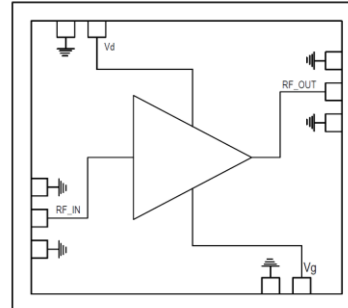
2 - 20GHz 1Watt GaN Driver Amplifier

Features

- **Frequency Range: 2 - 20GHz**
- **Gain: 11dB(Typ.)**
- **Output P1dB: 30dBm**
- **Input Return Loss: 8dB**
- **Output Return Loss: 10dB**
- **Die Size: 3.5mm x 1.5mm x 0.1mm**
- **DC decoupled input and output**
- **Dual bias operation**

Functional Diagram



Typical Applications

- Radar
- Military & Space
- Instrumentation

Description

The ASL4045 is a wide band driver amplifier which covers frequency range from 2-20GHz. It features 11dB Gain with input and output return losses of 11dB (typ) over the operating frequency band. This driver amplifier features wide bandwidth, flat gain with output P1dB greater than 30dBm over the bandwidth. The circuit grounds are provided through Vias to the back side metallization.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum	Units
Drain supply voltage	+28	Volts
Drain current (Id)	1000	mA
RF input power at V_d=20V	25	dBm
Operating temperature	-50 to +85	^{o}C
Storage Temperature	-65 to +150	^{o}C

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

Electrical Specifications @ T_A = 25 °C, Z_o =50Ω,

Parameter	Typical Values	Units
Frequency Range	2 - 20	GHz
Gain	11 ± 1.0	dB
P1dB	30	dBm
P_{sat}	32	dBm
Input Return Loss	8	dB
Output Return Loss	10	dB
Voltage	20	V
Current(Idq)	400	mA

Note:

1. The above parameters specified are on Wafer probed data.
2. Adjust Vg between -4V to 0V to achieve Idq of 400mA(Typical)

