

Hermetically Sealed Absorptive Coaxial SP3T Switch 0.02GHz-18GHz



Features

- TTL compatible driver included
- Fast Switching Speed
- Low Power Cold Switching
- Insertion Loss 3.0dB
- Isolation 75dB Typical
- 50 Ohm Matched

Product Description

RFSP3TA0018G-H is a hermetically sealed absorptive coaxial single pole three throw switch with a frequency range of 0.02 to 18GHz.

The maximum power input of this switch is 30dBm. The insertion loss is 3.0dB with a typical isolation of 75dB.

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

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	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		0.02~6			6~12			12~18		GHz
Insertion Loss		2.0	2.2		4.2	4.5		4.4	4.8	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Isolation	60	80		60	75		60	68		dB
Input VSWR		1.8	2.0		1.5	1.8		1.5	1.8	: 1
Output VSWR		1.5	1.8		1.5	1.8		1.5	1.8	: 1
RF Input Power			30			30			30	dBm
Power Dissipation		0.85			0.85			0.85		W
0.1dB Compression Point (P0.1dB)		30			30			30		dBm
IIP3		37			38			35		dBm
Switching Speed					250 Max.					ns
Bias Current (+5V/-5V)					120/50 Max.					mA
Weight					0.073 Max.					lbs
Impedance					50					Ω
Input / Output Connectors					SMA-Female(Input) – SMA-Female(Output)					
Package					Hermetically Sealed (Laser Welded)					

Absolute Maximum Ratings

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

* TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.

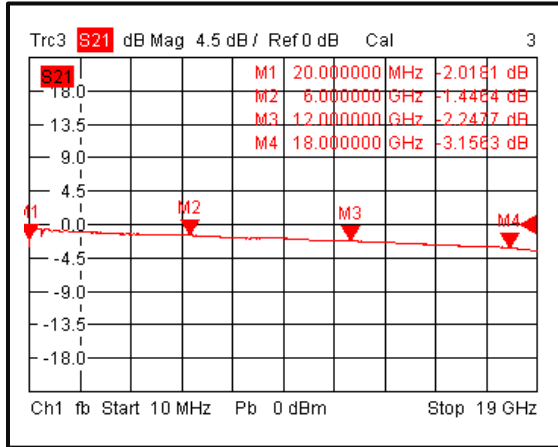
Environmental Specifications and Test Standards

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)

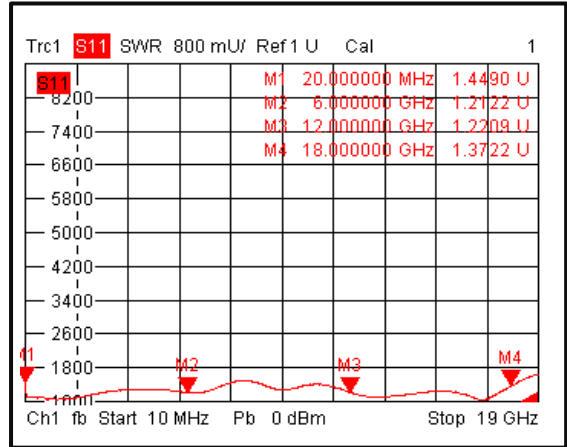
*For vibration testing details please see additional information section.

