*Xtra Long Life*

# SPDT Switch

**MSP2T-26XL+**
**MSP2T-26-PM+**
**MSP2T-26-BM+**

50Ω DC to 26.5 GHz, 24 Volt, Reflective

## The Big Deal

- Extra long life - 10 million cycles guaranteed
- Low insertion loss, 0.25 dB
- High isolation, 85 dB
- Reflective
- Reliable sleep mode switching



MSP2T-26XL+



MSP2T-26-PM+
*Panel Mount*



MSP2T-26-BM+
*Base Mount*

## Product Overview

Mini-Circuits' MSP2T-26 Series are ultra-reliable, rugged-duty reflective fail-safe SP2T switches designed in break-before-make configuration offering an Ultra long switching life. Powered by +24VDC, the device has a typical switching speed of 20 milliseconds, insertion loss of 0.25 dB and high isolation of 85 dB. The MSP2T-26 Series are 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 automatic test systems. |
| High isolation, 85 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 insertion loss between switching cycles ensures reliable performance critical for automated testing and other measurement applications. |

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# MSP2T-26XL+
# MSP2T-26-PM+
# MSP2T-26-BM+



MSP2T-26XL+



MSP2T-26-PM+
*Panel Mount*



MSP2T-26-BM+
*Base Mount*



*HT-Series*
*Tight Spot*
*SMA Wrench*
*Click Here*

## Features

- extra long switching life - 100 million cycles[4]
- low insertion loss, 0.25 dB typ.
- high isolation, 85 dB typ.
- high power handling, 20W
- 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

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

| Model No. | Connectors | Bracket Option | Case Style |
|---|---|---|---|
| MSP2T-26XL+ | SMA | — | FK811 |
| MSP2T-26-PM+ | SMA | Panel Mount | FK811-PM |
| MSP2T-26-BM+ | SMA | Base Mount | FK811-BM |

*See Page 4 for Mounting Options Available*
*Option must be specified when ordering*

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

## Electrical Specifications

| Parameter | Condition | Min. | Typ. (Note 1) | Max. | Unit |
|---|---|---|---|---|---|
| **Frequency Range** | | DC | — | 26.5 | GHz |
| **Insertion Loss** | DC - 1 GHz | — | 0.10 | 0.15 | dB |
| | 1 - 8 | — | 0.20 | 0.30 | |
| | 8 - 12 | — | 0.25 | 0.35 | |
| | 12 - 18 | — | 0.30 | 0.45 | |
| | 18 - 26.5 | — | 0.64 | 0.75 | |
| **Isolation** | DC - 1 GHz | 85 | 100 | — | dB |
| | 1 - 8 | 75 | 90 | — | |
| | 8 - 12 | 70 | 80 | — | |
| | 12 - 18 | 60 | 66 | — | |
| | 18 - 26.5 | 50 | 66 | — | |
| **VSWR** (Note 2) | DC - 1 GHz | — | 1.05 | 1.10 | :1 |
| | 1 - 8 | — | 1.20 | 1.35 | |
| | 8 - 12 | — | 1.20 | 1.35 | |
| | 12- 18 | — | 1.15 | 1.40 | |
| | 18 - 26.5 | — | 1.29 | 1.60 | |
| **Operating Voltage Range** | DC - 26.5 GHz | — | 24±1.0 | — | V |
| **Control Signal** (Note 3) | at 24V | — | 80 | 115 | mA |
| **RF Power Cold Switching** | DC - 26.5 GHz | — | — | 20 | W |
| **RF Power Hot Switching** | 0.1W | 10 million | — | — | Cycles |
| | 1W | — | 3 million | — | |
| **Switching Time** | DC - 26.5 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 cyles and are capable of greater than 100 million cycles with factory cleaning.

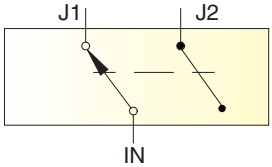
## Maximum Ratings

| | |
|---|---|
| Operating Temperature | -15°C to +45°C |
| Storage Temperature | -15°C to +85°C |
| RF Power (at IN port) | 20W |
| Control Voltage | 26VDC |

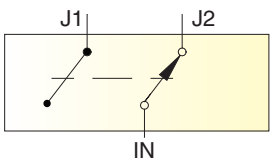
Permanent damage may occur if any of these limits are exceeded.

