

Reflective Coaxial SP2T Switch 0.01GHz-18GHz



Product Description

RFSP2TRDC18G is a reflective coaxial single pole double throw switch with a frequency range of 0.01 to 18GHz.

The maximum power input of this switch is 40dBm. The insertion loss is 1.3dB with a typical isolation of 45dB.

The product features 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 1.3dB Typical
- Isolation 45dB 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, TTL = 0 / +5V

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		0.01-6			6-12			12-18		GHz
Insertion Loss		0.8	1.3		1.3	1.8		1.7	2.3	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	35	45		27	35		22	25		dB
Input VSWR		1.3	1.4		1.6	1.8		1.6	2.0	: 1
Output VSWR		1.3	1.4		1.7	1.8		1.6	2.0	: 1
*RF Input Power (CW) (50Ω,T = 25°C)			40			40			40	dBm
DC Power Dissipation		0.5			0.5			0.5		W
0.1dB Compression Point (P0.1dB)		36			35			32		dBm
IIP3		45			48			50		dBm
Switching Speed					250 Typ.					ns
Bias Current (+5V)					100 Max.					mA
Weight	Net				0.2 Max.					lbs
	Including Heat Sink				0.38 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	+5V±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.

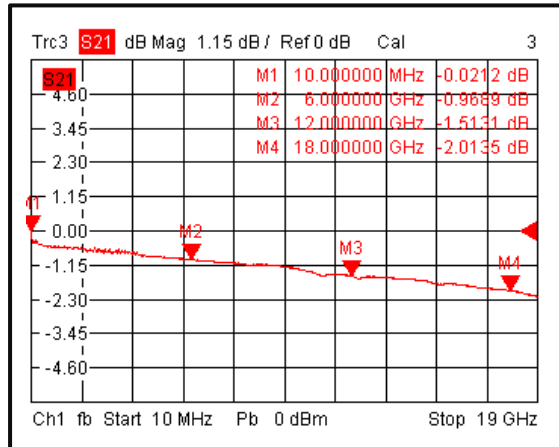
Environmental Specifications and Test Standards

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)

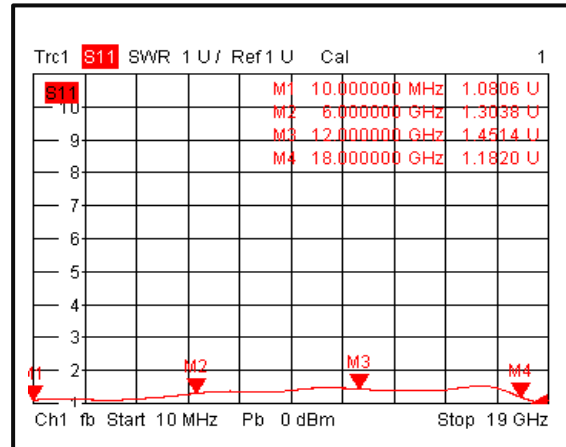
** For vibration testing details please see additional information section.

