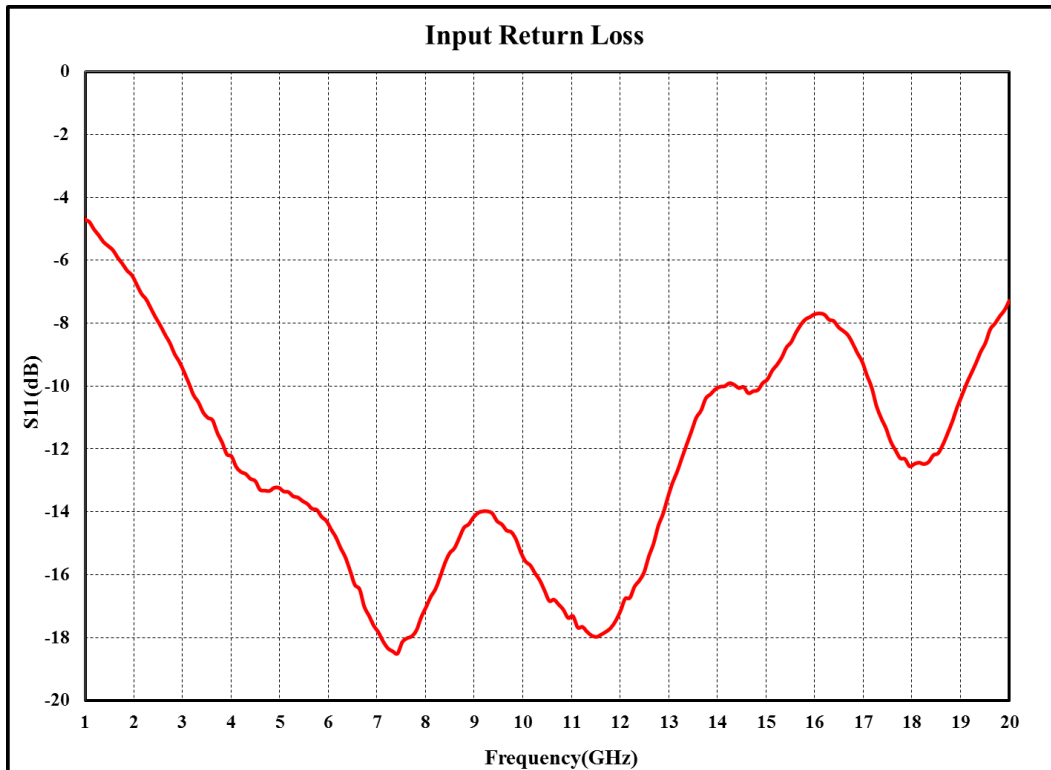
**Test Fixture Data @ Vd = 25V/600mA**

TA = 25 °C, Zo=50 Ω



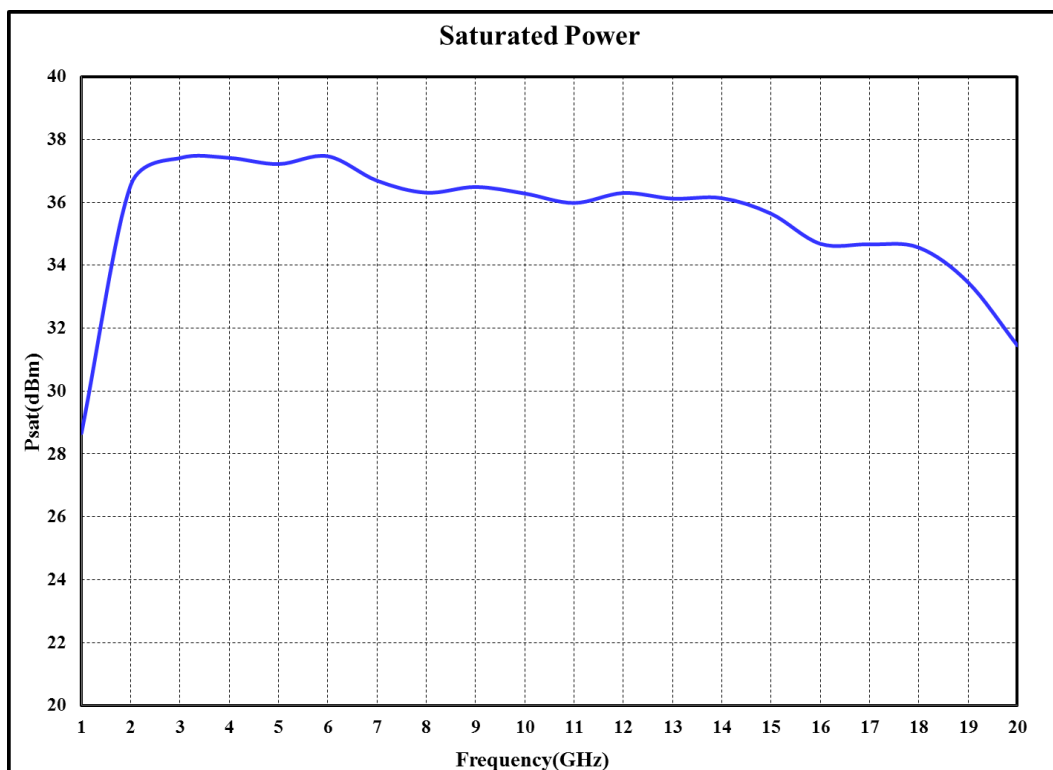
