

SPDT Absorptive Electro-Mechanical Switch DC-40GHz



Product Description

RFSPDT40EMC-T is a SPDT absorptive electro-mechanical switch with a frequency range of DC to 40GHz.

The maximum input power is 1W. The typical insertion loss is 0.8dB and the Isolation is 60dB with a switching 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

- SPDT configuration TTL Control
- Magnetic latching
- Operating life of 1 million cycles
- Guaranteed repeatability of 0.05dB up to 1 million cycles
- Excellent isolation, typically >70 dB to 20GHz
- 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=+25°C)

Parameter	Min	Typ	Max	Units
Frequency Range		DC – 40		GHz
Insertion Loss		@DC-10GHz	0.4	dB
		@10-20GHz	0.8	dB
		@20-40GHz	1.0	dB
VSWR		@DC-10GHz	1.3	:1
		@10-20GHz	1.5	:1
		@20-40GHz	1.8	:1
Isolation		@DC-10GHz	80	dB
		@10-20GHz	70	dB
		@20-40GHz	60	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		2.92mm-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	22– 28VDC

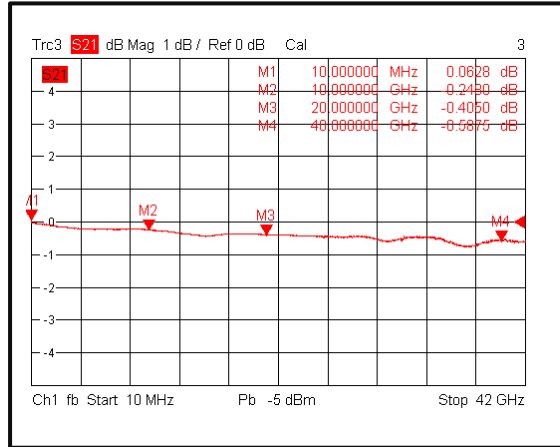
Environmental Specifications and Test Standards

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)

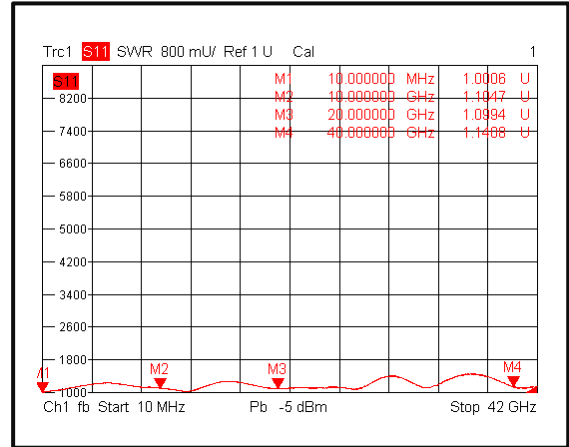
*For vibration testing details please see additional information section.