Typical Performance Plots

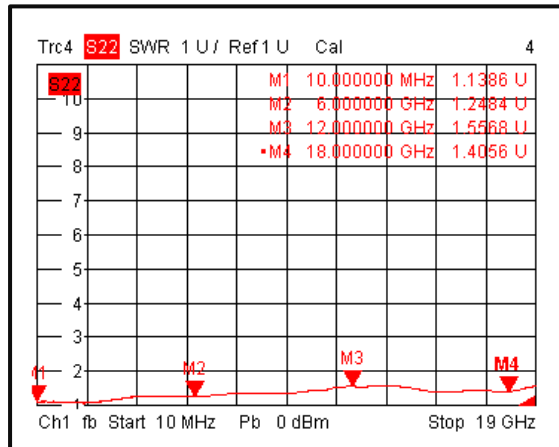
Insertion Loss @+25°C



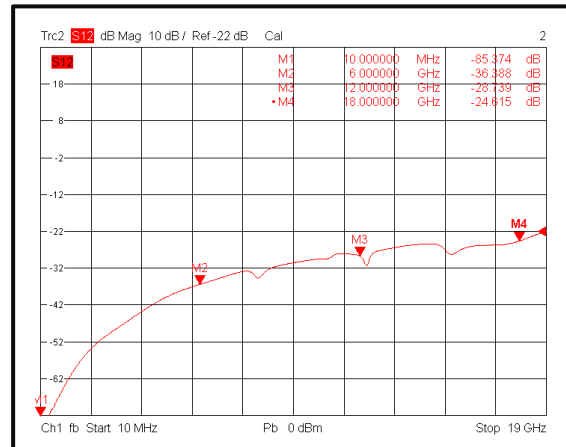
Input VSWR @+25°C



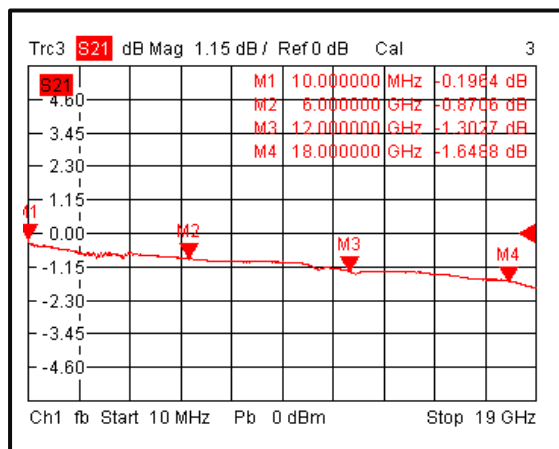
Output VSWR @+25°C



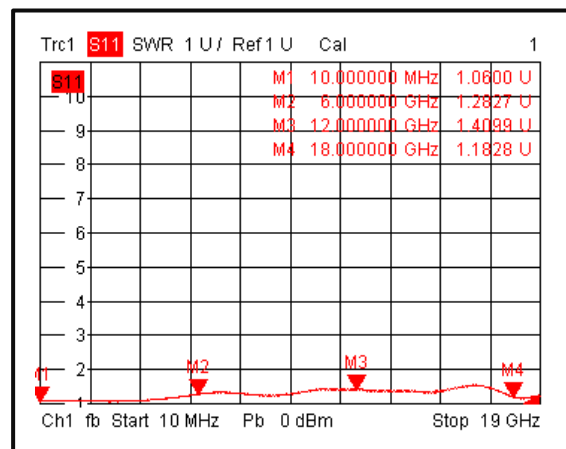
Isolation @+25°C



Insertion Loss @-40°C

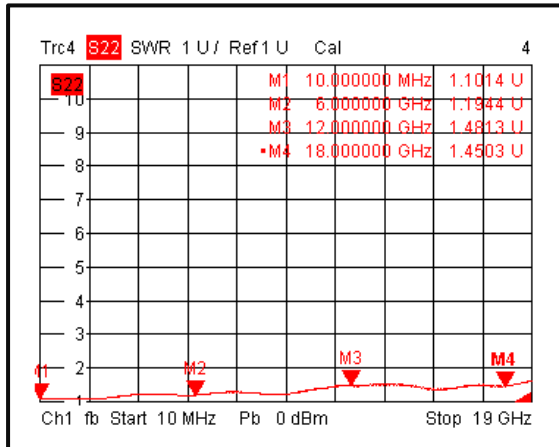


Input VSWR @-40°C

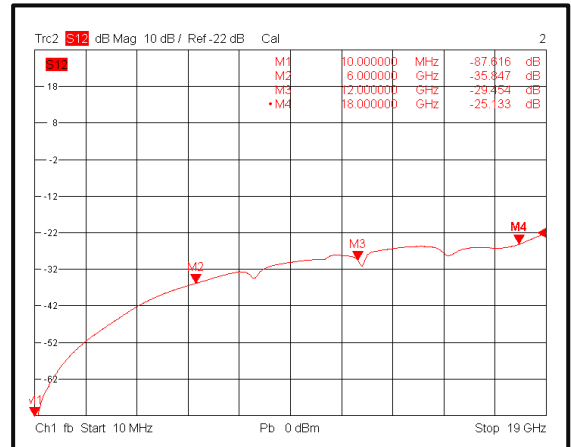


Typical Performance Plots

