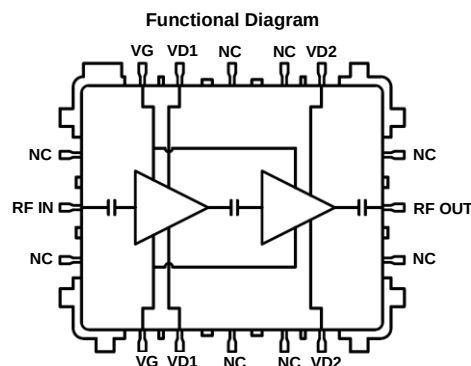


2.8 – 3.4 GHz GaN 50 Watt Power Amplifier MMIC

Features

- ◆ Frequency Range : 2.8 – 3.4 GHz
- ◆ Psat : 47 dBm (Peak)
- ◆ Power Gain : 18 dB
- ◆ Efficiency : 40 %
- ◆ Drain Voltage : 35 V
- ◆ Drain Bias Current : 170 mA (avg @ 10 % DC)
- ◆ Package Size : 11.71mm x 9.76mm x 2.5mm



Typical Applications

- ◆ Weather Radar
- ◆ Air Traffic Control
- ◆ Defense Radar

The Aelius ASL4062C is a packaged MMIC based two-stage 50 W Power Amplifier with operating frequency range of from 2.8 to 3.4 GHz. Input and output are matched to 50Ω impedance. ASL4062C exhibits 47dBm of saturated power, 18dB of power gain with a power added efficiency greater than 40% in pulse mode. The MMIC is developed using highly reliable AlGaIn/GaN HEMT process.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Drain supply voltage	52	V
Gate bias voltage (Vgs)	-4 to -2.2	V
RF input power at Vd = 50 V	32	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.

Typical Electrical Specifications

$T_A = 25\text{ }^{\circ}\text{C}$, $Z_0 = 50\text{ }\Omega$, *Pulse Width = 100 μS , Duty Cycle = 10%*

S.N.	Parameter	Typical Value	Units
1	Frequency	2.8 – 3.4	GHz
2	Small Signal Gain	25	dB
3	Input Return Loss	10	dB
4	Output Return Loss	7	dB
5	Saturated Output Power	47	dBm
6	Power Gain	18	dB
7	PAE	40	%
8	Drain Voltage (Vd)	35	V
9	Quiescent Current (Idq, avg.)	170	mA
10	Saturated Current (avg.)	430	mA
11	Package Size	11.71 x 9.76	mm x mm

Notes:

1. Adjust Vg between -3.0 V to -2.5 V to achieve required Idq.
2. Results presented in this data sheet are measured data which are tested in a fixture recommended in this document.

