

SPDT Absorptive Electro-Mechanical Switch DC-18GHz



Product Description

RFSPDT18EMC-S is a SPDT absorptive electro-mechanical switch with a frequency range of DC to 18GHz.

The power of this switch is 1W Max. The typical insertion loss is 0.6dB and the Isolation is 60dB with the speed of 20ms. This electromechanical switch works with typically +24 VDC power supply.

The repeatability and reliability of this switch is vital to ATS measurement accuracy and can cut the cost of ownership by reducing calibration cycles.

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

Features

- SPDT 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 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 – 18		GHz	
Insertion Loss		@DC-12.4GHz	0.3	dB	
		@12.4-18GHz	0.6	dB	
VSWR		@DC-12.4GHz	1.2	:1	
		@12.4-18GHz	1.2	1.5	
Isolation		@DC-18GHz	60	75	dB
Input Power			1	W	
Switching Speed			20	ms	
Life Cycles	1			Million	
Repeatability			0.05	dB	
Supply Current (VCC=+24VDC)		0.24 Typ.		A	
Weight		0.16 Max.		lbs.	
Impedance		50		Ohms	
Connector		SMA -Female			
Actuator Type		Latching			
Contact		Break Before Make			
Control		Standard Ground			
Package		Epoxy Sealed (Standard)			
		Hermetically Sealed (Optional)			

Absolute Maximum Ratings

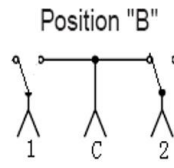
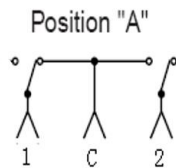
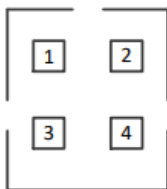
Parameter	Rating
Supply Voltage Range	20 – 28VDC

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	-40°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.

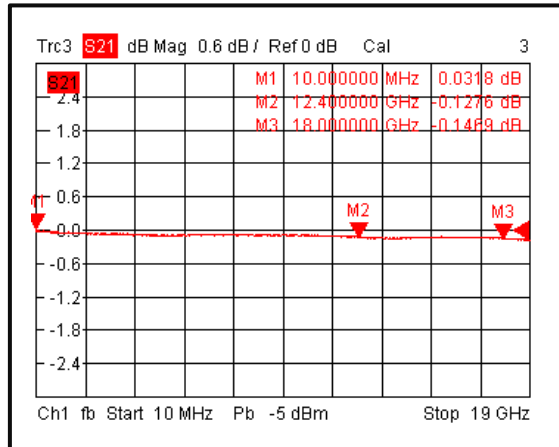
Control Type Functional Diagram



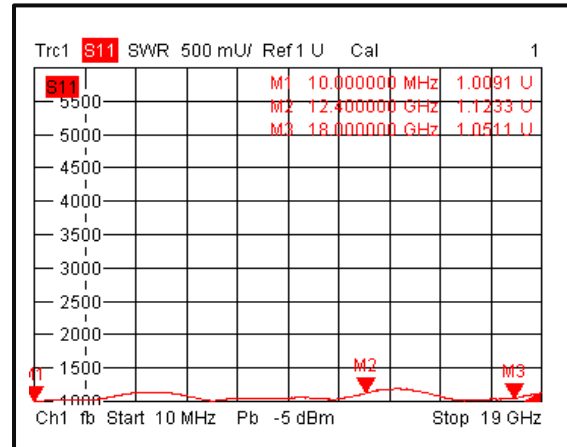
State	TTL Drive Voltage			
	PIN1	PIN2	PIN3	PIN4
RFC to 1	GND	+24V	GND	Open
RFC to 2	GND	+24V	Open	GND

