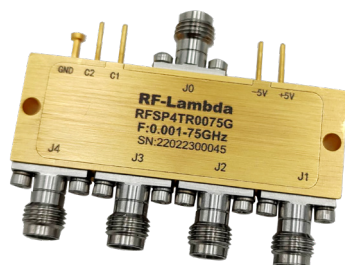


## Reflective Coaxial SP4T Switch 0.001-75GHz



### Product Description

RFSP4TR0075G is a reflective coaxial single pole four throw switch with a frequency range of 0.001 to 75GHz.

The maximum power input of this switch is 15dBm. The insertion loss is 10dB with a typical isolation of 35dB.

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 10dB Typical
- Isolation 35dB 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                        | 0.001~26.5                                   |     |     | 26.5~40 |           |     | 40~75 |     |     | GHz    |     |
| Insertion Loss                         | 5.0                                          |     |     | 6.0     | 6.5       |     | 7.5   | 9.0 |     | 10.0   | dB  |
| Insertion Loss Temperature Coefficient | 0.003                                        |     |     | 0.003   |           |     | 0.003 |     |     | dB/ °C |     |
| Isolation                              | 30                                           | 35  | 25  |         | 30        | 25  |       | 30  | dB  |        |     |
| Input VSWR                             | 1.7                                          |     |     | 2.5     | 1.7       |     | 2.5   | 1.8 |     | 2.5    | : 1 |
| Output VSWR                            | 1.7                                          |     |     | 2.5     | 1.7       |     | 2.5   | 1.8 |     | 2.5    | : 1 |
| RF Input Power                         |                                              |     |     | 15      | 15        |     |       | 15  |     |        | dBm |
| DC Power Dissipation (CW)              | 0.8                                          |     |     | 0.8     |           |     | 0.8   |     |     | W      |     |
| 0.1dB Compression Point (P0.1dB)       | 15                                           |     |     | 15      |           |     | 15    |     |     | dBm    |     |
| IIP3                                   | 28                                           |     |     | 30      |           |     | 30    |     |     | dBm    |     |
| Switching Speed                        |                                              |     |     |         | 500Max.   |     |       | ns  |     |        |     |
| Bias Current (+5V/-5V)                 |                                              |     |     |         | 10/5Max.  |     |       | mA  |     |        |     |
| Weight                                 |                                              |     |     |         | 0.07 Max. |     |       | lbs |     |        |     |
| Impedance                              |                                              |     |     |         | 50        |     |       | Ω   |     |        |     |
| Input / Output Connectors              | 1.85mm-Female(Input) – 1.85mm-Female(Output) |     |     |         |           |     |       |     |     |        |     |
| Package                                | Epoxy Sealed (Standard)                      |     |     |         |           |     |       |     |     |        |     |
|                                        | Hermetically Sealed (Optional)               |     |     |         |           |     |       |     |     |        |     |

### Absolute Maximum Ratings

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

Note: TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.

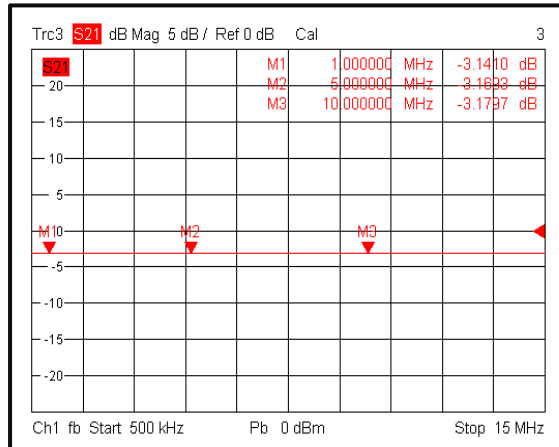
### Environmental Specifications and Test Standards

| 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)                                                                                                                                                                    |

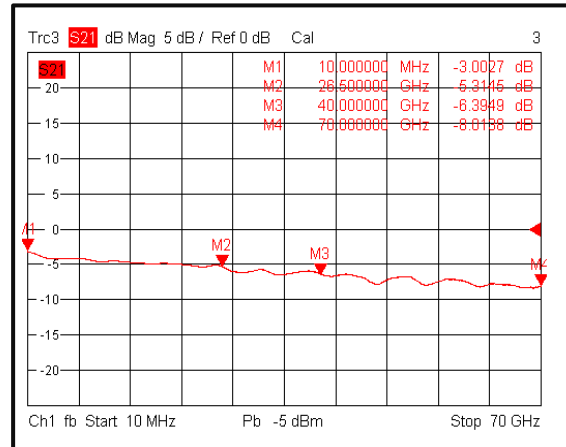
\*\* For vibration testing details please see additional information section.