Thermal Characteristics

Junction Temperature < 140 $^{\circ}\text{C}$

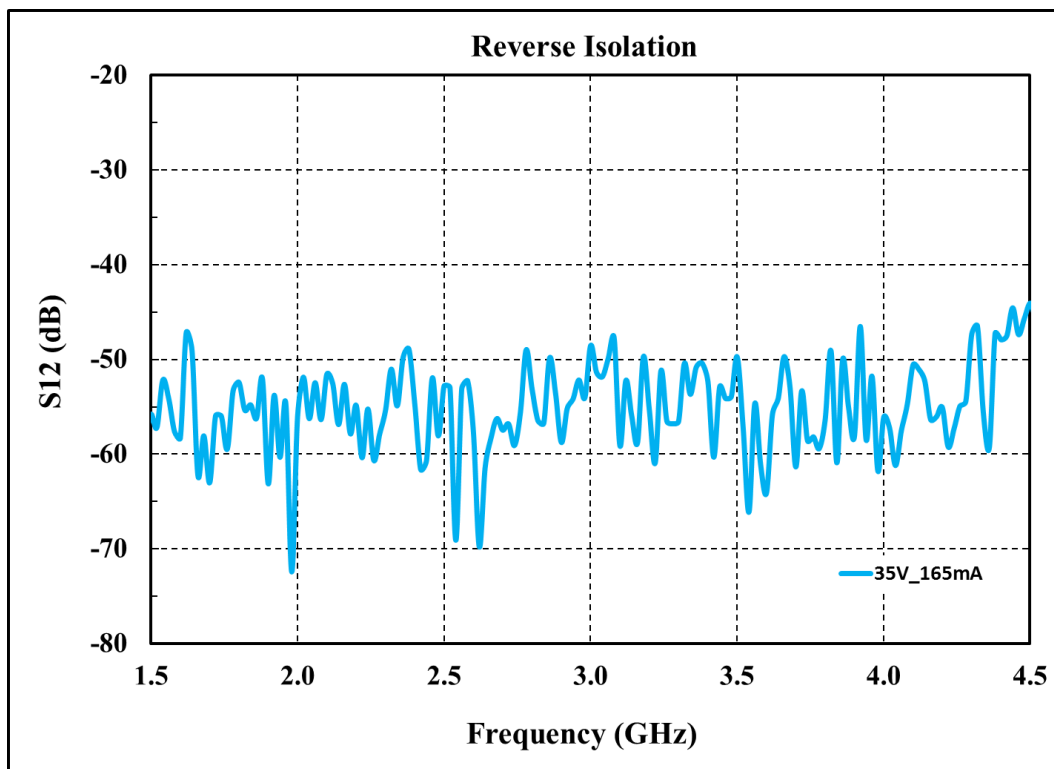
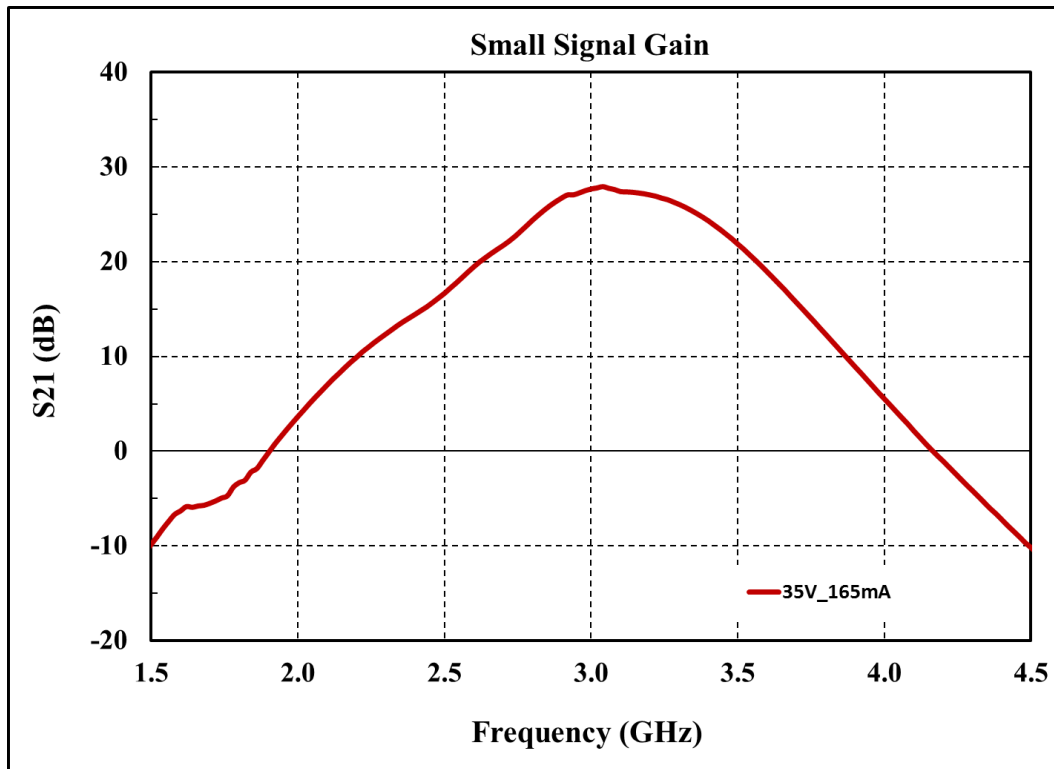
@ Saturated RF Output Power