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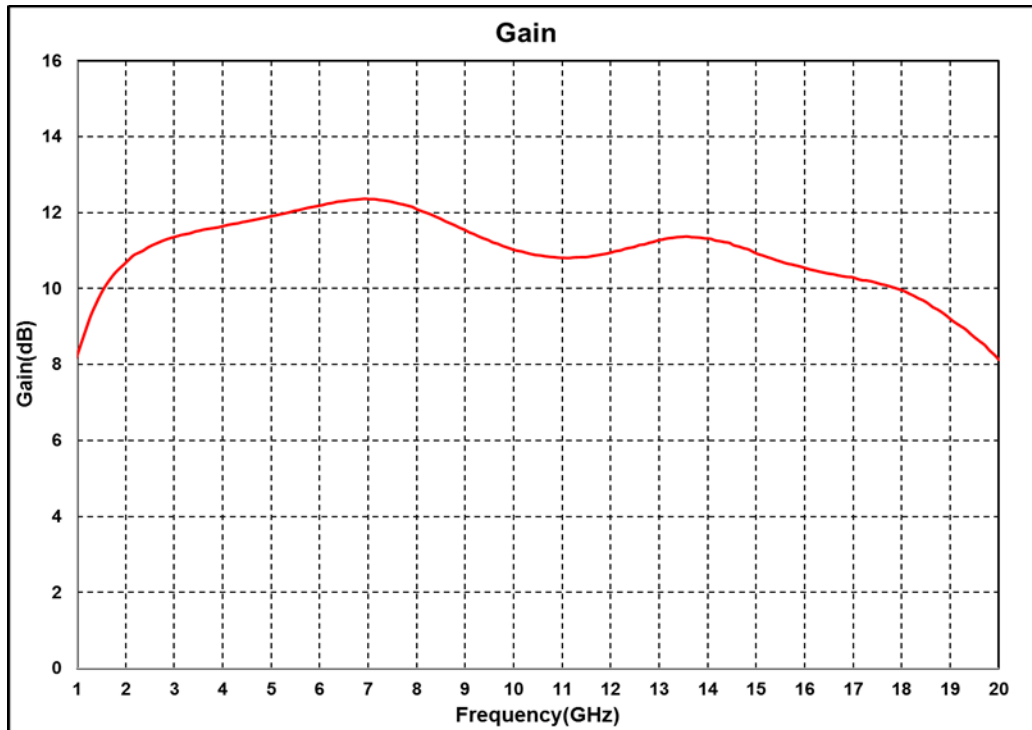
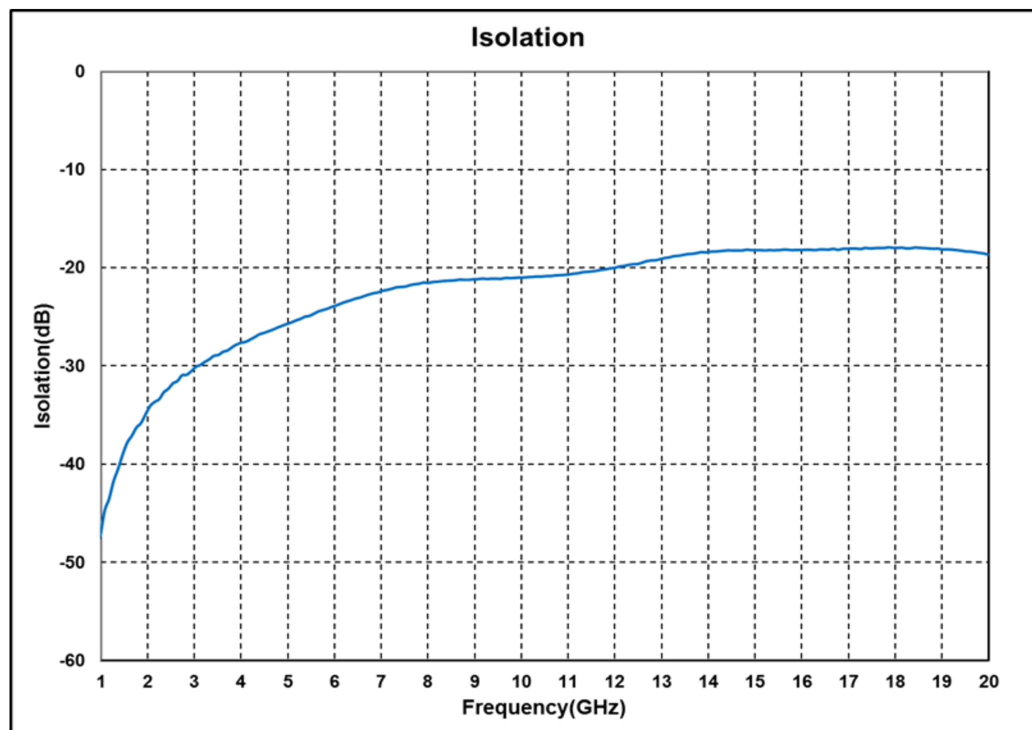
On Wafer Probed Data, Vd = 20V





