

DPDT Electro-Mechanical Switch DC-50GHz



Product Description

RFD PDT50EMA is a DPDT electro-mechanical switch with a frequency range of DC to 50GHz.

The power handling of this switch is 1W Max. The typical insertion loss is 1.2dB and the isolation is 50dB with the speed of 20ms.

This electromechanical switch works with a +24 VDC power supply.

The working temperature of this product is between - 25°C and + 70°C

Features

- DPDT 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
- Terminated ports
- TTL and 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	@DC-4GHz		0.3	0.3	dB
	@4-20GHz		0.5	0.8	dB
	@20-40GHz		0.8	1.0	dB
	@40-50GHz		1.2	1.5	dB
VSWR	@DC-4GHz			1.2	:1
	@4-20GHz			1.5	:1
	@20-50GHz			2.0	:1
Isolation	@DC-50GHz	50			dB
Avg. Power (hot switching)				1	W
Switching Speed				20	ms
Life Cycles		1			Million
Repeatability				0.05	dB
Supply Current (VCC=+24VDC)			0.2		A
Weight			0.27 Max.		lbs.
Impedance			50		Ohms
Connector			2.4mm-Female		
Actuator Type			Latching		
Contact			Break Before Make		
Control			TTL & Ground		
Package		Epoxy Sealed (Standard)			
		Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	22 – 28VDC

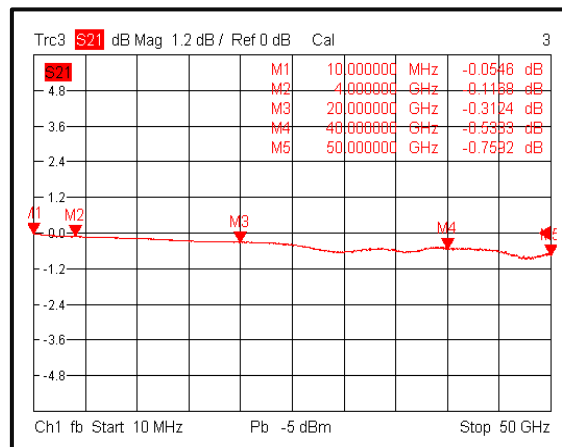
Environmental Specifications and Test Standards

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)

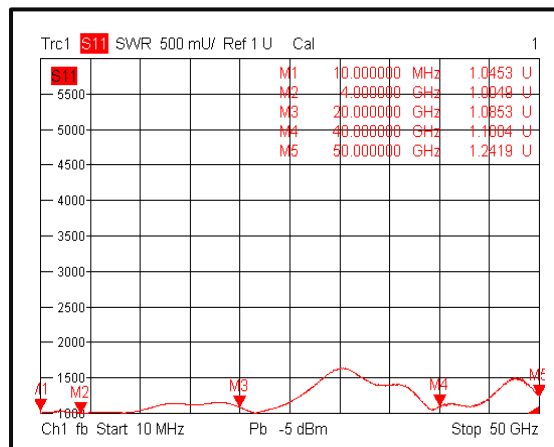
*For vibration testing details please see additional information section.