Case Temperatures 85 $^{\circ}\text{C}$

Pulse Width = 200 μS , Duty Cycle = 20%

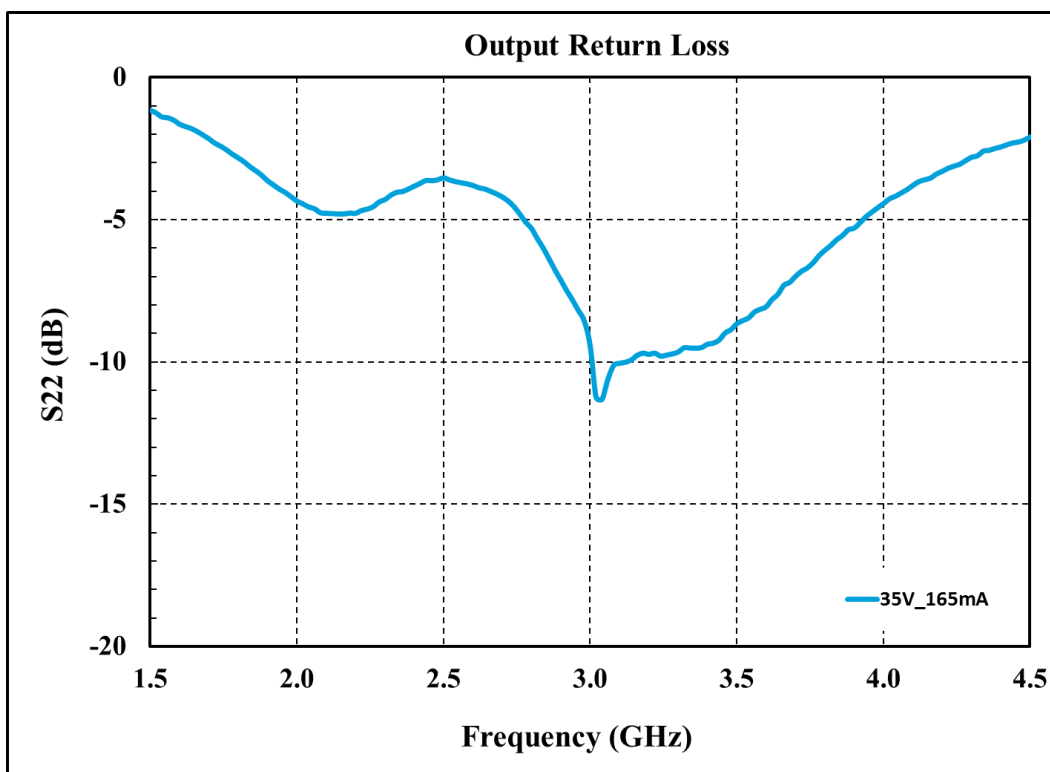
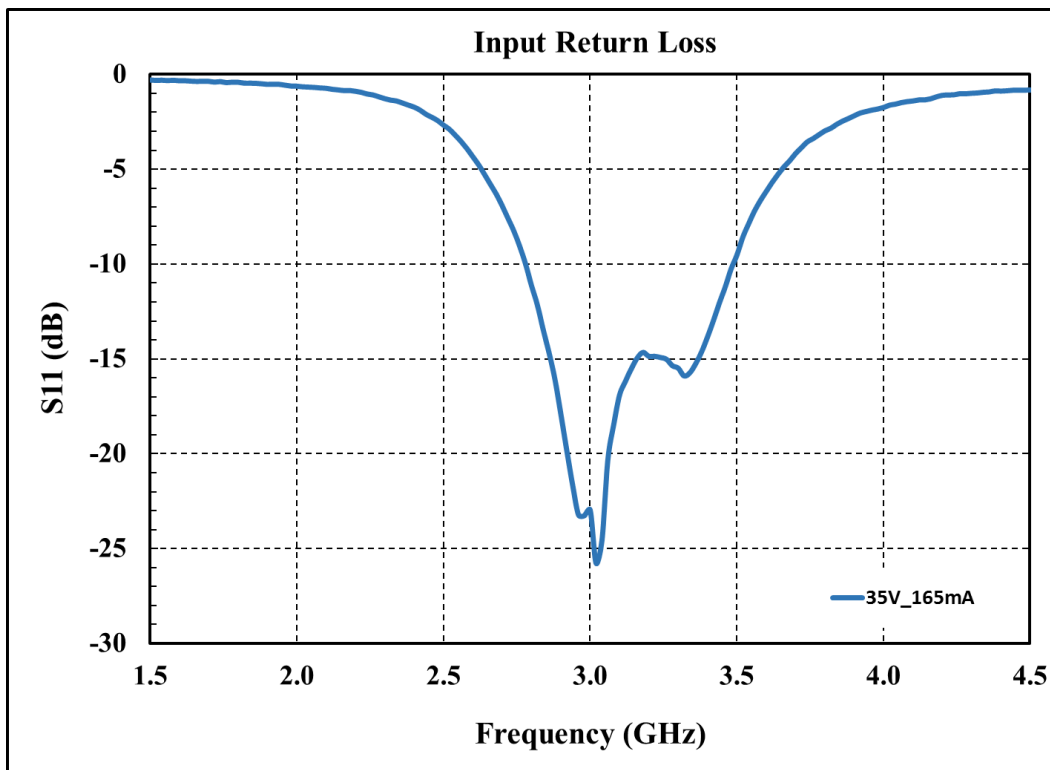
Small Signal S-Parameters

