

Reflective Coaxial SP2T Switch 20MHz-500MHz



Product Description

RFSP2TR0005M is a reflective coaxial single pole double throw switch with a frequency range of 20 to 500MHz.

The maximum power input of this switch is 50dBm. The insertion loss is 0.8dB with a typical isolation of 60dB.

The product features of fast switching speed, low insertion loss and high isolation.

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

Features

- TTL compatible driver included
- Fast Switching Speed
- High Power Cold Switching
- Insertion Loss 0.8dB
- Isolation 60dB Typical
- 50 Ohm Matched

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(TA = +25°C), Vdd = +5V/-28V, TTL = 0 / +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		20 – 25			25 - 500		MHz
Insertion Loss		0.8	1.2		0.55	0.8	dB
Insertion Loss Temperature Coefficient		0.003			0.003		dB/ °C
Isolation	55	60		60	65		dB
Input VSWR		1.5	1.8		1.4	1.5	: 1
Output VSWR		1.5	1.8		1.4	1.5	: 1
RF Input Power (CW)			100			100	W
DC Power Dissipation		1.3			1.3		W
0.1dB Compression Point (P0.1dB)		50			50		dBm
IIP3		55			55		dBm
Switching Speed		2.5	3		2.5	3	us
Bias Current (+5V/-28V)			250/50				mA
Weight	Switch		0.095 Max.				lbs
	Including Heat sink		0.28 Max.				lbs
Impedance			50				Ω
Input / Output Connectors			SMA-Female(Input) – SMA-Female(Output)				
Package			Epoxy Sealed (Standard)				
			Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Biasing	+5V±10%/-28V±10%

Notes:

- TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.
- If the device operates in high power state, case temperature must be lower than 60°C.
- Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could be damaged.

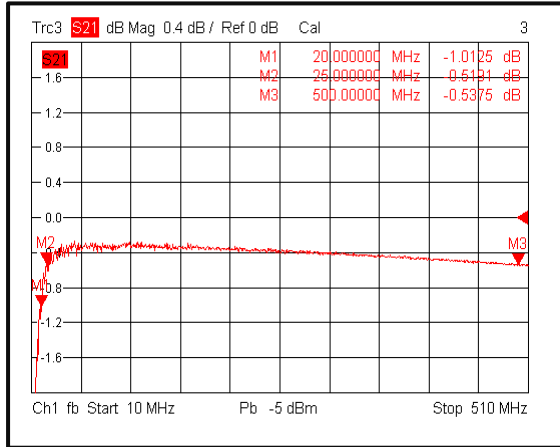
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C to +85°C (Case Temperature)
Storage Temperature	-50°C to +105°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)

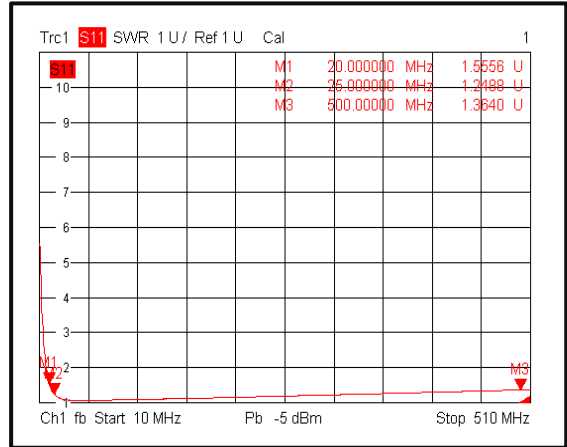
** For vibration testing details please see additional information section.

