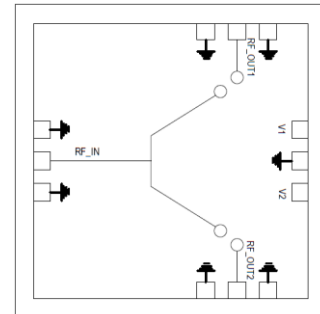


DC-20GHz High Power GaN SPDT Switch

Features

- ◆ Frequency Range: DC-20 GHz
- ◆ Low Insertion Loss: 1.8 dB
- ◆ Isolation: 35 dB
- ◆ Input & Output Return Loss: > 10 dB
- ◆ Input P1dB: 10Watt
- ◆ Die Size: 2.2mm×1.2mm×0.1mm

Functional Diagram



Typical Applications

- ◆ Radar
- ◆ Military & Space
- ◆ Instrumentation

Description

The GaN based ASL 8010 is a high power wide band Reflective single pole double through (SPDT) switch covering DC-20GHz. The Switch offers low insertion loss, high isolation. The Switch features 35dB Isolation and 1.8dB insertion loss up to 20GHz. The input power for 1dB compression is 10watt. The Switch operates on 0V & -40V for ON & OFF states.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
RF Input Power	+42	dBm
Control Voltage		
ON State	2	V
OFF State	-60	V
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 °C, Z_o =50Ω,

Parameter	Typical Values	Units
Frequency Range	DC – 20.0	GHz
Insertion Loss	1.8	dB
Input Return Loss	10	dB
Output Return Loss	10	dB
Isolation	35	dB
Input P1dB	10	Watt
Control Voltages ON State OFF State	0 -40	V