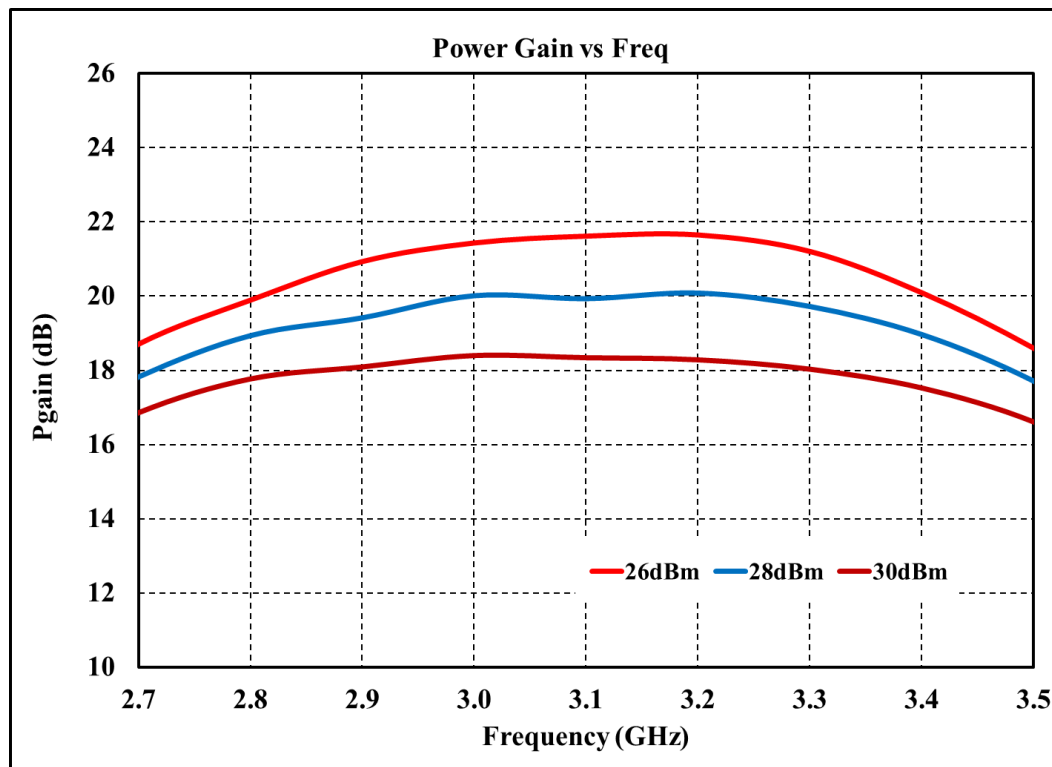
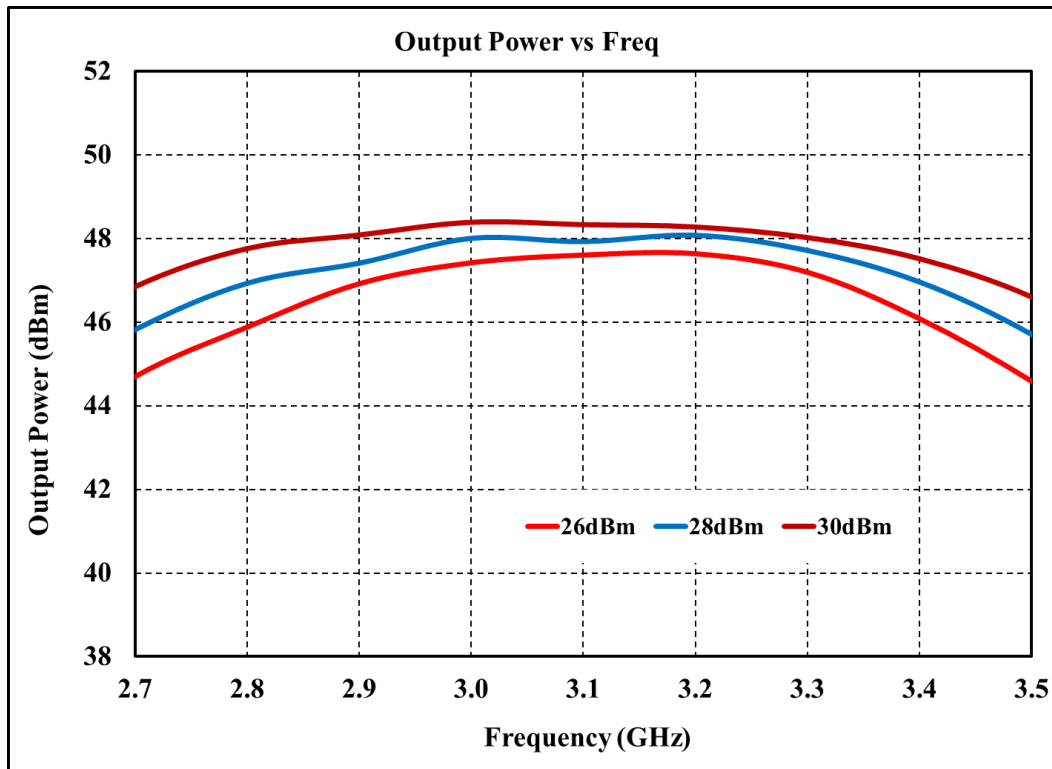
Test Ambient Temp. = 25 °C, $Z_0 = 50 \Omega$, $V_d = 35 V$

