

## SPDT Reflective Electro-Mechanical Switch DC-18GHz



### Product Description

RFSPDT18EMBET-T is an extended temperature range SPDT reflective electro-mechanical switch with a frequency range of DC to 18GHz.

The max power handling of this switch is 2W max. The typical insertion loss is 0.6dB and the Isolation is 60dB with the speed of 20ms.

The working temperature of this product is between - 40°C and + 85°C

### Features

- SPDT configuration
- Magnetic latching
- Operating life of 1 million cycles
- Guaranteed repeatability of 0.05dB up to 1 million cycles
- TTL drive
- 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<sub>A</sub>=+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	1.3	:1
		@12.4-18GHz	1.5	:1
Isolation		@DC-18GHz	60	dB
Input Power			2	W
Switching Speed			20	ms
Life Cycles	1			Million
Repeatability			0.05	dB
Supply Current	VCC=+24VDC	200		mA
Weight		0.1Max.		lbs.
Impedance		50		Ohms
Connector		SMA-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	+20 - 28V

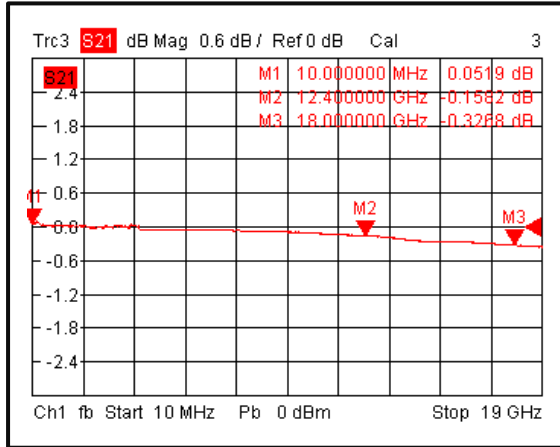
**Environmental Specifications and Test Standards**

Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +85°C
Thermal Shock	-40°C → +85°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 +85°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)

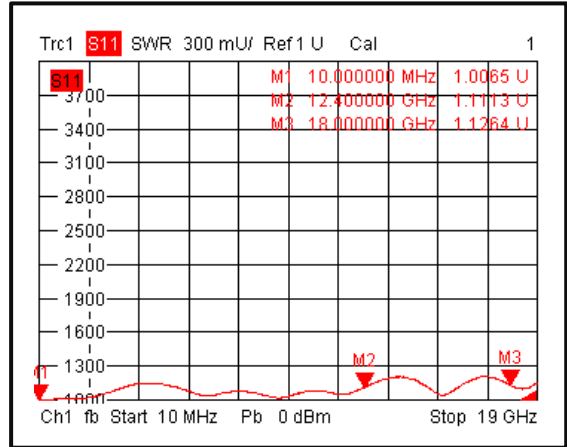
\*For vibration testing details please see additional information section.

