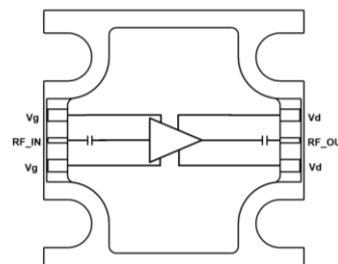


2 – 6.2 GHz GaN High Power Amplifier

Features

- ♦ Frequency Range : 2 – 6.2 GHz
- ♦ Small signal Gain : 26 dB
- ♦ Power Gain : 22 dB
- ♦ Psat : 44 dBm (typ)
- ♦ Efficiency : 30%
- ♦ Drain Voltage : 28V
- ♦ Drain Bias Current : 300 mA (average @10%DC)
- ♦ Package Size : 12.7mm x 12.7mm

Functional Diagram



Typical Applications

- ♦ Weather Radar
- ♦ Air Traffic Control
- ♦ Defense Radar

Description

The ASL4054MC1 is a packaged MMIC based two-stage 25-Watt Power Amplifier with operating frequency range of 2 to 6.2 GHz. Input and output of the amplifier are matched 50 ohm line impedance. The saturated output power of 44 dBm is achieved in pulsed operating condition with power gain of 22 dB and power added efficiency greater than 30%. The MMIC is developed using highly reliable AlGaIn/GaN HEMT process.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Drain supply voltage	32	volts
Gate bias voltage (Vgs)	-5 to -2.5	volts
RF input power at Vd=28v	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

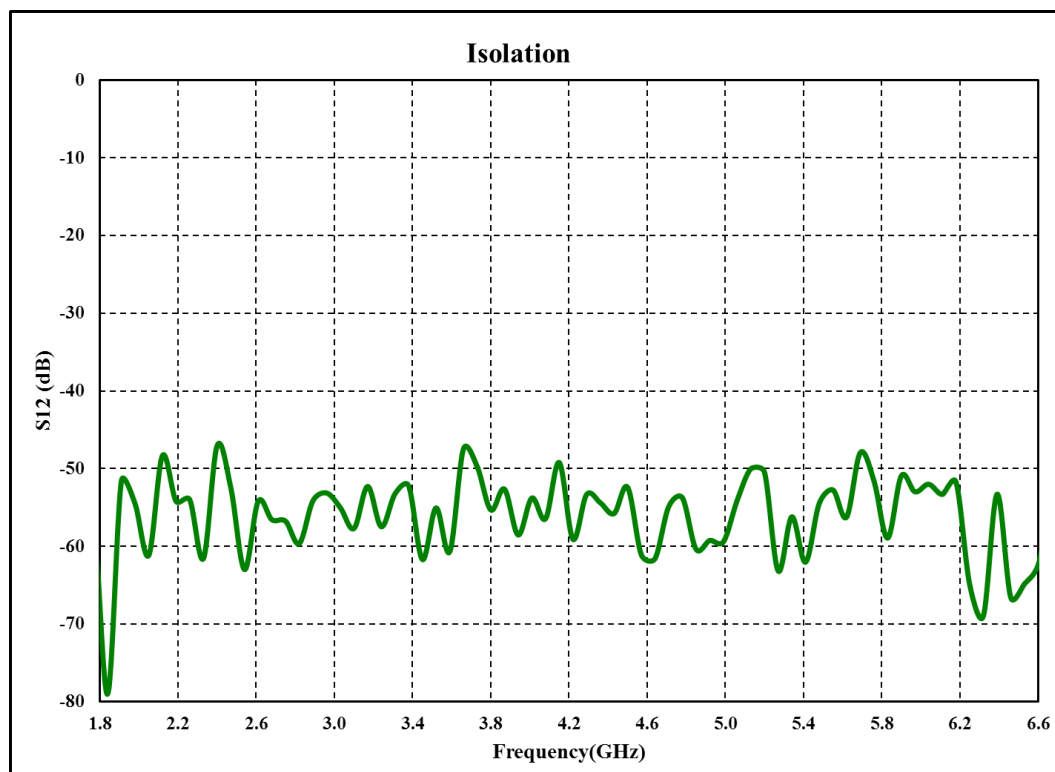
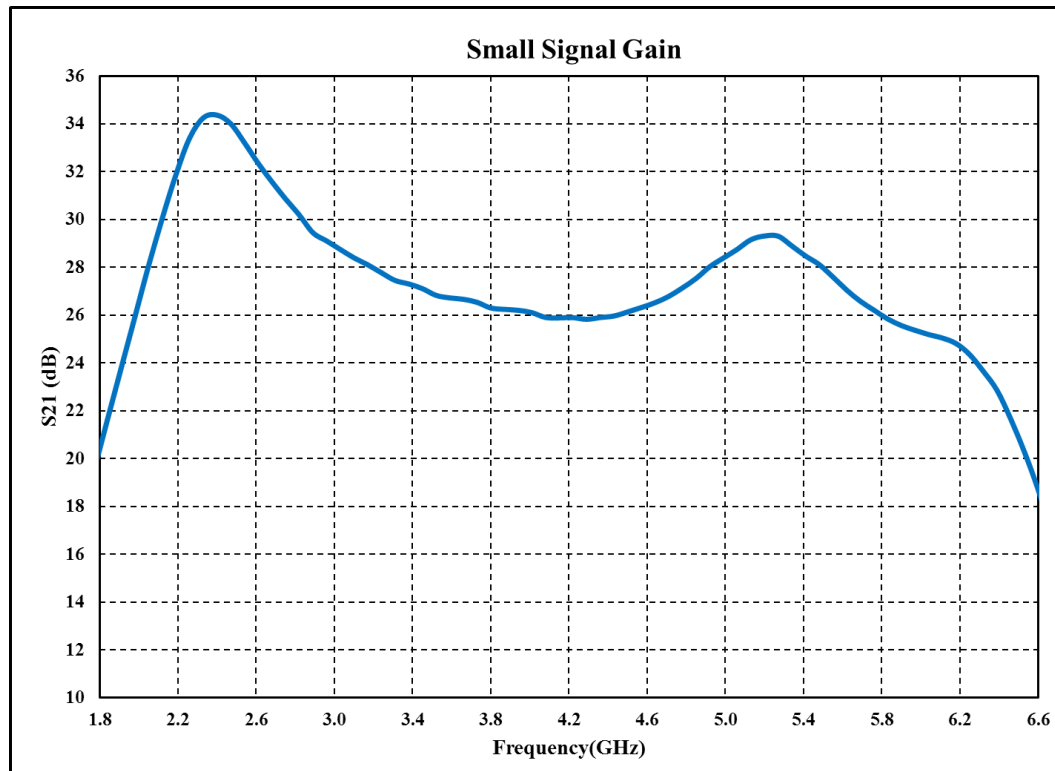
Electrical Specifications: $V_d=28V$, I_{dq} (avg) =300mA,
 $T_A = 25\text{ }^{\circ}C$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%

