

Absorptive SP4T Electro-Mechanical Switch DC–50GHz



Product Description

RFSP4T50EMA-T is an absorptive SP4T electro-mechanical switch with a frequency range of DC to 50GHz.

The maximum input power for this switch is 1W. The typical insertion loss is 1.0dB and the isolation is 80dB with the speed of 20ms.

This electromechanical switch works with a +24VDC power supply.

The working temperature of this product is between - 25°C and + 70°C

Features

- SP4T configuration
- Magnetic latching
- Operating life of 1 million cycles
- Guaranteed repeatability of 0.05dB up to 1 million cycles
- Excellent isolation, typically >80 dB to 18GHz
- Terminated ports
- TTL/5V CMOS compatible (optional)
- Control Cable 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 (T_A=+25°C)

Parameter		Min	Typ	Max	Units
Frequency Range			DC – 50		GHz
Insertion Loss	@DC-4GHz		0.2	0.3	dB
	@4-26.5GHz		0.8	1.0	dB
	@26.5-50GHz		1.3	1.5	dB
VSWR	@DC-4GHz			1.3	:1
	@4-26.5GHz			2.0	:1
	@26.5-50GHz			2.3	:1
Isolation	@DC-4GHz	80			dB
	@4-26.5GHz	70			dB
	@26.5-50GHz	60			dB
Input Power				1	W
Switching Speed			20		ms
Life Cycles		1			Million
Repeatability				0.05	dB
Supply Current (VCC=+24VDC)			0.2Typ.		A
Weight			0.42 Typ.		lbs.
Impedance			50		Ohms
Connector			2.4mm-Female		
Actuator Type			Latching		
Contact			Break Before Make		
Control			TTL		
Package	Epoxy Sealed (Standard)				
	Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	22 – 28VDC

Environmental Specifications and Test Standards

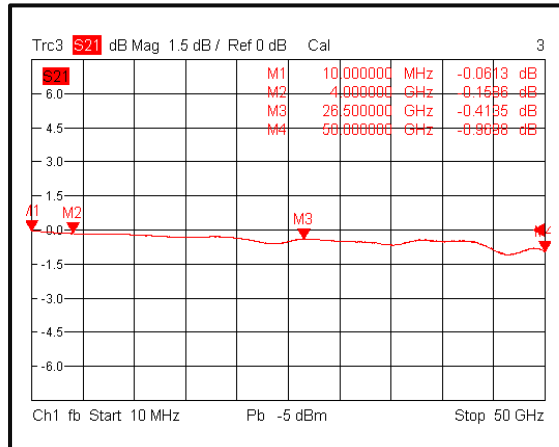
Parameter	Description
Operational Temperature	-25°C to +70°C (Case Temperature)
Storage Temperature	-50°C to +85°C
Thermal Shock	-25°C → +70°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +70°C for 72 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.

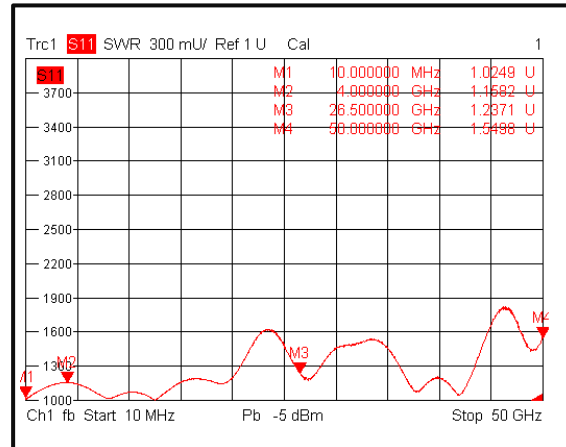
STATUS	PIN		TTL Drive Voltage (High = 2.5 to 5.5V, Low = 0 to 0.8V)				
	1	15	5	7	11	13	16
RF to 1	22-28V	GND	High	Low	Low	Low	Low
RF to 2			Low	High	Low	Low	Low
RF to 3			Low	Low	High	Low	Low
RF to 4			Low	Low	Low	High	Low
Reset			Low	Low	Low	Low	High

