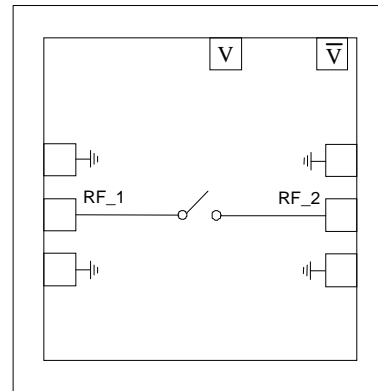


DC-20GHz Reflective SPST Switch

Features

- ◆ DC-20GHz Broadband performance
- ◆ Low Insertion Loss: 1.0dB @ 20GHz
- ◆ High Isolation: 40dB (min)
- ◆ 1.2:1 Input/Output VSWR
- ◆ Pin @ 1dB 21dBm
- ◆ Fast Switching Speed
- ◆ 0.15 μ m InGaAs pHEMTs Technology
- ◆ Chip size : 1.5 x 0.7x 0.1 mm

Functional Diagram



Typical Applications

- ◆ Broadband Communication
- ◆ Electronic warfare
- ◆ Military & Space
- ◆ Instrumentation Applications

Description

The AMT2551011 is a high performance Gallium Arsenide monolithic single pole single throw broadband RF switch. The switch features a very low insertion loss of 1dB at 20GHz and 40dB isolation up to 20GHz. The switch operates using -5/0 V complimentary control voltages.

The die is fabricated using a highly reliable and high performance InGaAs 0.15 μ m pHEMT Technology. This SPST switch is ideal for use in broadband communications.

Absolute Maximum Ratings ⁽¹⁾

| Parameter | Absolute Maximum | Units |
|-----------------------|------------------|-------|
| RF input Power | 25 | dBm |
| Max Control voltage | -8 | V |
| Operating temperature | -55 to +85 | °C |
| Storage Temperature | -65 to +150 | °C |

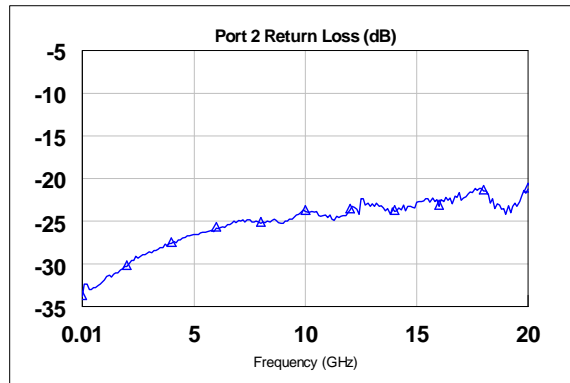
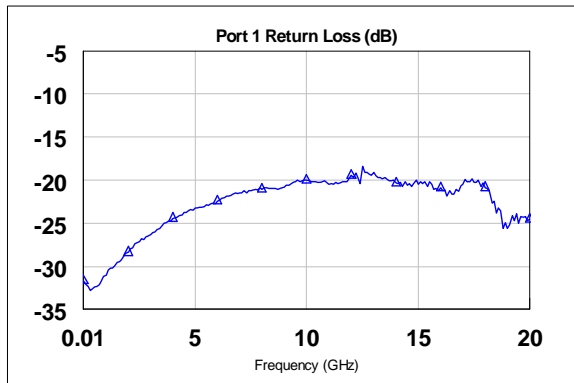
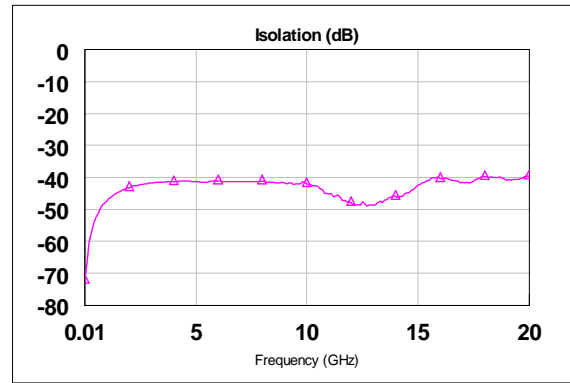
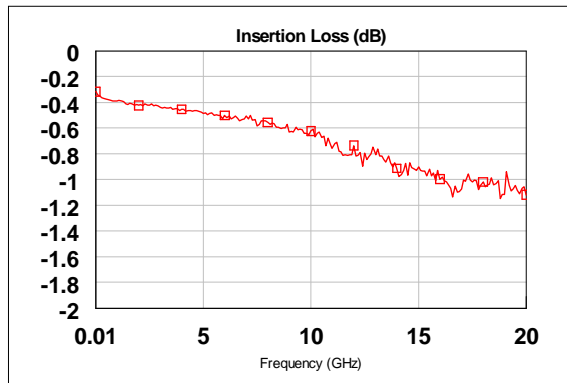
1. Operation beyond these limits may cause permanent damage to the component

