

USB / Ethernet Absorptive Coaxial SP4T Switch 0.5GHz-50GHz



Product Description

RFSP4TA5M50GUSB is an absorptive USB / ethernet controlled coaxial single pole four throw switch with a frequency range of 0.5 to 50GHz.

The power input of this switch is 23dBm max. The insertion loss is 5.0dB with a typical isolation of 70dB.

This 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

- Ultra Wide Band Operation 0.5-50GHz
- USB / Ethernet Control
- Low Insertion Loss and High Isolation
- Customization available upon request
- Control SW included.

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), USB Powered

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.5		18	18		43.5	43.5		50	GHz
Insertion Loss		3.3	4.0		5.0	6.0		6.5	7.0	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	58	70		40	55		45	55		dB
Input VSWR		1.8	2.5		2.5	3		2	2.5	: 1
Output VSWR		1.8	2.5		2.5	3		2	2.5	: 1
RF Input Power (CW)			23			23			23	dBm
DC Power Dissipation		0.8			0.8			0.8		W
0.1dB Compression Point (P 0.1dB)		23			23			23		dBm
IIP3		43			38			35		dBm
Bias Current					260 Typ.					mA
Power Supply					USB (+5.0V)					
Control Interface					USB2.0 & Ethernet(IPv4) (Control Cable Included)					
Weight					0.2 Max.					lbs
Impedance					50					Ω
Input / Output Connectors					2.4mm-Female					
Package					Epoxy Sealed (Standard)					
					Hermetically Sealed (Optional)					

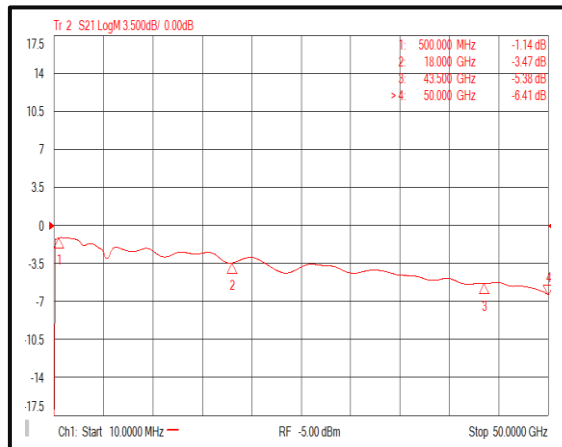
Environmental Specifications and Test Standards

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)

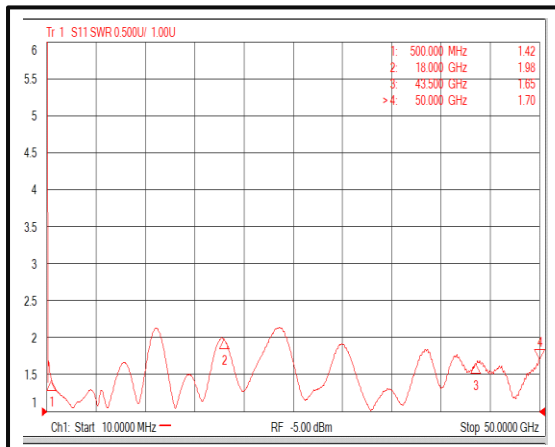
*For vibration testing details please see additional information section.