Typical Performance Plots

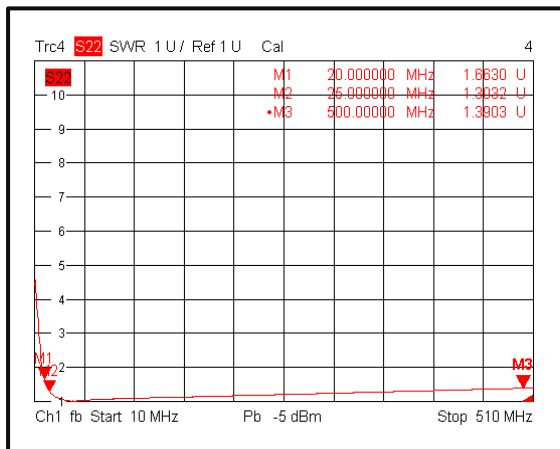
Insertion Loss @+25°C



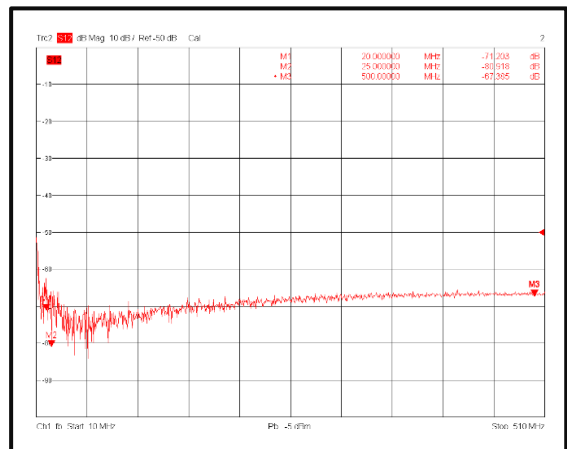
Input VSWR @+25°C



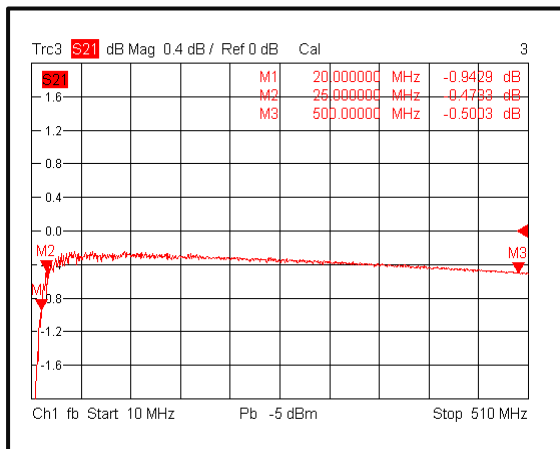
Output VSWR @+25°C



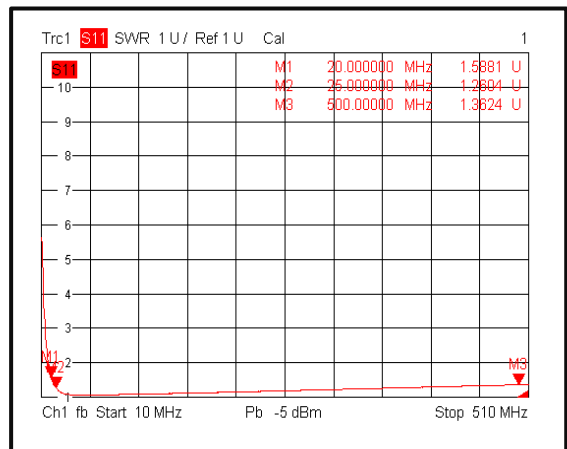
Isolation @+25°C



Insertion Loss @-40°C

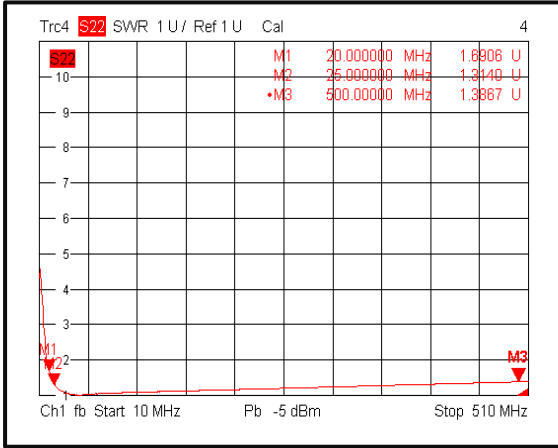


Input VSWR @-40°C

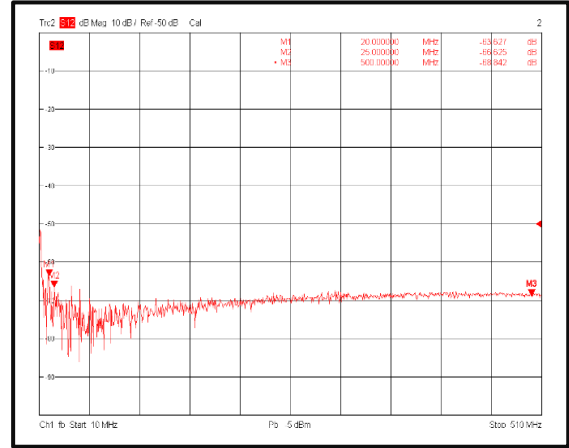


Typical Performance Plots

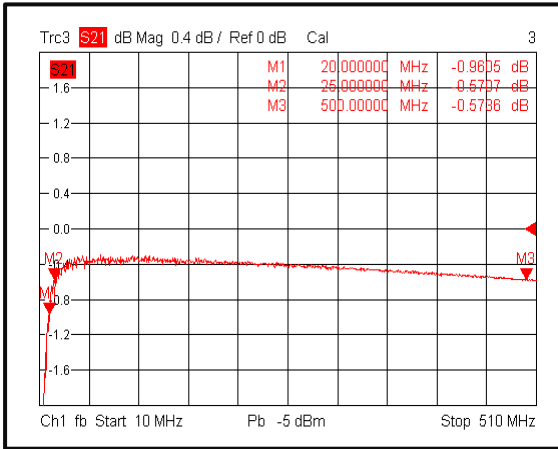
Output VSWR @-40°C



