# Absorptive Coaxial SP5T Switch
# 0.02GHz-18GHz


## Product Description

RFSP5TA0018G is an absorptive coaxial single pole five throw switch with a frequency range of 0.02 to 18GHz.

The max power input of this switch is 30dBm. The insertion loss is 3.0dB with a typical isolation of 70dB.

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

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

## Features

- TTL compatible driver included
- Fast Switching Speed
- Low Power Cold Switching
- Insertion Loss 3.0dB
- Isolation 70dB
- 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 | | 0.02-6 | | | 6-12 | | | 12-18 | | GHz |
| Insertion Loss | | 2.2 | 3.0 | | 3.0 | 4.0 | | 4.0 | 5.0 | dB |
| Insertion Loss Temperature Coefficient | | 0.003 | | | 0.003 | | | 0.003 | | dB/ °C |
| Isolation | 60 | 75 | | 60 | 70 | | 60 | 65 | | dB |
| Input VSWR | | 1.6 | 2.0 | | 1.6 | 2.0 | | 1.8 | 2.0 | : 1 |
| Output VSWR | | 1.6 | 2.0 | | 1.6 | 2.0 | | 1.8 | 2.0 | : 1 |
| RF Input Power | | | 30 | | | 30 | | | 30 | dBm |
| DC Power Dissipation | | 1.2 | | | 1.2 | | | 1.2 | | W |
| 0.1dB Compression Point ( P0.1dB ) | | 30 | | | 30 | | | 30 | | dBm |
| IIP3 | | 45 | | | 43 | | | 42 | | dBm |
| Switching Speed | | | | | 250 Max. | | | | | ns |
| Bias Current ( +5V / -5V ) | | | | | 200/50 Max. | | | | | mA |
| Weight | | | | | 0.085 Max. | | | | | lbs |
| Impedance | | | | | 50 | | | | | Ω |
| Input / Output Connectors | | | | | SMA-Female(Input) – SMA-Female(Output) | | | | | |
| Package | | | | | Epoxy Sealed (Standard) | | | | | |
| | | | | | Hermetically Sealed (Optional) | | | | | |



RF-LAMBDA USA LLC: www.rflambda.com
Sales: sales@rflambda.com Technical: support@rflambda.com

### 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.

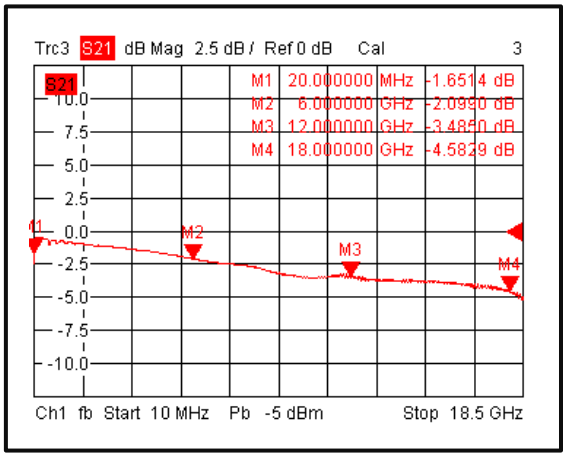
### Environmental Specifications and Test Standards

| Parameter | Description |
|---|---|
| Operational Temperature | -40ºC to +85ºC<br>(Case Temperature) |
| Storage Temperature | -50ºC to +105ºC |
| Thermal Shock | -40ºC → +85ºC<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 +85ºC 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) |

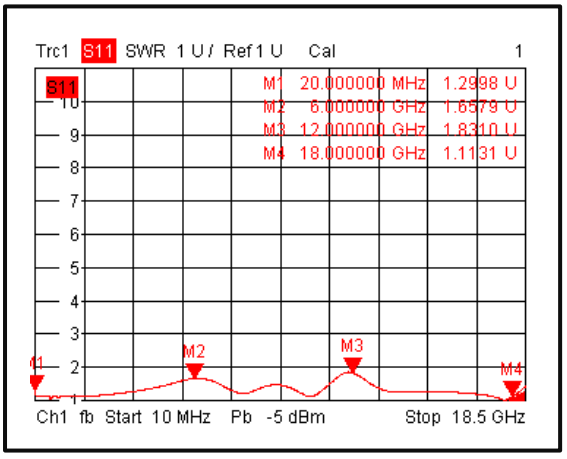
*For vibration testing details please see additional information section.