Typical Performance Plots

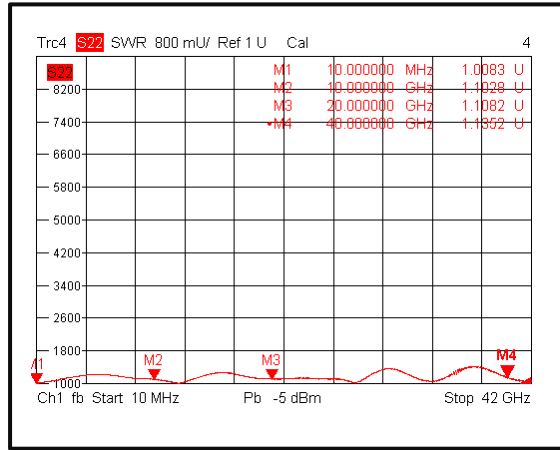
Insertion Loss @+25°C



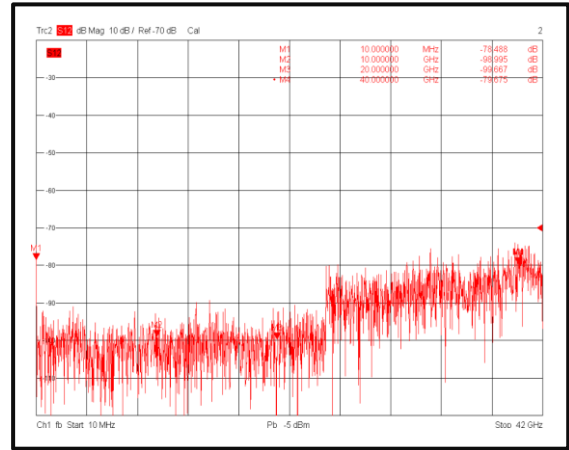
Input VSWR @+25°C



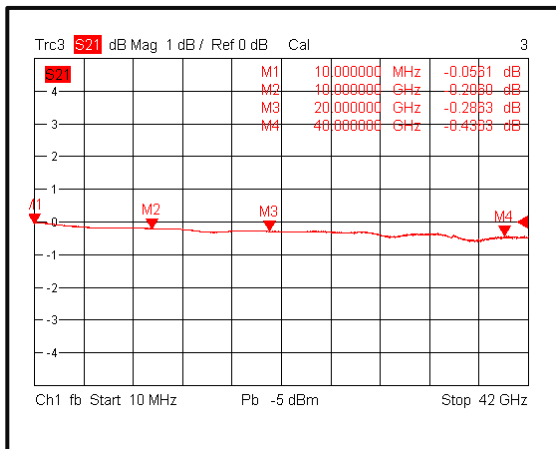
Output VSWR @+25°C



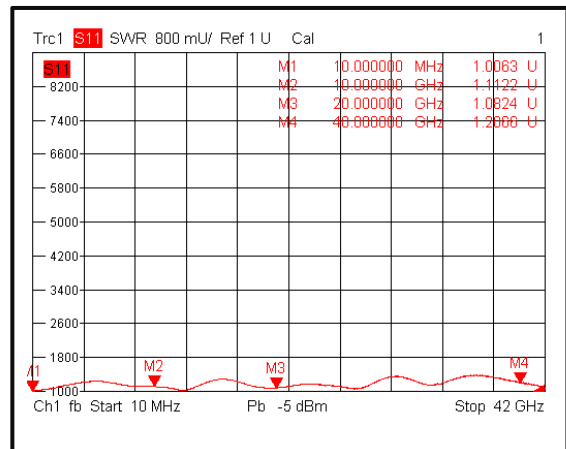
Isolation @+25°C



Insertion Loss @-25°C

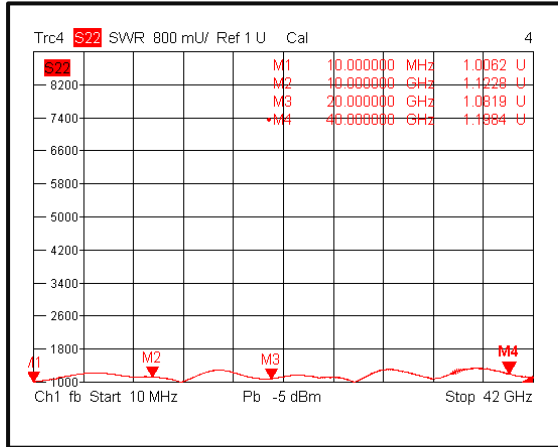


Input VSWR @-25°C

