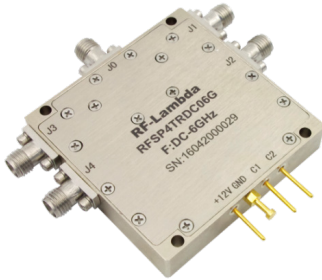


Reflective Coaxial SP4T Switch 0.01GHz-6GHz



Product Description

RFSP4TRDC06G is a reflective coaxial single pole four throw switch with a frequency range of 0.01 to 6GHz.

The maximum power input of this switch is 46dBm. The insertion loss is 1.8dB with a typical isolation of 45dB.

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
- High Power Cold Switching
- Insertion Loss 1.8dB
- Isolation 45dB 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 = +12V, TTL = 0 / +5V

| Parameter | Min | Typ | Max | Min | Typ | Max | Units |
|---|-----|--------|--|-----|-------|-----|--------|
| Frequency Range | | 0.01-3 | | | 3-6 | | GHz |
| Insertion Loss | | 1.8 | 2.0 | | 2.2 | 2.6 | dB |
| Insertion Loss Temperature Coefficient | | 0.003 | | | 0.003 | | dB/ °C |
| Isolation | 35 | 45 | | 33 | 35 | | dB |
| Input VSWR | | 1.5 | 1.8 | | 1.5 | 1.8 | : 1 |
| Output VSWR | | 1.5 | 1.8 | | 1.5 | 1.8 | : 1 |
| *RF Input Power (CW) (50Ω,T = 25°C) | | | 46 | | | 46 | dBm |
| DC Power Dissipation | | 2 | | | 2 | | W |
| 0.1dB Compression P0.1dB (P0.1dB) | | 46 | | | 46 | | dBm |
| IIP3 | | 55 | | | 50 | | dBm |
| Switching Speed | | | 400 Max. | | | | ns |
| Bias Current (+12V) | | | 150 Max. | | | | mA |
| Weight | | | 0.34 Max. | | | | lbs |
| Impedance | | | 50 | | | | Ω |
| Input / Output Connectors | | | SMA-Female(Input) – SMA-Female(Output) | | | | |
| Package | | | Epoxy Sealed (Standard) | | | | |
| | | | Hermetically Sealed (Optional) | | | | |

* When the working frequency is lower than 100MHz, please refer to the max input power curve..

Absolute Maximum Ratings

| Parameter | Rating |
|-----------|----------|
| Biasing | +12V±10% |

Notes:

1. TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged .
2. If the device operates in high power state, recommend keeping case temperature lower than 60°C.
3. Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could be damaged.
4. DC blocks required . Input and output ports must not be connected to DC ground or any DC voltage or the switch will be damaged.

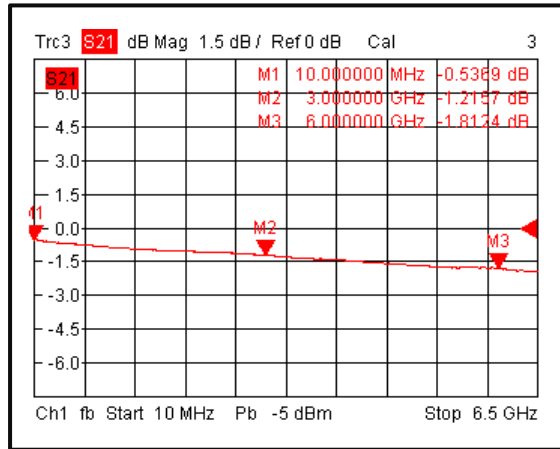
Environmental Specifications and Test Standards

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

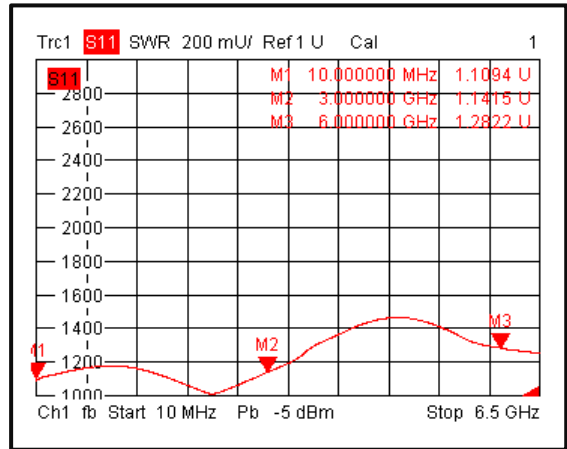
** For vibration testing details please see additional information section.

