# Absorptive Coaxial SP8T Switch
# 24GHz-53GHz


## Product Description

RFSP8TA2453GA is an absorptive coaxial single pole eight throw switch with a frequency range of 24 to 53GHz.

The power input of this switch is 23dBm Max. The Insertion Loss is 7.5dB with a typical isolation of 53dB.

The product features of 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 7.5dB Typical
- Isolation 53dB 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 | 18 | | 24 | 24 | | 40 | 40 | | 53 | GHz |
| Insertion Loss | | 6.5 | | | 7.5 | 8.5 | | 10.5 | 11.5 | dB |
| Insertion Loss Temperature Coefficient | | 0.003 | | | 0.003 | | | 0.003 | | dB/ °C |
| Isolation | | 55 | | 48 | 53 | | 38 | 45 | | dB |
| Input VSWR | | 3.0 | | | 2.2 | 3.0 | | 2.5 | 3.0 | : 1 |
| Output VSWR | | 3.0 | | | 2.2 | 3.0 | | 2.5 | 3.0 | : 1 |
| RF Input Power (CW) | | 23 | | | | 23 | | | 23 | dBm |
| DC Power Dissipation | | 0.8 | | | 0.8 | | | 0.8 | | W |
| 0.1dB Compression Point (P0.1dB ) | | 23 | | | 23 | | | 23 | | dBm |
| IIP3 | | 38 | | | 38 | | | 28 | | dBm |
| Switching Speed | | | | | 100 Max. | | | | | ns |
| Bias Current (+5V/-5V) | | | | | 200/50 Max. | | | | | mA |
| Weight | | | | | 0.15 Max. | | | | | lbs |
| Impedance | | | | | 50 | | | | | Ω |
| Input / Output Connectors | | | | | 1.85mm-Female(Input) – 1.85mm-Female(Output) | | | | | |
| Interface and Control Connector | | | | | MICRO-D9 (Female) | | | | | |
| Package | | | | | Epoxy Sealed (Standard) | | | | | |
| | | | | | Hermetically Sealed (Optional) | | | | | |



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### 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.

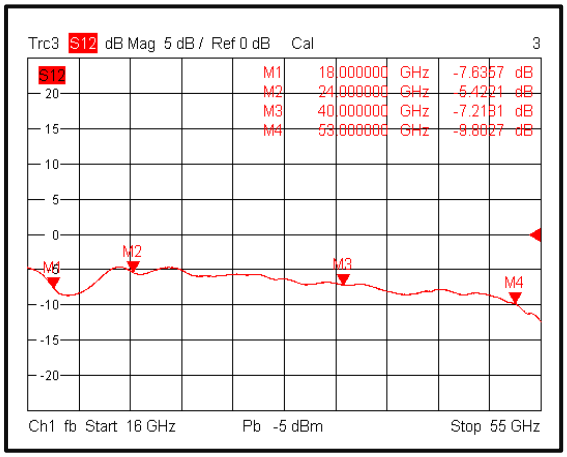
### Environmental Specifications and Test Standards

| 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) |

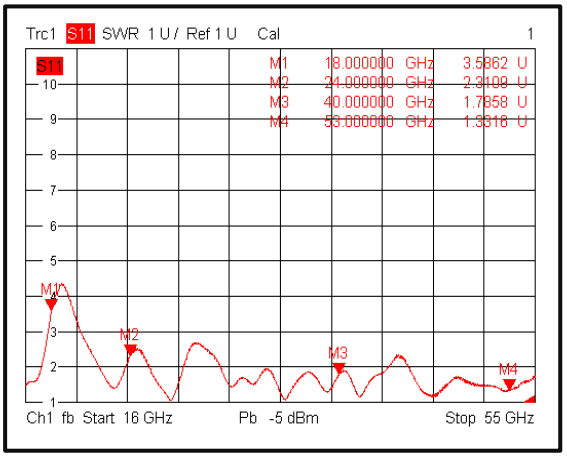
**For vibration testing details please see additional information section.

