

Xtra Long Life

SPDT Switch

**MSP2T-18-PM+
MSP2T-18-BM+**

50Ω DC to 18 GHz, 24 Volt, Reflective

The Big Deal

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

MSP2T-18-PM+
Panel MountMSP2T-18-BM+
Base Mount

Product Overview

Mini-Circuits' MSP2T-18 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-18 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. |

Xtra Long Life

SPDT Switch

50Ω DC to 18 GHz, 24 Volt, Reflective

Features

- 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

NON-CATALOG

MSP2T-18-PM+ MSP2T-18-BM+



MSP2T-18-PM+
Panel Mount



MSP2T-18-BM+
Base Mount



| Model No. | Connectors | Bracket Option | Case Style |
|--------------|------------|----------------|------------|
| MSP2T-18-PM+ | SMA | Panel Mount | FK811-PM |
| MSP2T-18-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 | — | 18 | 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 | |
| Isolation | DC - 1 GHz | 85 | 100 | — | dB |
| | 1 - 8 | 75 | 90 | — | |
| | 8 - 12 | 70 | 80 | — | |
| | 12 - 18 | 60 | 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 | |
| Control Signal (Note 3) | at 24V | — | 80 | 115 | mA |
| RF Power Cold Switching | DC - 18 GHz | — | — | 20 | W |
| RF Power Hot Switching | 0.1W | 10 million | — | — | Cycles |
| | 1W | — | 3 million | — | |

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. +24 Volt applied to energized port, COM is negative.

Additional Specifications

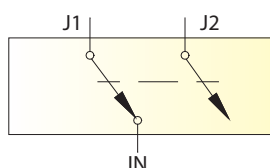
| | |
|-------------------------|---------------|
| Operating Voltage Range | 24V (nom) ±1V |
| Switching Time (Typ.) | 20ms |

Maximum Ratings

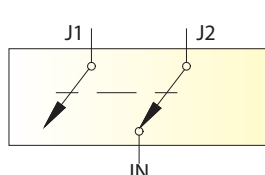
| | |
|---|----------------|
| Operating Temperature | -15°C to +45°C |
| Storage Temperature | -15°C to +85°C |
| RF Power (at IN port) | 20W |
| RF Power (at J1 and J2) | 1W |
| Control Voltage | 26VDC |
| Permanent damage may occur if any of these limits are exceeded. | |

Switching States

DE-ENERGIZED DC=0V



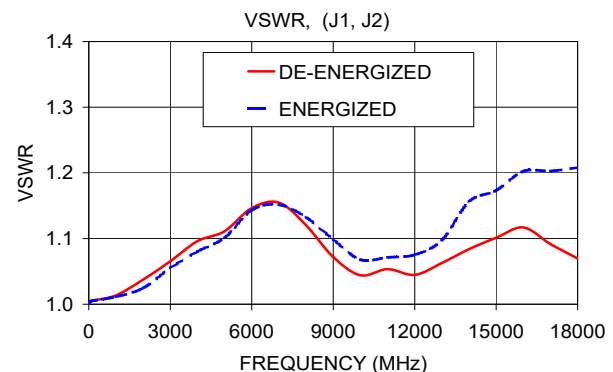
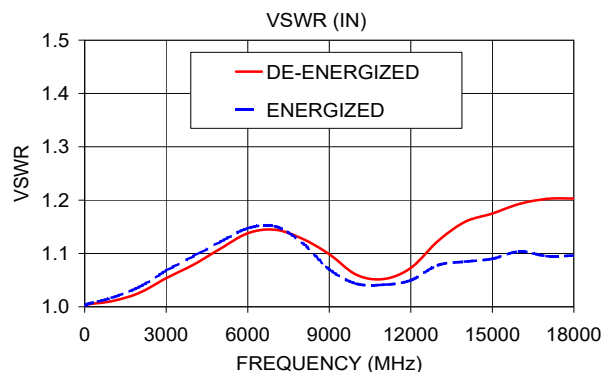
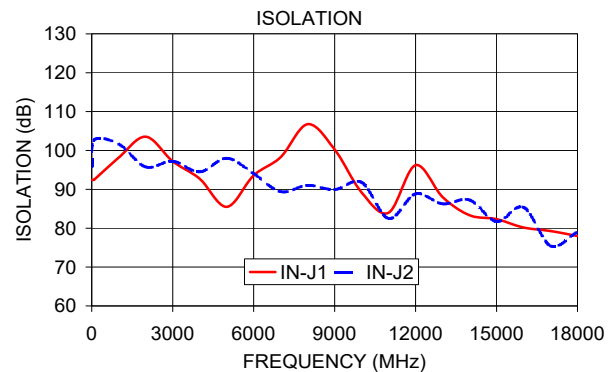
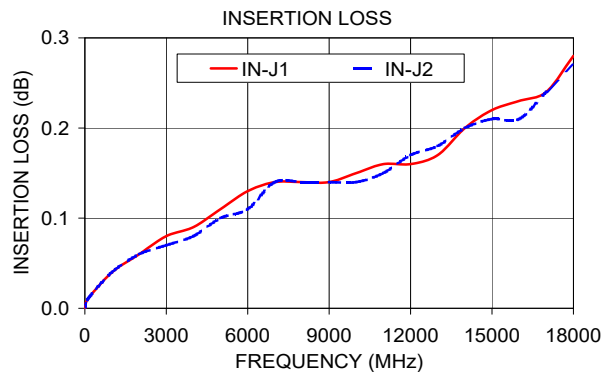
ENERGIZED DC=24V



