

## Absorptive Coaxial SP2T Switch 0.5GHz-12GHz



### Product Description

RFSP2TA5M12GA is an absorptive coaxial single pole double throw switch with a frequency range of 0.5 to 12GHz.

The maximum power input of this switch is 30dBm. The insertion loss is 2.0dB with a typical isolation of 85dB.

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

- LVTTTL compatible driver included
- Fast Switching Speed
- Low Power Cold Switching
- Insertion Loss 2.0dB
- Isolation 85dB 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 / +3.3V

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		0.5-6			6-12		GHz
Insertion Loss		1.3	1.5		2.0	2.5	dB
Insertion Loss Temperature Coefficient		0.003			0.003		dB/ °C
Isolation	80	90		80	85		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			30			30	dBm
DC Power Dissipation		0.4			0.4		W
0.1dB Compression Point ( P0.1dB )		30			30		dBm
IIP3		41			40		dBm
Switching Speed			100Max.				ns
Bias Current ( +5V / -5V )			80 / 50 Max.				mA
Weight			0.04 Max.				lbs
Impedance			50				Ω
Input / Output Connectors	SMA-Female(Input) – SMA-Female(Output)						
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.

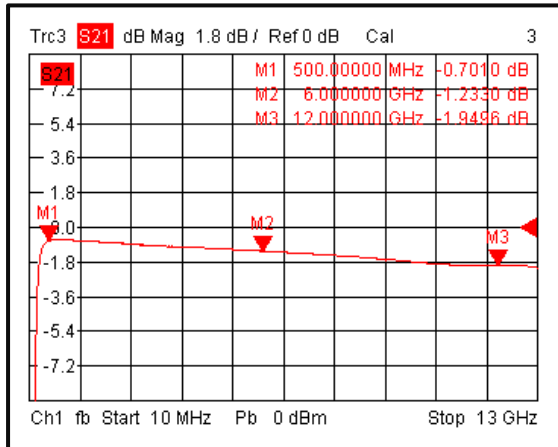
**Environmental Specifications and Test Standards**

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)

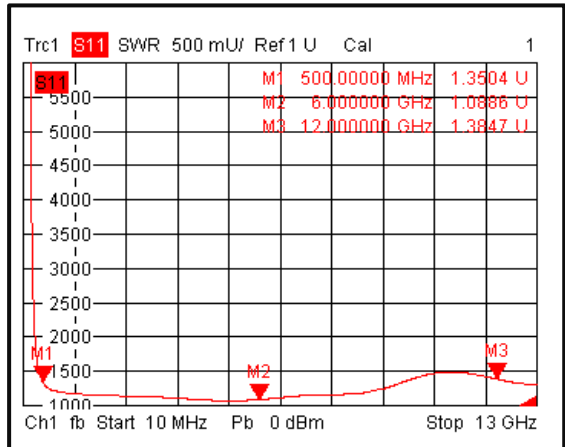
\*\* For vibration testing details please see additional information section.

