

## 8-12GHz 12Watt GaAs Power Amplifier

### Features

- ◆ Frequency Range: 8 – 12GHz
- ◆ Small Signal Gain: 24dB
- ◆ Output P1dB: 39dBm
- ◆ Psat: 40.5dBm
- ◆ DC decoupled input and output
- ◆ Dual bias operation
- ◆ 7x7mm 28 Lead QFN Package

### Typical Applications

- ◆ Radar
- ◆ Military & Space
- ◆ Instrumentation

### Description

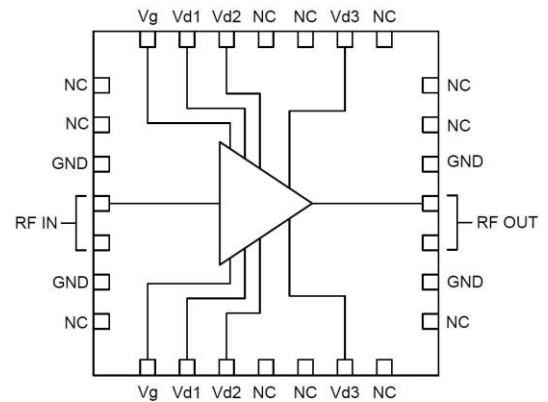
The ASL4048P7 is a X-band Power Amplifier which covers frequency range from 8-12GHz. It features 24dB small signal Gain with input and output return losses better than 10dB (typ) over the operating frequency band. This amplifier features saturated output power of 40.5dBm over the bandwidth.

### Absolute Maximum Ratings<sup>1</sup>

Parameter	Absolute Maximum	Units
Drain supply voltage	+9	volts
Drain current ( $I_{dq}$ ) at $V_d=8.5V$	5.5	A
RF input power	23	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