**Typical Performance Plots**

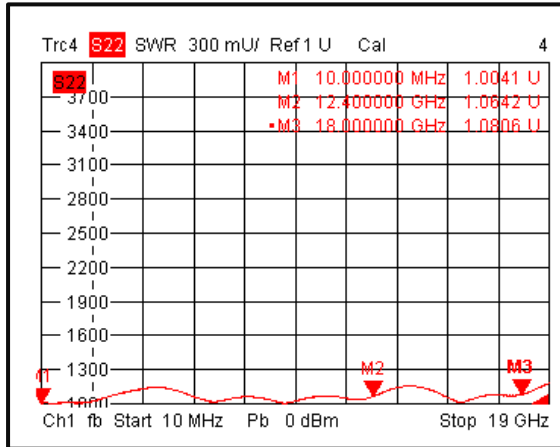
**Insertion Loss@+25°C**



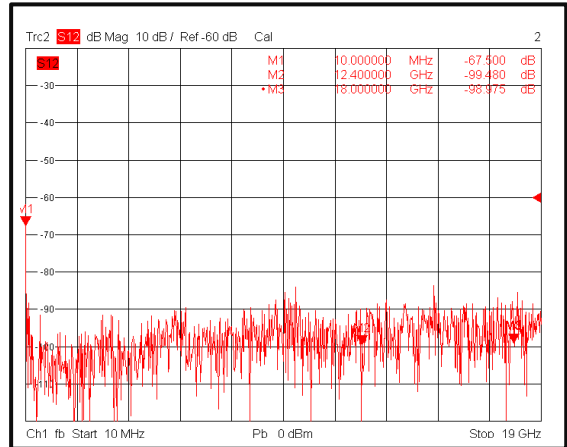
**Input VSWR@+25°C**



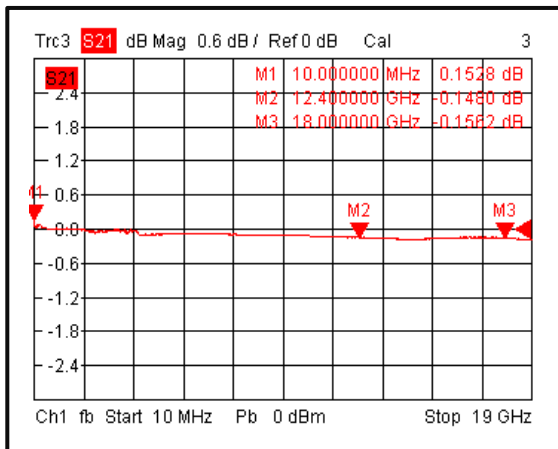
**Output VSWR@+25°C**



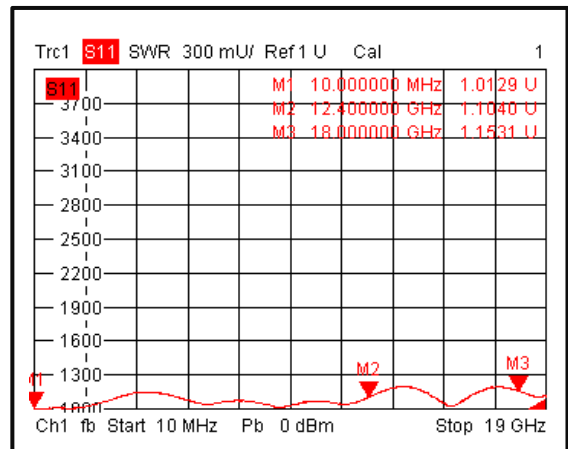
**Isolation@+25°C**



**Insertion Loss @-40°C**

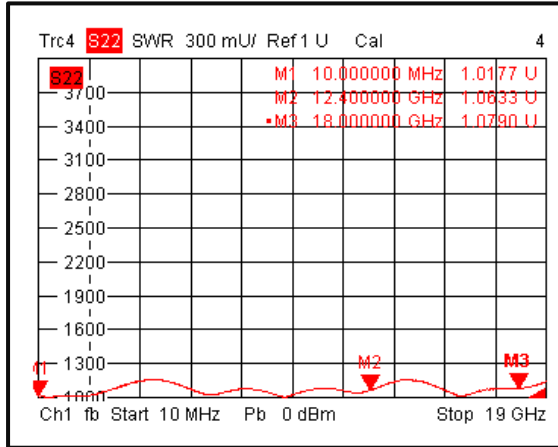


**Input VSWR @-40°C**

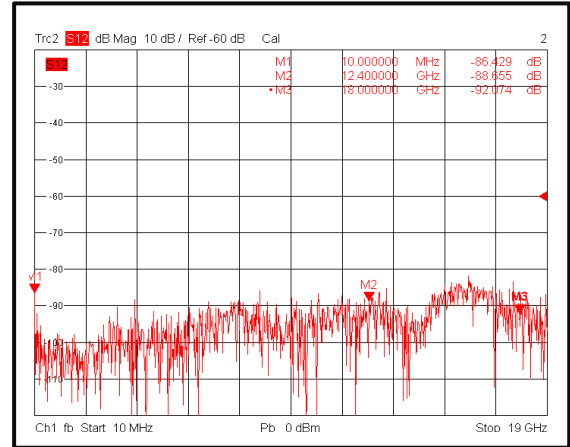


Typical Performance Plots

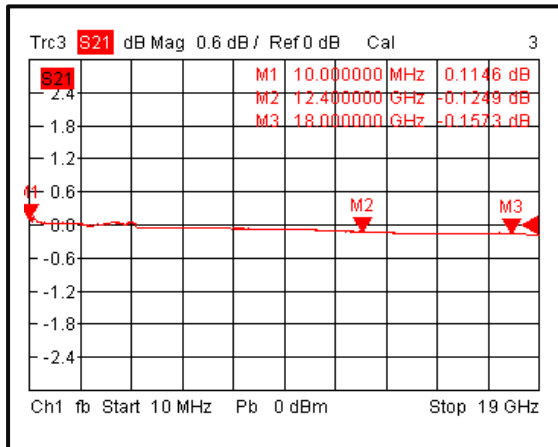
Output VSWR @-40°C



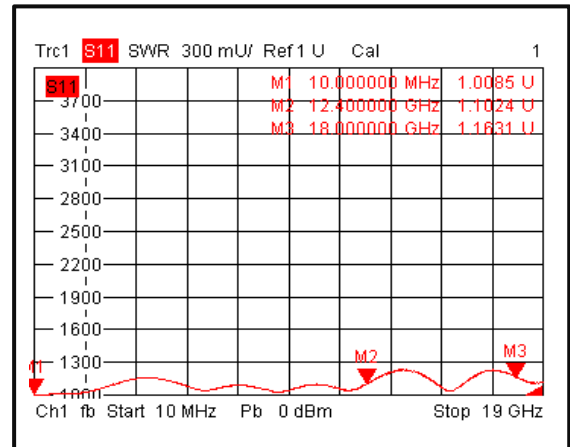
Isolation @-40°C



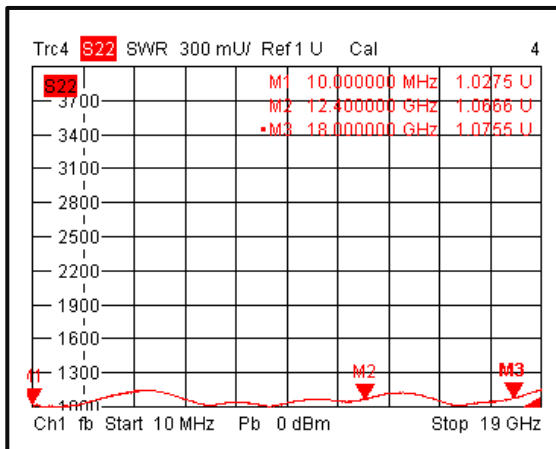
Insertion Loss @+85°C



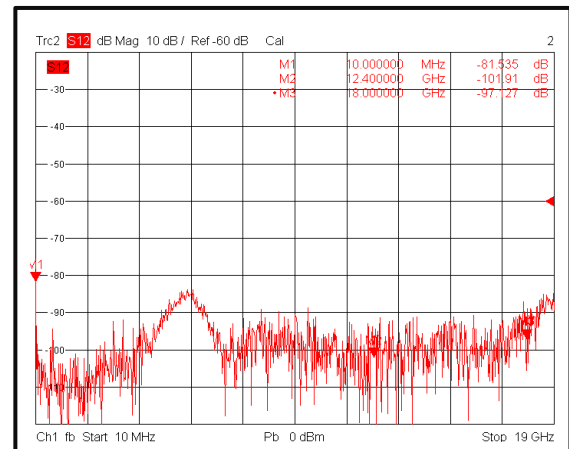
Input VSWR @+85°C



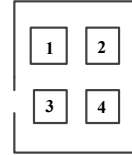
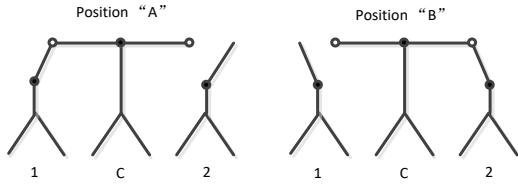
Output VSWR @+85°C