Typical Performance Plots

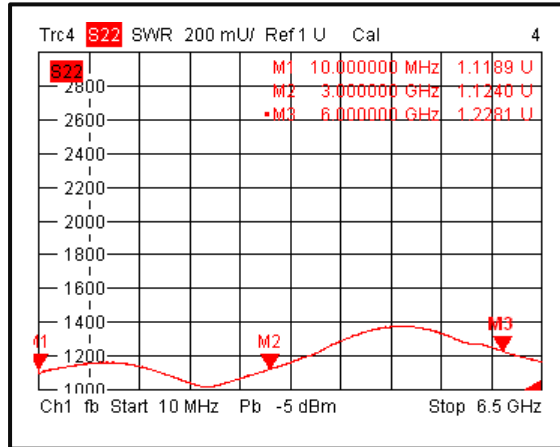
Insertion Loss @+25°C



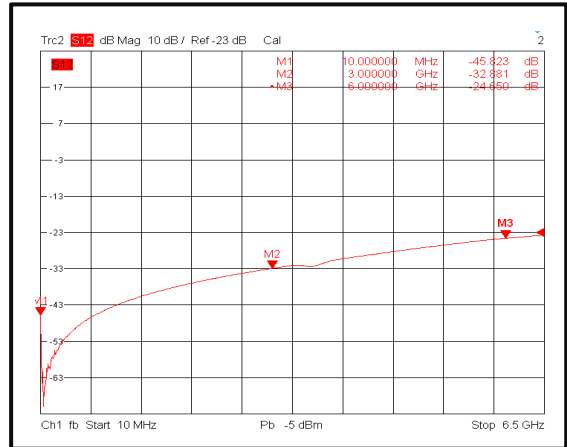
Input VSWR @+25°C



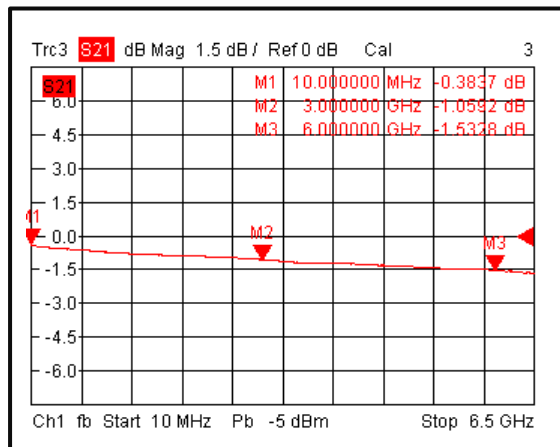
Output VSWR @+25°C



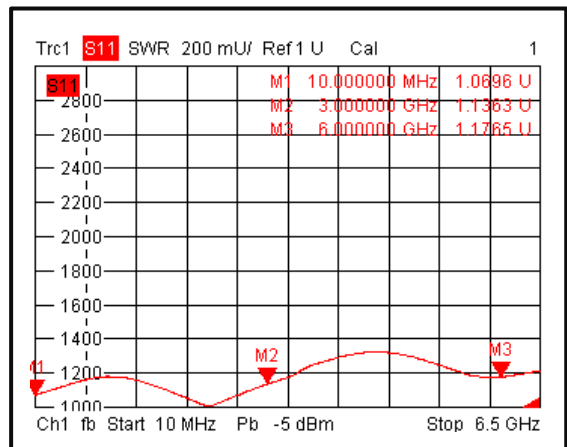
Isolation @+25°C



Insertion Loss @-40°C

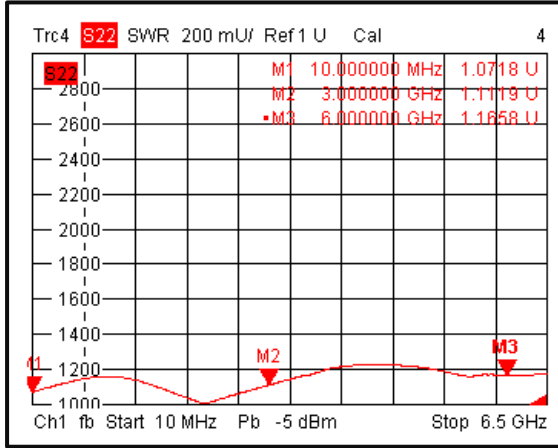


Input VSWR @-40°C

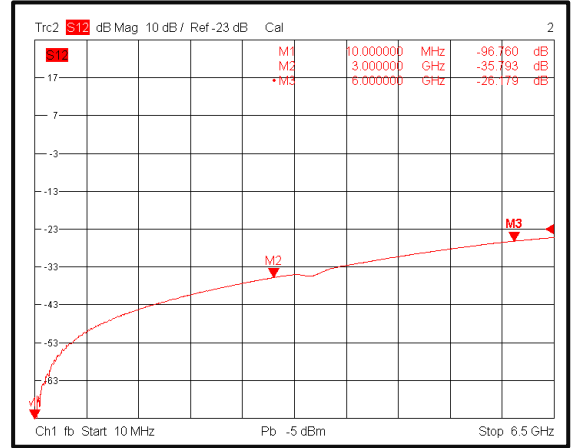


Typical Performance Plots

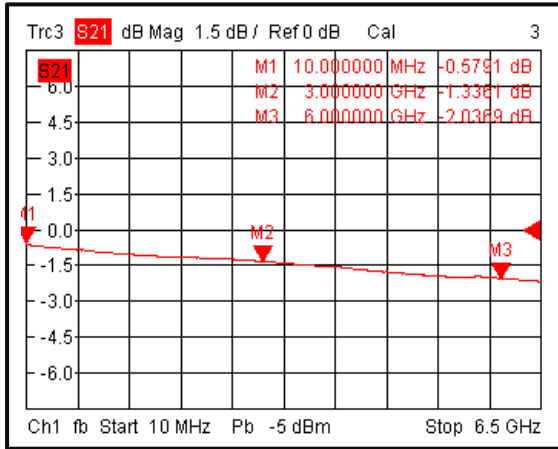
Output VSWR @-40°C



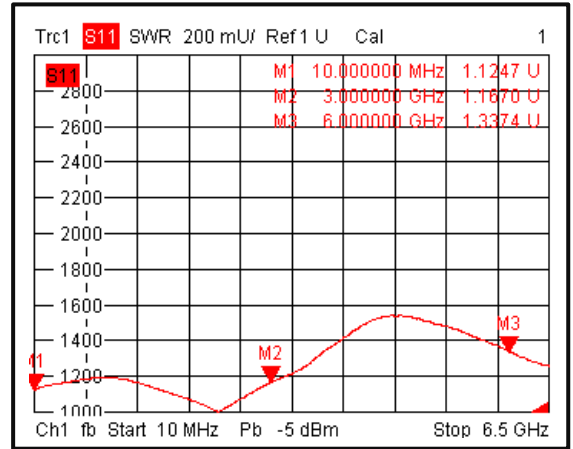
Isolation @-40°C



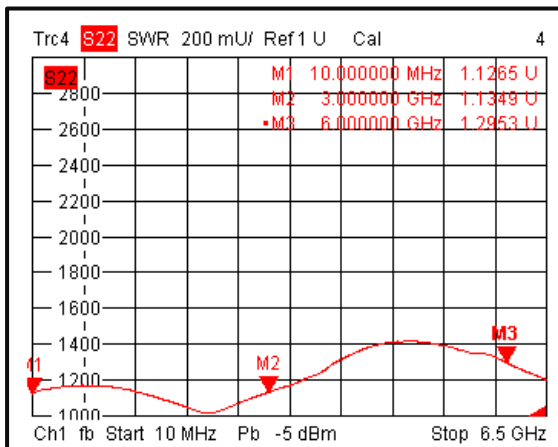