### Functional Diagram

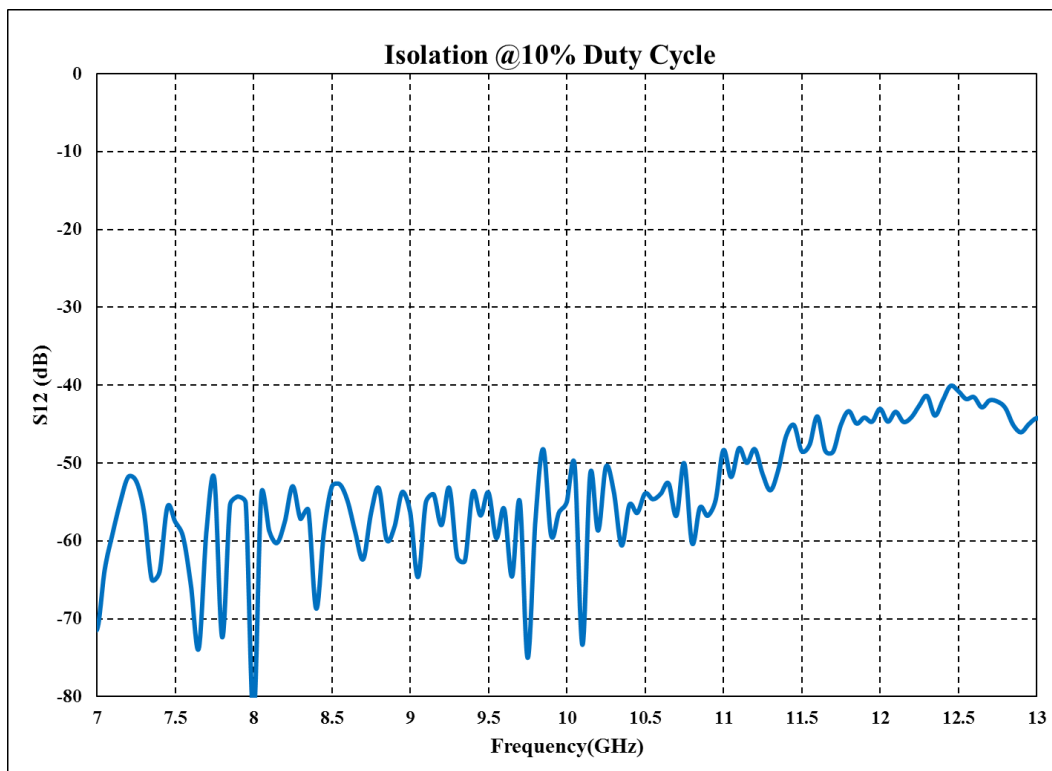
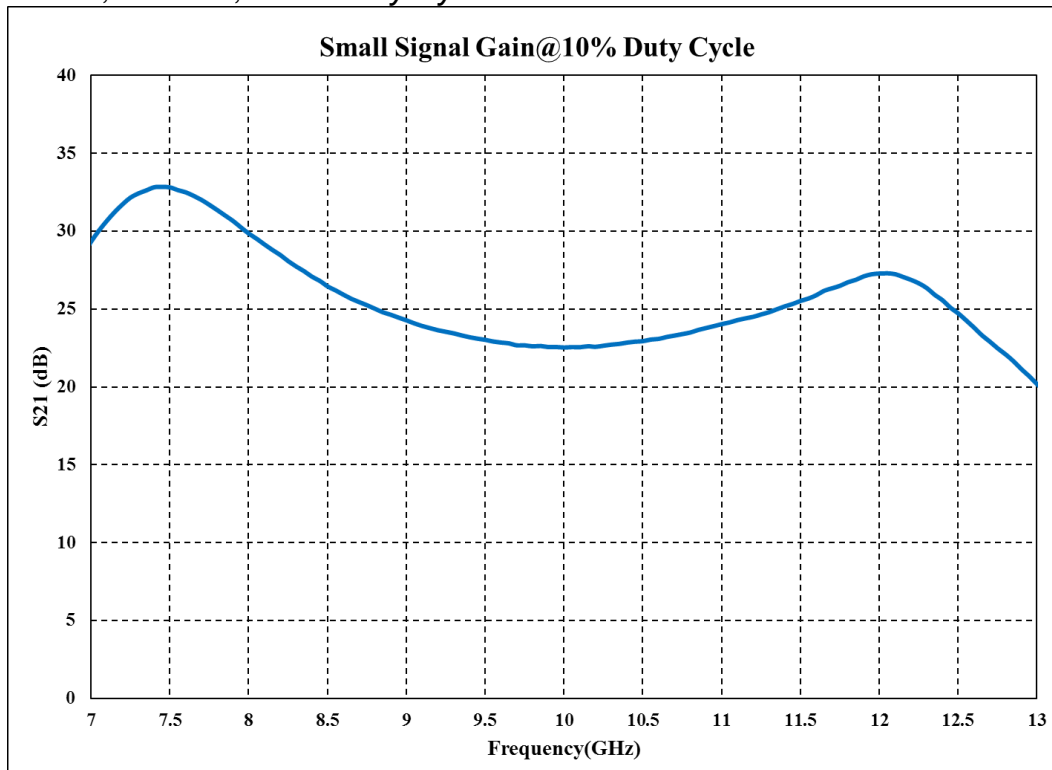


