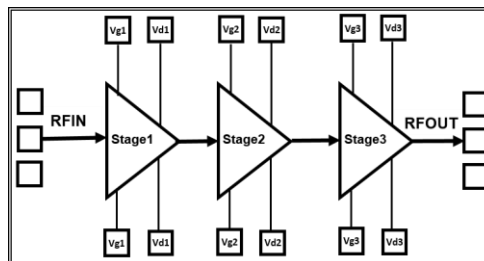


12.0 – 14.6 GHz GaN High Power Amplifier

Features

- ◆ Frequency Range : 12.0 – 14.6 GHz
- ◆ Small signal Gain : 22 dB
- ◆ Power Gain : 16 dB
- ◆ Psat : 43 dBm (typ)
- ◆ PAE : 30%
- ◆ Die Size: 4.9 mm ×4.6 mm



Typical Applications

- ◆ Communications
- ◆ Electronic Warfare
- ◆ Test Instrumentation
- ◆ EMC Amplifier

Description

The ASL 4058 is a three stage High Power Amplifier designed to operate from 12.0 to 14.6 GHz frequency band. This Amplifier features 43dBm saturated output power with power gain of 16dB. The power amplifier designed using highly reliable AlGaIn/GaN HEMT process.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Drain supply voltage		volts
Drain current (I_{dq})		A
RF input power at $V_d=28v$		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

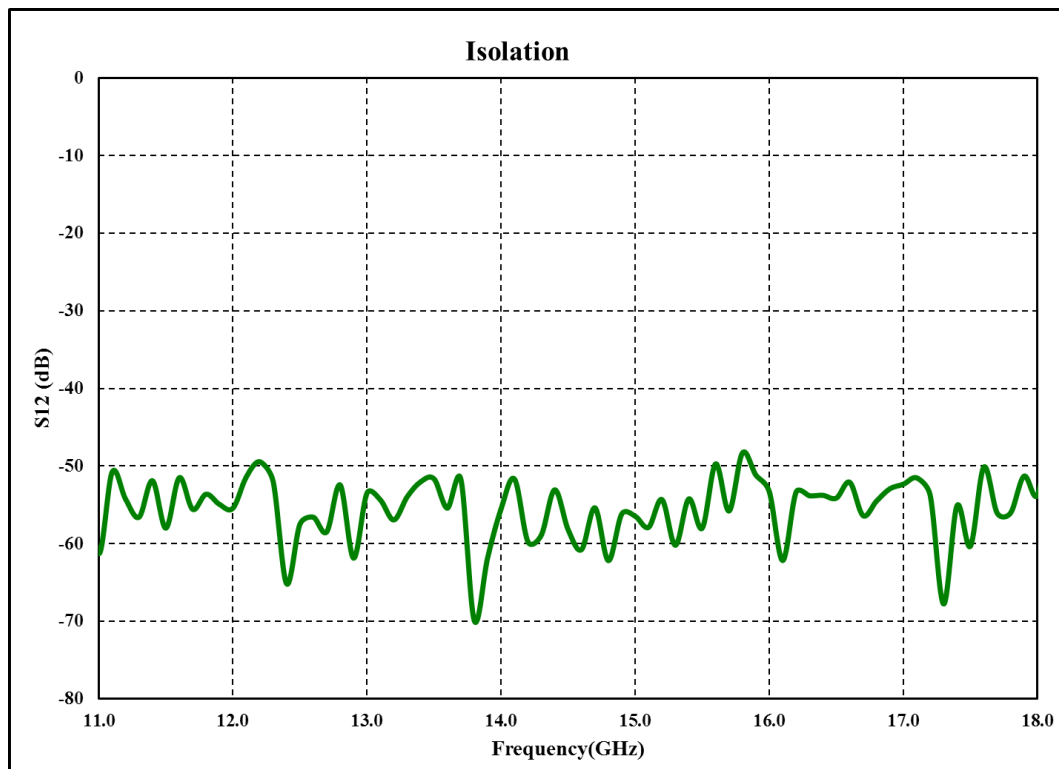
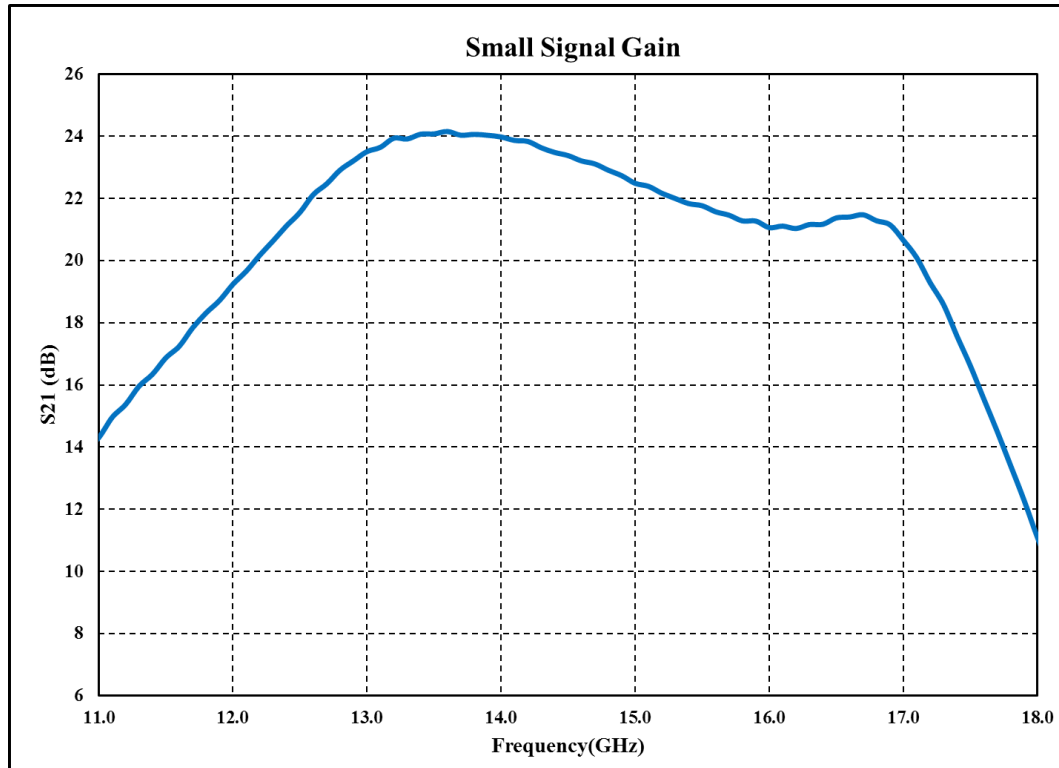
Electrical Specifications @ $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o = 50\text{ }\Omega$
 $V_d = 28\text{V}$, $I_{dq} = 300\text{mA}$, Pulse Duty Cycle = 10%