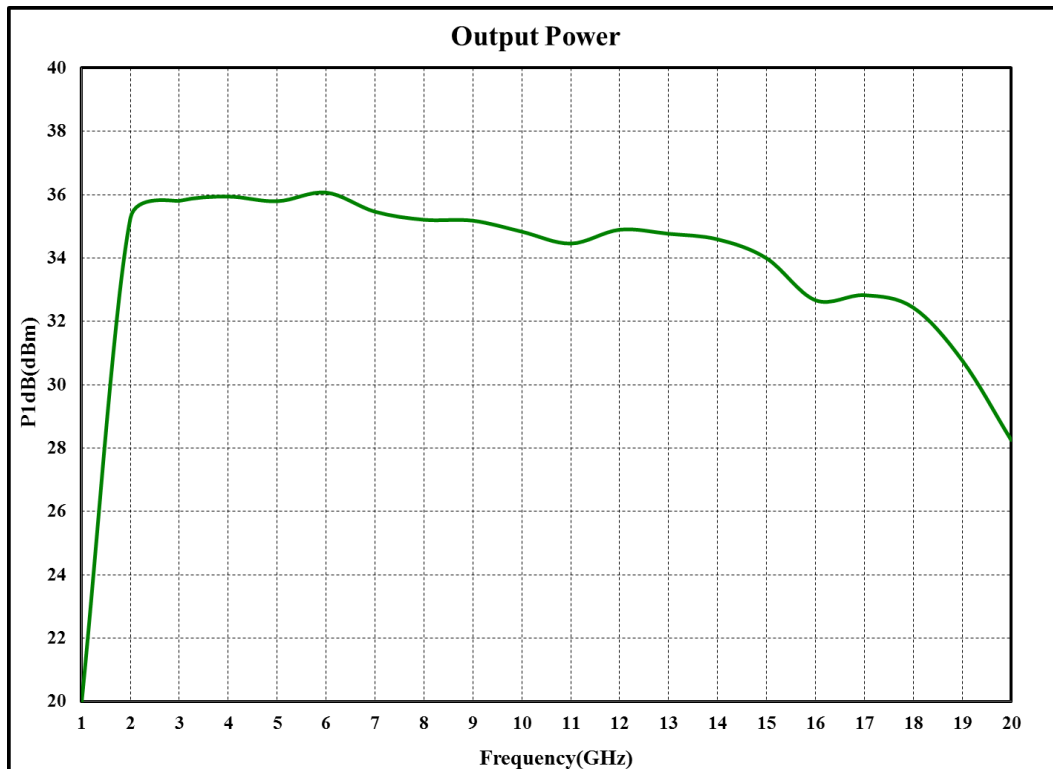
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