www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

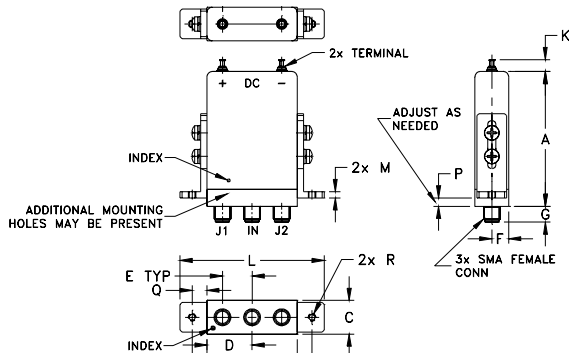
Typical Performance Data

| 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 |
| 10.00 | 0.00 | 0.00 | 92.40 | 95.82 | 1.00 | 1.00 | 1.00 | 1.00 |
| 100.00 | 0.01 | 0.01 | 92.57 | 102.75 | 1.00 | 1.01 | 1.01 | 1.00 |
| 1000.00 | 0.04 | 0.04 | 98.17 | 101.65 | 1.01 | 1.02 | 1.01 | 1.01 |
| 2000.00 | 0.06 | 0.06 | 103.54 | 95.79 | 1.03 | 1.04 | 1.04 | 1.02 |
| 3000.00 | 0.08 | 0.07 | 97.19 | 97.25 | 1.05 | 1.07 | 1.07 | 1.06 |
| 4000.00 | 0.09 | 0.08 | 92.71 | 94.48 | 1.08 | 1.09 | 1.10 | 1.08 |
| 5000.00 | 0.11 | 0.10 | 85.50 | 98.00 | 1.11 | 1.12 | 1.11 | 1.10 |
| 6000.00 | 0.13 | 0.11 | 93.58 | 94.07 | 1.14 | 1.15 | 1.15 | 1.14 |
| 7000.00 | 0.14 | 0.14 | 98.28 | 89.40 | 1.14 | 1.15 | 1.15 | 1.15 |
| 8000.00 | 0.14 | 0.14 | 106.76 | 91.02 | 1.13 | 1.12 | 1.12 | 1.13 |
| 9000.00 | 0.14 | 0.14 | 100.25 | 89.95 | 1.10 | 1.07 | 1.07 | 1.10 |
| 10000.00 | 0.15 | 0.14 | 89.20 | 91.80 | 1.06 | 1.04 | 1.04 | 1.07 |
| 11000.00 | 0.16 | 0.15 | 84.01 | 82.51 | 1.05 | 1.04 | 1.05 | 1.07 |
| 12000.00 | 0.16 | 0.17 | 96.22 | 88.82 | 1.07 | 1.05 | 1.04 | 1.08 |
| 13000.00 | 0.17 | 0.18 | 88.01 | 86.27 | 1.12 | 1.08 | 1.06 | 1.10 |
| 14000.00 | 0.20 | 0.20 | 83.33 | 87.28 | 1.16 | 1.08 | 1.08 | 1.16 |
| 15000.00 | 0.22 | 0.21 | 82.33 | 81.73 | 1.17 | 1.09 | 1.10 | 1.17 |
| 16000.00 | 0.23 | 0.21 | 80.17 | 85.38 | 1.19 | 1.10 | 1.12 | 1.20 |
| 17000.00 | 0.24 | 0.24 | 79.28 | 75.47 | 1.20 | 1.09 | 1.09 | 1.20 |
| 18000.00 | 0.28 | 0.27 | 78.01 | 79.03 | 1.20 | 1.10 | 1.07 | 1.21 |

**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

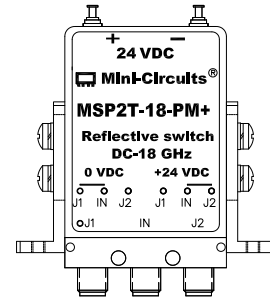
Outline Drawing (FK811-PM) Panel Mount Bracket



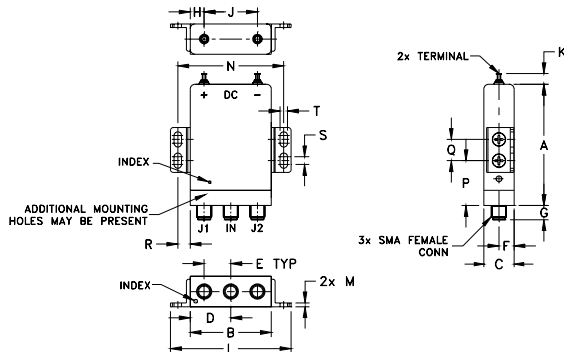
Outline Dimensions (inch)

| 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 |

Marking Drawing



Outline Drawing (FK811-BM) Base Mount Bracket



Outline Dimensions (inch)

| 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 |

