

Absorptive Coaxial SP5T Switch 0.1GHz-50GHz



Product Description

RFSP5TA5M50G is an absorptive coaxial single pole five throw switch with a frequency range of 0.1 to 50GHz.

The max power input of this switch is 23dBm. The insertion loss is 5.0dB with a typical isolation of 55dB.

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 5.0dB
- Isolation 55dB
- 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		0.1-20			20-30			30-50		GHz
Insertion Loss		4.5	5.0		5.0	5.5		7.1	8.0	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	60	75		50	55		40	50		dB
Input VSWR		2.0	2.5		2.2	3		2.5	3	: 1
Output VSWR		2.0	2.5		2.2	3		2.2	3	: 1
RF Input Power			23			23			23	dBm
DC Power Dissipation		0.6			0.6			0.6		W
0.1dB Compression Point (P0.1dB)		23			23			23		dBm
IIP3		43			38			33		dBm
Switching Speed					100 Max.					ns
Bias Current (+5V / -5V)					240/50 Max.					mA
Weight					1.45 Max.					Ounces
Impedance					50					Ω
Input / Output Connectors					2.4mm-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.

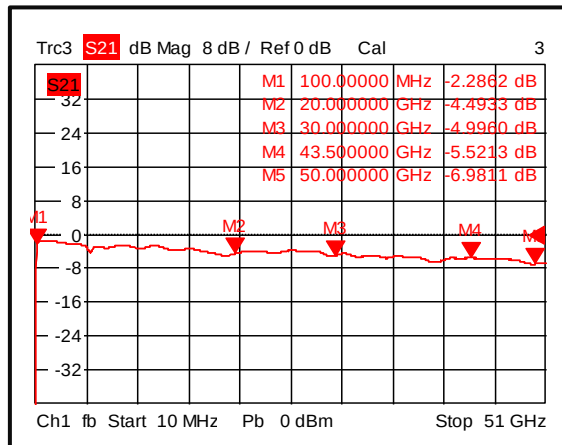
Environmental Specifications and Test Standards

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)

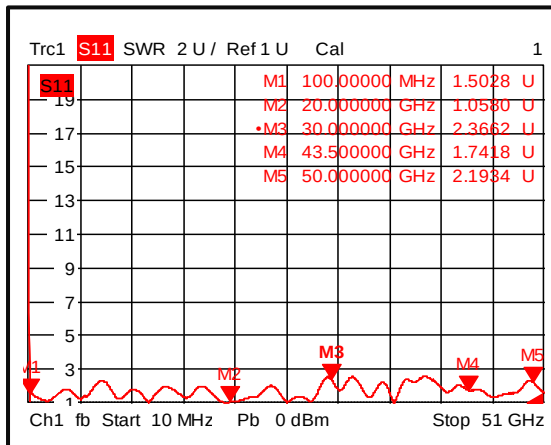
*For vibration testing details please see additional information section.

