

Hermetically Sealed Reflective Coaxial SP2T Switch 0.02GHz-3GHz



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-H is a hermetically sealed 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	Hermetically Sealed (Laser Welded)			

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.

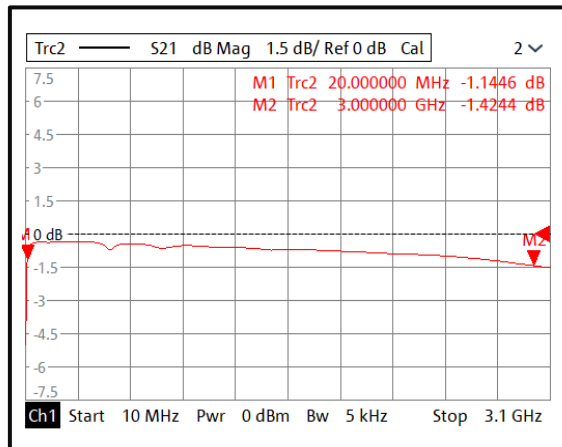
Environmental Specifications and Test Standards

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)

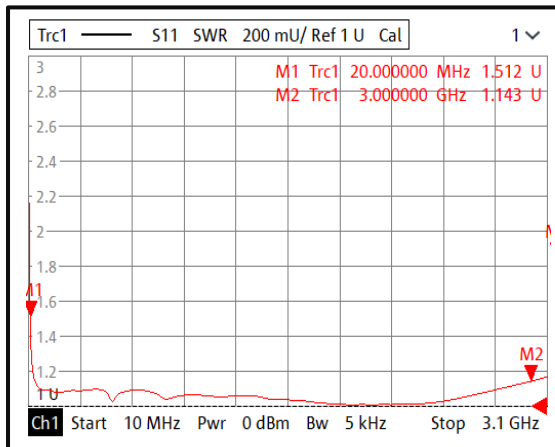
** For vibration testing details please see additional information section.