## Typical Performance Plots

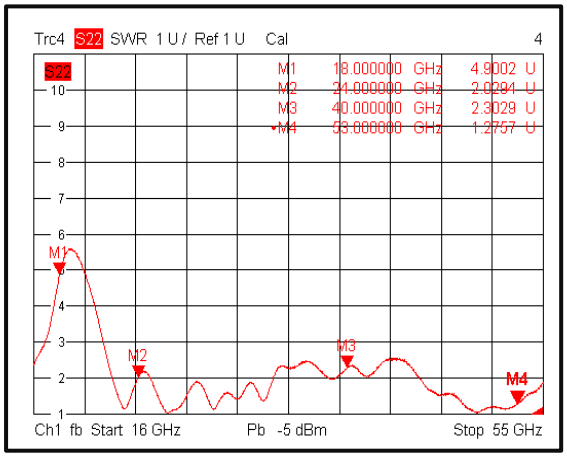
### Insertion Loss @+25℃



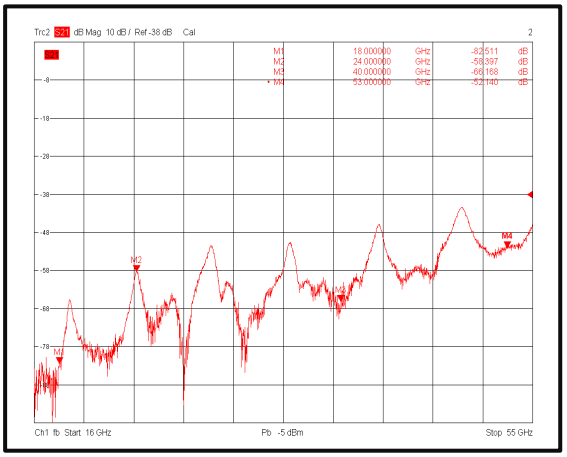

### Input VSWR @+25℃



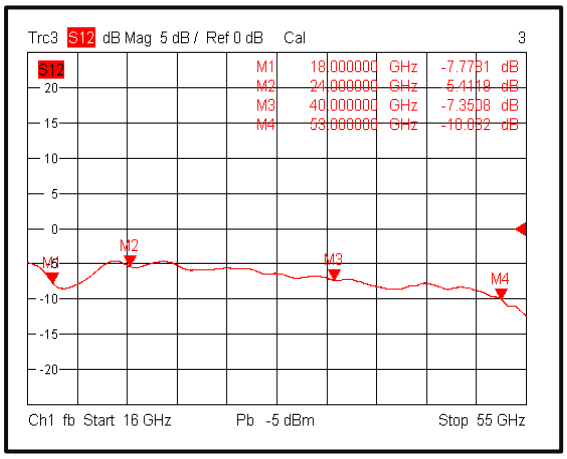

### Output VSWR @+25℃



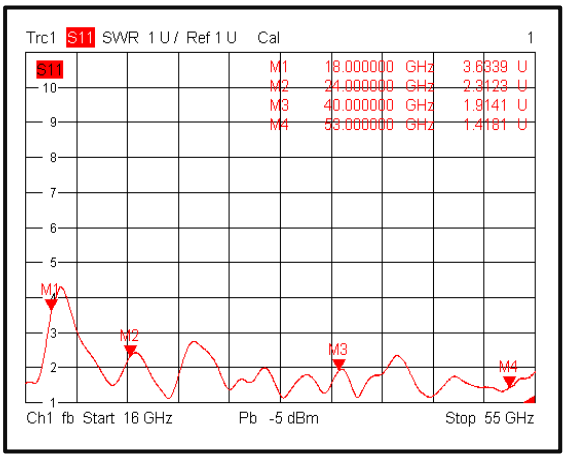

### Isolation @+25℃



### Insertion Loss @-40℃

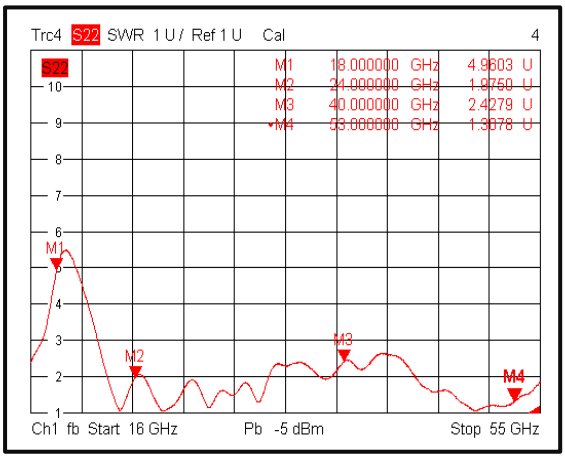



