

## Absorptive Coaxial SP4T Switch 2GHz-20GHz



### Product Description

RFSP4TA0220G is an absorptive coaxial single pole four throw switch with a frequency range of 2 to 20GHz.

The maximum power input of this switch is 30dBm. The insertion loss is 2.7dB max with a typical isolation of 75dB

The product features 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 2.7dB
- Isolation 75dB
- 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		2~6			6~12			12~20		GHz
Insertion Loss		1.8	2		2.7	3		3.2	3.5	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	70	75		70	75		60	65		dB
Input VSWR		1.8	2		1.6	2		1.6	2	: 1
Output VSWR		1.8	2		1.6	2		1.6	2	: 1
RF Input power			30			30			30	dBm
DC Power Dissipation (CW)		0.3			0.4			0.5		W
0.1dB Compression Point (P0.1dB)		30			30			30		dBm
IIP3		35			36			34		dBm
Switching Speed					200 Max.					ns
Bias Current (+5V/-5V)					210/0 Max.					mA
Weight					0.08 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.

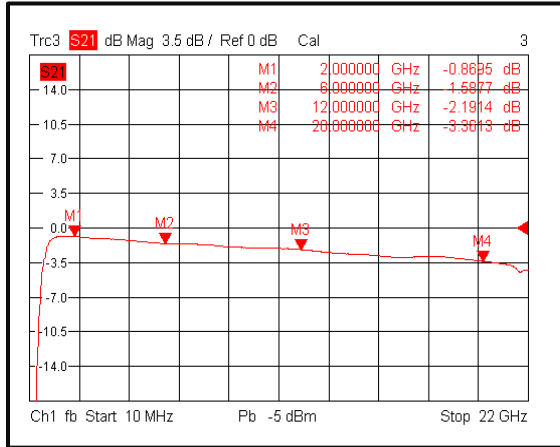
**Environmental Specifications and Test Standards**

Parameter	Description
Operational Temperature	-40°C to +85°C (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)

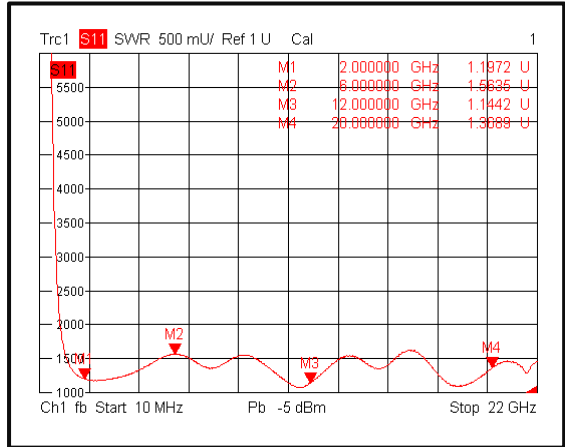
\*For vibration testing details please see additional information section.

