

SPDT Absorptive Electro-Mechanical Switch DC-50GHz



Product Description

RFSPDT50EMC-S is a SPDT absorptive electro-mechanical switch with a frequency range of DC to 50GHz.

The maximum input power of this switch is 1W. The typical insertion loss is 0.8dB and the Isolation is 77dB 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 + 75°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
- Standard Drive Compatible
- 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	@0.01-10GHz			0.4	dB
	@10-20GHz			0.8	dB
	@20-50GHz			1.2	dB
VSWR	@0.01-10GHz			1.25	:1
	@10-20GHz			1.5	:1
	@20-50GHz			1.8	:1
Isolation	@0.01-10GHz		85		dB
	@10-20GHz		77		dB
	@20-50GHz		70		dB
Input Power	@0.01-10GHz			30	W
	@10-20GHz			12	W
	@20-50GHz			1	W
Switching Speed				20	ms
Life Cycles		1			Million
Repeatability				0.05	dB
Supply Current (VCC=+24VDC)			0.2		A
Weight			0.17 Typ.		lbs.
Impedance			50		Ohms
Connector			2.4mm		
Actuator Type			Latching		
Contact			Break Before Make		
Control			Ground		
Package		Epoxy Sealed (Standard)			
		Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	20– 28VDC

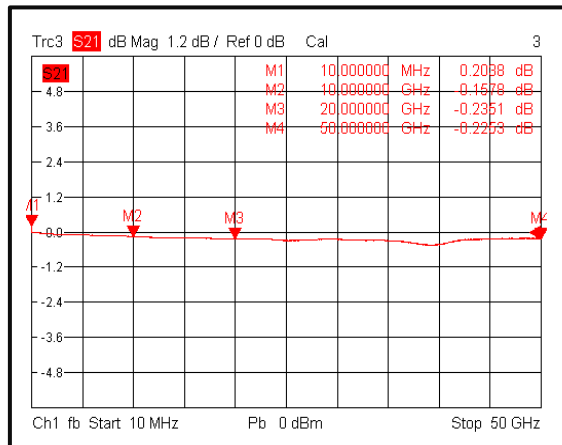
Environmental Specifications and Test Standards

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)

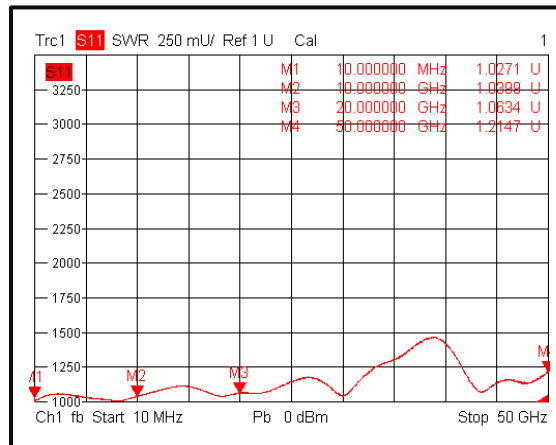
*For vibration testing details please see additional information section.