Typical Performance Plots

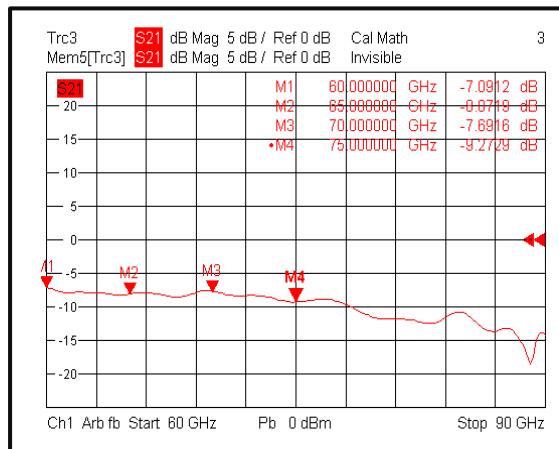
Insertion Loss(1-10MHz) @+25°C



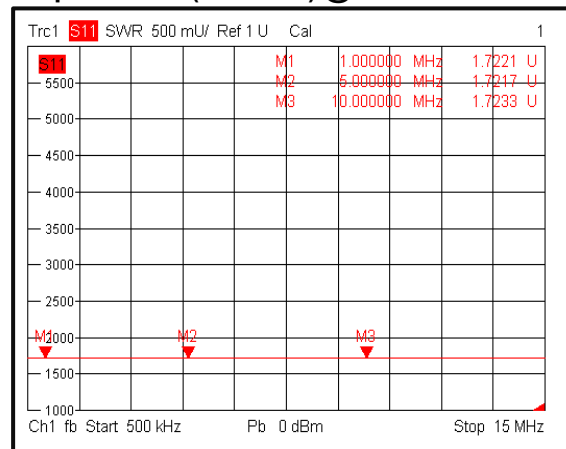
Insertion Loss(0.01-70GHz) @+25°C



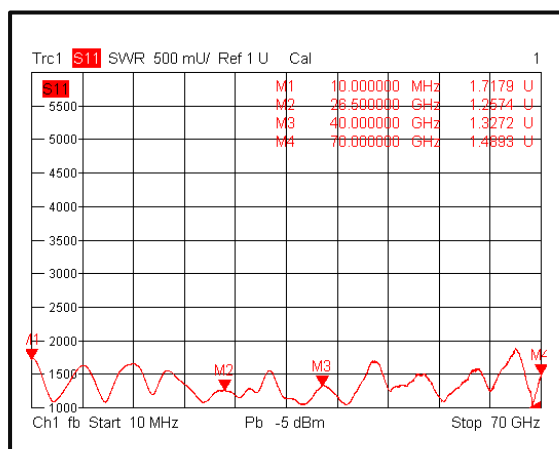
Insertion Loss(60-75GHz) @+25°C



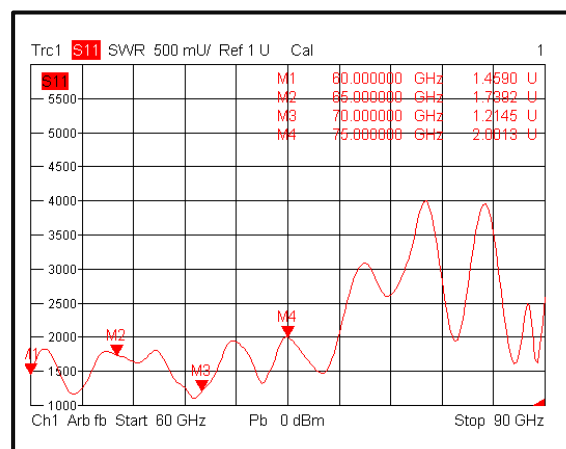
Input VSWR (1-10MHz) @+25°C



Input VSWR (0.01-70GHz) @+25°C

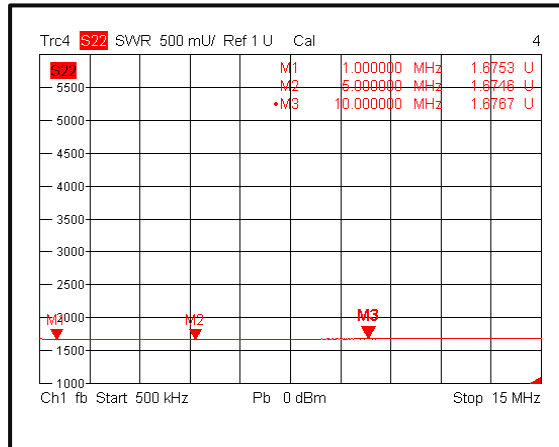


Input VSWR (60-75GHz) @+25°C

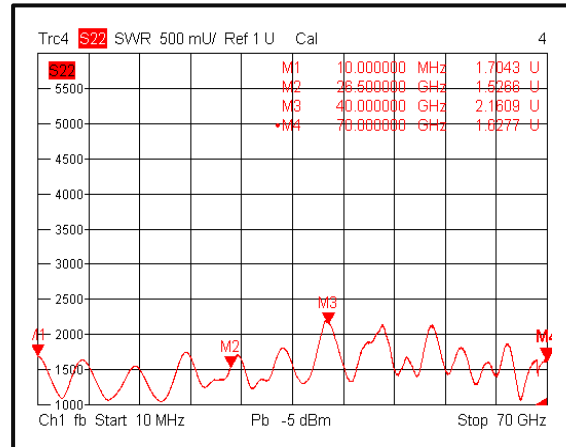


Typical Performance Plots

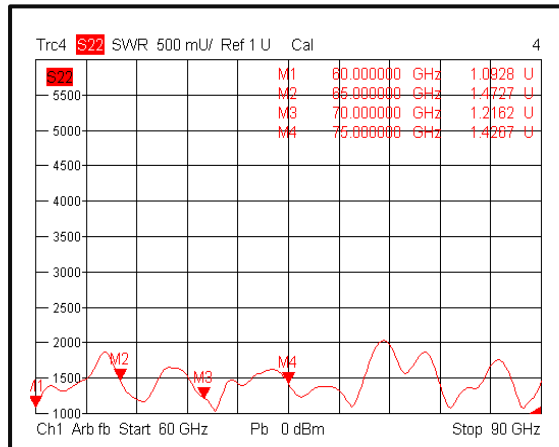
