Xtra Long Life
SP6T Switch

MSP6TA-12-12D+

50Ω   DC to 12 GHz   12 Volt   Absorptive

CASE STYLE: HJ1143-1

The Big Deal

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

Product Overview

Mini-Circuits' MSP6TA-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 MSP6TA-12-12D+ is suitable for use across a wide range of applications, including switching for automated test equipment and redundancy switching.

Key Features

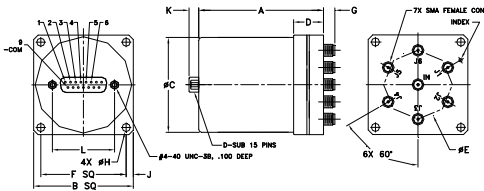| Feature	Advantages
Extra long service life	Exceptionally long service life improves system reliability and reduces the need to replace switches often, making it ideal for automaticd test systems.
High isolation, 90 dB typ.	Prevents interference from unwanted signals, ensuring signal integrity and accuracy 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 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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front view   *back view*

CASE STYLE: HJ1143-1

Connectors	Model
SMA	MSP6TA-12-12D+

HT-Series
*Tight Spot
SMA Wrench*
Click Here

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

Maximum Ratings

Operating Temperature	-15°C to +45°C
Storage Temperature	-15°C to +85°C
RF Power	20W
Control Voltage	13V

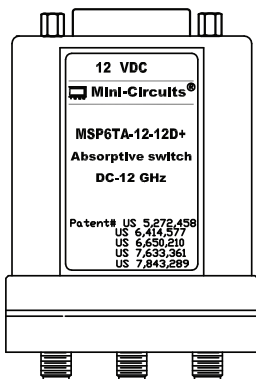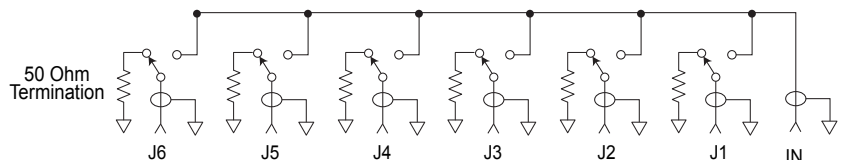Permanent damage may occur if any of these limits are exceeded.

Features

• ultra-reliable, 10 million cycles
• low insertion loss, 0.2 dB typ.
• high isolation, 90 dB typ.
• 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

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	OFF
1	IN-J1	J1-T1
2	IN-J2	J2-T2
3	IN-J3	J3-T3
4	IN-J4	J4-T4
5	IN-J5	J5-T5
6	IN-J6	J6-T6

9 -COM

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	
	8 - 12	—	0.25	0.45	
Isolation	DC - 1 GHz	85	100	—	dB
	1 - 6	80	95	—	
	6 - 8	80	90	—	
	8 - 12	80	90	—	
VSWR (Note 2)	DC - 1 GHz	—	1.05	1.10	:1
	1 - 6	—	1.20	1.25	
	6 - 8	—	1.20	1.35	
	8 - 12	—	1.20	1.35	
Operating Voltage Range	DC - 12 GHz		12±0.5		V
Control Signal (Note 3)	12V	—	170	250	mA
RF Power Cold Switching	—	—	—	20	W
RF Power Hot Switching	0.1W	10 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. For port IN in Energized state only.
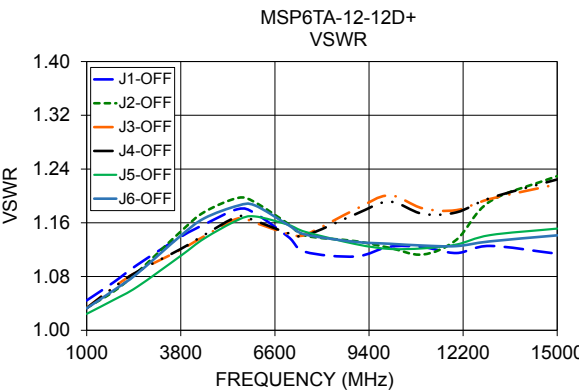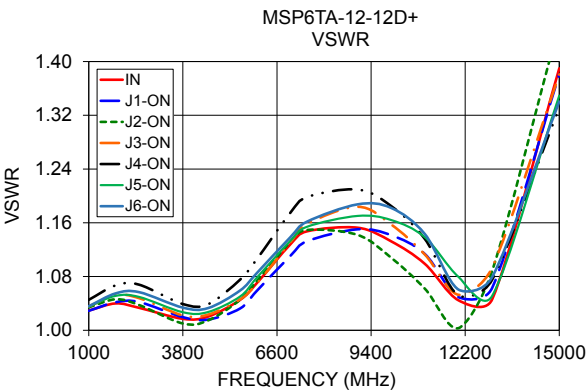4. +12 Volt applied to energized port, COM is negative.

Switching Position (Non-Energized)

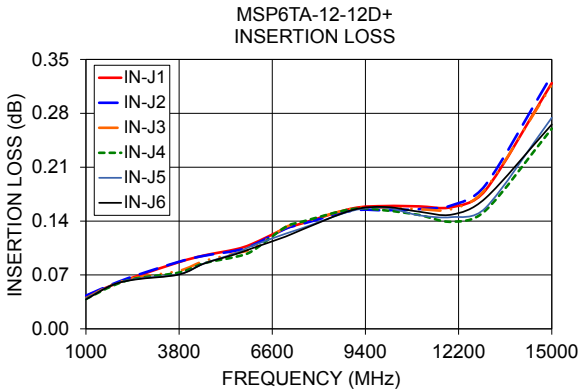

50 Ohm
Termination

J6   J5   J4   J3   J2   J1   IN

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M166135
MSP6TA-12-12D+
BT/TH/CP
180912
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MSP6TA-12-12D+

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

*See graph below for VSWR OFF state.

MSP6TA-12-12D+ INSERTION LOSS

MSP6TA-12-12D+ ISOLATION

MSP6TA-12-12D+ VSWR

MSP6TA-12-12D+ VSWR
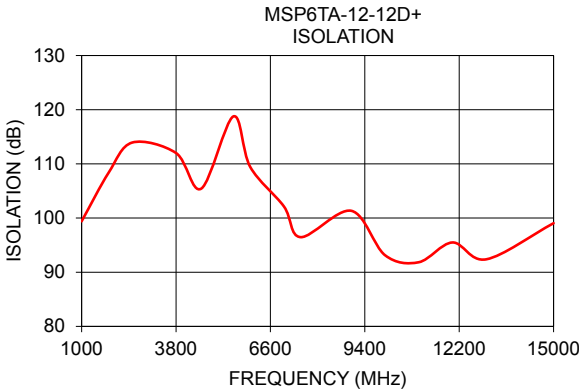
Additional Notes

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.

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