

Reflective Coaxial SP2T Switch 0.02GHz-3GHz



Note: Photo is for illustration purposes only.
Please refer to outline drawing.

Features

- TTL compatible driver included
- Fast Switching Speed
- High Power Cold Switching
- Insertion Loss 1.1dB
- Isolation 70dB Typical
- 50 Ohm Matched

Product Description

RFSP2TR0003G5W is a reflective coaxial single pole double throw switch with a frequency range of 0.02 to 3GHz.

The maximum power input of this switch is 37dBm. The insertion loss is 1.1dB with a typical isolation of 70dB.

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

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/-5V, TTL = 0 / +5V

Parameter	Min	Typ	Max	Units
Frequency Range		0.02-3		GHz
Insertion Loss		1.1	1.5	dB
Insertion Loss Temperature Coefficient		0.003		dB/ °C
Isolation	60	70		dB
Input VSWR		1.4	1.8	: 1
Output VSWR		1.4	1.8	: 1
RF Input Power			37	dBm
DC Power Dissipation		0.25		W
0.1dB Compression Point (P0.1dB)		36		dBm
IIP3		50		dBm
Switching Speed		500 Typ.		ns
Bias Current (+5V/-5V)		180/20 Max.		mA
Weight		0.095 Max.		lbs
Impedance		50		Ω
Input / Output Connectors	SMA-Female(Input) – SMA-Female(Output)			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Note:
Supports 1W hot switching at 2GHz.

Absolute Maximum Ratings

Parameter	Rating
Biasing	+5V±10%/-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.

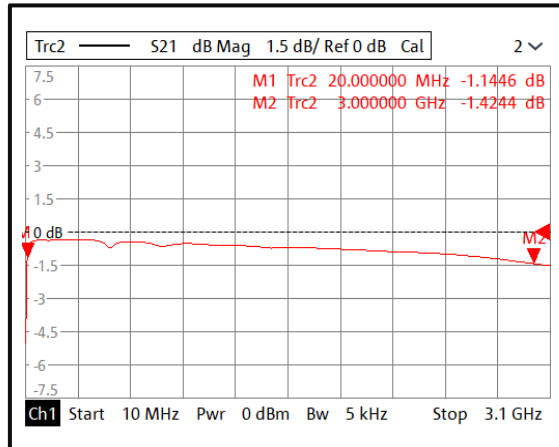
Environmental Specifications and Test Standards

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)

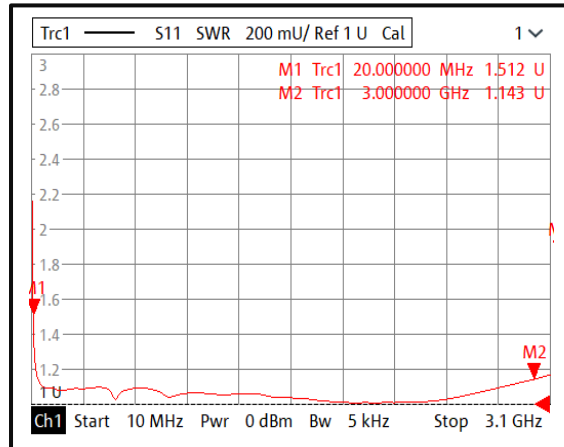
** For vibration testing details please see additional information section.

