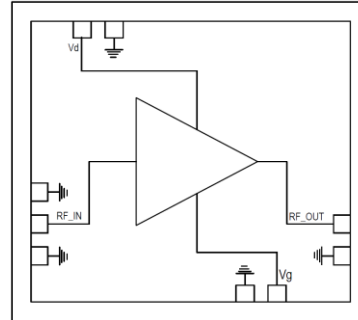


## 2-18GHz 2Watt GaN Driver Amplifier

### Features

- ◆ Frequency Range: 2 - 18GHz
- ◆ Gain: 9dB(Typ.)
- ◆ Output P1dB: 33dBm
- ◆ Psat: >35dBm
- ◆ Return Losses: >10dB
- ◆ Die Size: 4.8mm x 1.6mm x 0.1mm
- ◆ DC decoupled input and output
- ◆ Dual bias operation

### Functional Diagram



### Typical Applications

- ◆ Radar
- ◆ Military & Space
- ◆ Instrumentation

### Description

The ASL4046 is a wide band Power Amplifier which covers frequency range from 2-18GHz. It features 9dB Gain with input and output return losses better than 11dB (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.

### 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

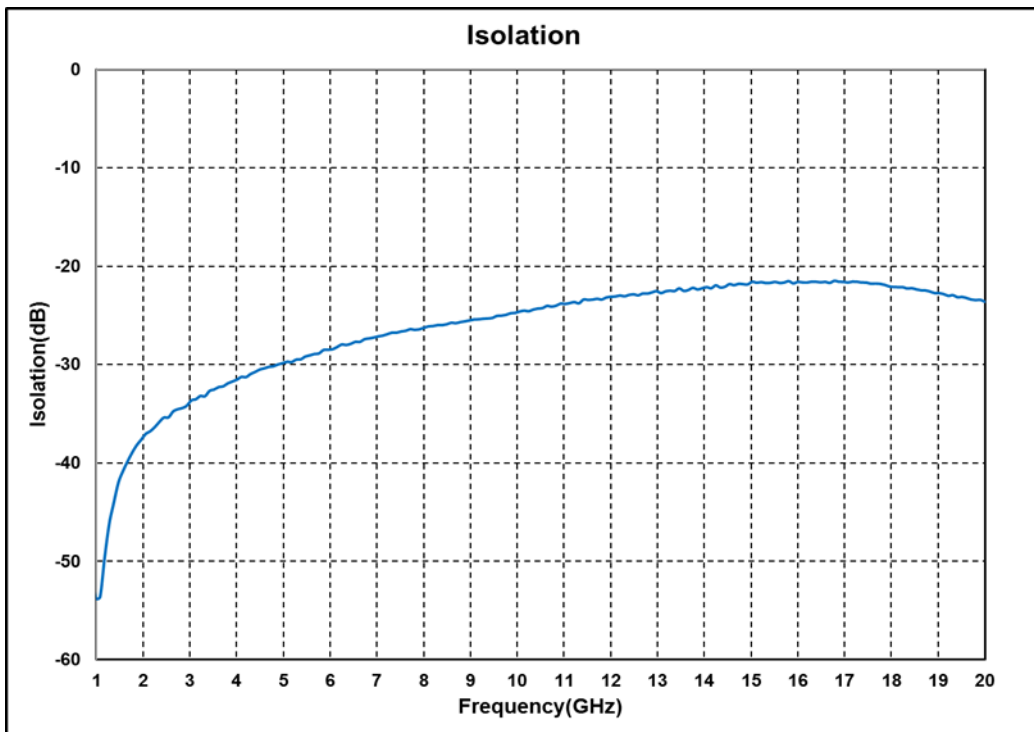
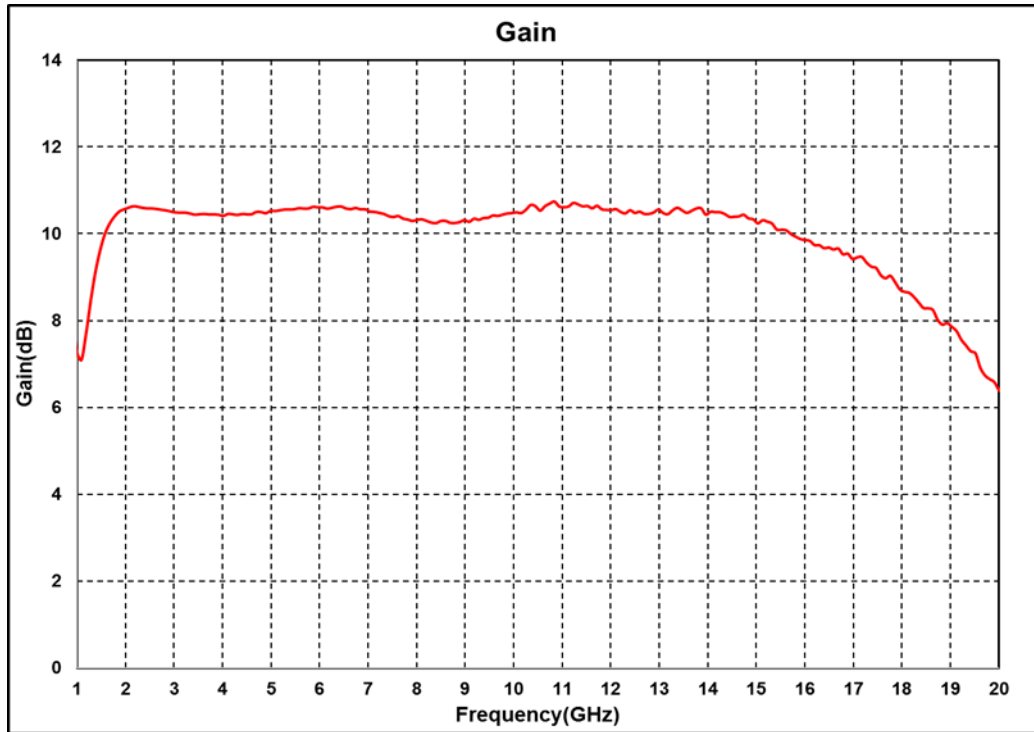
**Electrical Specifications @  $T_A = 25\text{ }^\circ\text{C}$ ,  $Z_o = 50\Omega$ ,**