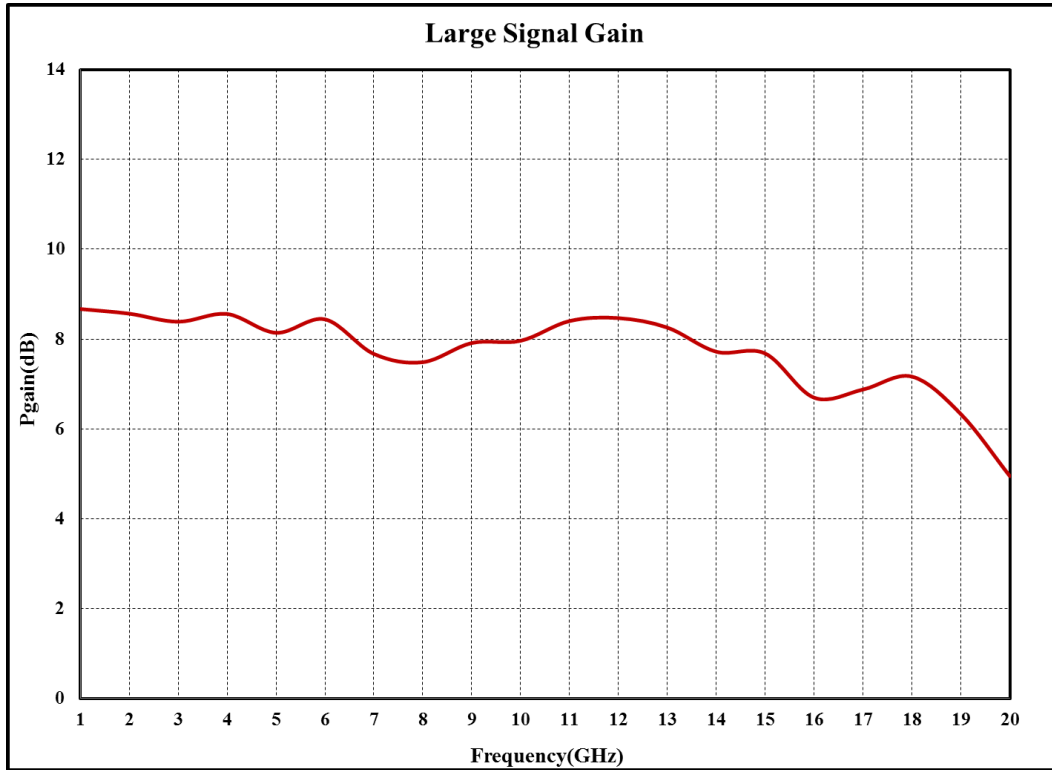
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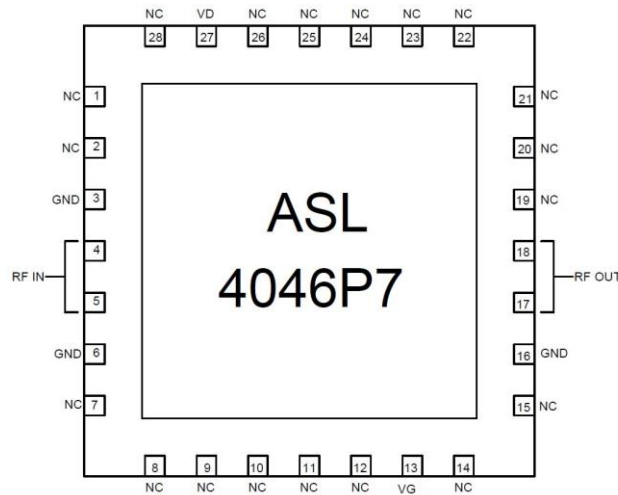


