

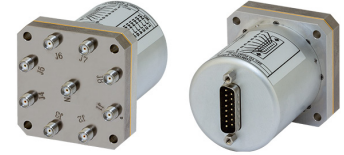
Xtra Long Life SP8T Switch

MSP8T-12D+

50Ω DC to 12 GHz, 24 Volt, Reflective

The Big Deal

- Extra long life - 5 million cycles guaranteed
- Low insertion loss, 0.4 dB typ. at 12 GHz
- High isolation, 90 dB typ. at 12 GHz
- Reflective
- Reliable sleep mode switching



CASE STYLE: HJ2201-1

Product Overview

Mini-Circuits' MSP8T-12D+ is an ultra-reliable, rugged-duty reflective 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 +24VDC, the device has a typical switching speed of 20 milliseconds, insertion loss of 0.4 dB and high isolation of 90 dB. The MSP8T-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 D-Sub Connector	Easy and reliable connect/disconnect eliminating soldering and connection errors.

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50Ω DC to 12 GHz 24 Volt Reflective

MSP8T-12D+

Maximum Ratings

Operating Temperature	-15°C to +45°C
Storage Temperature	-15°C to +85°C
RF Power	20W
Control Voltage	26V

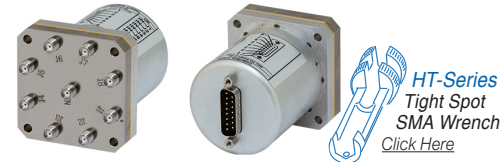
Permanent damage may occur if any of these limits are exceeded.

Features

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

Applications

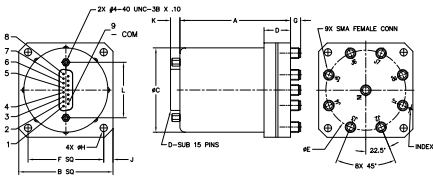
- (ATE) automatic test equipment
- redundancy switching for microwave radio



front view back view
CASE STYLE: HJ2201-1
Connectors Model
SMA MSP8T-12D+

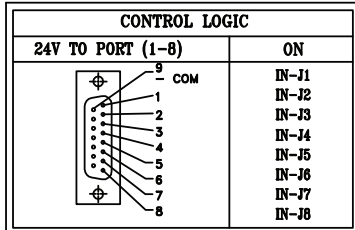
+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Outline Drawing

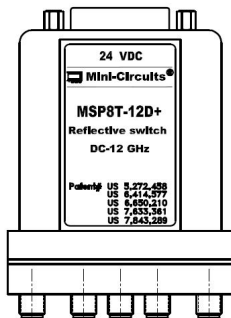


Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	
2.63	2.24	2.00	.63	1.900	1.800	.24	
66.80	56.90	50.80	16.00	48.26	45.72	6.10	
H	J	K	L				wt
.172	.22	.22	1.312				grams
4.37	5.59	5.59	33.32				260



Marking Drawing



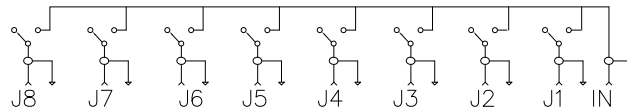
Electrical Specifications at 25°C

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	0.35	
Isolation	8 - 12	—	0.40	0.80	dB
	DC - 1 GHz	95	100	—	
	1 - 4	95	100	—	
VSWR (Note 2)	4 - 8	85	100	—	:1
	8 - 12	70	90	—	
	DC - 1 GHz	—	1.05	1.10	
Operating Voltage Range	DC - 12 GHz	—	24±1	—	V
Control Signal (Note 3)	24V	—	40	60	mA
RF Power Cold Switching		—	—	20	W
RF Power Hot Switching	0.1W	5 million	—	—	Cycles
	1.0W	—	1 million	—	
Switching Time	DC - 12 GHz	—	20	—	ms