Typical Performance Plots

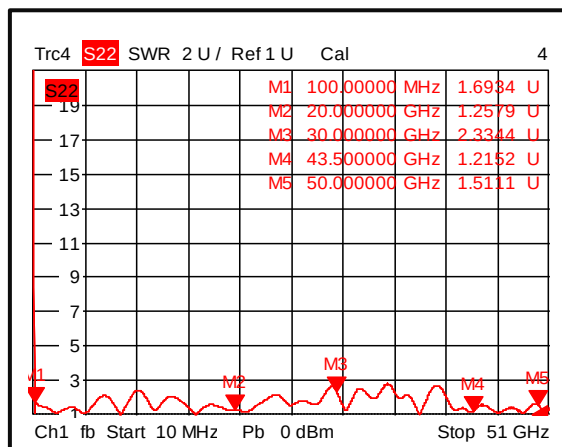
Insertion Loss @+25°C



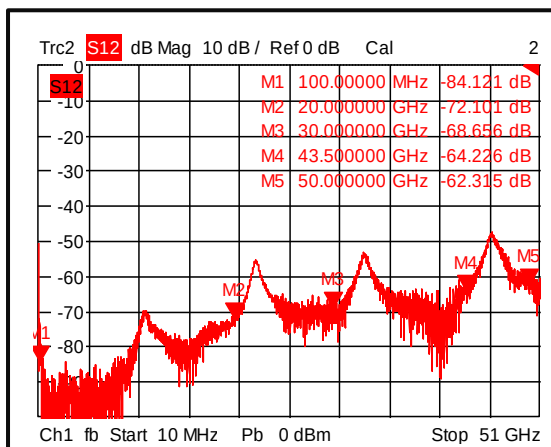
Input VSWR @+25°C



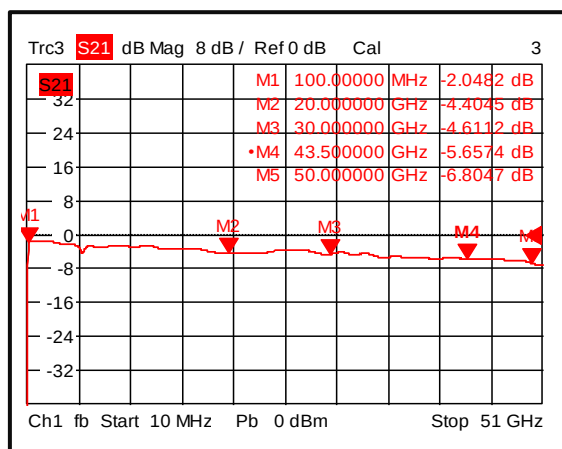
Output VSWR @+25°C



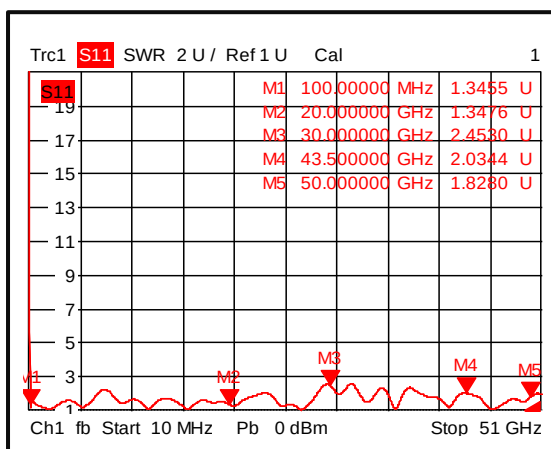
Isolation @+25°C



Insertion Loss @-40°C

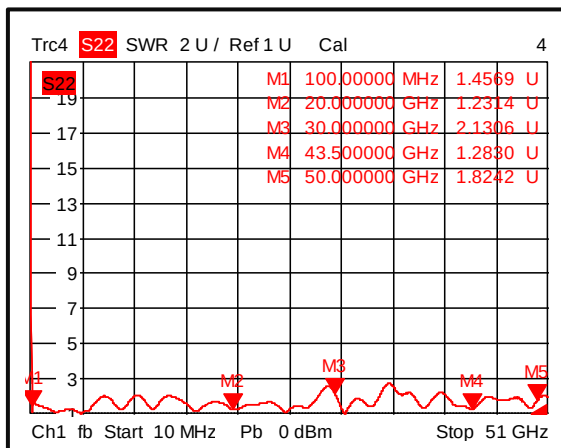


