

## Absorptive Coaxial SP6T Switch 6GHz-12GHz



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 2dB
- Isolation 70dB
- 50 Ohm Matched

### Product Description

RFSP6TA0612G is an absorptive coaxial single pole six throw switch with a frequency range of 6 to 12GHz.

The power input of this switch is 30 dBm Max. The Insertion Loss is 2dB with a typical isolation of 70dB.

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                        |     | 6-12                           |     | GHz    |
| Insertion Loss                         |     | 2.2                            | 3.0 | dB     |
| Insertion Loss Temperature Coefficient |     | 0.003                          |     | dB/ °C |
| Isolation                              | 70  | 80                             |     | dB     |
| Input VSWR                             |     | 1.5                            | 2.0 | : 1    |
| Output VSWR                            |     | 1.5                            | 2.0 | : 1    |
| RF Input Power                         |     |                                | 30  | dBm    |
| DC Power Dissipation                   |     | 1.1                            |     | W      |
| 0.1dB Compression Point (P0.1dB)       |     | 30                             |     | dBm    |
| IIP3                                   |     | 40                             |     | dBm    |
| Switching Speed                        |     | 200 Max.                       |     | ns     |
| Bias Current ( +5V / -5V )             |     | 290 / 0Max.                    |     | mA     |
| Weight                                 |     | / Max.                         |     | lbs    |
| Impedance                              |     | 50                             |     | Ω      |
| Input / Output Connectors              |     | SMA-Female                     |     |        |
| Package                                |     | Epoxy Sealed (Standard)        |     |        |
|                                        |     | Hermetically Sealed (Optional) |     |        |

### 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.

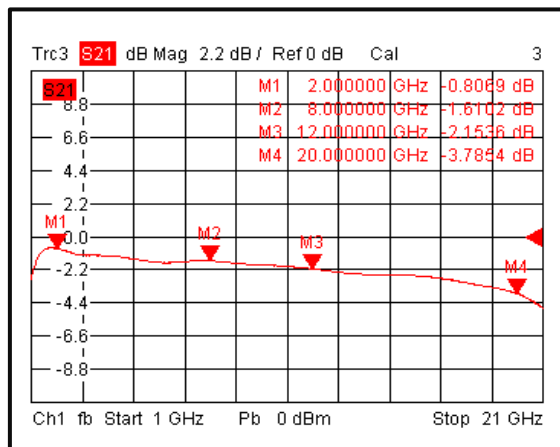
### Environmental Specifications and Test Standards

| 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)                                                                                                                                                                    |

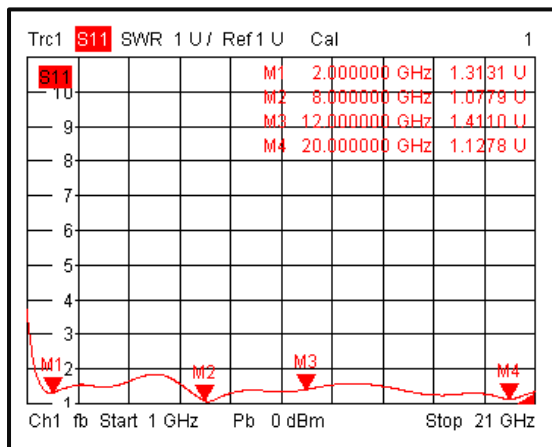
\*For vibration testing details please see additional information section.

