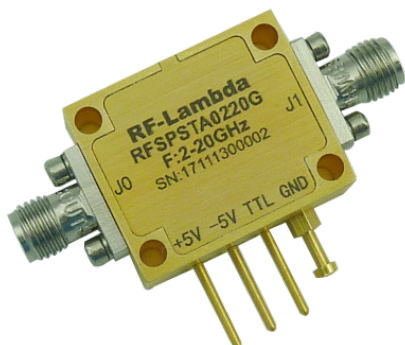


## Absorptive Coaxial SPST Switch 2GHz-20GHz



### Product Description

RFSPSTA0220G is an absorptive coaxial single pole single throw switch with a frequency range of 2 to 20GHz.

The maximum power input of this switch is 30dBm. The insertion loss is 1.5dB with a typical isolation of 85dB.

The product features of fast switching speed, low insertion loss and high isolation.

The working temperature of this product is between - 40°C and + 85°C

### Features

- TTL compatible driver included
- Fast Switching Speed
- Low Power Cold Switching
- Insertion Loss 1.5dB
- Isolation 85dB Typical
- 50 Ohm Matched

### Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

### Electrical Specifications(TA = +25°C), Vdd = +5V/-5V, TTL = 0 / +5V

| Parameter                              | Min                                    | Typ   | Max | Min | Typ        | Max | Min | Typ   | Max | Units  |
|----------------------------------------|----------------------------------------|-------|-----|-----|------------|-----|-----|-------|-----|--------|
| Frequency Range                        |                                        | 2-8   |     |     | 8-12       |     |     | 12-20 |     | GHz    |
| Insertion Loss                         |                                        | 1.3   | 1.5 |     | 1.5        | 2.0 |     | 2.5   | 2.8 | dB     |
| Insertion Loss Temperature Coefficient |                                        | 0.003 |     |     | 0.003      |     |     | 0.003 |     | dB/ °C |
| Isolation (J0→J1)                      | 80                                     | 90    |     | 80  | 85         |     | 70  | 80    |     | dB     |
| Input VSWR                             |                                        | 1.5   | 1.8 |     | 1.5        | 1.8 |     | 1.5   | 1.8 | : 1    |
| Output VSWR                            |                                        | 1.5   | 1.8 |     | 1.5        | 1.8 |     | 1.5   | 1.8 | : 1    |
| RF Input power                         |                                        |       | 30  |     |            | 30  |     |       | 30  | dBm    |
| Power Dissipation                      |                                        | 0.3   |     |     | 0.3        |     |     | 0.3   |     | W      |
| 0.1dB Compression Point (P0.1dB )      |                                        | 30    |     |     | 30         |     |     | 30    |     | dBm    |
| IIP3                                   |                                        | 44    |     |     | 43         |     |     | 42    |     | dBm    |
| Switching Speed                        |                                        |       |     |     | 100 Max.   |     |     |       |     | ns     |
| Bias Current (+5V/-5V)                 |                                        |       |     |     | 80/50 Max. |     |     |       |     | mA     |
| Weight                                 |                                        |       |     |     | 0.03 Max.  |     |     |       |     | lbs    |
| Impedance                              |                                        |       |     |     | 50         |     |     |       |     | Ω      |
| Input / Output Connectors              | SMA-Female(Input) – SMA-Female(Output) |       |     |     |            |     |     |       |     |        |
| Package                                | Epoxy Sealed (Standard)                |       |     |     |            |     |     |       |     |        |
|                                        | Hermetically Sealed (Optional)         |       |     |     |            |     |     |       |     |        |

\* J0: Absorptive Port J1: Reflective port

**Absolute Maximum Ratings**

| Parameter | Rating          |
|-----------|-----------------|
| Biasing   | +5V±10%/-5V±10% |

\* TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.

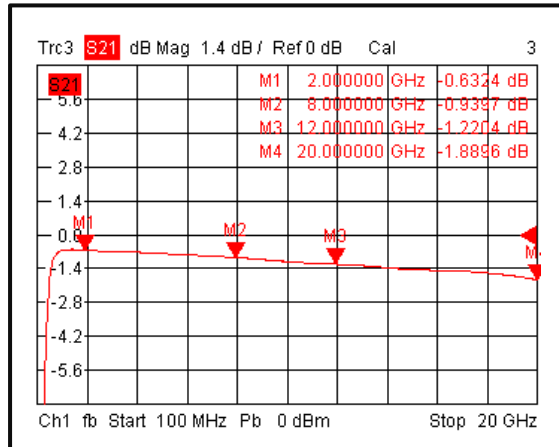
**Environmental Specifications and Test Standards**