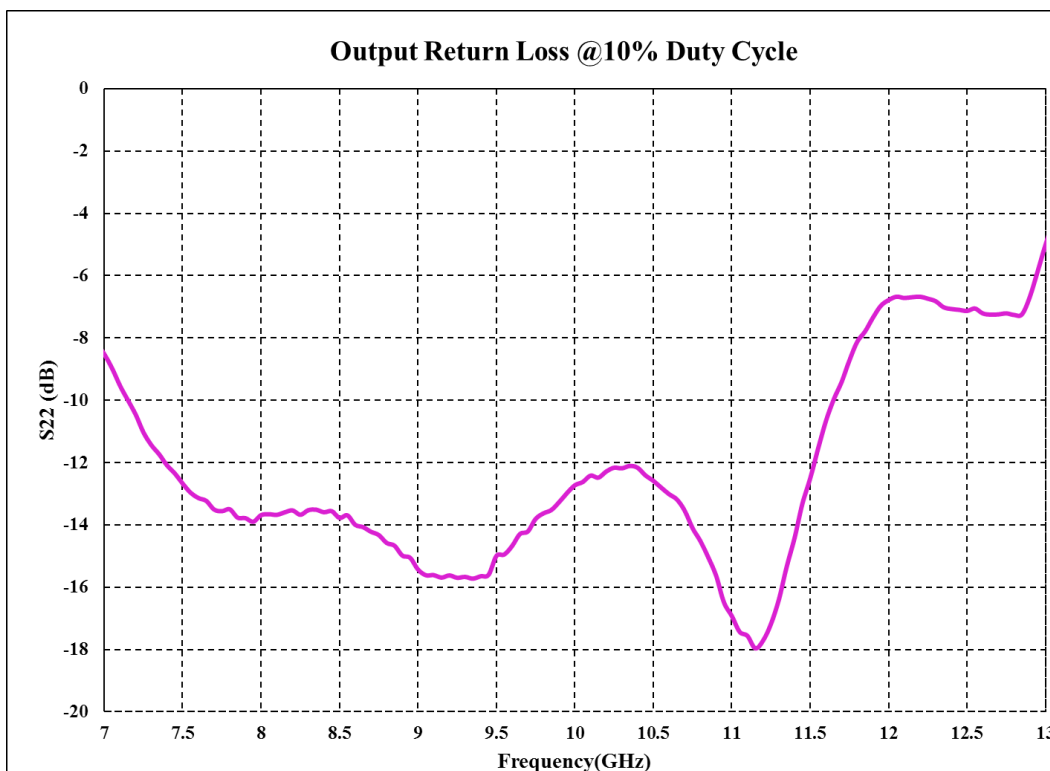
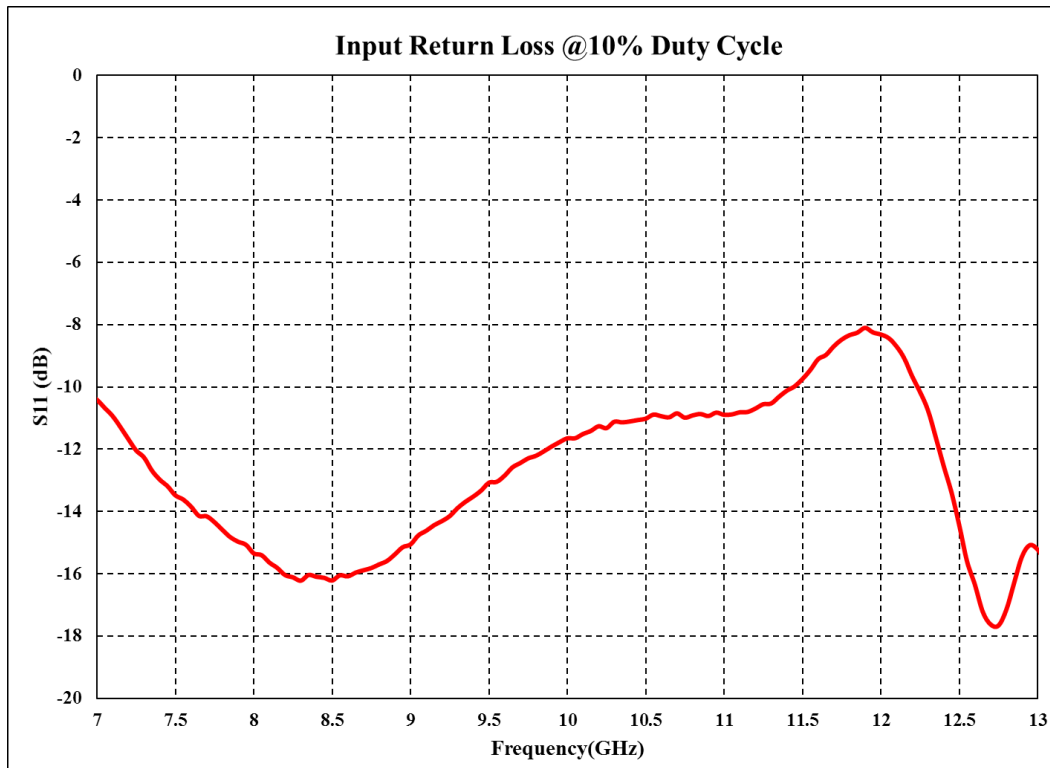
**Electrical Specifications @  $T_A = 25\text{ }^\circ\text{C}$ ,  $Z_o = 50\Omega$ , Pulse Duty Cycle=10%**