## Typical Performance Plots

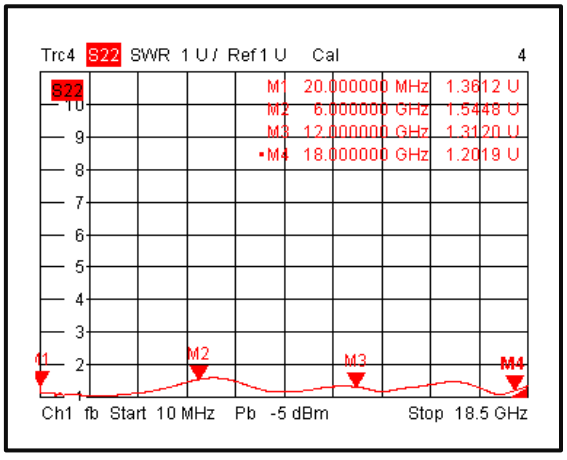
### Insertion Loss @+25℃



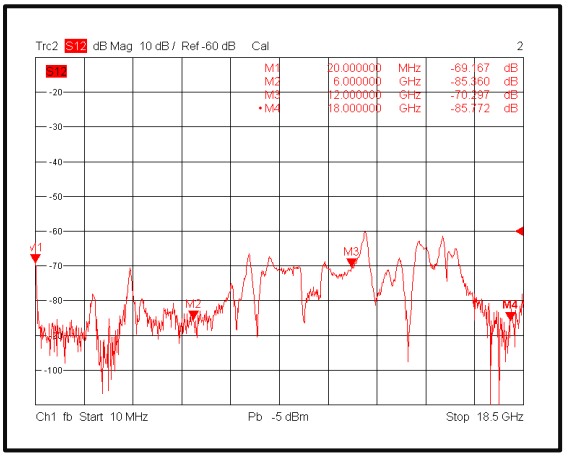

### Input VSWR @+25℃



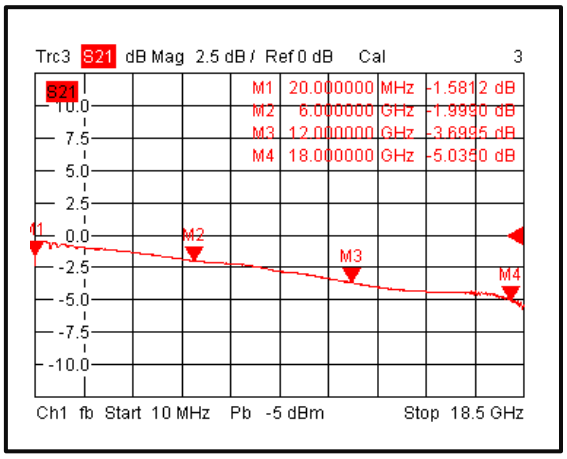

### Output VSWR @+25℃



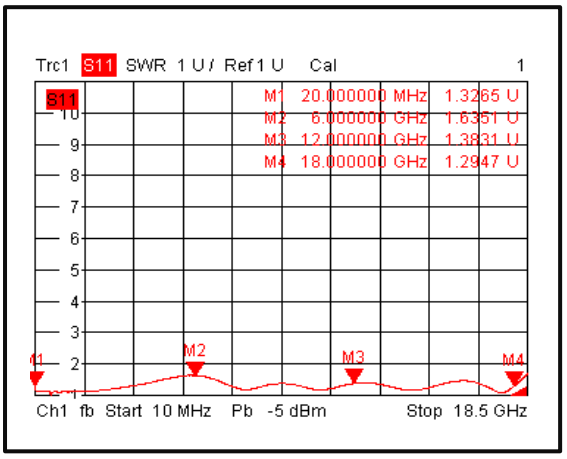

### Isolation @+25℃




### Insertion Loss @-40℃

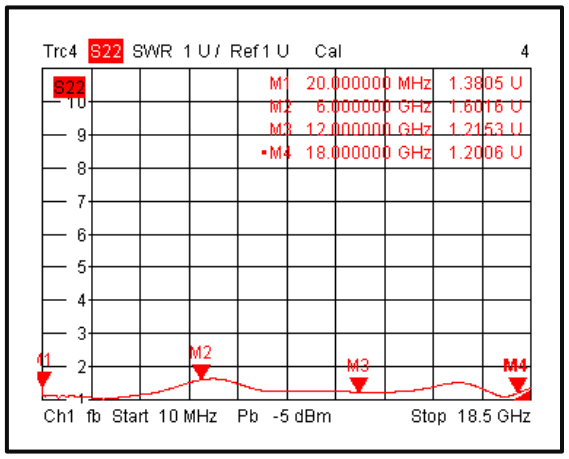