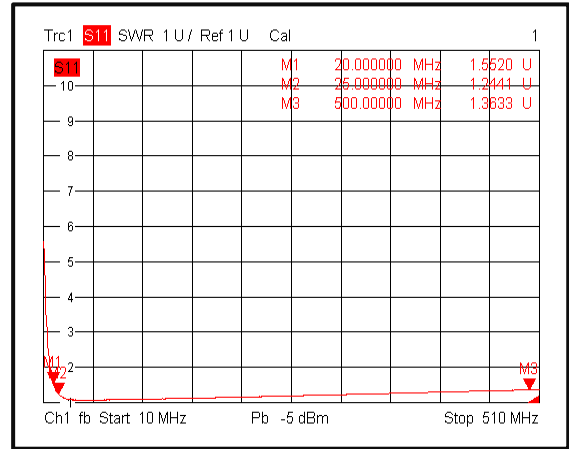
Isolation @-40°C



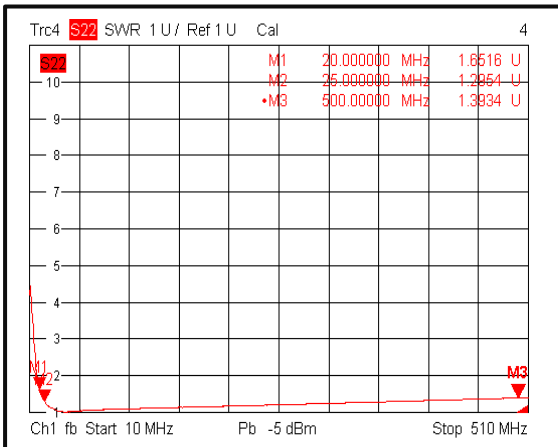
Insertion Loss @+85°C



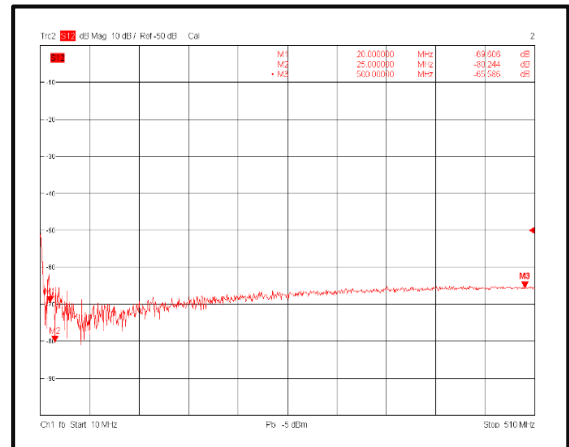
Input VSWR @+85°C



Output VSWR @+85°C

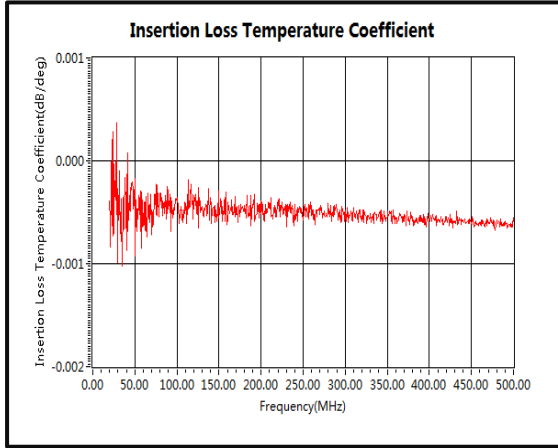


Isolation @+85°C

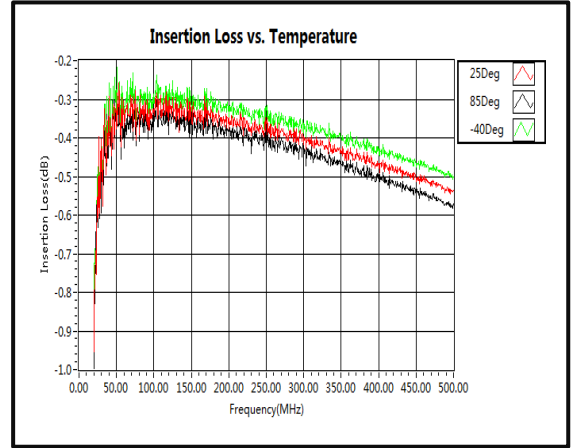


Typical Performance Plots

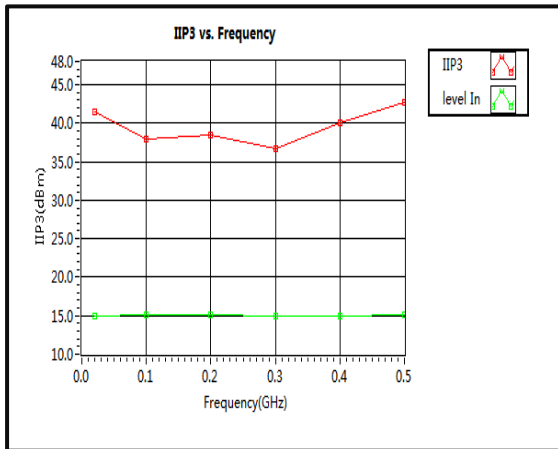
Insertion Loss Temperature Coefficient



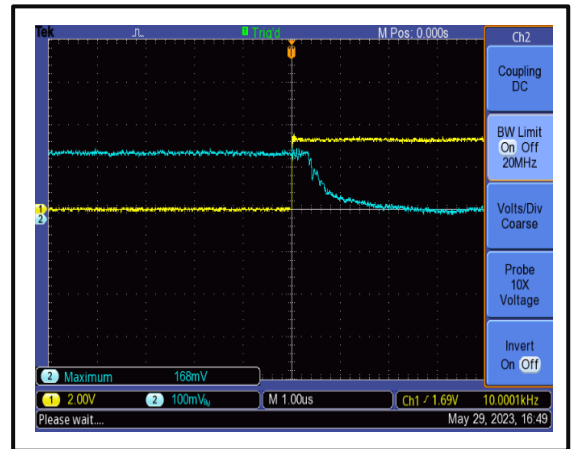
Insertion Loss vs. Temperature



