

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 30W. 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	@DC-10GHz			30	W
	@10-20GHz			12	W
	@20-40GHz			5	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

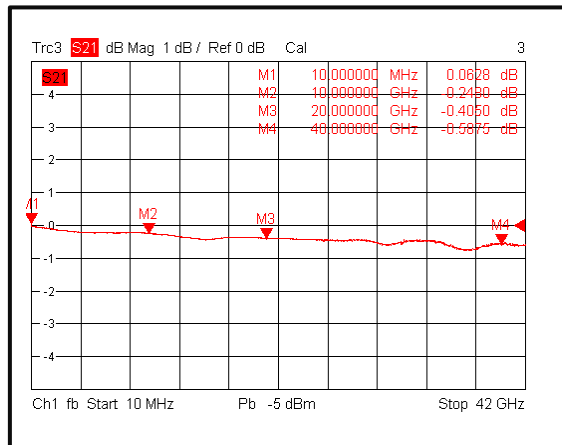
Environmental Specifications and Test Standards

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)

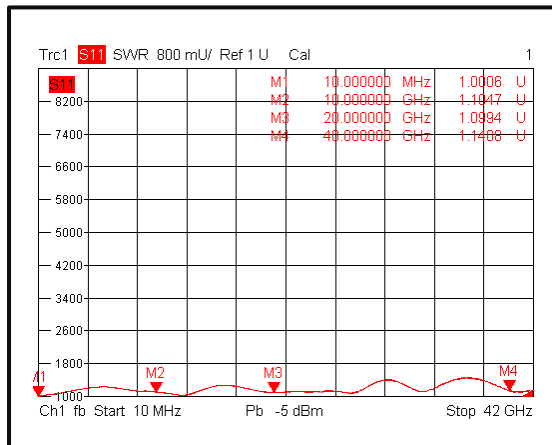
*For vibration testing details please see additional information section.