Typical Performance Plots

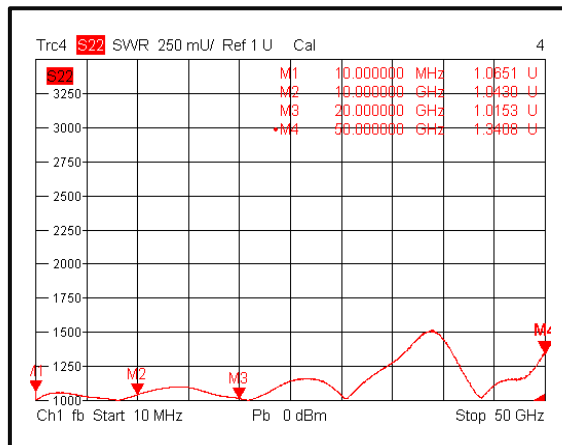
Insertion Loss@+25°C



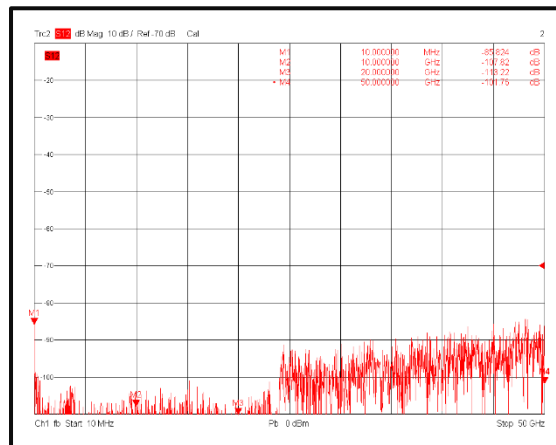
Input VSWR@+25°C



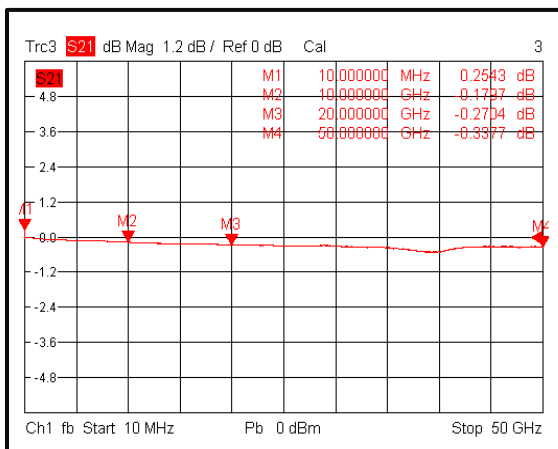
Output VSWR@+25°C



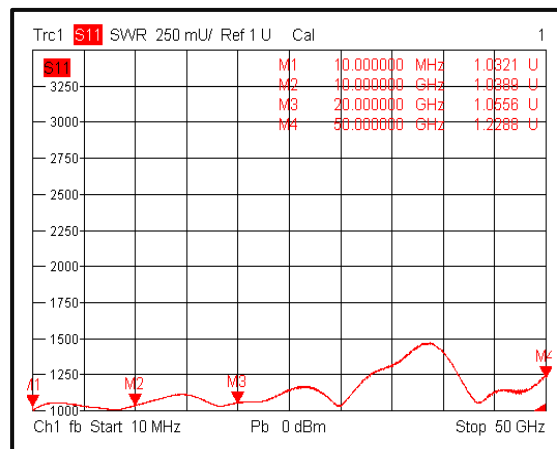
Isolation@+25°C



Insertion Loss @-25°C

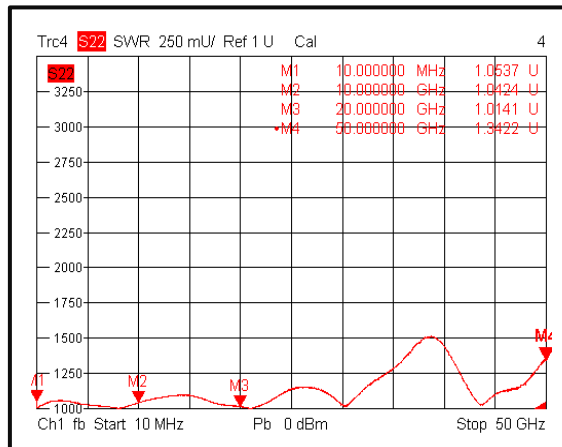


Input VSWR @-25°C

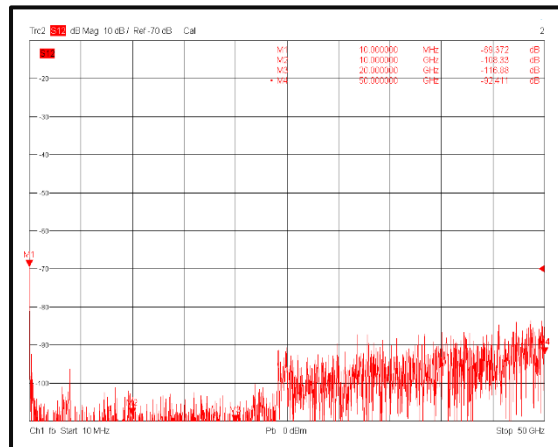


Typical Performance Plots

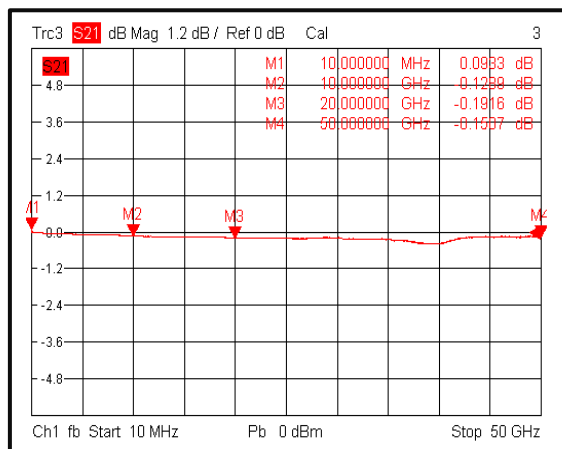
Output VSWR @-25°C



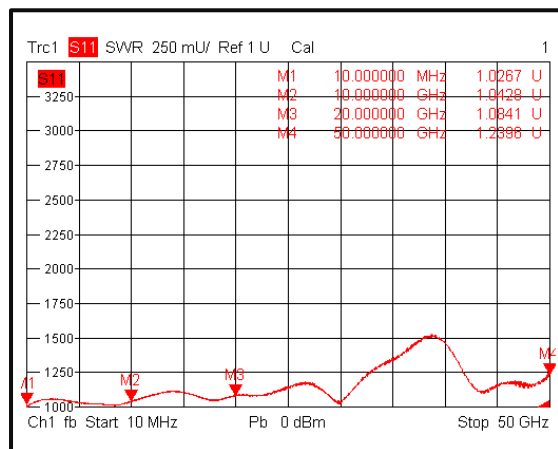
