

SP6T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 12V, TTL, Diodes, Solder Pins

The FMSW6506 is a Single Pole Six Throw (SP6T) electromechanical relay switch that operates across a wide frequency range from DC to 12 GHz and can handle up to 160W of average power in a break before make condition. The design is rated for 2 million lifecycles and features a Normally Open Actuator where the selected position remains active with constant voltage, all positions are open when voltage is removed. Additional features include TTL control logic, and suppression diodes which limit voltage spikes or reverse current. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 70 dB. This switch requires +12Vdc bias voltage and operates over a temperature range of -25°C to +65°C. The rugged and compact package assembly supports N Type female connectors and Solder Pins for DC command control functions. And for highly reliable operation, the model is guaranteed to meet MIL-STD-202 environmental test conditions for shock and random vibration.

Electrical Specifications (TA = +25°C, DC Voltage = +12 Vdc)

| | |
|------------------|---|
| Switch Type | SP6T |
| Actuator Type | Normally Open |
| Actuator Options | TTL Logic |
| TTL Control | on: 2.4 to 5 Volts off: 0 to 0.8 Volts |

| Description | Min | Typ | Max | Units |
|-----------------------------------|-----|-------|-------|-------|
| Frequency Range | DC | | 12.4 | GHz |
| Operating Voltage | | +12 | | Volts |
| Actuating Current @ +12 Volts | | | 600 | mA |
| VSWR | | 1.4:1 | 1.7:1 | |
| Insertion Loss | | 0.2 | 0.7 | dB |
| Isolation | 60 | 70 | | dB |
| Input Power (CW) (at 12.4 GHz) | | | 160 | Watts |

Performance by Frequency

| Description | F1 | F2 | F3 | F4 | F5 | Units |
|---------------------|--------|-------|--------|--------|----|-------|
| Frequency Range | DC - 1 | 1 - 4 | 4 - 8 | 8 - 12 | | GHz |
| VSWR, Max | 1.25:1 | 1.4:1 | 1.45:1 | 1.7:1 | | |
| Insertion Loss, Max | 0.3 | 0.4 | 0.4 | 0.7 | | dB |
| Isolation, Min | 70 | 60 | 60 | 60 | | dB |

Mechanical Specifications

| | |
|----------------|--------------------|
| Size | |
| Length | 3.2 in [81.28 mm] |
| Width/Diameter | 2.5 in [63.5 mm] |
| Height | 2.5 in [63.5 mm] |
| Weight | 0.4 lbs [181.44 g] |



Features:

- Single Pole Six Throw (SP6T) Electromechanical Relay Switch
- DC to 12 GHz Frequency Range
- Normally Open Actuator
- TTL Logic Control
- Suppression Diodes
- 2M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +12 Volt DC Bias
- Solder Terminal Pins for DC Command Control
- N Type Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 160 Watt Average Power Handling
- 50 Ohm Design
- Hot Switching Capability - Consult Factory
- S-Parameter Data available upon request
- Rugged Design meets Mil-STD-202 Test Conditions

Applications:

- Aerospace & Defense
- Test & Measurement
- Microwave Radio Systems
- Military & Commercial Communication Systems
- Research & Development
- SATCOM
- Wireless Communications
- Enterprise
- IoT

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Connectors

RF Connector Type

N Female

Environmental Specifications

Temperature

Operating Range

-25 to +65 deg C

Storage Range

-55 to +100 deg C

Shock

MIL-STD-202 Method 213, Condition D, 500G (non oper)