Isolation @+85°C



**Functional Diagram**



PIN 1 connect the ground, PIN 2 connect +24V/+12V/+5V, PIN3 and PIN4 are control PINS.

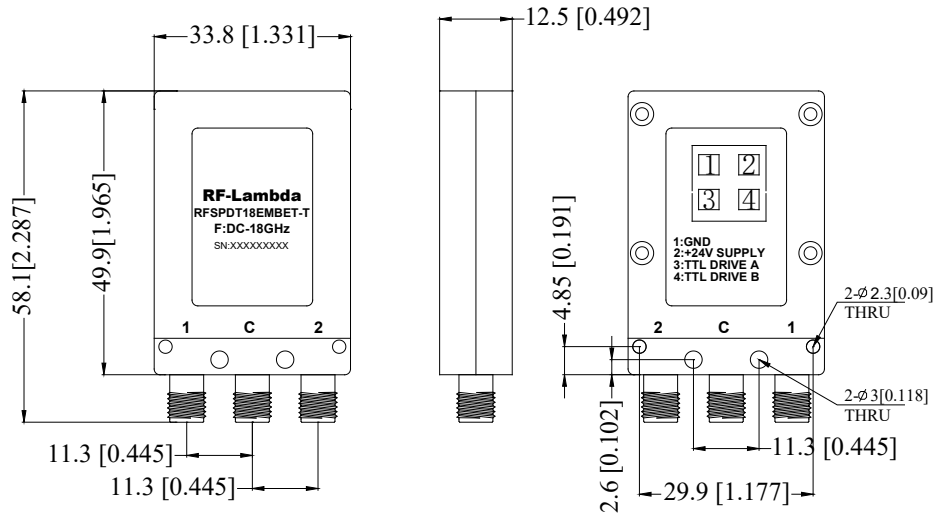
**Control Table**

TTL (3.3~5.5V)				Path
PIN1	PIN2	PIN3	PIN4	
GND	+24V/+12V/+5V	TTL	OPEN	PositionA (C ↔ 1)
GND	+24V/+12V/+5V	OPEN	TTL	PositionB (C ↔ 2)
GND	+24V/+12V/+5V	OPEN	OPEN	Keep the original path
GND	+24V/+12V/+5V	TTL	TTL	Forbidden

**Notes:**

1. When the power path of the switch is in the off state, the switch port is connected to the load sheet, so at this time the max input power of the port is 1W(CW).
2. The negative pole must always be connected to ground. if the negative pole is not connected to power supply ground, catastrophic failure will occur.
3. Before switching, microwave signal sources must be cut off.

**Outline Drawing**



**Notes:**

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



**Additional Information**

Documentation	Webpage
ESD Policy	<a href="https://rflambda.com/pdf/rflambda_esd_control.pdf">https://rflambda.com/pdf/rflambda_esd_control.pdf</a>
Connector Torque Specifications	<a href="https://www.rflambda.com/pdf/Torque_Specifications.pdf">https://www.rflambda.com/pdf/Torque_Specifications.pdf</a>
Random Vibration Test Standard	<a href="https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf">https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf</a>

**Ordering Information**

Part Number	Modification	Description
RFSPDT18EMBET-T	Connectors SMA-Female TTL	DC-18GHz SPDT Electromechanical Switch

**Important Notice**

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