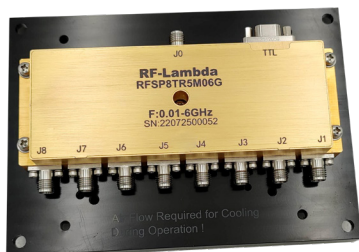


## Reflective Coaxial SP8T Switch 0.01GHz-6GHz



### Product Description

RFSP8TR5M06G is a reflective coaxial single pole eight throw switch with a frequency range of 0.01 to 6GHz.

The power input of this switch is 50dBm Max. The insertion loss is 2.8dB with a typical isolation of 45dB.

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 2.8dB
- Isolation 45dB
- 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 = +12V, TTL = 0 / +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Units	
Frequency Range		0.01 - 3			3 - 6		GHz	
Insertion Loss		2.8	3.8		3.8	4.5	dB	
Insertion Loss Temperature Coefficient		0.003			0.003		dB/ °C	
Isolation	40	45		35	40		dB	
Input VSWR		1.5	2.0		1.5	1.8	: 1	
Output VSWR		1.5	2.0		1.5	1.8	: 1	
*RF Input Power (CW) (50Ω, T = 25°C)			47			47	dBm	
*RF Input Power (pulsed, 10% Duty Cycle, 20us pulse width)			50			50	dBm	
DC Power Dissipation		8.5			8.5		W	
0.1dB Compression Point (P0.1dB)		50			50		dBm	
IIP3		50			50		dBm	
Switching Speed			250 Typ.				ns	
Bias Current (+12V)			130 Typ. 200 Max.				mA	
Weight	Net		0.97 Max.				lbs	
	Including Heat Sink		1.48 Max.					
Impedance			50				Ω	
Input / Output Connectors			SMA-Female(Input) – SMA-Female(Output)					
Package			Epoxy Sealed (Standard)					
			Hermetically Sealed (Optional)					

\* When the working frequency is lower than 100MHz, the power needs to be derated linearly to 1W from 100MHz to 10MHz.

**Absolute Maximum Ratings**

Parameter	Rating
Biasing	+12V ± 10%

Notes:

1. TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged .
2. If the device operates in high power state, recommend keeping case temperature lower than 60°C.
3. Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could be damaged.
4. DC blocks required . Input and output ports must not be connected to DC ground or any DC voltage or the switch will be damaged.

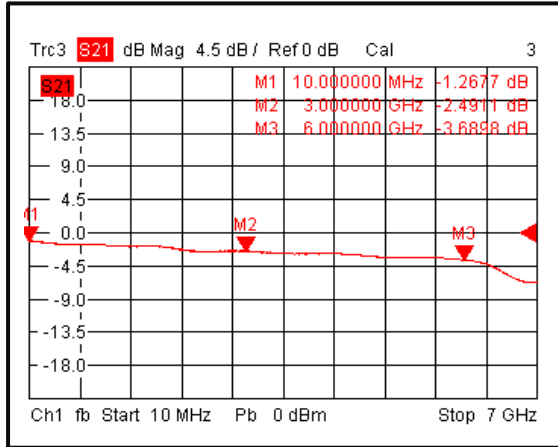
**Environmental Specifications and Test Standards**

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)

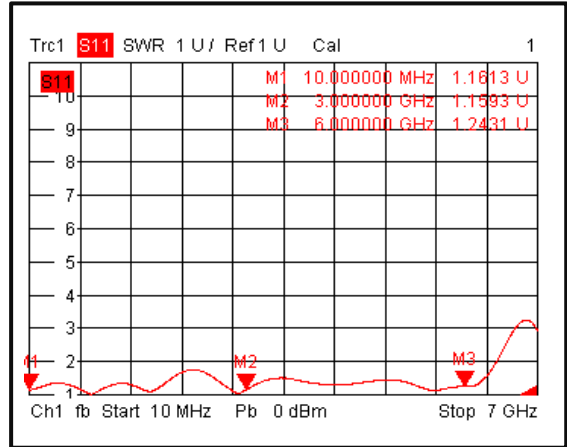
\*For vibration testing details please see additional information section.