### Input VSWR @-40℃

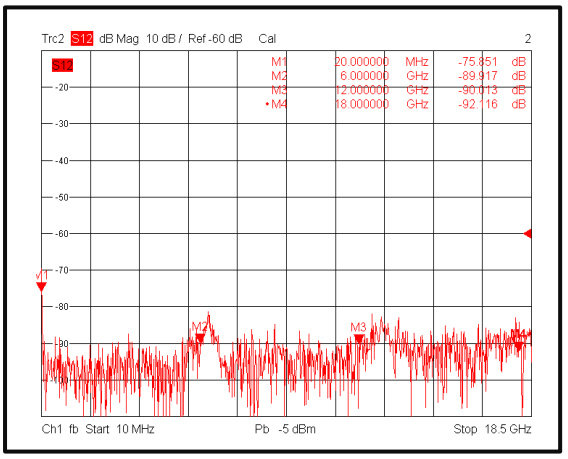


## Typical Performance Plots

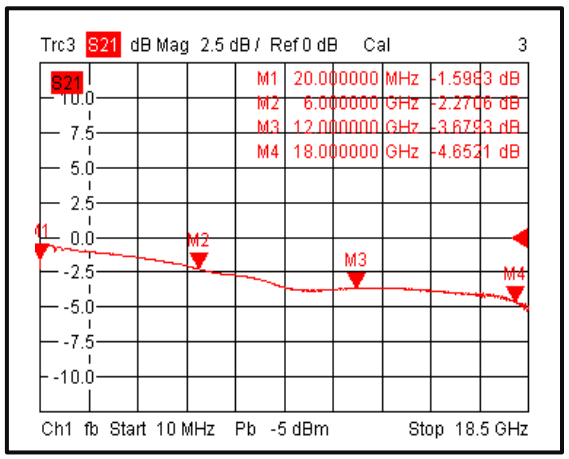
### Output VSWR @-40℃



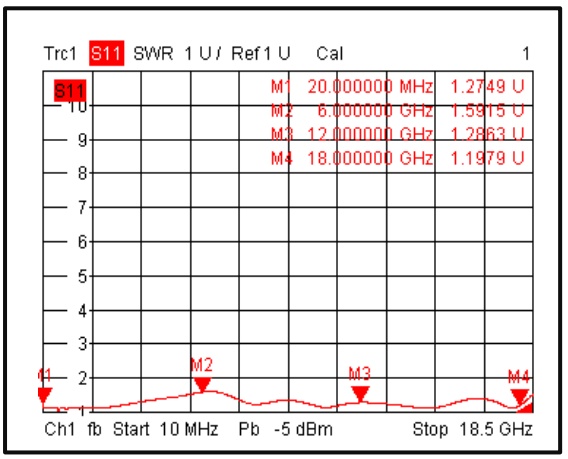

### Isolation @-40℃



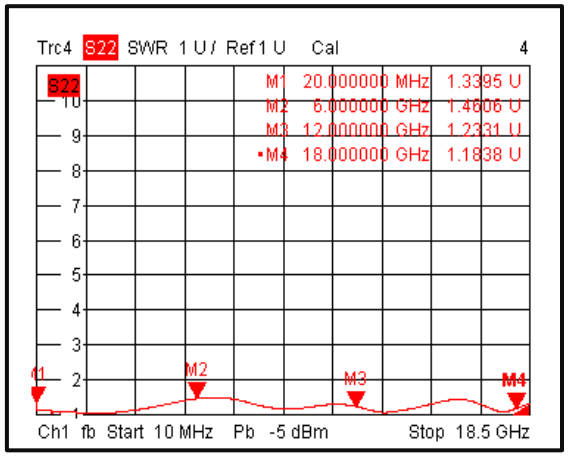