Typical Performance Plots

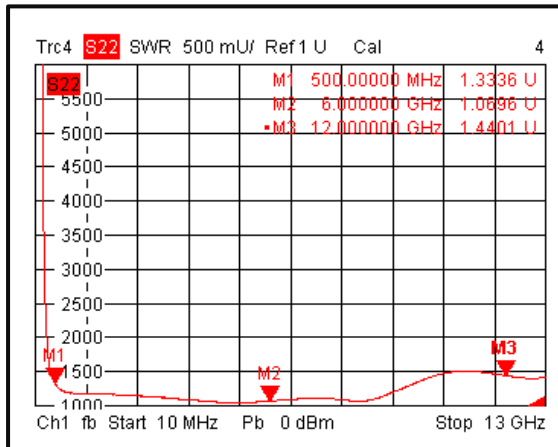
Insertion Loss @+25°C



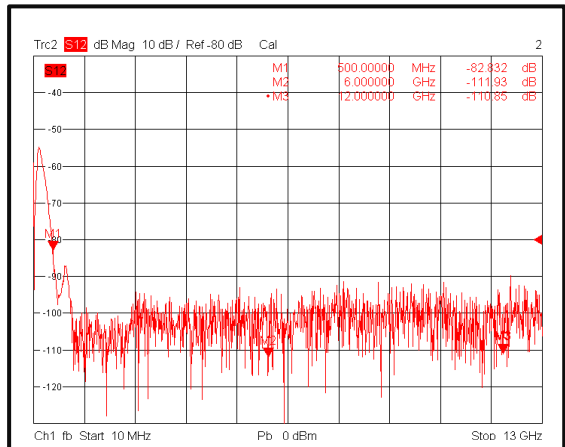
Input VSWR @+25°C



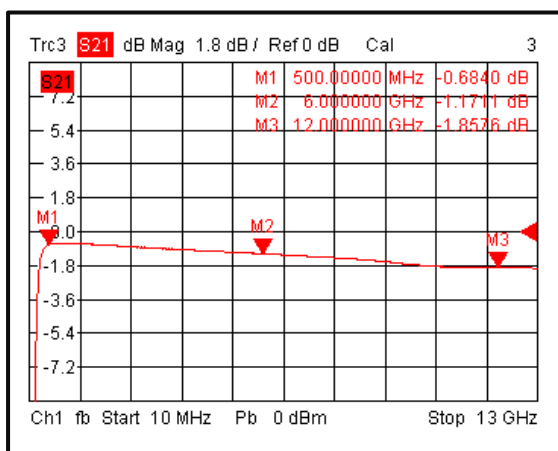
Output VSWR @+25°C



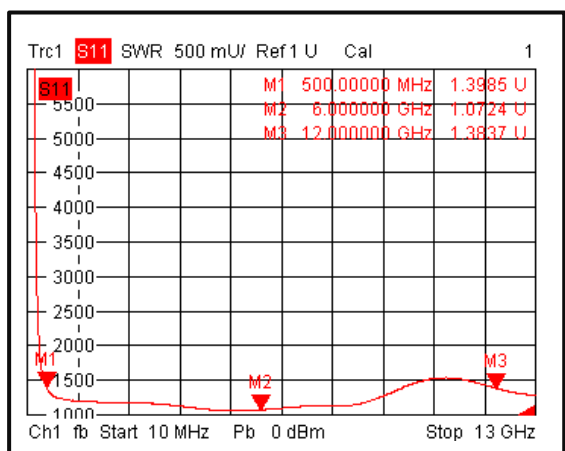
Isolation @+25°C



Insertion Loss @-40°C

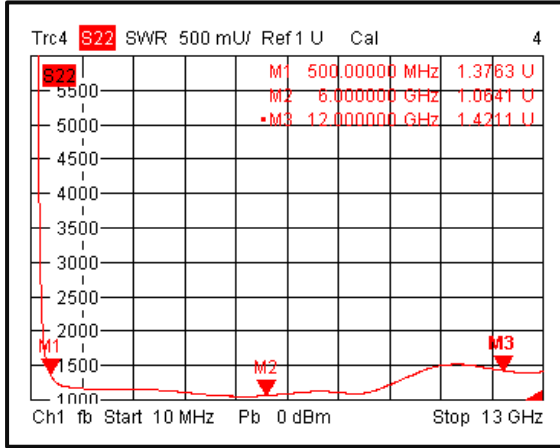


Input VSWR @-40°C

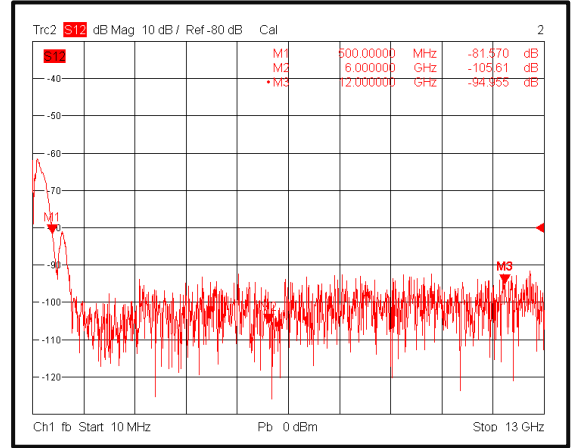


Typical Performance Plots

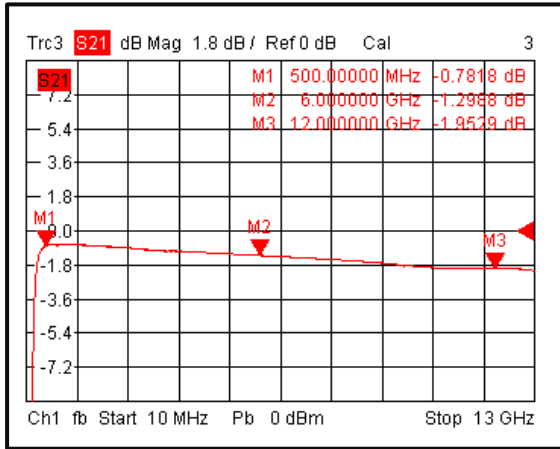