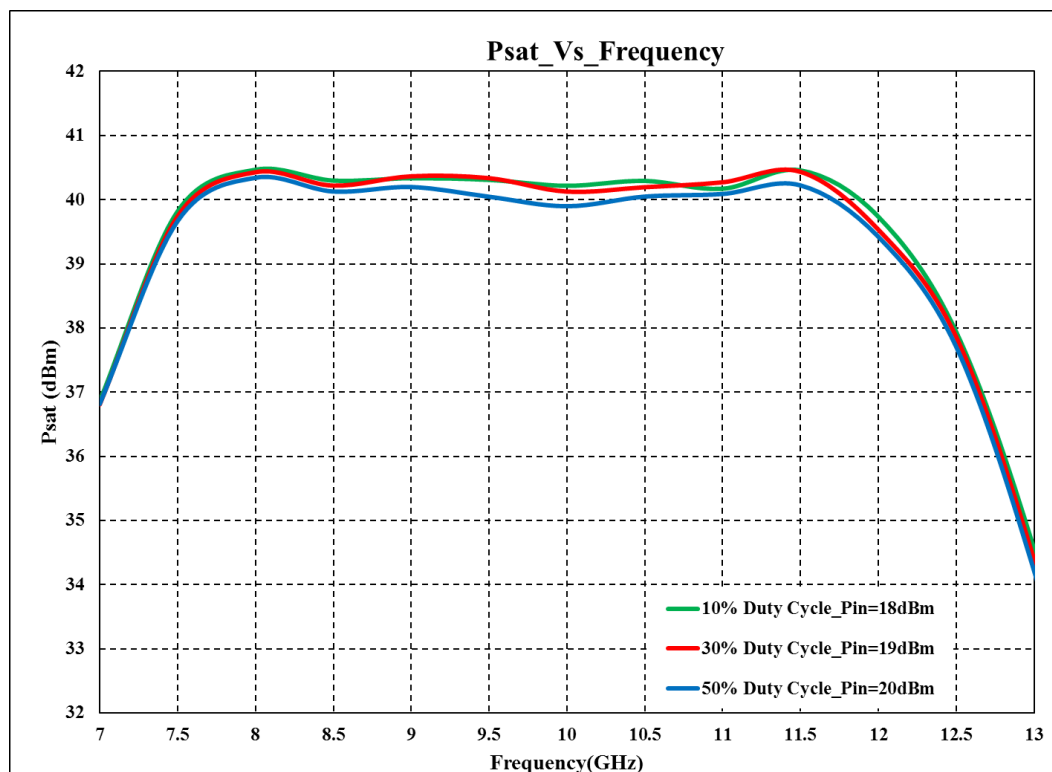
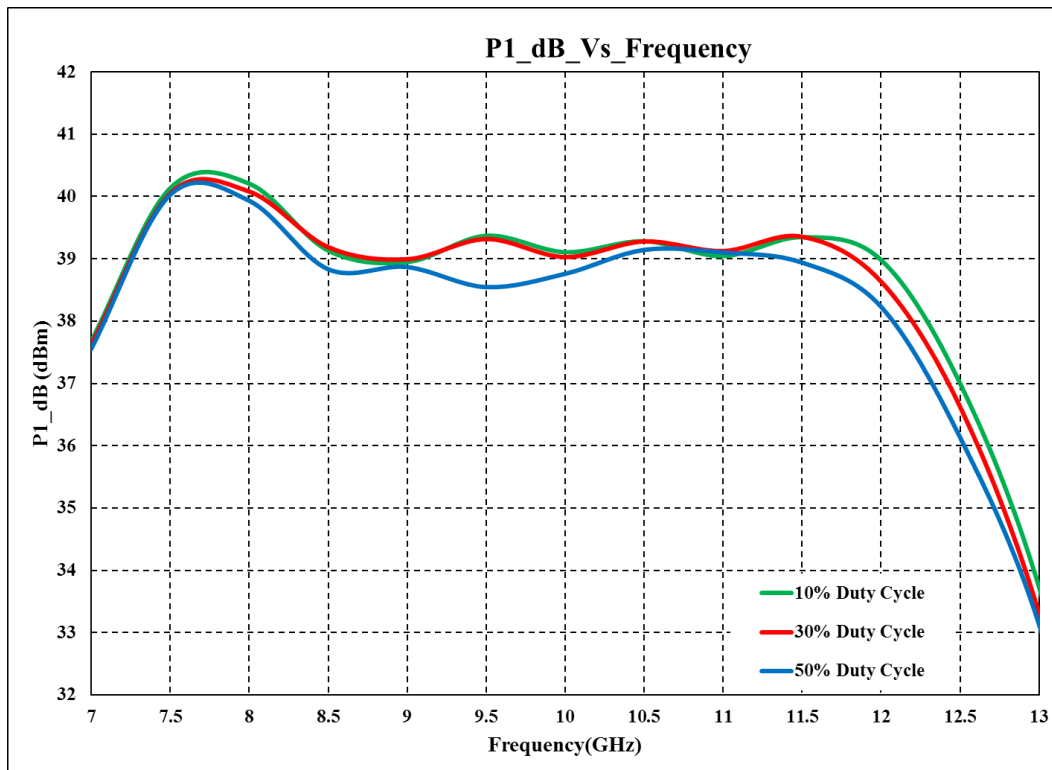
Parameter	Typical Values	Units
Frequency Range	8 – 12	GHz
Small Signal Gain	24	dB
PGain	21	dB
P1dB	39	dBm
$P_{\text{sat}}$	40.5	dBm
Input Return Loss	10	dB
Output Return Loss	10	dB
Voltage	8.5	V
Current(I <sub>dq</sub> )	3500	mA