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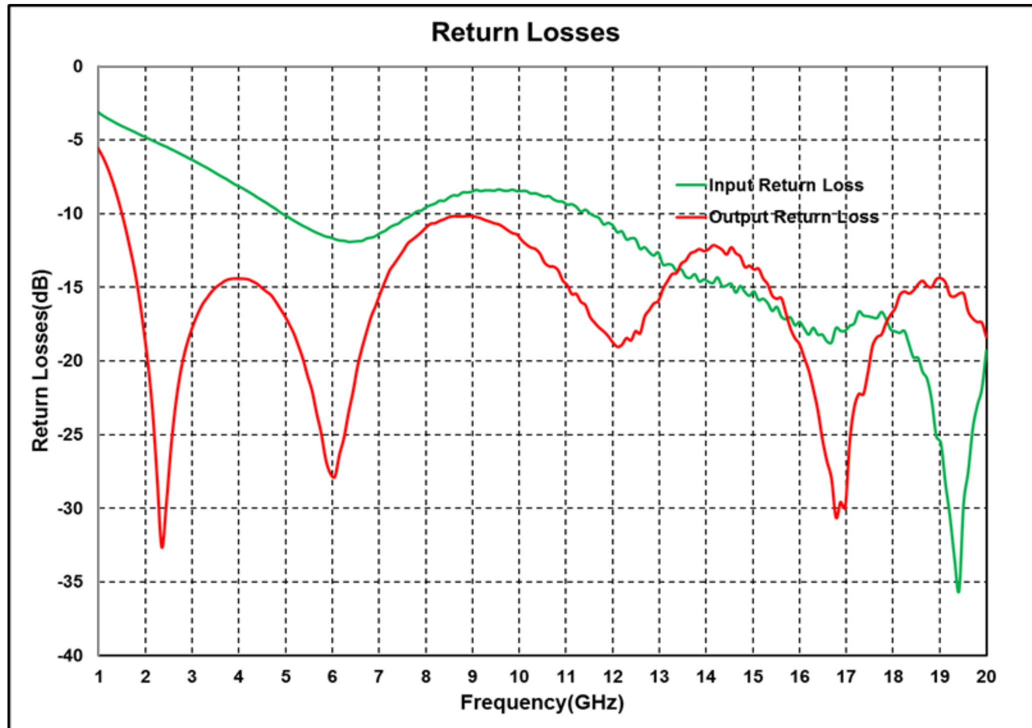
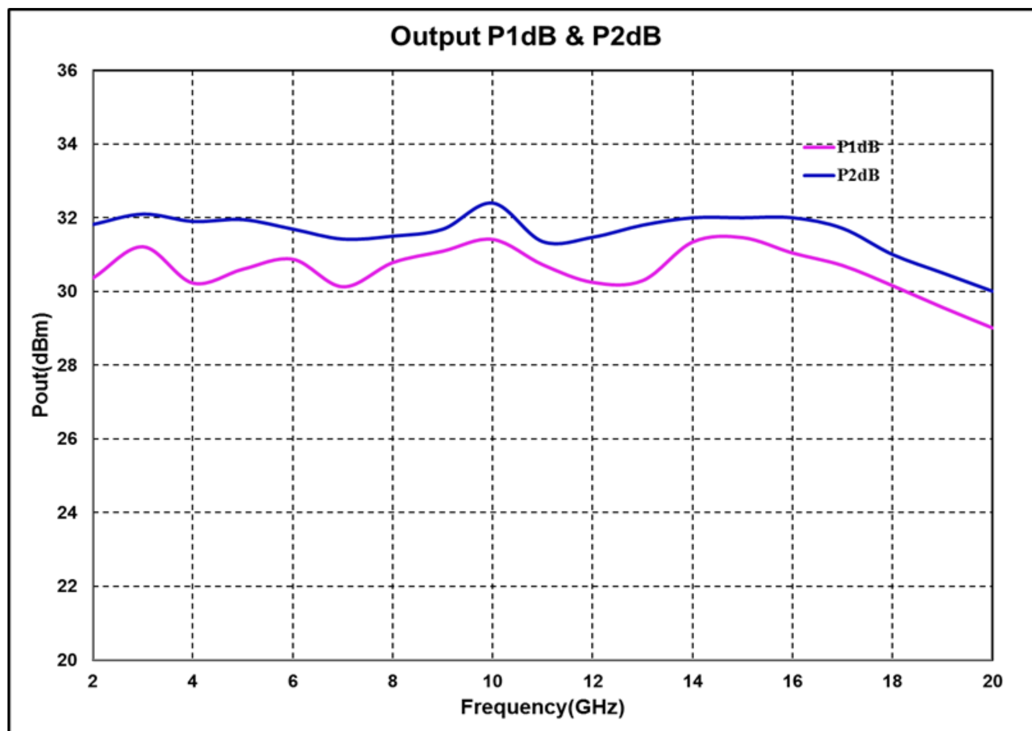
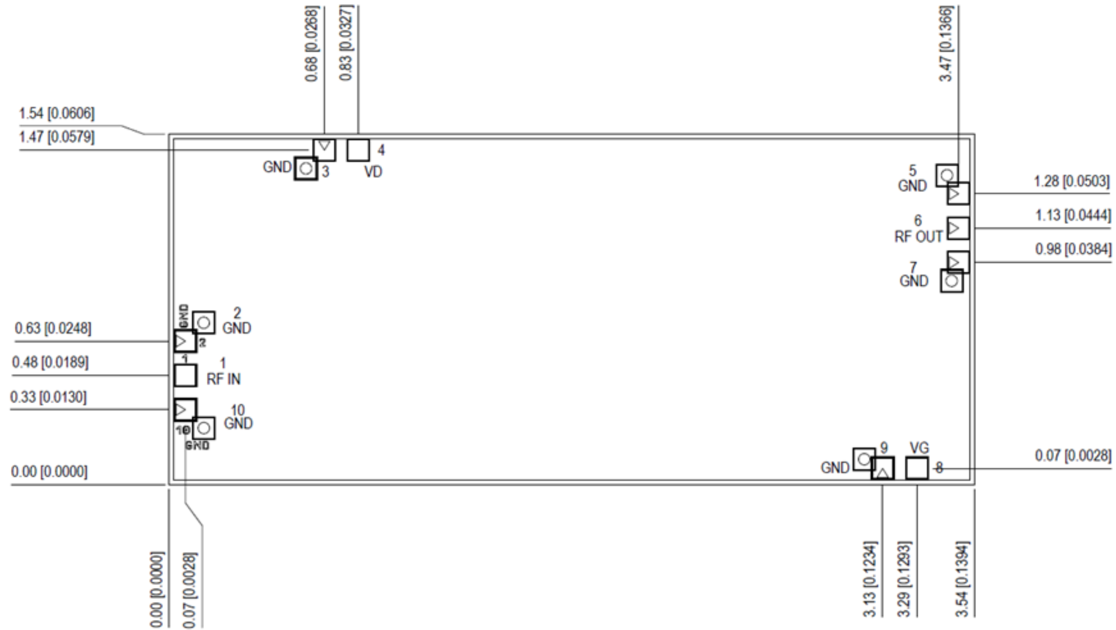