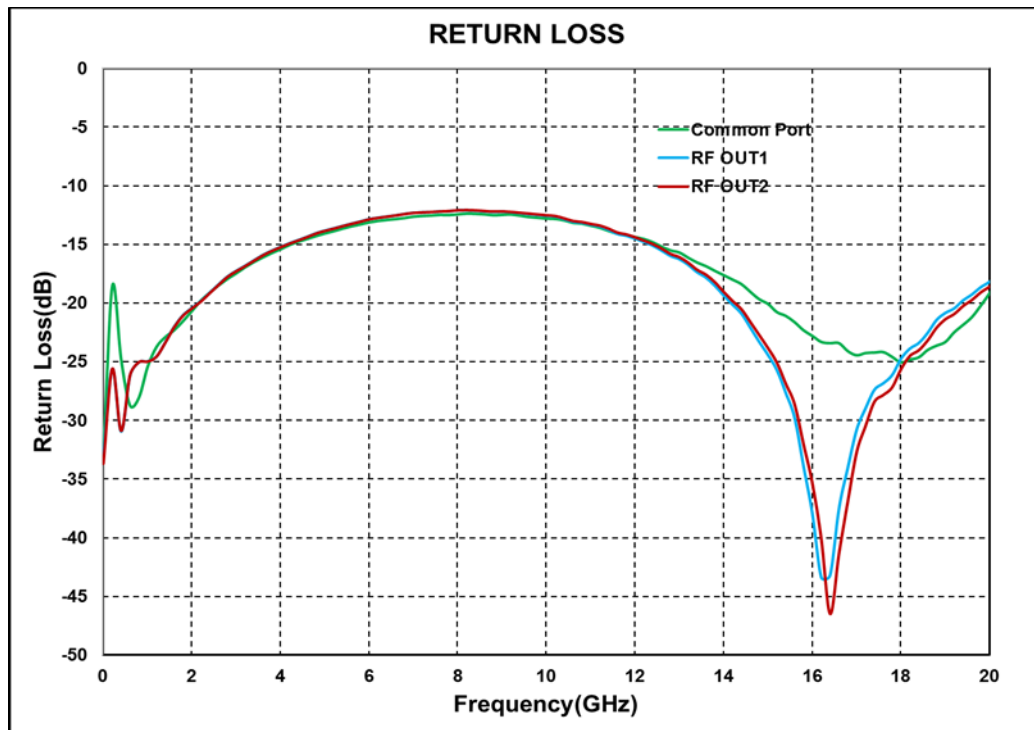
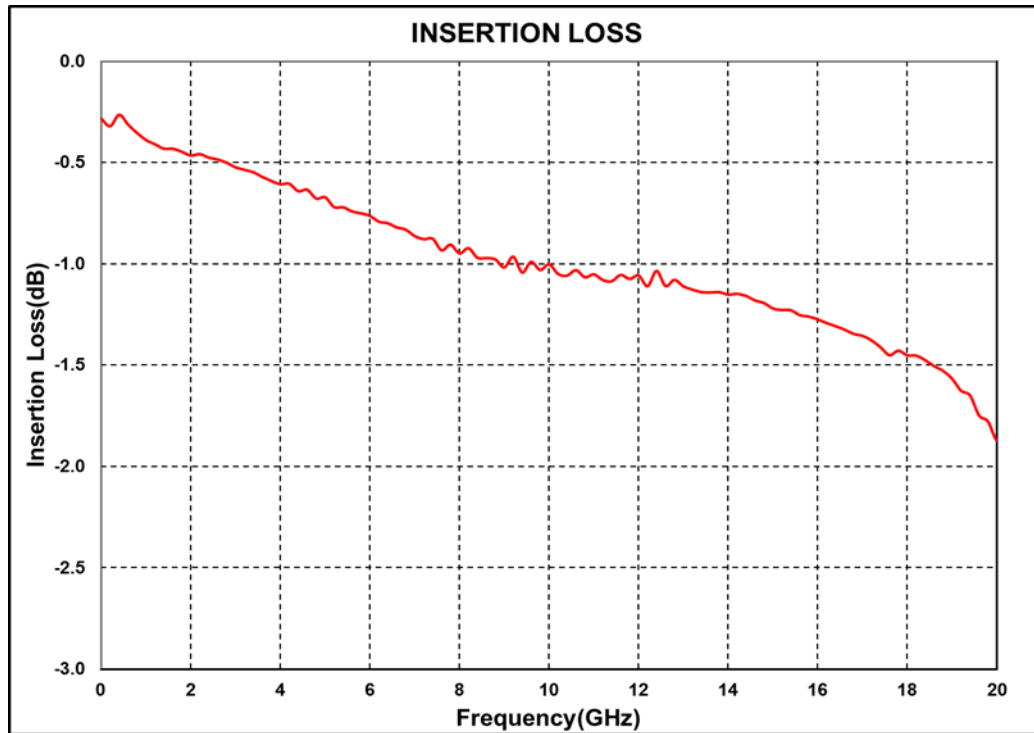
Note:

1. The above mentioned electrical specifications are measured in 50ohm line test fixture.
2. The RF input & output ports are DC coupled.
3. For reliable operation external DC blocking capacitors are required at the RF input & output ports.