**Note:**

1. The above parameters specified are measured in 50-Ohm test fixture.
2. Adjust V<sub>g</sub> between -4V to 0V to achieve I<sub>dq</sub> = 3500mA (Typical)

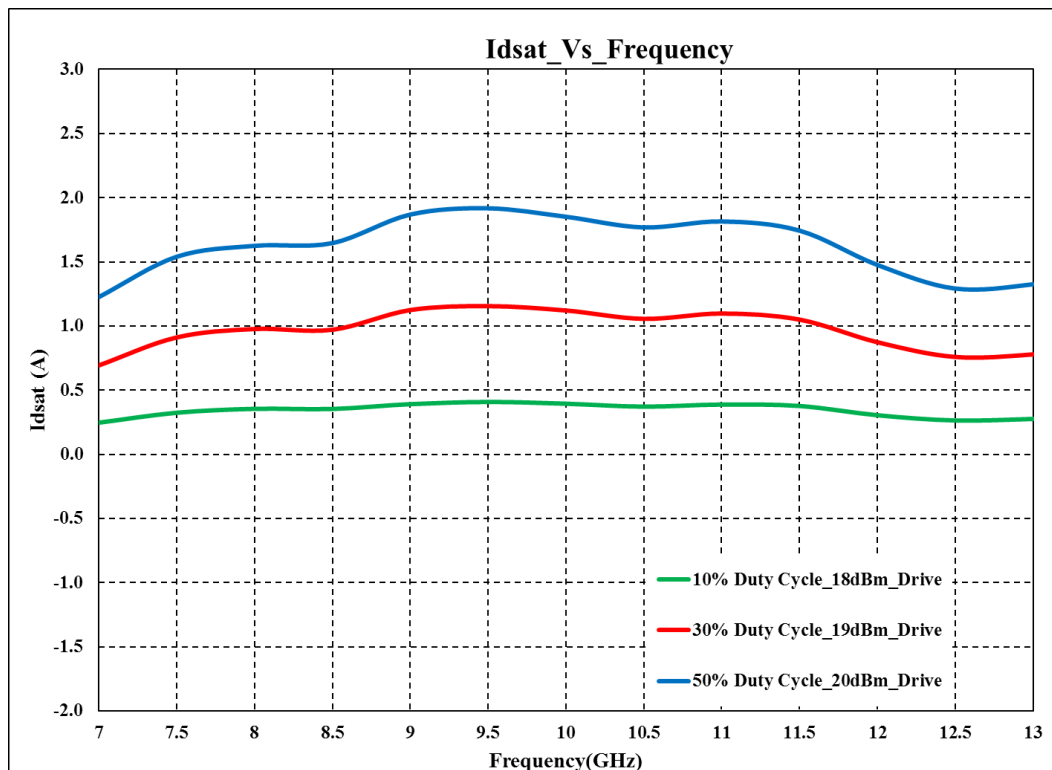