**Test Fixture Data @ Vd = 25V/600mA**

TA = 25 °C. Zo=50 Ω

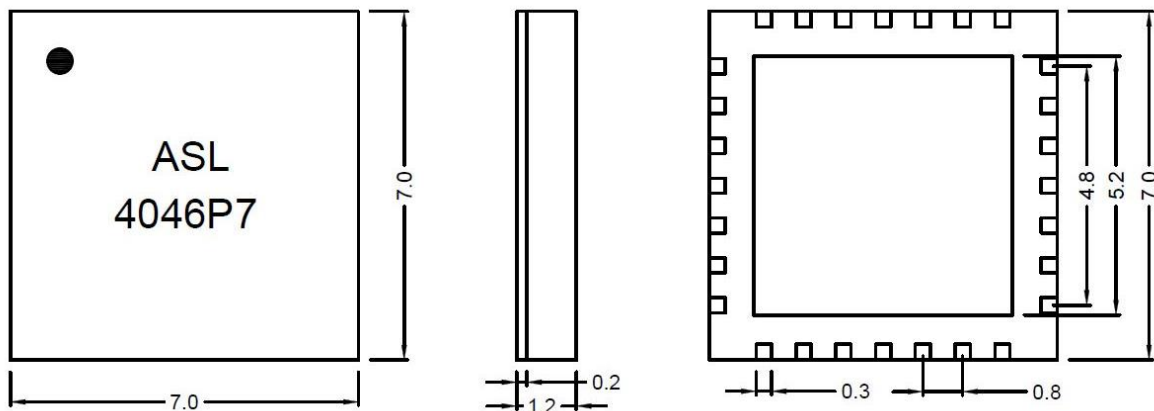


## Pin Configuration Details


**Note:**

- |   |                 |
|---|-----------------|
| 1. Pin no. 4 & 5                        | : RF IN         |
| 2. Pin no.17 & 18                       | : RF OUT        |
| 3. Pin no. 13                           | : Vg            |
| 4. Pin no. 27                           | : Vd            |
| 5. Pin no. 3,6 & 16                     | : Ground (GND)  |
| 6. Pin no.1,2,7 - 12,14,15,19 - 26 & 28 | : No Connection |

## Package Outline Drawing

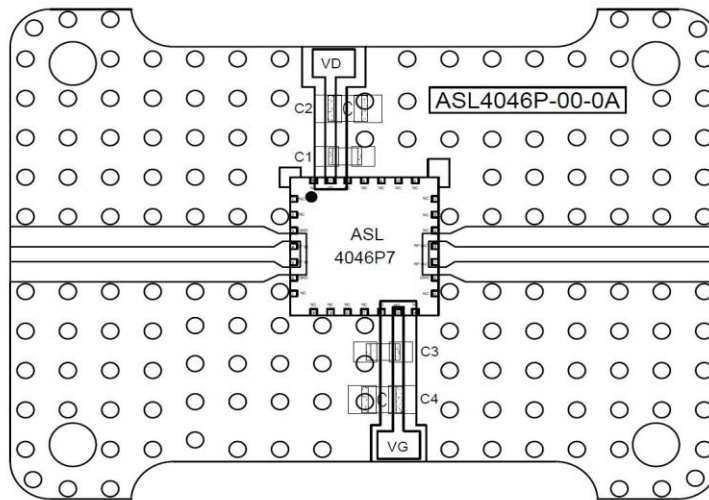


TOP VIEW

BOTTOM VIEW

**Note:** All Dimensions are in mm.

## Recommended Assembly Diagram



## List of Components

Component	Value
C1	1 <sup>st</sup> Bypass Capacitor at Vd , 0.1 $\mu$ F
C2	2 <sup>nd</sup> Bypass Capacitor at Vd , 1 $\mu$ F
C3	1 <sup>st</sup> Bypass Capacitor at Vg , 0.1 $\mu$ F
C4	2 <sup>nd</sup> Bypass Capacitor at Vg , 1 $\mu$ F

### Note:

1. Input and output 50 ohm lines are on 5 mil RT Duroid substrate
2. 0.1  $\mu$ F and 1 $\mu$ F capacitors may be additionally used as a second level of bypass for reliable operation as shown above
3. The RF input & output ports are DC decoupled ports.
4. During testing device need to be mounted on proper heat sink made of aluminum or copper base for better thermal reliability of package



**GaN 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. Before using the product, please download and refer to latest datasheet from website.