Input VSWR @-40°C

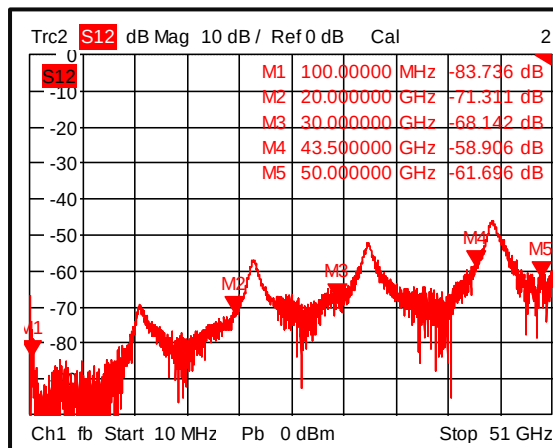


Typical Performance Plots

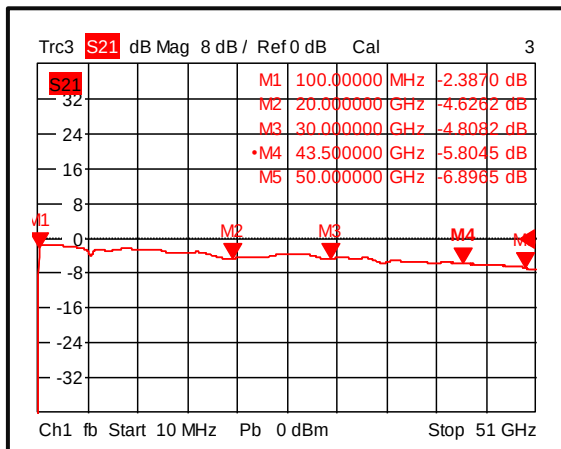
Output VSWR @-40°C



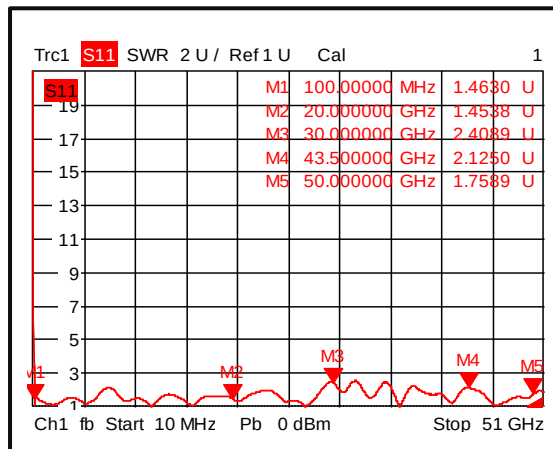
Isolation @-40°C



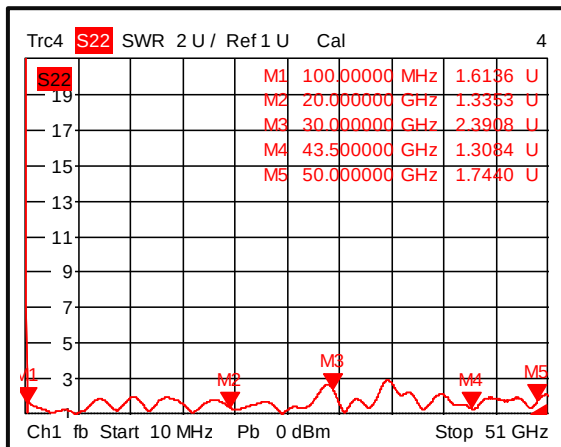
Insertion Loss @+85°C



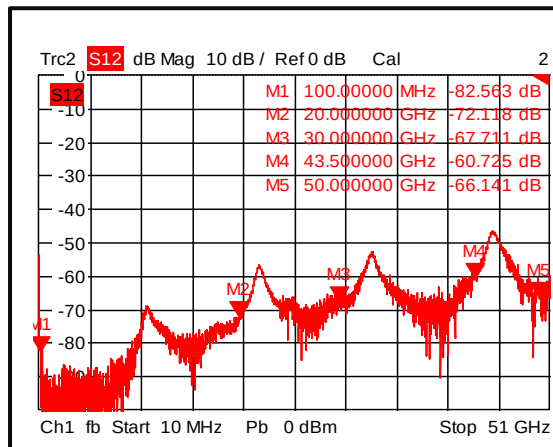
Input VSWR @+85°C



Output VSWR @+85°C