**Typical Performance Plots**

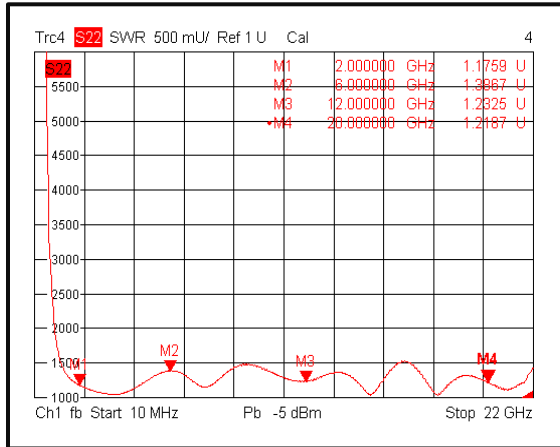
**Insertion Loss @+25°C**



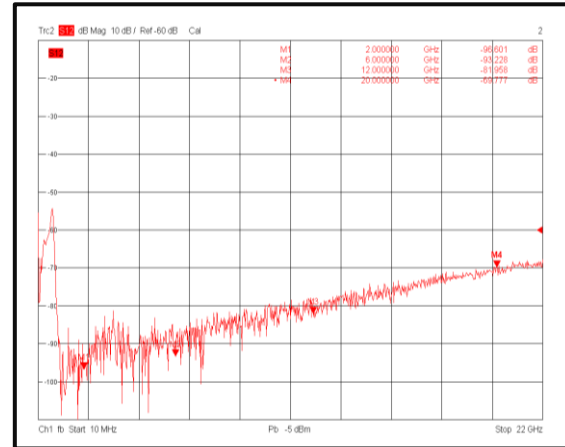
**Input VSWR @+25°C**



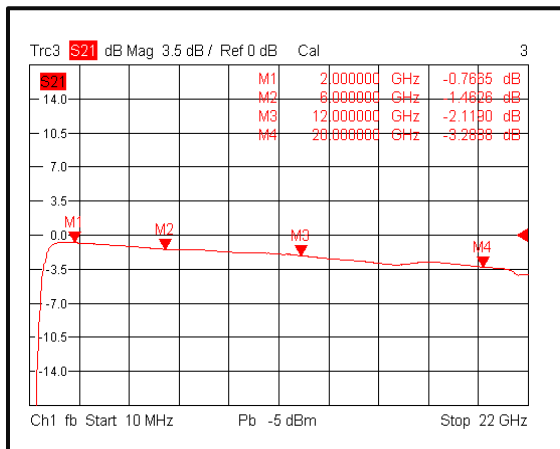
**Output VSWR @+25°C**



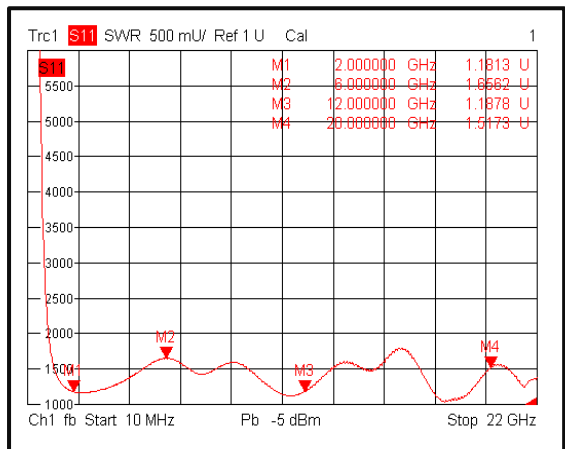
**Isolation @+25°C**



**Insertion Loss @-40°C**

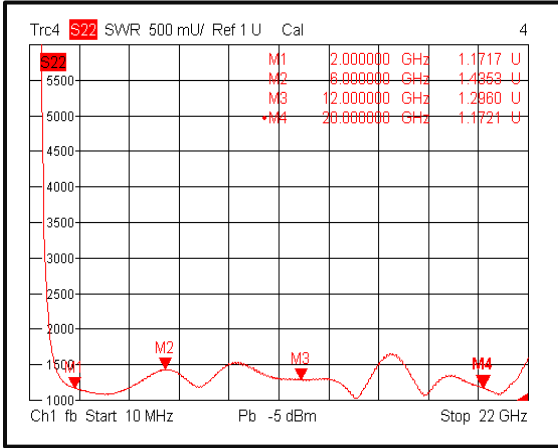


**Input VSWR @-40°C**

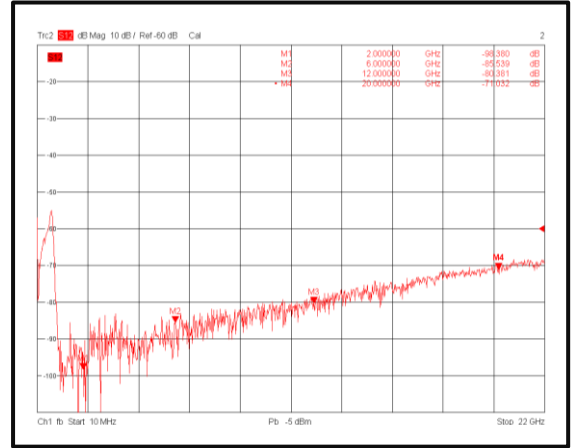


**Typical Performance Plots**

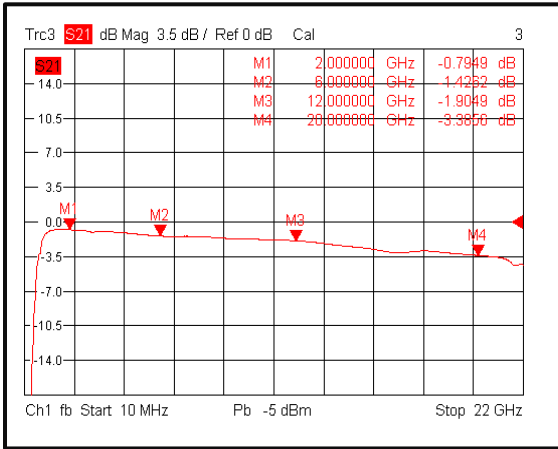
**Output VSWR @-40°C**



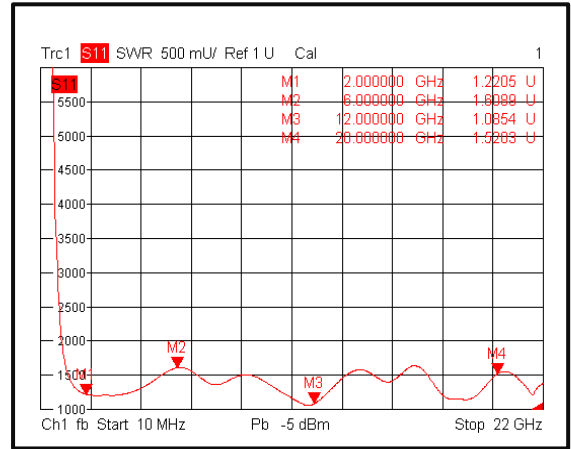
**Isolation @-40°C**



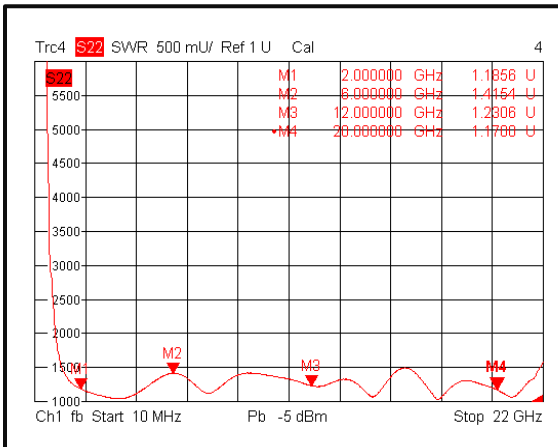