S.No	Parameter	Typical Value	Units
1	Frequency	12.0 – 14.6	GHz
2	Small Signal Gain	22	dB
3	Input Return Loss	8	dB
4	Output Return Loss	10	dB
5	Saturated Output Power	43	dBm
6	Power Gain	16	dB
7	PAE	30	%
8	Drain Voltage (V_d)	28	V
9	Quiescent Current (I_{dq})	300	mA
10	Saturated current	320	mA
11	Die Size	4.9 x 4.6 x 0.1	mm

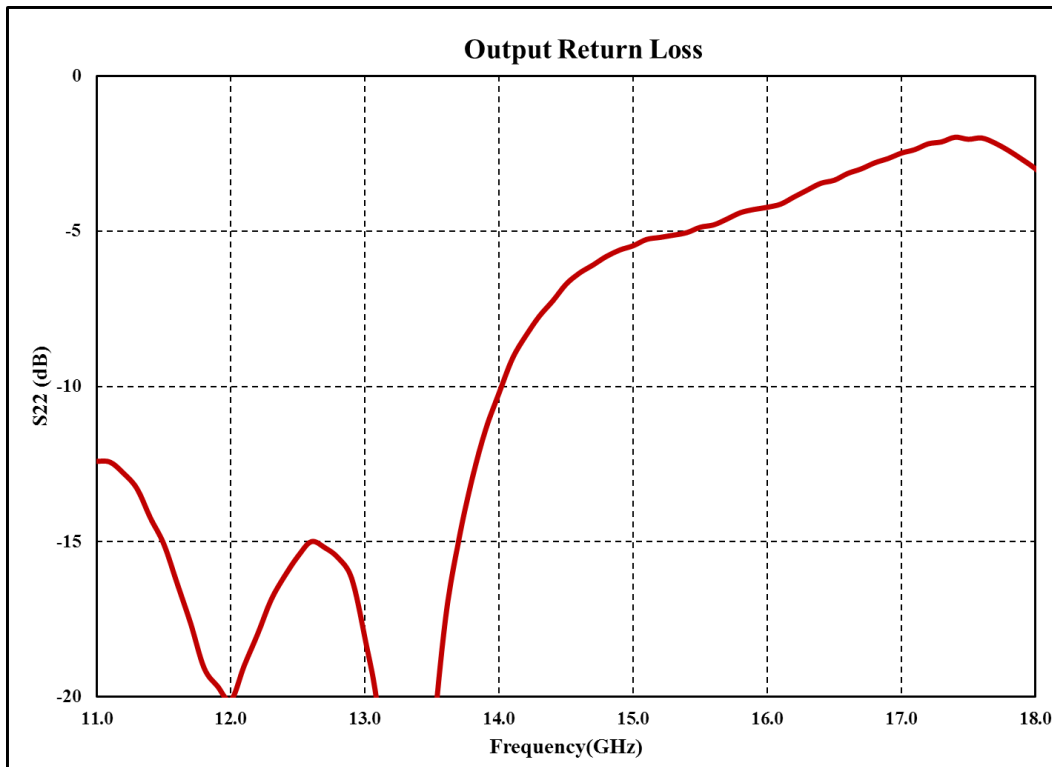
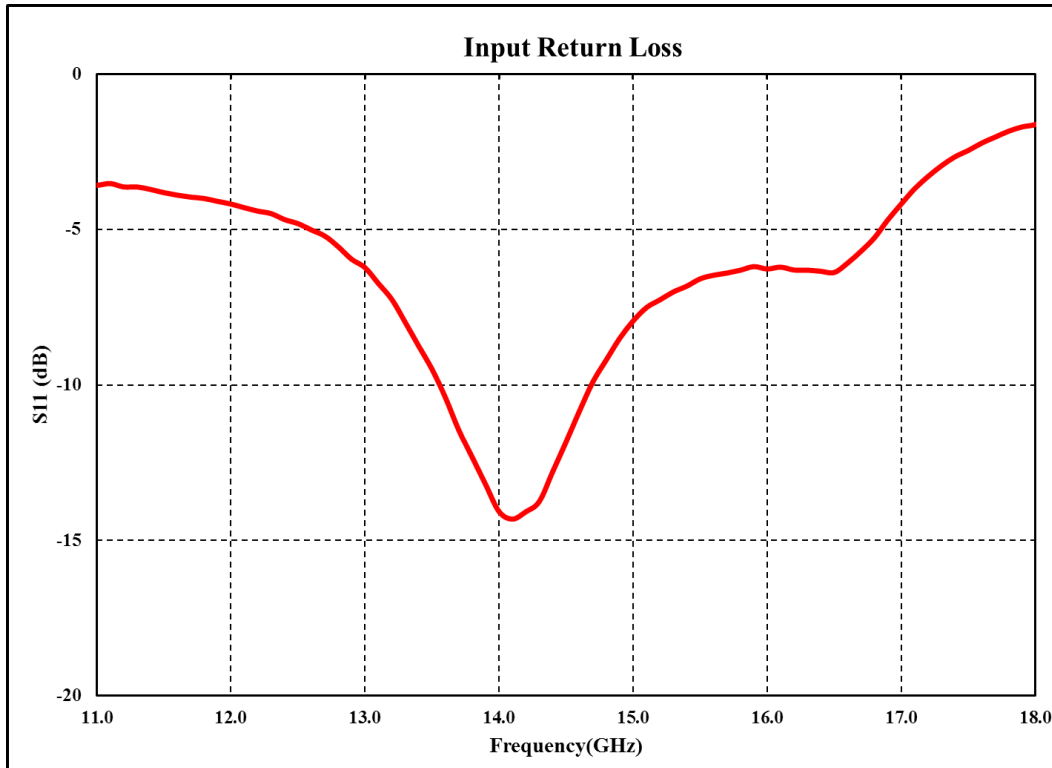
Note:

1. The above parameters specified are measured in 50-Ohm test fixture.
2. Adjust V_g between -4.5V to -2.5V to achieve required I_{dq} .