S.No	Parameter	Typical Value	Units
1	Frequency	2 – 6.2	GHz
2	Small Signal Gain	26	dB
3	Input Return Loss	8	dB
4	Output Return Loss	8	dB
5	Saturated Output Power	44	dBm
6	Power Gain	22	dB
7	PAE	30	%
8	Drain Voltage (V_d)	28	V
9	Quiescent Current (I_{dq} , avg)	300	mA

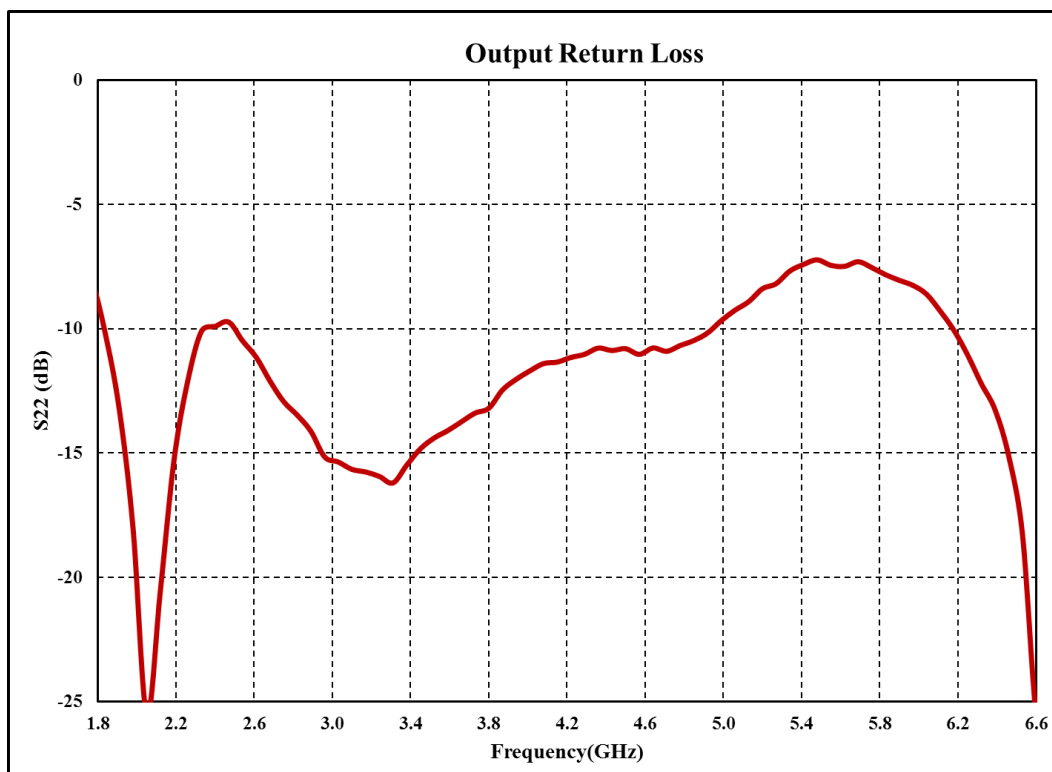
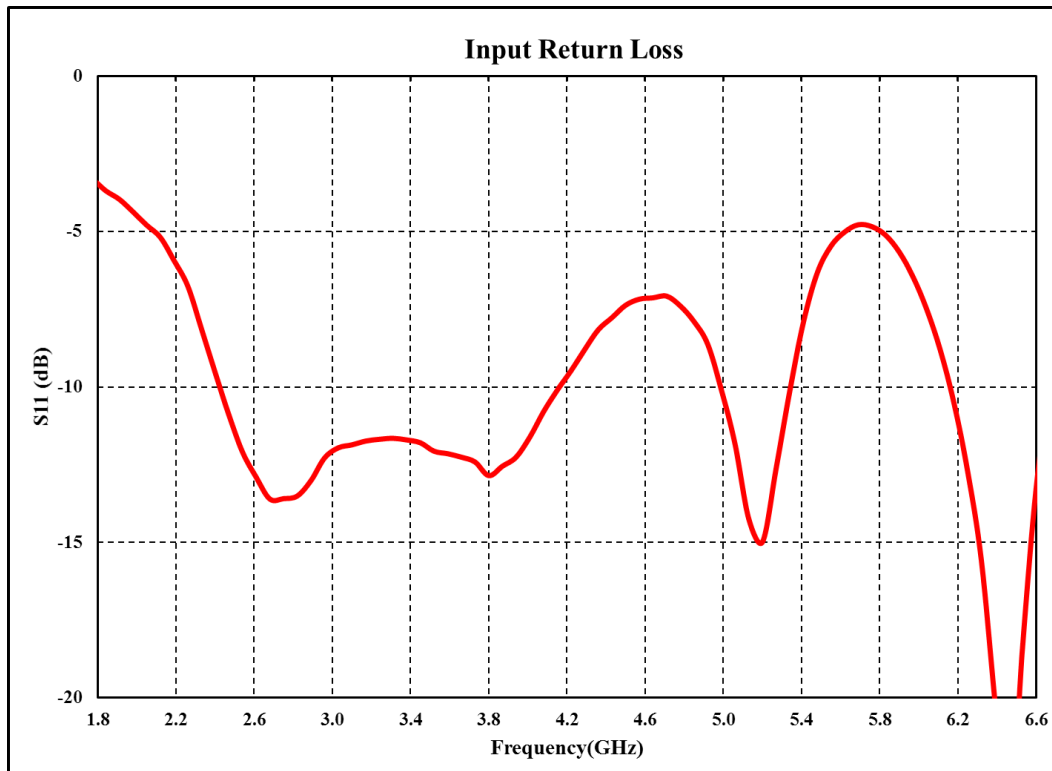
Note:

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} .