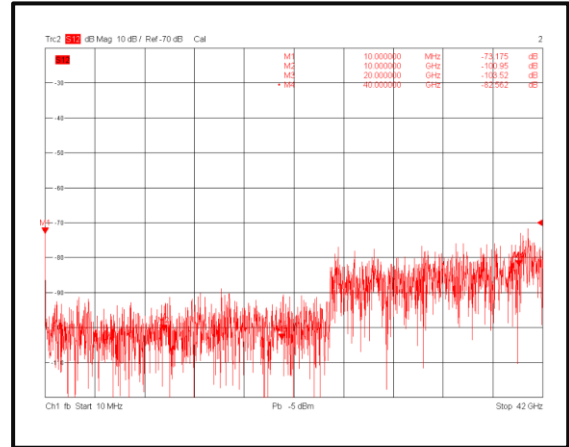


Typical Performance Plots

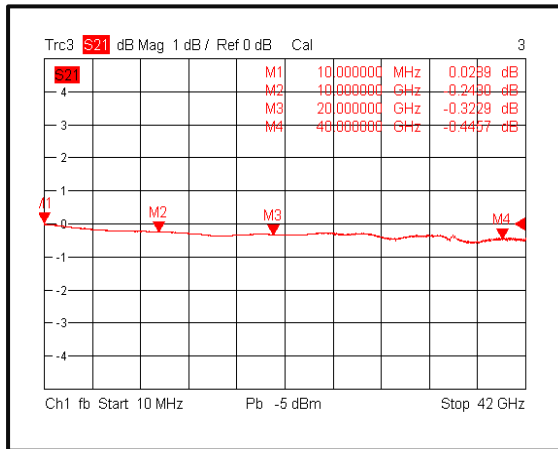
Output VSWR @-25°C



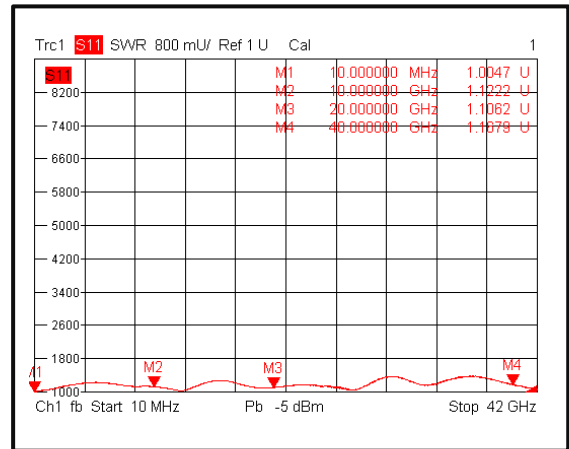
Isolation @-25°C



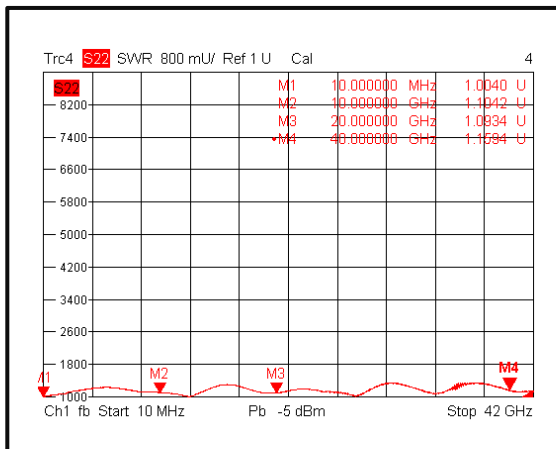
Insertion Loss @+70°C



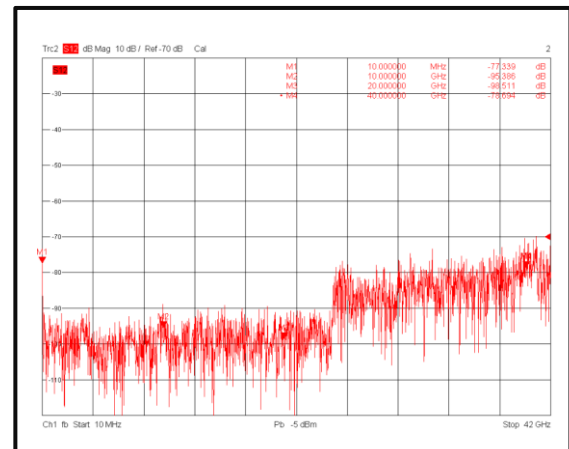
Input VSWR @+70°C



Output VSWR @+70°C

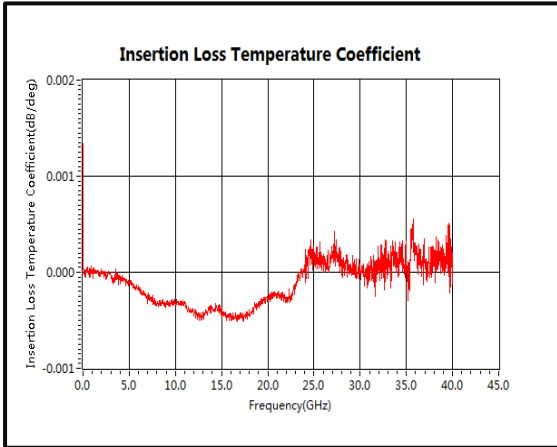