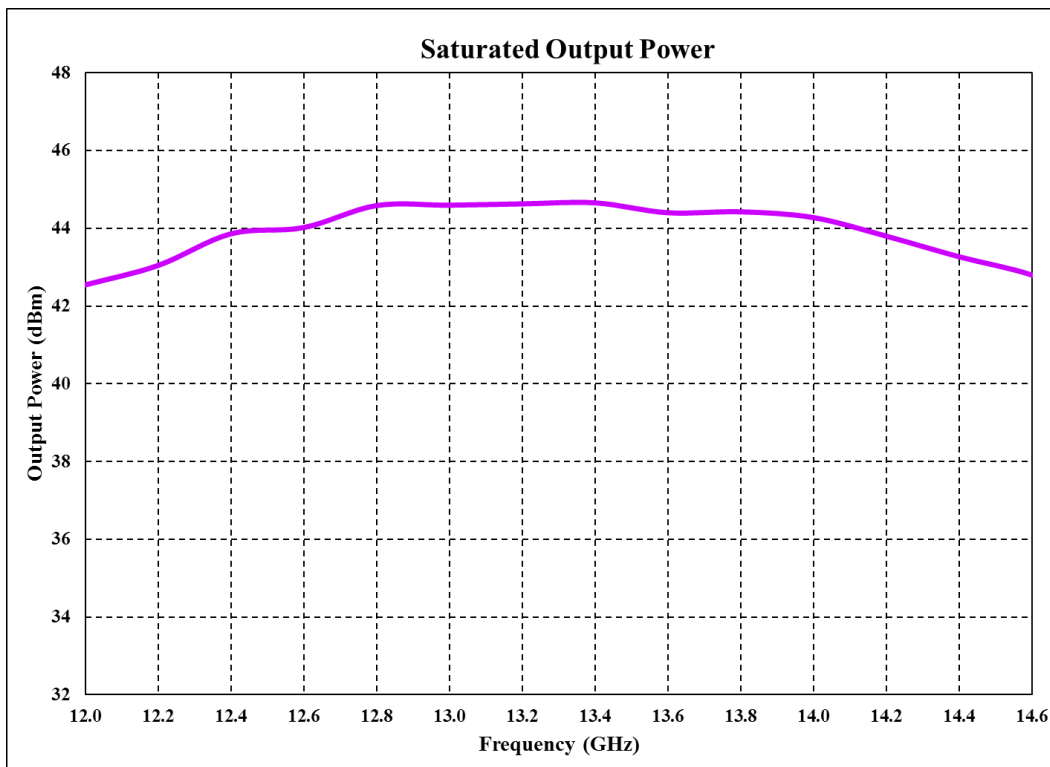
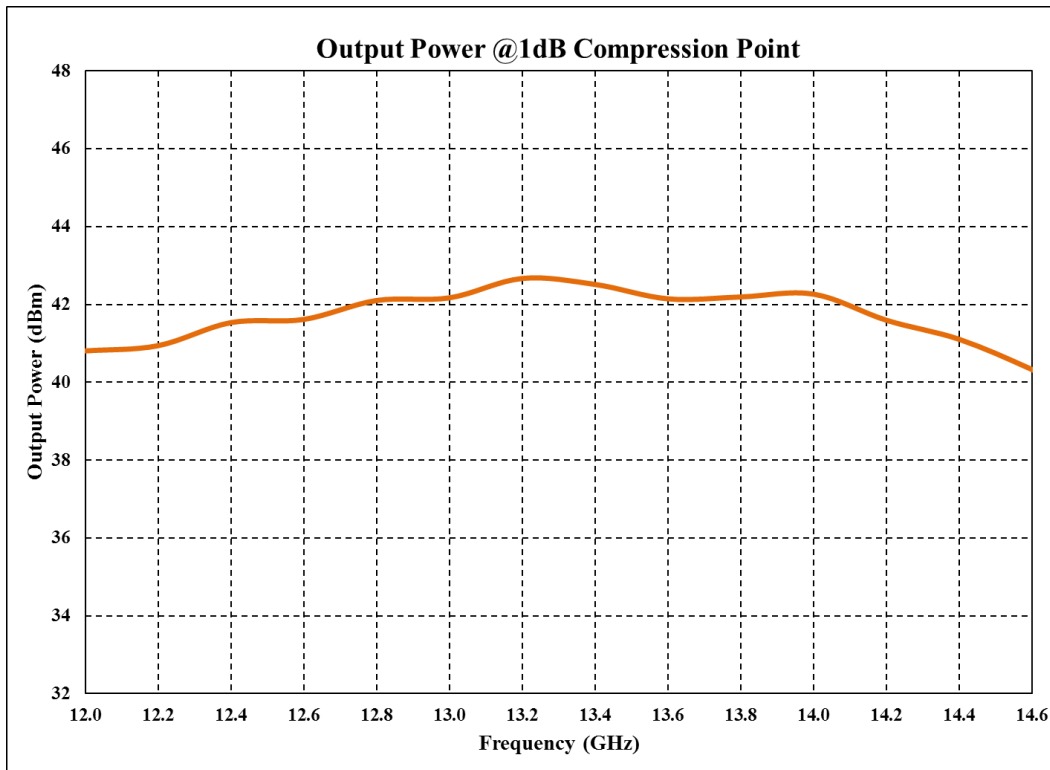
Test Fixture Data for $V_d=28V$, $I_{dq}=300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Duty Cycle=10%



