

## Reflective Coaxial SPST Switch 12GHz-18GHz



Note: Photo is for illustration purposes only.  
Please refer to outline drawing.

### Features

- TTL compatible driver included
- Fast Switching Speed
- Low Power Cold Switching
- Insertion Loss 2.2dB
- Isolation 65dB Typical
- 50 Ohm Matched

### Product Description

RFSPSTR1218G is a reflective coaxial single pole single throw switch with a frequency range of 12 to 18GHz.

The maximum power input of this switch is 30dBm. The insertion loss is 2.2dB with a typical isolation of 65dB.

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

### 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 | Units  |
|----------------------------------------|----------------------------------------|--------------|-----|--------|
| Frequency Range                        |                                        | 12~18        |     | GHz    |
| Insertion Loss                         |                                        | 1.9          | 2.2 | dB     |
| Insertion Loss Temperature Coefficient |                                        | 0.003        |     | dB/ °C |
| Isolation (*J0→J1)                     | 65                                     | 75           |     | dB     |
| Input VSWR                             |                                        | 1.3          | 1.5 | : 1    |
| Output VSWR                            |                                        | 1.3          | 1.5 | : 1    |
| RF Input Power                         |                                        |              | 30  | dBm    |
| DC Power Dissipation                   |                                        | 0.3          |     | W      |
| IIP3                                   |                                        | 43           |     | dBm    |
| Switching Speed                        |                                        | 100 Max.     |     | ns     |
| Bias Current (+5V / -5V)               |                                        | 80 / 50 Max. |     | mA     |
| Weight                                 |                                        | 0.035 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.

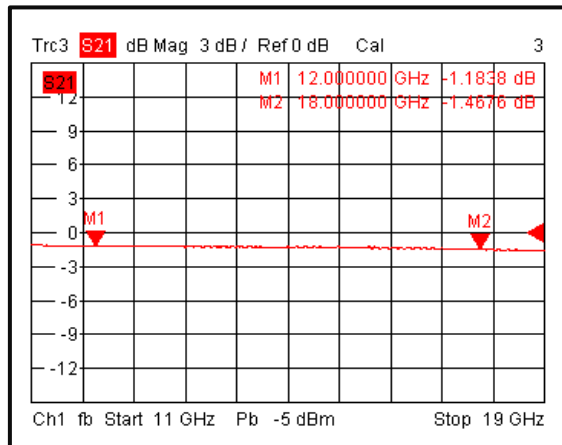
### Environmental Specifications and Test Standards

| 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)                                                                                                                                                                    |

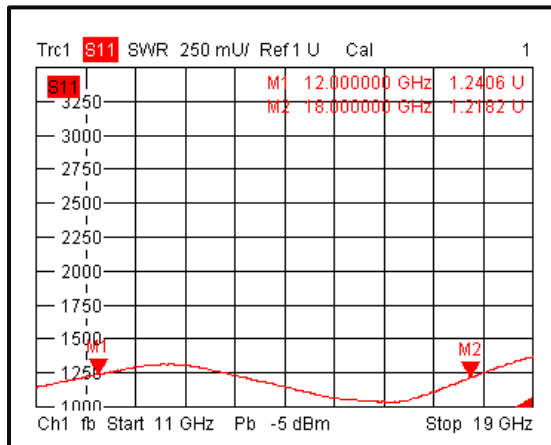
\*\* For vibration testing details please see additional information section.