Parameter	Typical Values	Units
Frequency Range	2 - 18	GHz
Gain	$9 \pm 1$	dB
$P_{\text{sat}}$	>35	dBm
P1dB	33	dBm
Input Return Loss	10	dB
Output Return Loss	12	dB
Voltage	25	V
Current(I <sub>dq</sub> )	600	mA

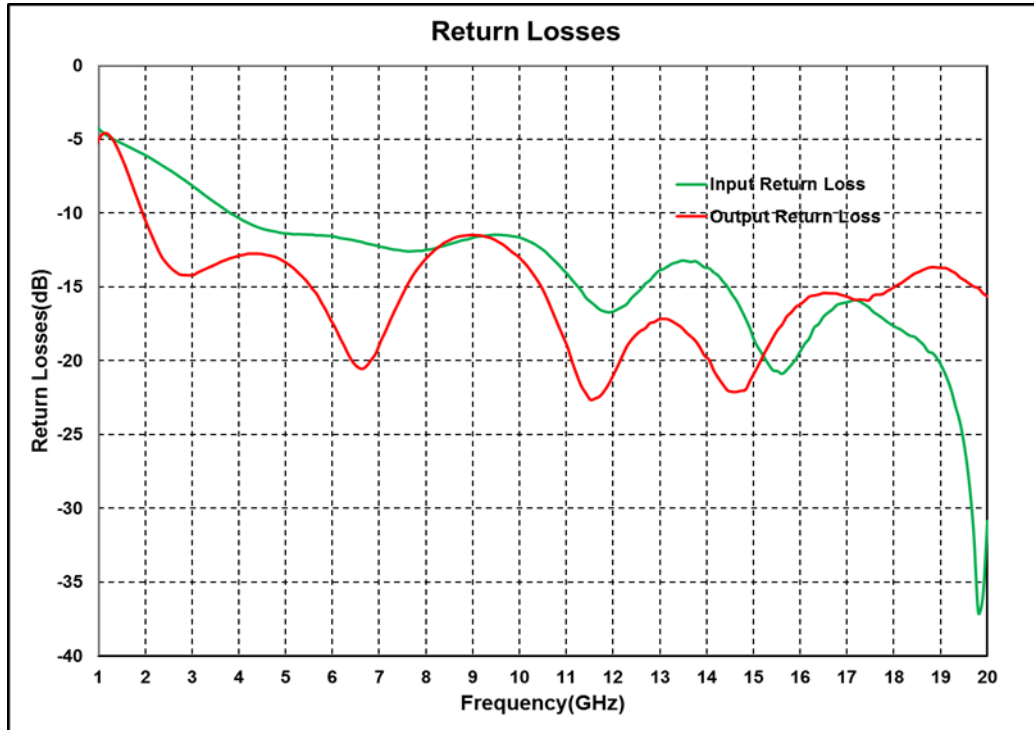
**Note:**

1. The above parameters specified are On Wafer probed results.
2. Adjust V<sub>g</sub> between -4V to 0V to achieve I<sub>dq</sub> = 600mA (Typical)