Typical Performance Plots

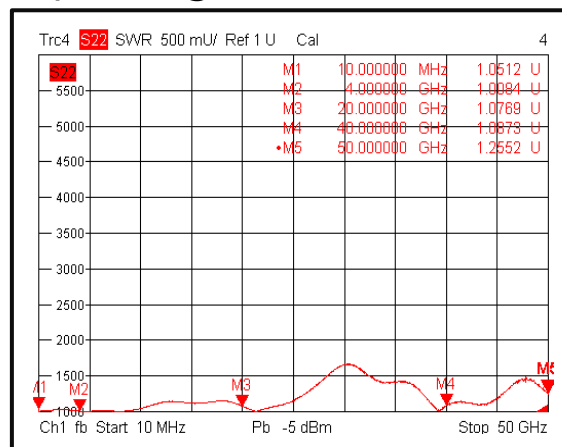
Insertion Loss@+25°C



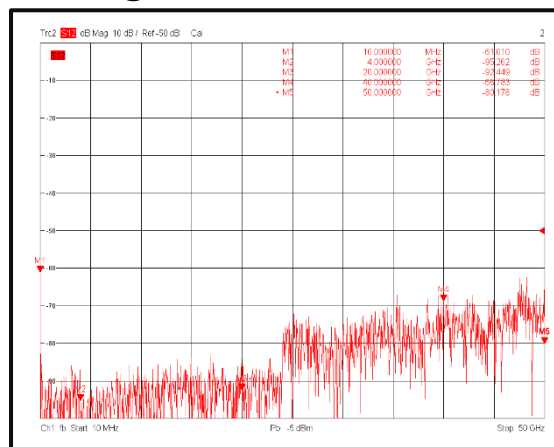
Input VSWR@+25°C



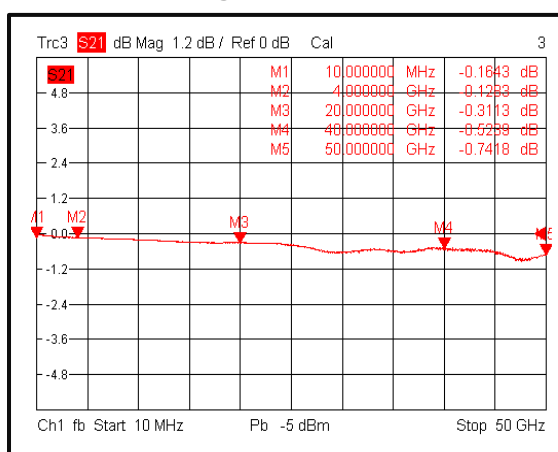
Output VSWR@+25°C



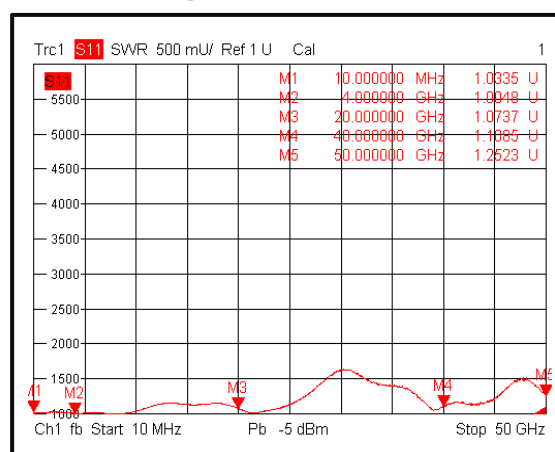
Isolation@+25°C



Insertion Loss @-25°C

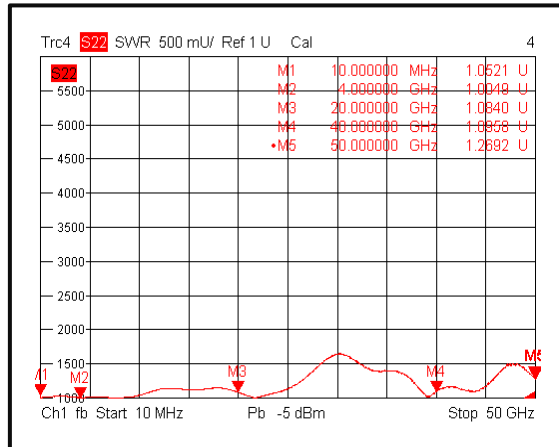


Input VSWR @-25°C

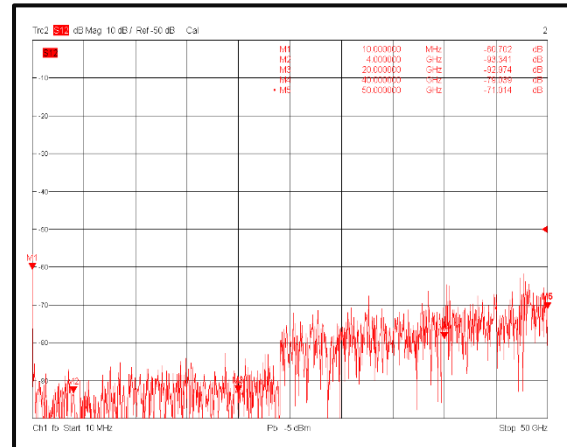


Typical Performance Plots

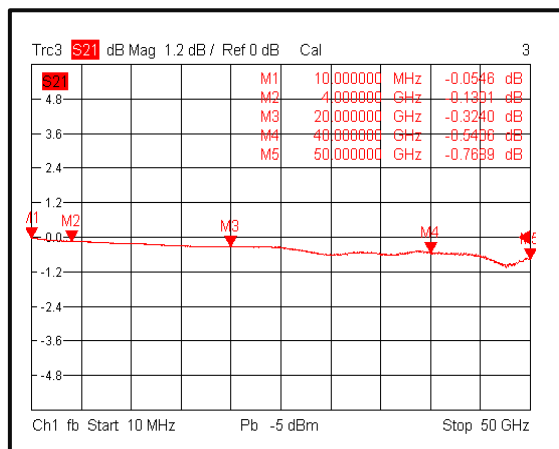
Output VSWR @-25°C



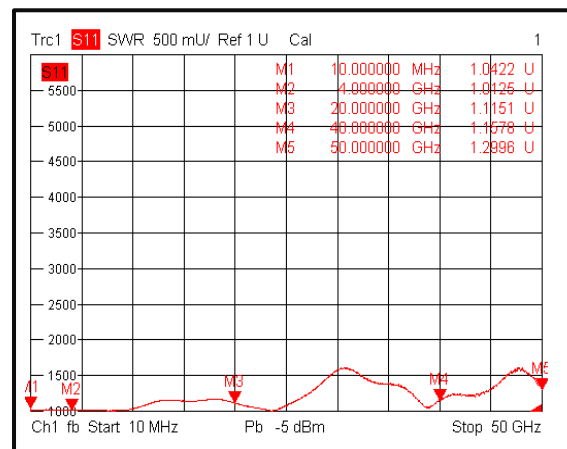