Typical Performance Plots

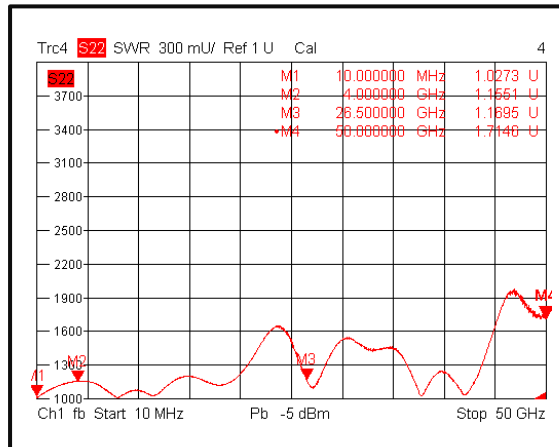
Insertion Loss@+25°C



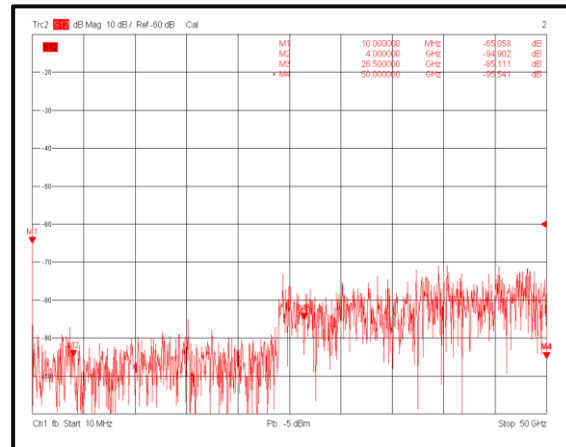
Input VSWR@+25°C



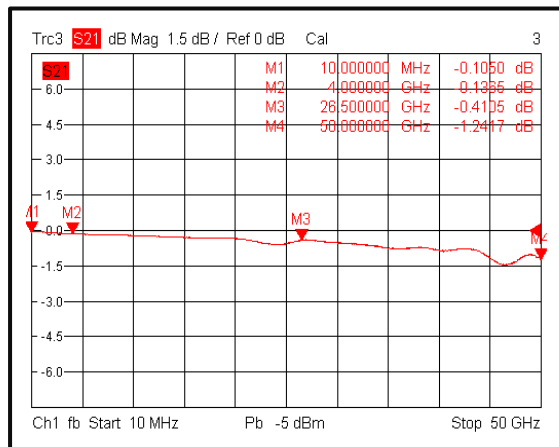
Output VSWR@+25°C



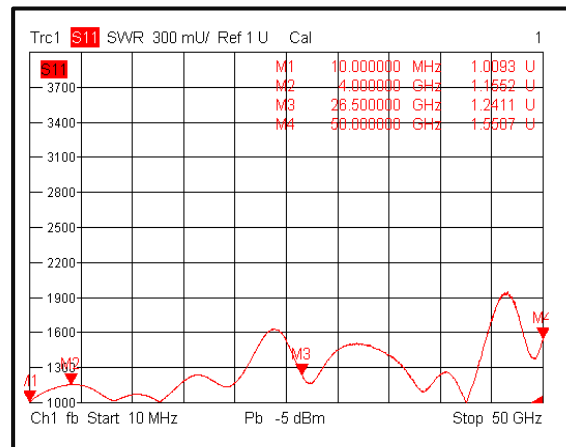
Isolation@+25°C



Insertion Loss @-25°C

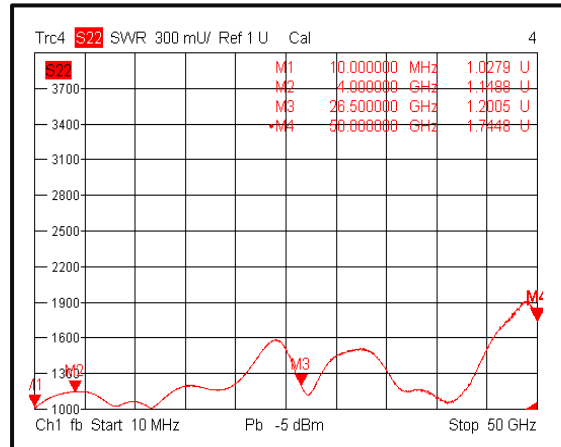


Input VSWR @-25°C

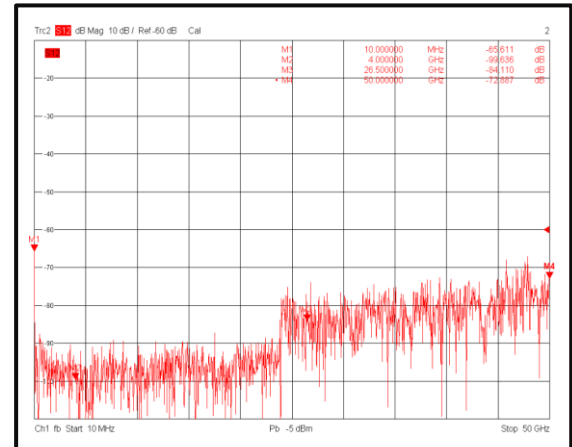


Typical Performance Plots

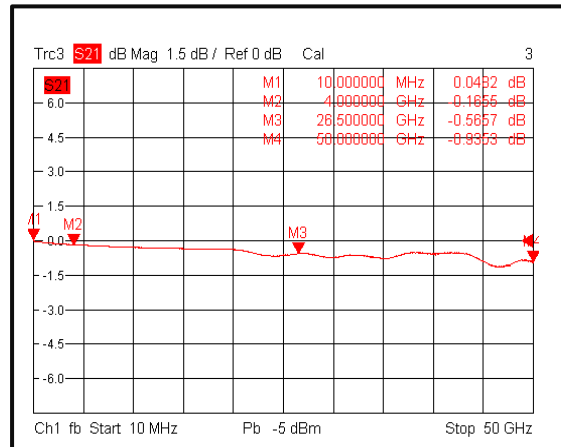