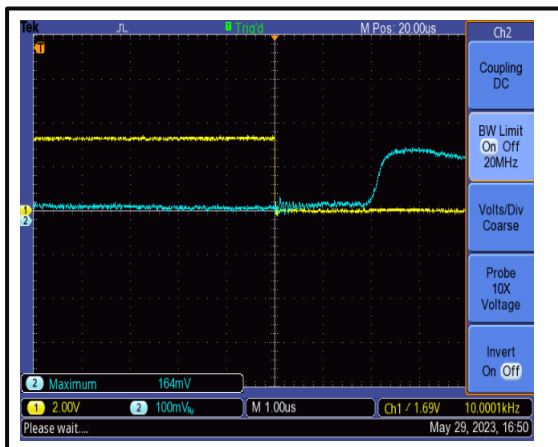
IIP3



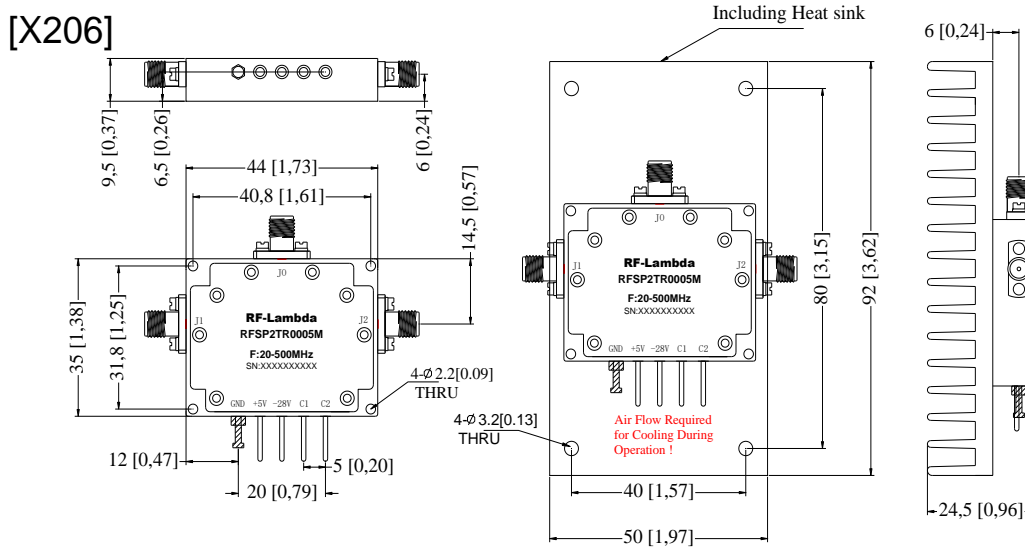
Switching Speed



Switching Speed



Outline Drawing

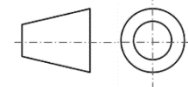


Truth Table

TTL Control Voltage THRESHOLD	Low(0)=0~0.8V High(1)=2.8~5V
Control Input TTL	Signal Path State
C2 C1	
0 0	OFF
0 1	J0-J1
1 0	J0-J2
1 1	Not Used
Control Pin Customization available upon request	

Notes:

1. Package Material: Copper
2. Finish: Gold Plated
3. All dimensions are in millimeters [inches].
4. Housing Tolerances ± 0.1 [0.004] unless otherwise specified.
5. Heatsink Required - Mandatory for High Power Operation .Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation	Webpage
ESD Policy	https://rflambda.com/pdf/rflambda_esd_control.pdf
Heatsink Lookup Specifications	https://rflambda.com/search_heatsink.jsp
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
RFSP2TR0005M	Standard	20MHz-500MHz SP2T PIN Diode Switch

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