

# Xtra Long Life SPDT Switch

50Ω DC to 18 GHz 12 Volt

## MSP2T-18-12+



CASE STYLE: FK811

| Connectors | Model        | Price    | Qty.  |
|------------|--------------|----------|-------|
| SMA        | MSP2T-18-12+ | \$159.95 | (1-9) |

### +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 +45°C |
| RF Power (any single port)                                      | 10W            |
| Control Voltage   | 13VDC          |
| Permanent damage may occur if any of these limits are exceeded. |                |

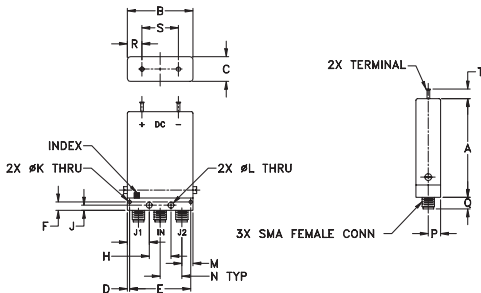
### Features

- low voltage operation, 12V
- low insertion loss, 0.25 dB typ.
- high isolation, 80 dB typ.
- high power handling, 10W
- 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; 7,843,289

### Applications

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

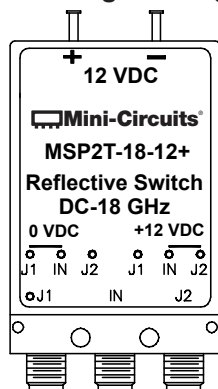
### Outline Drawing



### Outline Dimensions (inch/mm)

|       |       |       |       |       |      |       |       |       |
|-------|-------|-------|-------|-------|------|-------|-------|-------|
| A     | B     | C     | D     | E     | F    | G     | H     | J     |
| 2.00  | 1.33  | .50   | .045  | 1.240 | .170 | .445  | .440  | .103  |
| 50.80 | 33.78 | 12.70 | 1.14  | 31.50 | 4.32 | 11.30 | 11.18 | 2.62  |
| K     | L     | M     | N     | P     | Q    | R     | S     | T     |
| .070  | .120  | .227  | .440  | .25   | .24  | .297  | .740  | .19   |
| 1.78  | 3.05  | 5.77  | 11.18 | 6.35  | 6.10 | 7.54  | 18.80 | 4.83  |
|       |       |       |       |       |      |       |       | wt    |
|       |       |       |       |       |      |       |       | grams |
|       |       |       |       |       |      |       |       | 41    |

### Marking Drawing



### Electrical Specifications

| Parameter                            | Condition (GHz) | Min.    | Typ.   | Max. | Unit |
|--------------------------------------|-----------------|---------|--------|------|------|
| Frequency Range                      |                 | DC      | —      | 18   | GHz  |
| Insertion Loss                       | DC - 1          | —       | 0.10   | 0.15 | dB   |
|                                      | 1 - 8           | —       | 0.20   | 0.30 |      |
|                                      | 8 - 12          | —       | 0.25   | 0.35 |      |
|                                      | 12 - 18         | —       | 0.30   | 0.45 |      |
| Isolation                            | DC - 1          | 85      | 100    | —    | dB   |
|                                      | 1 - 8           | 75      | 90     | —    |      |
|                                      | 8 - 12          | 70      | 80     | —    |      |
|                                      | 12 - 18         | 60      | 66     | —    |      |
| VSWR                                 | DC - 1          | —       | 1.05   | 1.10 | :1   |
|                                      | 1 - 8           | —       | 1.20   | 1.35 |      |
|                                      | 8 - 12          | —       | 1.20   | 1.35 |      |
|                                      | 12 - 18         | —       | 1.15   | 1.40 |      |
| DC Current @ +12V                    | DC - 18         | —       | 180    | 230  | mA   |
| RF Power Cold Switching <sup>4</sup> | DC - 18         | —       | —      | 10   | W    |
| RF Power Hot Switching               | Note 1          | DC - 18 | —      | —    | 0.1  |
|                                      |                 |         | Note 2 | —    | —    |