## Switching States

DE-ENERGIZED DC=0V

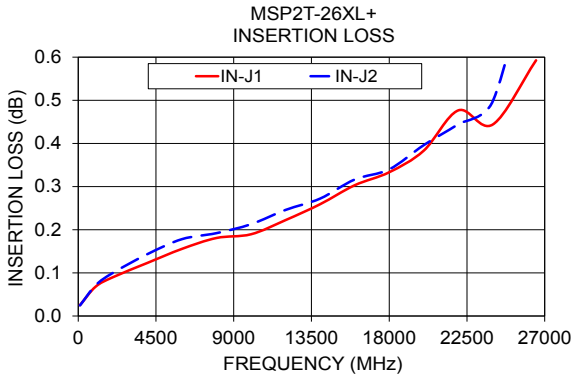


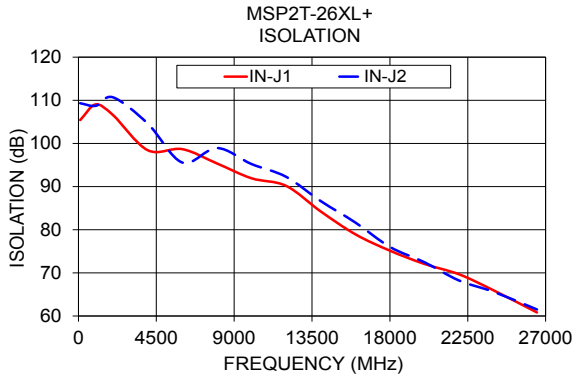

ENERGIZED DC=12V

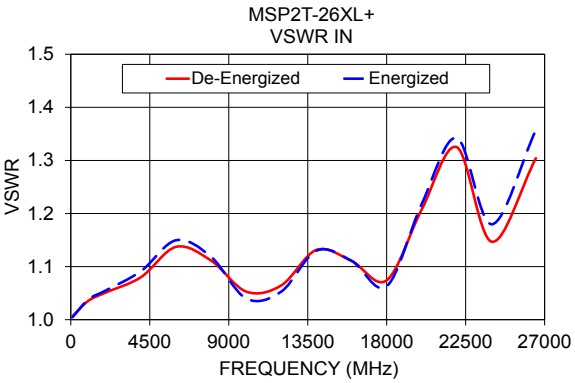


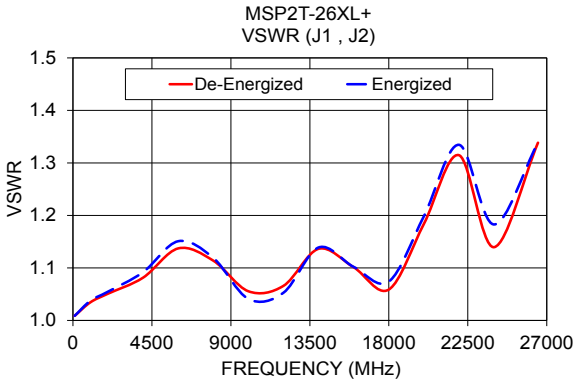
## Typical Performance Data

| FREQ. (MHz) | ON INSERTION LOSS (dB) | | OFF ISOLATION (dB) | | VSWR, IN (:1) | | VSWR, (J1,J2) (:1) | |
|---|---|---|---|---|---|---|---|---|
| | IN-J1 | IN-J2 | IN-J1 | IN-J2 | De-Energized | Energized | De-Energized | Energized |
| 100 | 0.03 | 0.02 | 105.42 | 109.32 | 1.01 | 1.00 | 1.01 | 1.01 |
| 1000 | 0.07 | 0.07 | 109.05 | 108.73 | 1.04 | 1.04 | 1.03 | 1.04 |
| 2000 | 0.09 | 0.10 | 106.57 | 110.68 | 1.05 | 1.06 | 1.05 | 1.05 |
| 4000 | 0.12 | 0.14 | 98.43 | 104.62 | 1.08 | 1.09 | 1.08 | 1.09 |
| 6000 | 0.16 | 0.18 | 98.67 | 95.57 | 1.14 | 1.15 | 1.14 | 1.15 |
| 8000 | 0.18 | 0.19 | 95.37 | 98.94 | 1.11 | 1.12 | 1.11 | 1.12 |
| 10000 | 0.19 | 0.21 | 91.93 | 95.23 | 1.05 | 1.04 | 1.06 | 1.04 |
| 12000 | 0.22 | 0.25 | 90.17 | 92.27 | 1.06 | 1.05 | 1.07 | 1.05 |
| 14000 | 0.26 | 0.27 | 84.24 | 86.64 | 1.13 | 1.13 | 1.14 | 1.14 |
| 16000 | 0.30 | 0.32 | 78.95 | 81.68 | 1.11 | 1.11 | 1.10 | 1.10 |
| 18000 | 0.33 | 0.34 | 75.14 | 76.02 | 1.07 | 1.06 | 1.06 | 1.07 |
| 20000 | 0.38 | 0.40 | 72.06 | 72.45 | 1.21 | 1.22 | 1.18 | 1.20 |
| 22000 | 0.48 | 0.44 | 69.66 | 68.22 | 1.32 | 1.34 | 1.31 | 1.33 |
| 24000 | 0.44 | 0.50 | 65.93 | 65.59 | 1.15 | 1.18 | 1.14 | 1.18 |
| 26500 | 0.59 | 0.86 | 60.82 | 61.51 | 1.30 | 1.36 | 1.34 | 1.34 |



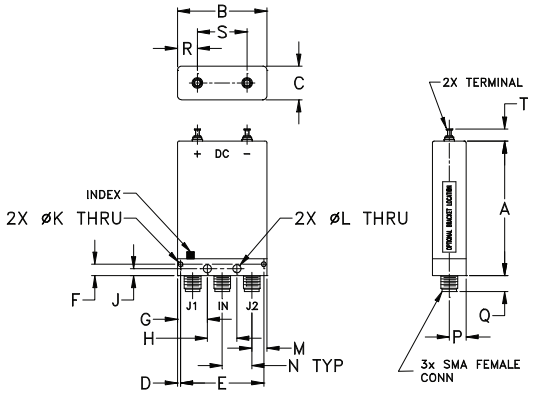

### Additional Notes

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.

