

USB / Ethernet Absorptive Coaxial SP3T Switch 0.5GHz-43.5GHz



Product Description

RFSP3TA5M43GUSB is an absorptive USB / Ethernet controlled coaxial single pole three throw switch with a frequency range of 0.5 to 43.5GHz.

The power input of this switch is 23dBm max. The insertion loss is 4.5dB with a typical isolation of 53dB.

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

- USB / Ethernet Control
- Control SW included.
- Low Power Cold Switching
- Insertion Loss 4.5dB
- Isolation 53dB
- 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), USB Powered

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		0.5-18			18-30			30-43.5		GHz
Insertion Loss		3.5	4.5		4.5	5.0		5.0	6.0	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	60	68		50	53		45	50		dB
Input VSWR		2.0	2.5		2.0	2.5		2.0	2.5	: 1
Output VSWR		2.0	2.5		2.0	2.5		2.0	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		45			45			40		dBm
Bias Current					300 Max.					mA
Power Supply					USB(+5.0V)					
Control Interface					USB2.0 & Ethernet(IPv4) (Control Cable Included)					
Weight					0.19 Max.					lbs
Impedance					50					Ω
Input / Output Connectors					2.92mm-Female(Input) – 2.92mm-Female(Output)					
Package					Epoxy Sealed (Standard)					
					Hermetically Sealed (Optional)					

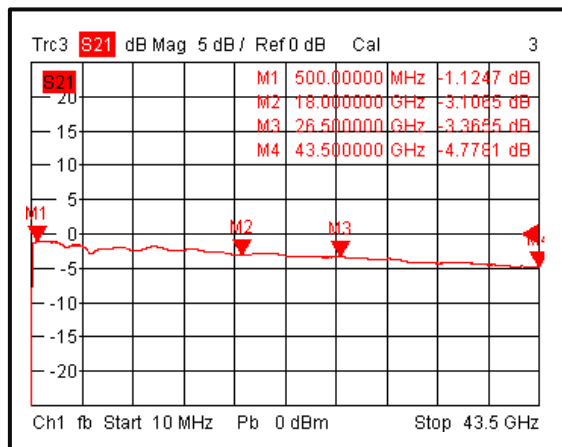
Environmental Specifications and Test Standards

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)

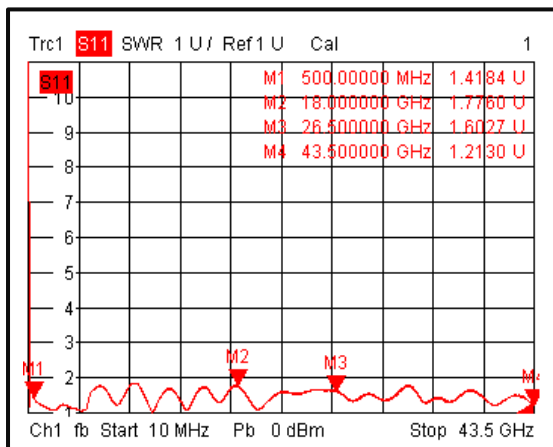
*For vibration testing details please see additional information section.