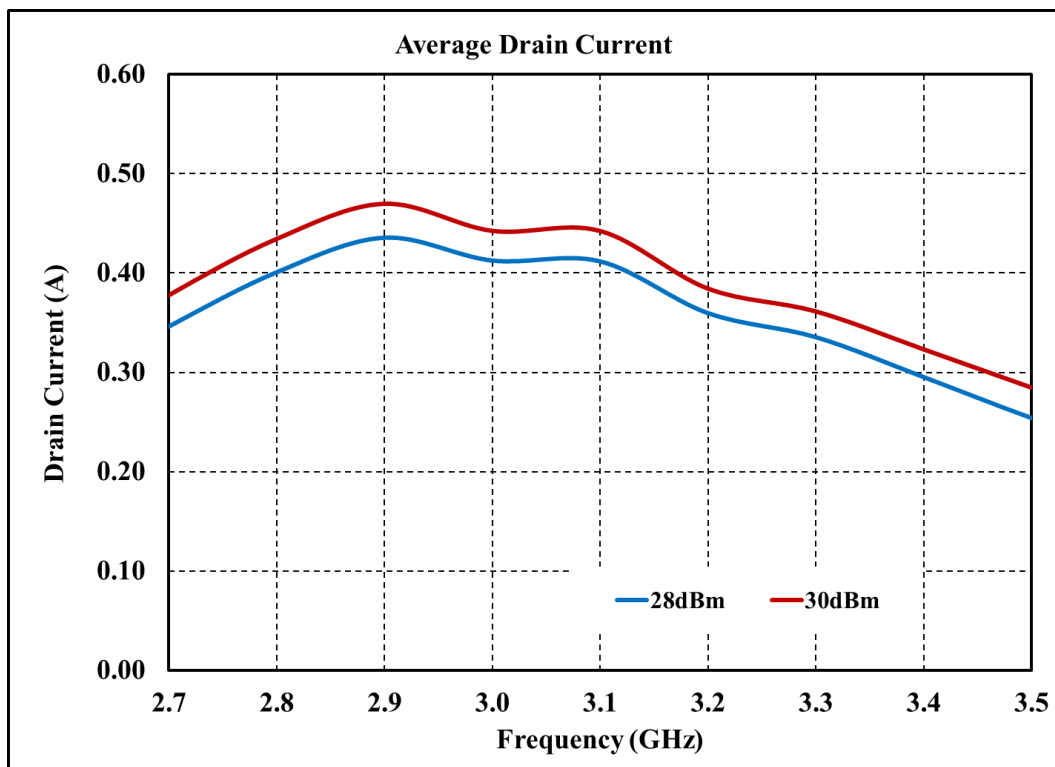
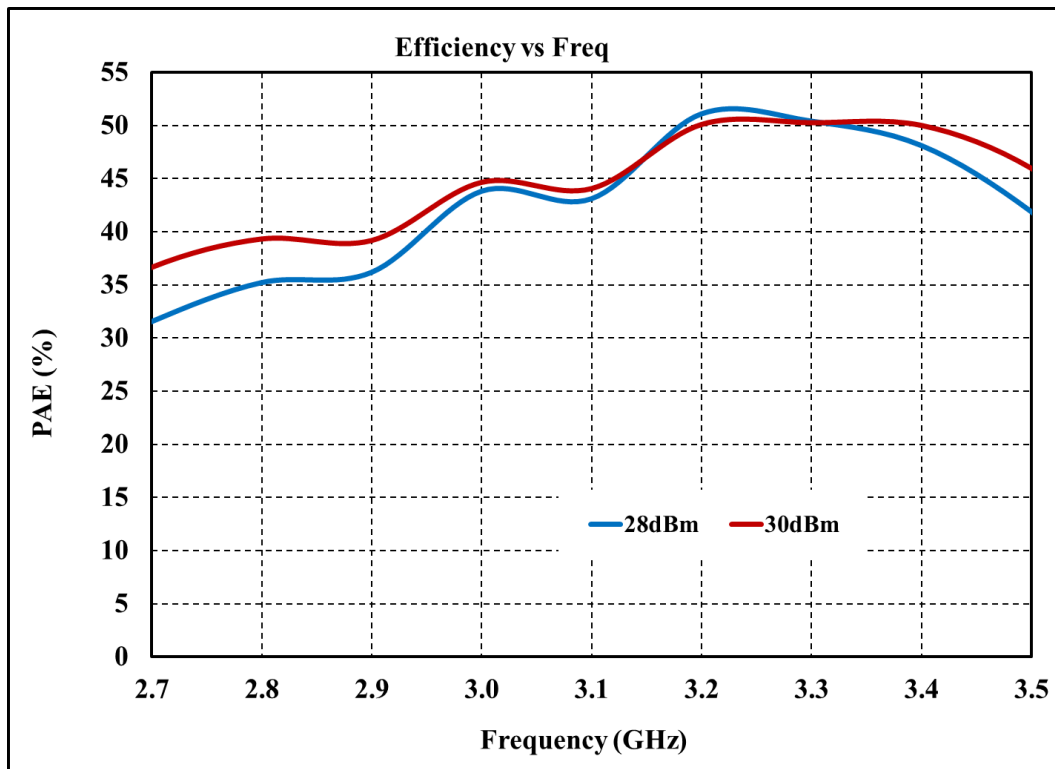


