

## Absorptive Coaxial SP8T Switch 0.02-18GHz



### Key Features

- Ultra Wide Band Operation 0.02-18GHz
- RS-422 compatible driver included
- Fast Switching Speed
- Low Insertion Loss and High Isolation

### Typical Applications

- Wireless Infrastructure
- Military and Aerospace
- Test and Measurement
- Radar and Satellite
- 5G LTE Communications

Electrical Specifications,  $T_A = +25^\circ\text{C}$

Description	PN: RFSP8TA0018G-RS422									
	SP8T Absorptive Switch									
	Low Power Cold Switching									
Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.02-6			6-12			12-18			GHz
Insertion Loss		2.5	4.5		3.8	5.5		5.5	6.0	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Port to Port Phase Matching	+/-15									deg
Isolation	60	85		75	80		60	70		dB
Input VSWR		1.5	1.8		1.5	1.8		1.5	2.0	: 1
Output VSWR		1.5	1.8		1.5	1.8		1.5	2.0	: 1
RF Input Power			30			30			30	dBm
DC Power Dissipation		1.5			1.5			1.5		W
0.1dB Compression Point (P0.1dB )		30			30			30		dBm
IIP3		45			43			39		dBm
Switching Speed	250 Typ.									ns
Weight	2.5 Max.									oz
Impedance	50									$\Omega$
Bias Current (+5V )	400 Typ.									mA
Input / Output Connectors	SMA - Female									
Interface and Control Connector	Micro-D9 (Female )									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (Optional)									

Absolute Maximum Ratings

Parameter	Value
Biasing Voltage	+5V±10%

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

Ordering Information

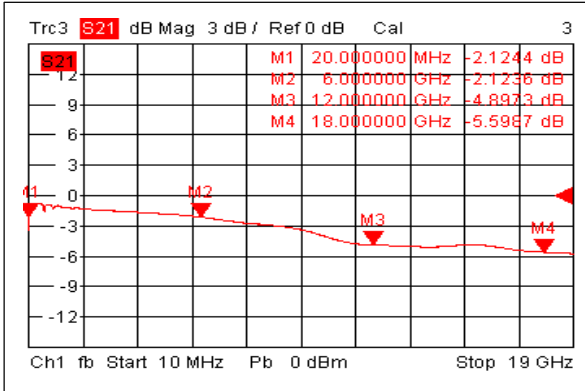
Part Number	Description
RFSP8TA0018G-RS422	SP8T 0.02-18GHz PIN Diode Switch

Environmental Specifications and Test Standards

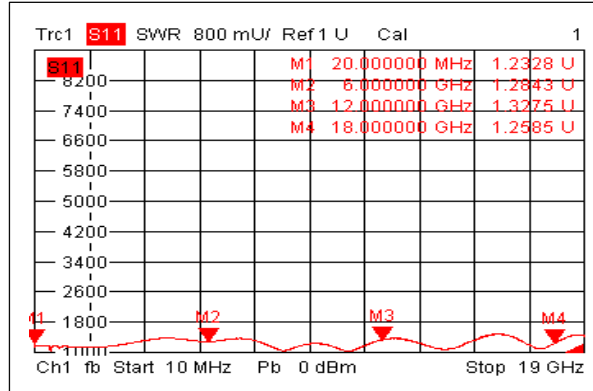
Parameter	Description
Operational Temperature	-40°C~+85°C (Case Temperature)
Storage Temperature	-50°C~+105°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 72 Hours
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)