Typical Performance Plots

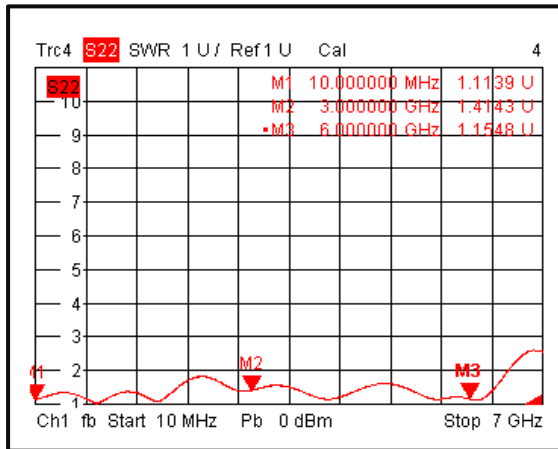
Insertion Loss @+25°C



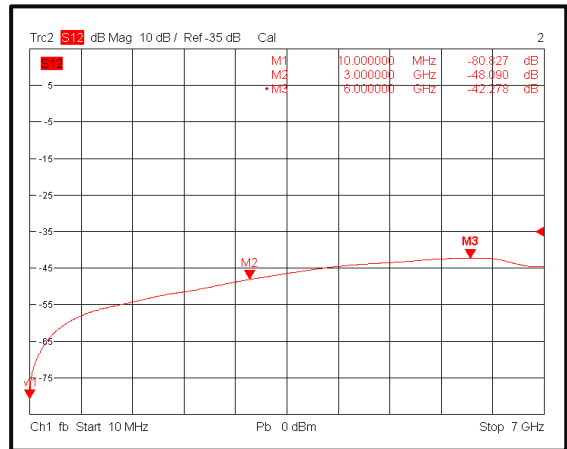
Input VSWR @+25°C



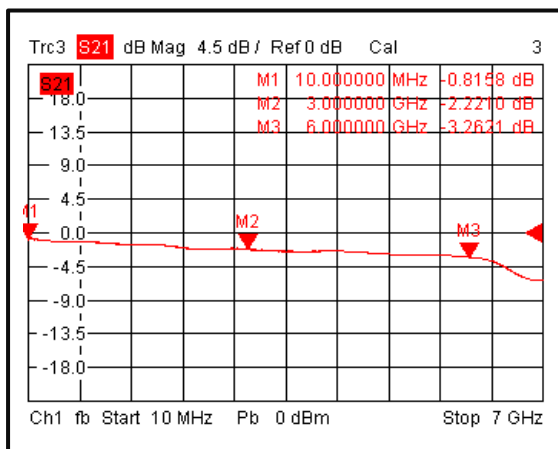
Output VSWR @+25°C



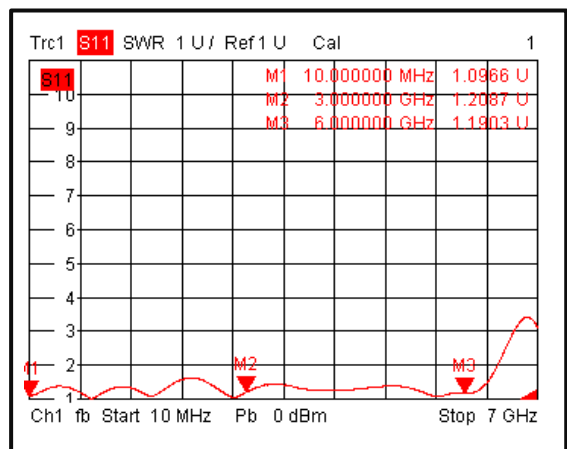
Isolation @+25°C



Insertion Loss @-40°C

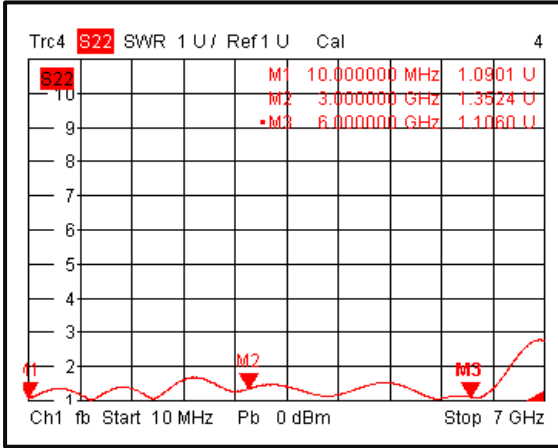


Input VSWR @-40°C

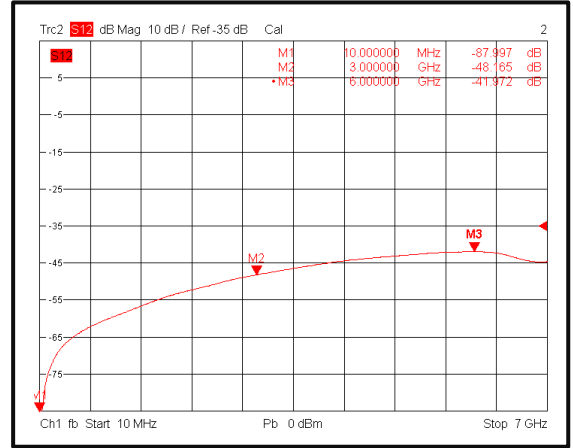


**Typical Performance Plots**

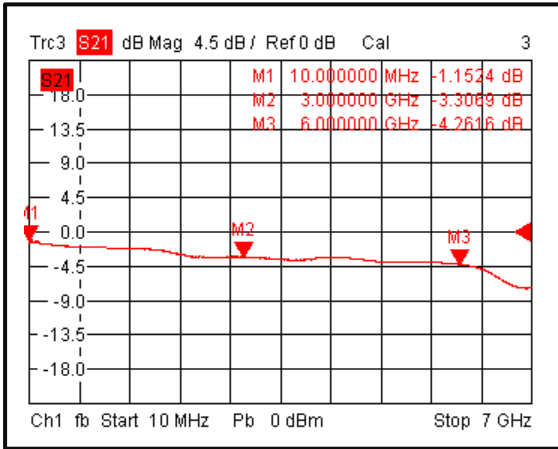
**Output VSWR @-40°C**



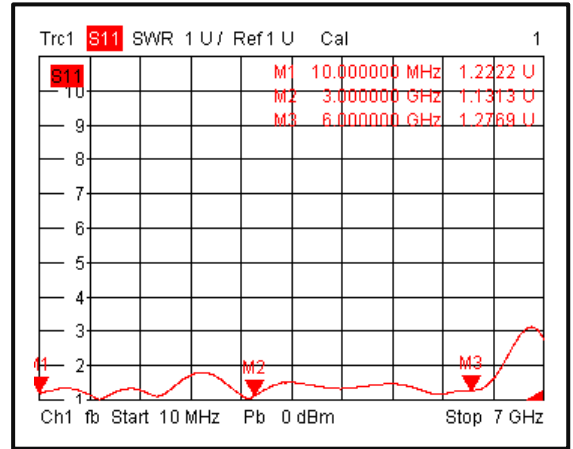