Typical Performance Plots

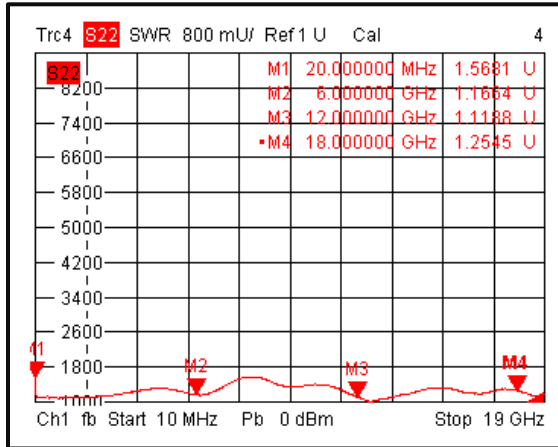
Insertion Loss @+25°C



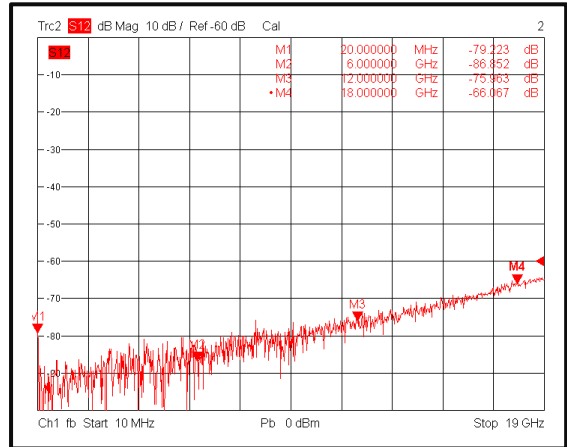
Input VSWR @+25°C



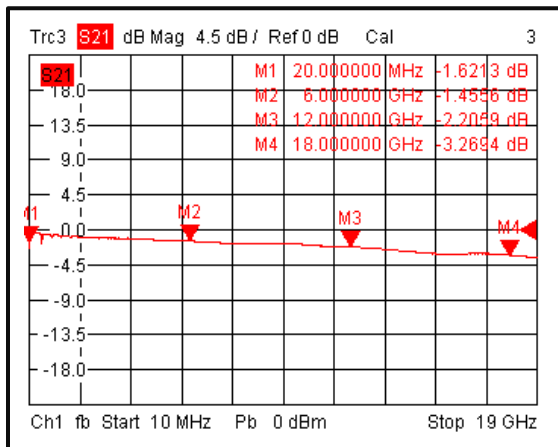
Output VSWR @+25°C



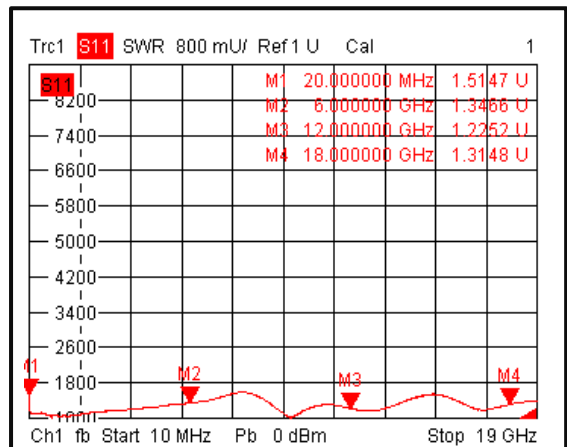
Isolation @+25°C



Insertion Loss @-40°C

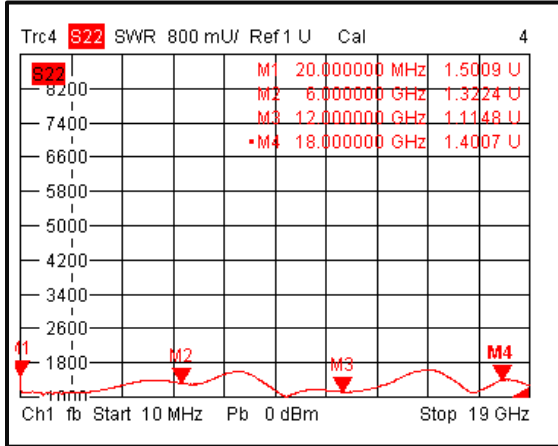


Input VSWR @-40°C

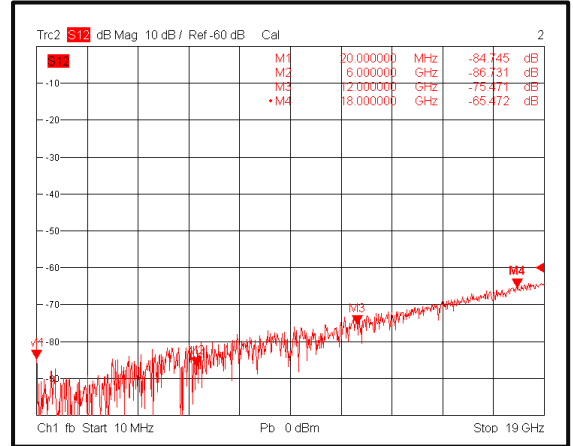


Typical Performance Plots

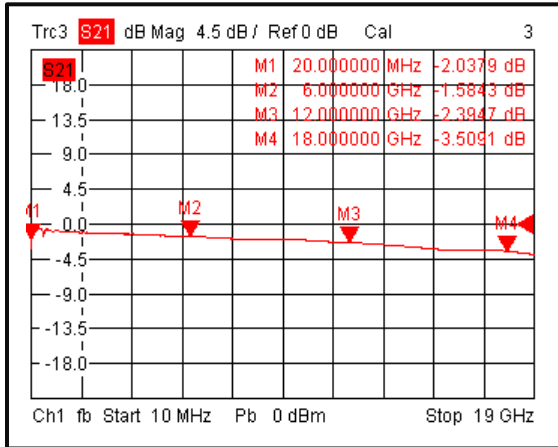
Output VSWR @-40°C



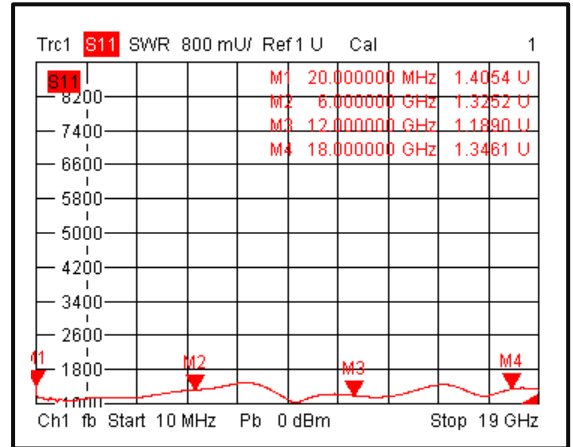