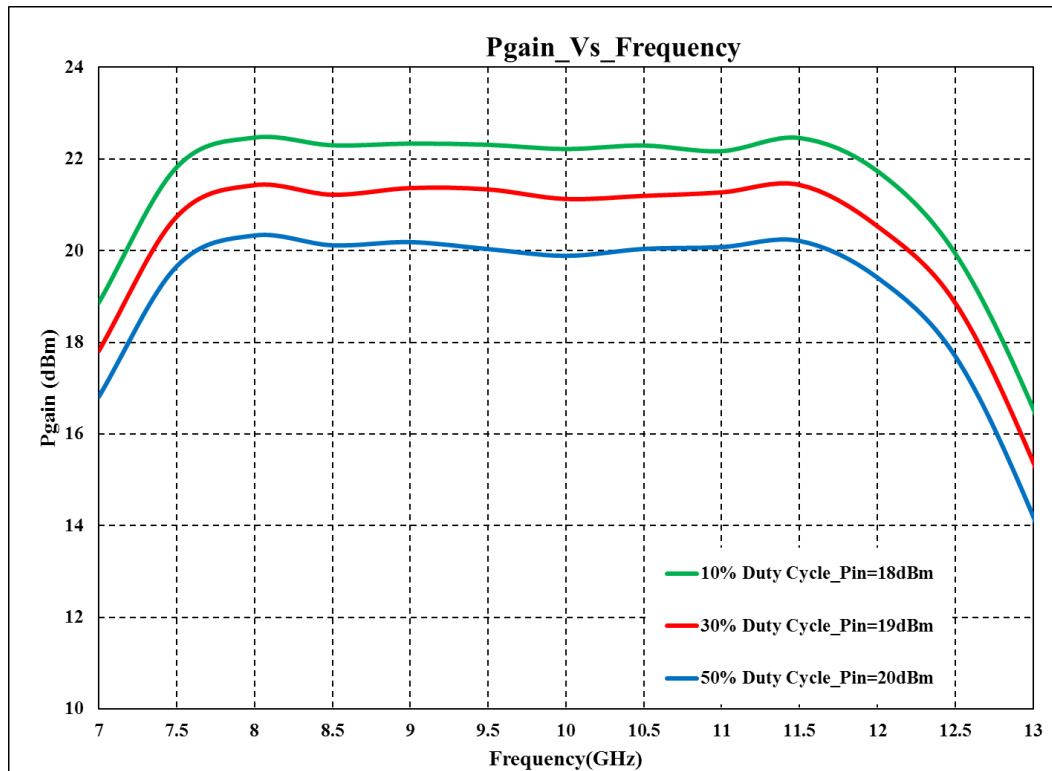
**Test Fixture Data for Varying  $V_d=8.5V$ ,  $I_{dq}=3500mA$ ,  
 $T_A = 25^\circ C$ ,  $Z_o=50\ \Omega$ , Pulse Duty Cycle=10%**