Typical Performance Plots

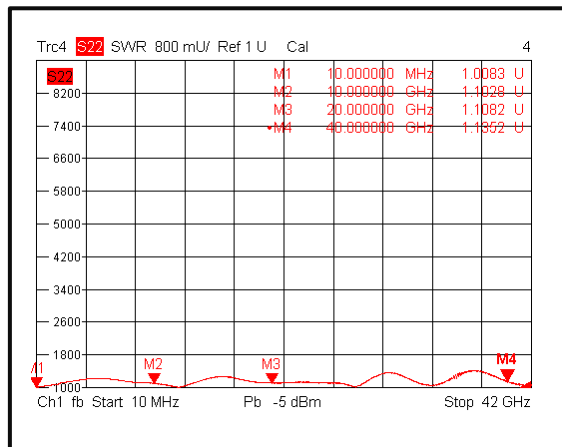
Insertion Loss@+25°C



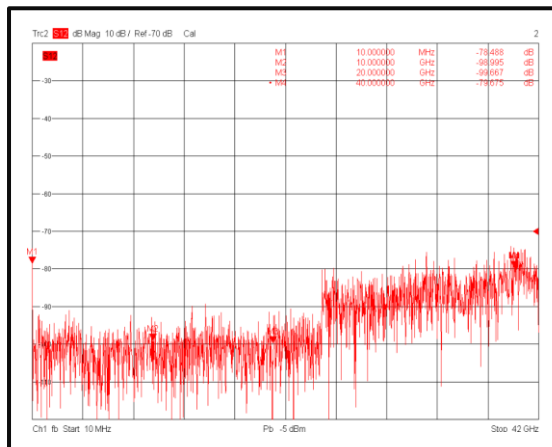
Input VSWR@+25°C



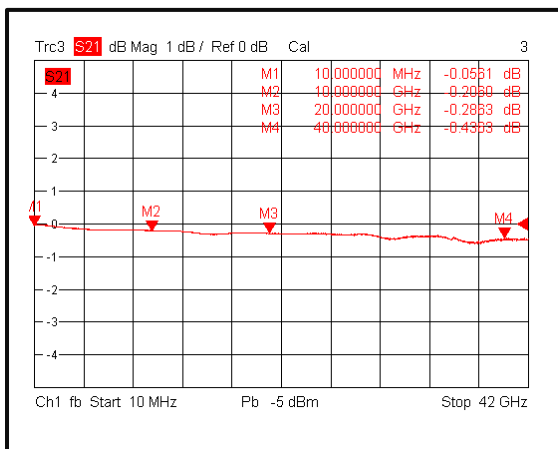
Output VSWR@+25°C



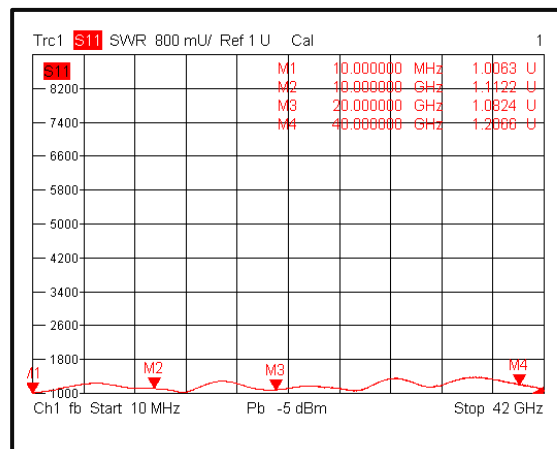
Isolation@+25°C



Insertion Loss @-25°C

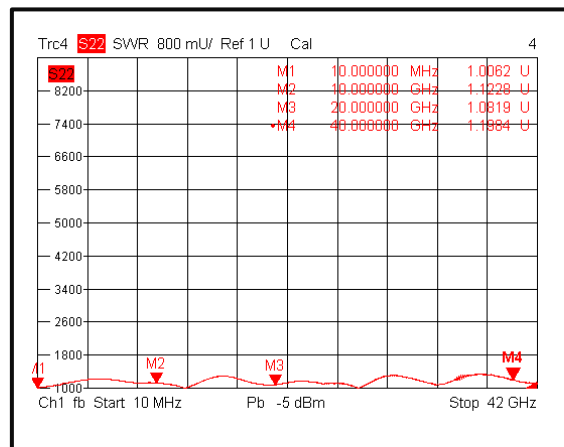


Input VSWR @-25°C

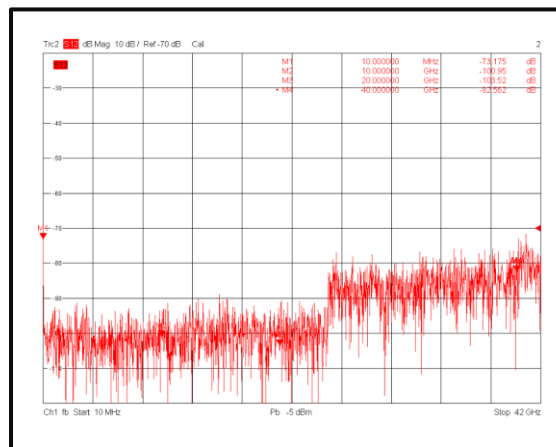


Typical Performance Plots

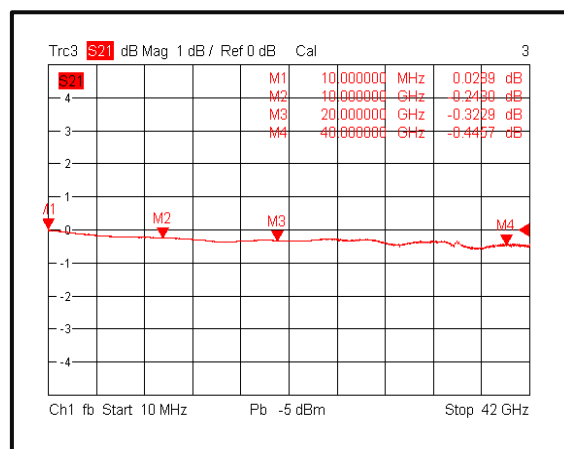
Output VSWR @-25°C



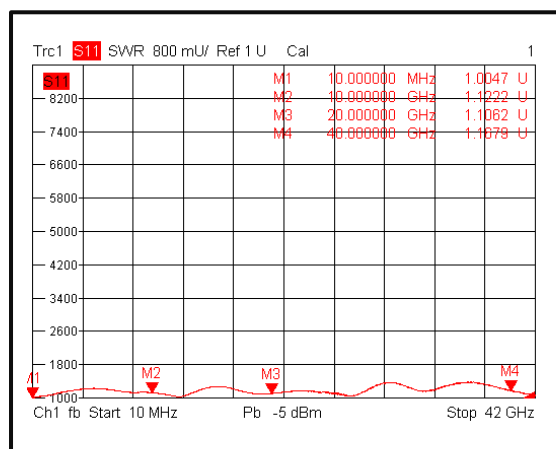
Isolation @-25°C