Typical Performance Plots

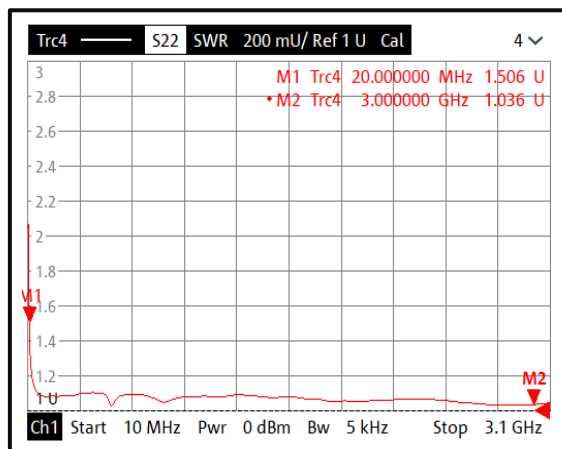
Insertion Loss @+25°C



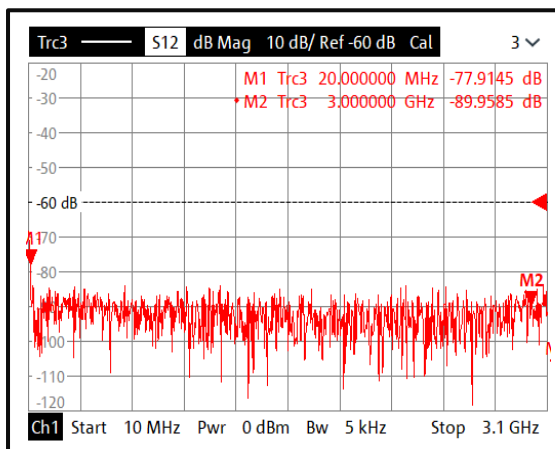
Input VSWR @+25°C



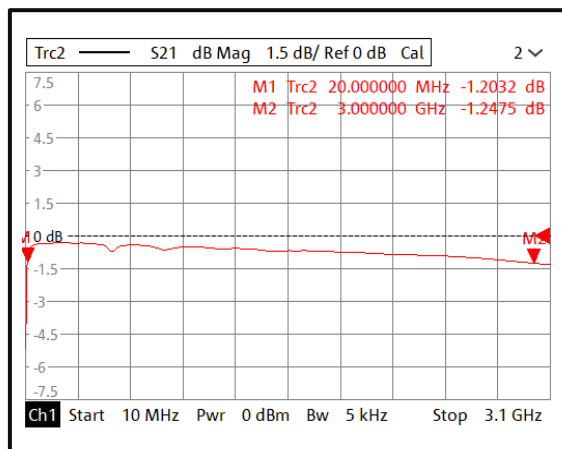
Output VSWR @+25°C



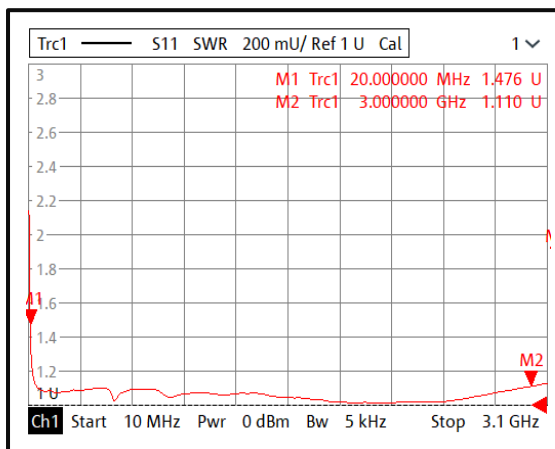
Isolation @+25°C



Insertion Loss @-40°C

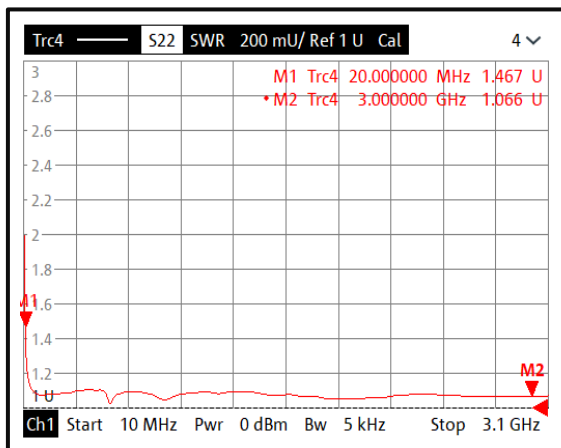


Input VSWR @-40°C

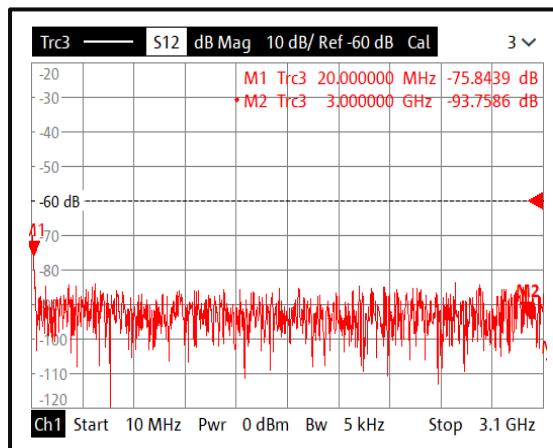


Typical Performance Plots

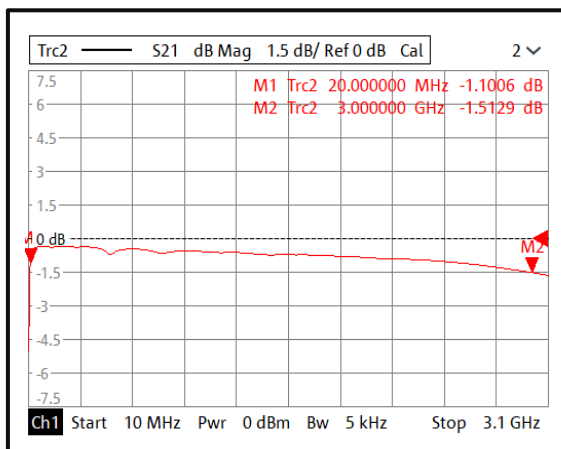
Output VSWR @-40°C



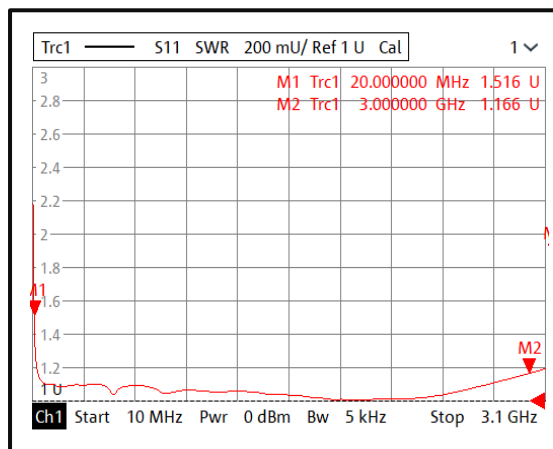