**Test Fixture Data for Varying  $V_d=8.5V$ ,  $I_{dq}=3500mA$ ,  
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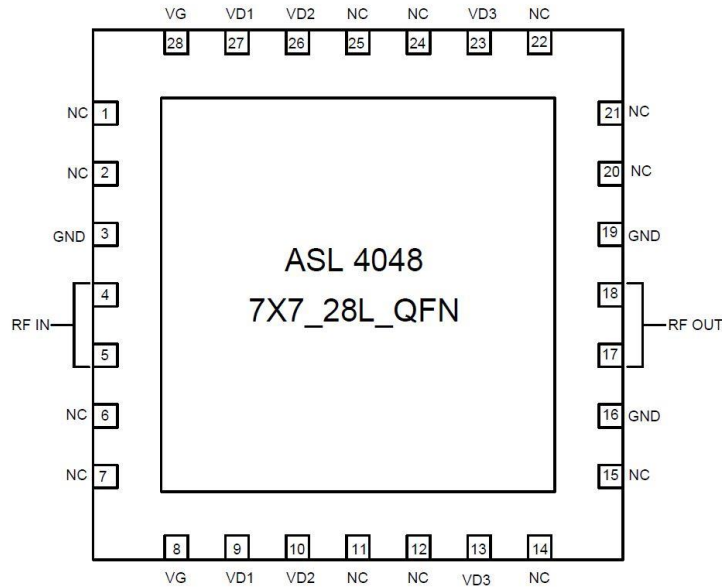
**Test Fixture Data for Varying Vd=8.5V, Idq=3500mA,**
*TA = 25 °C, Zo=50 Ω, Pulse Duty Cycle=10%,30%,50%.*