**Isolation @-40°C**



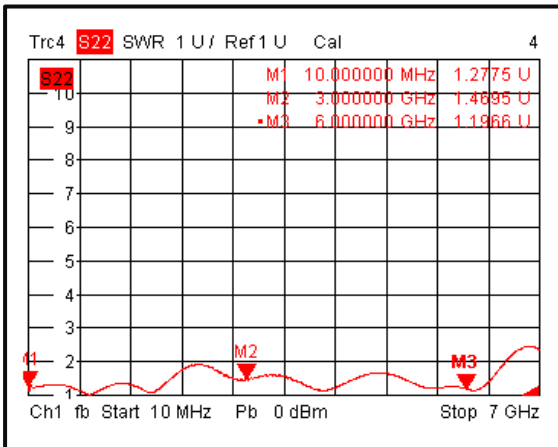
**Insertion Loss @+85°C**



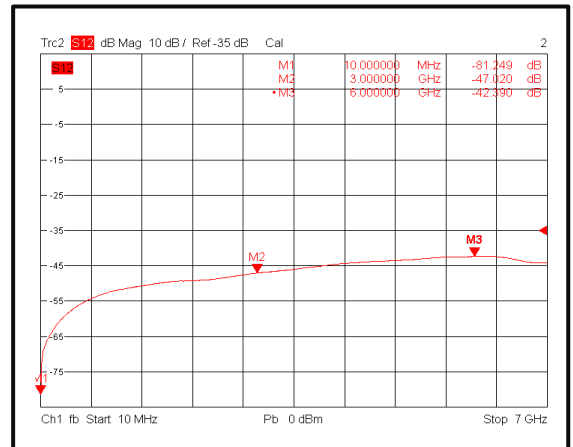
**Input VSWR @+85°C**



**Output VSWR @+85°C**

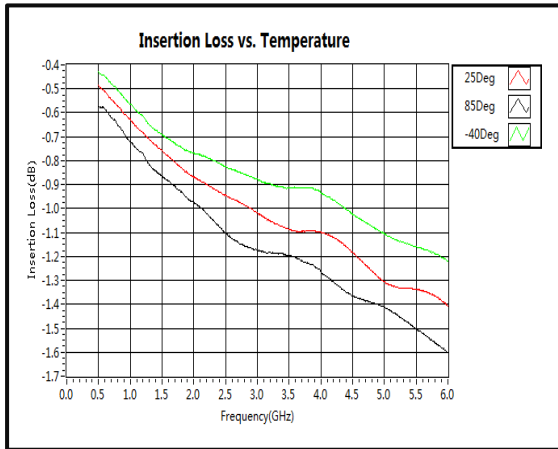


**Isolation @+85°C**

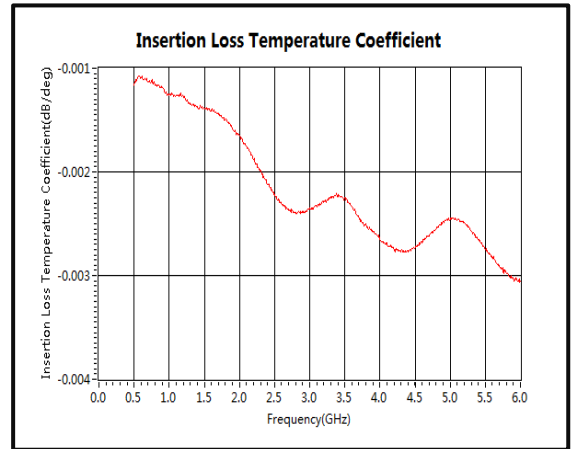


Typical Performance Plots

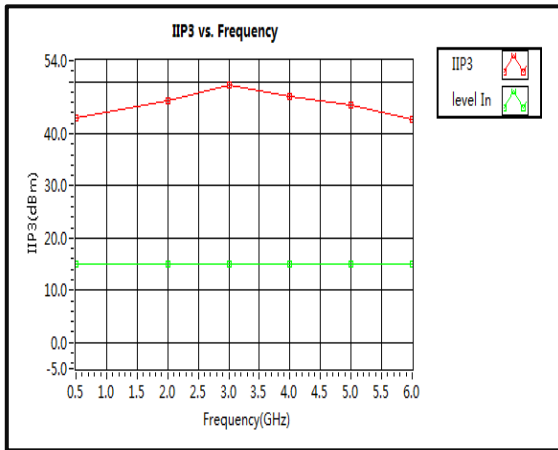
Insertion Loss Temperature Coefficient



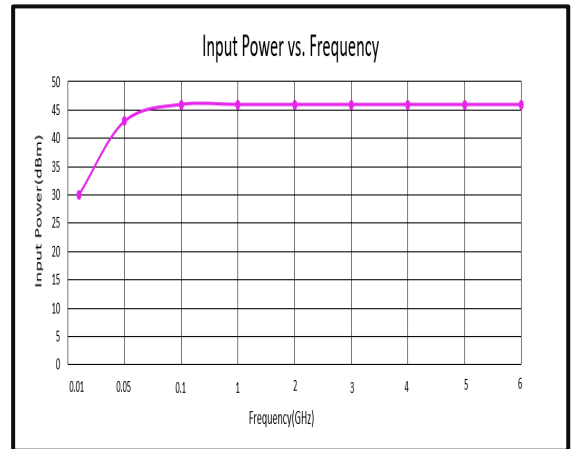
Insertion Loss vs. Temperature



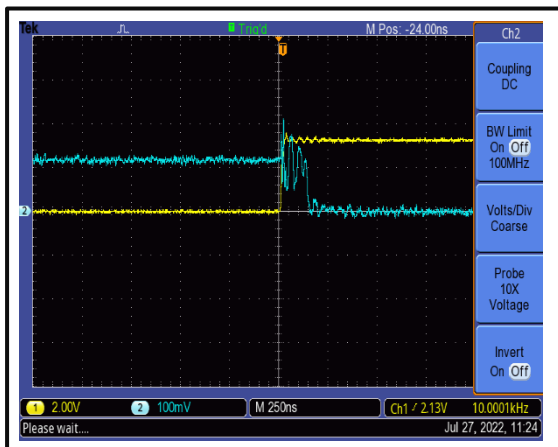
IIP3



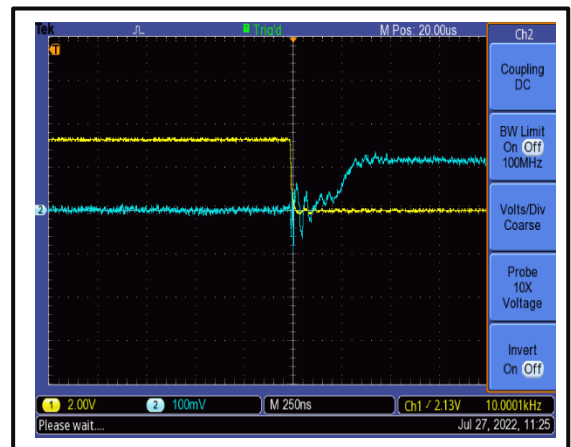