Typical Performance Plots

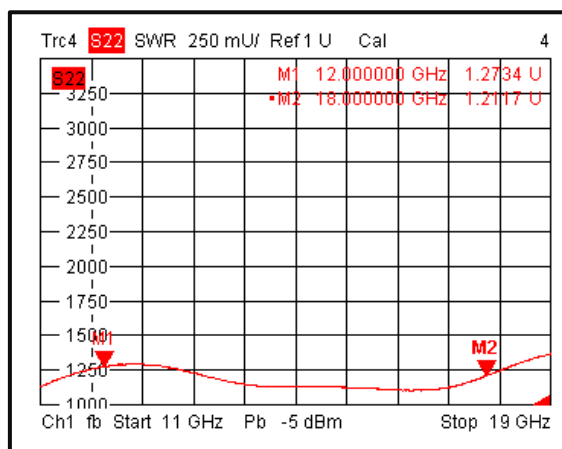
Insertion Loss @+25°C



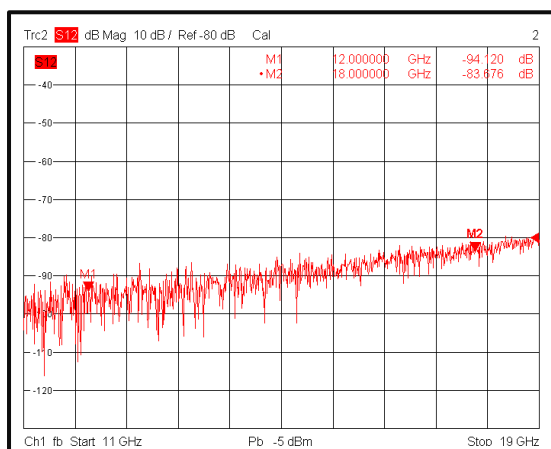
Input VSWR @+25°C



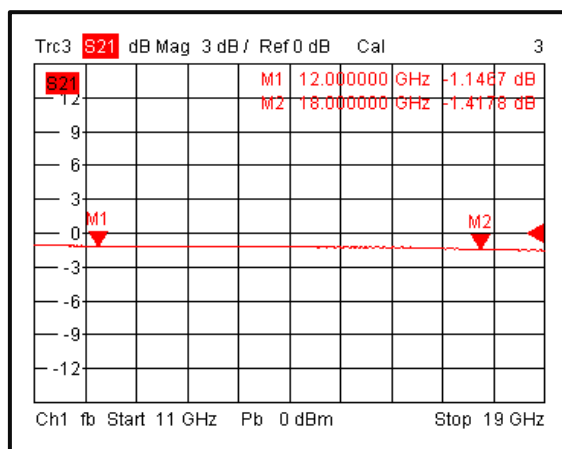
Output VSWR @+25°C



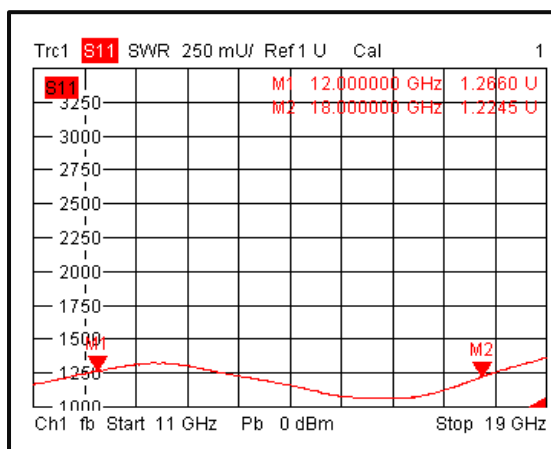
Isolation @+25°C



Insertion Loss @-40°C

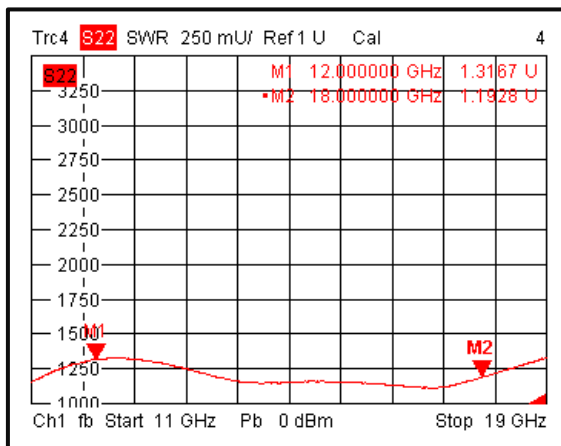


Input VSWR @-40°C

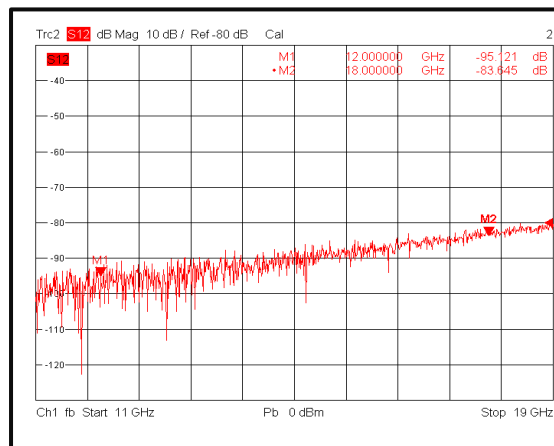


Typical Performance Plots