### Insertion Loss @+85℃



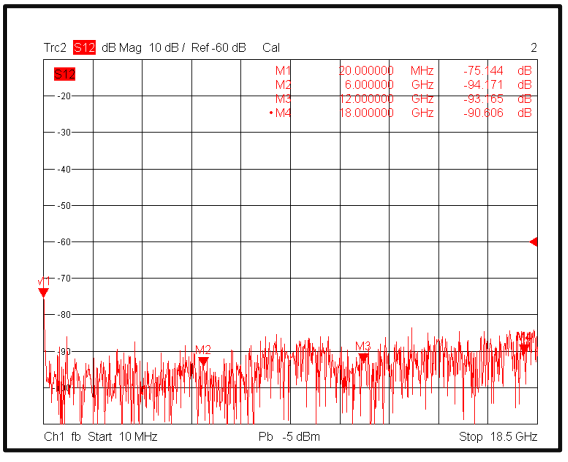

### Input VSWR @+85℃




### Output VSWR @+85℃

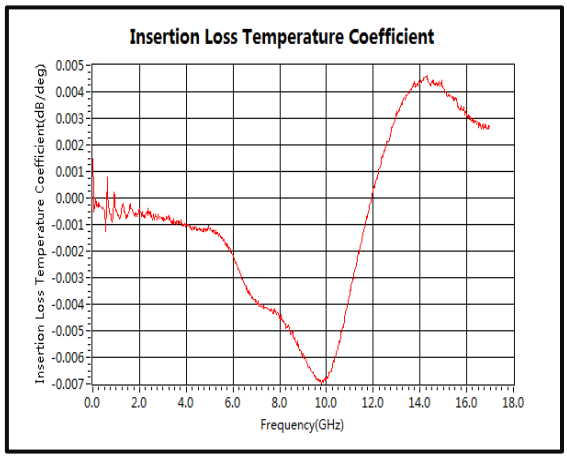



### Isolation @+85℃

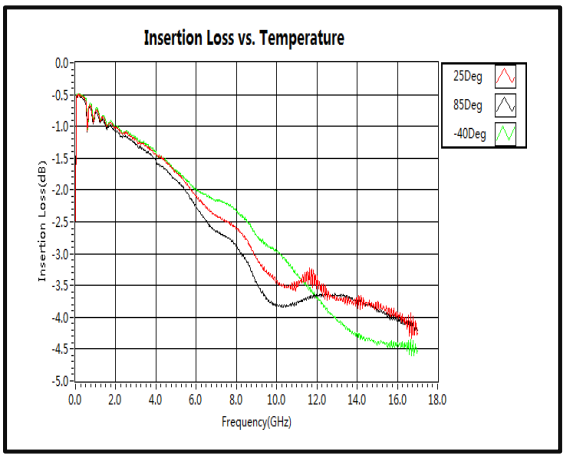


## Typical Performance Plots

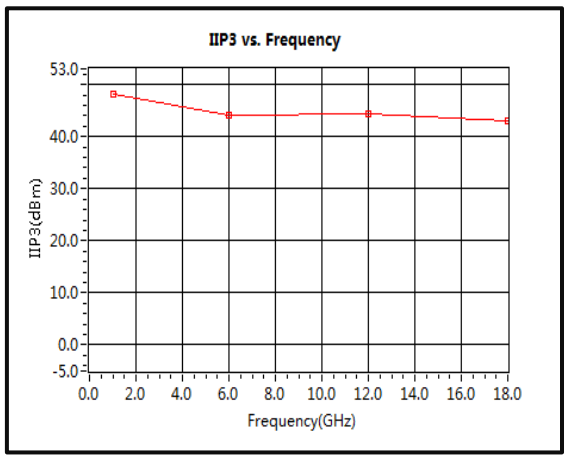
### Insertion Loss Temperature Coefficient