Output VSWR (1-10MHz) @+25°C



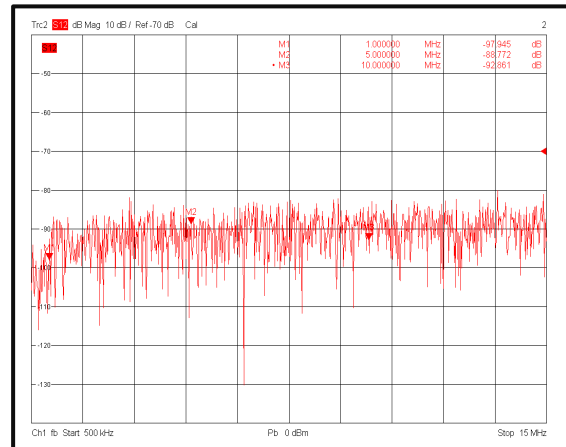
Output VSWR (0.01-70GHz) @+25°C



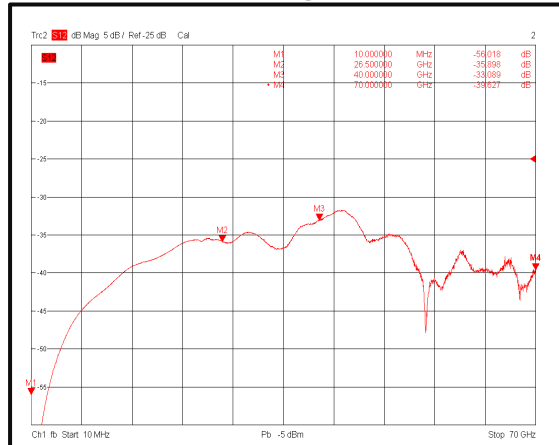
Output VSWR (60-75GHz) @+25°C



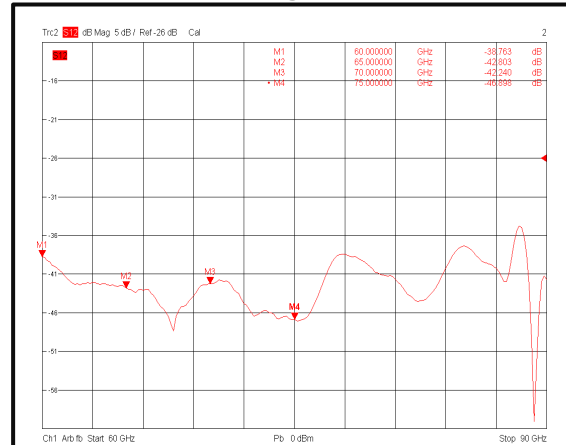
Isolation (1-10MHz) @+25°C



Isolation (0.01-70GHz) @+25°C

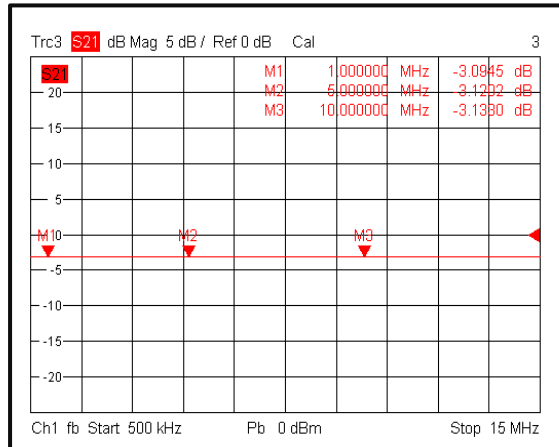


Isolation (60-75GHz) @+25°C

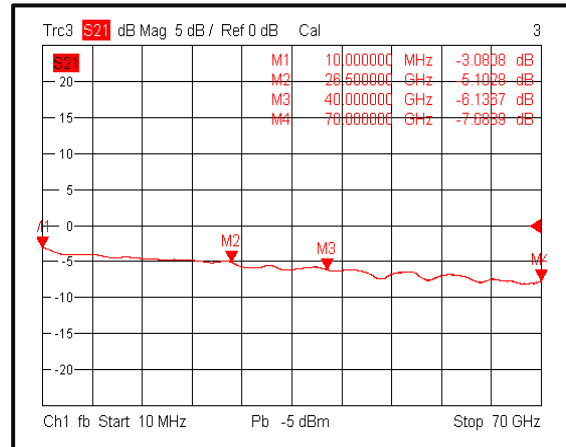


Typical Performance Plots

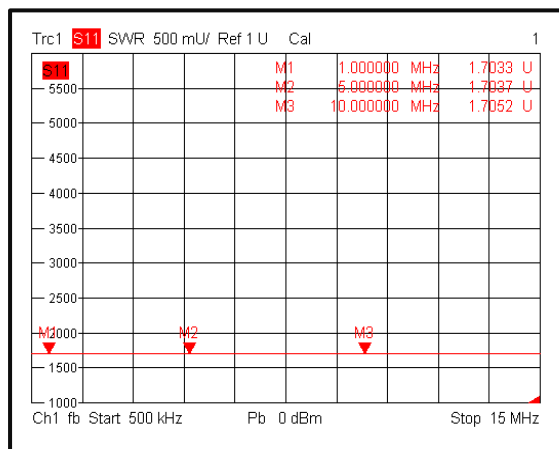
Insertion Loss(1-10MHz) @-40°C



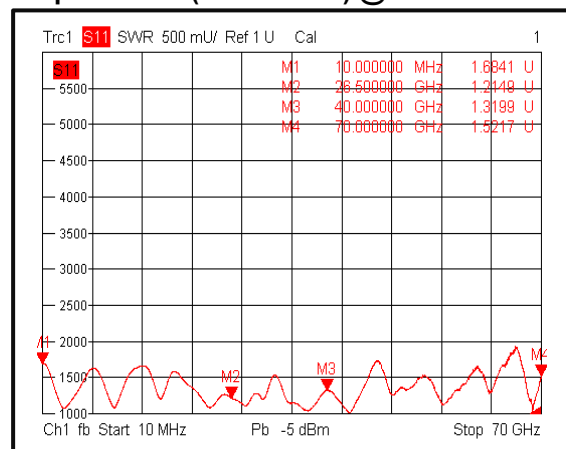