Isolation @-40°C



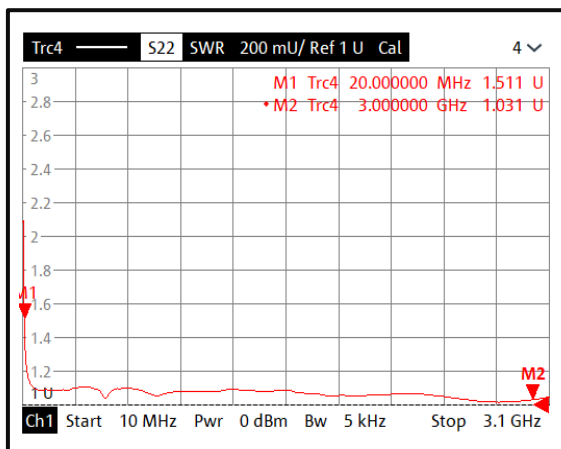
Insertion Loss @+85°C



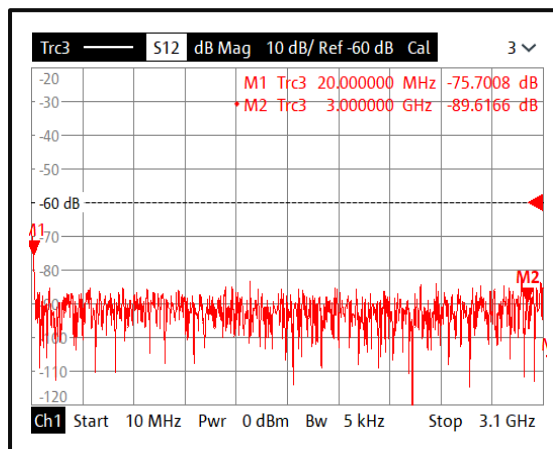
Input VSWR @+85°C



Output VSWR @+85°C

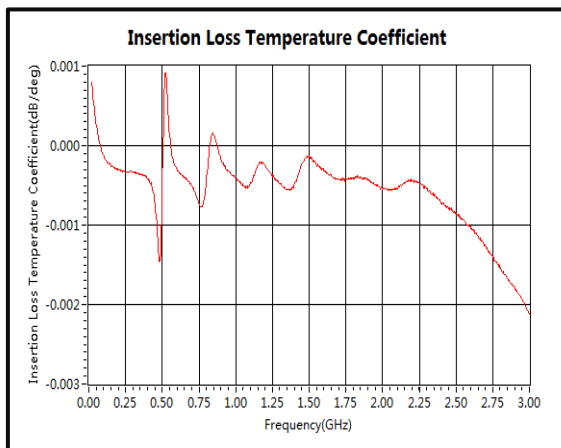


Isolation @+85°C

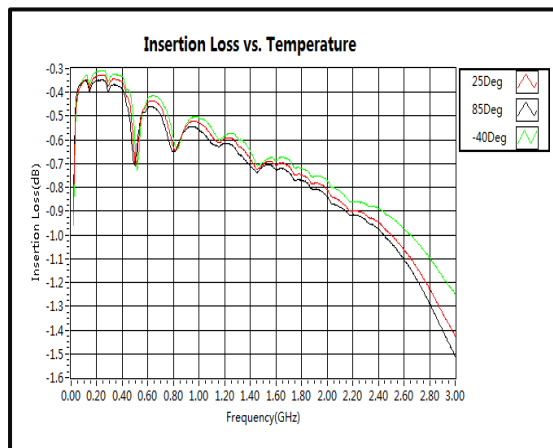


Typical Performance Plots

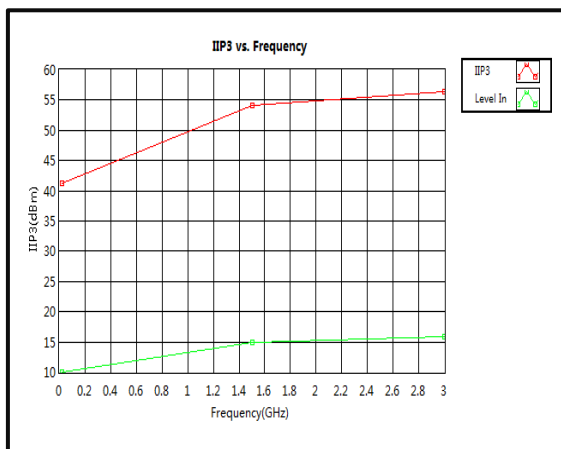
Insertion Loss Temperature Coefficient



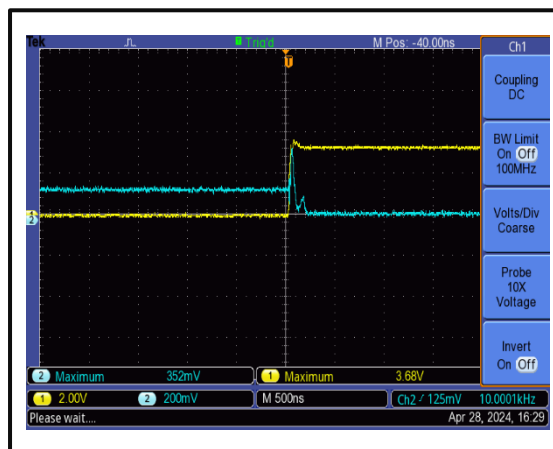
Insertion Loss vs. Temperature



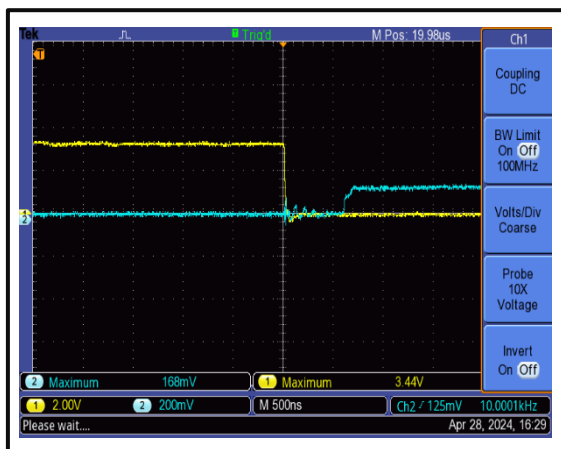
IIP3