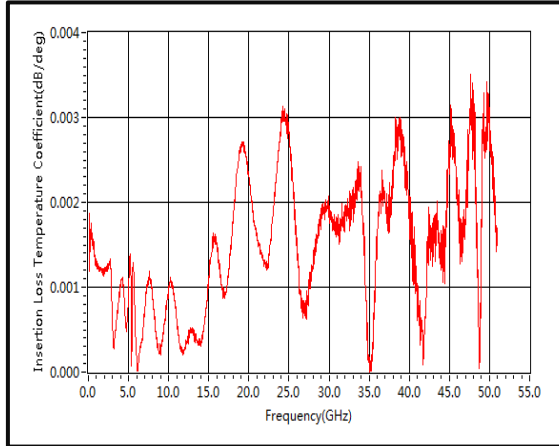


Isolation @+85°C

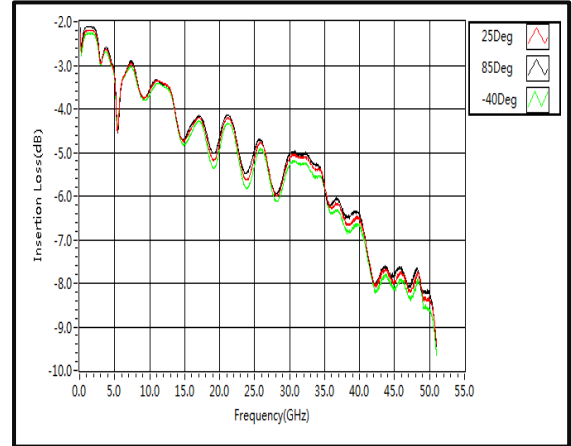


Typical Performance Plots

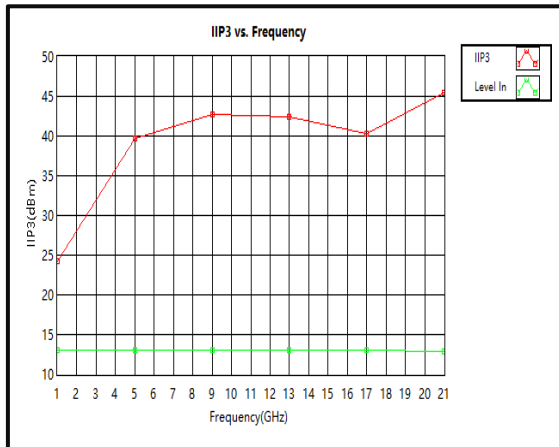
Insertion Loss Temperature Coefficient



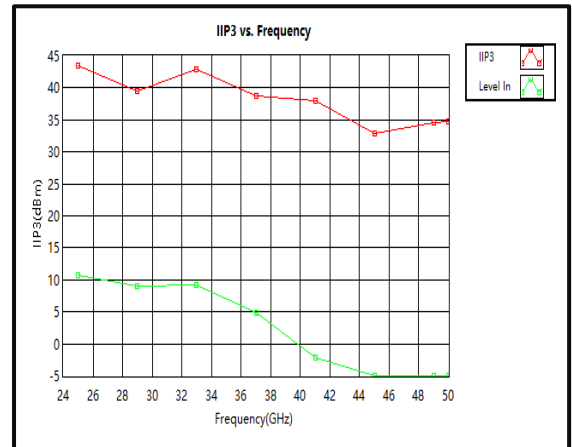
Insertion Loss vs. Temperature



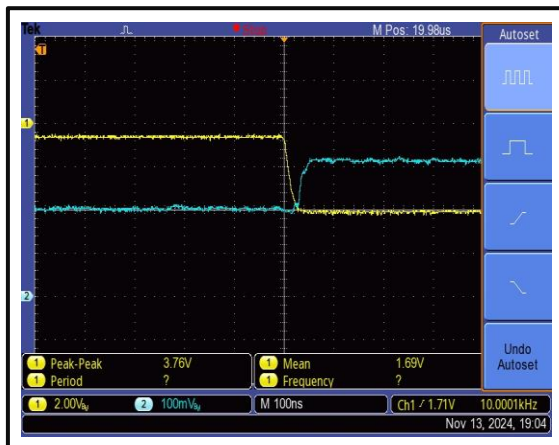
IIP3 (1GHz-21GHz)