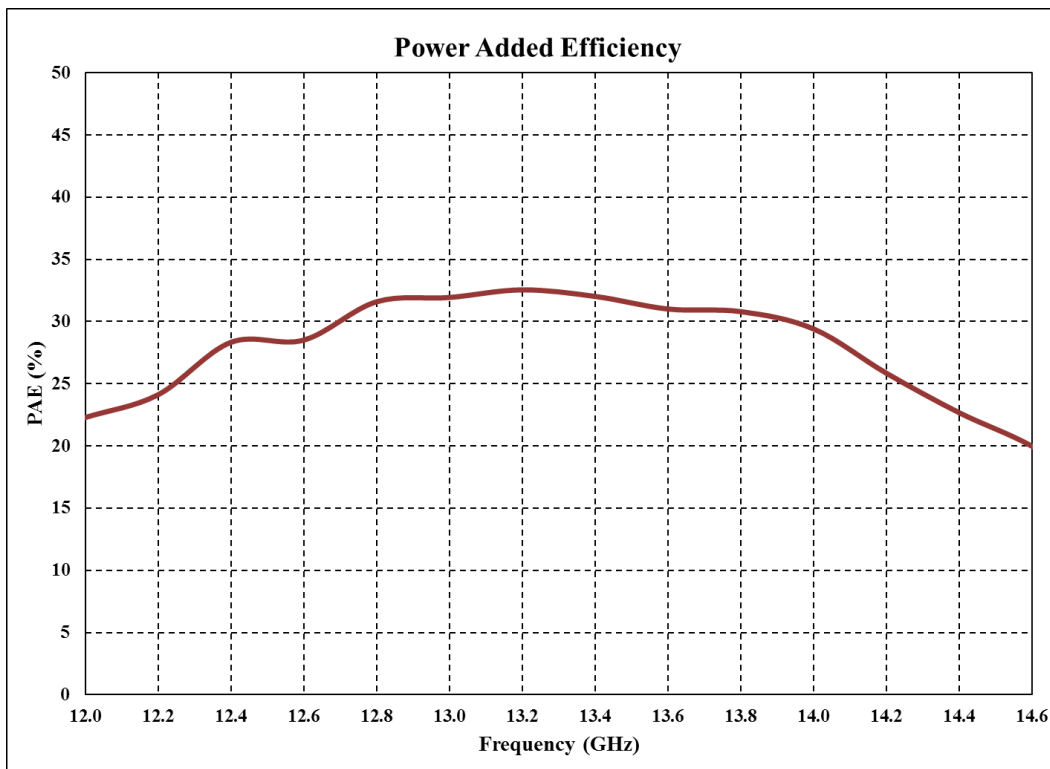
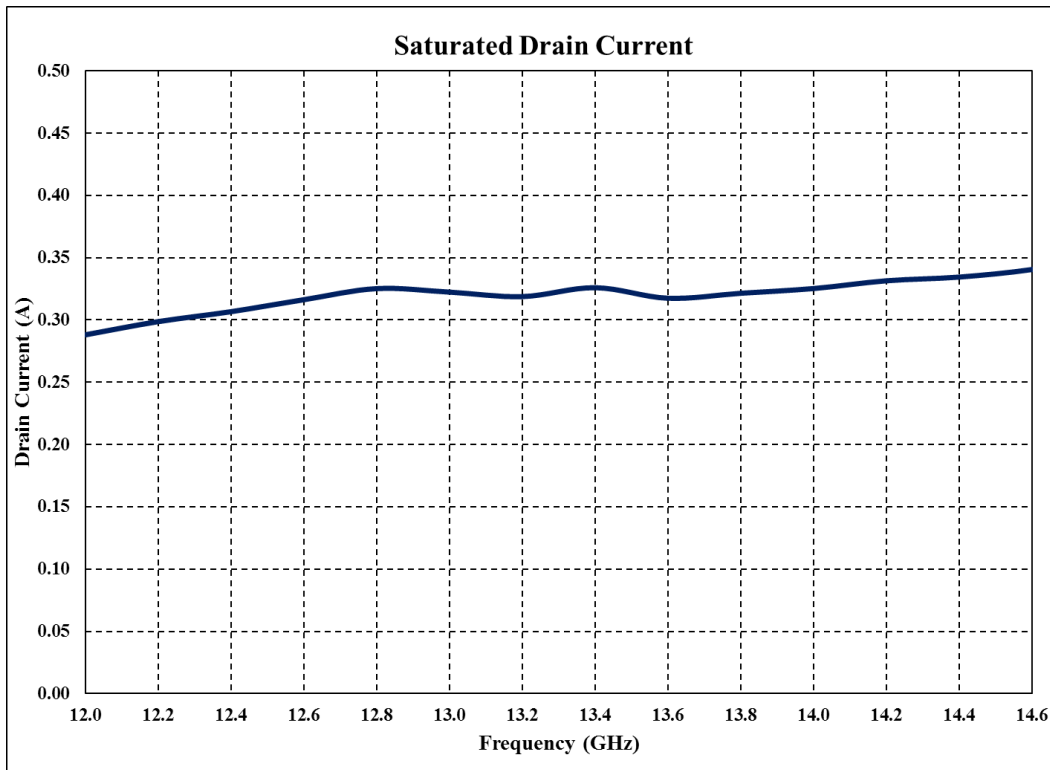
Test Fixture Data for $V_d=28V$, $I_{dq}=300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Duty Cycle=10%