### Additional Specifications

|                          |                                |
|--------------------------|--------------------------------|
| Operating Voltage Range  | 12V (nom) ±0.5V                |
| Switching Time (Typ.)    | 20ms                           |
| Life <sup>3</sup> (Min.) | 1year/10 million switch cycles |

#### Notes

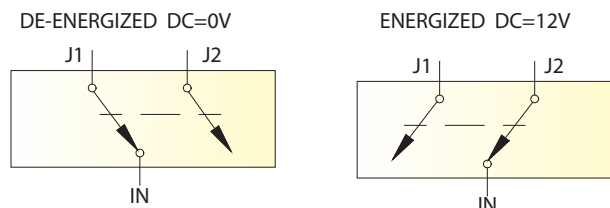
1. To achieve specified life, hot switching RF power must not exceed this level.
2. Degradation in life (min.) to typically 3 million switch cycles for hot switch at this RF power level.
3. Tested at 0 dBm RF power.
4. Power handling is specified with RF applied to the IN port and output load connected to either J1 or J2.

**10 YEAR EXTENDED WARRANTY**

10 Yr. 100 Million Cycles<sup>3</sup>  
\$19.95/yr.  
for a total of  
\$199.50

\*10 year agreement required  
Click Here for details

### Switching States



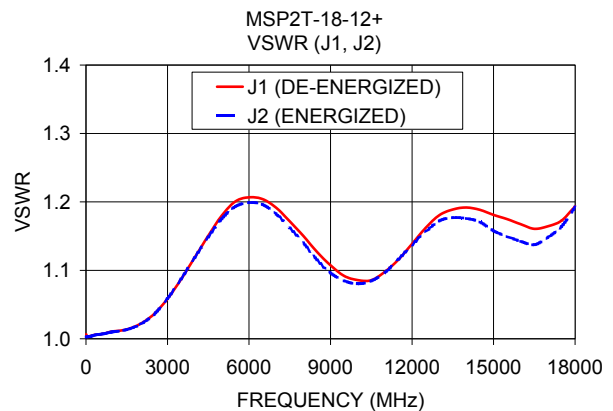
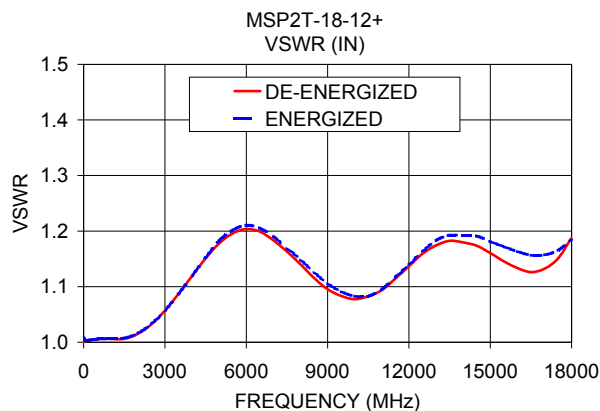
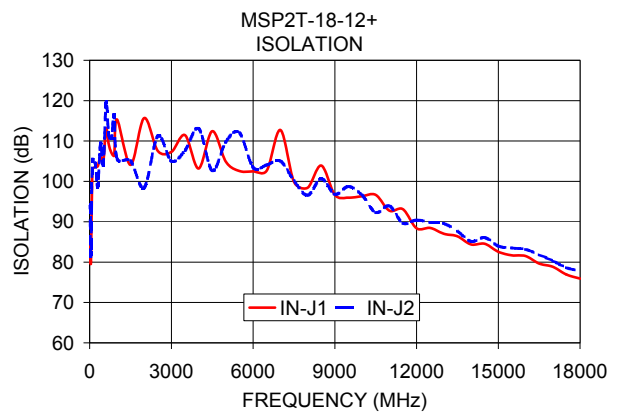
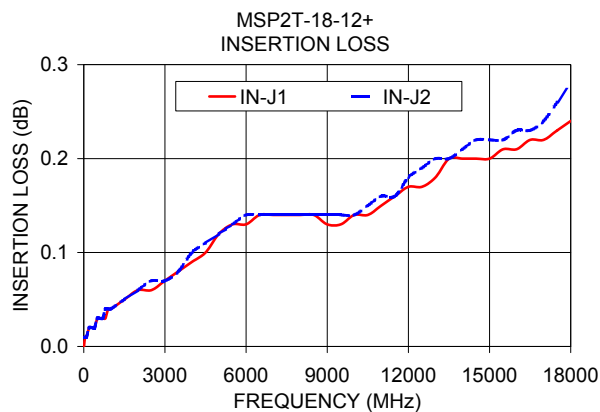
#### Notes