Typical Performance Plots

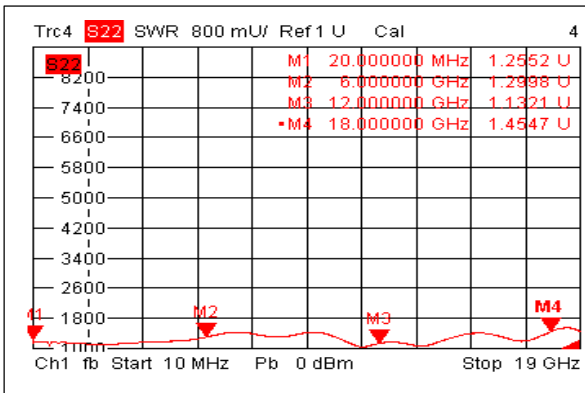
Insertion Loss @+25°C



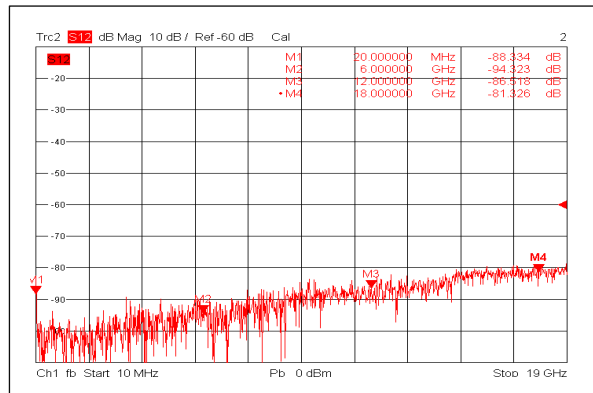
Input VSWR @+25°C



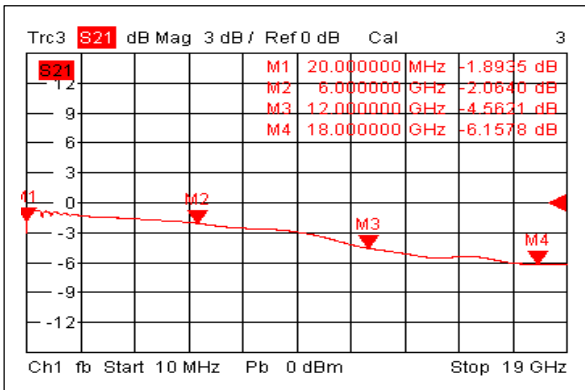
Output VSWR @+25°C



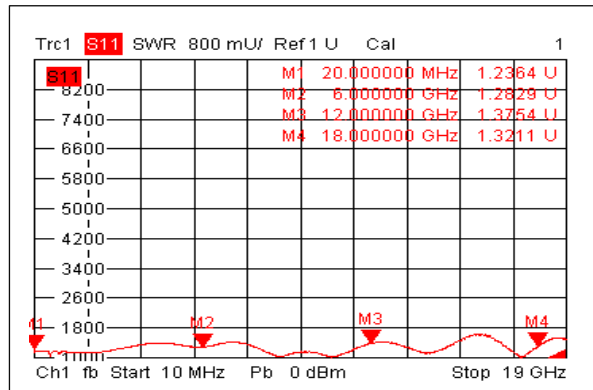
Isolation @+25°C



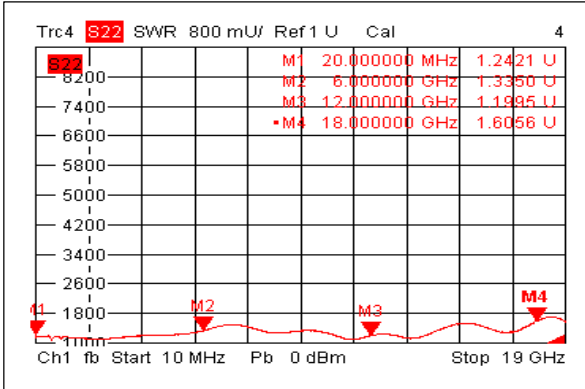
Insertion Loss @-40°C



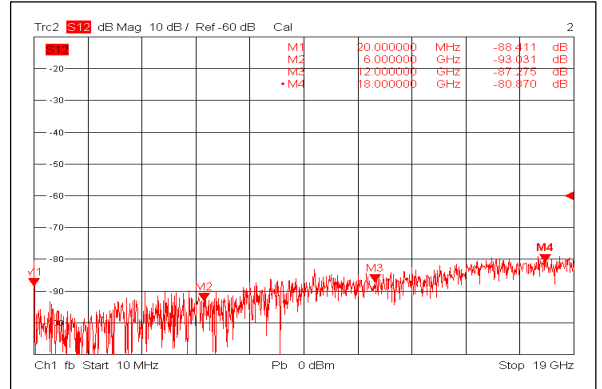
Input VSWR @-40°C



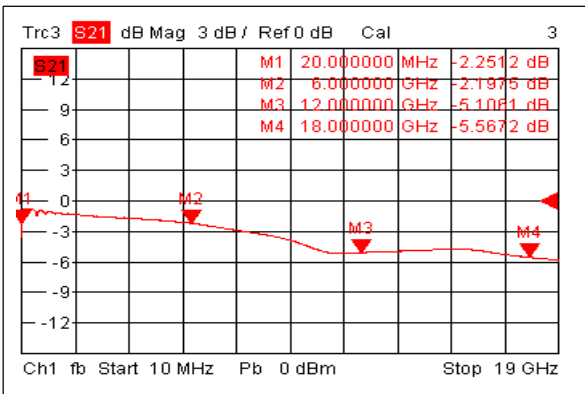
Output VSWR @-40°C



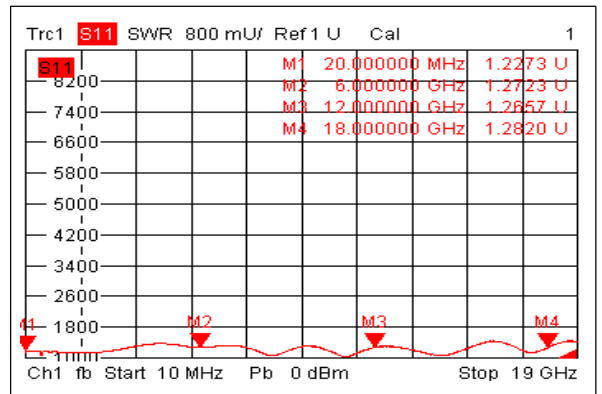
Isolation @-40°C



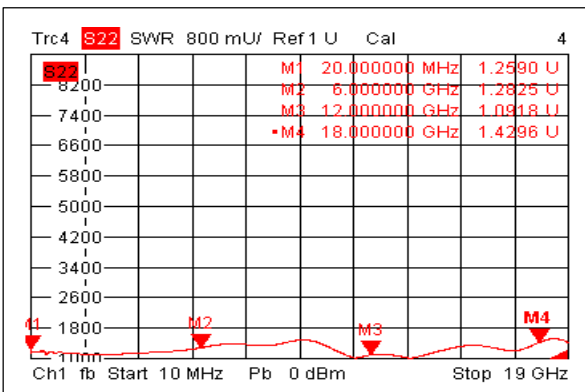
Insertion Loss @+85°C