Typical Performance Plots

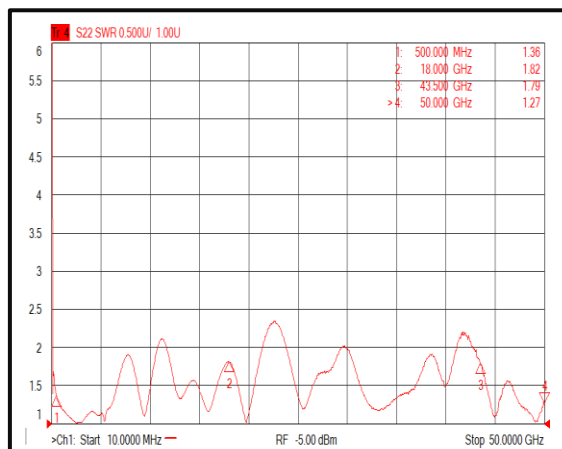
Insertion Loss @+25°C



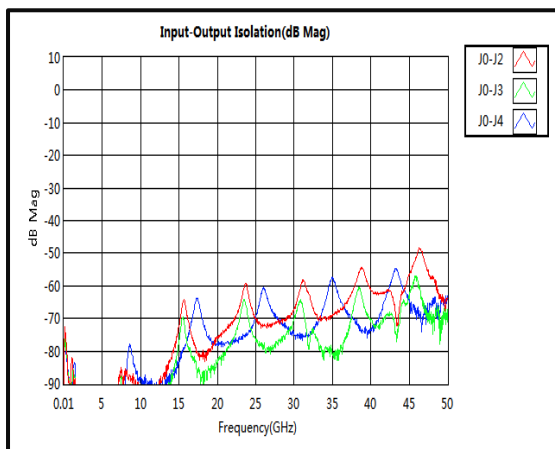
Input VSWR @+25°C



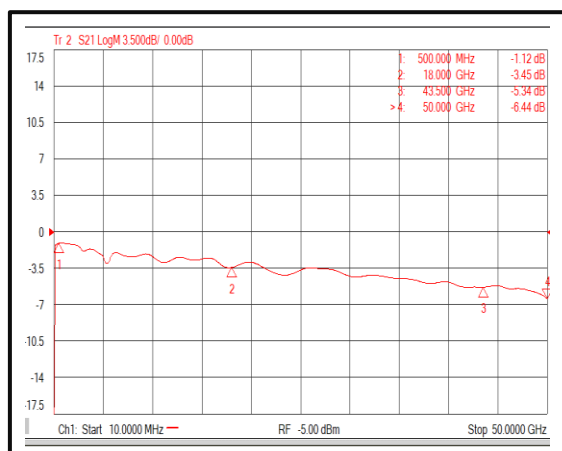
Output VSWR @+25°C



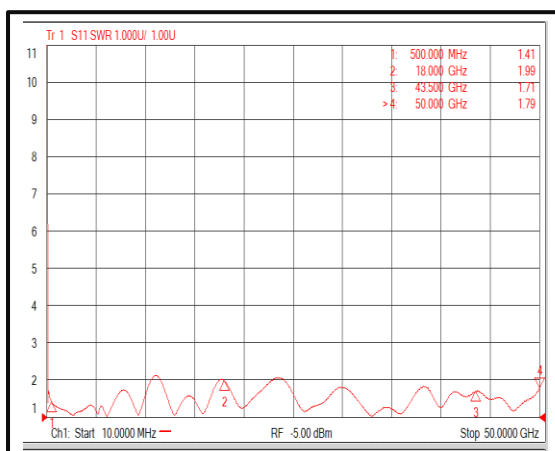
Isolation @+25°C



Insertion Loss @-40°C

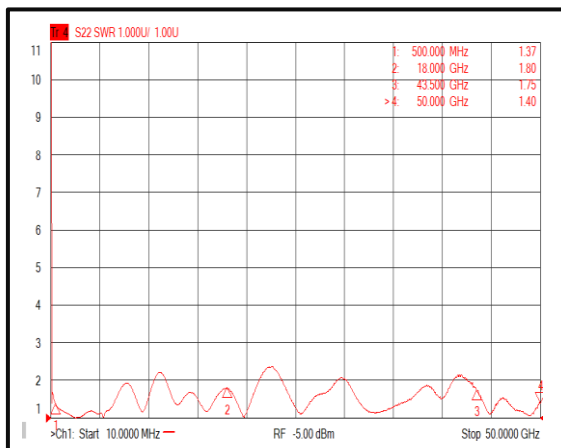


Input VSWR @-40°C

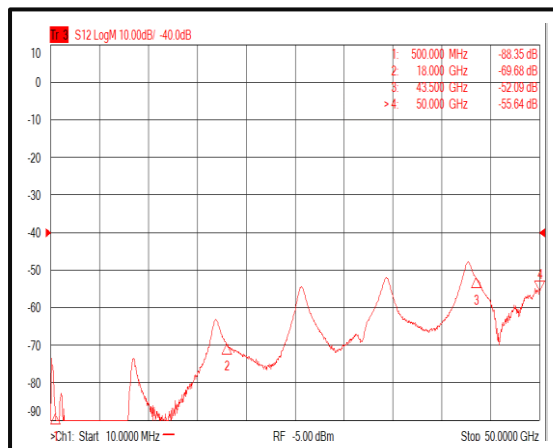


Typical Performance Plots

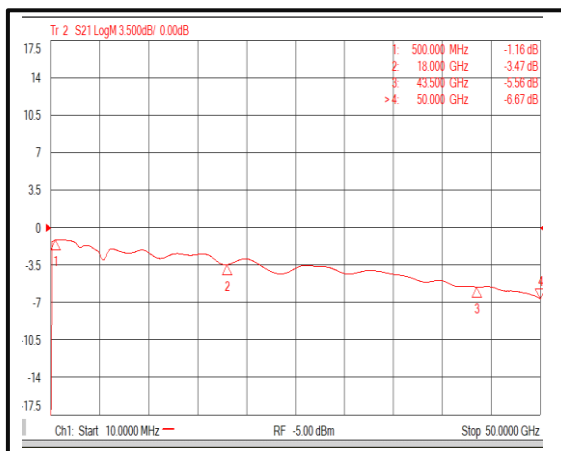
Output VSWR @-40°C



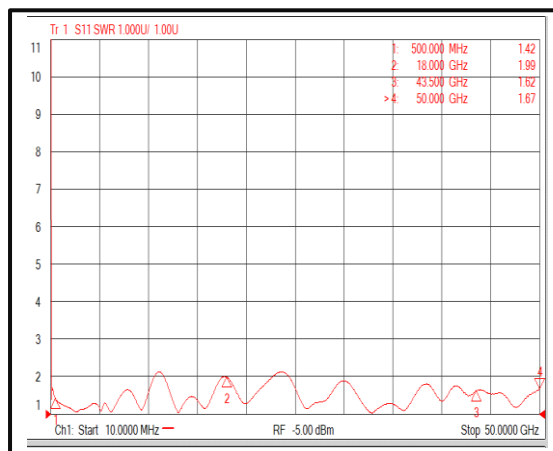
Isolation @-40°C



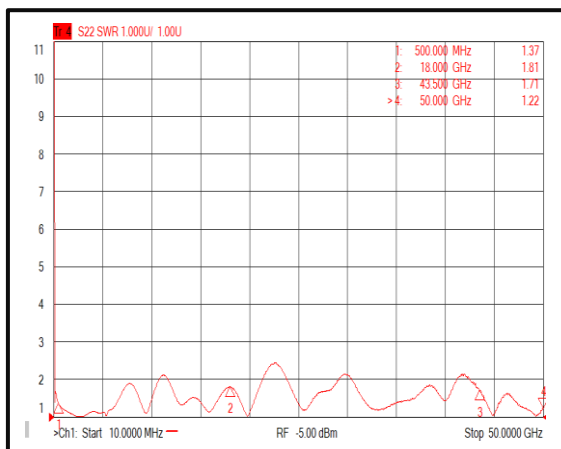
Insertion Loss @+85°C



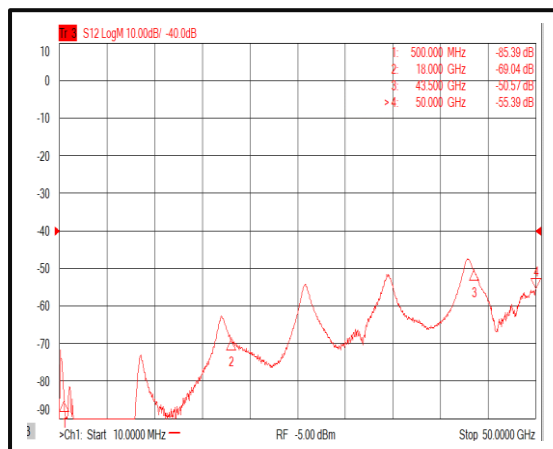