| Parameter                         | Description                                                                                                                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operational Temperature           | -40°C to +85°C<br>(Case Temperature)                                                                                                                                                                           |
| Storage Temperature               | -50°C to +105°C                                                                                                                                                                                                |
| Thermal Shock                     | -40°C → +85°C<br>(5 Cycles / 10 hours)                                                                                                                                                                         |
| **Random Vibration                | MIL-STD-202G<br>Table 214-I, Test Condition Letter C<br>1.5 Hours Per Axis                                                                                                                                     |
| High Temperature Burn In          | Temperature +85°C for 72 Hours                                                                                                                                                                                 |
| Shock                             | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight ≤20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude                          | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)                                                                                            |
| Hermetically Sealed<br>(Optional) | MIL-STD-883 (For Hermetically Sealed Units)                                                                                                                                                                    |

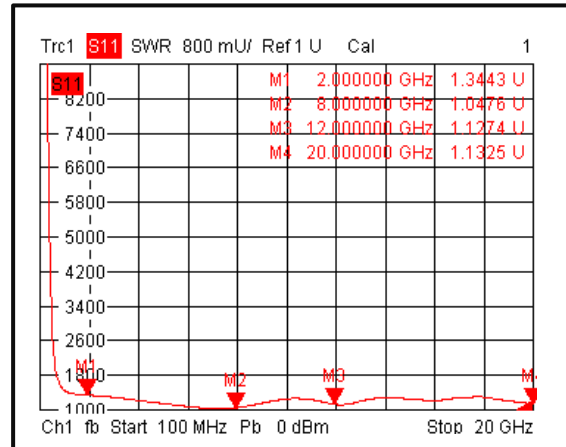
\*\* For vibration testing details please see additional information section.