Switching Speed

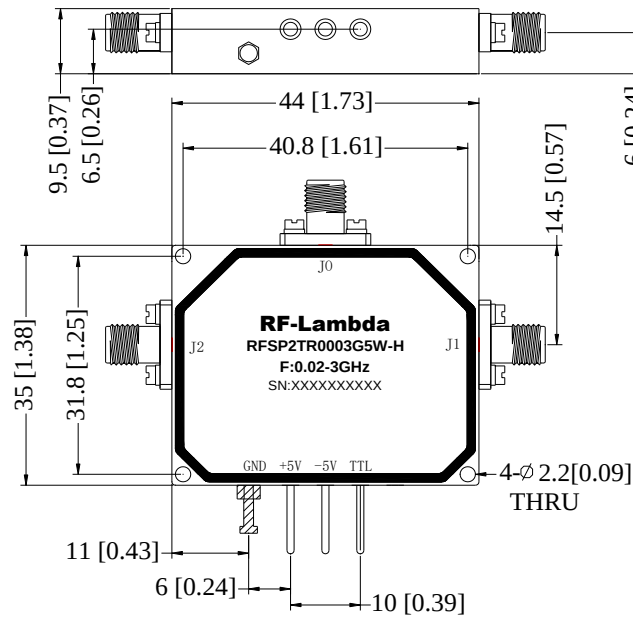


Switching Speed



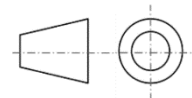
Outline Drawing

[X205]



Truth Table

TTL Control Voltage	Low(0)=0~0.8V
THRESHOLD	High(1)=2.8~5V
Control Input TTL	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. Standard torque wrench must be used to secure RF connectors.

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
RFSP2TR0003G5W-H	Standard	0.02GHz-3GHz SP2T PIN Diode Switch

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