

Absorptive SP4T Electro-Mechanical Switch DC-40GHz



Product Description

RFSP4T40EMA-S is an absorptive SP4T electro-mechanical switch with a frequency range of DC to 40GHz.

The maximum input power of this switch is 1W. The typical insertion loss is 0.8dB and the Isolation is 70dB 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 Ground Control
- Magnetic latching
- Operating life of 1 million cycles
- Guaranteed repeatability of 0.05dB up to 1 million cycles
- Excellent isolation, typically >80 dB to 20GHz
- 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 – 40		GHz
Insertion Loss	@DC-4GHz			0.2	dB
	@4-26.5GHz			0.8	dB
	@26.5-50GHz			1.2	dB
VSWR	@DC-4GHz			1.2	:1
	@4-26.5GHz			1.7	:1
	@26.5-50GHz			1.9	: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)			0.2		A
Weight			0.42 Max.		lbs.
Impedance			50		Ohms
Connector			2.92mm-Female		
Actuator Type			Latching		
Contact			Break Before Make		
Control			Ground		
Package	Epoxy Sealed (Standard)				
	Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	22– 28VDC

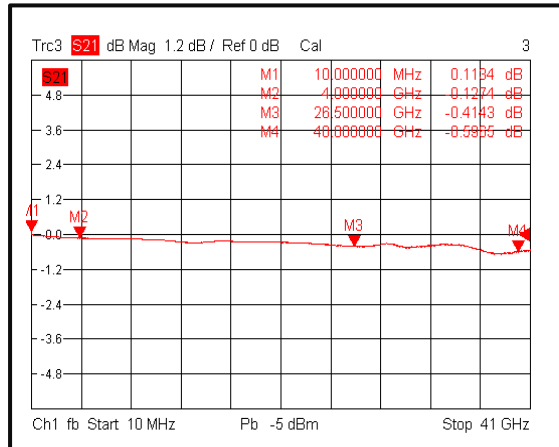
Environmental Specifications and Test Standards

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)

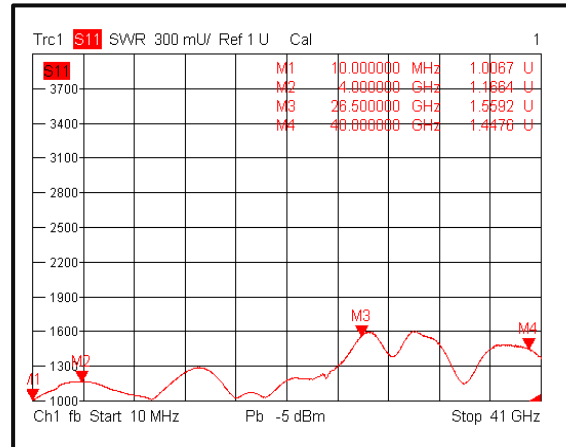
*For vibration testing details please see additional information section.

