

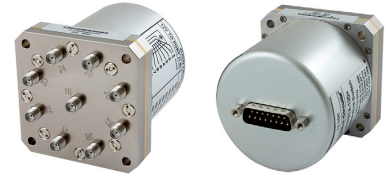
# Xtra Long Life SP8T Switch

## MSP8TA-12-12D+

50Ω DC to 12 GHz, 12 Volt, Absorptive

### The Big Deal

- Extra long life - 5 million cycles
- Low insertion loss, 0.2 dB
- High isolation, 90 dB
- Absorptive
- Reliable sleep mode switching



CASE STYLE: HJ2201

### Product Overview

Mini-Circuits' MSP8TA-12-12D+ is an ultra-reliable, rugged-duty absorptive fail-safe SP8T switch designed in break-before-make configuration. Its patented switch design comprised of very few frictionless moving parts which enable repeatable and optimum performance. Powered by +12VDC, the device has a typical switching speed of 20 milliseconds, insertion loss of 0.2 dB and high isolation of 90 dB. The MSP8TA-12-12D+ is suitable for use across a wide range of applications, including switching for automated test equipment and redundancy switching.

### Key Features

Feature	Advantages
Extra long service life	Exceptionally long service life improves system reliability and reduces the need to replace switches often, making it ideal for automatic test systems.
High isolation, 90 dB typ.	Prevents interference from unwanted signals, ensuring signal integrity and accuracy of testing.
Reliable sleep-mode switching	Offers dependable performance even after being set at a fixed position for prolonged periods. Highly-reliable sleep mode switching averts failures due to "wake up," making it suitable for automatic testing as well as redundancy switching applications.
High repeatability between switching cycles	High repeatability of insertion loss between switching cycles ensures reliable performance critical for automated testing and other measurement applications.
15-Pin Sub-D Connector	Easy and reliable connect/disconnect eliminating soldering and connection errors.

# Xtra Long Life SP8T Switch

50Ω DC to 12 GHz 12 Volt Absorptive

## MSP8TA-12-12D+

### Maximum Ratings

Operating Temperature	-15°C to +45°C
Storage Temperature	-15°C to +85°C
RF Power	20W
Control Voltage	13V
Permanent damage may occur if any of these limits are exceeded.	

### Features

- ultra-reliable, 5 million cycles
- low insertion loss, 0.4 dB typ up to 8 GHz
- high isolation, 90 dB typ up to 12 GHz
- break-before-make configuration
- absorptive failsafe switch
- reliable "sleep-time" switching
- protected by US Patents 5,272,458; 6,414,577; 7,633,361; 7,843,289 and 6,650,210

### Applications

- (ATE) automatic test equipment
- redundancy switching for microwave radio



front view

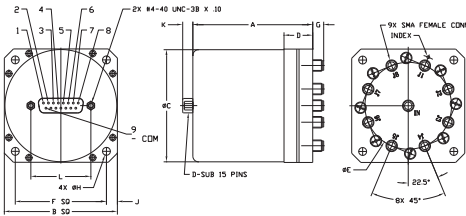
back view

CASE STYLE: HJ2201

Connectors Model  
SMA MSP8TA-12-12D+

**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Outline Drawing



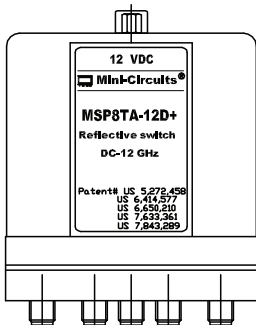
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
2.63	2.48	2.45	.63	1.900	2.000	.24
66.80	62.99	62.23	16.00	48.26	50.80	6.10
H	J	K	L	wt		
.172	.24	.22	1.312	grams		
4.37	6.10	5.59	33.32	320		

### CONTROL LOGIC

12V TO PORT (1-8)	ON	OFF
9 CDM	IN-J1	J1-T1
1	IN-J2	J2-T2
2	IN-J3	J3-T3
3	IN-J4	J4-T4
4	IN-J5	J5-T5
5	IN-J6	J6-T6
6	IN-J7	J7-T7
7	IN-J8	J8-T8
8		