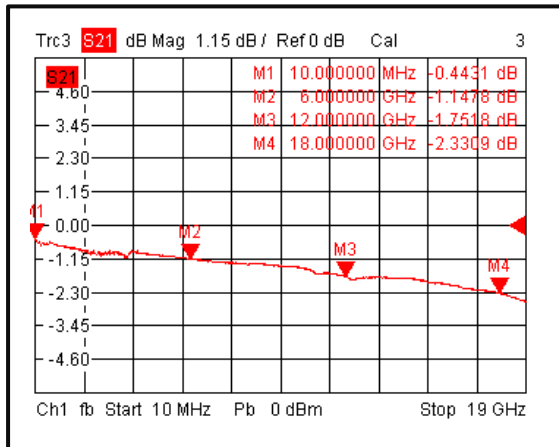
Output VSWR @-40°C



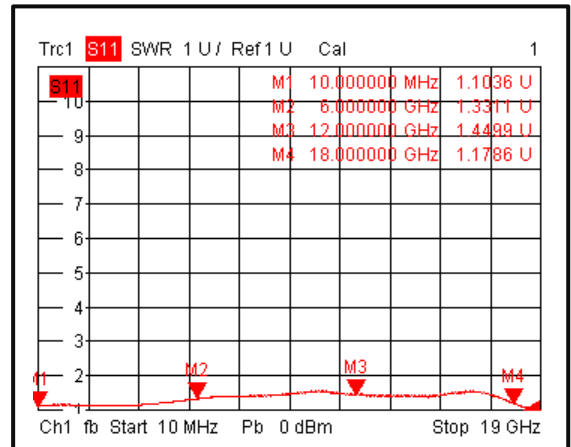
Isolation @-40°C



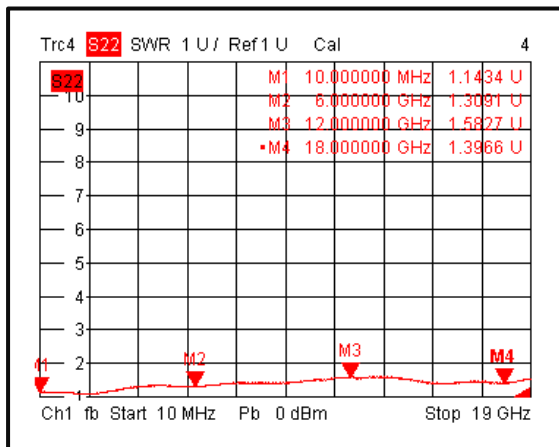
Insertion Loss @+85°C



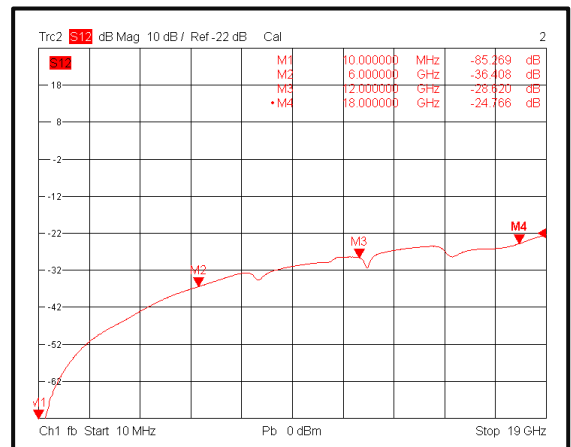
Input VSWR @+85°C



Output VSWR @+85°C

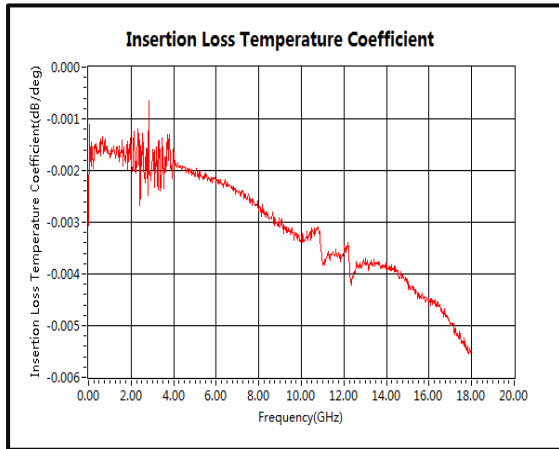


Isolation @+85°C

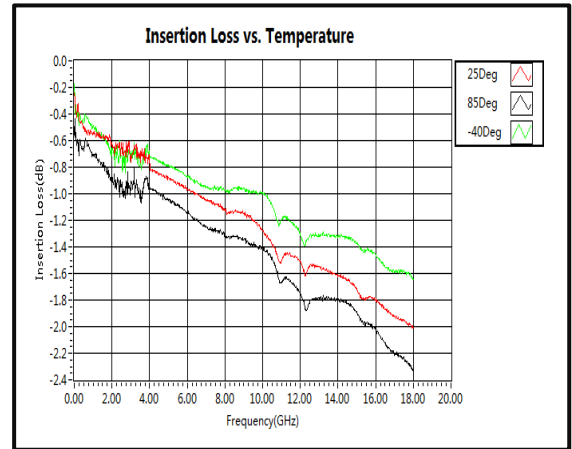


Typical Performance Plots

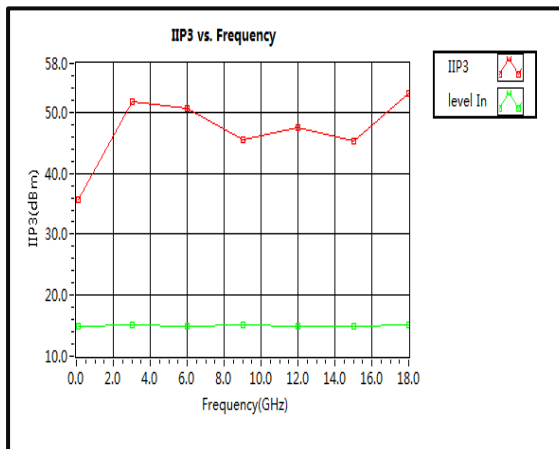