Insertion Loss(0.01-70GHz) @-40°C



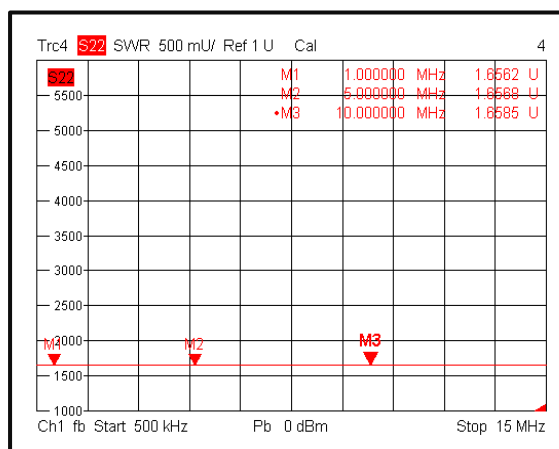
Input VSWR (1-10MHz) @-40°C



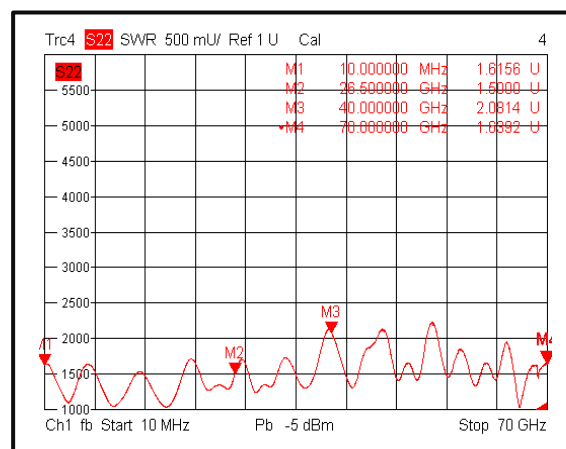
Input VSWR (0.01-70GHz) @-40°C



Output VSWR (1-10MHz) @-40°C

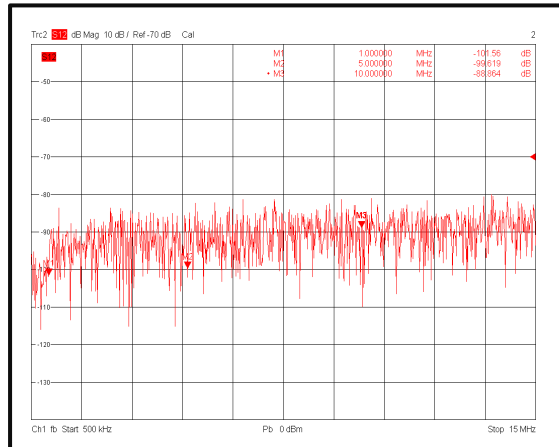


Output VSWR (0.01-70GHz) @-40°C

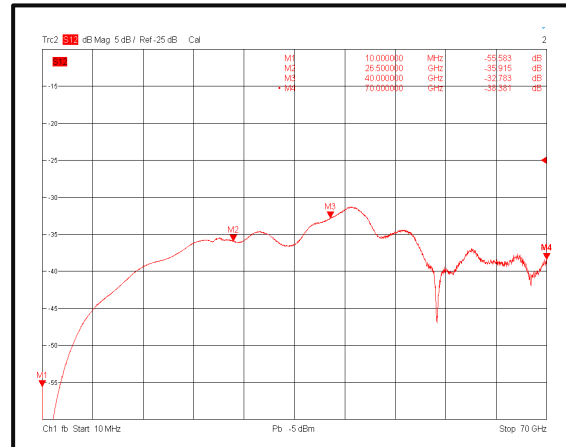


Typical Performance Plots

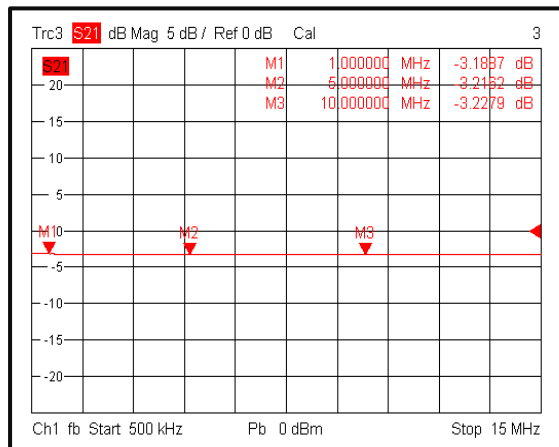
Isolation (1-10MHz) @-40°C



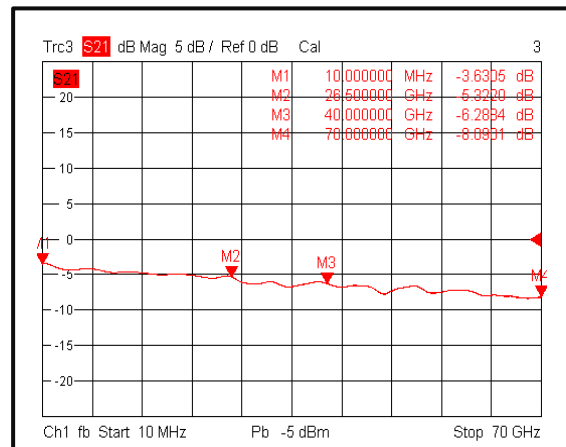
Isolation (0.01-70GHz) @-40°C



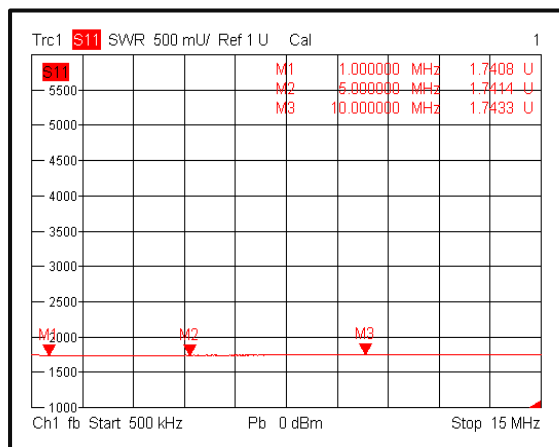