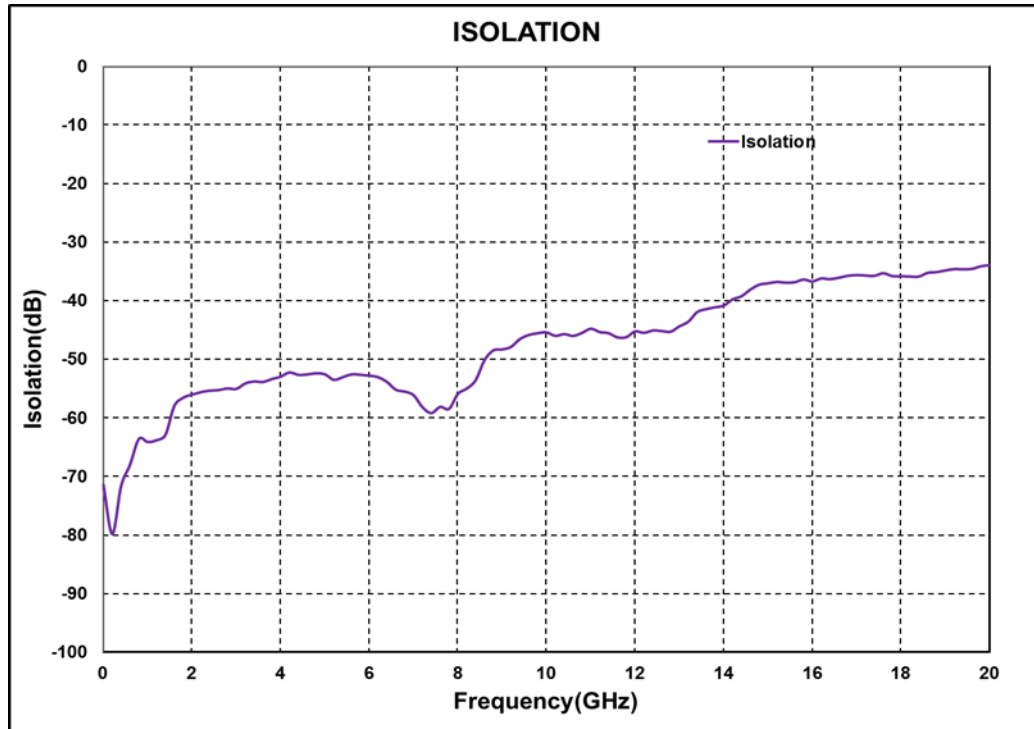
Truth Table

Control Input		Signal Path	
V1	V2	RF IN to RF OUT1	RF IN to RF OUT2
0	-40	ON	OFF
-40	0	OFF	ON