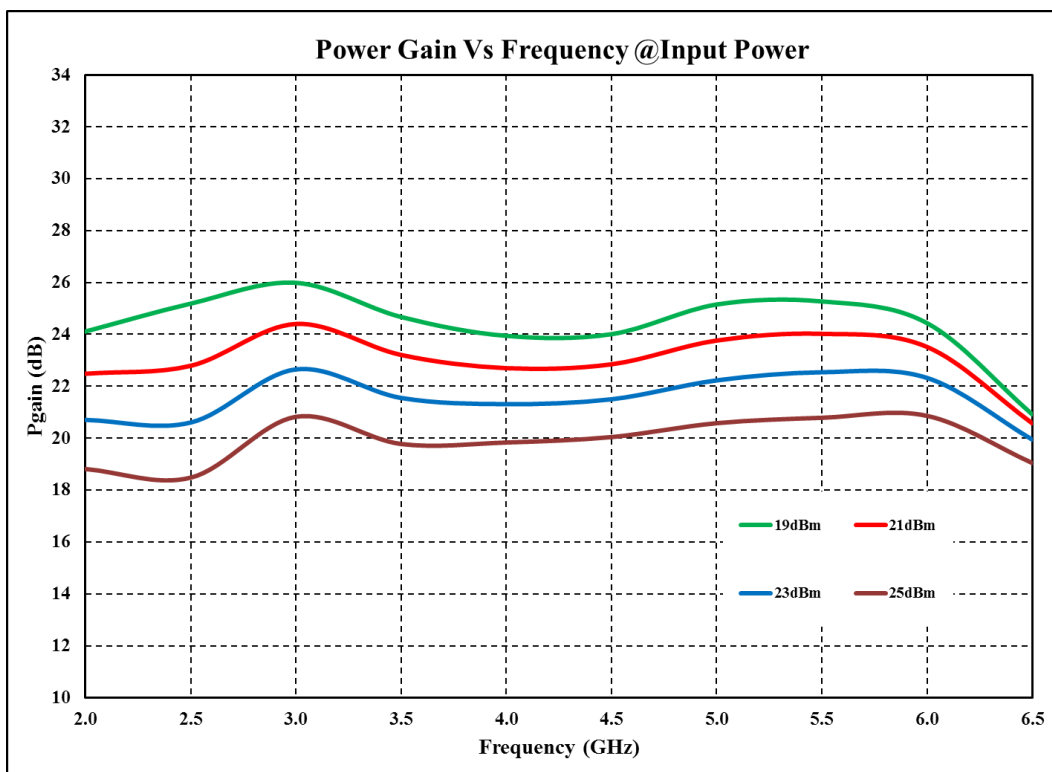
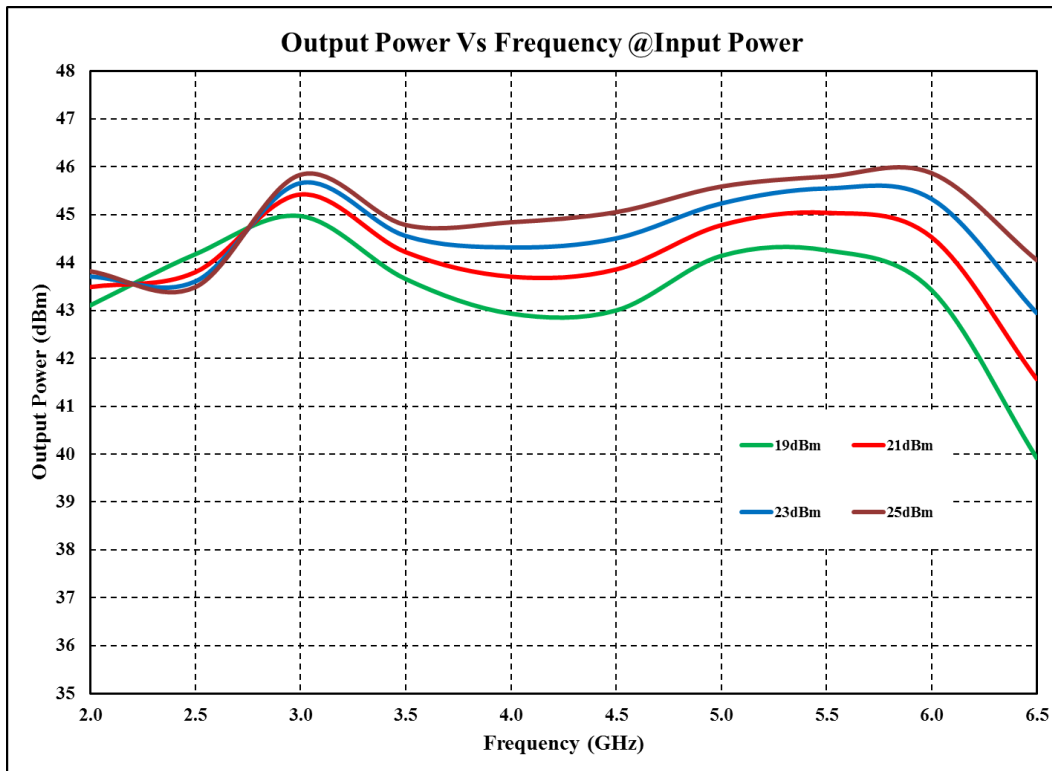
Test Fixture Data: $V_d=28V$, $I_{dq}(\text{avg})=300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