Typical Performance Plots

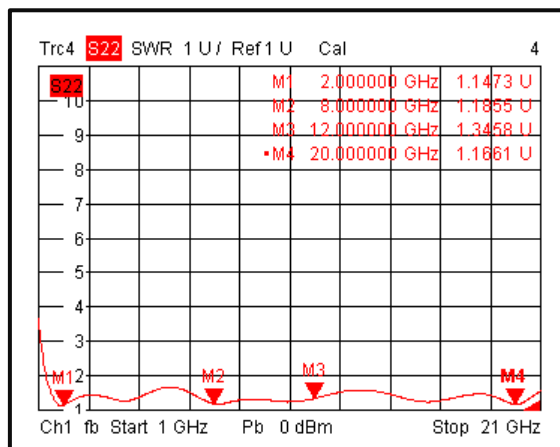
Insertion Loss @+25°C



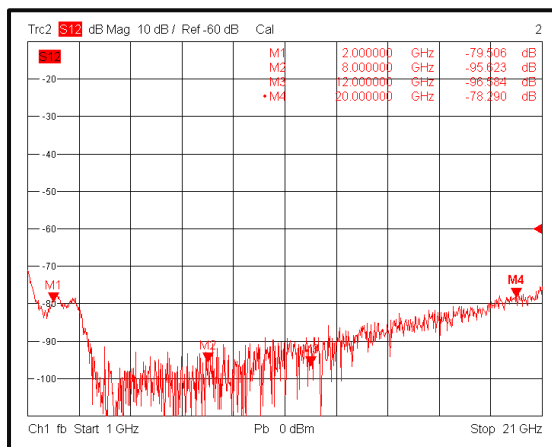
Input VSWR @+25°C



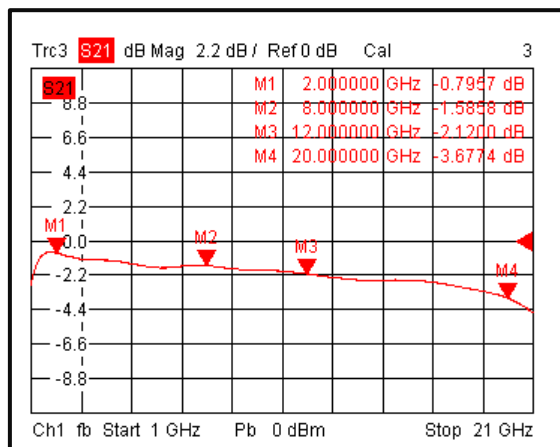
Output VSWR @+25°C



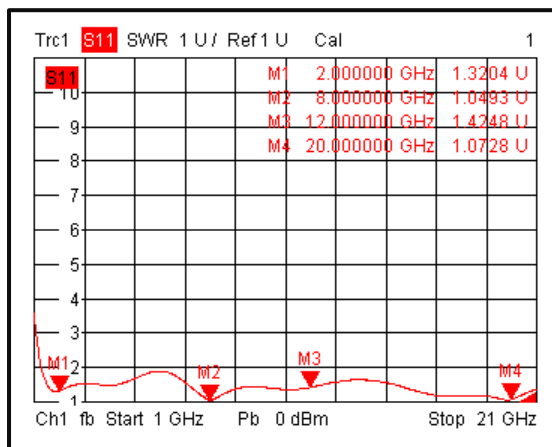
Isolation @+25°C



Insertion Loss @-40°C

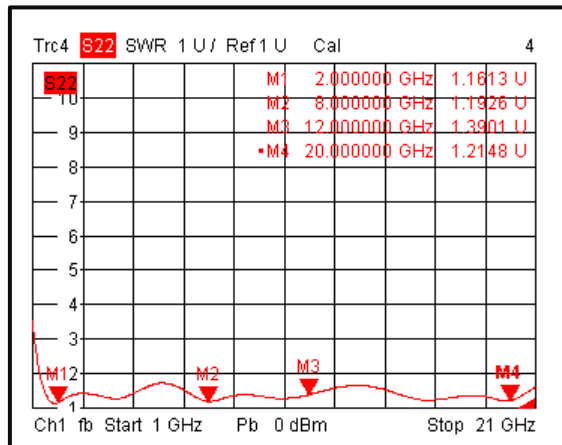


Input VSWR @-40°C

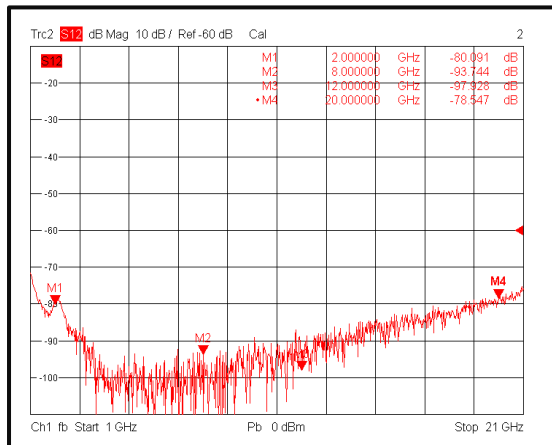


Typical Performance Plots

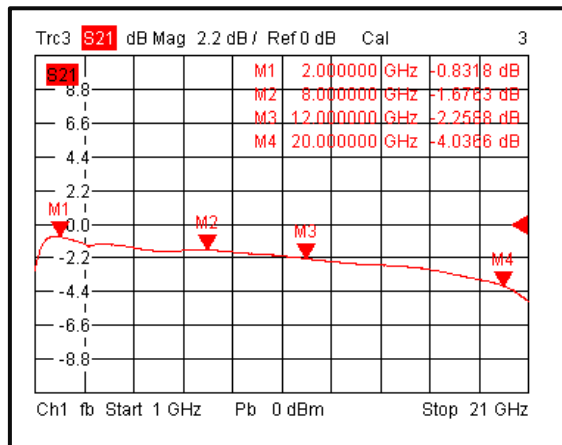
Output VSWR @-40°C



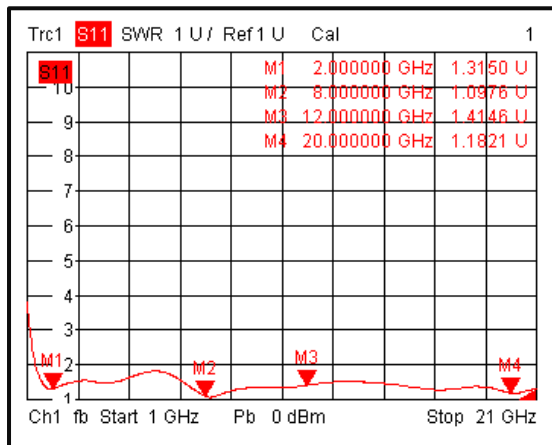
Isolation @-40°C



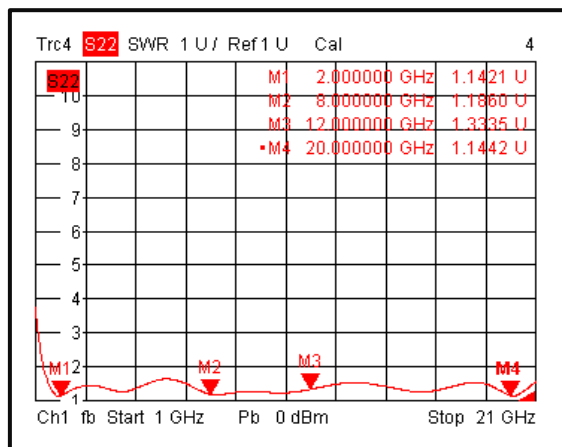
Insertion Loss @+85°C



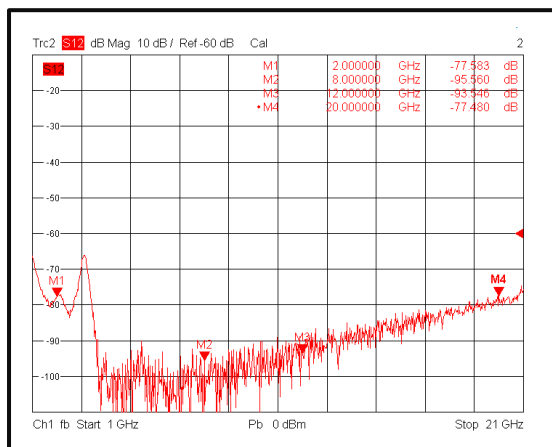
Input VSWR @+85°C



Output VSWR @+85°C

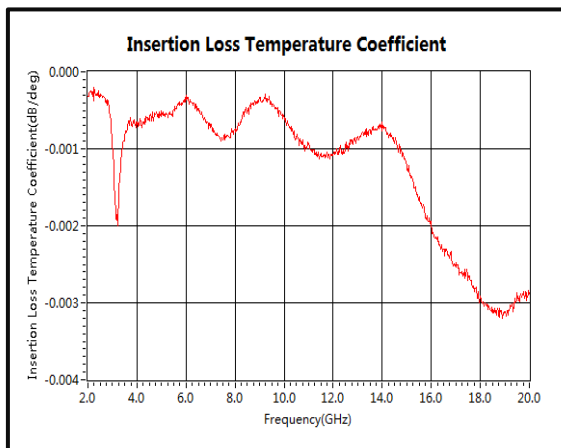


Isolation @+85°C

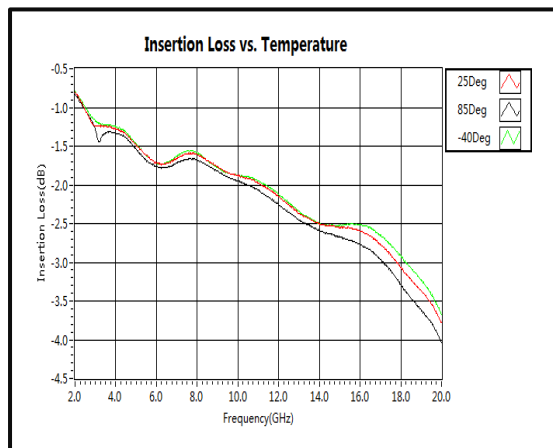