Typical Performance Plots

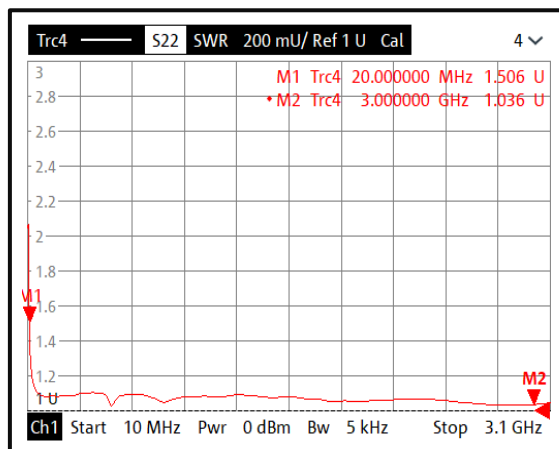
Insertion Loss @+25°C



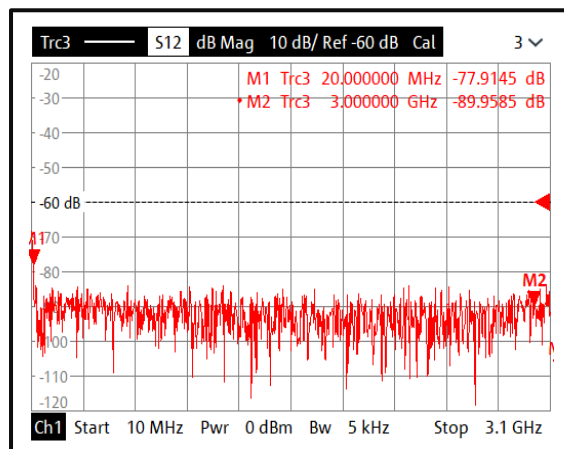
Input VSWR @+25°C



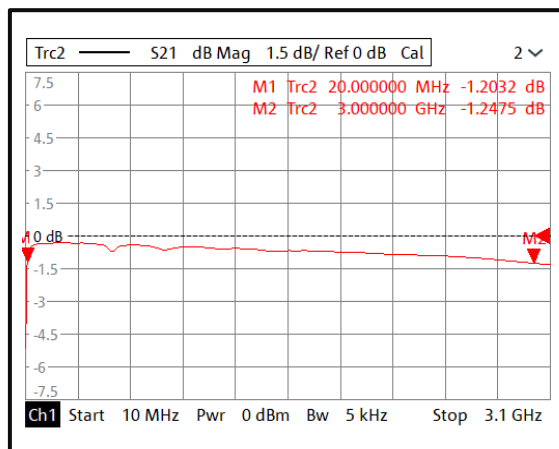
Output VSWR @+25°C



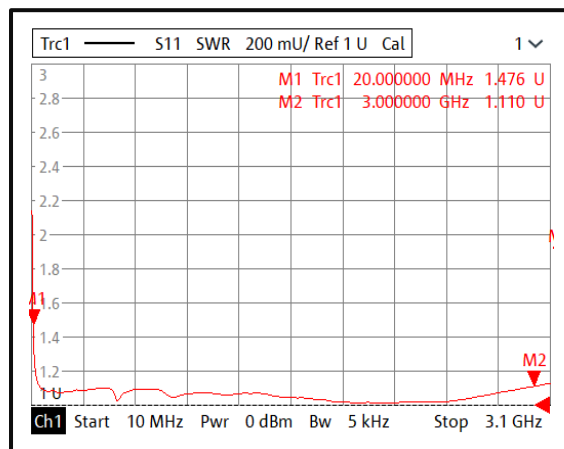
Isolation @+25°C



Insertion Loss @-40°C

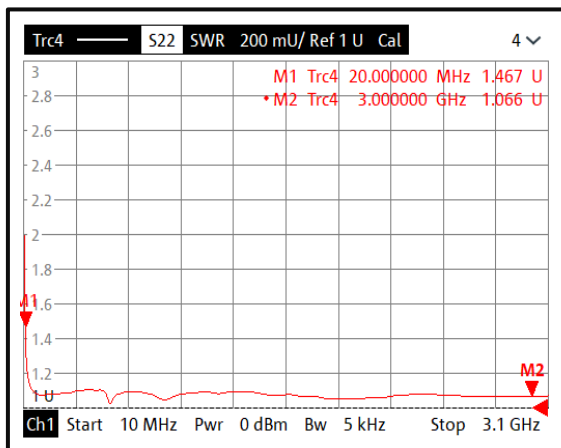


Input VSWR @-40°C

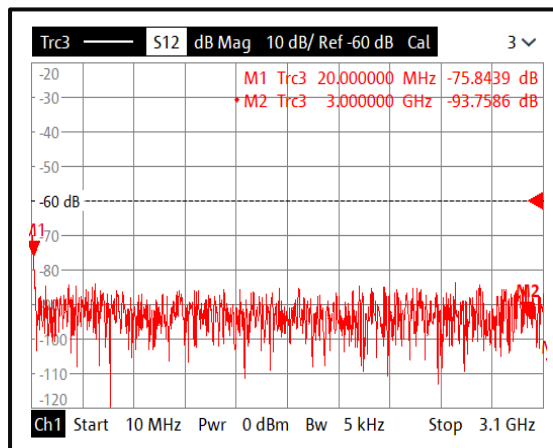


Typical Performance Plots

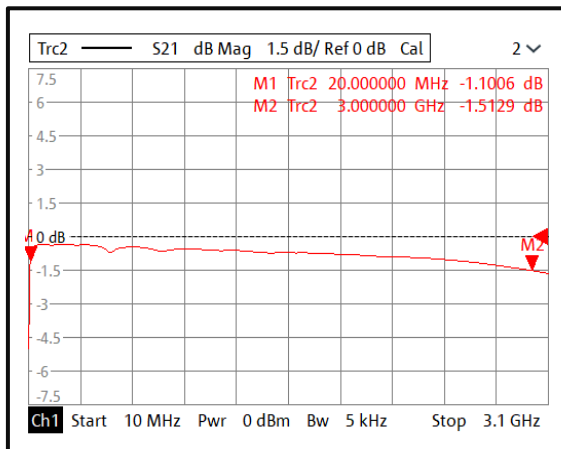
Output VSWR @-40°C



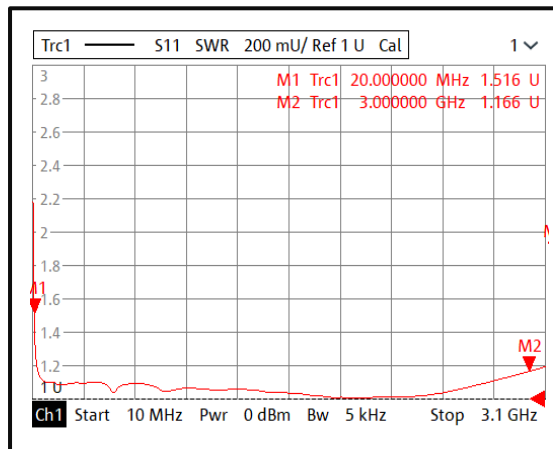
