

Xtra Long Life SP6T Switch

MSP6T-12-12D+

50Ω DC to 12 GHz 12 Volt Reflective



CASE STYLE: HJ1143-1

The Big Deal

- Extra-long switching life - 10 million cycles guaranteed
- Low insertion loss, 0.2 dB
- High isolation, 90 dB
- Reflective
- Reliable sleep mode switching

Product Overview

Mini-Circuits' MSP6T-12-12D+ is an ultra-reliable, rugged-duty reflective fail-safe SP6T switch designed in break-before-make configuration offering an ultra long switching life. 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 MSP6T-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.
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 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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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

- low insertion loss, 0.2 dB typ.
- high isolation, 90 dB typ.
- ultra reliable
- break-before-make configuration
- reflective failsafe switch
- protected by US Patents 5,272,458; 6,414,577; 6,650,210; 7,633,361 and 7,843,289

Applications

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

MSP6T-12-12D+

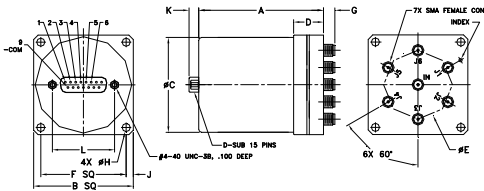


front view back view
CASE STYLE: HJ1143-1

Connectors	Model
SMA	MSP6T-12-12D+

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

Outline Drawing



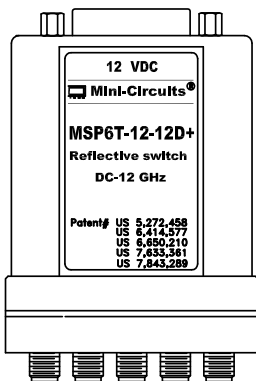
Outline Dimensions (Inch/mm)

A	B	C	D	E	F
2.63	2.10	2.00	.63	1.45	1.800
66.80	53.34	50.80	16.00	36.83	45.72
G	H	J	K	L	wt
.24	.172	.15	.20	1.312	grams
6.10	4.37	3.81	5.08	33.32	230

CONTROL LOGIC

12V TO PORT (1-6)	ON
1	IN-J1
2	IN-J2
3	IN-J3
4	IN-J4
5	IN-J5
6	IN-J6

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 - 6	—	0.15	0.25	
	6 - 8	—	0.20	0.30	
Isolation	DC - 1 GHz	85	100	—	dB
	1 - 6	80	95	—	
	6 - 8	80	90	—	
VSWR (Note 2,3)	DC - 1 GHz	—	1.05	1.10	:1
	1 - 6	—	1.10	1.25	
	6 - 8	—	1.20	1.35	
Control Signal (Note 4)	12V	—	85	125	mA
Switching Lifetime Hot Switching	0.1W	10 million	—	—	cycles
	1.0W	—	1 million	—	
RF Power Cold Switching	—	—	—	20	W

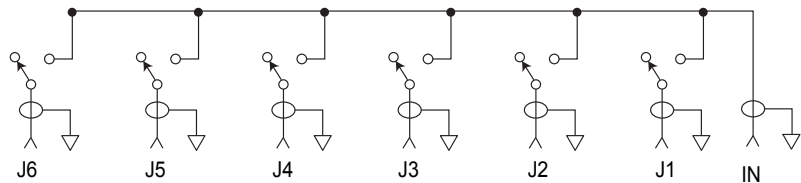
Notes

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 when energized.
3. For port IN in Energized state only.
4. +12 Volt applied to energized port, COM is negative.