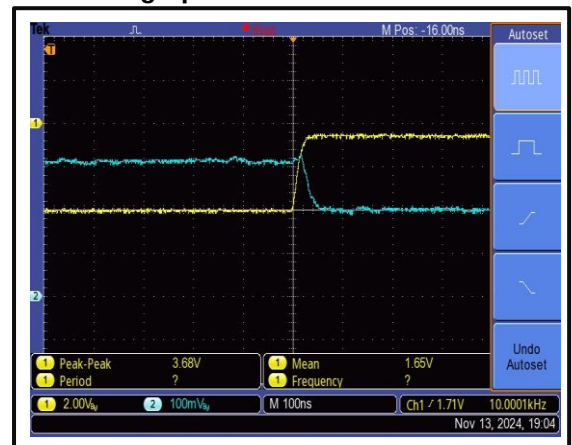
IIP3 (24GHz-50GHz)



Switching Speed

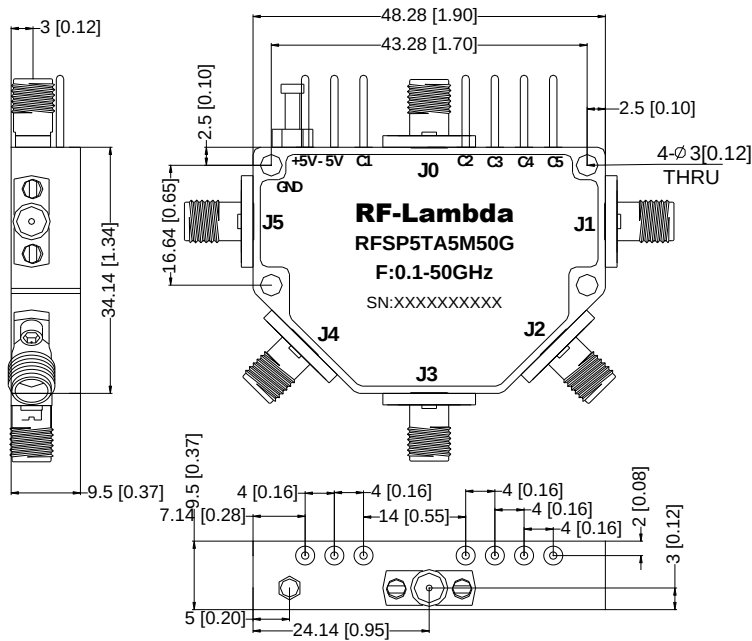


Switching Speed



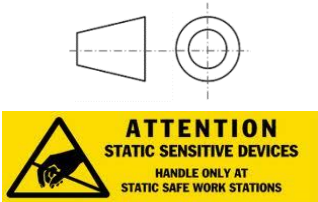
Outline Drawing

[X501]



Truth Table						
TTL Control Voltage THRESHOLD					Low(0)=0~0.8V	
					High(1)=2.8~5V	
Control Input TTL					Signal Path State	
C5	C4	C3	C2	C1		
1	1	1	1	1	OFF	
1	1	1	1	0	J0-J1	
1	1	1	0	1	J0-J2	
1	1	0	1	1	J0-J3	
1	0	1	1	1	J0-J4	
0	1	1	1	1	J0-J5	
0	0	0	0	0	Not Used	
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 ±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
RFSP5TA5M50G	Connectors 2.4mm-Female	0.1GHz-50GHz SP5T PIN Diode Switch

Important Notice

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