On Wafer Probed Results

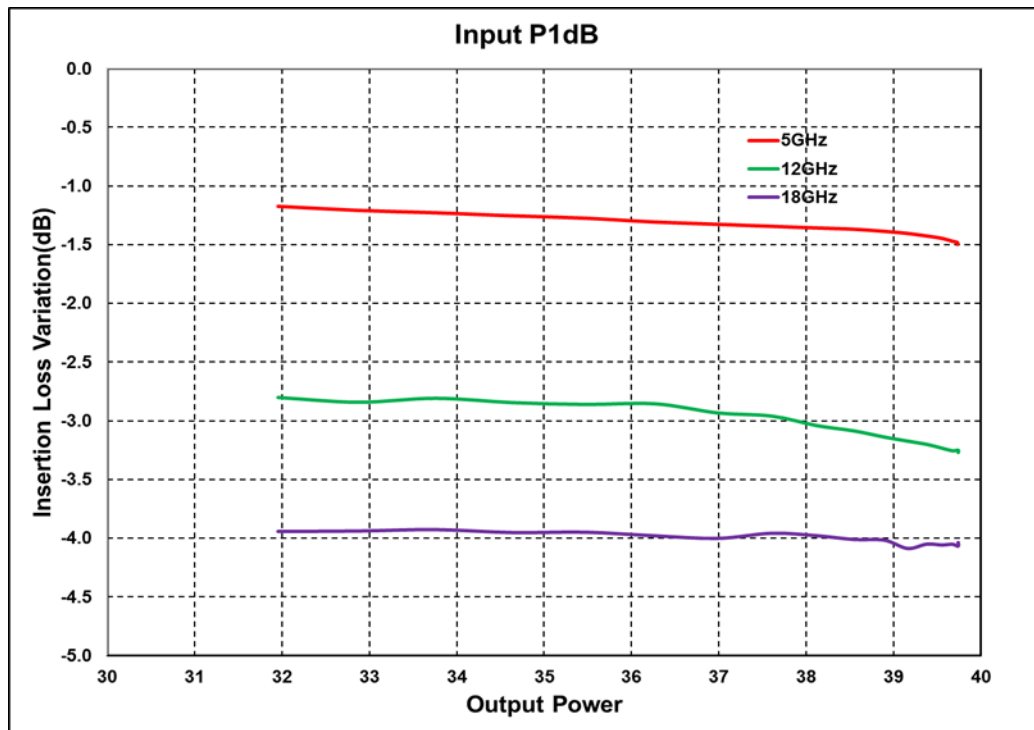


On Wafer Probed Results

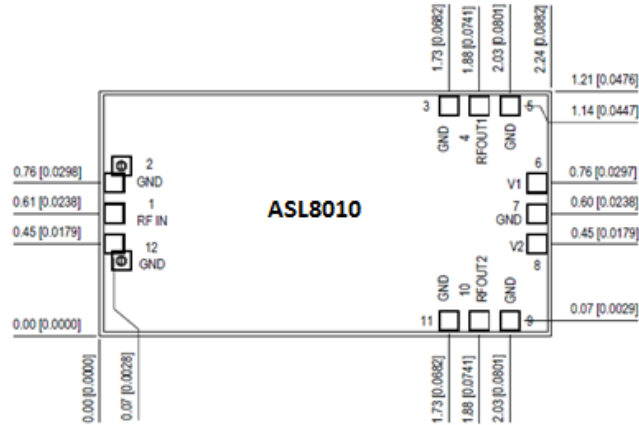


Test Fixture Data

$T_A = 25^\circ\text{C}$, $Z_o = 50\ \Omega$

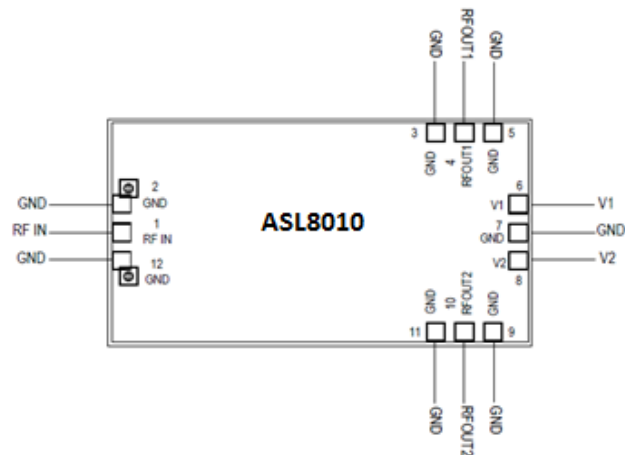


Mechanical Characteristics



Units : millimeters (inches)

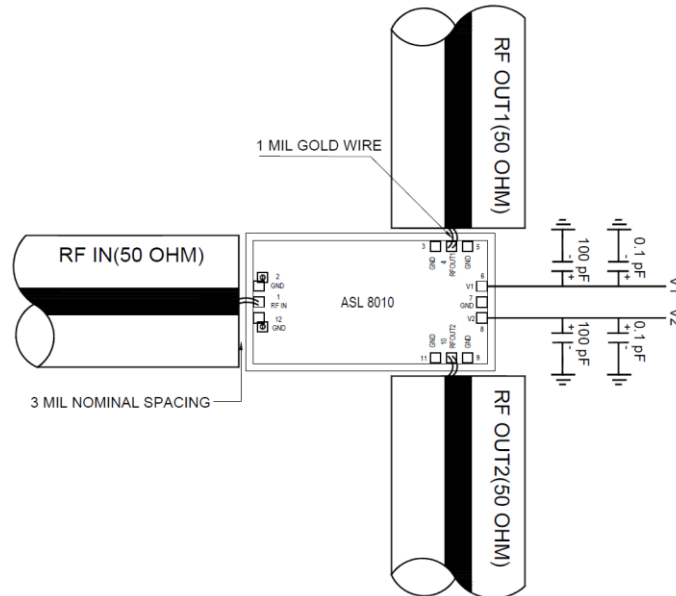
RF and DC Pad Details



Note:

1. All RF and DC bond pads are 100 μ m x 100 μ m
2. Pad no. 1 : RF IN
3. Pad no. 2,3,5,7,9,11,12 : GND
4. Pad no. 4 : RF OUT1
5. Pad no.6 : V1
6. Pad no.8 : V2
7. Pad no.10 : RFOUT2

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 coupled on-chip.
4. 100pf and 0.1 μ F capacitors may be additionally used as a bypass for reliable operation at the power supplies

Die attach: For Epoxy attachment, use of a two-component conductive epoxy is recommended. An epoxy fillet should be visible around the total die periphery. If 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 - 200 μ m length of wedge bonds is advised. Single Ball bonds of 250-300 μ m 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.