Typical Performance Plots

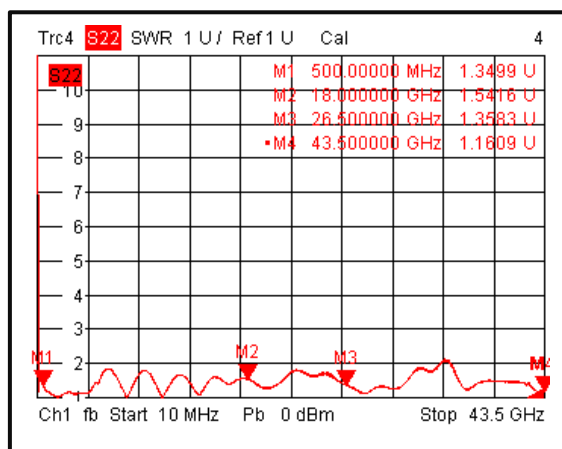
Insertion Loss @+25°C



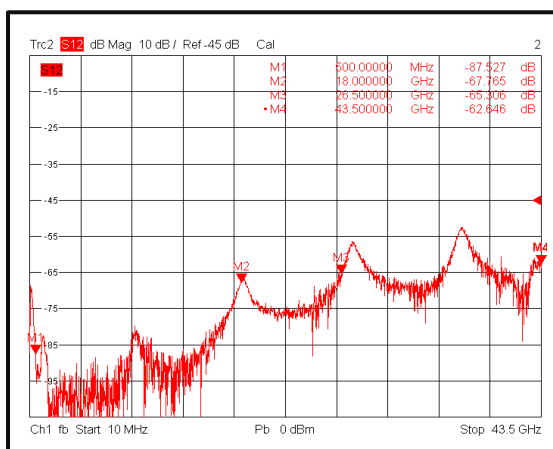
Input VSWR @+25°C



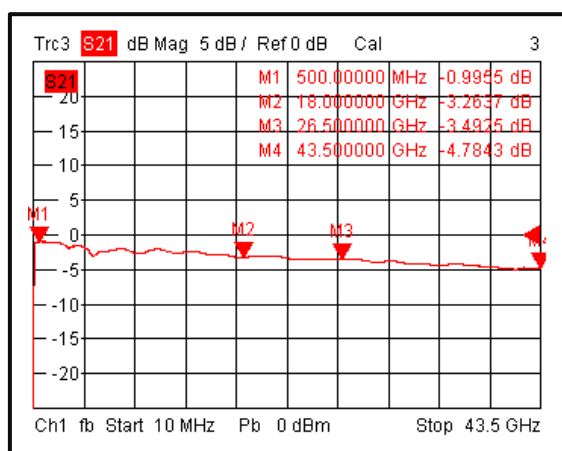
Output VSWR @+25°C



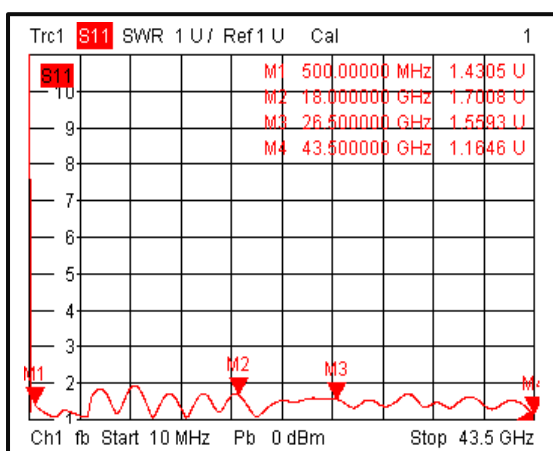
Isolation @+25°C



Insertion Loss @-40°C

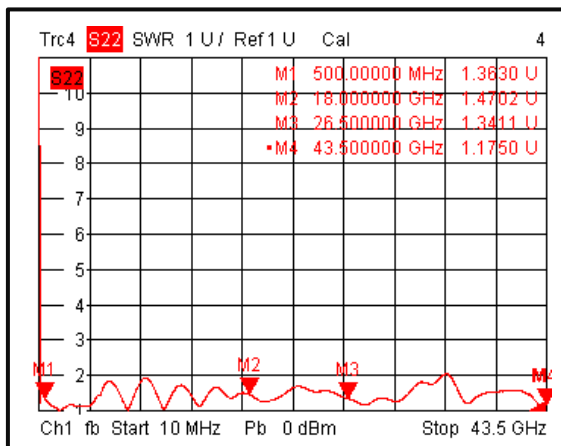


Input VSWR @-40°C

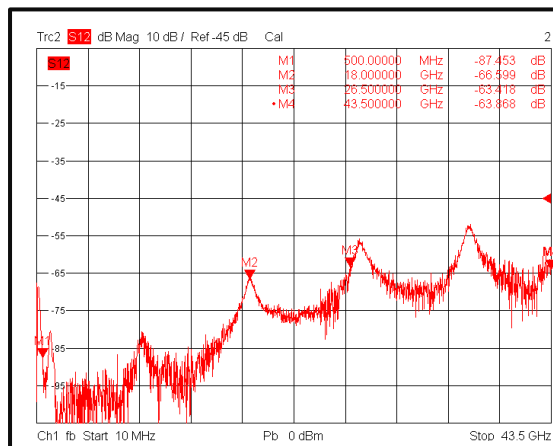


Typical Performance Plots

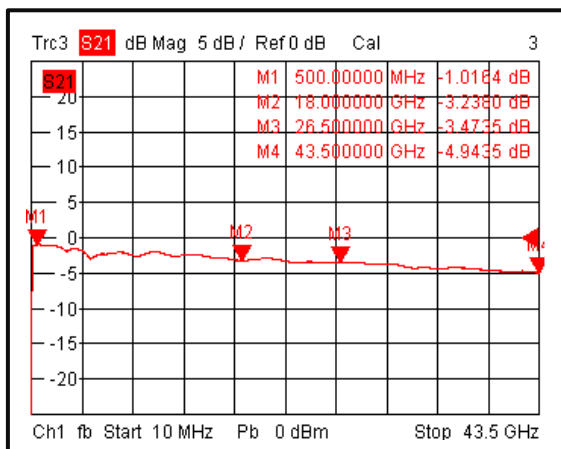
Output VSWR @-40°C