### Input VSWR @-40℃

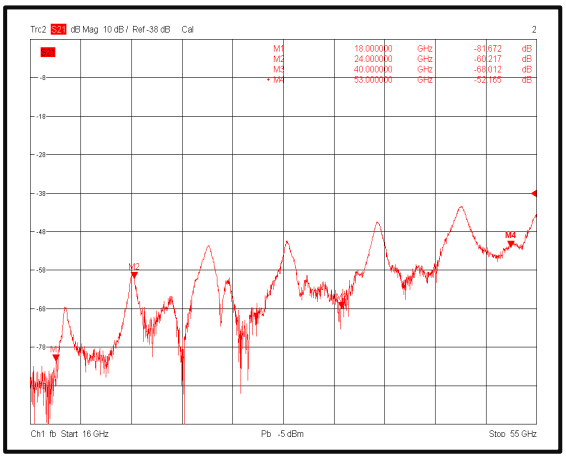


## Typical Performance Plots

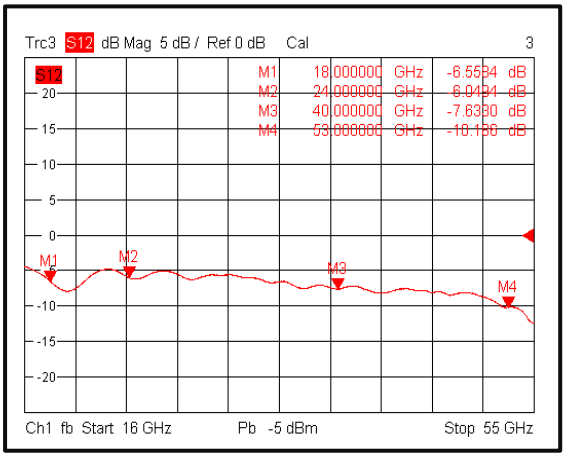
### Output VSWR @-40℃



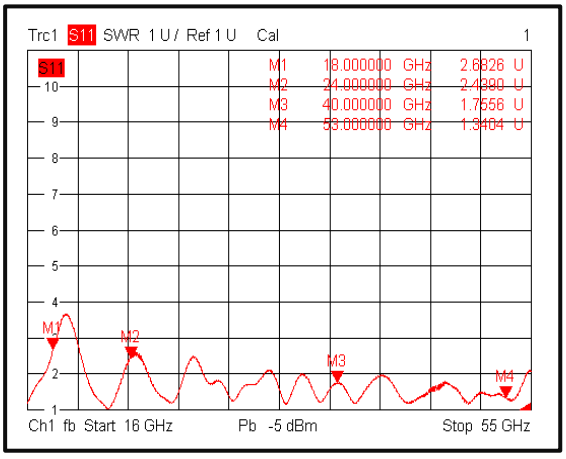

### Isolation @-40℃



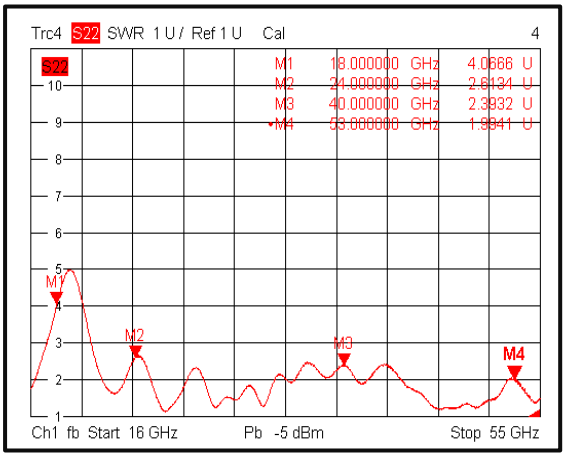
