SPDT Absorptive Electro-Mechanical Switch DC-110GHz

Product Description

RFSPDT110EMC-T is a SPDT absorptive electro-mechanical switch with a frequency range of DC to 110GHz.

The typical insertion loss is 1.8dB and the Isolation is 60dB with the speed of 20ms.

The working temperature of this product is between - 20℃ and + 70℃

Features

- SPDT configuration TTL Control
- Magnetic latching
- Operating life of 0.5 million cycles
- Guaranteed repeatability of 0.15dB up to 0.5 million cycles
- Excellent isolation, typically >60 dB to 67GHz
- TTL/5V CMOS 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=+25ºC)

Parameter		Min	Typ	Max	Units
Frequency Range			DC – 110		GHz
Insertion Loss	@DC-20GHz			0.8	dB
	@20-50GHz			1.4	
	@50-67GHz			1.8	
	@67-90GHz			2.2	
	@90-110GHz			2.5	
VSWR	@DC-20GHz			1.5	:1
	@20-50GHz			1.8	
	@50-67GHz			1.9	
	@67-90GHz			2.0	
	@90-110GHz			2.2	
Isolation	@DC-20GHz	70			dB
	@20-50GHz	70			
	@50-67GHz	60			
	@67-90GHz	60			
	@90-110GHz	50			
Input Power				1	W
Switching Speed				20	ms
Life Cycles (1 to 2 to 1 is one cycle)		0.5			Million
Repeatability				0.15	dB
* Supply Current	(VCC=+24VDC)		240		mA
Weight			0.16 Typ.		lbs.
Impedance			50		Ohms
Connector			1.0mm-Female		
Relay Structure			Magnetic Latching		
Contact			Break Before Make		
Control			TTL		
Package			Epoxy Sealed (Standard)		
			Hermetically Sealed (Optional)		

* Note: The supply current will be drawn for approximate 20ms when a state change is initiated, then the current will drop to 0.

RF-LAMBDA USA LLC: www.rflambda.com
Sales: sales@rflambda.com Technical: support@rflambda.com

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	22– 28V

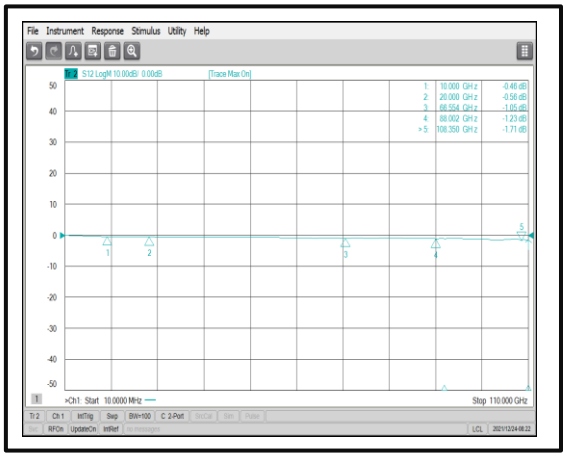
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-20ºC to +70ºC (Case Temperature)
Storage Temperature	-50ºC to +85ºC
Thermal Shock	-20ºC → +70ºC (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 +70ºC 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)

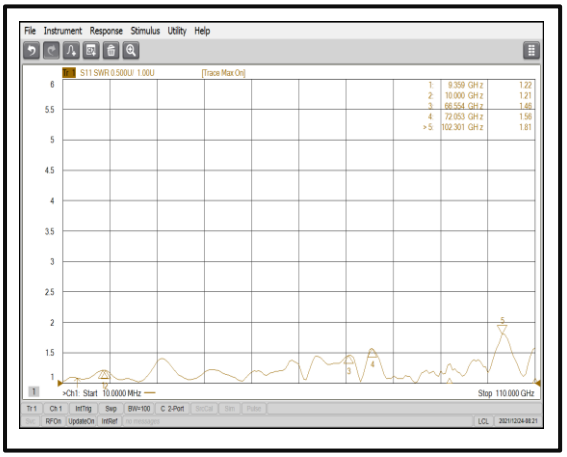
*For vibration testing details please see additional information section.