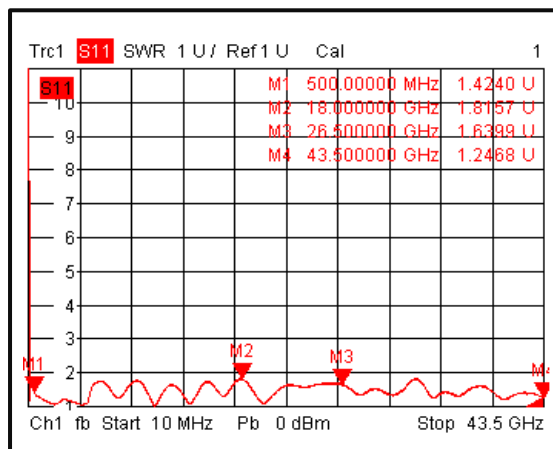
Isolation @-40°C



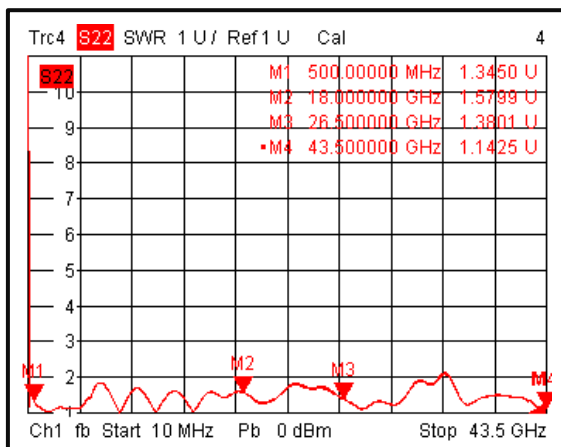
Insertion Loss @+85°C



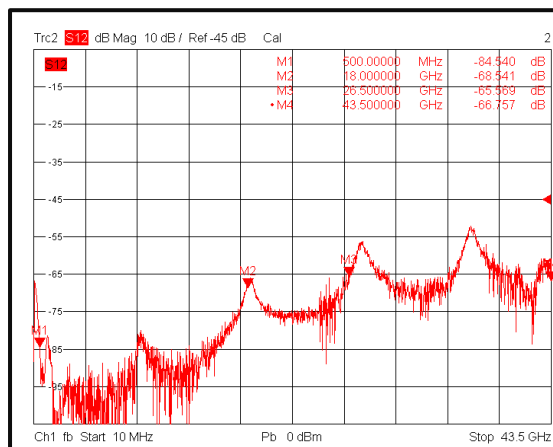
Input VSWR @+85°C



Output VSWR @+85°C

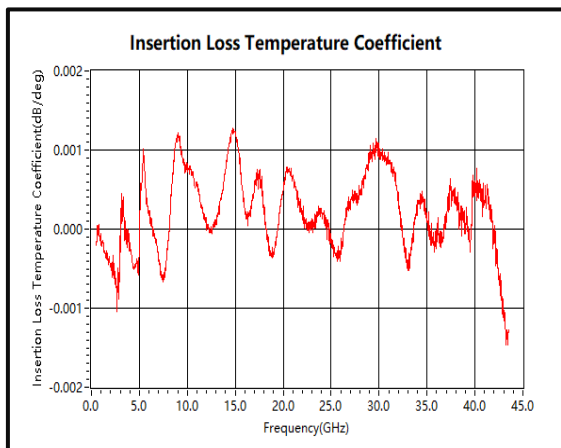


Isolation @+85°C

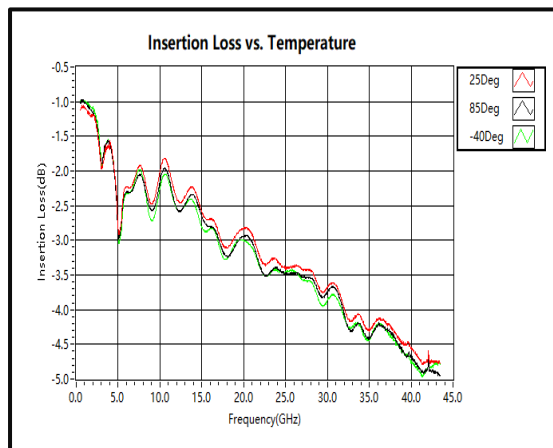


Typical Performance Plots

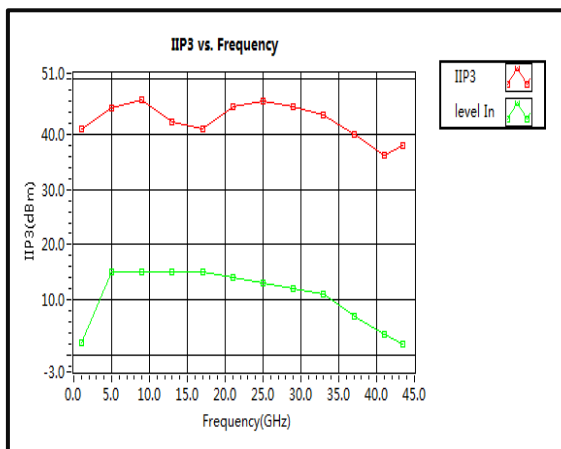
Insertion Loss Temperature Coefficient



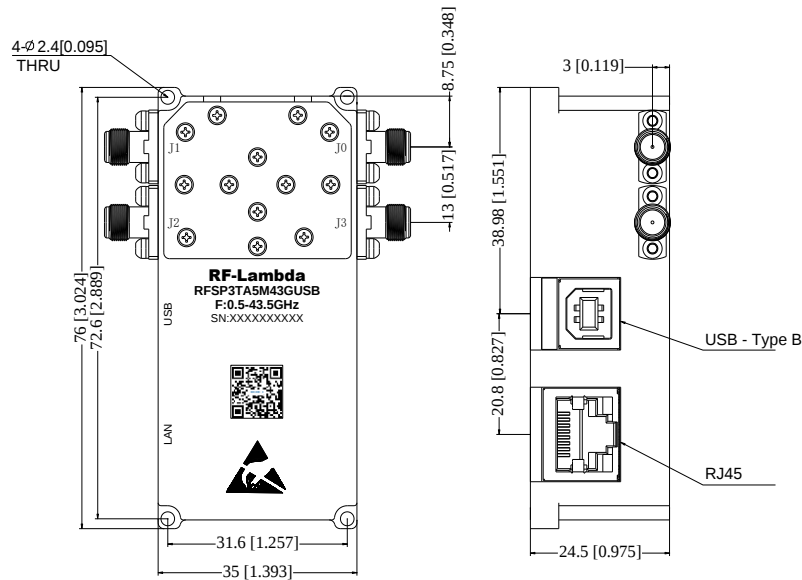
Insertion Loss vs. Temperature



IIP3