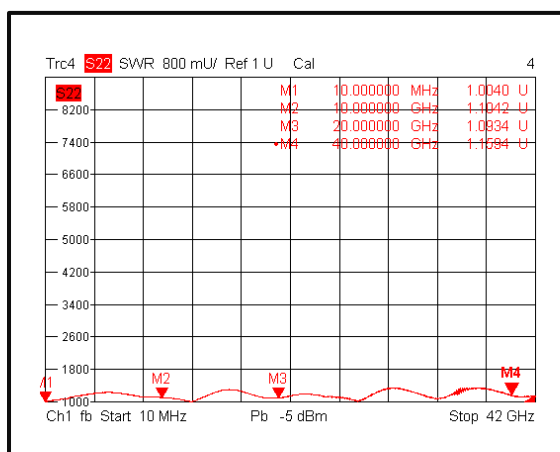
Insertion Loss @+70°C



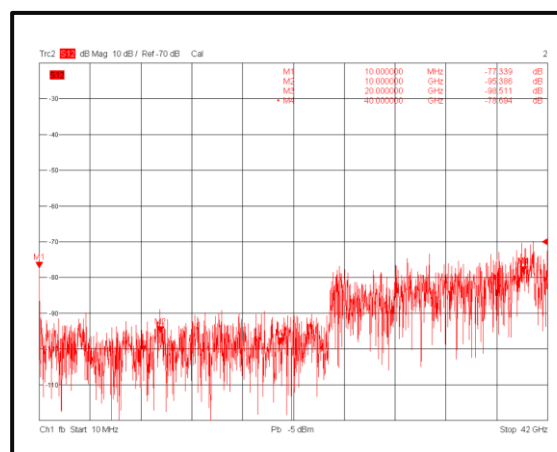
Input VSWR @+70°C



Output VSWR @+70°C

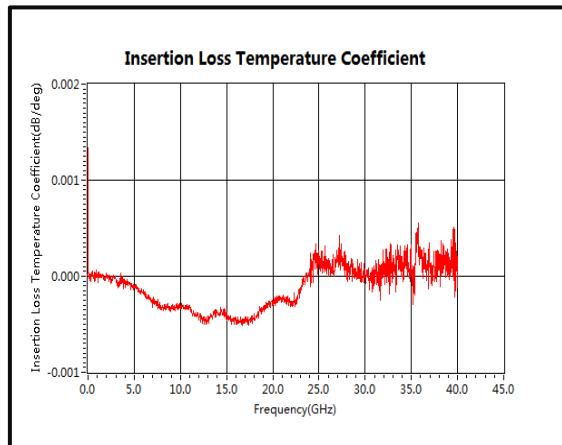


Isolation @+70°C

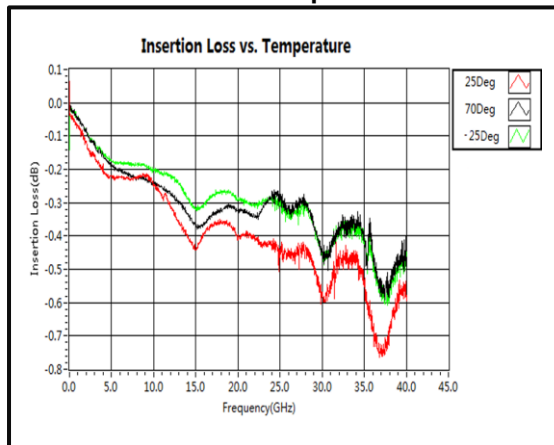


Typical Performance Plots

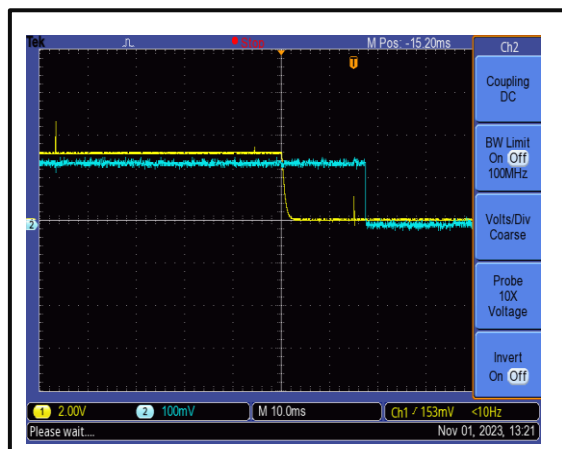
Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



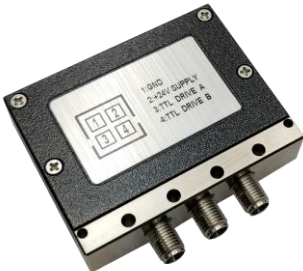
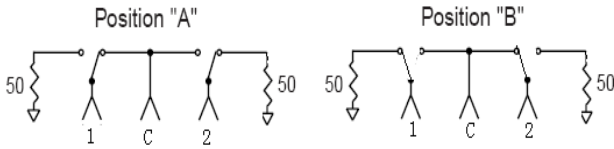
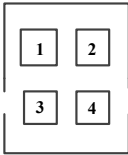
Switching Speed



Switching Speed