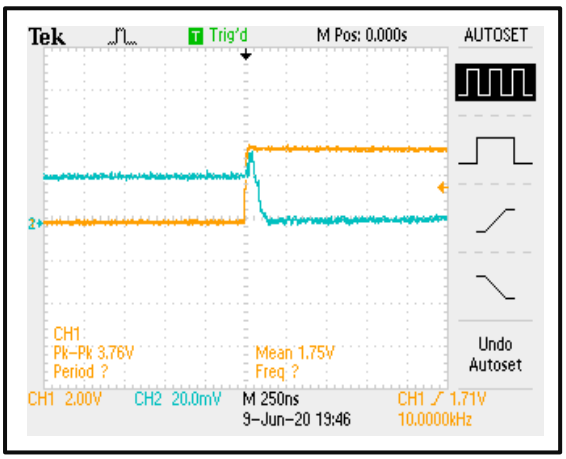

### Insertion Loss vs. Temperature



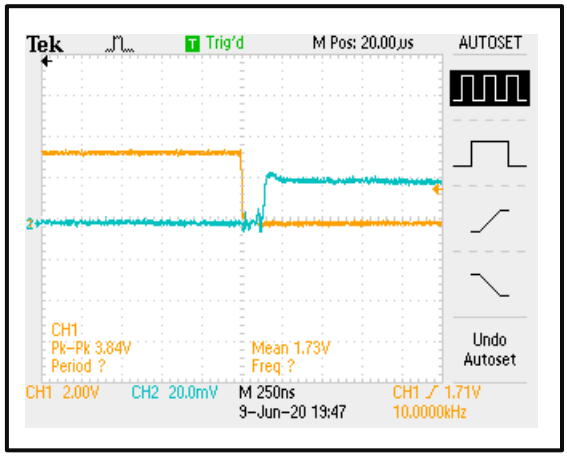

### IIP3




### Switching Speed

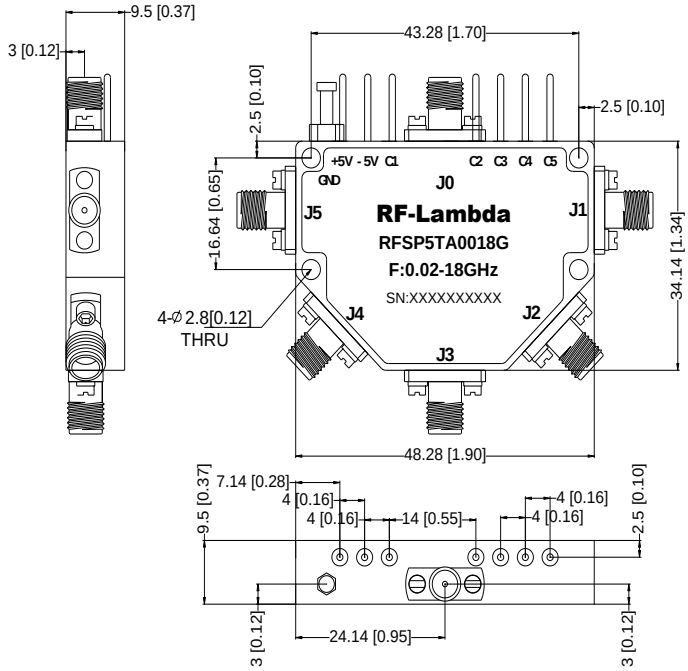



### Switching Speed

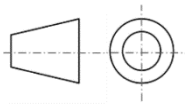


## Outline Drawing

[X501]




| Truth Table | | | | | | |
|---|---|---|---|---|---|---|
| TTL Control Voltage THRESHOLD | | | | | | Low(0)=0~0.8V |
| | | | | | | High(1)=2.8~5V |
| Control Input TTL | | | | | | Signal Path State |
| C5 | C4 | C3 | C2 | C1 | | |
| 1 | 1 | 1 | 1 | 0 | | J0-J1 |
| 1 | 1 | 1 | 0 | 1 | | J0-J2 |
| 1 | 1 | 0 | 1 | 1 | | J0-J3 |
| 1 | 0 | 1 | 1 | 1 | | J0-J4 |
| 0 | 1 | 1 | 1 | 1 | | J0-J5 |
| 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±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 |
| Connector Torque Specifications | https://www.rflambda.com/pdf/Torque_Specifications.pdf |
| Random Vibration Test Standard | https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf |

## Ordering Information

| Part Number | Modification | Description |
|---|---|---|
| RFSP5TA0018G | Standard | 0.02GHz-18GHz SP5T PIN Diode Switch |

## Important Notice





RF-LAMBDA USA LLC: www.rflambda.com
Sales: sales@rflambda.com Technical: support@rflambda.com