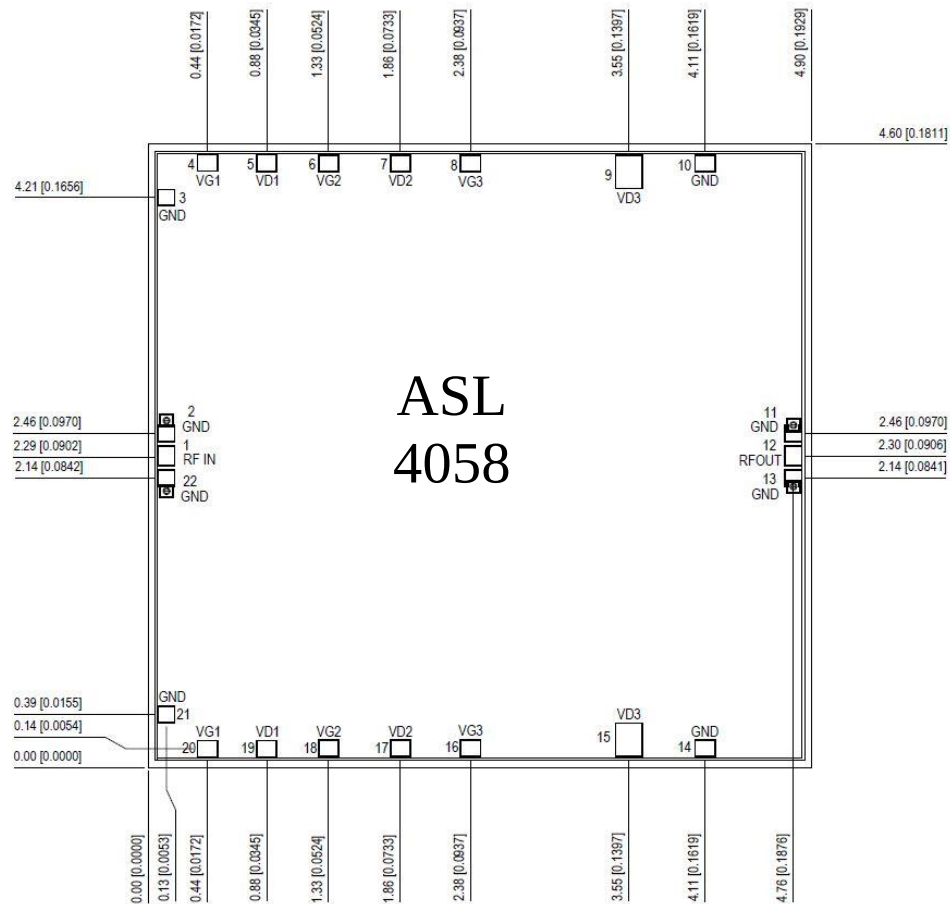
Test Fixture Data for $V_d=28V$, $I_{dq}=300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Duty Cycle=10%