Isolation @-40°C



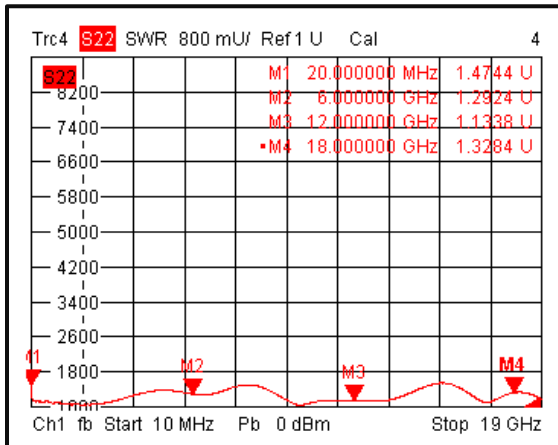
Insertion Loss @+85°C



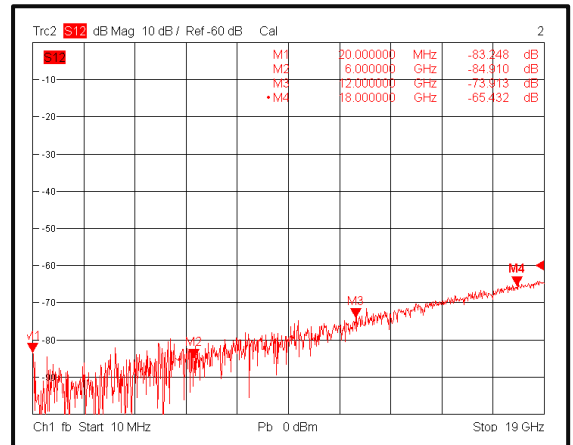
Input VSWR @+85°C



Output VSWR @+85°C

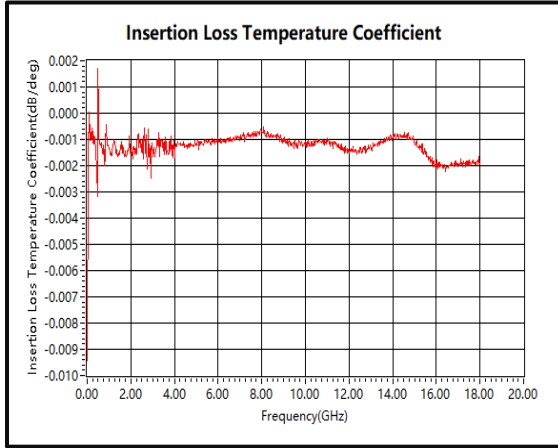


Isolation @+85°C

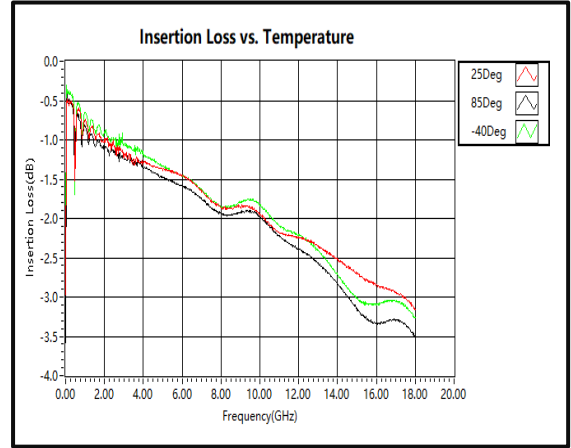


Typical Performance Plots

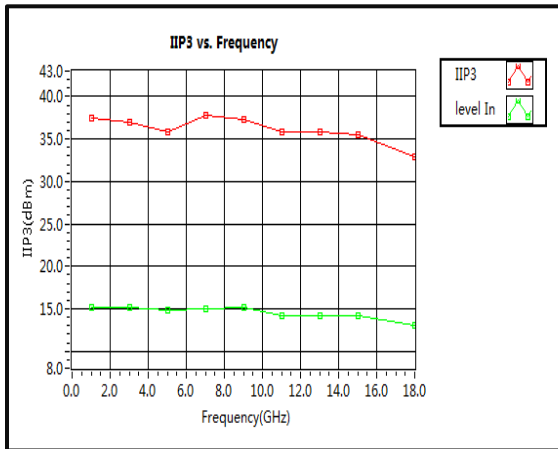
Insertion Loss Temperature Coefficient



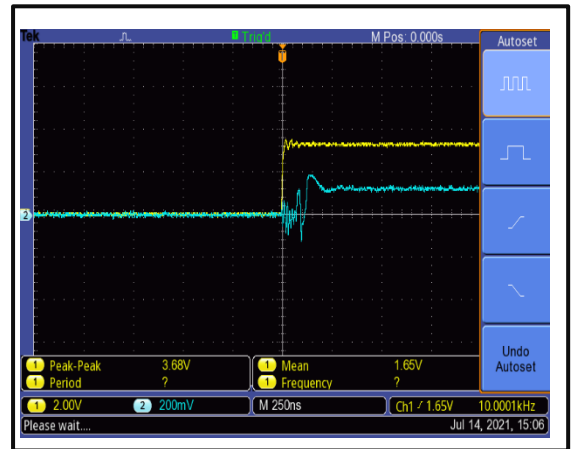
Insertion Loss vs. Temperature



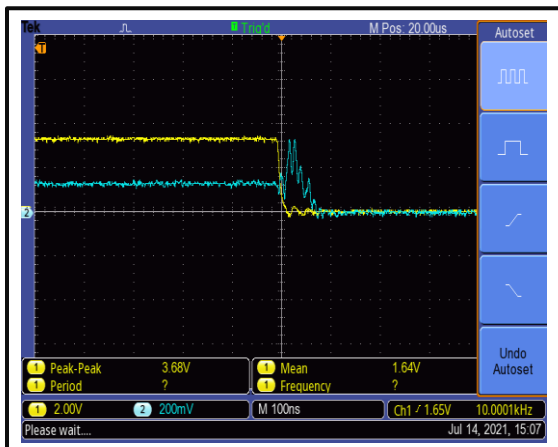
IIP3