Isolation @-40°C



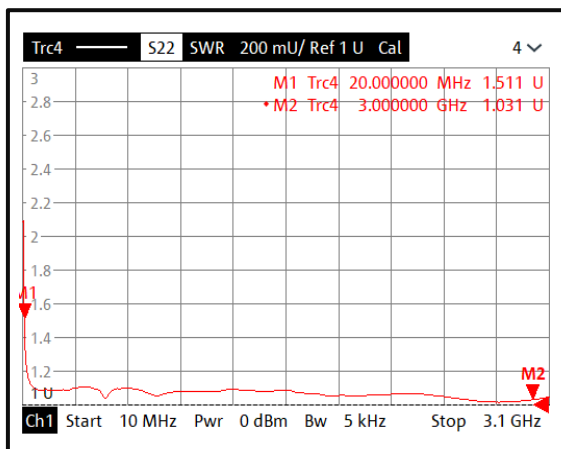
Insertion Loss @+85°C



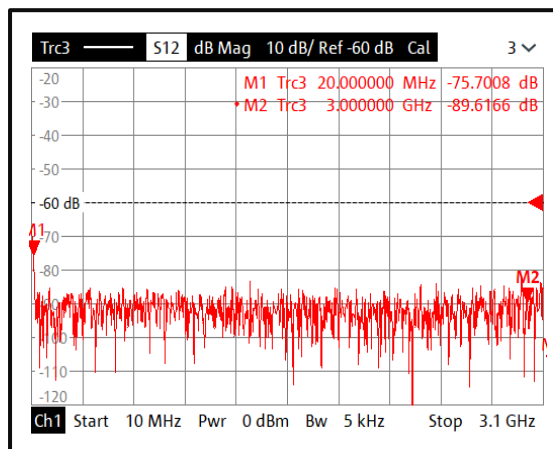
Input VSWR @+85°C



Output VSWR @+85°C

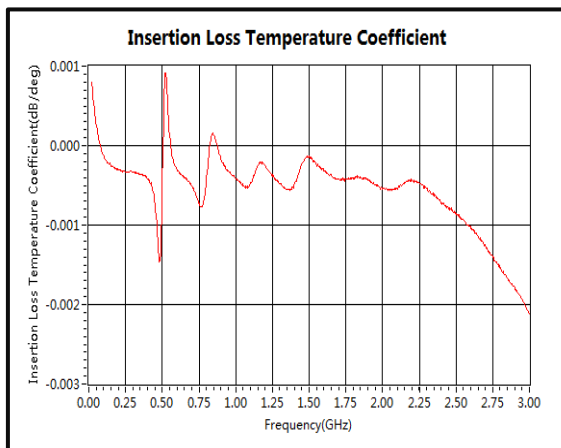


Isolation @+85°C

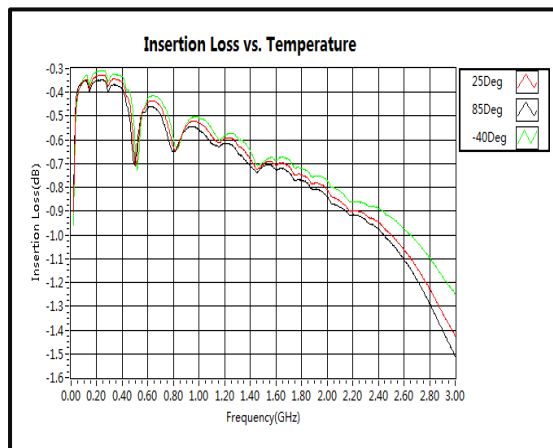


Typical Performance Plots

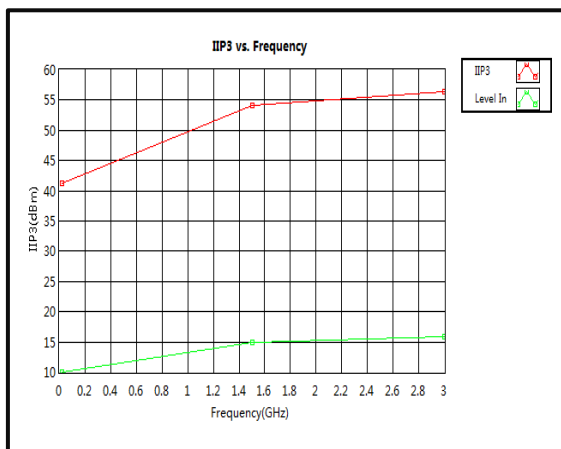
Insertion Loss Temperature Coefficient



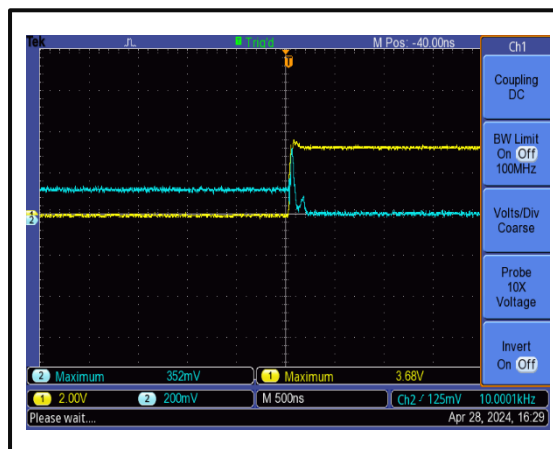
Insertion Loss vs. Temperature



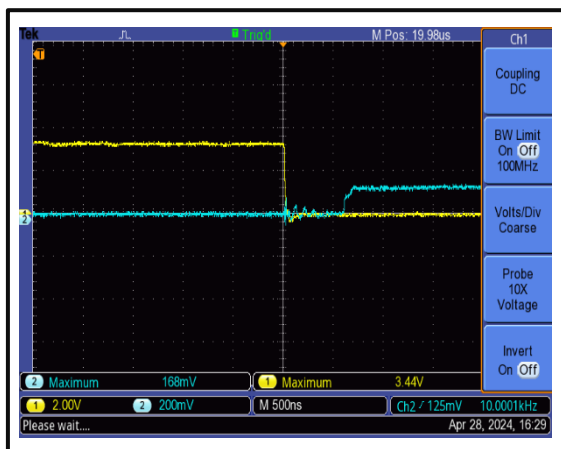