Typical Performance Plots

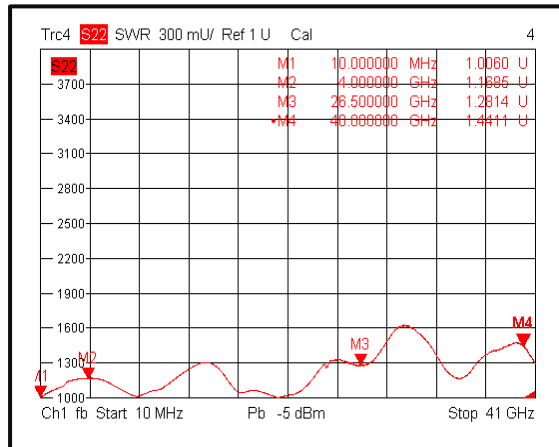
Insertion Loss@+25°C



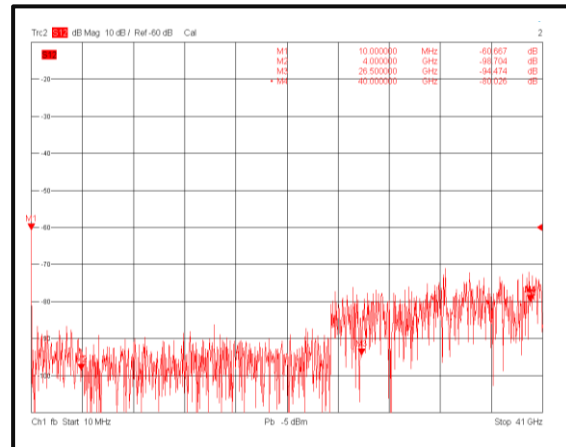
Input VSWR@+25°C



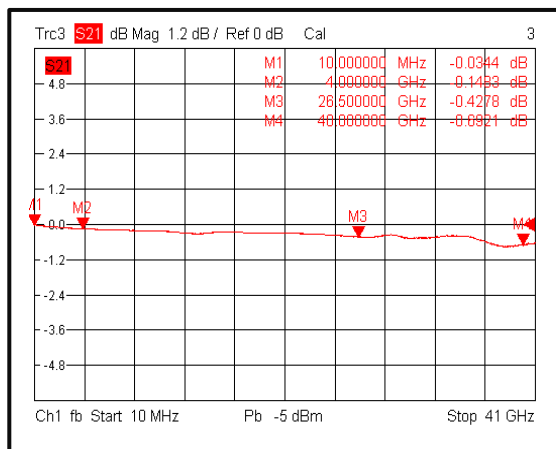
Output VSWR@+25°C



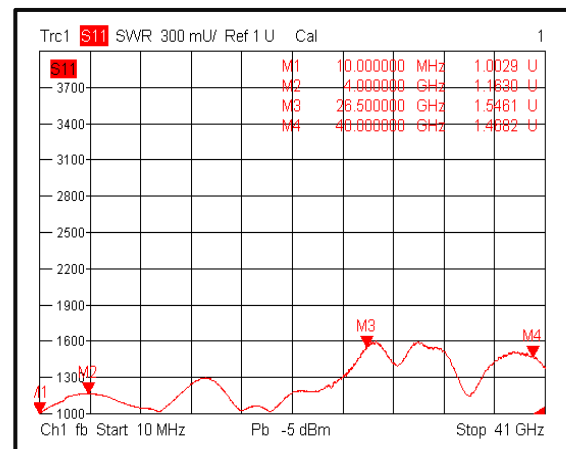
Isolation@+25°C



Insertion Loss @-25°C

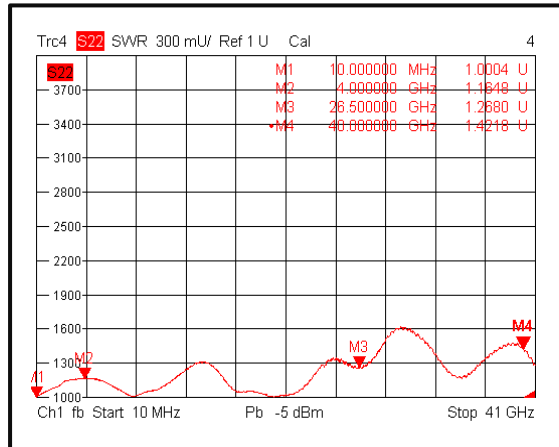


Input VSWR @-25°C

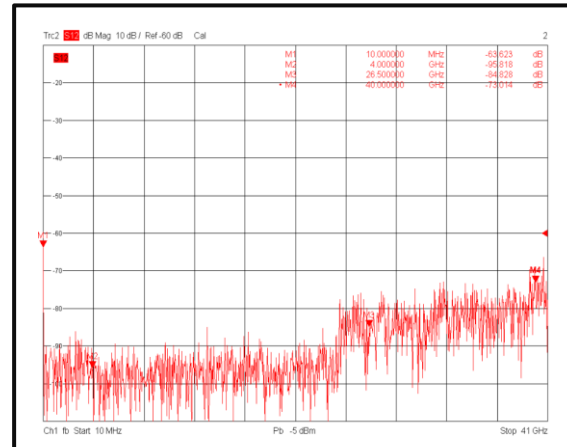


Typical Performance Plots

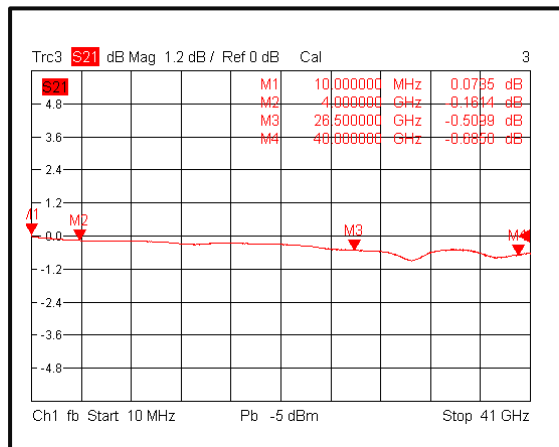
Output VSWR @-25°C



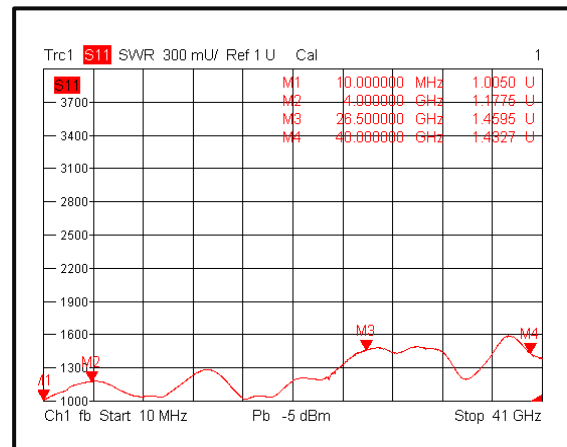