Typical Performance Plots

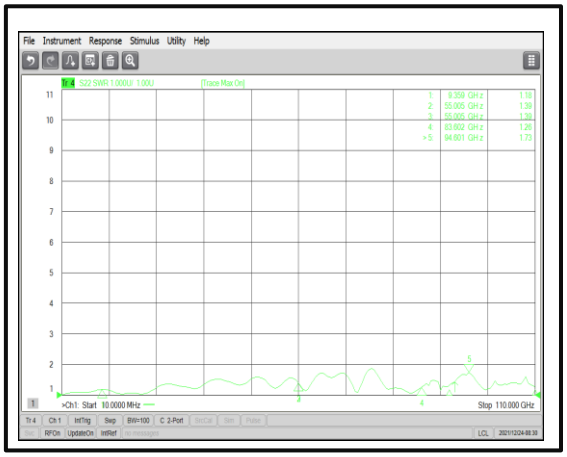
Insertion Loss



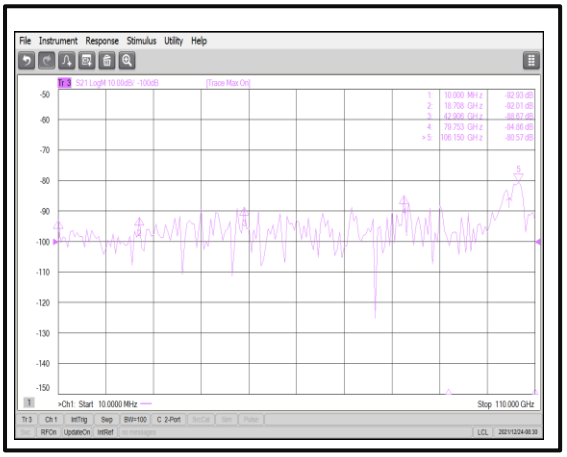
Input VSWR



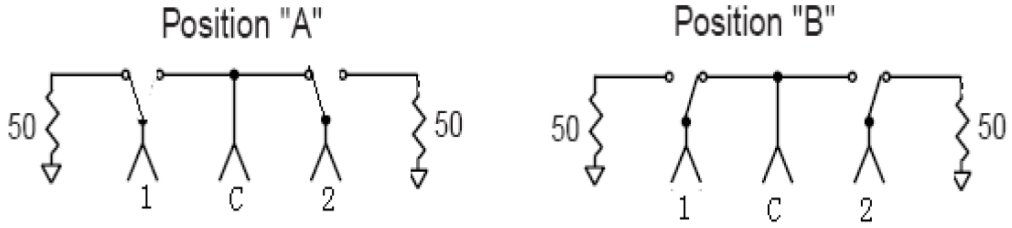
Output VSWR



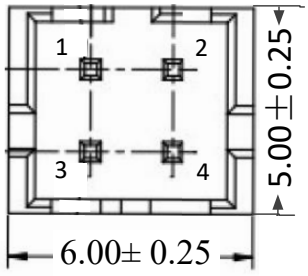
Isolation



Functional Diagram



Control Port



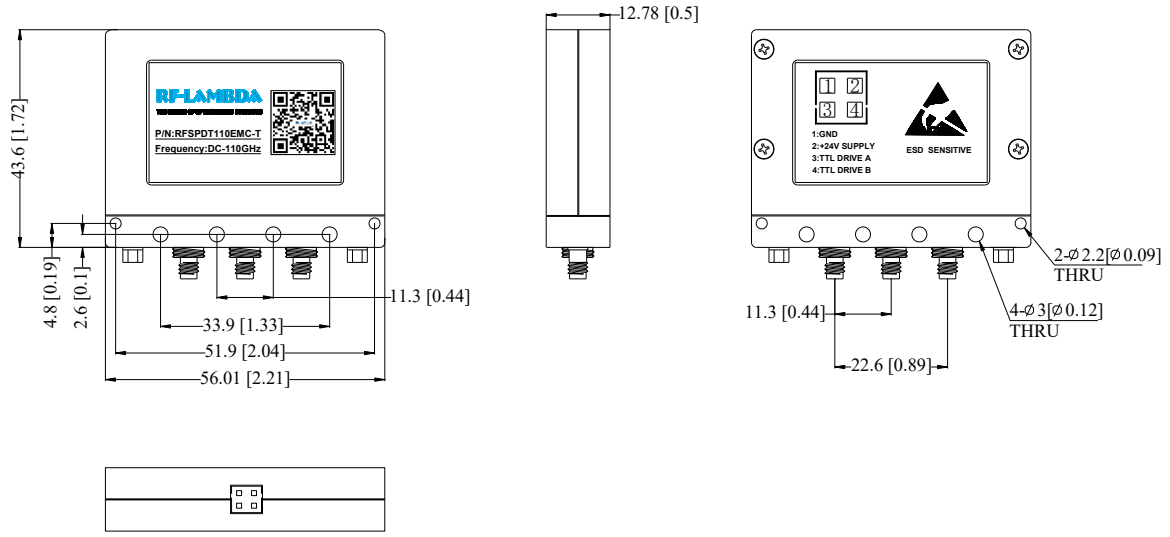
PIN 1:GND, PIN 2: +24V(+22~+28V);

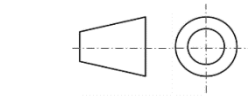
Note:
GND: Ground
OPEN: High resistance state
High:+3.3V(+3V~+5.5V)
Low:0V(0V~+0.8V)
Control Cable included PN: RFCBLAEMSW-SP2TA

PIN		TTL		Channel
PIN1	PIN2	PIN3	PIN4	
GND	+24V	HIGH	LOW	PositionA（C↔ 2）
GND	+24V	LOW	HIGH	PositionB（C↔ 1）
GND	+24V	LOW	LOW	Last State
GND	+24V	HIGH	HIGH	Forbidden

The forbidden state will not damage the part but it will cause an unknown final state.
It is necessary to hold the control state for than 20ms or longer.

Outline Drawing





Notes:
1. Package Material: Aluminum
2. Finish: Black 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
RFSPDT110EMC-T	connectors 1.0mm-Female TTL	DC-110GHz SPDT Electromechanical Switch

Important Notice