Input VSWR @+85°C



Output VSWR @+85°C

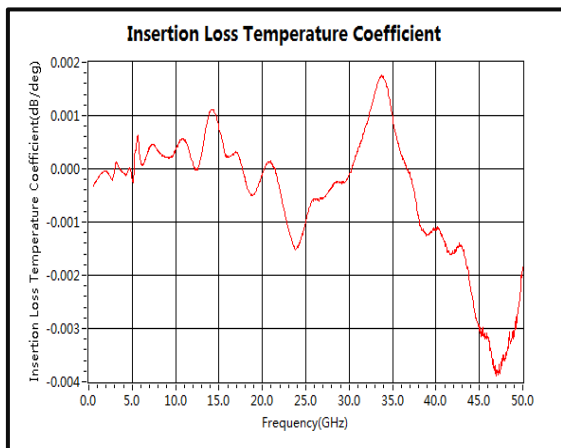


Isolation @+85°C

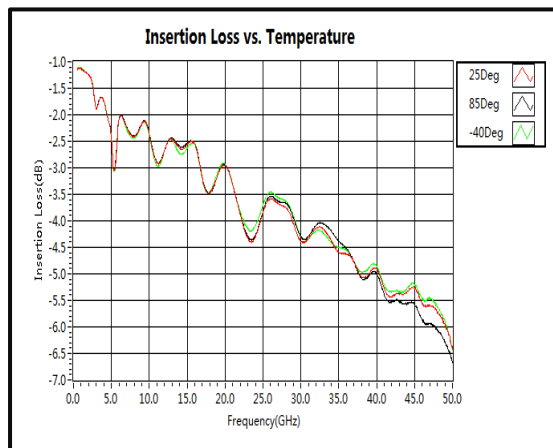


Typical Performance Plots

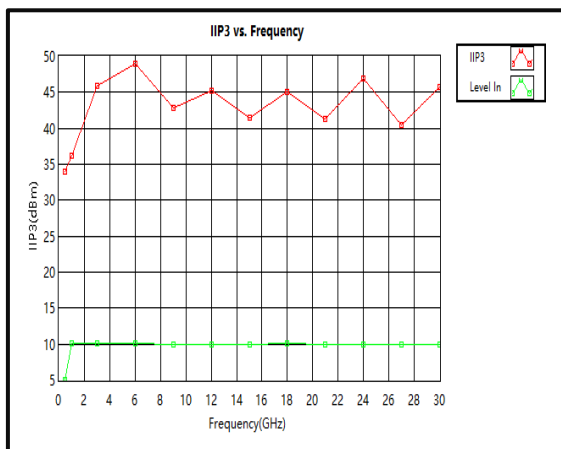
Insertion Loss Temperature Coefficient



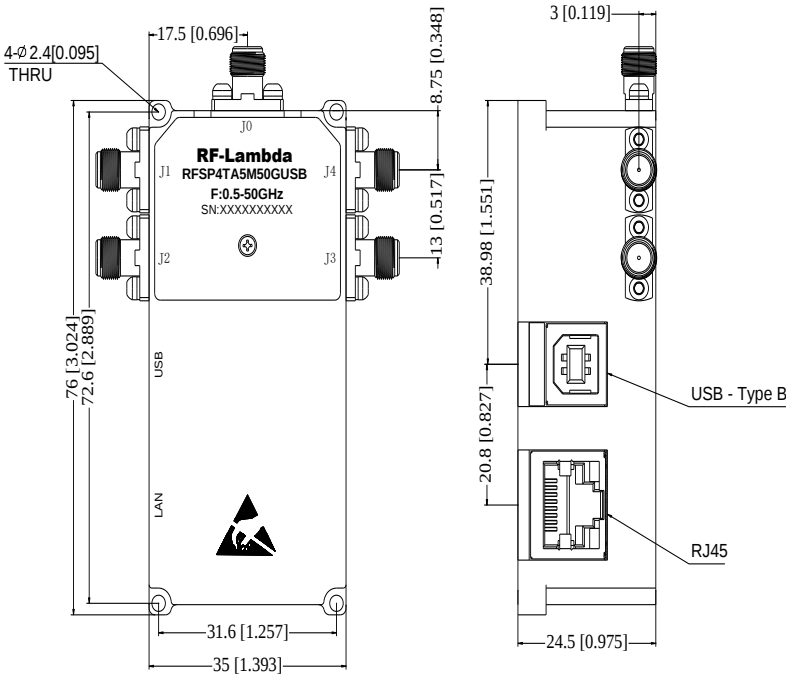
Insertion Loss vs. Temperature



IIP3



Outline Drawing



Notes:

- 1. Package Material: Aluminum
- 2. Finish: Nickel 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.



Packing List

ID	Description	QTY
1	Fig a. USB/Ethernet Control RF Switch	1
2	Fig b. USB2.0 Cable (5 feet / 1.5 meter)	1
3	Fig c. Network Cable (6 feet / 2 meter)	1
4	Fig d. International Universal AC Power Adapter (For SP6T or higher)	1



Fig b.



Fig c.



Fig d.

Control Content Description

Format Requirement	USB (virtual serial port) Configuration	LAN Interface	Range of Parameters
a. All commands must end with a semicolon. b. All commands are case - insensitive. c. Comma is used to separate multiple parameters in commands. d. All commands are suitable for USB(virtual serial port) and LAN interface.	Baud Rate :115200 Data bits : 8 Parity : None Stop bits : 1 Flow Type :None	IP address and Port. Default:192.168.1.225:5100 Use 'USB Control Panel.exe' to set.	x(channel):1~n. y(period ,ms): 0.01~2000 z(pulse ,ms): 0.01~2000