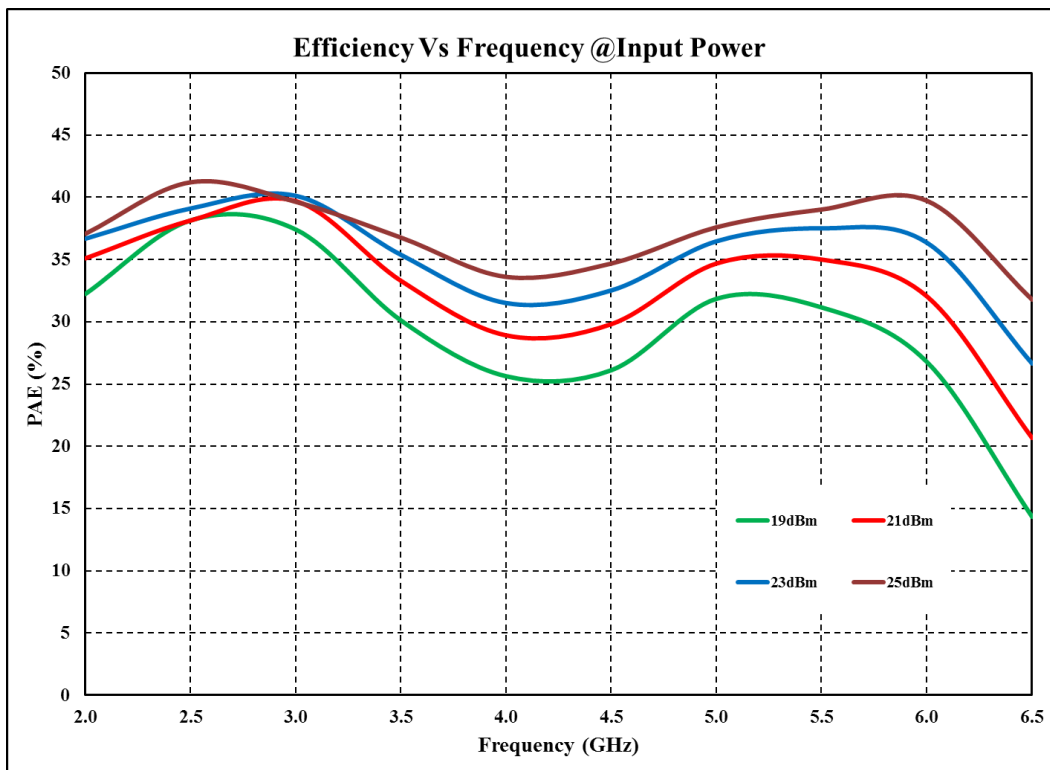
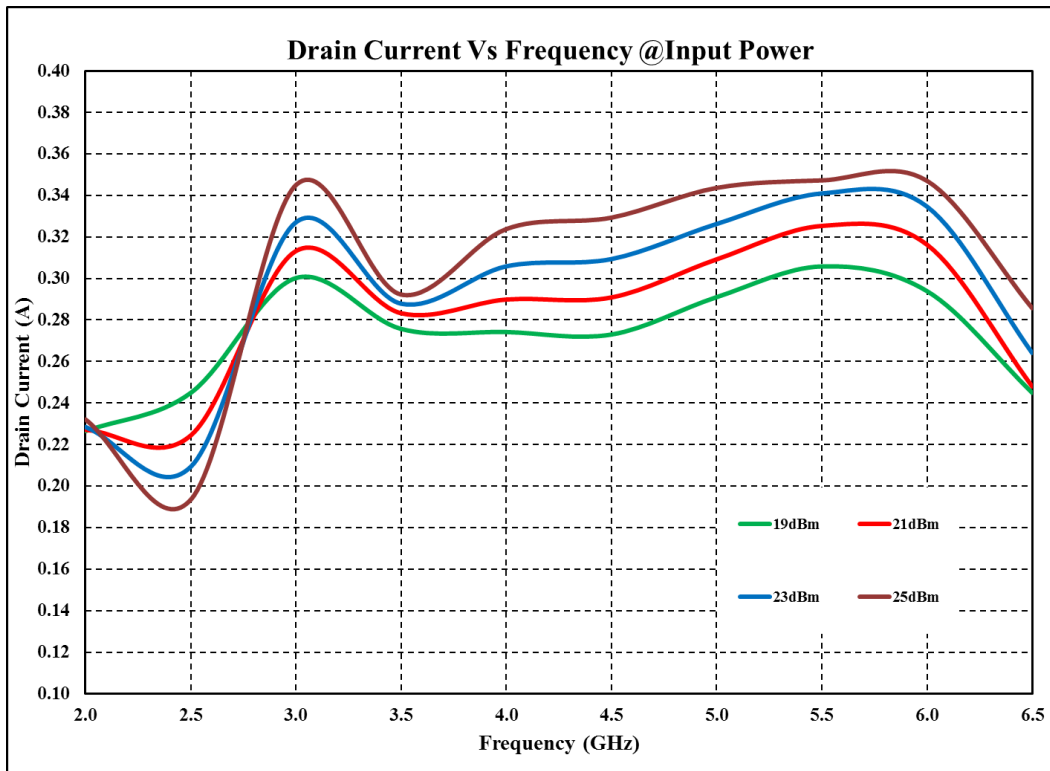
Test Fixture Data: $V_d=28V$, $I_{dq} \text{ (avg)} = 300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