Typical Performance Plots

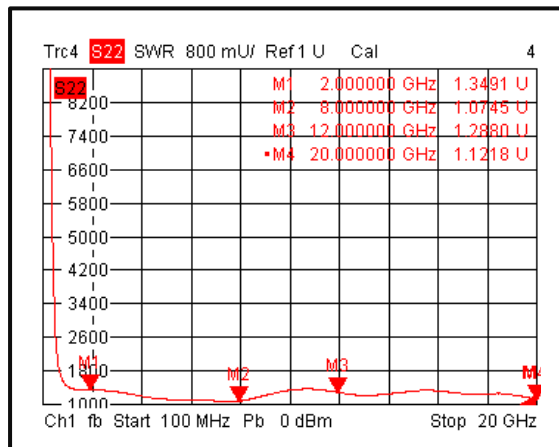
Insertion Loss @+25°C



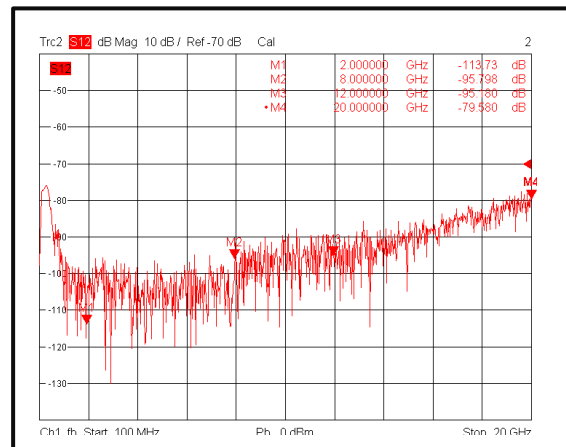
Input VSWR @+25°C



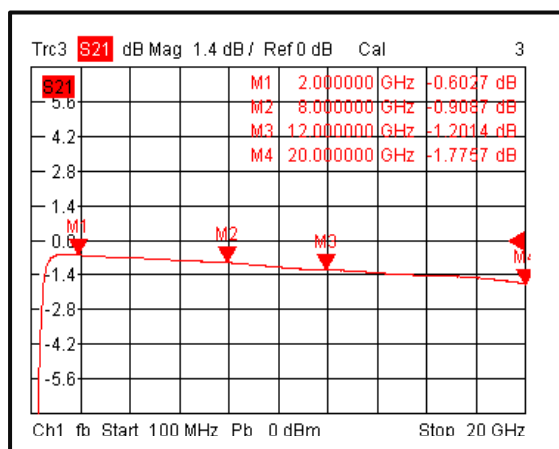
Output VSWR @+25°C



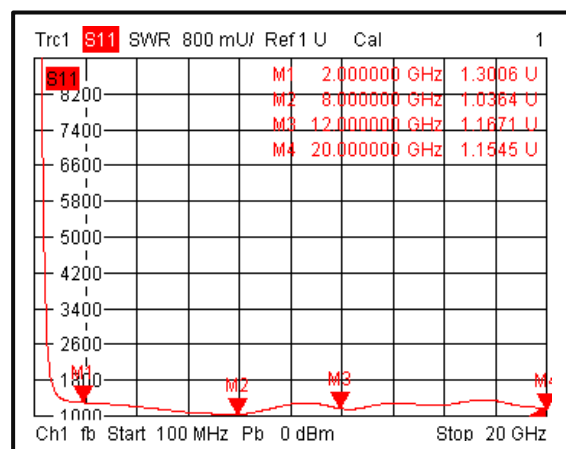
Isolation @+25°C



Insertion Loss @-40°C

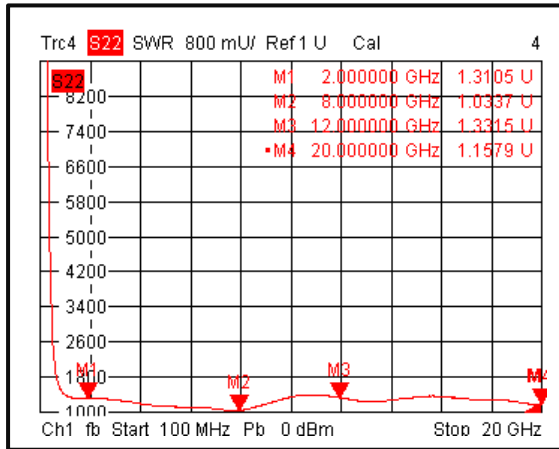


Input VSWR @-40°C

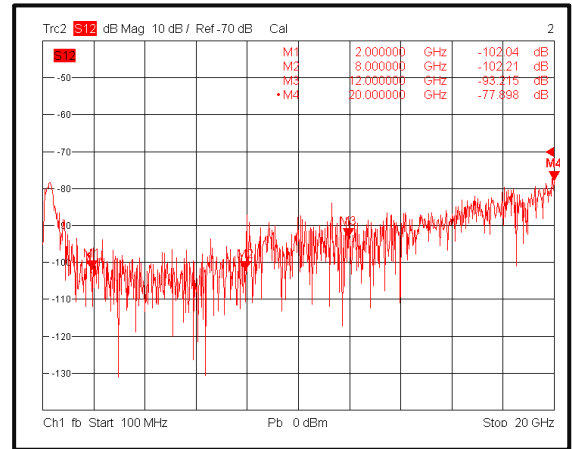


Typical Performance Plots

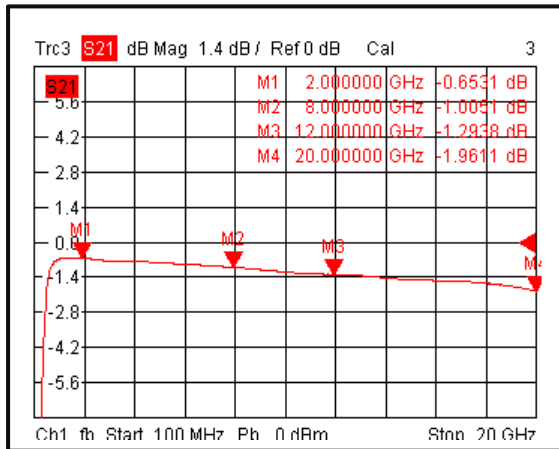
Output VSWR @-40°C



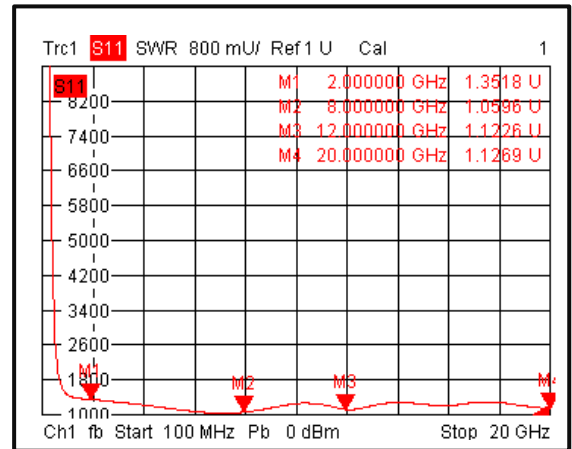
Isolation @-40°C



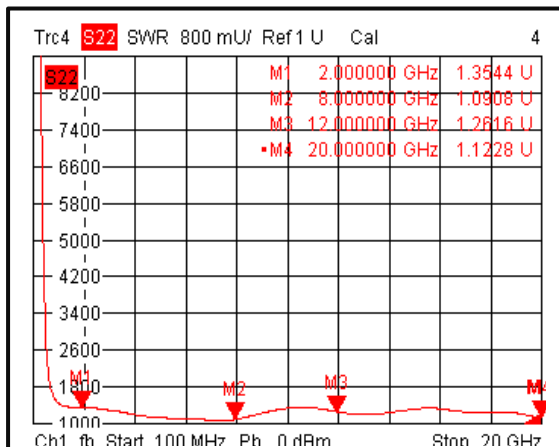
Insertion Loss @+85°C



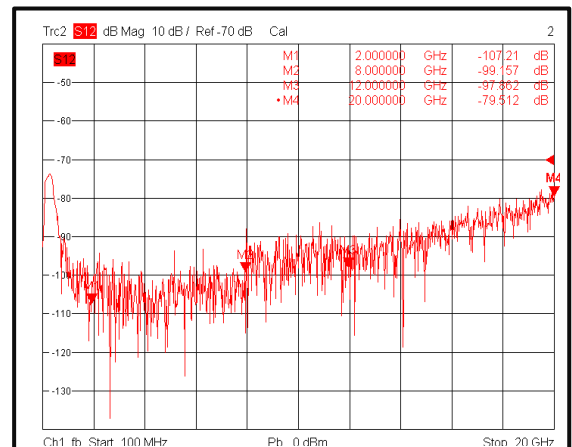
Input VSWR @+85°C



Output VSWR @+85°C

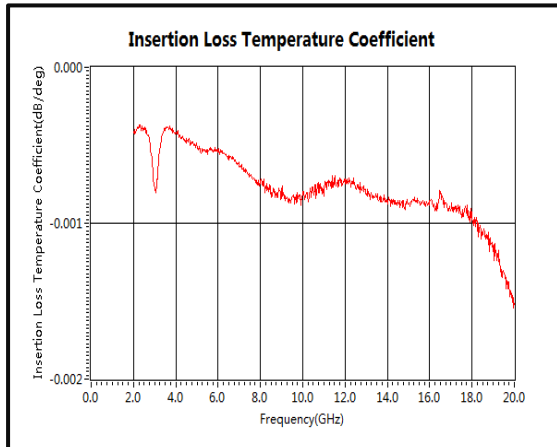


Isolation @+85°C

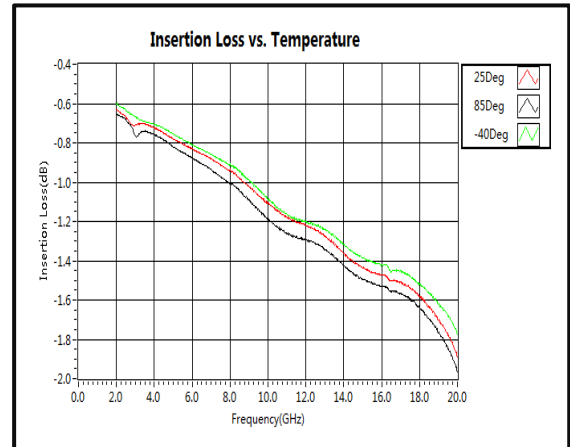


Typical Performance Plots

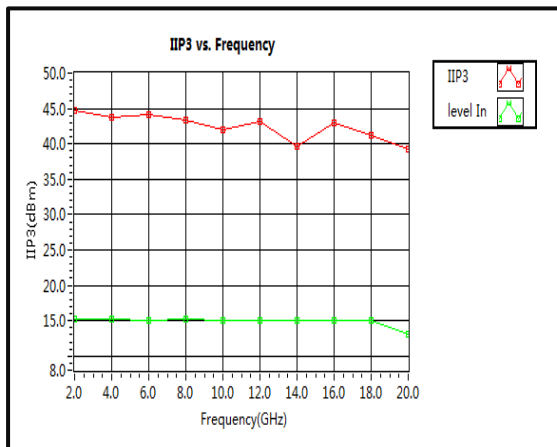
Insertion Loss Temperature Coefficient