Output VSWR @-40°C



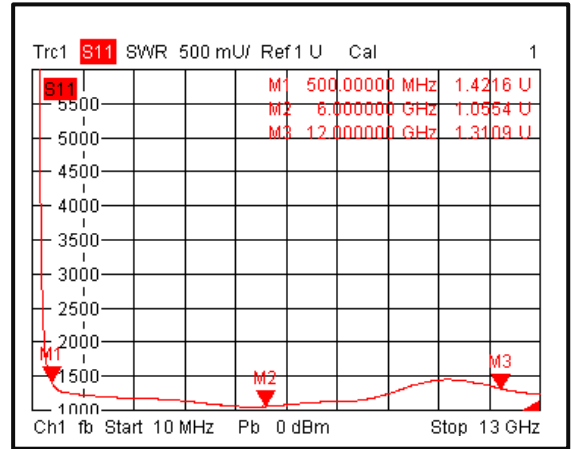
Isolation @-40°C



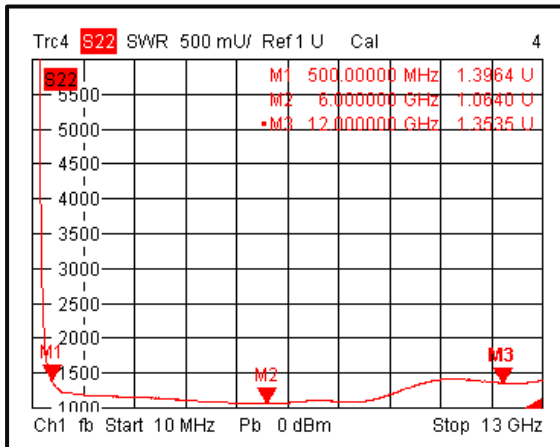
Insertion Loss @+85°C



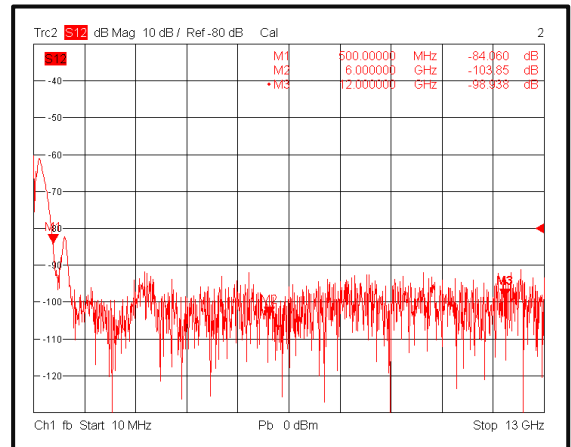
Input VSWR @+85°C



Output VSWR @+85°C

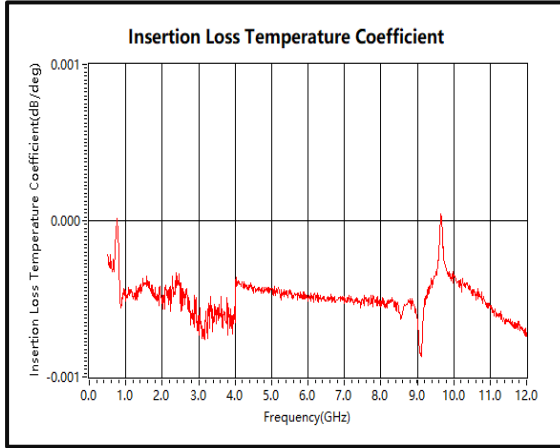


Isolation @+85°C

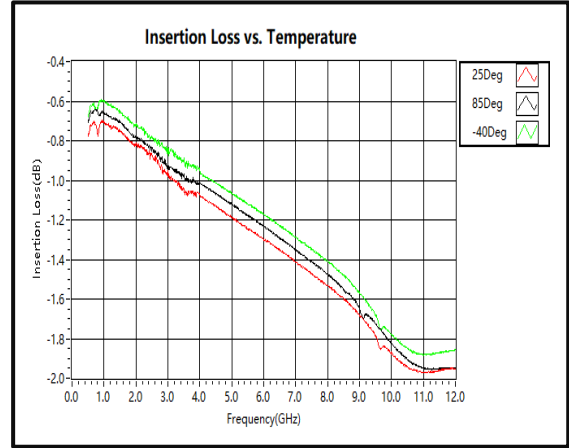


**Typical Performance Plots**

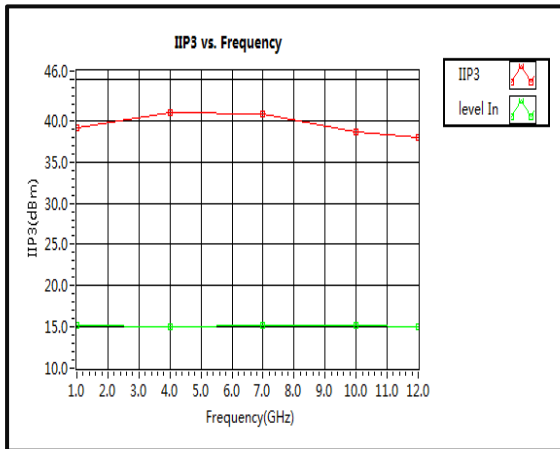
**Insertion Loss Temperature Coefficient**