Typical Performance Plots

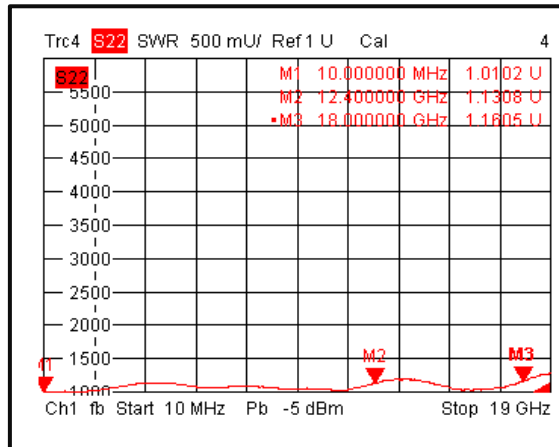
Insertion Loss @+25°C



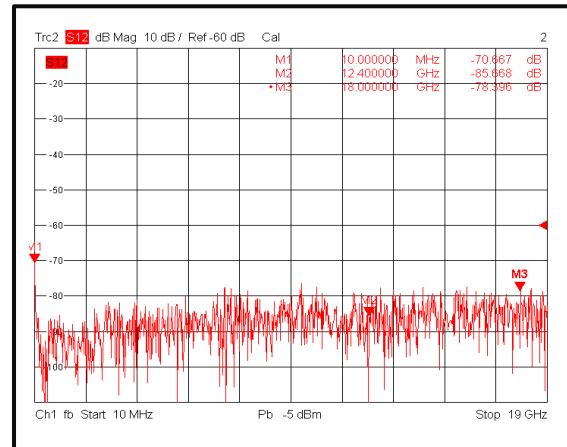
Input VSWR @+25°C



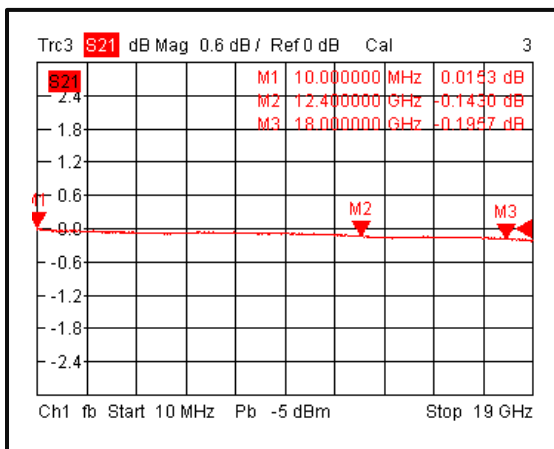
Output VSWR @+25°C



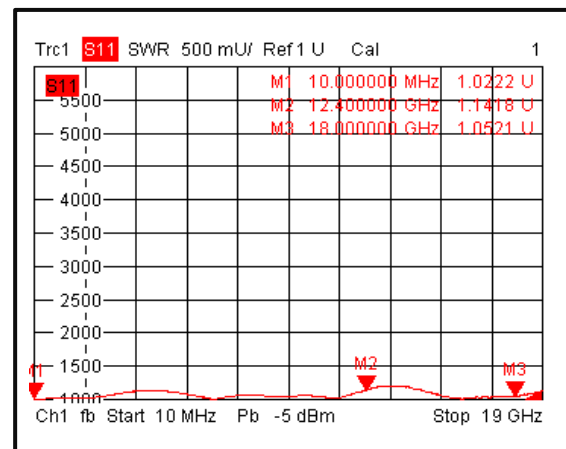
Isolation @+25°C



Insertion Loss @-25°C

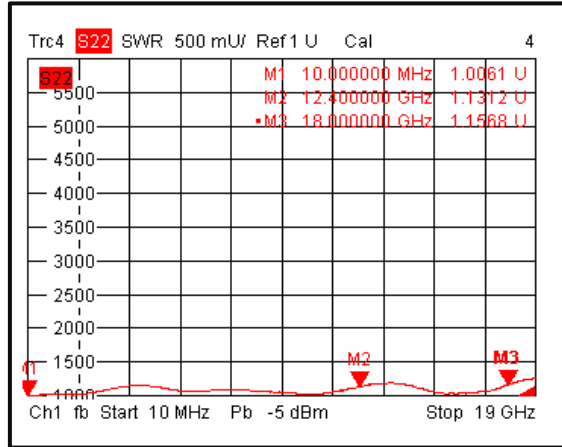


Input VSWR @-25°C

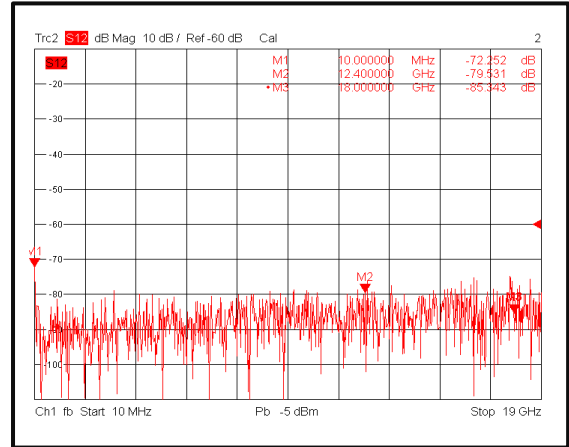