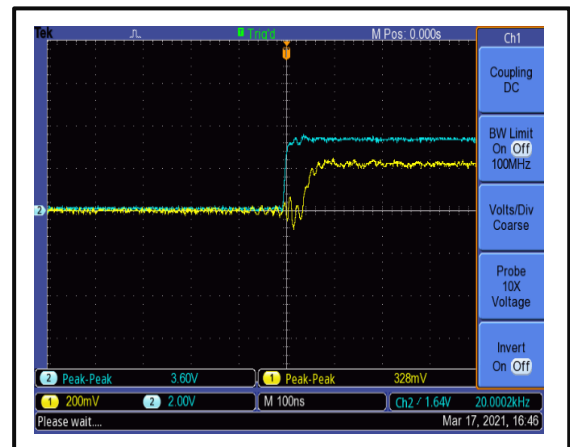
Insertion Loss vs. Temperature



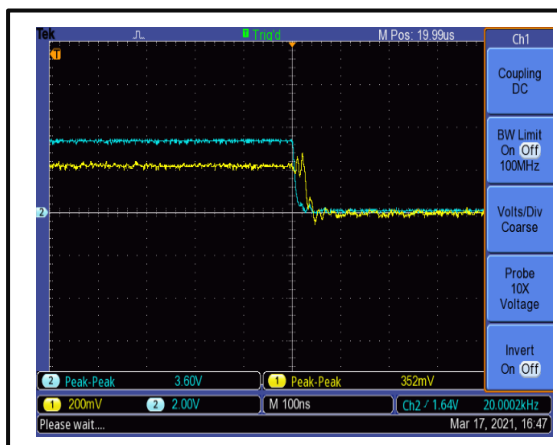
IIP3



Switching Speed

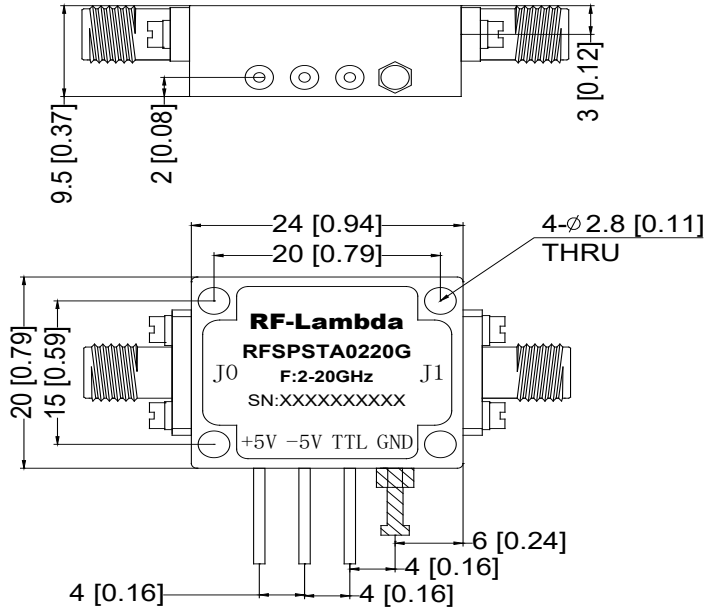


Switching Speed



Outline Drawing

[X101]

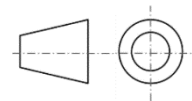


Truth Table

|                     |                                      |
|---------------------|--------------------------------------|
| TTL Control Voltage | Low(0)=0~0.8V                        |
| THRESHOLD           | High(1)=2.8~5V                       |
| Control Input       | State                                |
| TTL                 |                                      |
| 1                   | ON                                   |
| 0                   | OFF                                  |
| Control Pin         | Customization available upon request |

Notes:

1. Package Material: Aluminum
2. Plating: Gold
3. All dimensions are in millimeters [inches].
4. Housing Tolerances  $\pm 0.1$  [0.004] unless otherwise specified.
5. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation

Webpage

ESD Policy

[https://rflambda.com/pdf/rflambda\\_esd\\_control.pdf](https://rflambda.com/pdf/rflambda_esd_control.pdf)

Connector Torque Specifications

[https://www.rflambda.com/pdf/Torque\\_Specifications.pdf](https://www.rflambda.com/pdf/Torque_Specifications.pdf)

Random Vibration Test Standard

[https://www.rflambda.com/pdf/rflambda\\_random\\_vibration\\_MIL-STD-202G.pdf](https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf)

**Ordering Information**

| Part Number  | Modification | Description                   |
|--------------|--------------|-------------------------------|
| RFSPSTA0220G | Standard     | 2-20GHz SPST PIN Diode Switch |

**Important Notice**

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