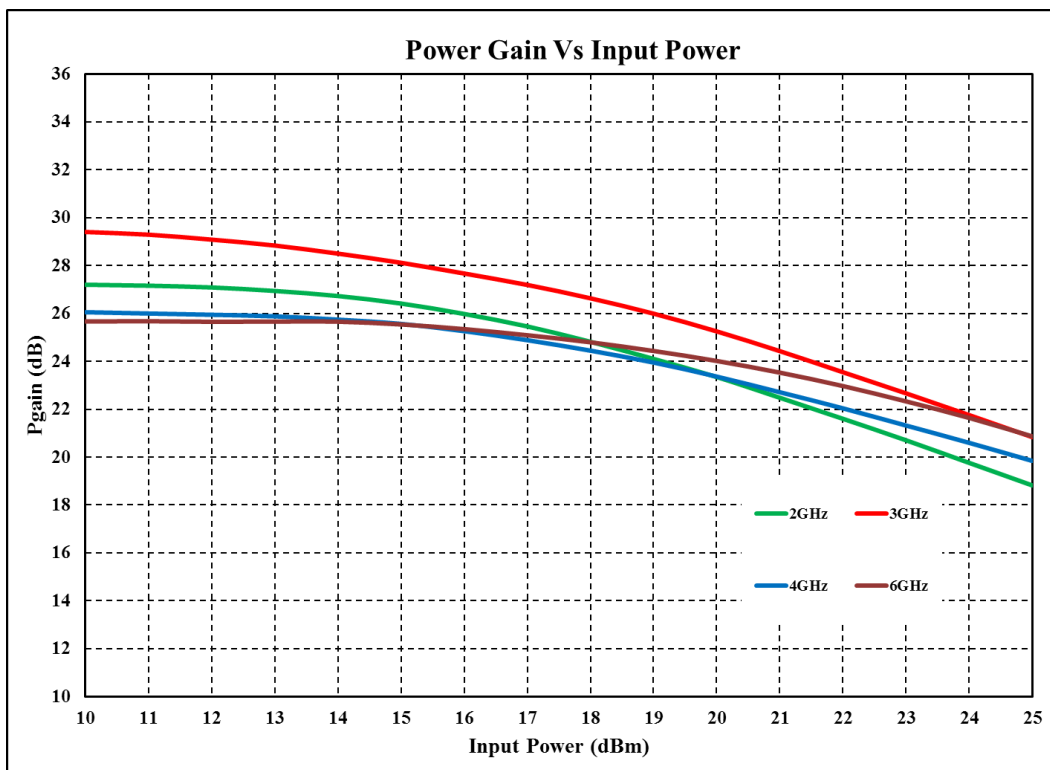
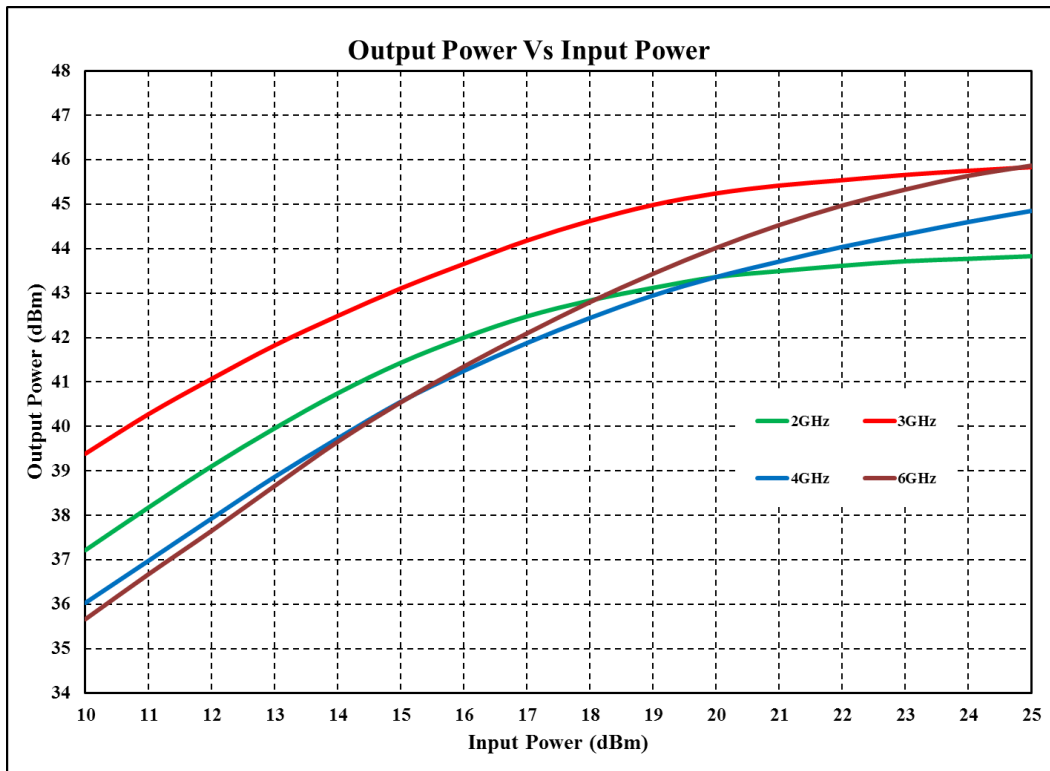
Test Fixture Data: $V_d=28V$, I_{dq} (avg) =300mA,
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



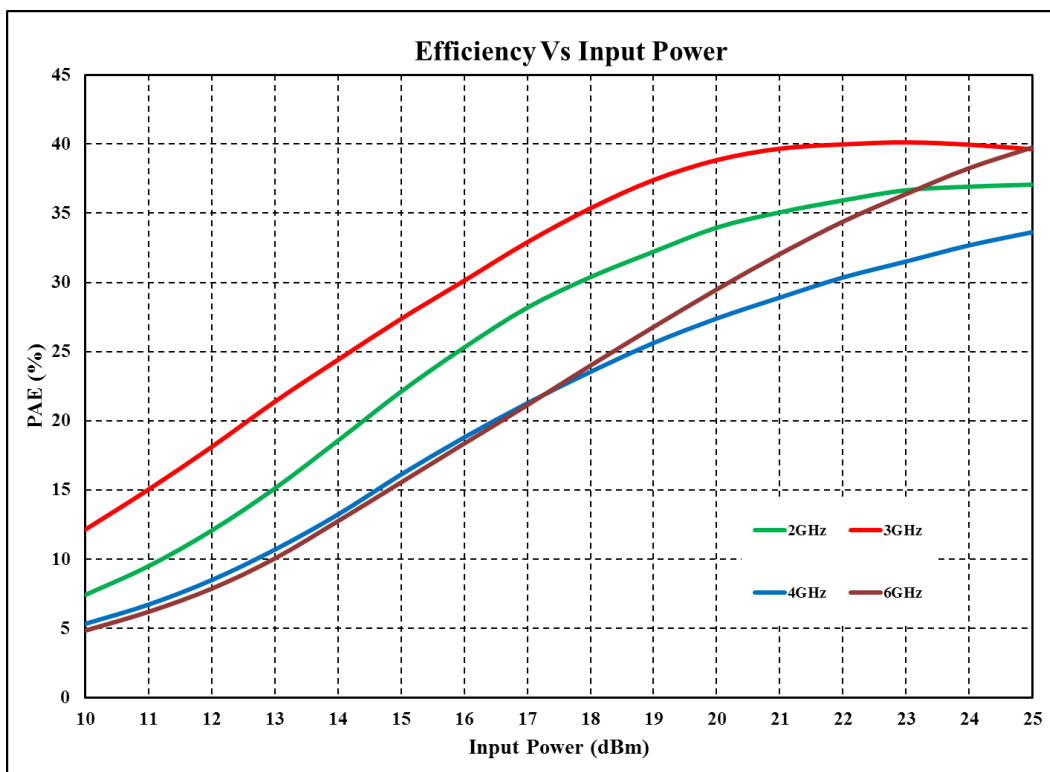
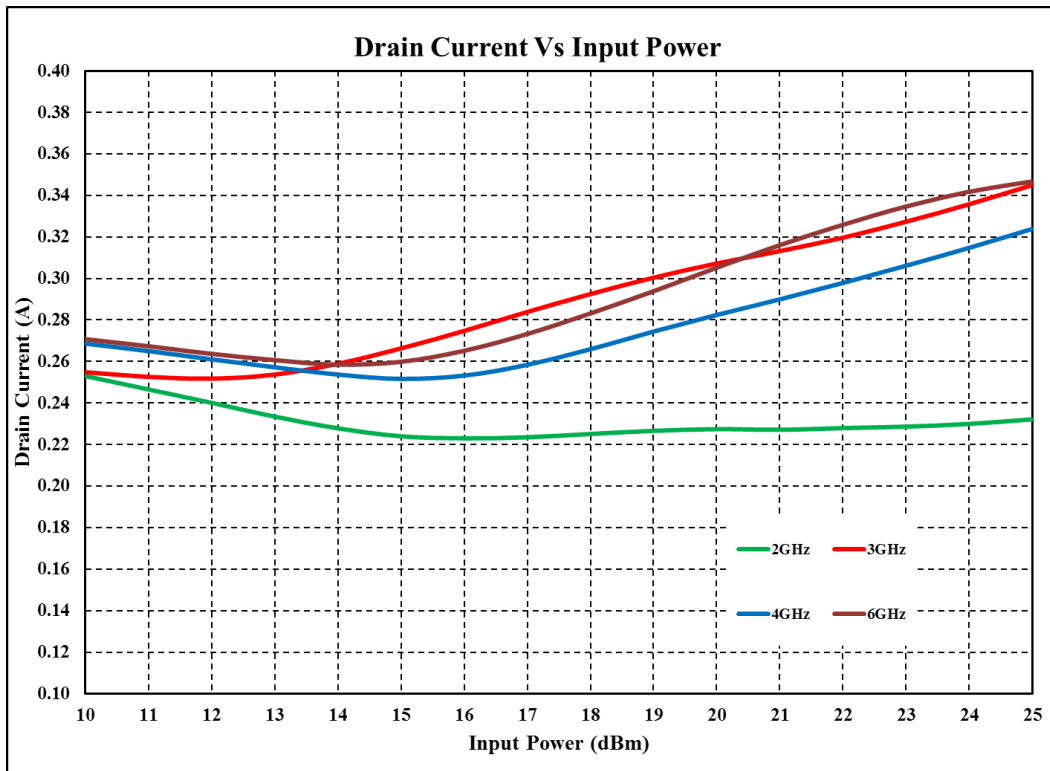
Test Fixture Data: $V_d=28V$, I_{dq} (avg) =300mA,
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