Typical Performance Plots

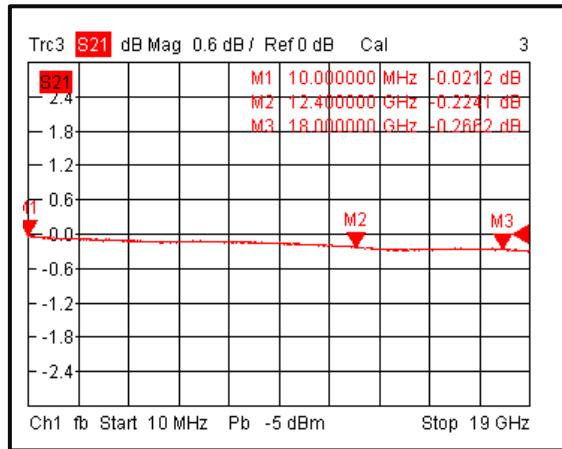
Output VSWR @-25°C



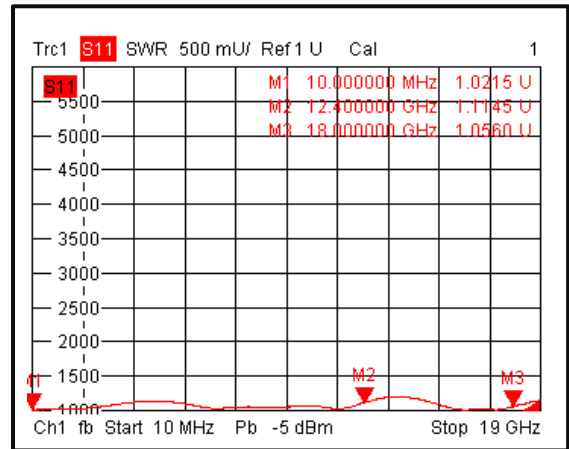
Isolation @-25°C



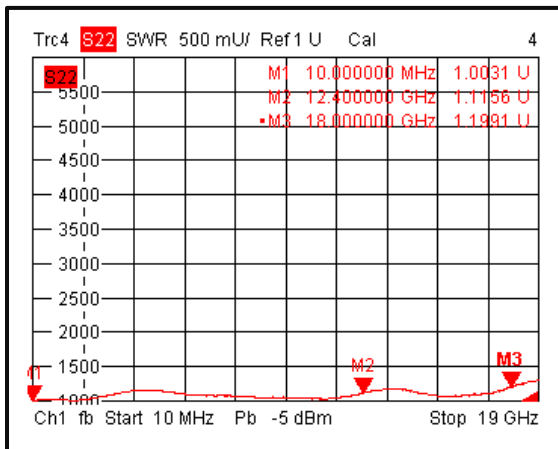
Insertion Loss @+70°C



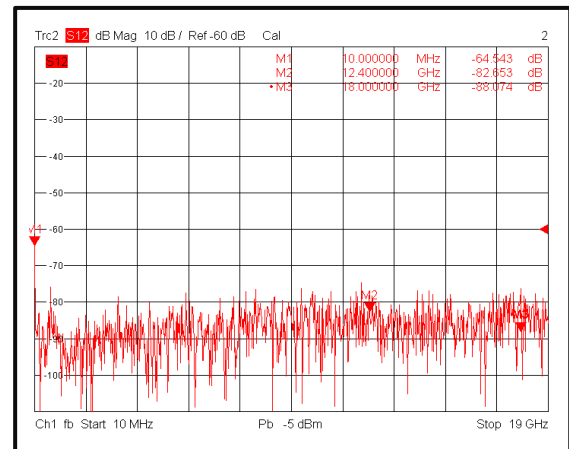
Input VSWR @+70°C



Output VSWR @+70°C

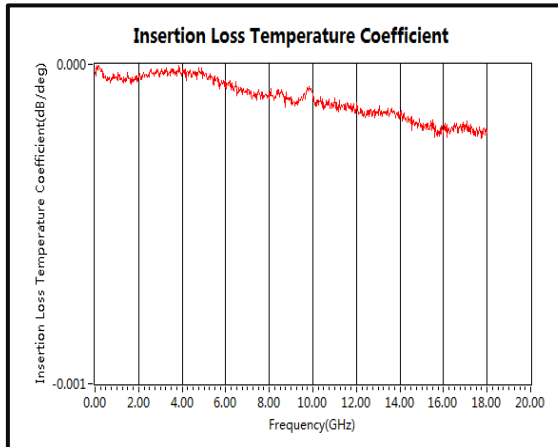


Isolation @+70°C

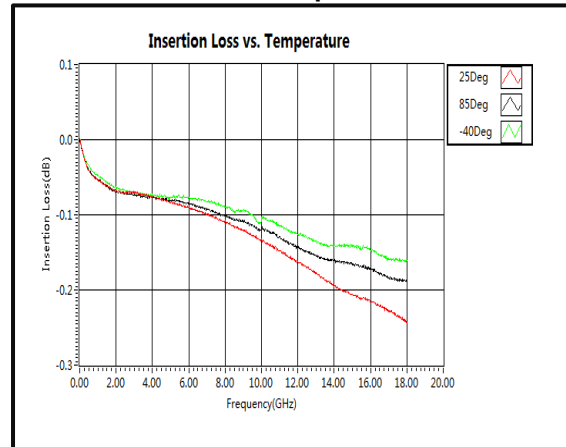