Isolation @+70°C

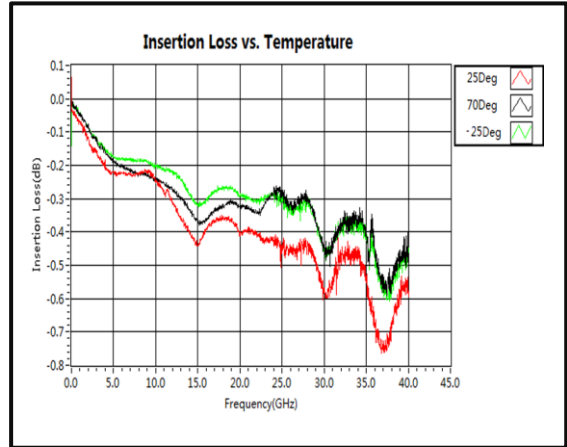


Typical Performance Plots

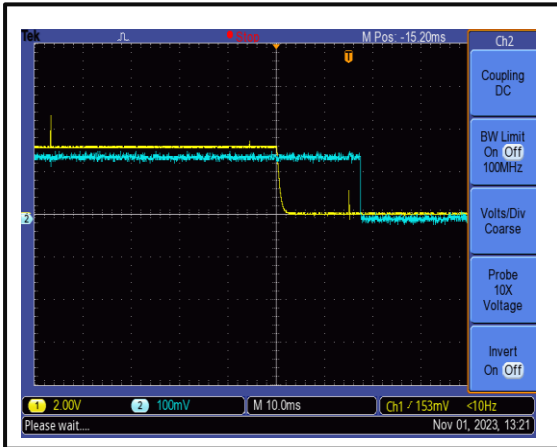
Insertion Loss Temperature Coefficient



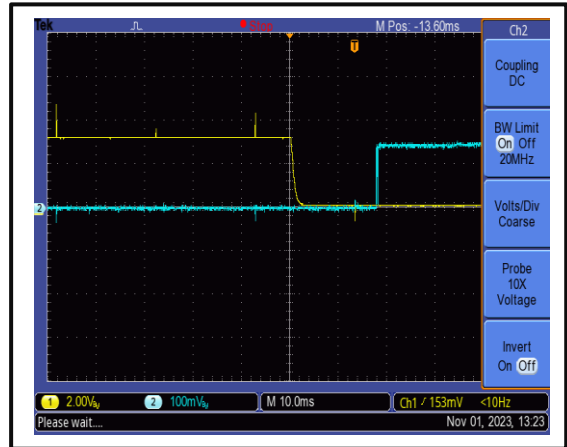
Insertion Loss vs. Temperature



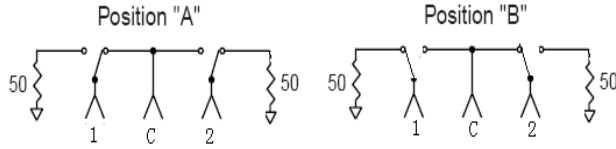
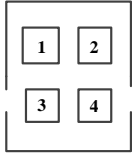
Switching Speed