Output VSWR @-25°C



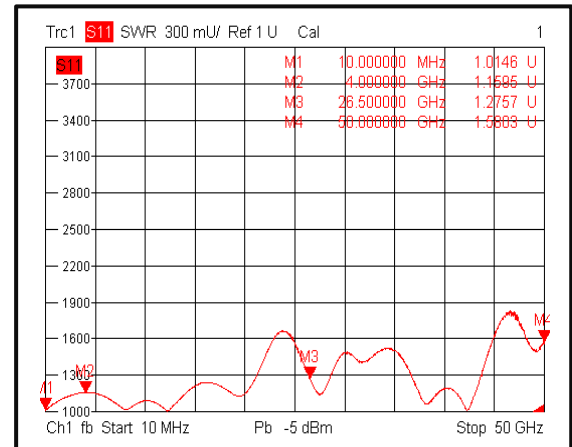
Isolation @-25°C



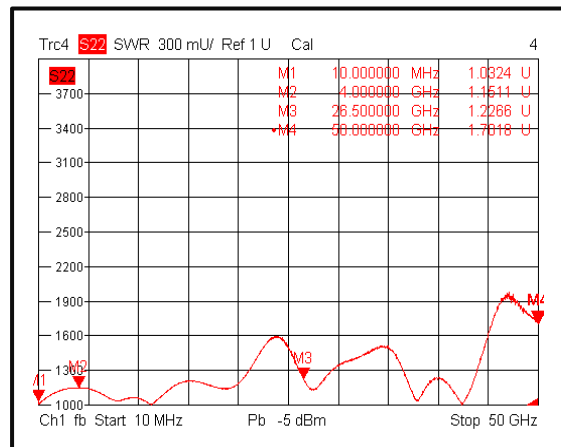
Insertion Loss @+70°C



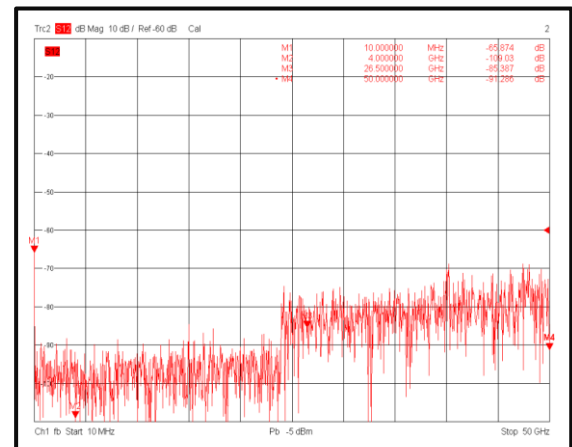
Input VSWR @+70°C



Output VSWR @+70°C

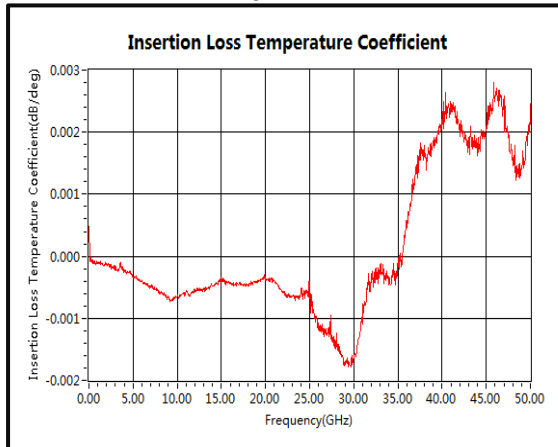


Isolation @+70°C

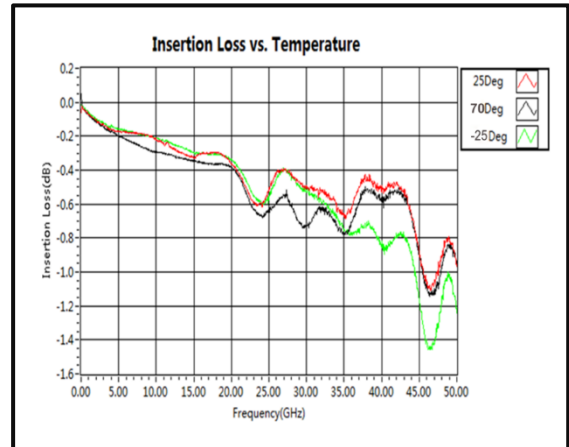


Typical Performance Plots

Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



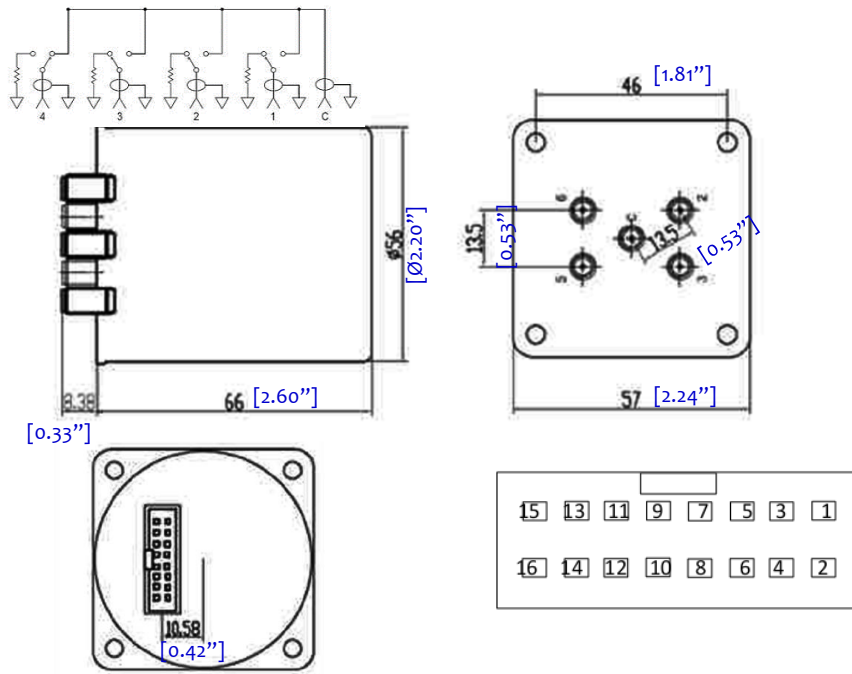
Switching Speed



Switching Speed



Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: Gray Paint
3. All dimensions are in millimeters [inches].
4. Tolerances ± 0.5 [0.02] unless otherwise specified.



Additional Information

Documentation

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

RFSP4T50EMA-T

Modification

connectors 2.4mm-Female TTL

Description

DC-50GHz SP4T Electromechanical Switch

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