Insertion Loss(1-10MHz) @+85°C



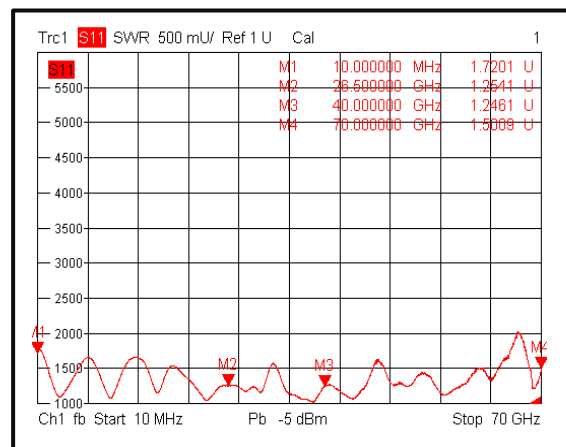
Insertion Loss(0.01-70GHz) @+85°C



Input VSWR (1-10MHz) @+85°C

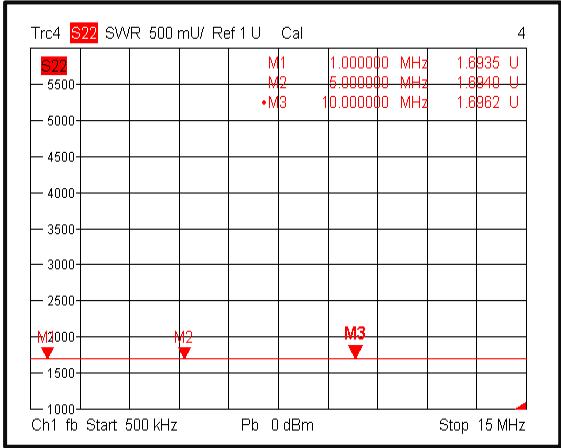


Input VSWR (0.01-70GHz) @+85°C

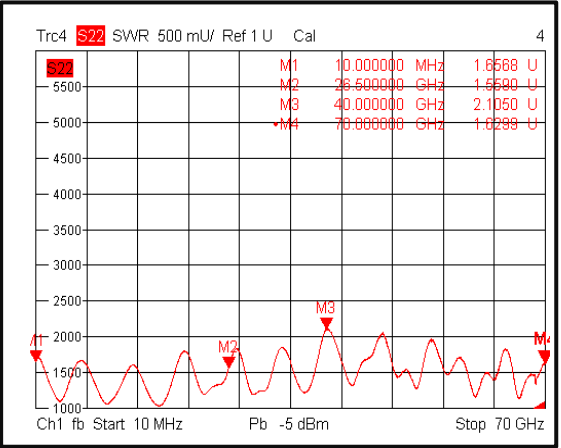


**Typical Performance Plots**

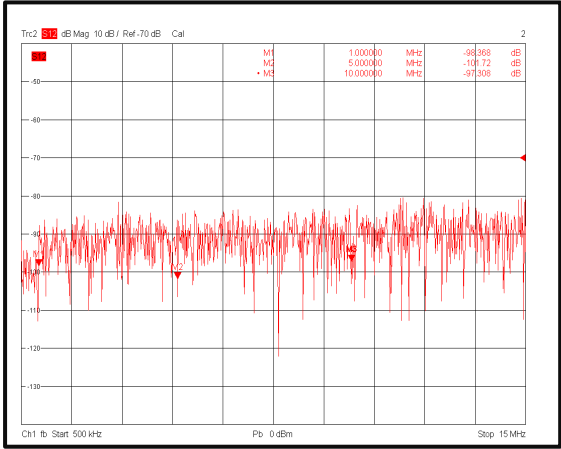
**Output VSWR (1-10MHz) @+85°C**



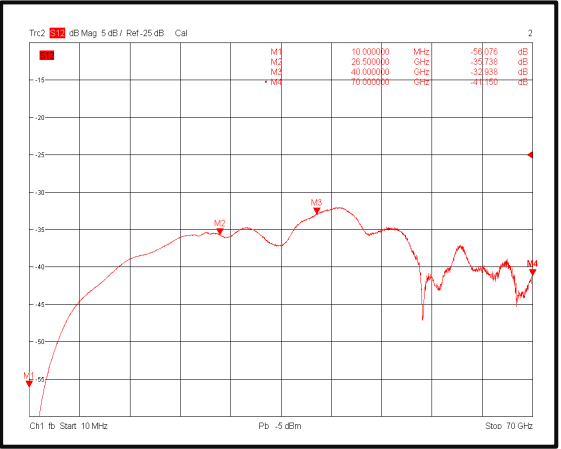
**Output VSWR (0.01-70GHz) @+85°C**



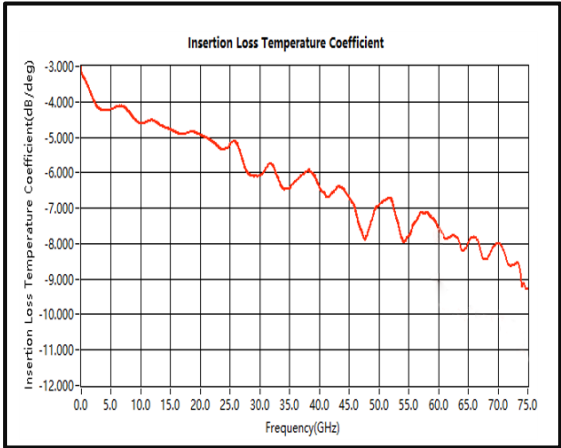
**Isolation (1-10MHz) @+85°C**



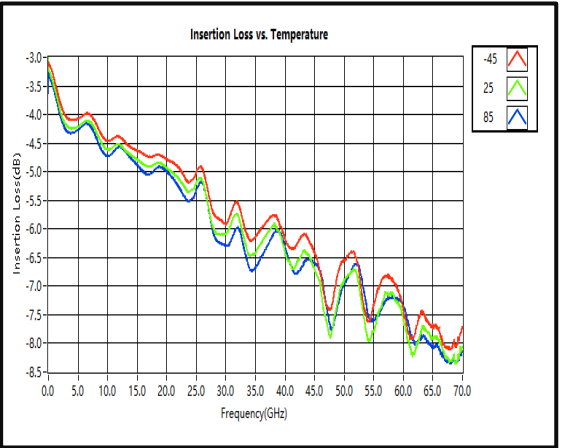