Command Specification

ID	Order	Description	Return	Example
1	*IDN?;	Query product information	Product PN ,SN, Manufacturer , version	*IDN?;
2	Reset;	Reset the product	/	Reset;
3	SW:Sopen x;	Open channel x	SOx	SW:Sopen 2; Return : SO2
4	SW:Sloop x,y,z;	Automatic cycle opening channel x with period as y (ms) and pulse width as z(ms)	SLx	SW:Sloop 2,0.1,0.05; Return :SL2
5	SW:Mloop x1,x2,...,z;	Cycle on channels x1, x2,... with pulse width as z(ms)	MLx1	SW:Mloop 1,2,0.1; Return :ML1
6	SW:Close;	Close all channel. Stop loop ,close all channel.	SC0	SW:Close; Return: SC0

Error Code Query

ID	Return	Description
1	E1	Semicolon missing
2	E2	Incorrect commands
3	E3	Missing space
4	E4	Incorrect parameter format
5	E5	Out of range parameters

USB Control Panel

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Download Quit Continue >>

Select Device

Digital Control Switch

Digital Control Attenuator

Digital Control Phase Shifter

Control Interface

USB

ETHERNET

Please select a COM port COM62

Connect Device

The device number is: 2020041100151
Device IP:192.168.1.225:5100

Note

1. Please refer to the product manual for power supply.
2. Please refer to the product manual to configure the port.

2020.03 v2.01

USB Control Panel

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<< Goback

Select Path J0 J1

Manual Control OFF

Single Channel Auto Cycle

Pulse Period(ms) 10.00

Pulse Width(ms) 5.000

Start

Multi Channel Auto Cycle

J1 J2 J3 J4 Use Input

J5 J6 J7 J8

Input the channel which you want to use, Separated by commas. For example: 3,1,6,7

Pulse Width(ms) 0.100

Start

Device Name: Digital Control Switch

Part Number: RFSP4TA5M50GUSB

Serials Number: 2020041100151

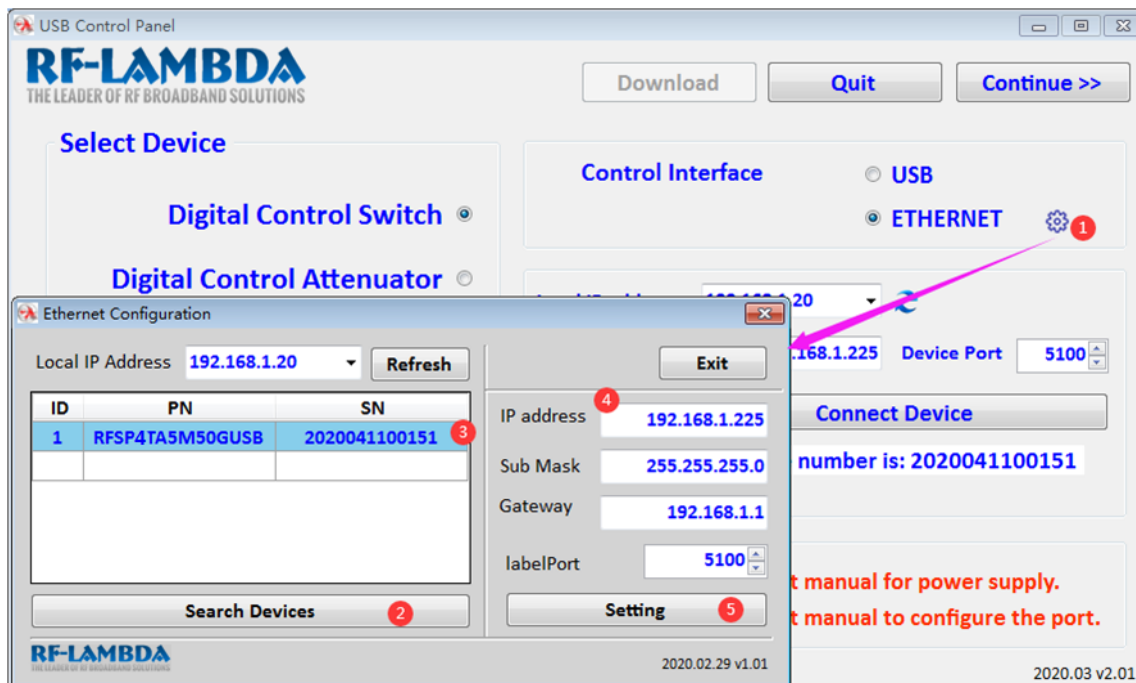
Control Model: USB

Control Port: COM62

Send String SW:Sopen 1;

Recevie String S01

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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
RFSP4TA5M50GUSB	Connectors 2.4mm-Female	0.5GHz-50GHz SP4T USB / Ethernet Controlled Switch

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