

# Xtra Long Life SP4T Switch

50Ω DC to 18 GHz 24 Volt

## Maximum Ratings

|   |                |
|---|----------------|
| Operating Temperature   | -15°C to +45°C |
| Storage Temperature   | -15°C to +45°C |
| RF Power  | 2W             |
| Control Voltage   | 26VDC          |
| Permanent damage may occur if any of these limits are exceeded. |                |

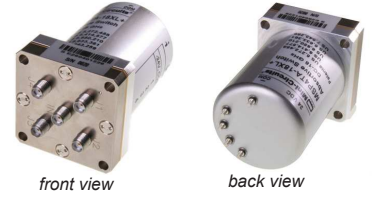
## Features

- low insertion loss, 0.2 dB typ.
- high isolation, 85 dB typ.
- 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 and 7,843,289

## Applications

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

## MSP4TA-18+

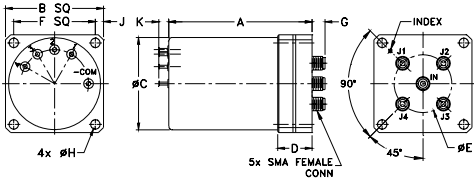


|                    |            |          |       |
|--------------------|------------|----------|-------|
| CASE STYLE: HJ1768 |            |          |       |
| Connectors         | Model      | Price    | Qty.  |
| SMA                | MSP4TA-18+ | \$395.00 | (1-9) |

### +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  | 1.80  | 1.70  | .63   | 1.06  | 1.500 |
| 66.80 | 45.72 | 43.18 | 16.00 | 26.92 | 38.10 |
| G     | H     | J     | K     |       | wt    |
| .24   | .172  | .15   | .19   |       | grams |
| 6.10  | 4.37  | 3.81  | 4.83  |       | 160   |

## Electrical Specifications

| Parameter                   | Condition  | Min. | Typ.        | Max. | Unit   |
|-----------------------------|------------|------|-------------|------|--------|
| Frequency Range             |            | DC   | —           | 18   | GHz    |
| Insertion Loss              | DC - 1 GHz | —    | 0.10        | 0.20 | dB     |
|                             | 1 - 8      | —    | 0.15        | 0.30 |        |
|                             | 8 - 12     | —    | 0.25        | 0.40 |        |
|                             | 12 - 18    | —    | 0.50        | 0.80 |        |
| Isolation                   | DC - 1 GHz | 85   | 105         | —    | dB     |
|                             | 1 - 8      | 80   | 100         | —    |        |
|                             | 8 - 12     | 75   | 95          | —    |        |
|                             | 12 - 18    | 60   | 80          | —    |        |
| VSWR (Note 1,2)             | DC - 1 GHz | —    | 1.05        | 1.10 | :1     |
|                             | 1 - 8      | —    | 1.20        | 1.40 |        |
|                             | 8 - 12     | —    | 1.20        | 1.40 |        |
| 12 - 18                     | —          | 1.30 | 1.60        |      |        |
| Control Signal (Note 3)     | 24V        | —    | 85          | 125  | mA     |
| Switching Lifetime (Note 4) | 0.1W       | —    | 100 million | —    | cycles |
|                             | 1.0W       | —    | 10 million  | —    |        |

### Notes

1. For ports J1, J2, J3 and J4 energized state.
2. For port IN in Energized state only.
3. +24 Volt applied to energized port, all other ports negative or ground. COM is negative.
4. Since these are mechanical devices, a lubrication may be required to meet the expected lifetimes shown in the specifications. Please see Mini-Circuits Warranty Policy regarding these devices.

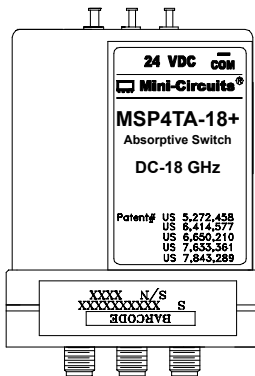
## Additional Specifications

|                         |               |
|-------------------------|---------------|
| Operating Voltage Range | 24V (nom) ±1V |
| Switching Time (Typ.)   | 20ms          |

### Patents

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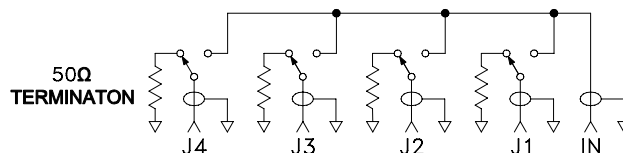
## Marking Drawing