**On Wafer Probed Data, Vd = 25V**

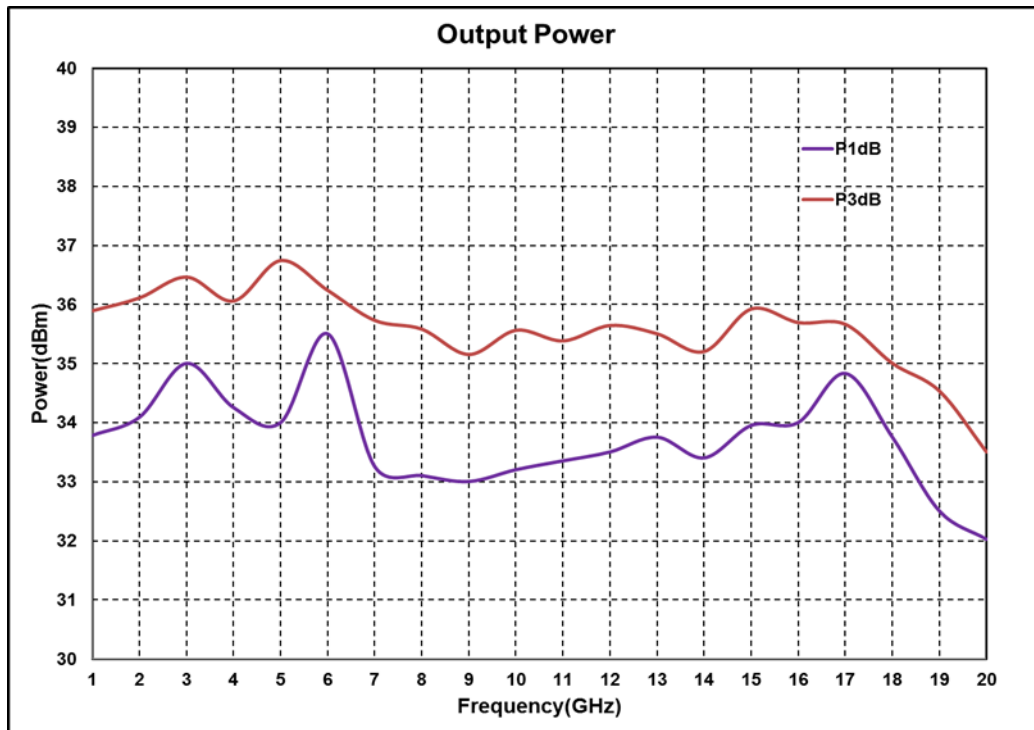


**On Wafer Probed Data, Vd = 25V**

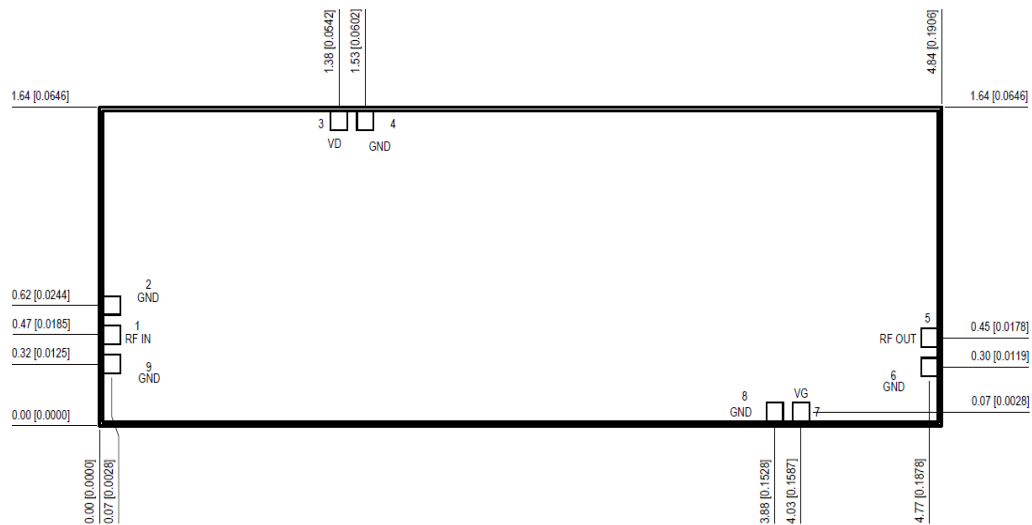


**Test Fixture Data**

$T_A = 25^\circ C, Z_o = 50 \Omega$

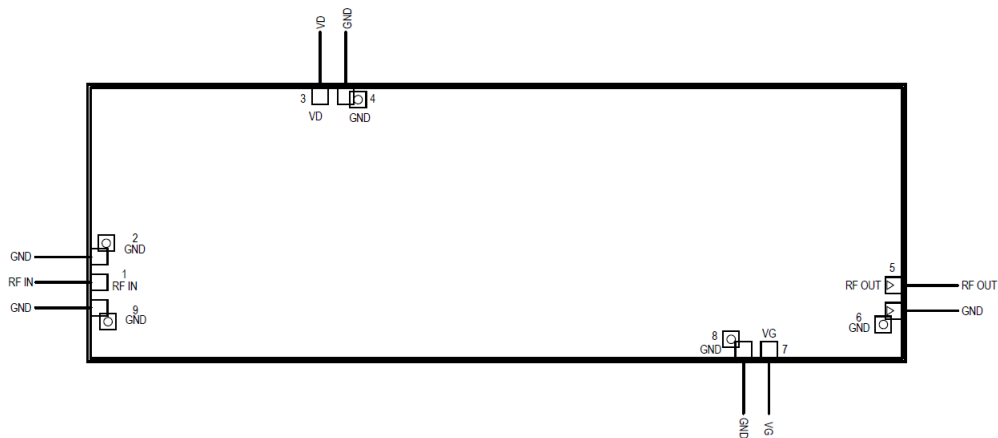


## Mechanical Characteristics



**Units** : millimeters (inches)

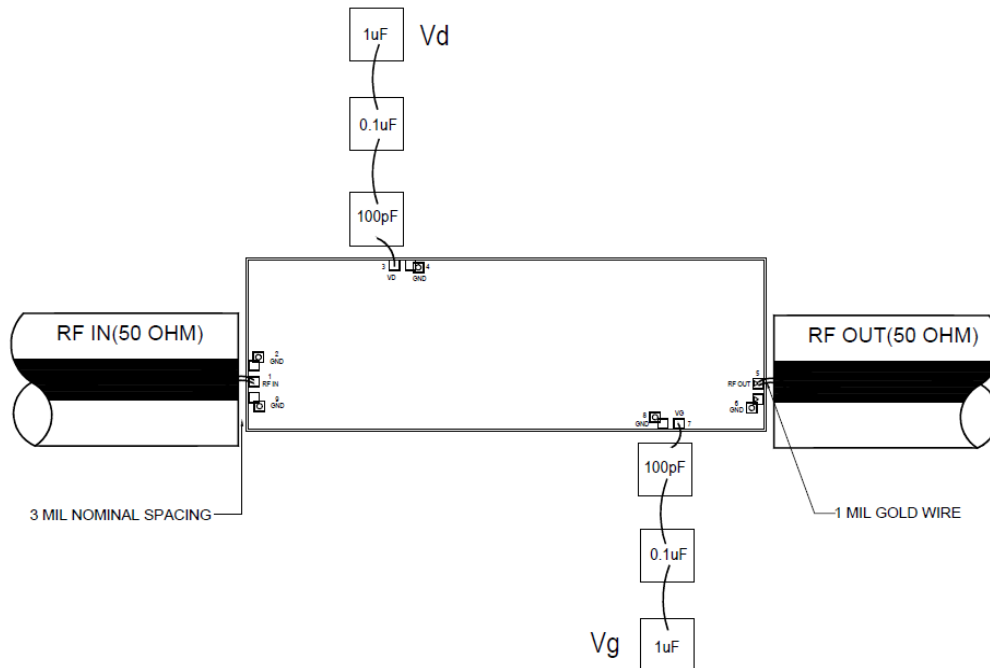
## RF and DC Pad Details



**Note:**

1. All RF and DC bond pads are 100µm x 100µm
2. Pad no.1: RF IN
3. Pad no.5: RF OUT
4. Pad no.3: Vd
5. Pad no.7: Vg
6. Pad no.2,4,6 & 9: GND (Ground)

## Recommended Assembly Diagram



### Note:

1. Two 1 mil (0.0254mm) bond wires of minimum length should be used for RF input, RF output.
2. Input and output 50 ohm lines are preferably on 5mil or 10mil RT Duroid substrate.
3. The RF input & output ports are DC decoupled.
4. Use high thermal conductive material for die mounting/die attachment for long-term reliability.
5. Proper heat sink like copper tungsten or copper molybdenum carrier plate need to be used for mounting the chip

**Die attach:** For Die attachment, eutectic attachment is preferred, use of flux less AuSn (80/20) 1-2 mil thick preform solder is recommended. Use of AuGe preform should be strictly avoided.

**Wire bonding:** For DC pad connections use either ball or wedge bonds. For best RF performance, use of 150 - 200 $\mu$ m length of wedge bonds is advised. Single Ball bonds of 250-300 $\mu$ m though acceptable, may cause a deviation in RF performance.



**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.