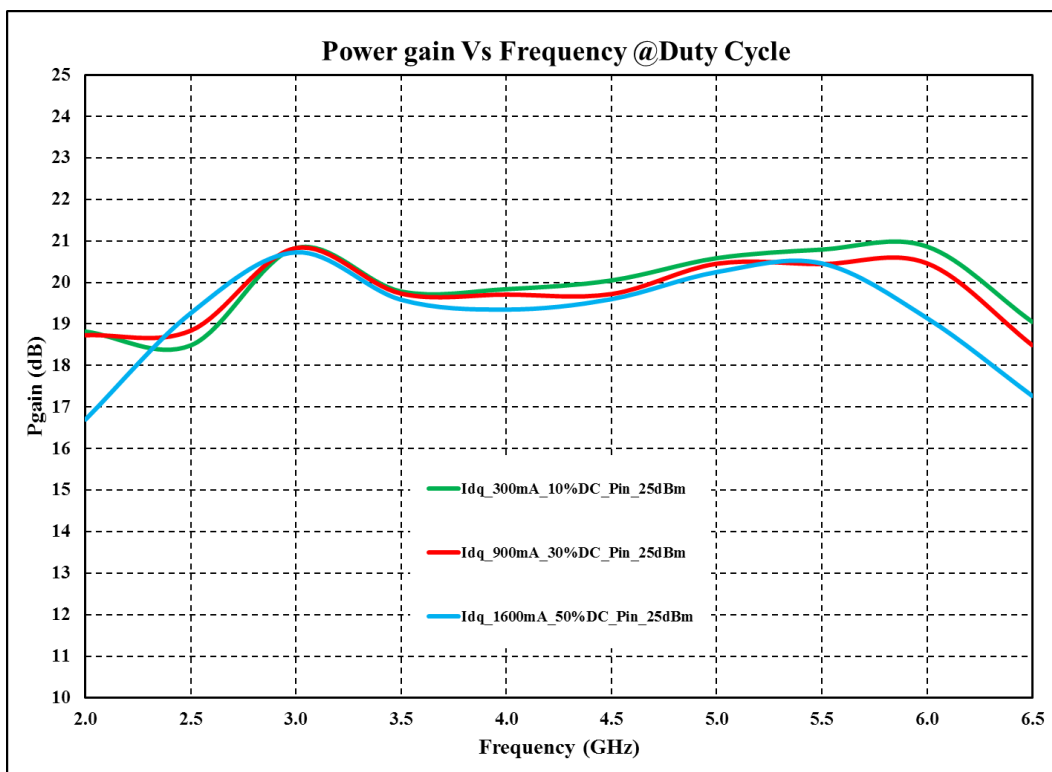
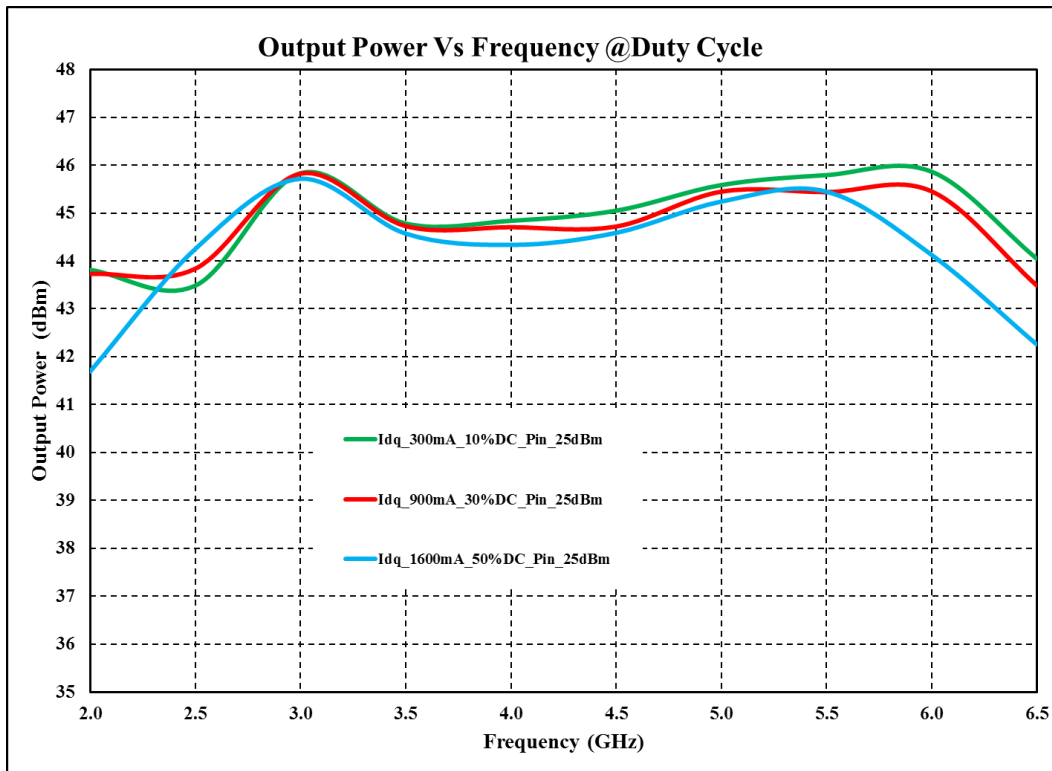
Test Fixture Data: $V_d=28V$, $I_{dq} \text{ (avg)} = 300mA$,
 $T_A = 25^\circ C$, $Z_o=50\ \Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