### Marking Drawing



### Electrical Specifications at 25°C

Parameter	Condition	Min.	Typ. (Note 1)	Max.	Unit
Frequency Range		DC	—	12	GHz
Insertion Loss	DC - 1 GHz	—	0.10	0.15	dB
	1 - 4	—	0.15	0.25	
	4 - 8	—	0.20	0.45	
Isolation	8 - 12	—	0.40	0.80	dB
	DC - 1 GHz	95	100	—	
	1 - 4	95	100	—	
VSWR (Note 2,3)	4 - 8	85	100	—	:1
	8 - 12	70	90	—	
	DC - 1 GHz	—	1.05	1.10	
Control Signal (Note 4)	1 - 4	—	1.10	1.20	:1
	4 - 8	—	1.30	1.47	
	8 - 12	—	1.35	1.52	
Switching Lifetime	12V	—	170	250	mA
Hot Switching	0.1W	5 million	—	—	cycles
	1.0W	—	1 million	—	
RF Power Cold Switching	—	—	—	20	W

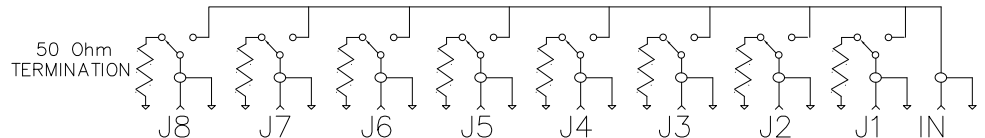
### Notes

1. The performance values represents a common value for the frequency range. For typical performance across the frequency band, see performance graphs in the next page.
2. All ports, all states
3. For port IN in Energized state only.
4. +12 Volt applied to energized port, COM is negative.

### Additional Specifications

Operating Voltage Range	12V (nom) ±0.5V
Switching Time (Typ.)	20ms

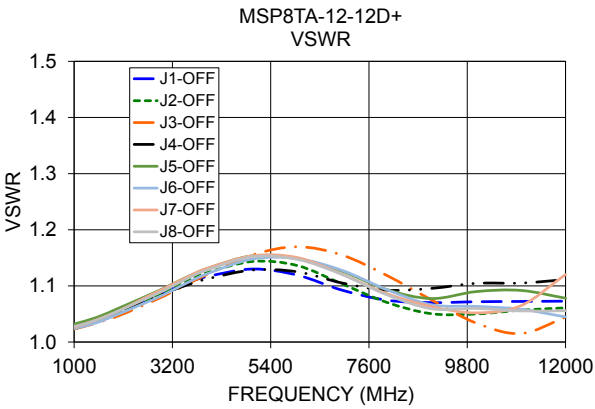
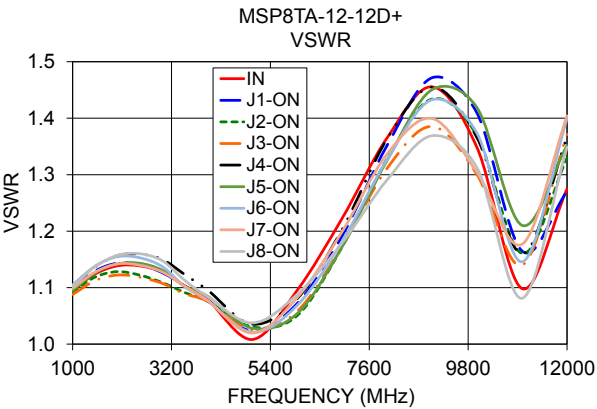
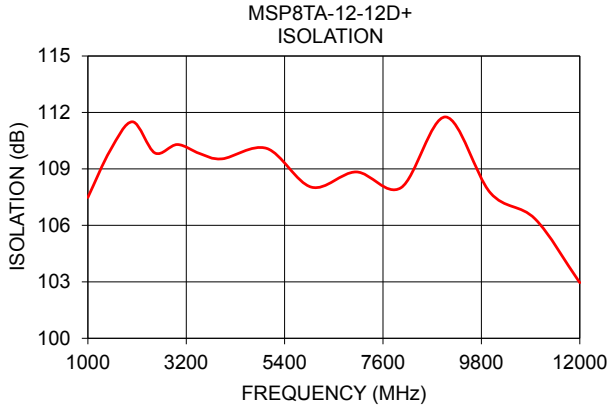
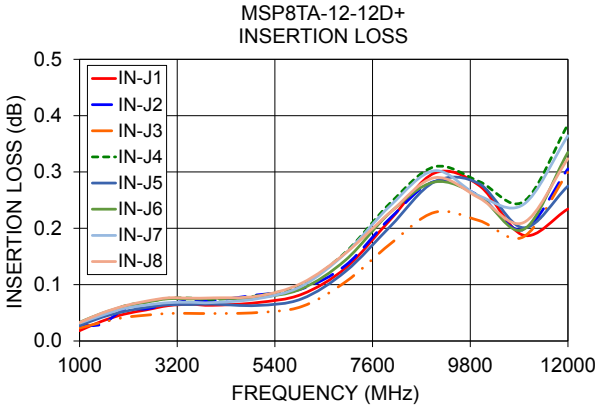
### Switching Position (Non-Energized)



## Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB)								ISOLATION (dB)				VSWR*							
	IN-J1	IN-J2	IN-J3	IN-J4	IN-J5	IN-J6	IN-J7	IN-J8	IN	J1-ON	J2-ON	J3-ON	J4-ON	J5-ON	J6-ON	J7-ON	J8-ON			
1000	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	107.48	1.10	1.10	1.09	1.09	1.10	1.09	1.10	1.10			
1500	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.05	109.98	1.12	1.13	1.12	1.11	1.14	1.13	1.14	1.13			
2000	0.05	0.06	0.04	0.06	0.05	0.06	0.06	0.06	111.50	1.14	1.14	1.13	1.12	1.16	1.14	1.15	1.14			
2500	0.06	0.06	0.05	0.07	0.06	0.07	0.06	0.07	109.85	1.14	1.14	1.12	1.12	1.16	1.14	1.15	1.14			
3000	0.06	0.07	0.05	0.08	0.06	0.07	0.07	0.08	110.29	1.13	1.13	1.11	1.11	1.15	1.13	1.14	1.13			
3500	0.06	0.07	0.05	0.08	0.06	0.07	0.07	0.08	109.82	1.10	1.10	1.09	1.09	1.12	1.10	1.10	1.10			
4000	0.06	0.07	0.05	0.07	0.07	0.08	0.07	0.08	109.53	1.08	1.08	1.08	1.08	1.10	1.08	1.08	1.08			
5000	0.07	0.08	0.05	0.08	0.06	0.08	0.07	0.08	110.09	1.01	1.02	1.03	1.02	1.04	1.03	1.02	1.02			
6000	0.08	0.09	0.06	0.10	0.07	0.09	0.10	0.10	108.03	1.10	1.07	1.05	1.06	1.08	1.05	1.07	1.08			
7000	0.13	0.13	0.11	0.16	0.12	0.14	0.16	0.16	108.84	1.22	1.19	1.17	1.17	1.20	1.17	1.18	1.20			
8000	0.22	0.22	0.17	0.25	0.20	0.23	0.24	0.23	108.00	1.37	1.35	1.33	1.31	1.36	1.33	1.33	1.34			
9000	0.30	0.28	0.23	0.31	0.28	0.28	0.30	0.29	111.76	1.46	1.47	1.43	1.39	1.46	1.45	1.43	1.40			
10000	0.28	0.26	0.21	0.28	0.28	0.26	0.26	0.25	107.73	1.35	1.41	1.37	1.30	1.37	1.42	1.37	1.30			
11000	0.19	0.20	0.18	0.25	0.20	0.20	0.24	0.21	106.34	1.10	1.16	1.16	1.14	1.16	1.21	1.15	1.18			
12000	0.23	0.31	0.30	0.38	0.27	0.33	0.36	0.32	102.96	1.27	1.27	1.33	1.37	1.37	1.35	1.40	1.40			

\*See graph below for VSWR OFF state.



### Additional Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)