TTL Control Type Functional Diagram



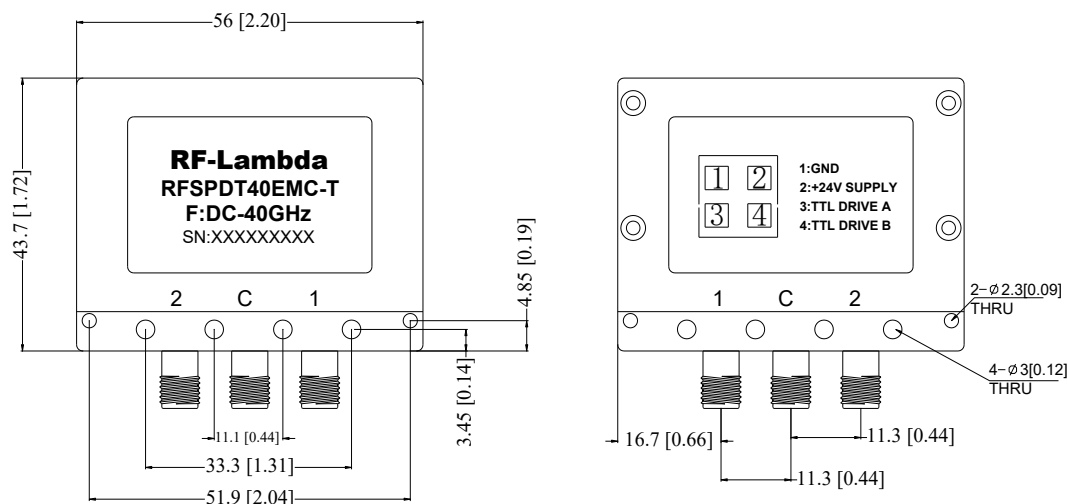
PIN 1 connect the ground, PIN 2 connect +24V, PIN3 and PIN4 are control PINS.

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

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:

- Package Material: Aluminum
- Finish: Black Paint
- All dimensions are in millimeters [inches].
- Tolerances ± 0.5 [0.02] unless otherwise specified.



Additional Information

Documentation

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

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