Vibration

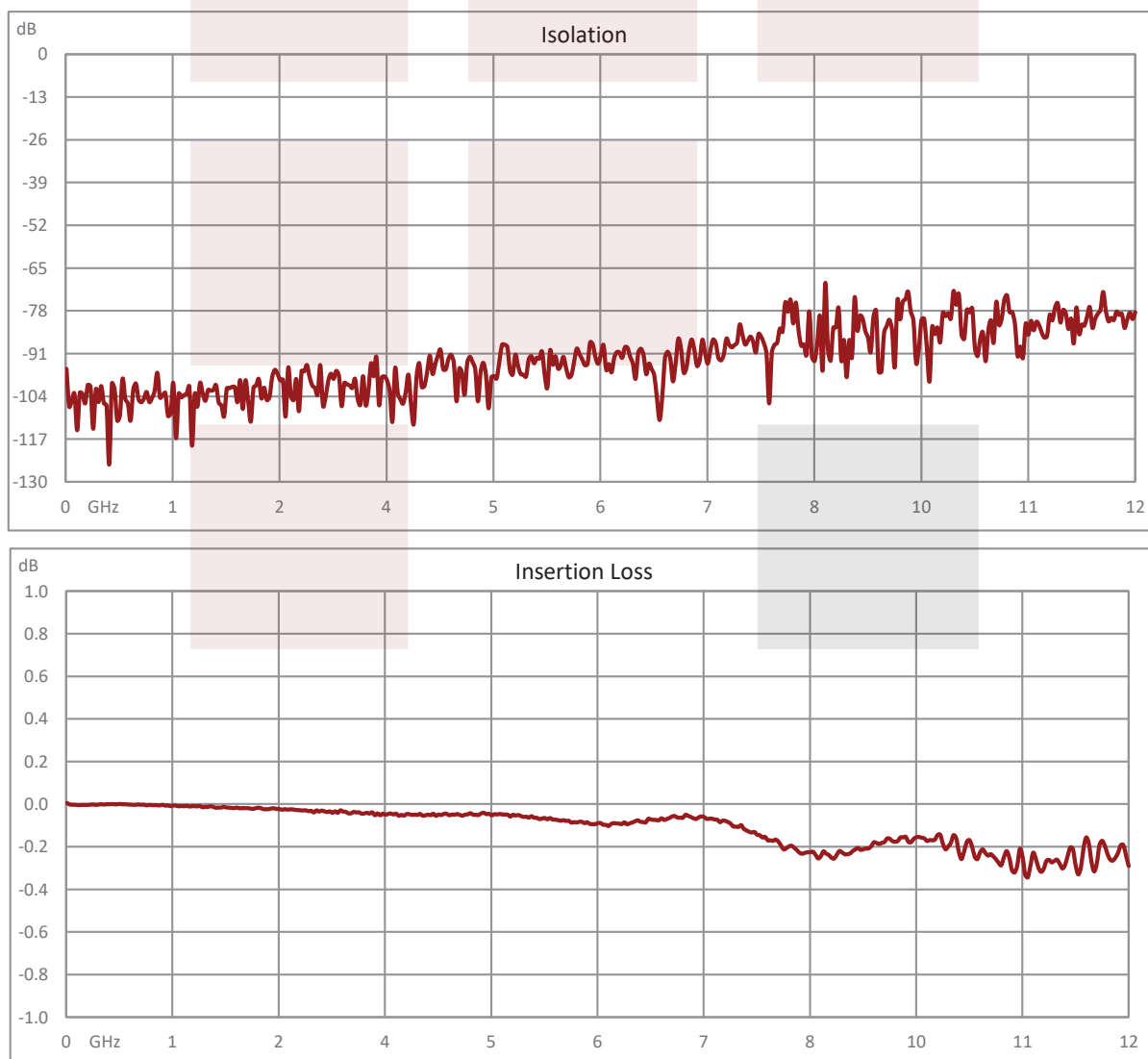
MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)