Isolation @-25°C



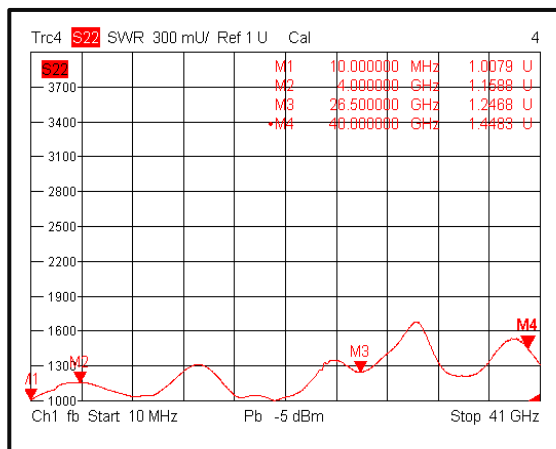
Insertion Loss @+75°C



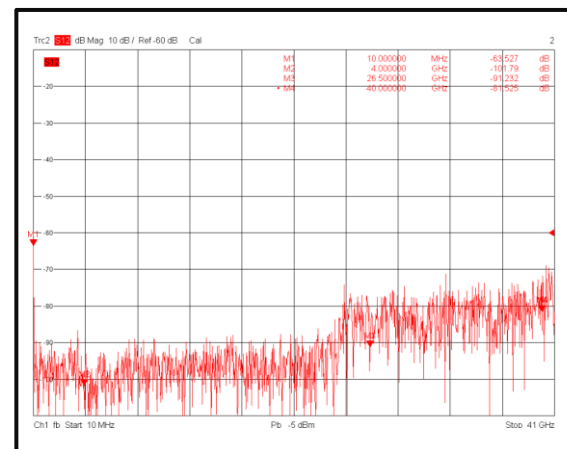
Input VSWR @+75°C



Output VSWR @+75°C

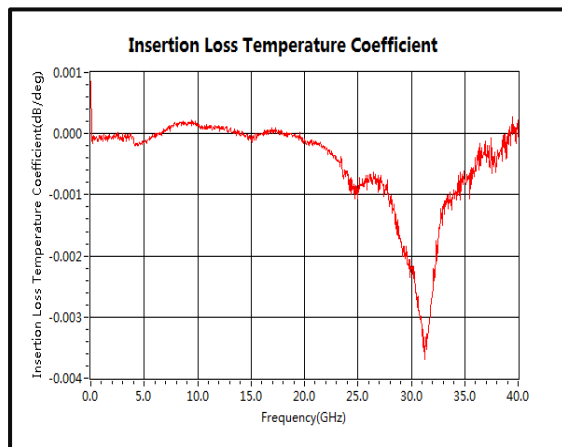


Isolation @+75°C

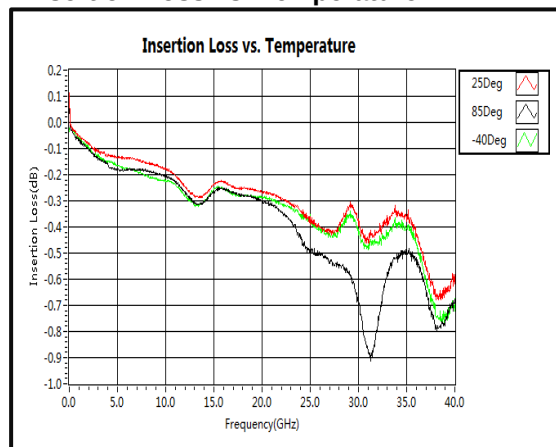


Typical Performance Plots

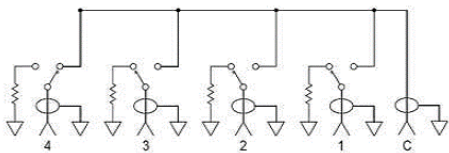
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature

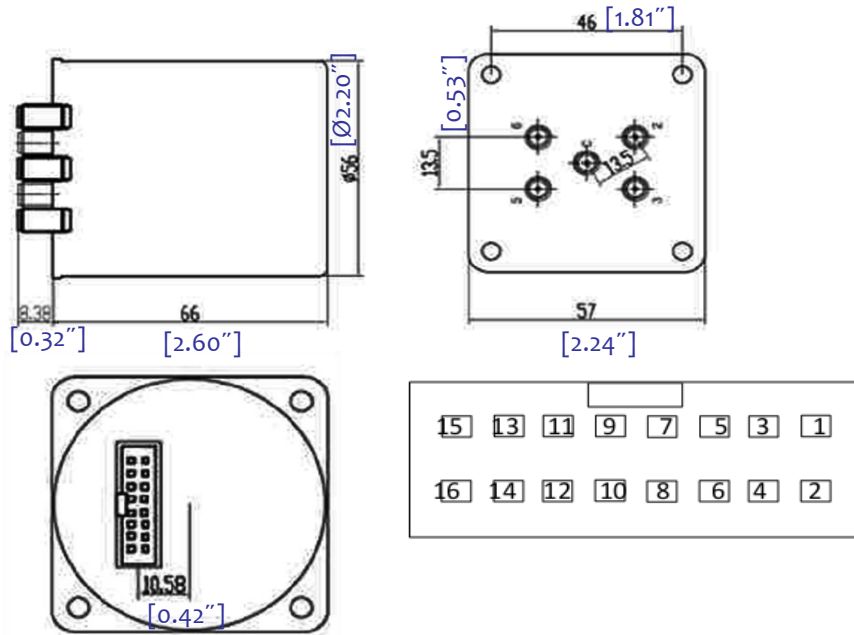


Pin Descriptions



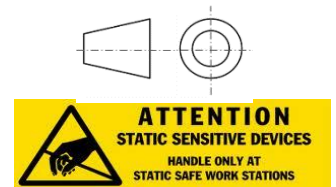
PIN		1	15	Standard Drive Voltage				
STATUS				5	7	11	13	16
RF to 1		22-28V	GND	GND	OPEN	OPEN	OPEN	OPEN
RF to 2				OPEN	GND	OPEN	OPEN	OPEN
RF to 3				OPEN	OPEN	GND	OPEN	OPEN
RF to 4				OPEN	OPEN	OPEN	GND	OPEN
Reset				OPEN	OPEN	OPEN	OPEN	GND

Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: Gray Paint
3. All dimensions are in millimeters [inches].



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	Modification	Description
RFSP4T40EMA-S	Standard Ground	DC-40GHz SP4T Electromechanical Switch

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