### Notes

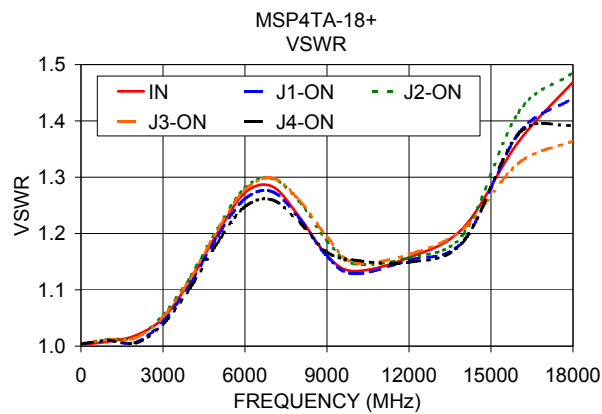
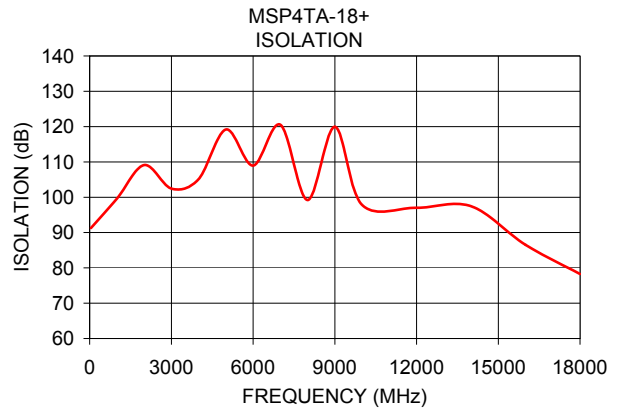
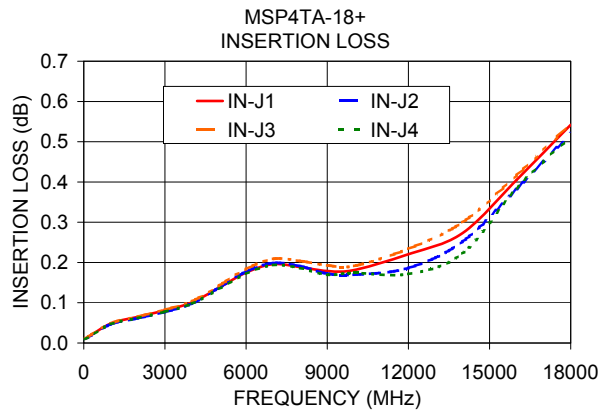
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## Switching Position (Non-Energized)



## Typical Performance Data

| FREQ.<br>(MHz) | ON INSERTION LOSS<br>(dB) |       |       |       | ISOLATION<br>(dB) | VSWR |       |       |       |       |
|----------------|---------------------------|-------|-------|-------|-------------------|------|-------|-------|-------|-------|
|                | IN-J1                     | IN-J2 | IN-J3 | IN-J4 |                   | IN   | J1-ON | J2-ON | J3-ON | J4-ON |
| 50.00          | 0.01                      | 0.01  | 0.01  | 0.01  | 91.27             | 1.00 | 1.00  | 1.00  | 1.00  | 1.00  |
| 1000.00        | 0.05                      | 0.05  | 0.05  | 0.05  | 99.60             | 1.01 | 1.01  | 1.01  | 1.01  | 1.01  |
| 2000.00        | 0.06                      | 0.06  | 0.07  | 0.06  | 109.11            | 1.02 | 1.01  | 1.02  | 1.01  | 1.01  |
| 3000.00        | 0.08                      | 0.08  | 0.08  | 0.08  | 102.46            | 1.05 | 1.04  | 1.05  | 1.05  | 1.04  |
| 4000.00        | 0.10                      | 0.10  | 0.10  | 0.10  | 105.14            | 1.12 | 1.11  | 1.12  | 1.12  | 1.10  |
| 5000.00        | 0.14                      | 0.14  | 0.14  | 0.13  | 119.18            | 1.20 | 1.20  | 1.21  | 1.21  | 1.18  |
| 6000.00        | 0.17                      | 0.18  | 0.18  | 0.17  | 108.97            | 1.27 | 1.26  | 1.28  | 1.28  | 1.25  |
| 7000.00        | 0.20                      | 0.20  | 0.21  | 0.19  | 120.51            | 1.28 | 1.27  | 1.30  | 1.30  | 1.26  |
| 8000.00        | 0.19                      | 0.19  | 0.20  | 0.19  | 99.22             | 1.23 | 1.23  | 1.26  | 1.26  | 1.22  |
| 9000.00        | 0.18                      | 0.17  | 0.19  | 0.17  | 119.92            | 1.16 | 1.16  | 1.19  | 1.19  | 1.17  |
| 10000.00       | 0.18                      | 0.17  | 0.19  | 0.17  | 97.84             | 1.13 | 1.13  | 1.15  | 1.15  | 1.15  |
| 12000.00       | 0.22                      | 0.19  | 0.23  | 0.17  | 97.02             | 1.16 | 1.15  | 1.16  | 1.16  | 1.15  |
| 14000.00       | 0.27                      | 0.25  | 0.30  | 0.22  | 97.45             | 1.21 | 1.19  | 1.20  | 1.21  | 1.19  |
| 16000.00       | 0.41                      | 0.38  | 0.42  | 0.38  | 86.52             | 1.36 | 1.38  | 1.41  | 1.32  | 1.38  |
| 18000.00       | 0.54                      | 0.52  | 0.54  | 0.51  | 78.26             | 1.47 | 1.44  | 1.49  | 1.36  | 1.39  |



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