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

| Parameter | Min. | Typ. | Max. | Units |
|-------------------------|------|--------|------|-------|
| Frequency | DC | | 20 | GHz |
| Insertion Loss | - | 1.0 | - | dB |
| Isolation | - | 40 | - | dB |
| Input VSWR | - | 1.2:1 | - | Ratio |
| Output VSWR | - | 1.2:1 | - | Ratio |
| Input power @ P-1dB GCP | - | 21 | - | dBm |
| Control Voltage | - | -5 & 0 | - | V |
| Switching speed | - | < 10 | - | ns |

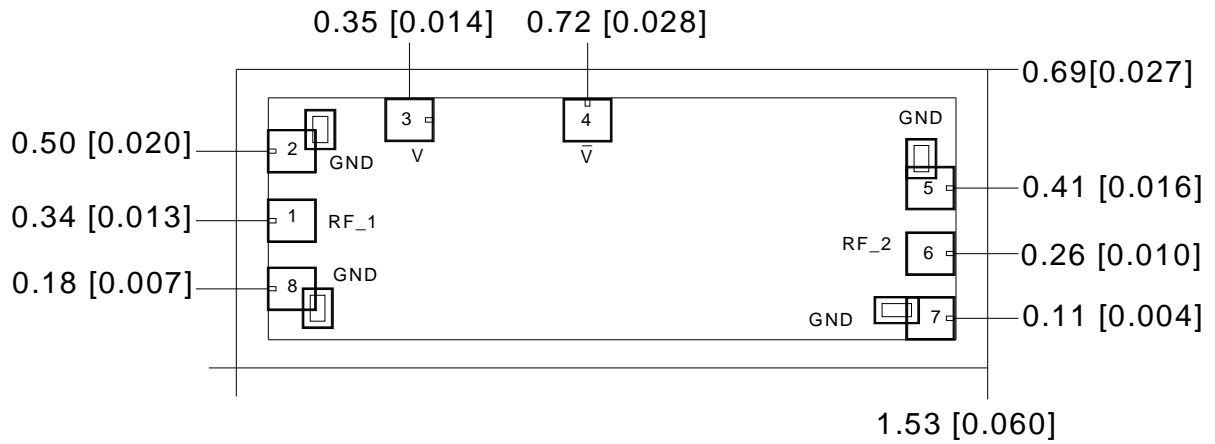
Note:

1. TTL Control Voltage should be minimum 3.5V for ON state

On-Wafer Measured data
 $T_A = 25^\circ\text{C}$, $Z_0 = 50\Omega$, Control Voltages = -5 & 0V

Truth Table

| V | \bar{V} | RF_1 to RF_2 |
|-----|-----------|----------------|
| 0V | -5V | Insertion loss |
| -5V | 0V | Isolation |

Mechanical Characteristics



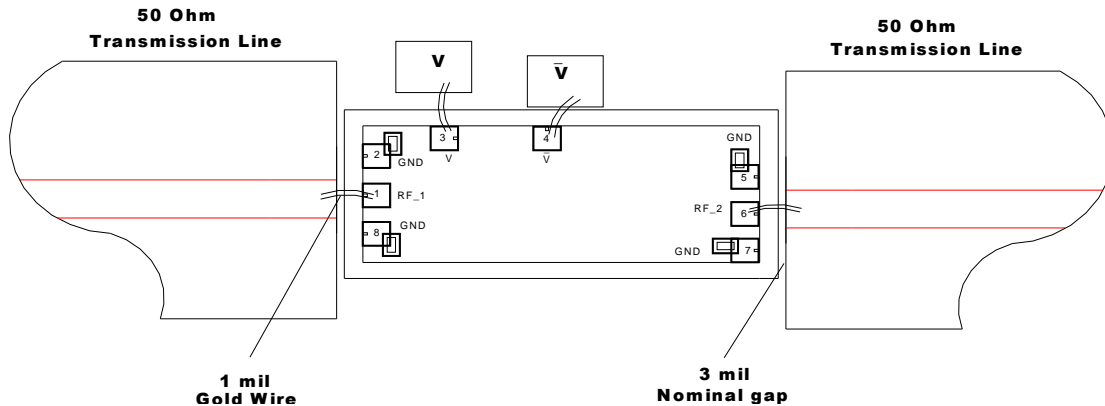
Units: millimeters (inches)

All RF and DC bond pads are 100µm x 100µm

Note:

1. Pad no. 1 : RF_1
2. Pad no. 3 : V (-5/0 V)
3. Pad no. 4: V (0/-5V)
4. Pad no. 6: RF_2

Recommended Assembly Diagram



Note:

1. All bond wire lengths should be of minimum length (~ 250 μ m).

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 fluxless 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.



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