Isolation @-25°C



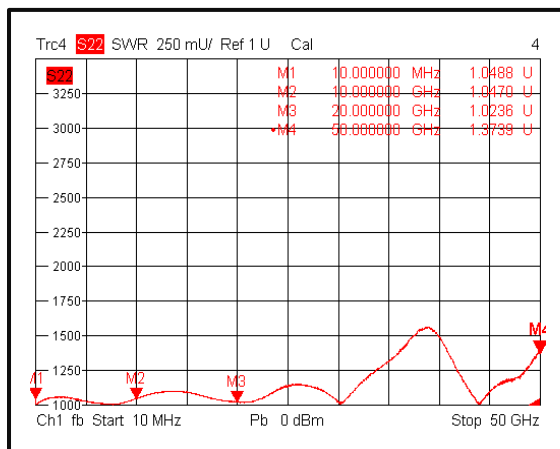
Insertion Loss @+75°C



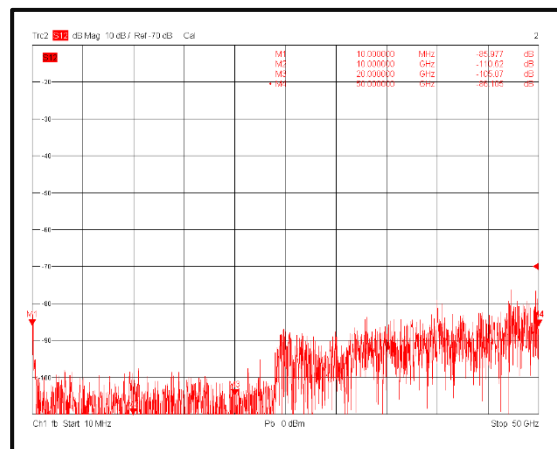
Input VSWR @+75°C



Output VSWR @+75°C

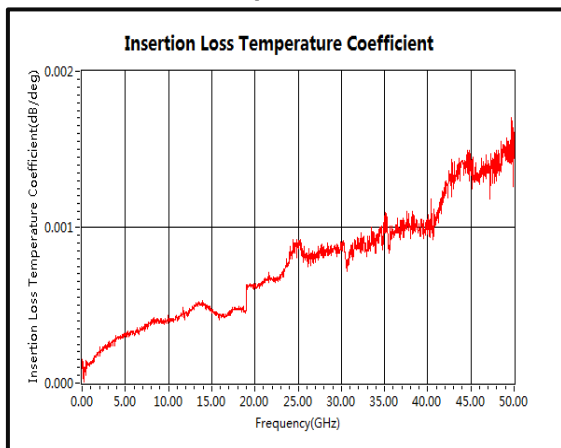


Isolation @+75°C

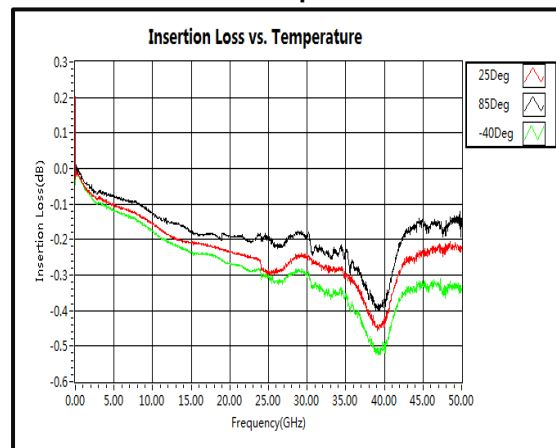


Typical Performance Plots

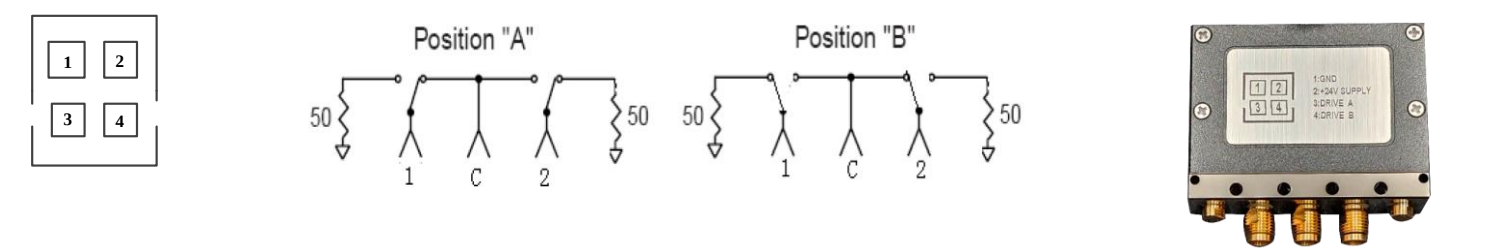
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



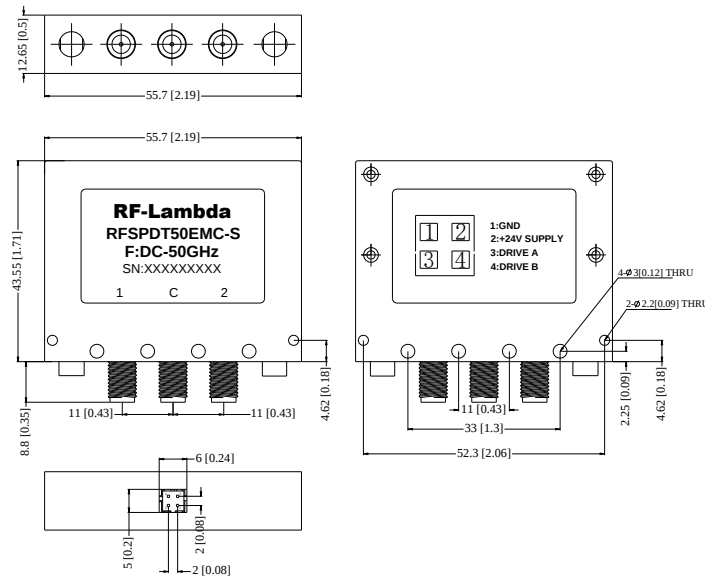
Functional Diagram



Standard Control Type

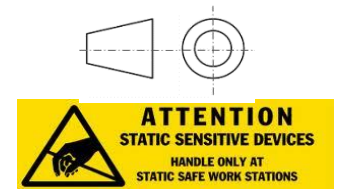
Standard Drive				Path
PIN1	PIN2	PIN3	PIN4	
GND	+24V/+12V/+5V	GND	OPEN	PositionA (C↔1)
GND	+24V/+12V/+5V	OPEN	GND	PositionB (C↔2)
GND	+24V/+12V/+5V	OPEN	OPEN	Keep the original path
GND	+24V/+12V/+5V	GND	GND	Forbidden

Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: Black Paint
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.



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
RFSPDT50EMC-S	connectors 2.4mm-Female	DC-50GHz SPDT Electromechanical Switch

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