Isolation @-25°C



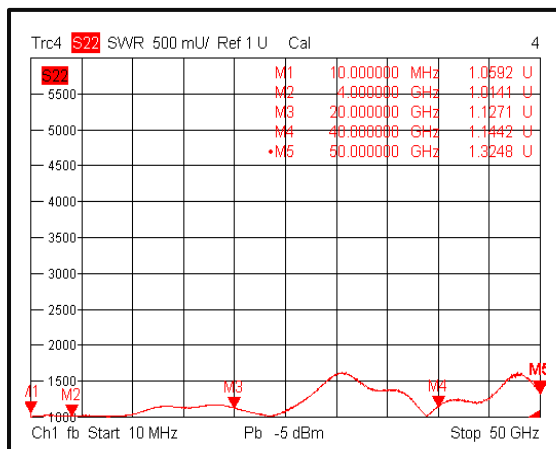
Insertion Loss @+70°C



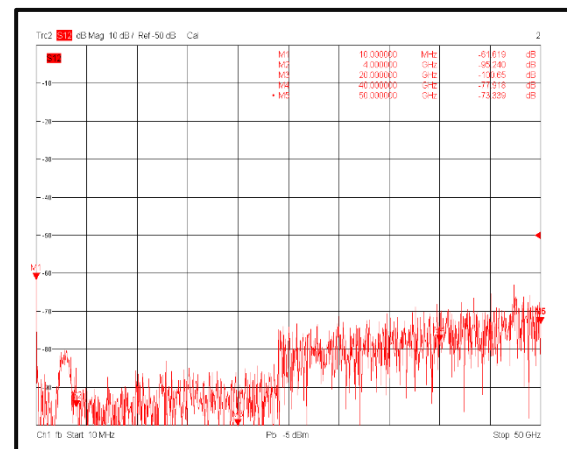
Input VSWR @+70°C



Output VSWR @+70°C

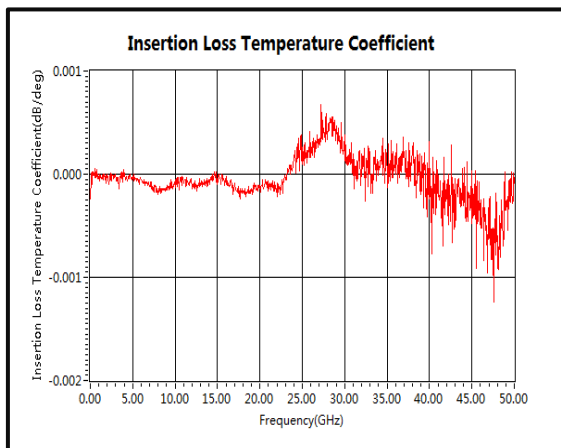


Isolation @+70°C

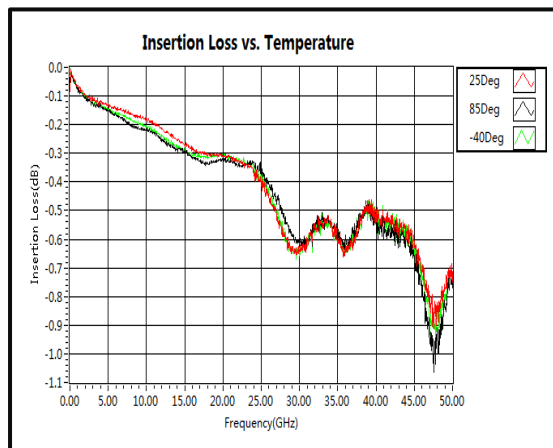


Typical Performance Plots

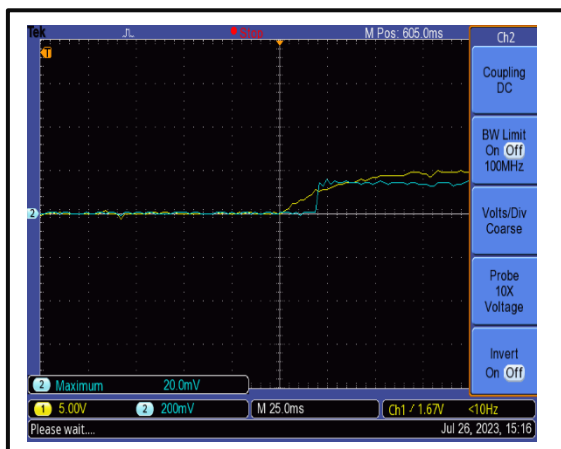
Insertion Loss Temperature Coefficient



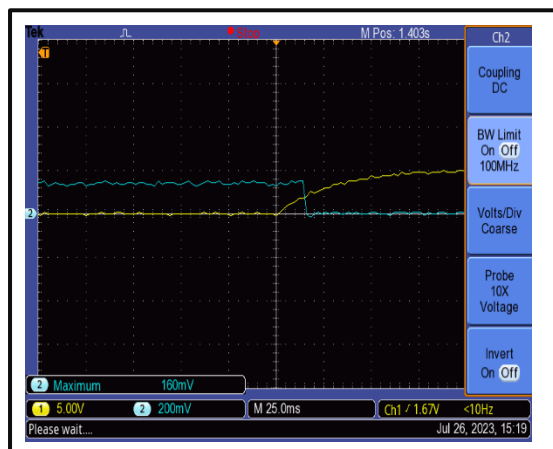
Insertion Loss vs. Temperature



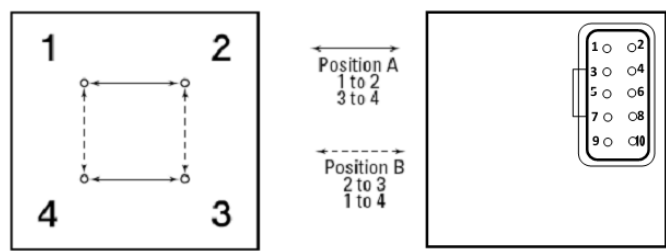
Switching Speed



Switching Speed