Insertion Loss @+85°C



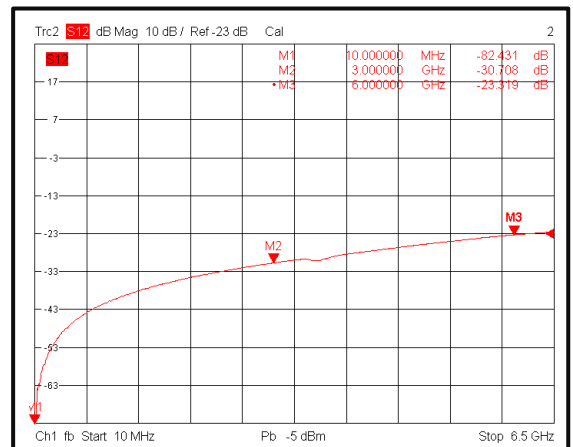
Input VSWR @+85°C



Output VSWR @+85°C

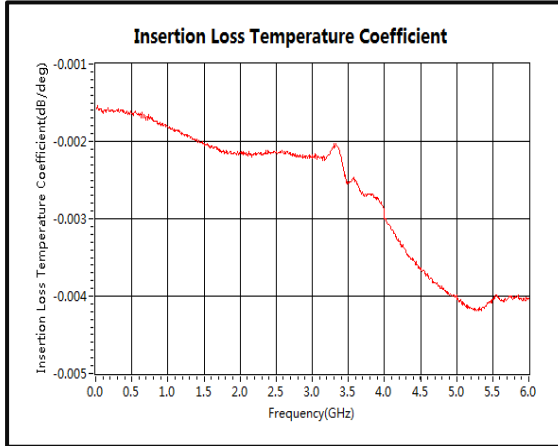


Isolation @+85°C

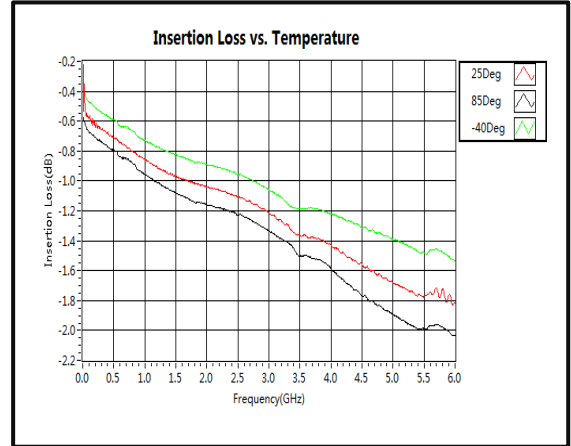


Typical Performance Plots

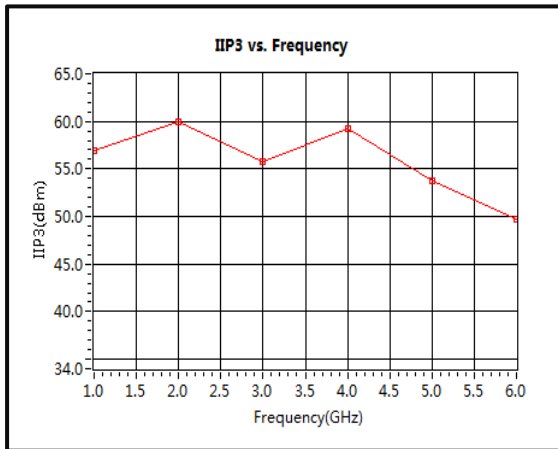
Insertion Loss Temperature Coefficient



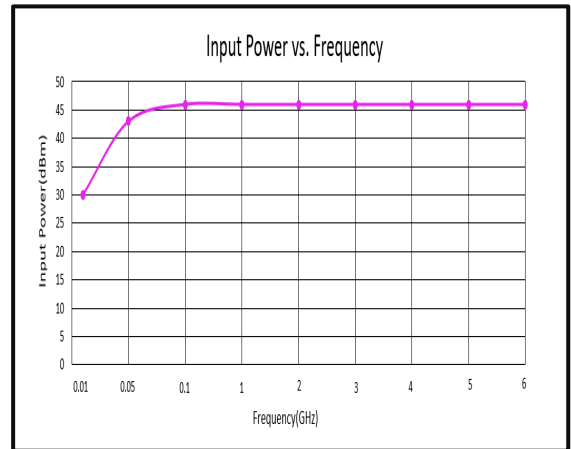
Insertion Loss vs. Temperature



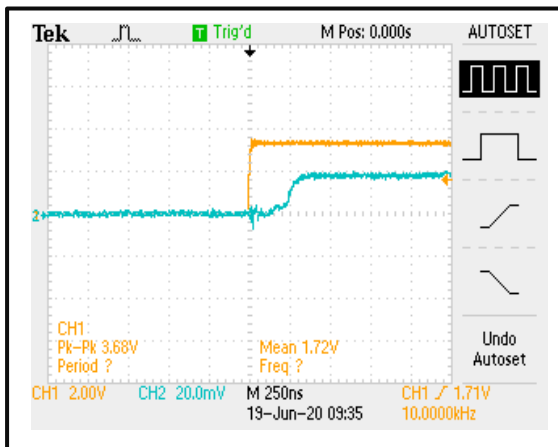
IIP3



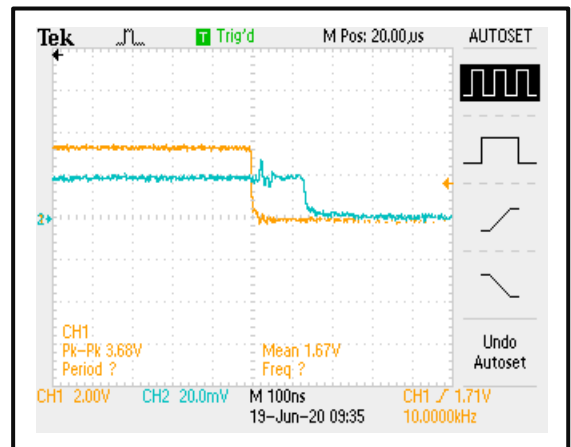
Input Power vs. Frequency



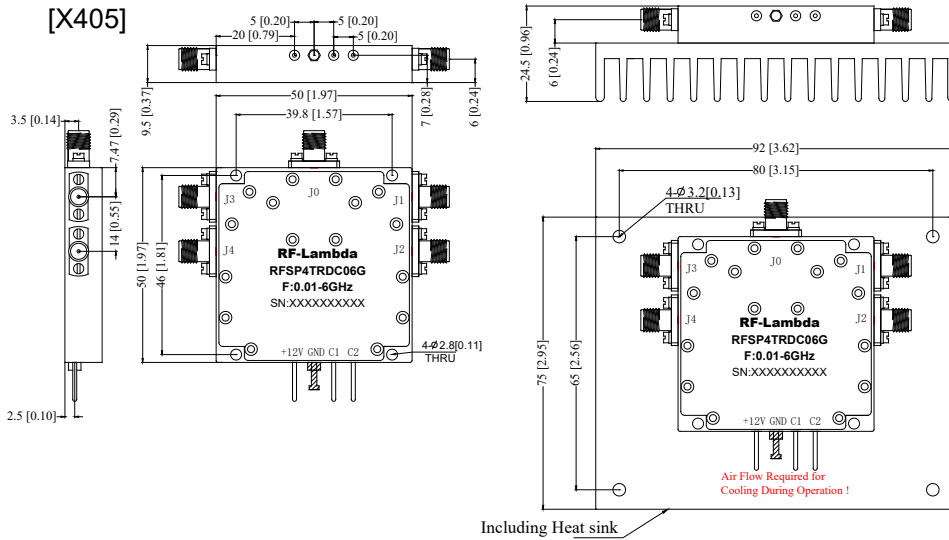
Switching Speed



Switching Speed



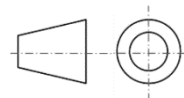
Outline Drawing



| Truth Table | | |
|--|----------------|-------|
| TTL Control Voltage | Low(0)=0~0.8V | |
| THRESHOLD | High(1)=2.8~5V | |
| Control Input TTL | State | |
| C1 | C2 | |
| 0 | 0 | J0-J1 |
| 0 | 1 | J0-J2 |
| 1 | 0 | J0-J3 |
| 1 | 1 | J0-J4 |
| Control Pin Customization available upon request | | |

Notes:

1. Package Material: Copper
2. Plating: Nickel
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ± 0.1 [0.004] unless otherwise specified(Excl Heat Sink).
5. Heatsink Required - Mandatory for High Power Operation .Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. Standard torque wrench must be used to secure RF connectors.



Additional Information

| Documentation | Webpage |
|---------------------------------|---|
| ESD Policy | https://rflambda.com/pdf/rflambda_esd_control.pdf |
| Heatsink Lookup Specifications | https://rflambda.com/search_heatsink.jsp |
| 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 |
|--------------|--------------|---------------------------------|
| RFSP4TRDC06G | Standard | 0.01-6GHz SP4T PIN Diode Switch |

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