**Isolation (0.01-70GHz) @+85°C**



**Insertion Loss Temperature Coefficient**

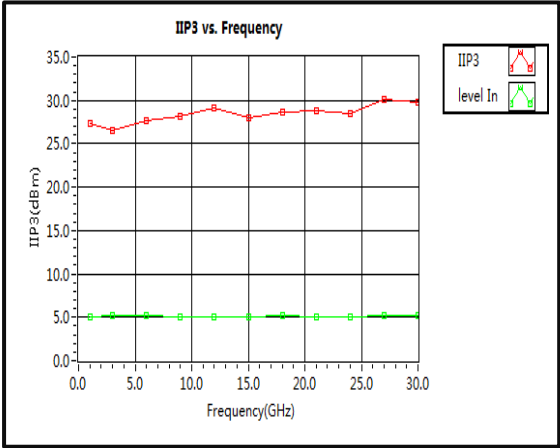


**Insertion Loss vs. Temperature**

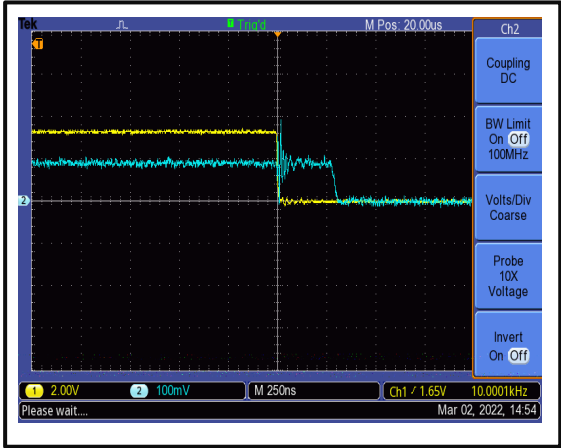


Typical Performance Plots

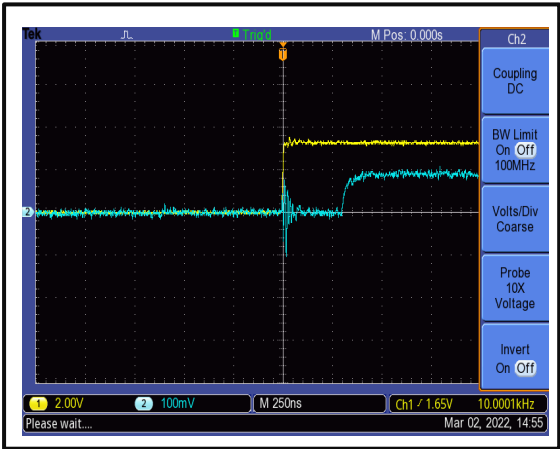
IIP3



Switching Speed



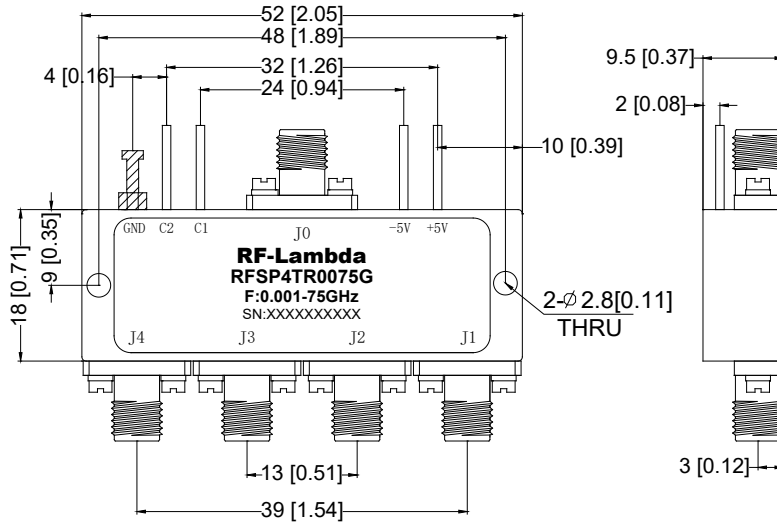
Switching Speed





**Outline Drawing**

[X401]

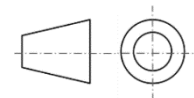


**Truth Table**

|                     |                                      |       |
|---------------------|--------------------------------------|-------|
| TTL Control Voltage | Low(0)=0~0.8V                        |       |
| THRESHOLD           | High(1)=2.8~5V                       |       |
| Control Input       | Signal Path State                    |       |
| TTL                 |                                      |       |
| C2                  | C1                                   |       |
| 0                   | 0                                    | J0-J1 |
| 1                   | 0                                    | J0-J2 |
| 0                   | 1                                    | J0-J3 |
| 1                   | 1                                    | J0-J4 |
| 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                       |
|--------------|---------------------------------------------------------------------|-----------------------------------|
| RFSP4TR0075G | Input Connector 1.85mm-Female<br>and Output Connector 1.85mm-Female | 0.001-75GHz SP4T PIN Diode Switch |

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