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## Typical Performance Data

| FREQ.<br>(MHz) | ON INSERTION<br>LOSS<br>(dB) |       | OFF ISOLATION<br>(dB) |        | VSWR, IN<br>(:1) |           | VSWR<br>(J1, J2)<br>(:1) |           |
|----------------|------------------------------|-------|-----------------------|--------|------------------|-----------|--------------------------|-----------|
|                | IN-J1                        | IN-J2 | IN-J1                 | IN-J2  | De-<br>Energized | Energized | (J1) De-                 | (J2)      |
|                |                              |       |                       |        |                  |           | Energized                | Energized |
| 10.0           | 0.00                         | 0.01  | 85.77                 | 94.22  | 1.00             | 1.01      | 1.01                     | 1.00      |
| 100.0          | 0.01                         | 0.01  | 102.87                | 105.34 | 1.00             | 1.00      | 1.00                     | 1.00      |
| 1000.0         | 0.04                         | 0.04  | 115.37                | 105.64 | 1.01             | 1.01      | 1.01                     | 1.01      |
| 2000.0         | 0.06                         | 0.06  | 115.69                | 98.42  | 1.02             | 1.02      | 1.02                     | 1.02      |
| 3000.0         | 0.07                         | 0.07  | 107.32                | 105.01 | 1.06             | 1.06      | 1.06                     | 1.06      |
| 4000.0         | 0.09                         | 0.10  | 103.20                | 113.10 | 1.12             | 1.12      | 1.12                     | 1.12      |
| 5000.0         | 0.12                         | 0.12  | 104.85                | 109.83 | 1.18             | 1.18      | 1.18                     | 1.18      |
| 6000.0         | 0.13                         | 0.14  | 102.48                | 103.47 | 1.20             | 1.21      | 1.21                     | 1.20      |
| 7000.0         | 0.14                         | 0.14  | 112.75                | 105.01 | 1.18             | 1.19      | 1.19                     | 1.18      |
| 8000.0         | 0.14                         | 0.14  | 98.41                 | 96.58  | 1.14             | 1.15      | 1.15                     | 1.14      |
| 9000.0         | 0.13                         | 0.14  | 96.65                 | 96.81  | 1.10             | 1.11      | 1.11                     | 1.10      |
| 10000.0        | 0.14                         | 0.14  | 96.31                 | 96.57  | 1.08             | 1.08      | 1.09                     | 1.08      |
| 11000.0        | 0.15                         | 0.16  | 92.76                 | 93.91  | 1.09             | 1.10      | 1.10                     | 1.10      |
| 12000.0        | 0.17                         | 0.18  | 88.40                 | 90.44  | 1.14             | 1.14      | 1.14                     | 1.14      |
| 13000.0        | 0.18                         | 0.20  | 87.03                 | 89.57  | 1.17             | 1.18      | 1.18                     | 1.17      |
| 14000.0        | 0.20                         | 0.21  | 84.38                 | 85.14  | 1.18             | 1.19      | 1.19                     | 1.18      |
| 15000.0        | 0.20                         | 0.22  | 82.56                 | 83.98  | 1.16             | 1.18      | 1.18                     | 1.16      |
| 16000.0        | 0.21                         | 0.23  | 81.52                 | 83.15  | 1.13             | 1.16      | 1.17                     | 1.14      |
| 17000.0        | 0.22                         | 0.24  | 78.85                 | 80.32  | 1.13             | 1.16      | 1.16                     | 1.15      |
| 18000.0        | 0.24                         | 0.28  | 75.92                 | 77.77  | 1.19             | 1.18      | 1.19                     | 1.19      |



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