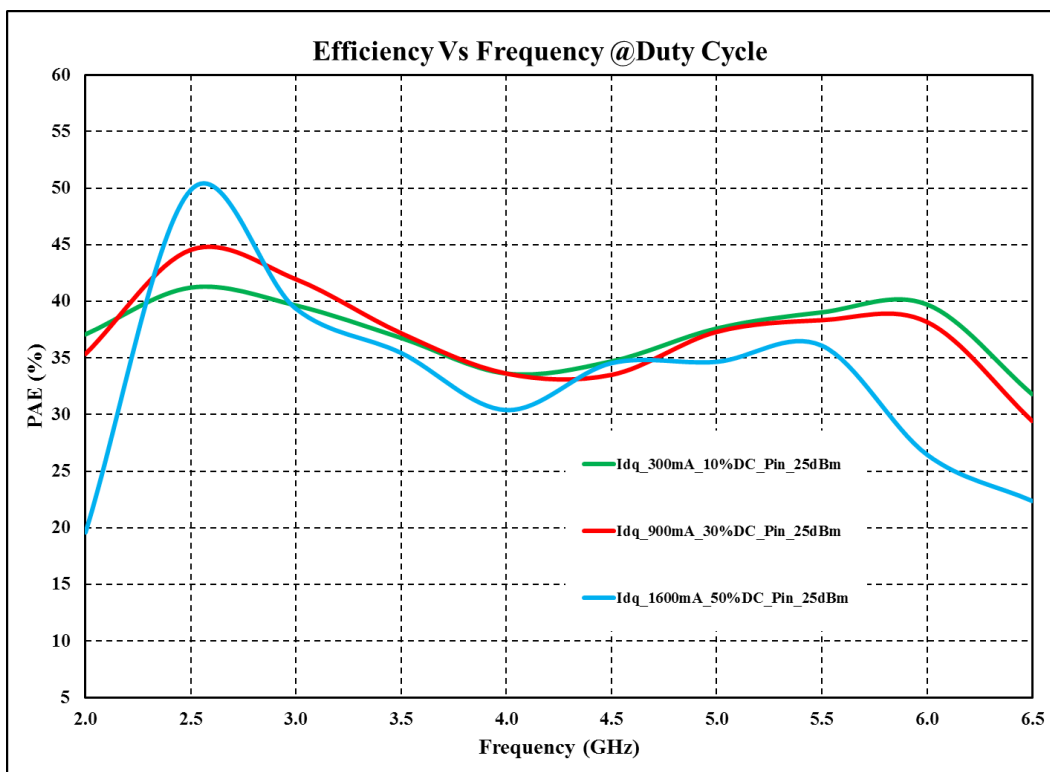
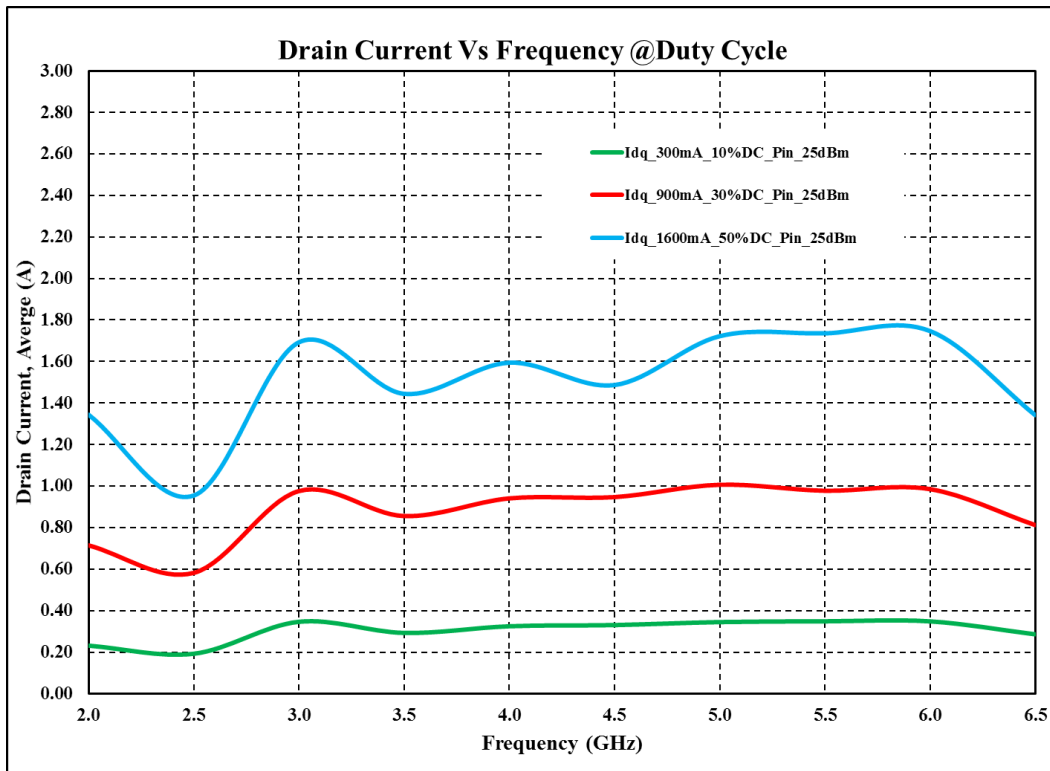
Test Fixture Data: $V_d=28V$, I_{dq} (avg) =300mA,
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle =10%