**Test Fixture Data for Varying Vd=8.5V, Idq=3500mA,**

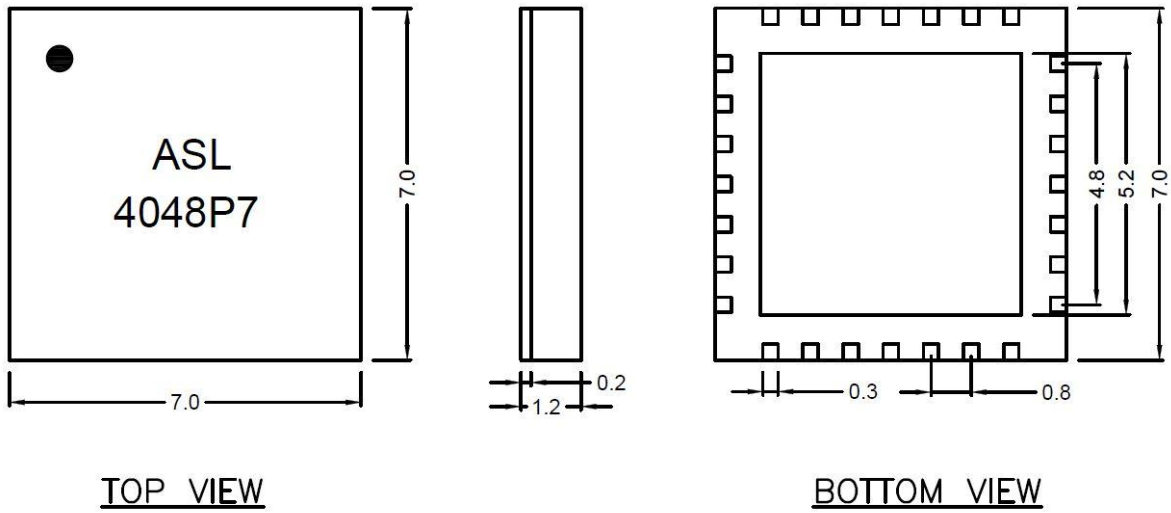
TA = 25 °C, Zo=50 Ω, Pulse Duty Cycle=10%,30%,50%.



## Pin Configuration Details


**Note:**

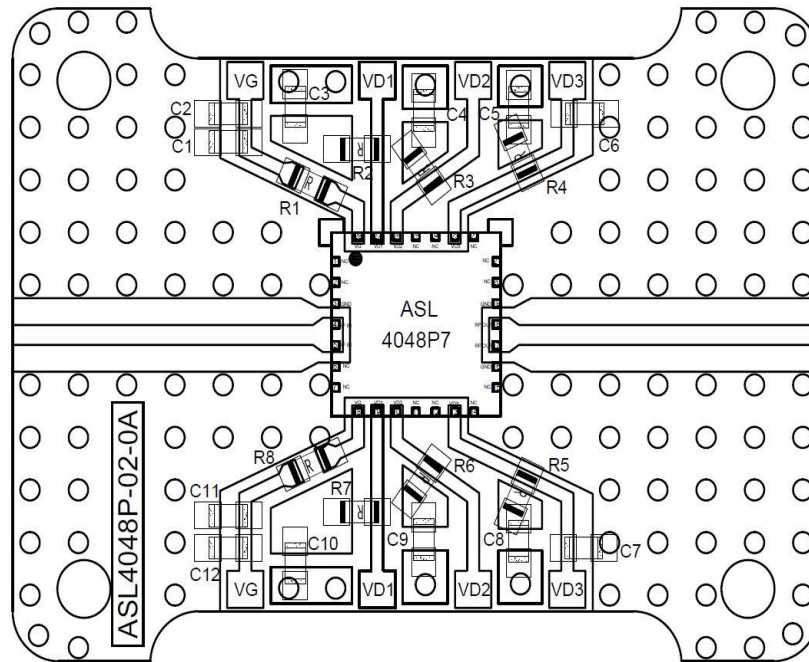
1. Pin no. 4 & 5 : RF IN
2. Pin no.17 & 18 : RF OUT
3. Pin no. 8 &28 : Vg
4. Pin no. 9 &27 : Vd1
5. Pin no. 10 &26 : Vd2
6. Pin no. 13 &23 : Vd3
7. Pin no. 3,16&19 : GND
8. Pin no. 1,2,6,7,11,12,14,15,20,21,22,24,25 : No Connection

**Package Outline Drawing**

**Note:** All Dimensions are in mm.



## Recommended Assembly Diagram



Component ID	Value	Description
C1, C11, C6, C7	10KpF	MLC Bypass capacitor
C2, C12	1uF	MLC Bypass capacitor
C3-C5, C8-C10	220KpF	MLC Bypass capacitor
R1, R8	0 $\Omega$	-
R2-R7	10 $\Omega$	-

### 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.
3. External Tantalum 22uF/50V capacitor required in both VD3 paths.



**GaAs 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.