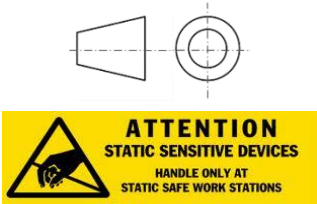


Outline Drawing



Notes:

- 1. Package Material: Aluminum
- 2. Finish: Nickel Plated
- 3. All dimensions are in millimeters [inches].
- 4. Housing Tolerances ± 0.2 [0.008] 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



Fig b.



Fig c.

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.

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USB Control Panel

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<< Goback

Select Path

J0 J1

Manual Control ☒ **Single Channel Auto Cycle** ☐

OFF

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

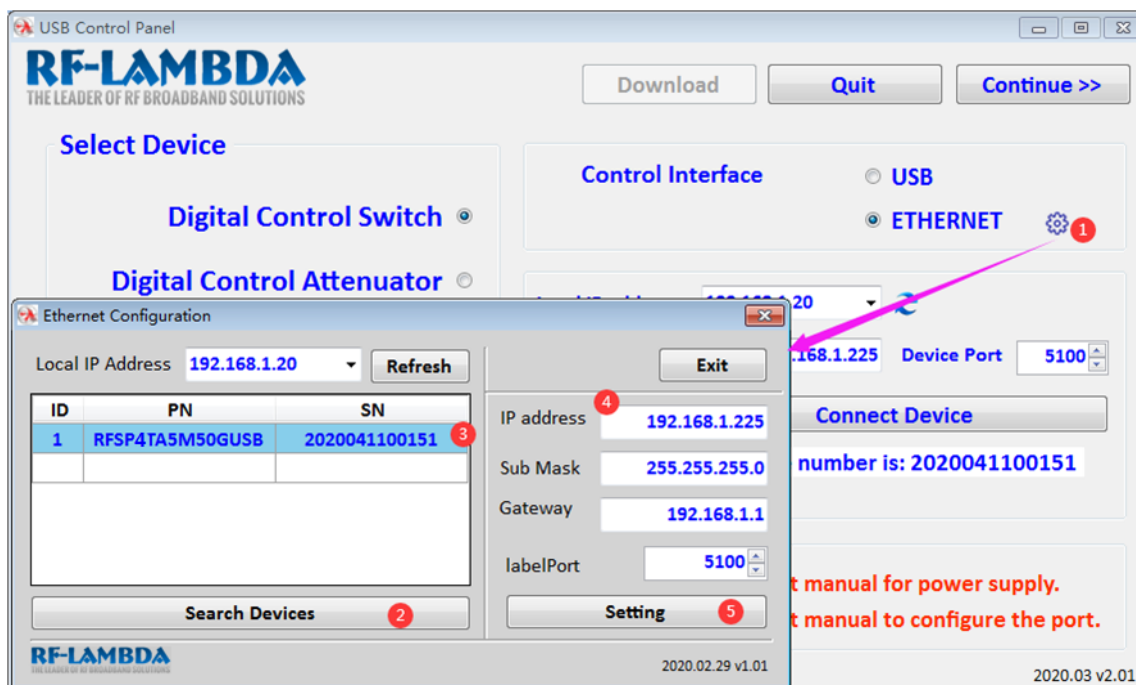
Control Model: USB

Control Port: COM62

Send String SW:Sopen 1;

Recevie String S01

2020.03 v2.01



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
RFSP3TA5M43GUSB	Input Connector 2.92mm-Female and Output Connector 2.92mm-Female	0.5GHz-43.5GHz SP3T USB / Ethernet Controlled Switch

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