Typical Performance Plots

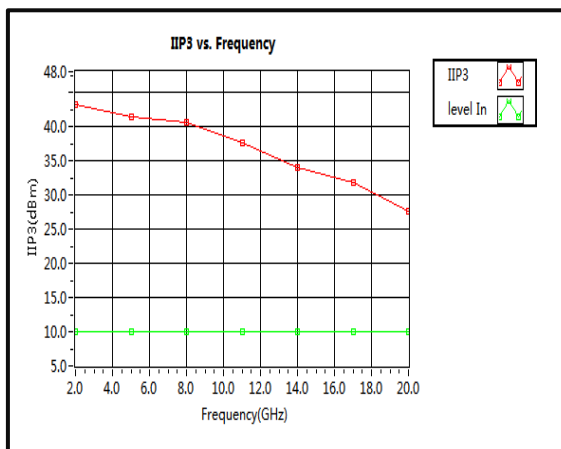
Insertion Loss Temperature Coefficient



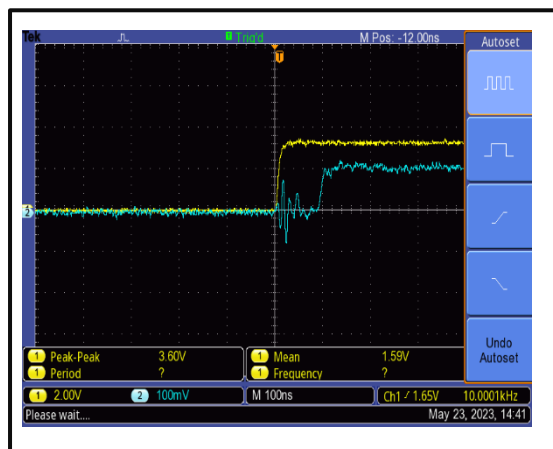
Insertion Loss vs. Temperature



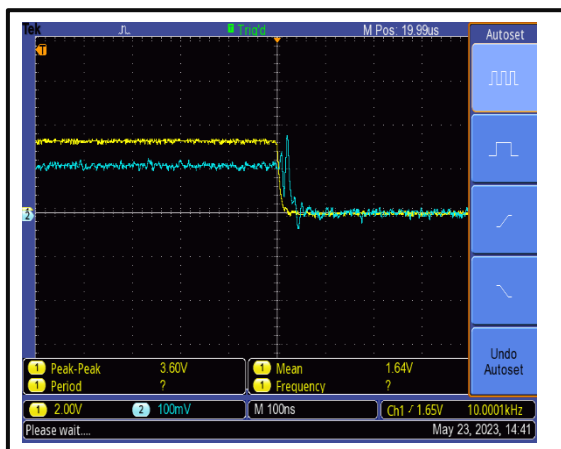
IIP3



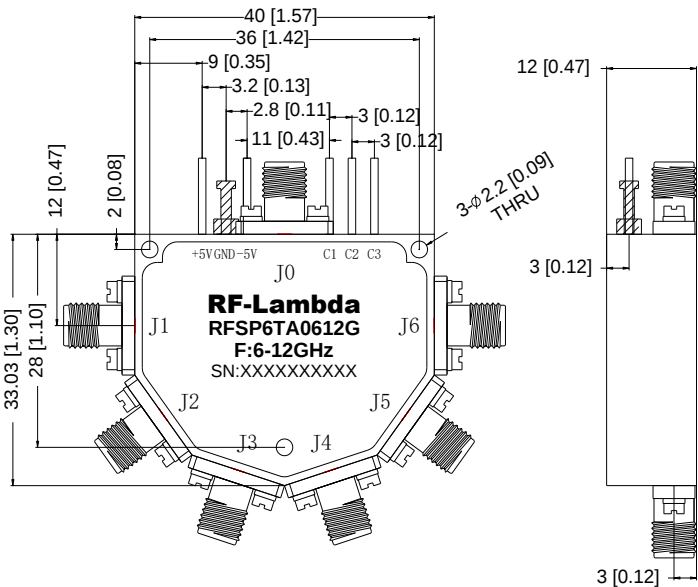
Switching Speed



Switching Speed



Outline Drawing

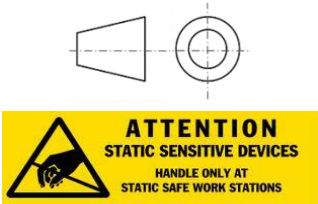


Truth Table

|                               |                                 |
|-------------------------------|---------------------------------|
| TTL Control Voltage THRESHOLD | Low(0)=0~0.8V<br>High(1)=2.8~5V |
| Control Input TTL             | Signal Path State               |
| C3 C2 C1                      |                                 |
| 0 0 0                         | J0-J1                           |
| 0 0 1                         | J0-J2                           |
| 0 1 0                         | J0-J3                           |
| 0 1 1                         | J0-J4                           |
| 1 0 0                         | J0-J5                           |
| 1 0 1                         | J0-J6                           |
| 1 1 0                         | OFF                             |
| 1 1 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 ±0.1 [0.004] unless otherwise specified.
  - 5. Standard torque wrench must be used to secure RF connectors.



Additional Information

| Documentation                   | Webpage                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ESD Policy                      | <a href="https://rflambda.com/pdf/rflambda_esd_control.pdf">https://rflambda.com/pdf/rflambda_esd_control.pdf</a>                                             |
| Connector Torque Specifications | <a href="https://www.rflambda.com/pdf/Torque_Specifications.pdf">https://www.rflambda.com/pdf/Torque_Specifications.pdf</a>                                   |
| Random Vibration Test Standard  | <a href="https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf">https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf</a> |

**Ordering Information**

| Part Number  | Modification | Description                      |
|--------------|--------------|----------------------------------|
| RFSP6TA0612G | Standard     | 6GHz-12GHz SP6T PIN Diode Switch |

**Important Notice**

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