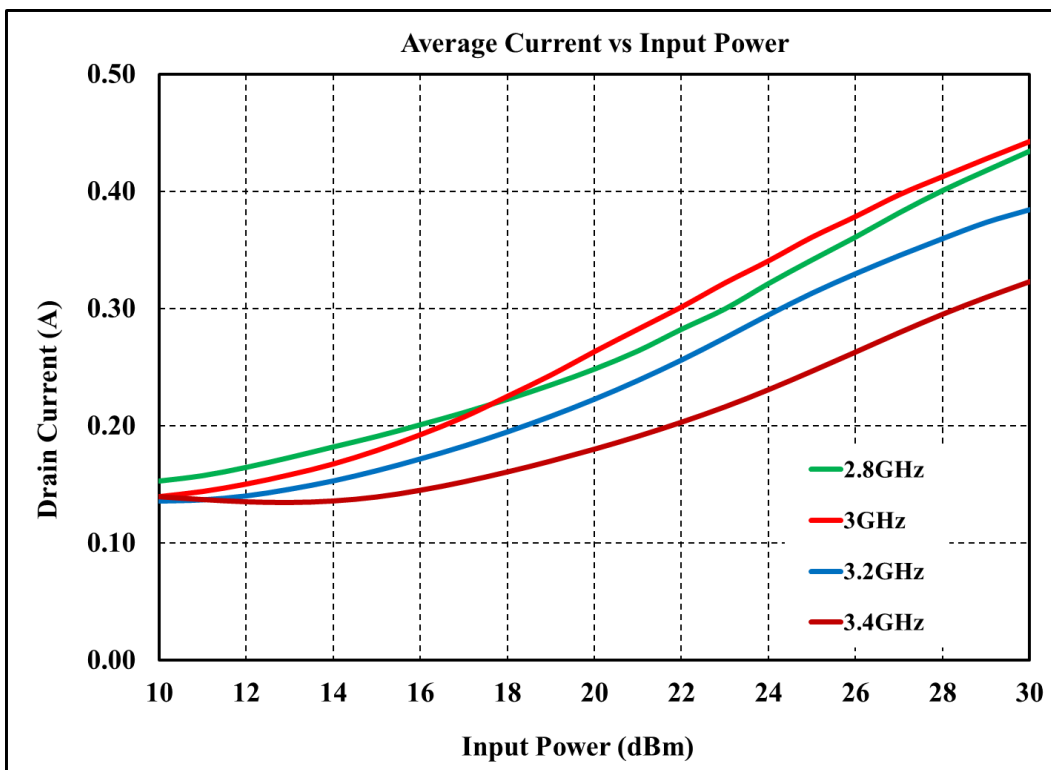
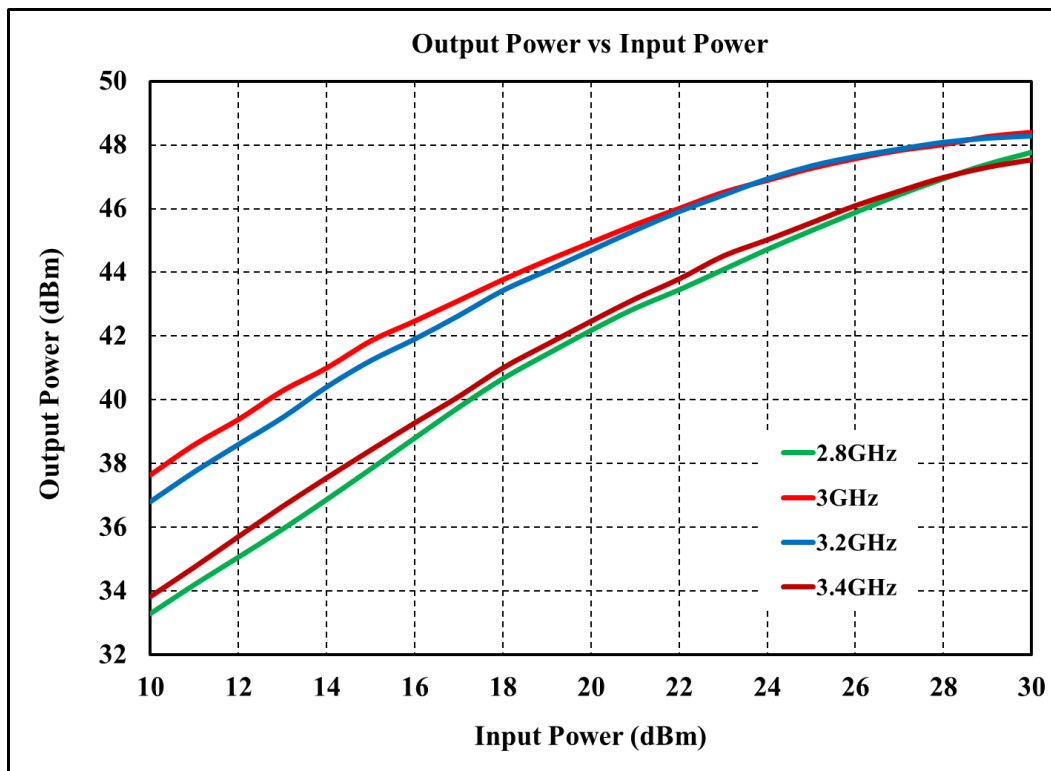
Small Signal S-Parameters