Test Fixture Data

T_A = 25 °C, Z_o=50 Ω



RF and DC Pad Details

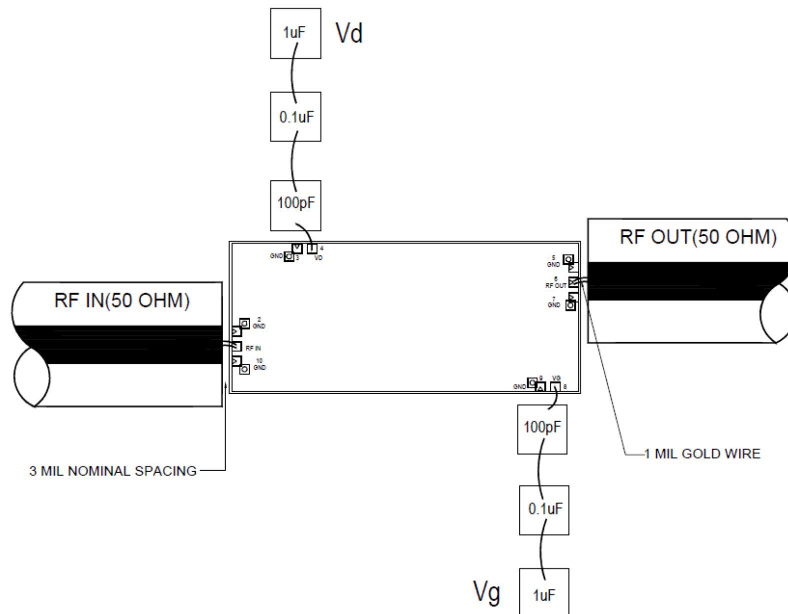


Units : millimeters (inches)

Note

1. All RF and DC bond pads are 100µm x 100µm
2. Pad no.1: RF IN
3. Pad no.6: RF OUT
4. Pad no.4: Vd
5. Pad no.8: Vg
6. Pad no.2,3,5,7,9 &10: 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 - 200µm length of wedge bonds is advised. Single Ball bonds of 250-300µm 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.

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