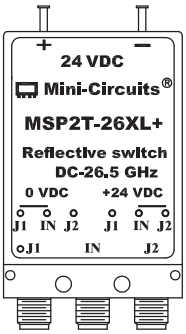
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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

## Outline Drawing (FK811)




## Marking Drawing






MSP2T-26XL+

HT-Series
Tight Spot
SMA Wrench
From $24.95
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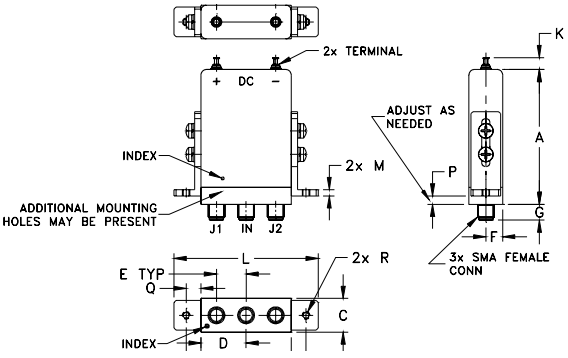
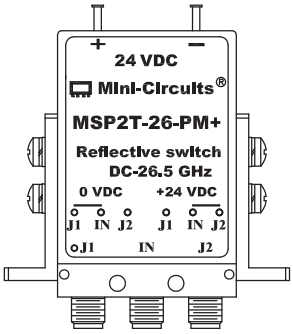
## Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | wt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.00 | 1.34 | .50 | .045 | 1.240 | .170 | .445 | .440 | .103 | .070 | .120 | .230 | .440 | .25 | .24 | .297 | .740 | .19 | grams |
| 50.80 | 34.04 | 12.70 | 1.14 | 31.50 | 4.32 | 11.30 | 11.18 | 2.62 | 1.78 | 3.05 | 5.84 | 11.18 | 6.35 | 6.10 | 7.54 | 18.80 | 4.83 | 41.0 |

## Outline Drawing (FK811-PM) *Panel Mount Bracket*




## Marking Drawing






MSP2T-26-PM+
*Panel Mount Option*

HT-Series
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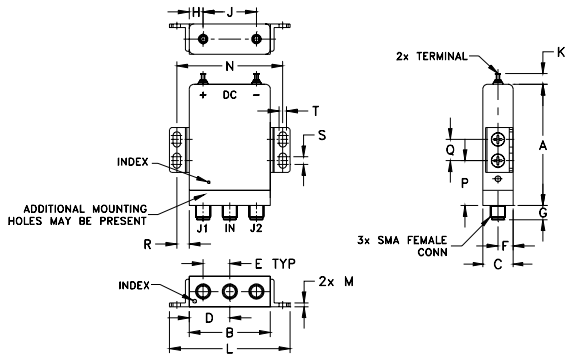
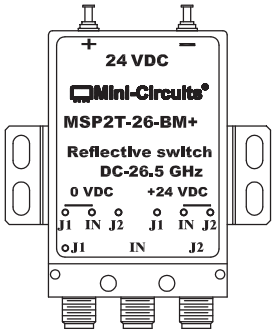
## Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | wt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.00 | 1.34 | .50 | .670 | .440 | .25 | .24 | .297 | .740 | .19 | 2.14 | .094 | 1.78 | 0 MIN /.50 MAX | .22 | #4-40 | grams |
| 50.80 | 34.04 | 12.70 | 17.02 | 11.18 | 6.35 | 6.10 | 7.54 | 18.80 | 4.83 | 54.36 | 2.39 | 45.21 | 0 MIN /6.35 MAX | 5.59 | (-) | 64.2 |

## Outline Drawing (FK811-BM) *Base Mount Bracket*




## Marking Drawing






MSP2T-26-BM+
*Base Mount Option*

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## Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | wt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.00 | 1.34 | .50 | .670 | .440 | .25 | .24 | .297 | .740 | .19 | 1.99 | .062 | 1.75 | .74 | .350 | .205 | .125 | .125 | grams |
| 50.80 | 34.04 | 12.70 | 17.02 | 11.18 | 6.35 | 6.10 | 7.54 | 18.80 | 4.83 | 50.55 | 1.57 | 44.45 | 18.80 | 8.89 | 5.21 | 3.18 | 3.18 | 59.8 |