**Insertion Loss @+85°C**



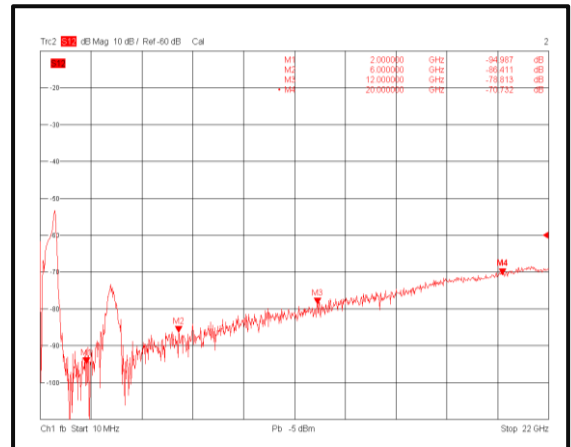
**Input VSWR @+85°C**



**Output VSWR @+85°C**

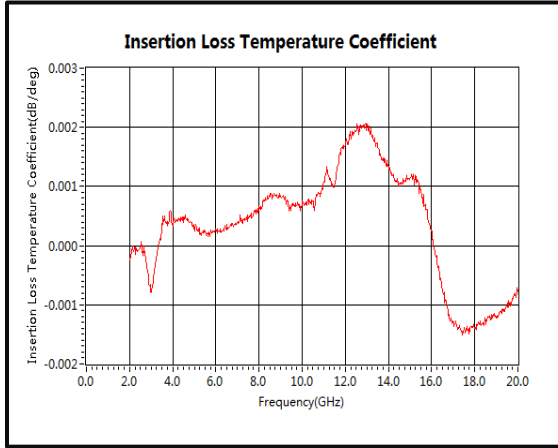


**Isolation @+85°C**

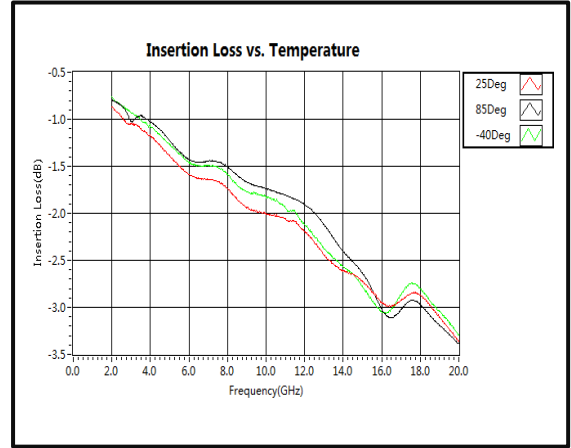


Typical Performance Plots

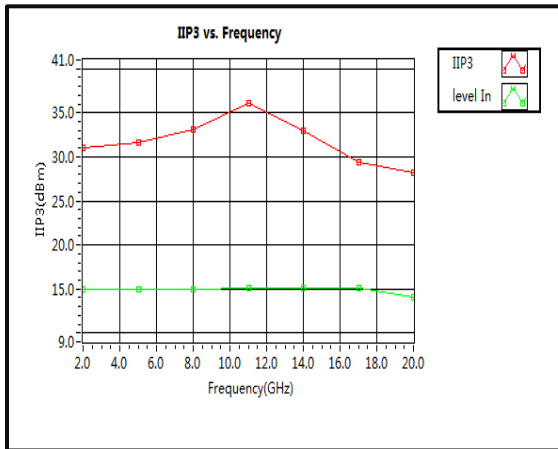
Insertion Loss Temperature Coefficient



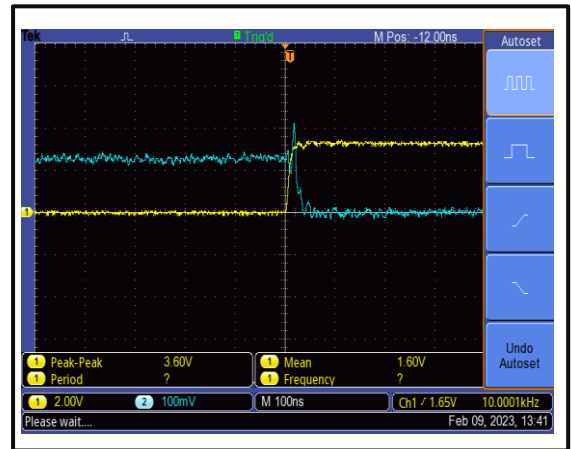
Insertion Loss vs. Temperature



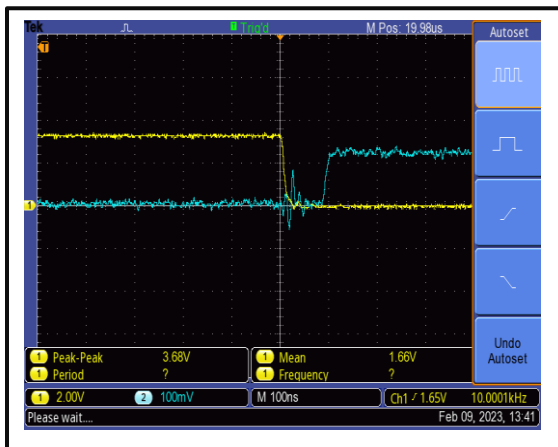
IIP3



Switching Speed

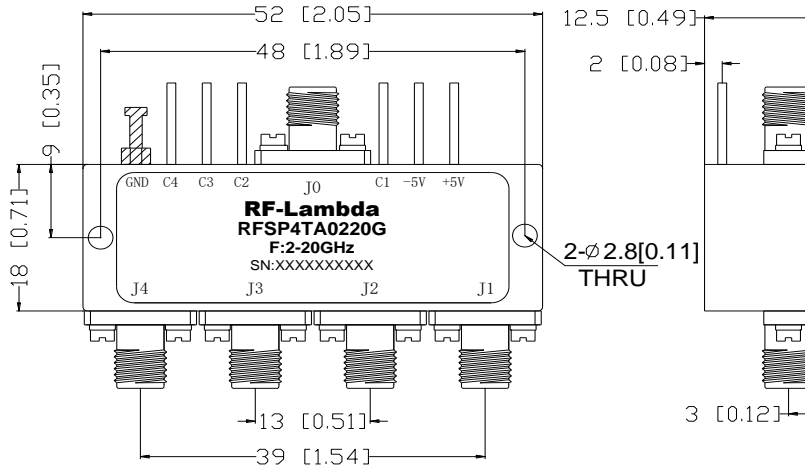


Switching Speed



**Outline Drawing**

[X401]



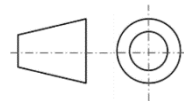
**Truth Table**

TTL Control Voltage THRESHOLD				Low(0)=0~0.8V
				High(1)=2.8~5V
Control Input TTL				Signal Path State
C4	C3	C2	C1	
0	0	0	0	Not Used
1	1	1	0	J0-J1
1	1	0	1	J0-J2
1	0	1	1	J0-J3
0	1	1	1	J0-J4
1	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  $\pm 0.1$  [0.004] unless otherwise specified.
5. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation	Webpage
ESD Policy	<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
RFSP4TA0220G	Standard	2GHz-20GHz SP4T PIN Diode Switch

**Important Notice**

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