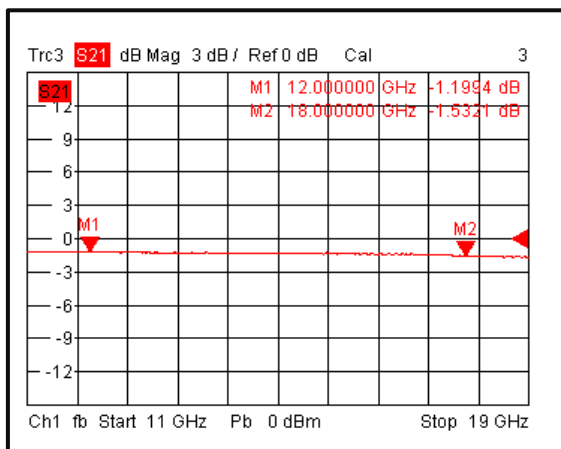
Output VSWR @-40°C



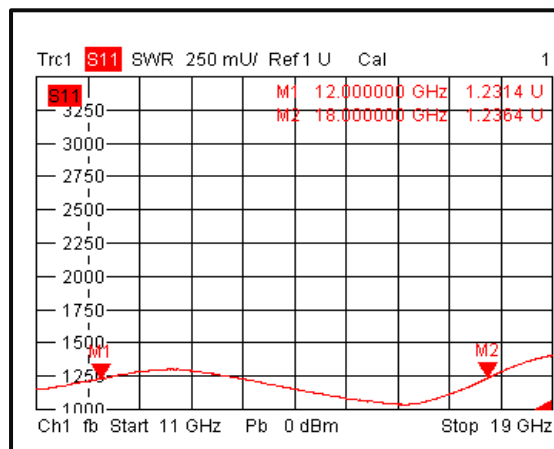
Isolation @-40°C



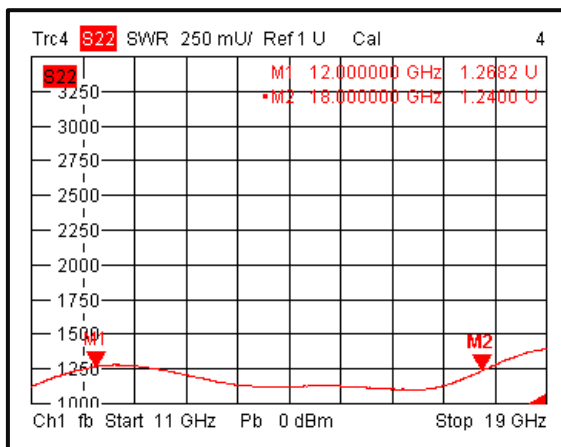
Insertion Loss @+85°C



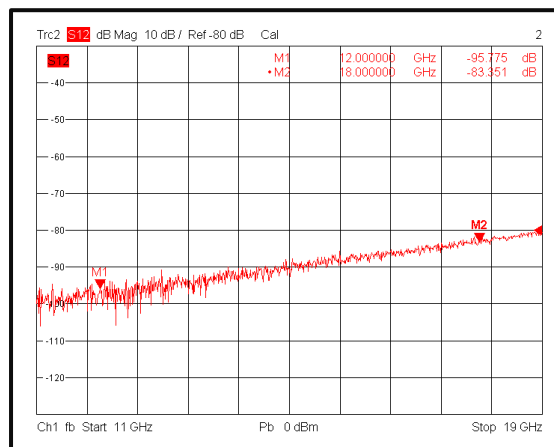
Input VSWR @+85°C



Output VSWR @+85°C

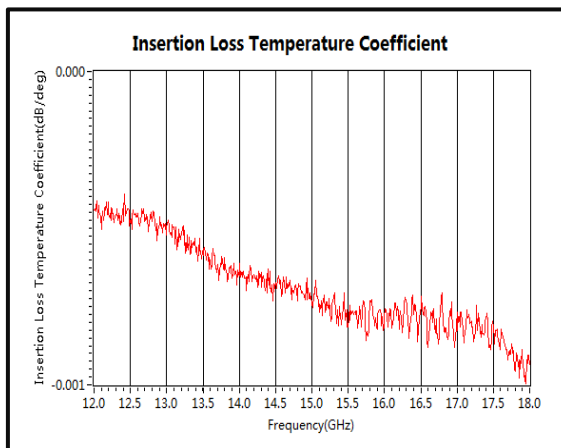


Isolation @+85°C

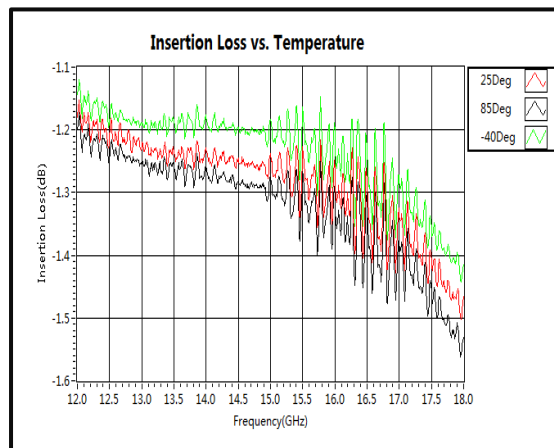


Typical Performance Plots

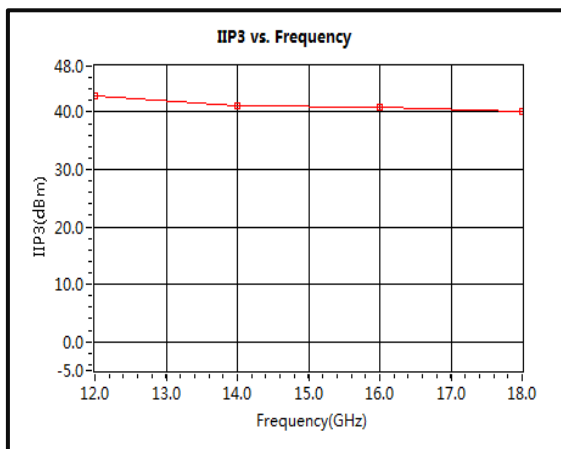