Insertion Loss Temperature Coefficient



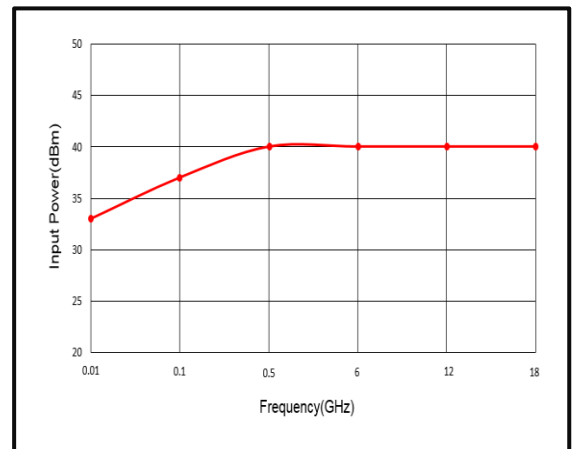
Insertion Loss vs. Temperature



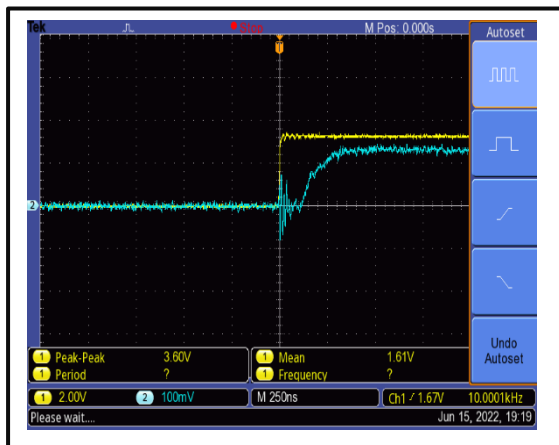
IIP3



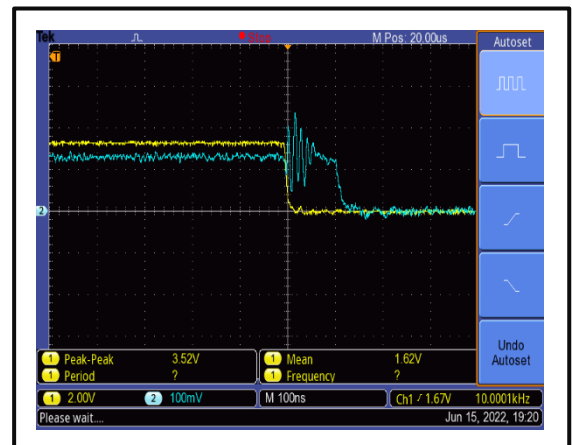
Input Power vs. Frequency



Switching Speed

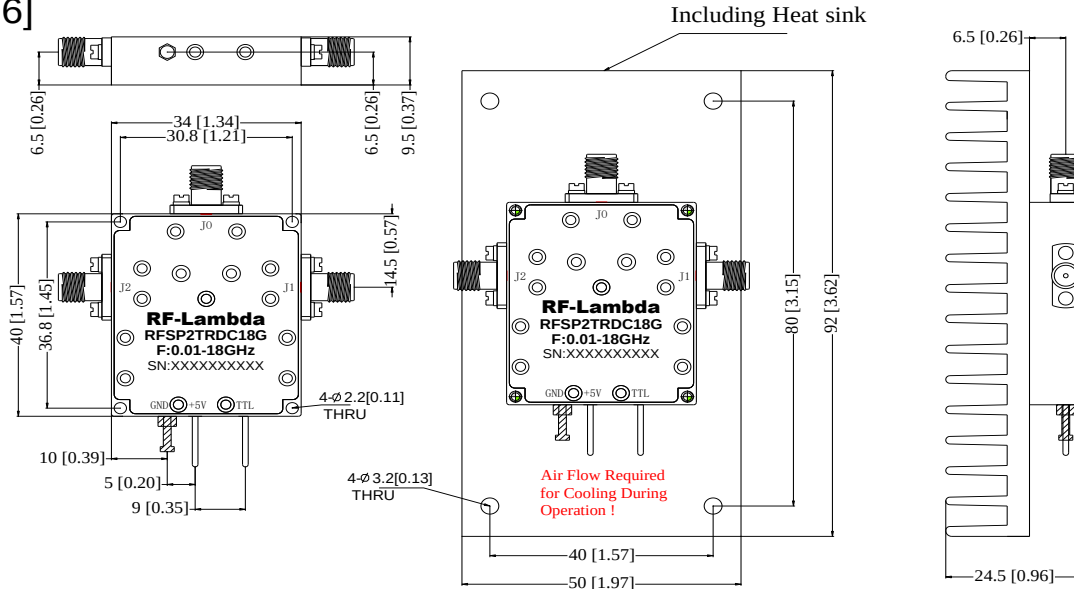


Switching Speed



Outline Drawing

[X206]

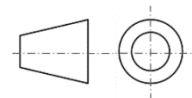


Notes:

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 Included - Mandatory for 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.

Truth Table

TTL Control Voltage	Low(0)=0~0.8V
THRESHOLD	High(1)=2.8~5V
Control Input TTL	State
1	J0-J1
0	J0-J2
Control Pin	Customization available upon request



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
RFSP2TRDC18G	Standard	0.01-18GHz SP2T PIN Diode Switch

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