IIP3



Switching Speed

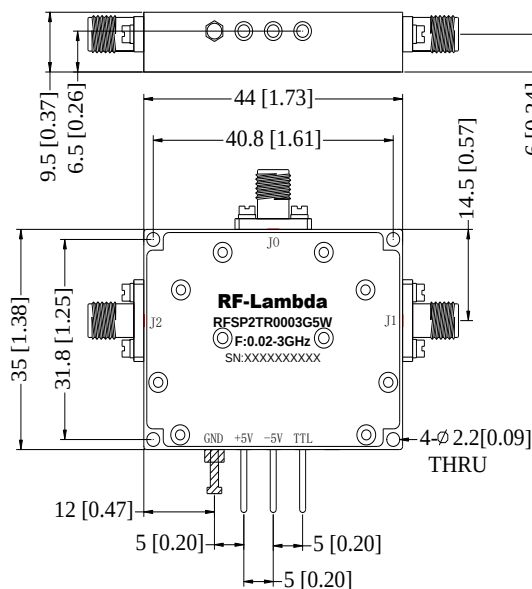


Switching Speed



Outline Drawing

[X206]

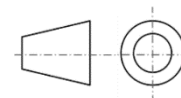


Truth Table

TTL Control Voltage	Low(0)=0~0.8V
THRESHOLD	High(1)=2.8~5V
Control Input TTL	Signal Path State
0	J0-J1
1	J0-J2
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 $\pm 0.3[0.012]$ 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
RFSP2TR0003G5W	Standard	0.02GHz-3GHz SP2T PIN Diode Switch

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