

# Xtra Long Life SPDT Switch

## MSP2TA-18-12D+

50Ω DC to 18 GHz, 12 Volt, Absorptive

### The Big Deal

- Extra long life - 10 million cycles
- Low insertion loss, 0.3 dB typ. at 18 GHz
- High isolation, 70 dB typ. at 18 GHz
- Absorptive
- Reliable sleep mode switching



CASE STYLE: FP914-3

### Product Overview

Mini-Circuits' MSP2TA-18-12D+ is an ultra-reliable, rugged-duty absorptive fail-safe SP2T 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 0.3 dB and high isolation of 70 dB. The MSP2TA-18-12D+ 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, 70 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.



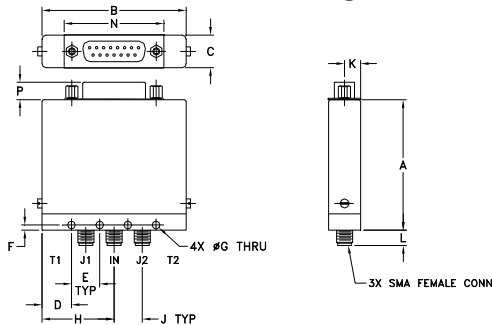
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50Ω DC to 18 GHz, 12 Volt, Absorptive

## Maximum Ratings

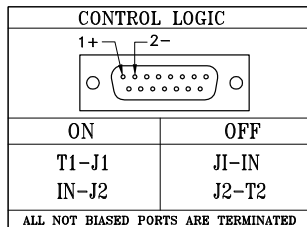
Operating Temperature	-15°C to +45°C
Storage Temperature	-15°C to +85°C
RF Power (any IN port)	20W
RF Power (any J1 and J2)	1W
Control Voltage	13VDC
Permanent damage may occur if any of these limits are exceeded.	

## Outline Drawing

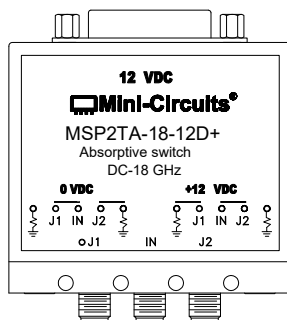


## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
2.00	2.25	.50	.460	.440	.080	.120
50.80	57.15	12.70	11.68	11.18	2.03	3.05
H	J	K	L	N	P	wt
1.125	.440	.25	.24	1.55	.27	grams
28.58	11.18	6.35	6.10	39.37	6.86	98



## Marking Drawing



## Features

- extra long switching life - 100 million cycles<sup>4</sup>
- low voltage operation, 12V
- low insertion loss, 0.3 dB typ. at 18 GHz
- high isolation, 70 dB typ. at 18 GHz
- high power handling, 20W
- ultra reliable
- break-before-make configuration
- absorptive failsafe switch
- protected by US Patents 5,272,458; 6,414,577; 6,650,210; 7,633,361; 7,843,289

## Applications

- Automatic Test Equipment (ATE)
- redundancy switching for microwave radio

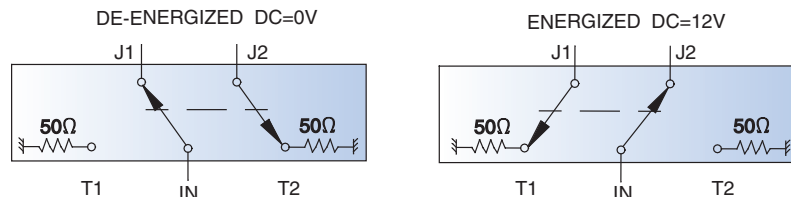
## Electrical Specifications

Parameter	Condition	Min.	Typ. (Note 1)	Max.	Unit
Frequency Range		DC	—	18	GHz
Insertion Loss	DC - 1 GHz	—	0.10	0.15	dB
	1 - 8	—	0.15	0.30	
	8 - 12	—	0.25	0.40	
	12 - 18	—	0.30	0.50	
Isolation	DC - 1 GHz	85	100	—	dB
	1 - 8	75	90	—	
	8 - 12	70	80	—	
	12 - 18	60	70	—	
VSWR (Note 2)	DC - 1 GHz	—	1.05	1.10	:1
	1 - 8	—	1.20	1.30	
	8 - 12	—	1.20	1.35	
	12 - 18	—	1.15	1.40	
Operating Voltage Range	DC - 18 GHz	—	12±0.5	—	V
Control Signal (Note 3)	12V	—	350	430	mA
RF Power Cold Switching	—	—	—	20	W
RF Power Hot Switching	0.1W	10 million	—	—	Cycles
	1.0W	—	3 million	—	
Switching Time	DC - 18 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. +12 Volt applied to energized port, COM is negative.
4. All units meet 10 million cycles and are capable of greater than 100 million cycles with factory cleaning.