Switching Speed



TTL Control Type Functional Diagram



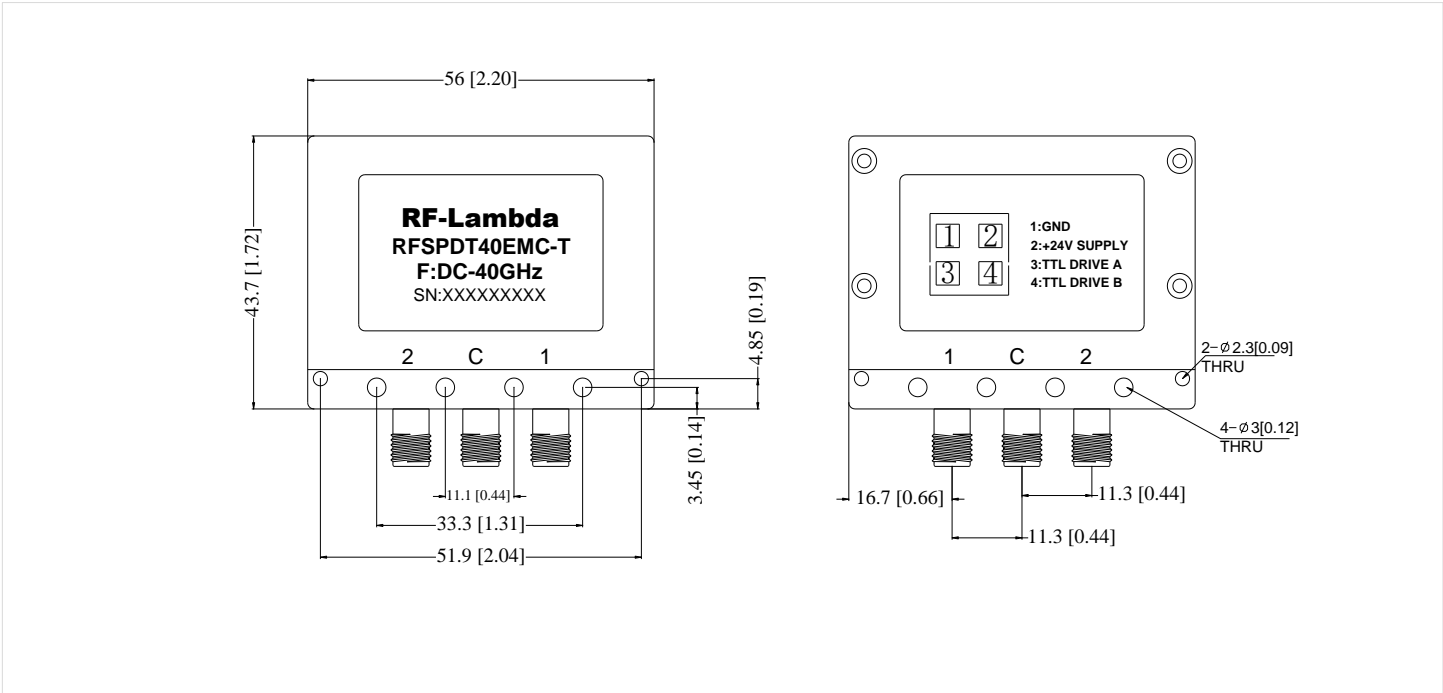
PIN 1 connect the ground, PIN 2 connect +24V, PIN3 and PIN4 are control PINS.

	PIN1	PIN2	PIN3	PIN4
Position A	GND	+24V	Open	TTL
Position B	GND	+24V	TTL	Open

Notes:

- 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).
- The negative pole must always be connected to ground. if the negative pole is not connected to power supply ground, catastrophic failure will occur.
- Before switching, microwave signal sources must be cut off.

Outline Drawing



Notes:

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



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
RFSPDT40EMC-T	Connectors 2.92mm-Female TTL Control	DC-40GHz SPDT Electromechanical Switch

Important Notice

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