Test Fixture Data for $V_d=28V$, $I_{dq}=300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Duty Cycle=10%



Bond Pad Location

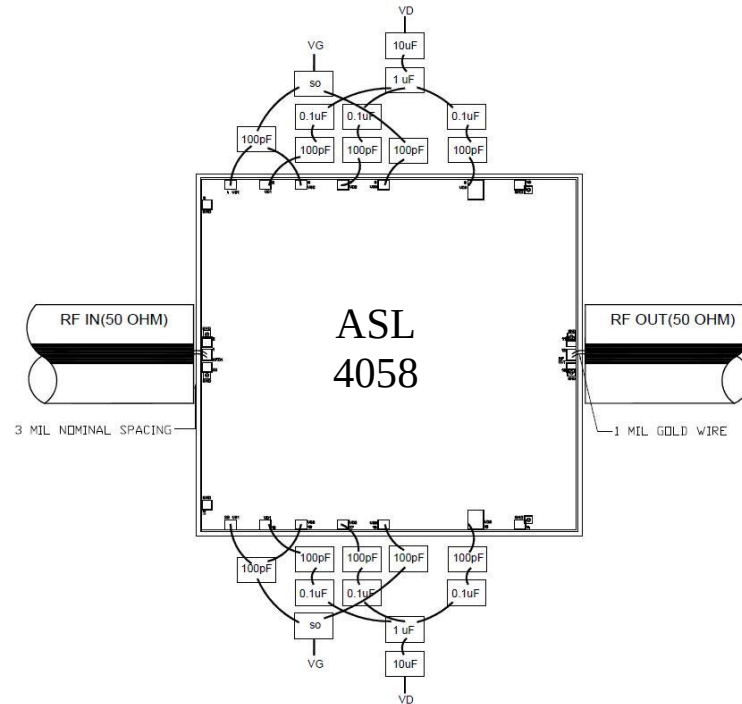


Units: millimeters (inches)

Note:

1. Pad no. 1 : RF IN
2. Pad no. 12 : RF Out
3. Pad no. 4,20 : Vg1
4. Pad no. 5,19 : Vd1
5. Pad no. 6,18 : Vg2
6. Pad no. 7,17 : Vd2
7. Pad no. 8,16 : Vg3
8. Pad no. 9,15 : Vd3
9. Pad no. 2,3,10,11,13,14,21,22 : GND

Recommended Assembly Diagram



S.No	Component Value	Description
1	100 pF (Gate Bypass)	Cap, D10/D12, 16V
2	100 pF (Drain Bypass)	Cap, D10/D12, 50V
3	1 KpF	Cap, 0402 X7R, 16V
4	0.1 uF	Cap, 0402 X7R, 50V
5	1 uF	Cap, 0402 or 0603 X7R, 50V
6	10 uF	TANT Cap, D case, 35V or 50V

Note:

1. Input and output 50 ohm lines are preferably on 5mil or 10mil RT Duroid substrate.
2. Use high thermal conductive material for die mounting/die attachment for long-term reliability.



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.