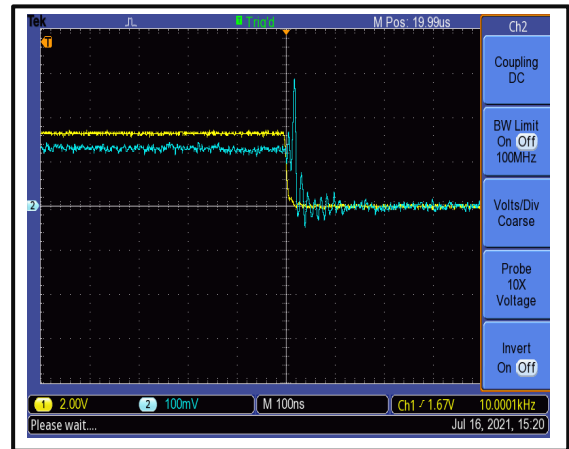
**Insertion Loss vs. Temperature**



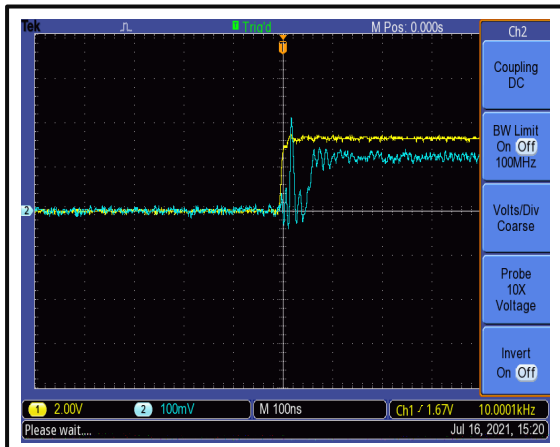
**IIP3**



**Switching Speed**

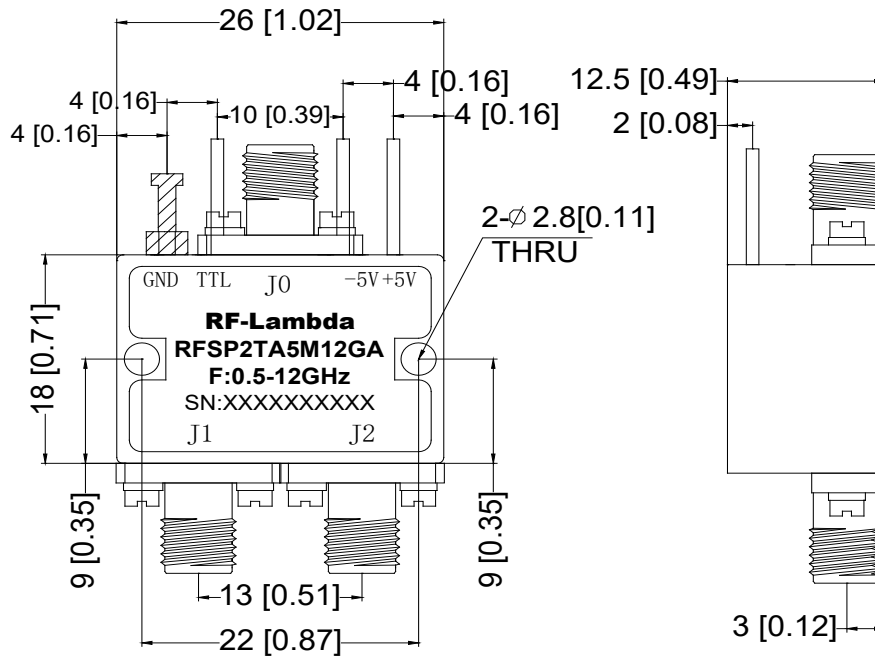


**Switching Speed**



**Outline Drawing**

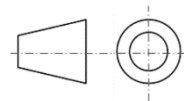
[ X201 ]



Truth Table	
TTL Control Voltage	Low(0)=0~0.8V
THRESHOLD	High(1)=2.8~5V
Control Input	State
TTL	
1	J0-J1
0	J0-J2
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	<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
RFSP2TA5M12GA	Standard	0.5-12GHz SP2T PIN Diode Switch

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