Input Power vs. Frequency



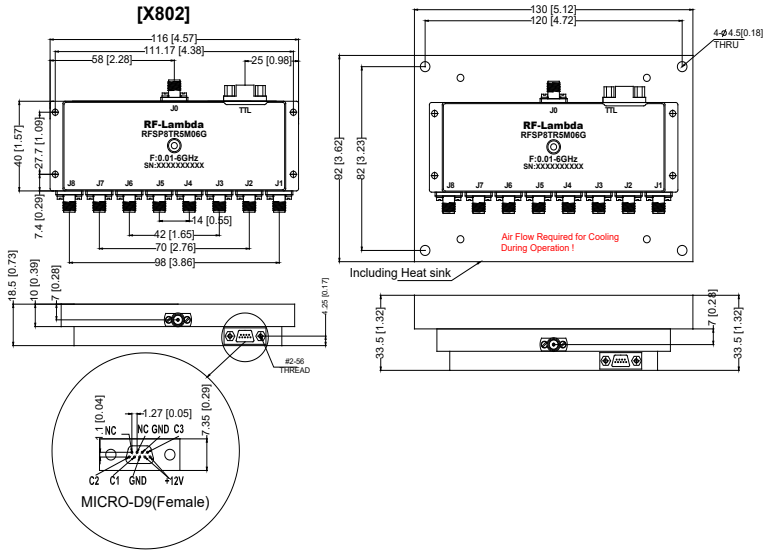
Switching Speed



Switching Speed



**Outline Drawing**



**Truth Table**

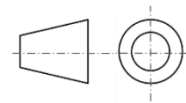
TTL Control Voltage THRESHOLD	Low(0)=0~0.8V High(1)=2.8~5V
-------------------------------	---------------------------------

Control Input TTL			Signal Path State
C3	C2	C1	
0	0	0	J0-J1
0	0	1	J0-J2
0	1	0	J0-J3
0	1	1	J0-J4
1	0	0	J0-J5
1	0	1	J0-J6
1	1	0	J0-J7
1	1	1	J0-J8

Control Pin Customization Available Upon Request

**Notes:**

1. Package Material: Aluminum
2. Finish: Gold Plated
3. All dimensions are in millimeters [inches].
4. Housing Tolerances  $\pm 0.2$  [0.008] 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	<a href="https://rflambda.com/pdf/rflambda_esd_control.pdf">https://rflambda.com/pdf/rflambda_esd_control.pdf</a>
Heatsink Lookup Specifications	<a href="https://rflambda.com/search_heatsink.jsp">https://rflambda.com/search_heatsink.jsp</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
RFSP8TR5M06G	Standard	0.01-6GHz SP8T PIN Diode Switch

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