Additional Specifications

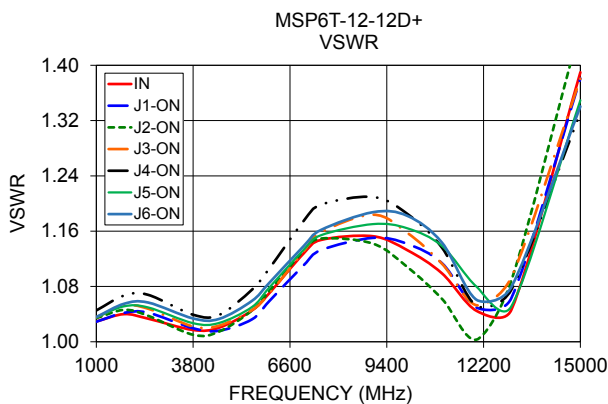
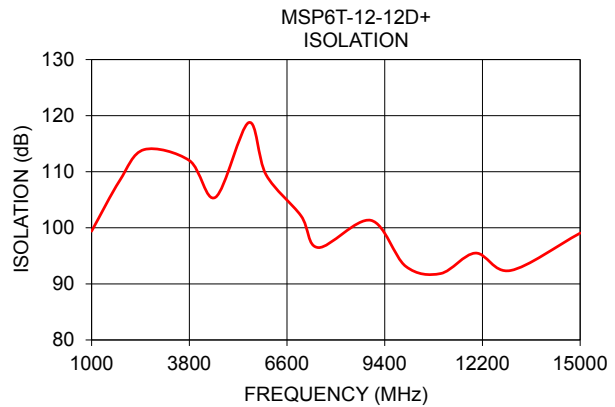
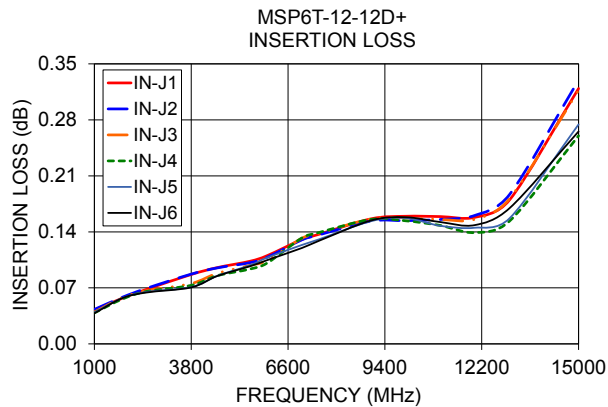
Operating Voltage Range	12V (nom) ±0.5V
Switching Time (Typ.)	20ms

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	J1-ON	J2-ON	J3-ON	J4-ON	J5-ON	J6-ON	
1000	0.04	0.04	0.04	0.04	0.04	0.04	99.41	1.03	1.03	1.03	1.04	1.05	1.04	1.04
1800	0.06	0.06	0.06	0.06	0.06	0.06	108.37	1.04	1.04	1.05	1.05	1.07	1.05	1.05
2500	0.07	0.07	0.07	0.07	0.06	0.06	113.94	1.03	1.04	1.04	1.05	1.07	1.05	1.06
3800	0.09	0.09	0.08	0.07	0.07	0.07	112.01	1.02	1.02	1.01	1.02	1.04	1.03	1.03
4550	0.10	0.09	0.09	0.09	0.08	0.08	105.44	1.02	1.02	1.01	1.02	1.04	1.03	1.03
5500	0.10	0.10	0.10	0.09	0.10	0.10	118.76	1.05	1.03	1.05	1.05	1.08	1.05	1.06
6000	0.11	0.11	0.10	0.10	0.11	0.10	109.45	1.07	1.06	1.07	1.07	1.11	1.08	1.09
7000	0.13	0.13	0.13	0.13	0.12	0.12	102.15	1.13	1.11	1.13	1.13	1.18	1.13	1.14
7500	0.14	0.14	0.14	0.14	0.13	0.13	96.47	1.15	1.13	1.15	1.16	1.20	1.15	1.16
9000	0.16	0.15	0.16	0.16	0.15	0.15	101.34	1.15	1.15	1.14	1.18	1.21	1.17	1.19
10000	0.16	0.15	0.16	0.15	0.16	0.16	93.14	1.13	1.14	1.11	1.16	1.18	1.16	1.18
11000	0.16	0.16	0.16	0.15	0.15	0.15	91.84	1.10	1.11	1.06	1.11	1.14	1.14	1.14
12000	0.16	0.16	0.16	0.14	0.15	0.15	95.49	1.04	1.05	1.00	1.05	1.05	1.08	1.06
13005	0.18	0.19	0.18	0.15	0.16	0.17	92.38	1.05	1.06	1.09	1.09	1.08	1.05	1.08
15000	0.32	0.33	0.32	0.26	0.27	0.27	99.05	1.39	1.38	1.46	1.38	1.33	1.35	1.34



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