Insertion Loss Temperature Coefficient



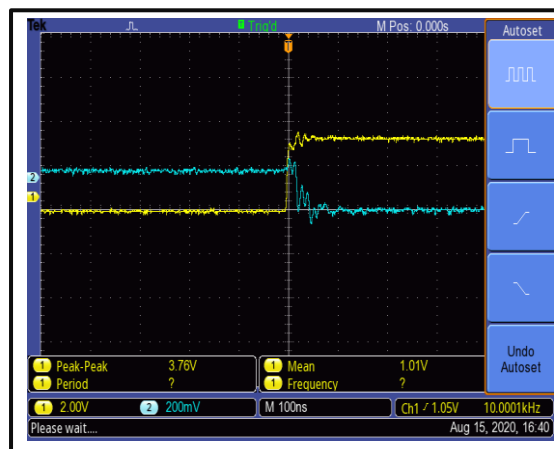
Insertion Loss vs. Temperature



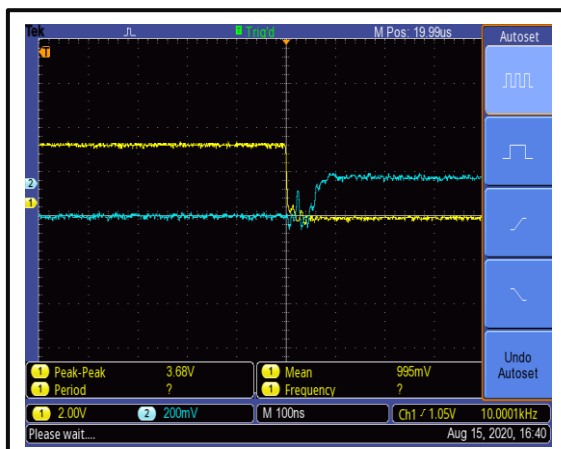
IIP3



Switching Speed

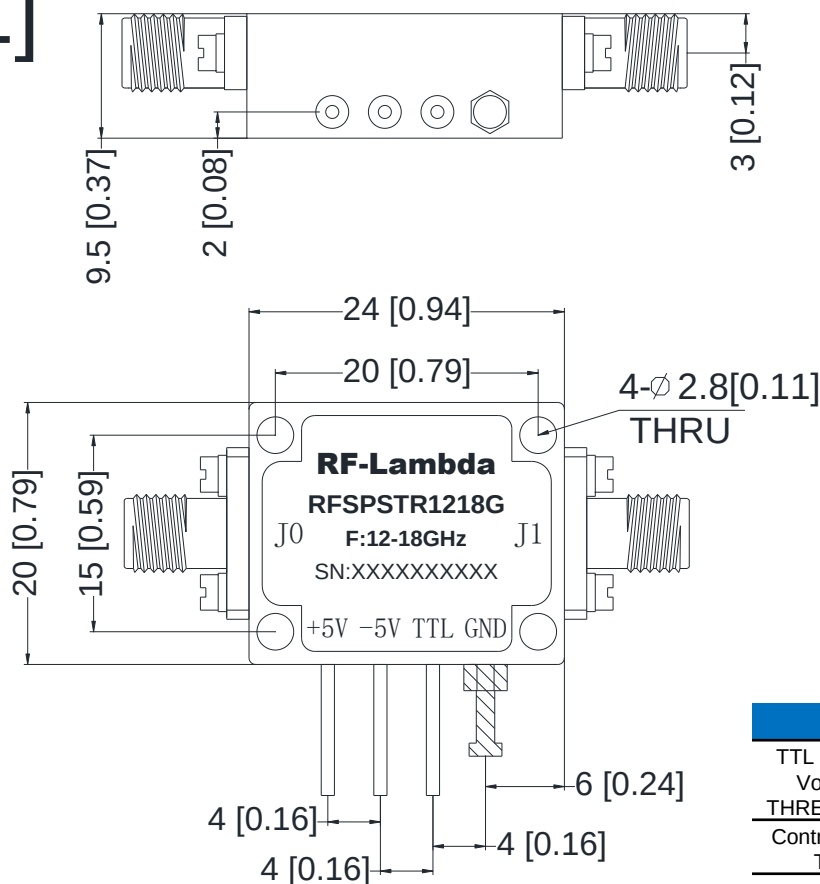


Switching Speed



Outline Drawing

[X101]

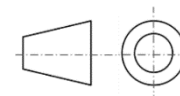


Truth Table

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

Notes:

1. Package Material: Aluminum
2. Finish: Gold Plated
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                       |
|--------------|--------------|-----------------------------------|
| RFSPSTR1218G | Standard     | 12GHz-18GHz SPST PIN Diode Switch |

**Important Notice**

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information. RF-Lambda products are not warranted or authorized for use as critical components in medical, life-saving, or life sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.