Test Ambient Temp. = 25 °C, $Z_0 = 50 \Omega$, $V_d = 35 V$

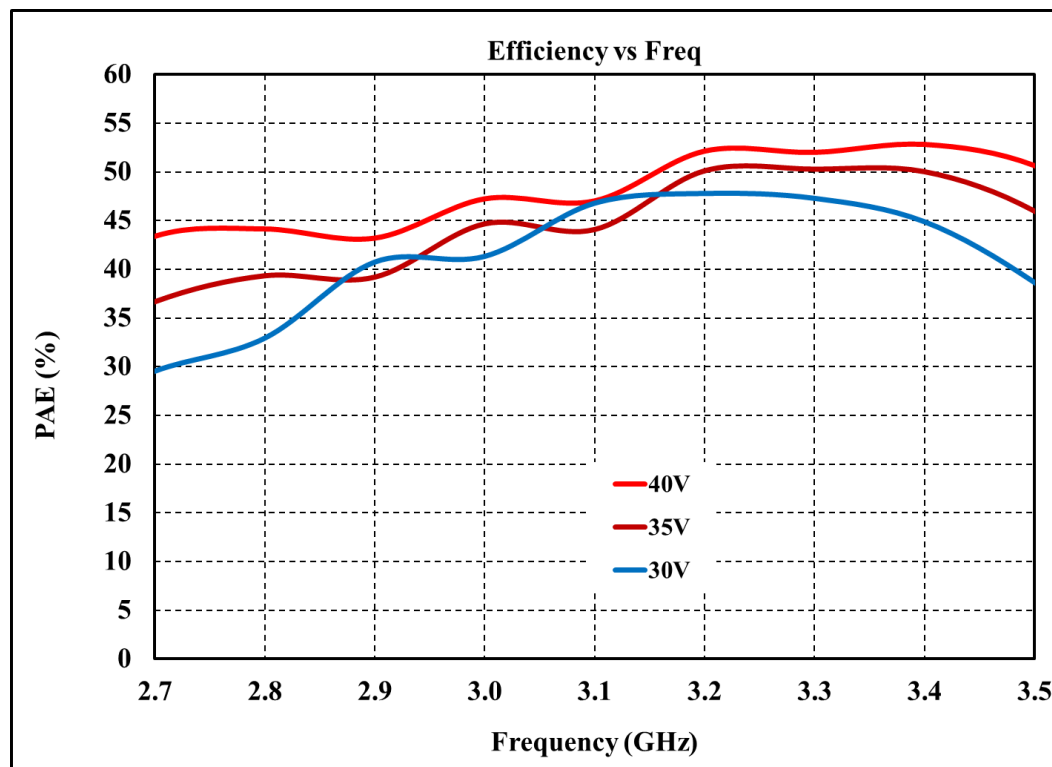
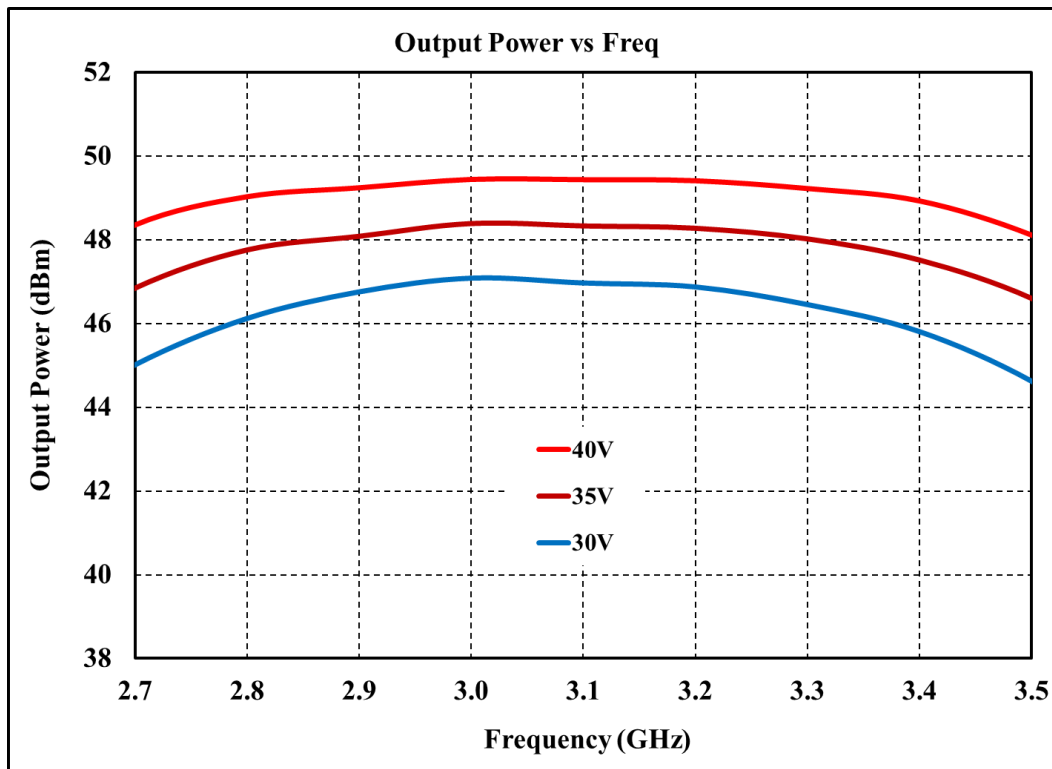


Power Measurements: $I_{dq} = 170 \text{ mA}$
 $T_A = 25^\circ\text{C}$, $Z_o = 50 \Omega$, $V_d = 35 \text{ V}$, *Pulse Width* = 100 μs , *Duty Cycle* = 10%


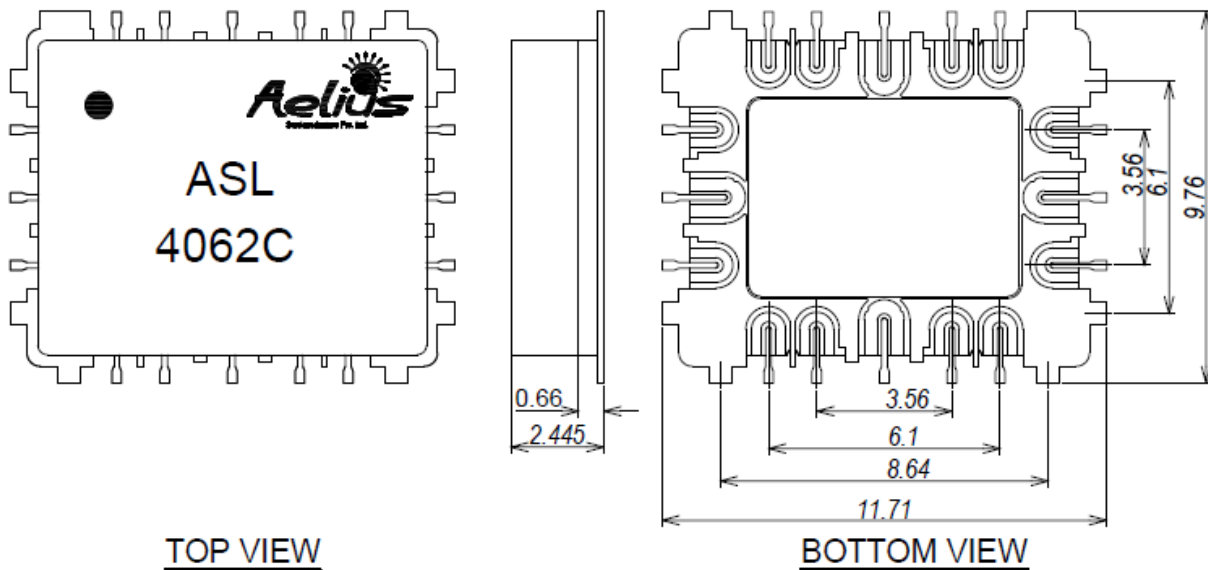
Power Measurements: $I_{dq} = 170 \text{ mA}$
 $T_A = 25^\circ\text{C}$, $Z_o = 50 \Omega$, $V_d = 35 \text{ V}$, $\text{Pulse Width} = 100 \mu\text{s}$, $\text{Duty Cycle} = 10\%$