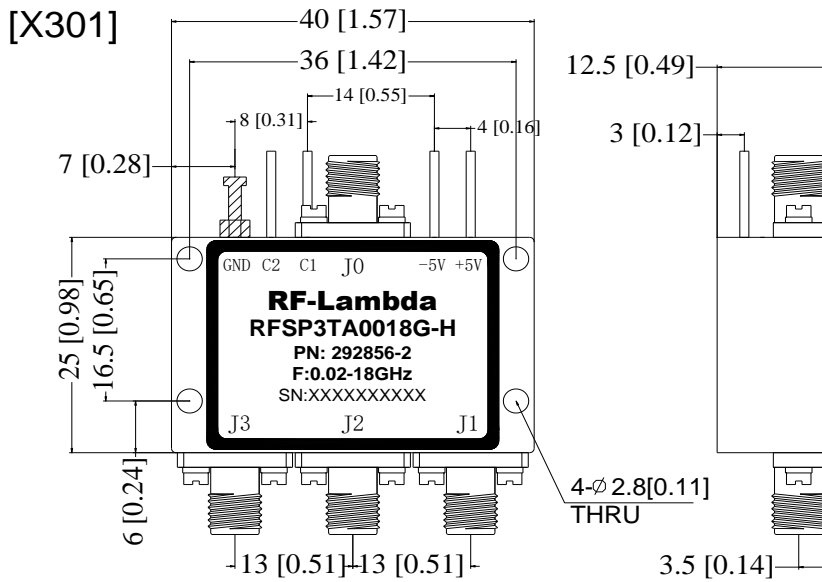
Switching Speed



Switching Speed



Outline Drawing

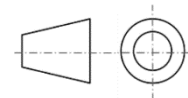


Truth Table

TTL Control Voltage THRESHOLD	Low(0)=0~0.8V	High(1)=2.8~5V
Control Input TTL	Signal Path State	
C1	C2	
0	0	J0-J1
0	1	J0-J2
1	0	J0-J3
1	1	OFF
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 ± 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
RFSP3TA0018G-H	Standard	0.02GHz-18GHz Hermetically Sealed SP3T PIN Diode Switch

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