Typical Performance Plots

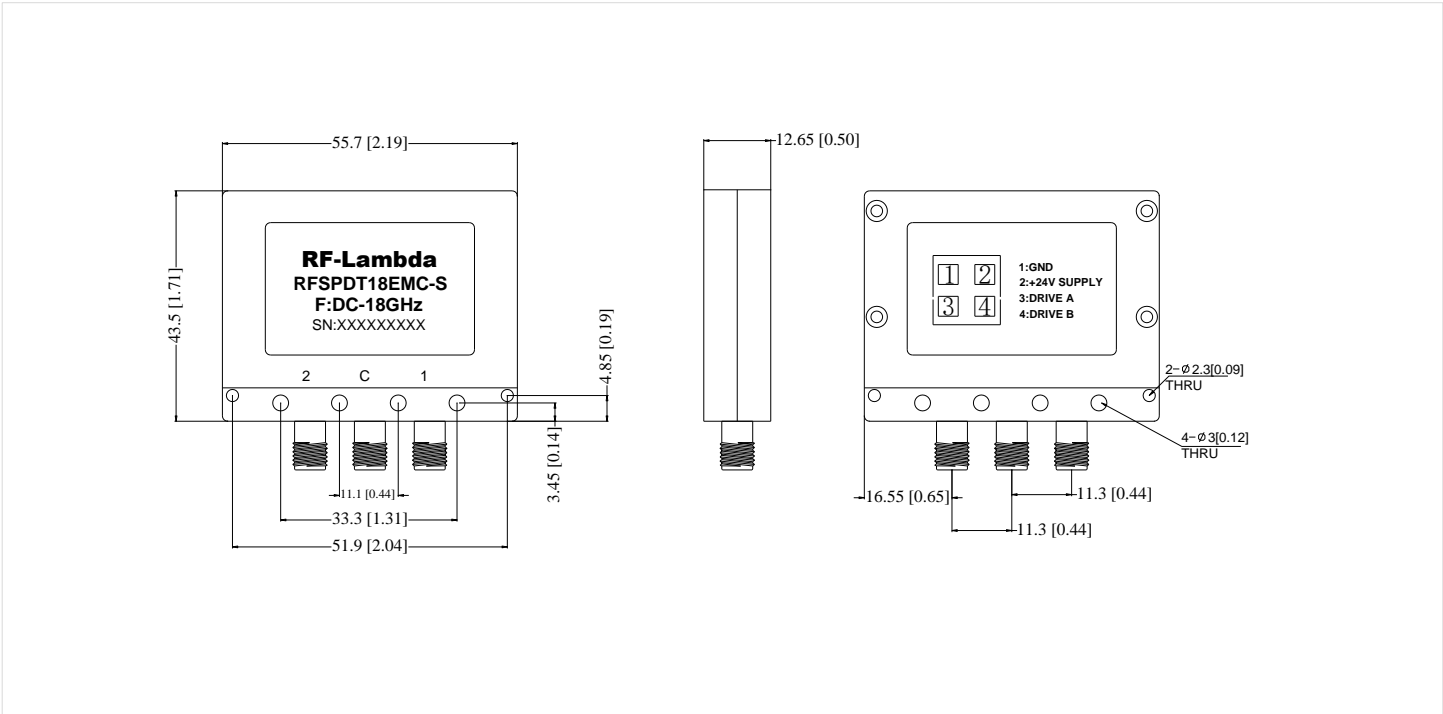
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



Outline Drawing



Notes:

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



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
RFSPDT18EMC-S	Connectors SMA-Female Ground Control	DC-18GHz SPDT Electromechanical Switch

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