Power Measurements: $I_{dq} = 170\text{ mA}$
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o = 50\text{ }\Omega$, $V_d = 35\text{ V}$, $PW = 100\text{ }\mu\text{s}$, $DC = 10\%$


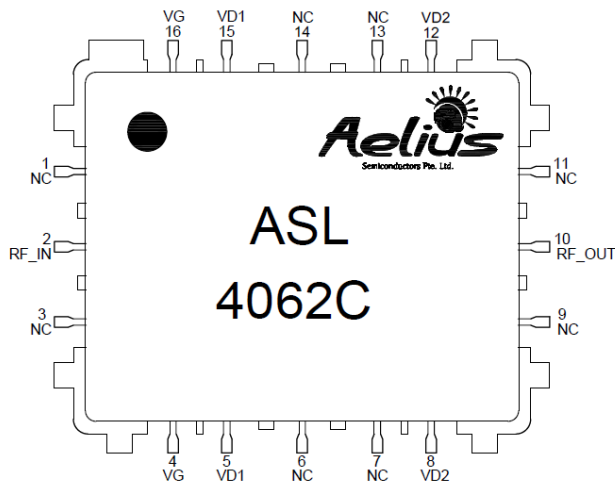
Power Measurements: $I_{dq} = 170 \text{ mA}$, $P_{in} = 30 \text{ dBm}$
 $T_A = 25^\circ\text{C}$, $Z_o = 50 \Omega$, $V_d = 35 \text{ V}$, $PW = 100 \mu\text{s}$, $DC = 10\%$



Package Dimensions and Pin Configuration



Pin configuration:

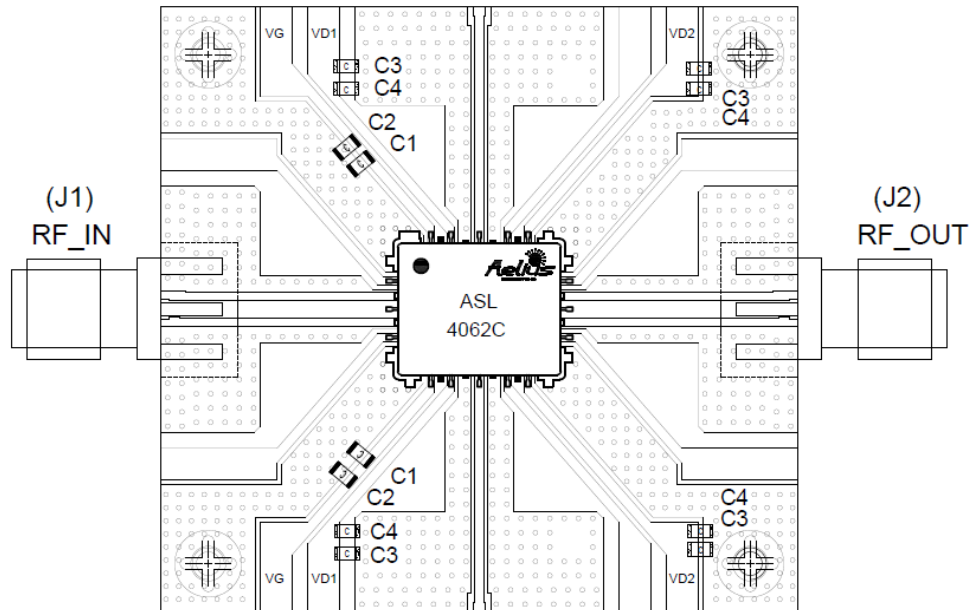


Units: millimeters

Note:

1. Pin no. 2 : RF IN
2. Pin no. 10 : RF Out
3. Pin no. 4,16 : Vg
4. Pin no. 5,15 : Vd1
5. Pin no. 8,12 : Vd2
6. Other Pins : NC

Recommended Test Assembly Diagram



Components	Component Value	Description
C1	1 K pF	Cap, 0603C, 16 V, 2 nos., at gate bias lines
C2	0.1 uF	Cap, 0603C, 16 V, 2 nos., at gate bias lines
C3	1 K pF	Cap, 0603C, 50 V, 4 nos., at drain bias lines
C4	0.1 uF	Cap, 0603C, 50 V, 4 nos., at drain bias lines

Note:

1. The PCB with input and output 50 Ohm lines are implemented on 20 mil, RO 4350 substrate.
2. Use electrically and thermally conductive material for the attachment of package to heat sink.



GaN MMIC devices are sensitive to electrostatic discharge. Proper precautions should be taken 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 the website.