## Switching States



CASE STYLE: FP914-3

Connectors Model  
SMA MSP2TA-18-12-D+

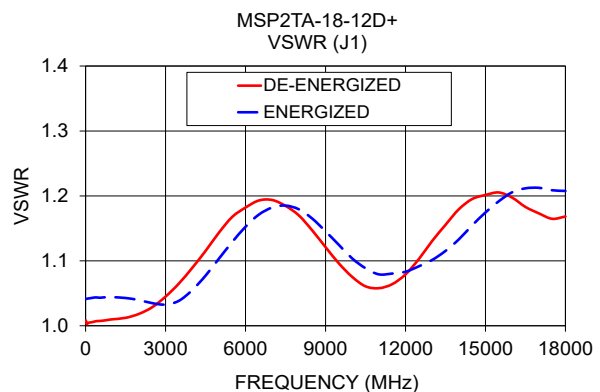
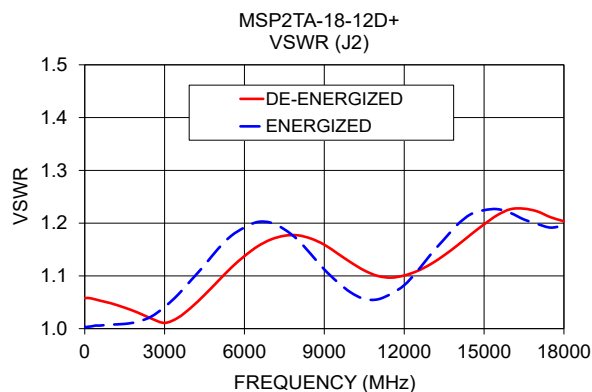
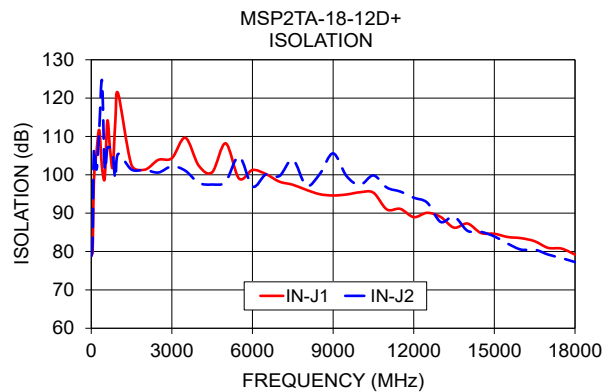
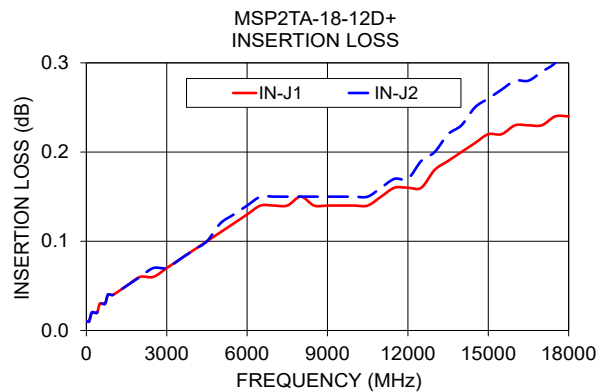
### +RoHS Compliant

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



## Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB)		OFF ISOLATION (dB)		VSWR, IN (:1)		VSWR (J2) (:1)		VSWR (J1) (:1)	
	IN-J2	IN-J2	IN-J1	IN-J2	De-Energized	Energized	De-Energized	Energized	De-Energized	Energized
10.0	0.01	0.01	79.15	78.83	1.00	1.01	1.06	1.00	1.01	1.04
100.0	0.01	0.01	98.51	106.49	1.00	1.00	1.06	1.00	1.00	1.04
1000.0	0.04	0.04	121.18	105.44	1.01	1.01	1.05	1.01	1.01	1.04
2000.0	0.06	0.06	101.35	101.29	1.01	1.02	1.03	1.01	1.02	1.04
3000.0	0.07	0.07	104.33	102.22	1.04	1.05	1.01	1.04	1.04	1.03
4000.0	0.09	0.09	102.39	97.90	1.09	1.09	1.04	1.09	1.09	1.05
5000.0	0.11	0.12	108.21	98.20	1.15	1.14	1.09	1.15	1.14	1.10
6000.0	0.13	0.14	101.25	96.96	1.20	1.18	1.14	1.19	1.18	1.15
7000.0	0.14	0.15	98.22	99.67	1.20	1.19	1.17	1.20	1.19	1.18
8000.0	0.15	0.15	96.08	97.15	1.17	1.16	1.18	1.17	1.17	1.18
9000.0	0.14	0.15	94.61	105.59	1.11	1.12	1.16	1.11	1.12	1.15
10000.0	0.14	0.15	95.45	97.35	1.07	1.07	1.13	1.07	1.08	1.10
11000.0	0.15	0.16	90.97	96.67	1.05	1.06	1.10	1.06	1.06	1.08
12000.0	0.16	0.17	88.97	94.03	1.08	1.08	1.10	1.08	1.08	1.08
13000.0	0.18	0.20	89.02	87.71	1.15	1.13	1.12	1.14	1.13	1.10
14000.0	0.20	0.23	87.29	85.40	1.21	1.18	1.16	1.20	1.18	1.13
15000.0	0.22	0.26	84.63	83.93	1.23	1.20	1.20	1.22	1.20	1.17
16000.0	0.23	0.28	83.48	80.49	1.21	1.20	1.23	1.22	1.20	1.21
17000.0	0.23	0.29	80.95	79.21	1.16	1.17	1.22	1.20	1.17	1.21
18000.0	0.24	0.32	79.20	77.24	1.16	1.17	1.20	1.20	1.17	1.21



## 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.
- 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)