### Insertion Loss @+85℃



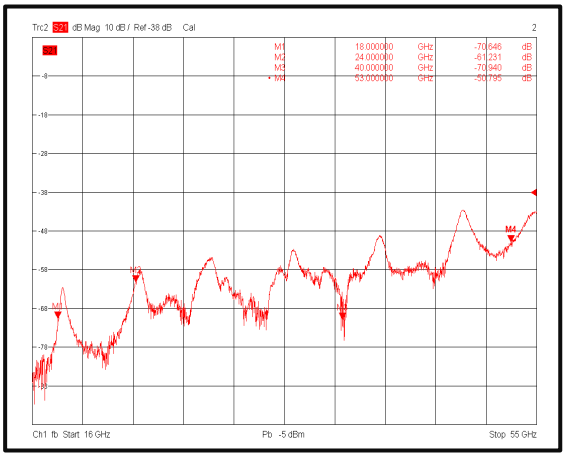

### Input VSWR @+85℃




### Output VSWR @+85℃

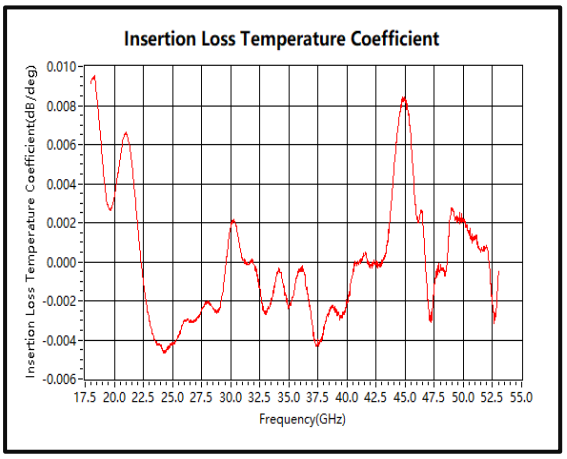



### Isolation @+85℃

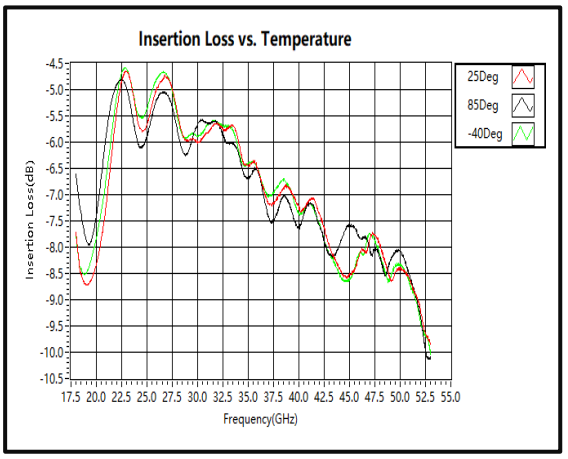


## Typical Performance Plots

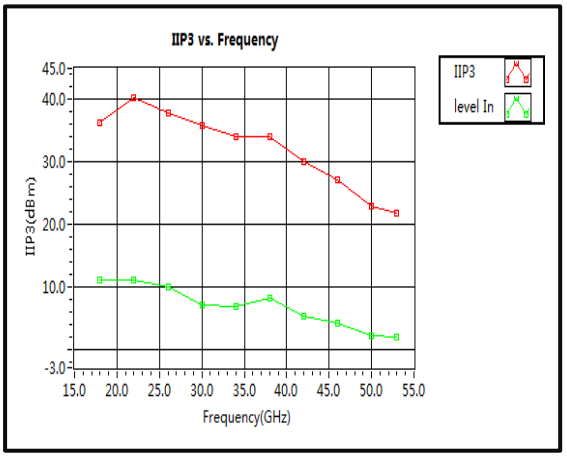
### Insertion Loss Temperature Coefficient