Notes

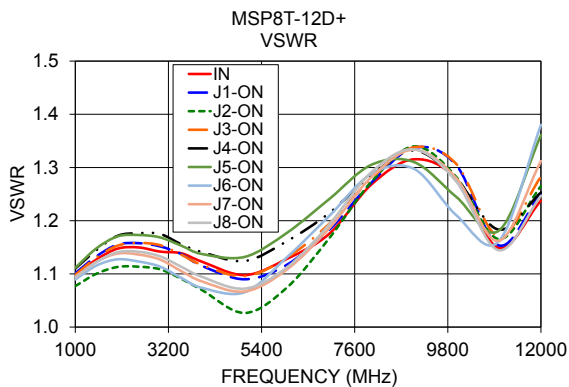
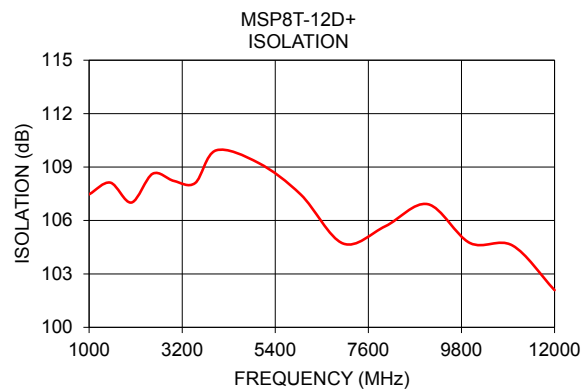
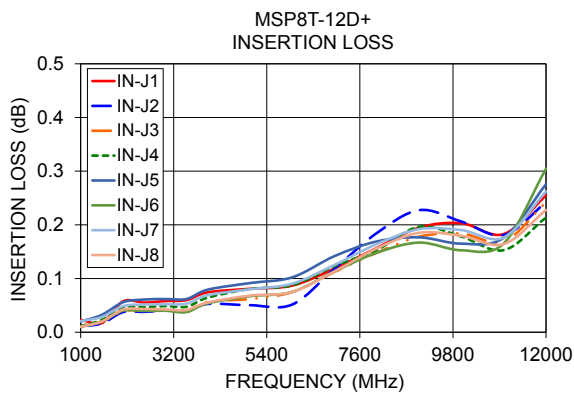
1. The performance values represents a common value for the frequency range. For typical performance across the frequency band, see performance graphs in the next page.
2. All ports, all states.
3. +24 Volt applied to energized port, COM is negative.

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	0.01	0.01	0.01	0.02	0.01	0.02	0.01	107.47	1.10	1.10	1.08	1.10	1.11	1.11	1.09	1.09	1.09		
1501	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	108.13	1.13	1.13	1.10	1.13	1.14	1.15	1.12	1.12	1.12		
2002	0.06	0.04	0.04	0.05	0.06	0.04	0.05	0.04	107.01	1.15	1.16	1.11	1.15	1.17	1.17	1.13	1.14	1.14		
2503	0.06	0.04	0.04	0.05	0.06	0.04	0.05	0.04	108.63	1.15	1.16	1.11	1.16	1.18	1.17	1.12	1.14	1.14		
3004	0.06	0.04	0.04	0.05	0.06	0.04	0.05	0.04	108.22	1.14	1.15	1.11	1.15	1.18	1.17	1.11	1.13	1.13		
3505	0.06	0.04	0.04	0.05	0.06	0.04	0.05	0.04	108.10	1.14	1.14	1.09	1.14	1.16	1.15	1.09	1.11	1.11		
4000	0.07	0.05	0.06	0.06	0.08	0.05	0.07	0.06	109.94	1.12	1.11	1.07	1.12	1.14	1.14	1.07	1.09	1.09		
5006	0.08	0.05	0.06	0.08	0.09	0.07	0.08	0.07	109.23	1.10	1.09	1.03	1.10	1.12	1.13	1.07	1.07	1.07		
6004	0.09	0.05	0.07	0.09	0.10	0.08	0.09	0.07	107.45	1.13	1.12	1.07	1.13	1.16	1.18	1.13	1.11	1.11		
7002	0.12	0.12	0.11	0.12	0.14	0.11	0.13	0.11	104.71	1.18	1.18	1.17	1.19	1.21	1.24	1.21	1.19	1.19		
8000	0.16	0.18	0.15	0.15	0.17	0.15	0.16	0.16	105.68	1.27	1.27	1.27	1.28	1.29	1.31	1.29	1.28	1.29		
9004	0.20	0.23	0.18	0.20	0.18	0.17	0.19	0.19	106.92	1.32	1.34	1.34	1.34	1.33	1.31	1.30	1.33	1.33		
10000	0.20	0.21	0.18	0.18	0.16	0.15	0.19	0.18	104.74	1.28	1.30	1.28	1.31	1.28	1.24	1.21	1.28	1.27		
11004	0.18	0.18	0.17	0.15	0.18	0.17	0.18	0.16	104.60	1.15	1.15	1.17	1.17	1.18	1.18	1.16	1.16	1.14		
12000	0.25	0.24	0.24	0.21	0.28	0.30	0.26	0.23	102.09	1.24	1.25	1.27	1.28	1.25	1.36	1.38	1.31	1.25		



Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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