Test Fixture Data: $V_d=28V$, I_{dq} (avg) = Variable @ Duty Cycle
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle=10%,30%,50%

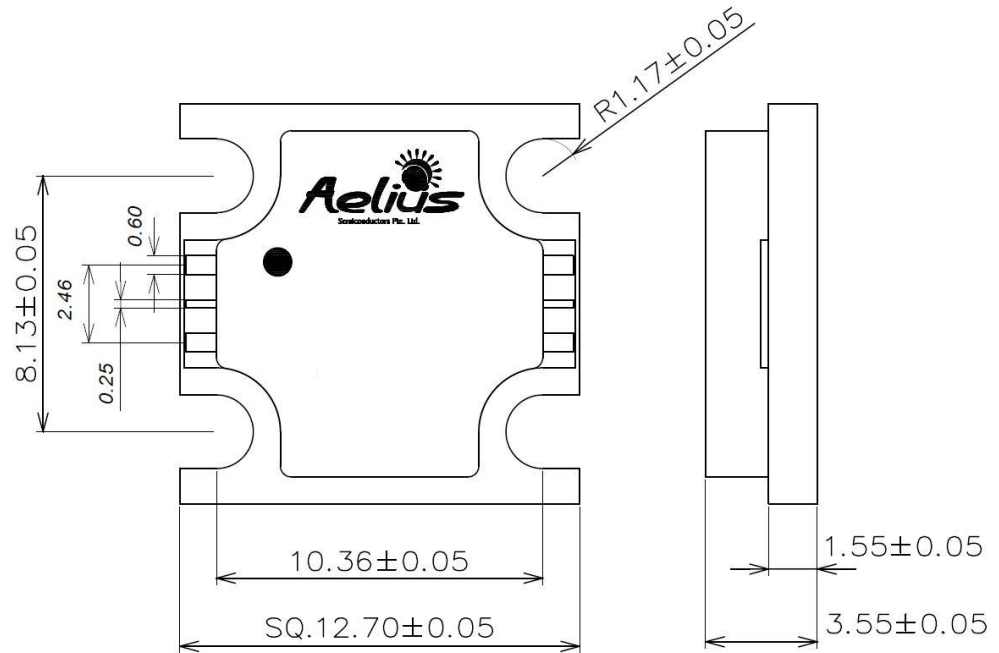


Test Fixture Data: $V_d=28V$, I_{dq} (avg) = Variable @ Duty Cycle
 $T_A = 25\text{ }^{\circ}\text{C}$, $Z_o=50\text{ }\Omega$, Pulse Repetition Period =1ms, Duty Cycle=10%,30%,50%



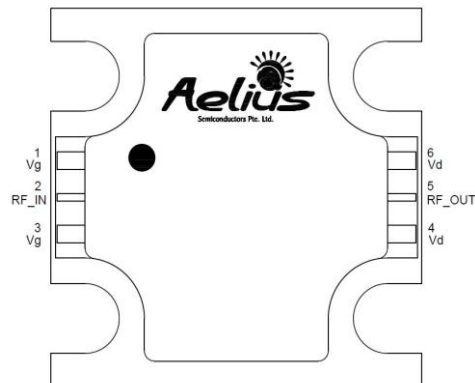
Package Dimension and Pin Configuration

Package Over View:



- Note:**
1. All units are in millimeters.
 2. Package dimensions at the opposite ends are identical.

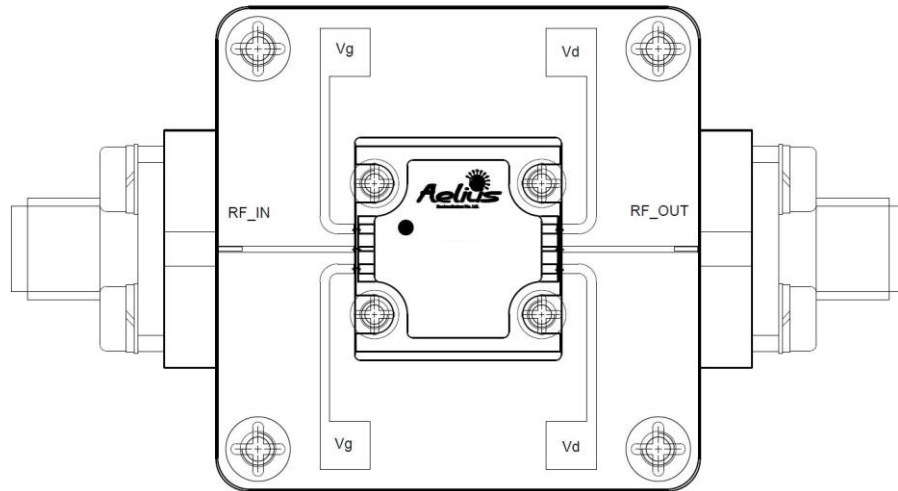
Pin Configuration:



Note:

1. Pin no. 1,3 : Vg
2. Pin no. 2 : RF IN
3. Pin no. 4,6 : Vd
4. Pin no. 5 : RF OUT

Assembly Diagram:



Note:

1. Additional 10uF polarized capacitors are recommended at top & bottom of drain bias.
2. Input and output 50 ohm lines are preferably on 5mil or 10mil RT Duroid substrate.
3. Use high electrically and thermally conductive material for the attachment of package to heat sink mounting for long-term reliability.
4. ASL4054MC1 doesn't support CW operation at full bias. Reducing "Id" by 50% can be accepted to support CW operation.



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 the website.