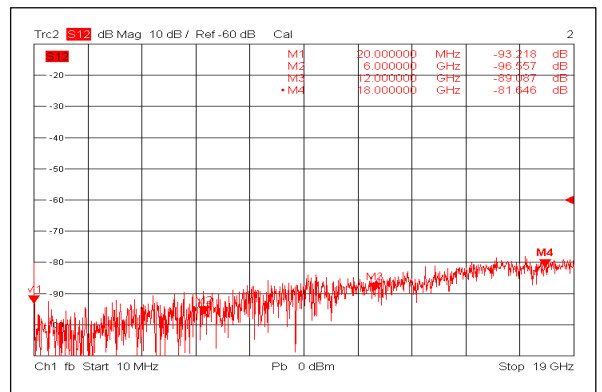
Input VSWR @+85°C



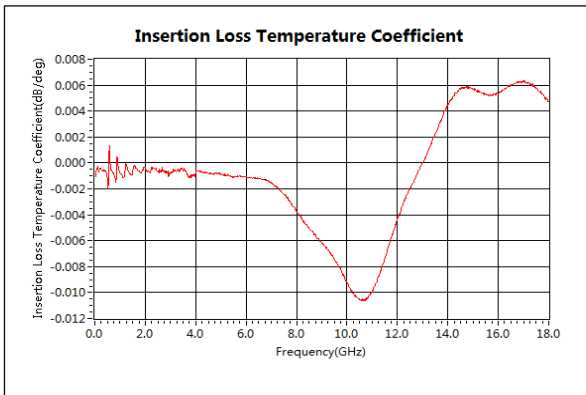
Output VSWR @+85°C



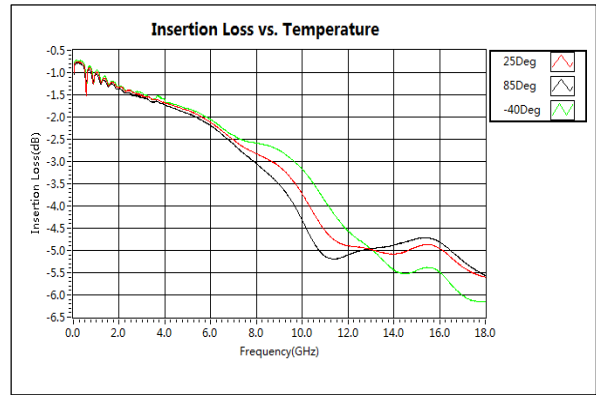
Isolation @+85°C



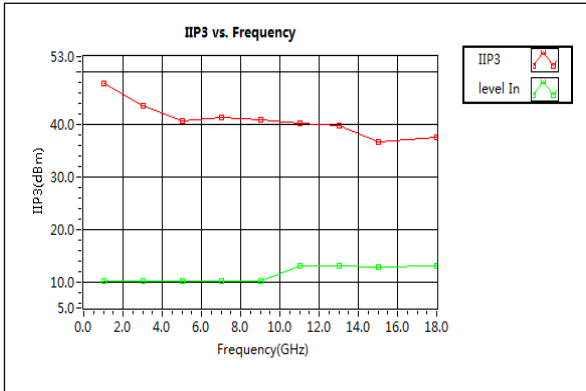
Insertion Loss Temperature Coefficient



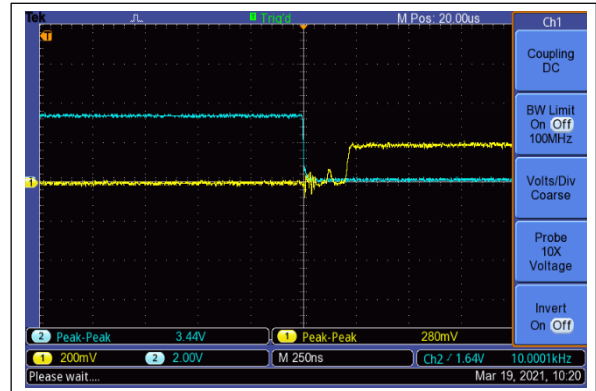
Insertion Loss vs. Temperature



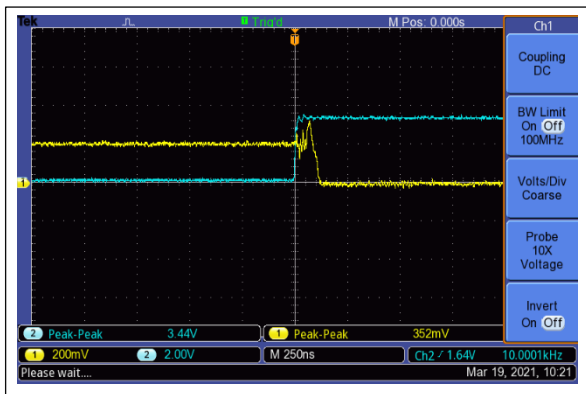
IIP3



Switching Speed



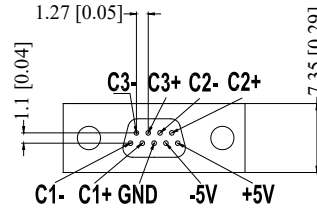
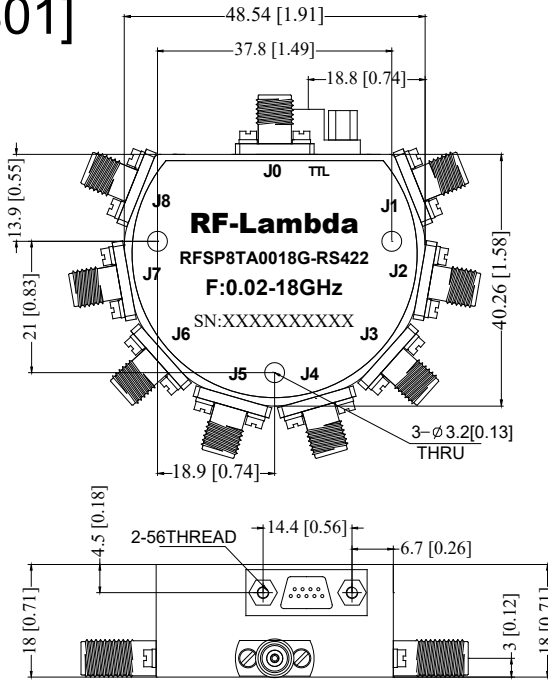
Switching Speed



Outline Drawing

All Dimensions in mm [inches]  
Housing Tolerances ±0.2 [0.008]

[X801]



**MICRO-D9(Female)**

Note: Standard torque wrench must be used to secure RF connectors.



Truth Table						
Common-Mode Input Voltage						±7V (MAX)
High(1)						2V (MIN)
Low(0)						0.8V (MAX)
Control Voltage THRESHOLD						Low(0)=(C+)-(C-) ≤0.2V
						High(1)=(C+)-(C-) ≥0.2V
Control Input RS-422						Signal Path State
C1+	C1-	C2+	C2-	C3+	C3-	ALL OFF
0	1	0	1	0	1	J0-J1
1	0	0	1	0	1	J0-J2
0	1	1	0	0	1	J0-J3
1	0	1	0	0	1	J0-J4
0	1	0	1	1	0	J0-J5
1	0	0	1	1	0	J0-J6
0	1	1	0	1	0	J0-J7
1	0	1	0	1	0	J0-J8
Control instruction customization available upon request						

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