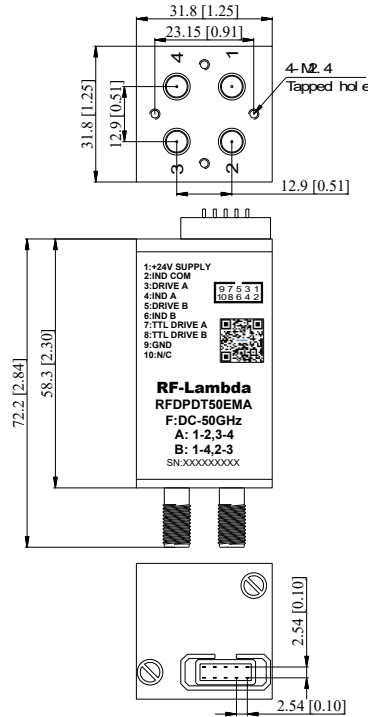
working State and Control Connector



Switch State	Pin 1	Pin 9	Standard Drive		TTL Drive	
			Pin 3	Pin 5	Pin 7	Pin 8
State A (1 to 2 : 3 to 4)	22-28V	GND	GND	Open	High (5V)	Low
State B (1 to 4 : 2 to 3)			Open	GND	Low	High (5V)

Note: Part supports both TTL and Standard Drive Configurations however only one can be used at a time.

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
RFSP6T50EMA-T	connectors 2.4mm-Female	DC-50GHz DPDT Electromechanical Switch

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