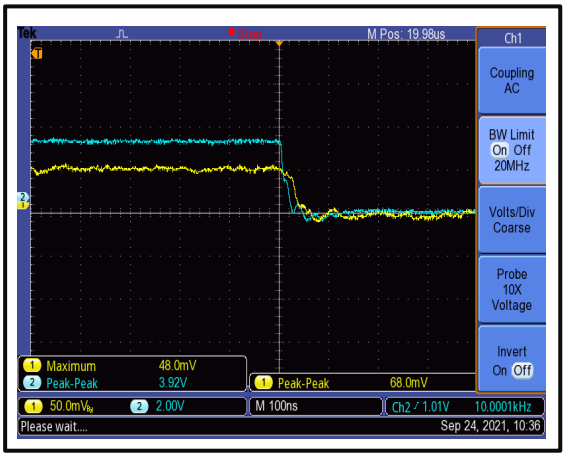

### Insertion Loss vs. Temperature



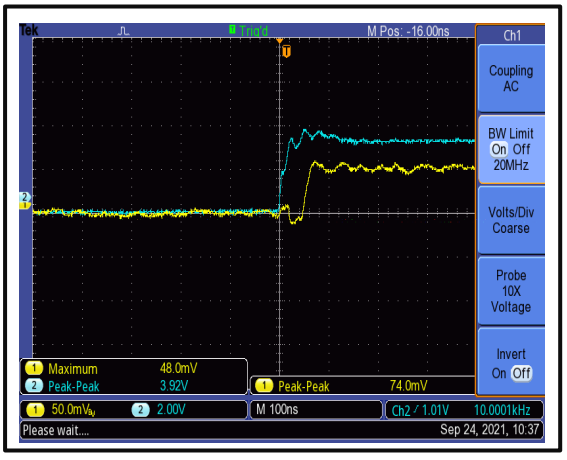

### IIP3




### Switching Speed

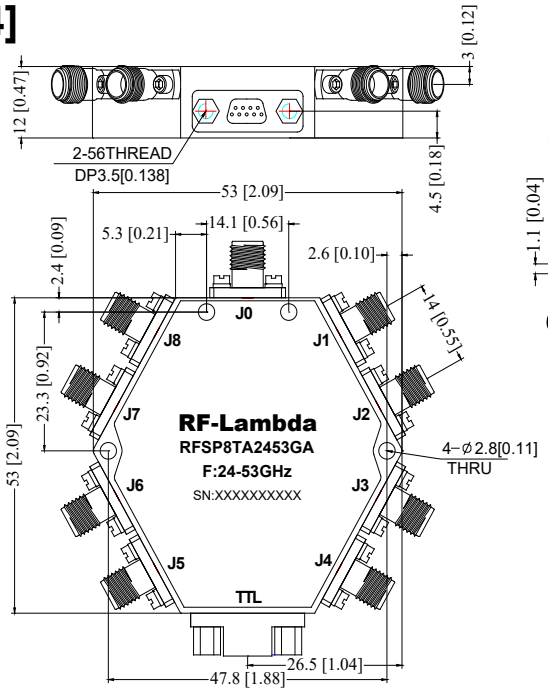


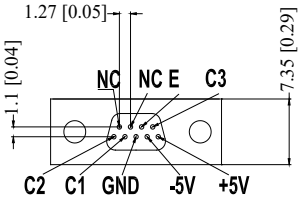

### Switching Speed



## Outline Drawing

### [X804]

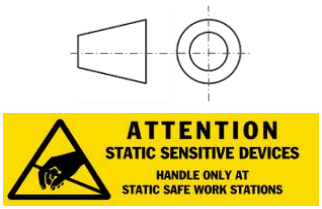



**MICRO-D9(Female)**

| Truth Table | | | | |
|---|---|---|---|---|
| TTL Control Voltage THRESHOLD | | | | Low(0)=0~0.8V<br>High(1)=2.8~5V |
| Control Input TTL | | | | Signal Path State |
| E | C3 | C2 | C1 | |
| 1 | X | X | X | ALL port off(50Ω) |
| 0 | 0 | 0 | 0 | J0-J1 |
| 0 | 0 | 0 | 1 | J0-J2 |
| 0 | 0 | 1 | 0 | J0-J3 |
| 0 | 0 | 1 | 1 | J0-J4 |
| 0 | 1 | 0 | 0 | J0-J5 |
| 0 | 1 | 0 | 1 | J0-J6 |
| 0 | 1 | 1 | 0 | J0-J7 |
| 0 | 1 | 1 | 1 | J0-J8 |
| Control Pin | Customization available upon request | | | |

Notes:
1. Package Material: Aluminum
2. Plating: Gold
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 |
|---|---|---|
| RFSP8TA2453GA | Input Connector 1.85mm-Female<br>and Output Connector 1.85mm-Female | 24-53GHz SP8T PIN Diode Switch |

## Important Notice





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