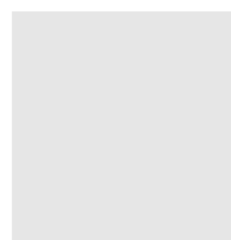
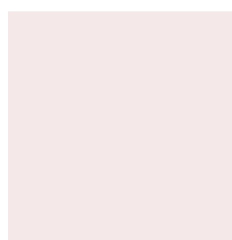
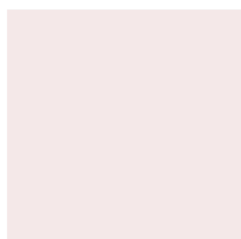
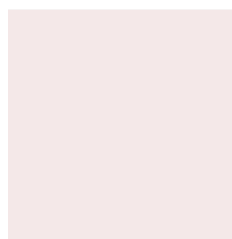
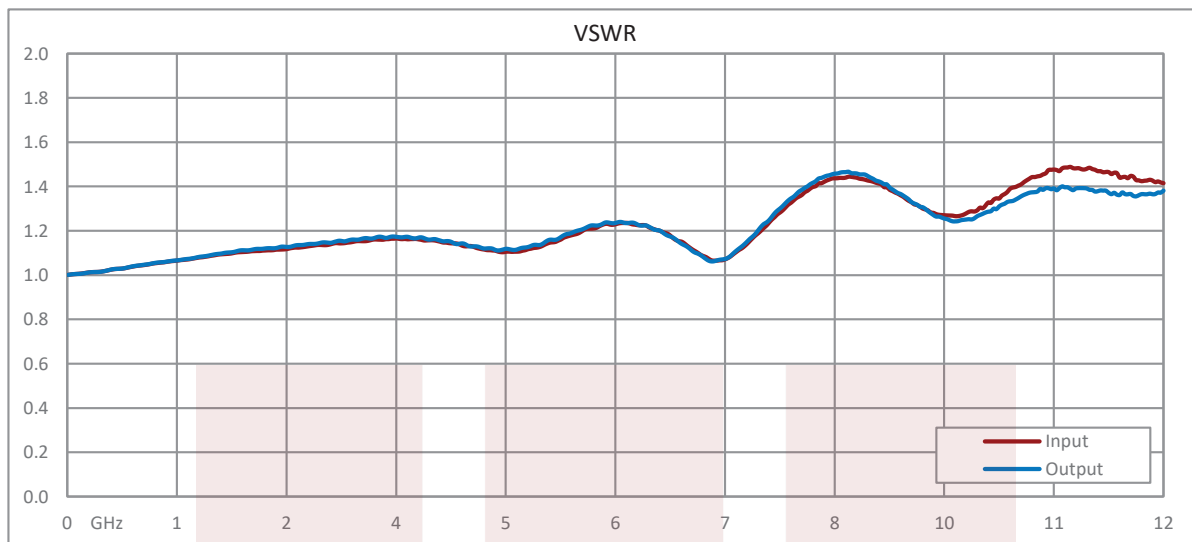
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

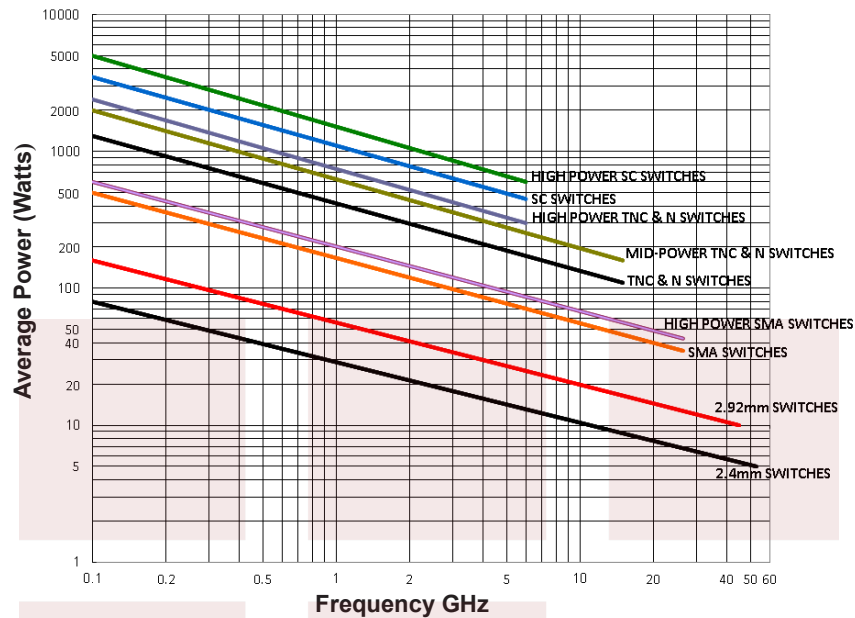
Notes:

Typical Performance Data





Power Handling vs. Frequency



Power Handling De-rating vs. Load VSWR



Power Handling Chart and Derating Curves based on the following Test and Environmental Conditions:
Ambient temperature: 20-25°C
Altitude: Sea Level to 1,000 feet
Relative Humidity: 50-55%
Load VSWR: $\leq 1.20:1$
Operation: Cold Switching

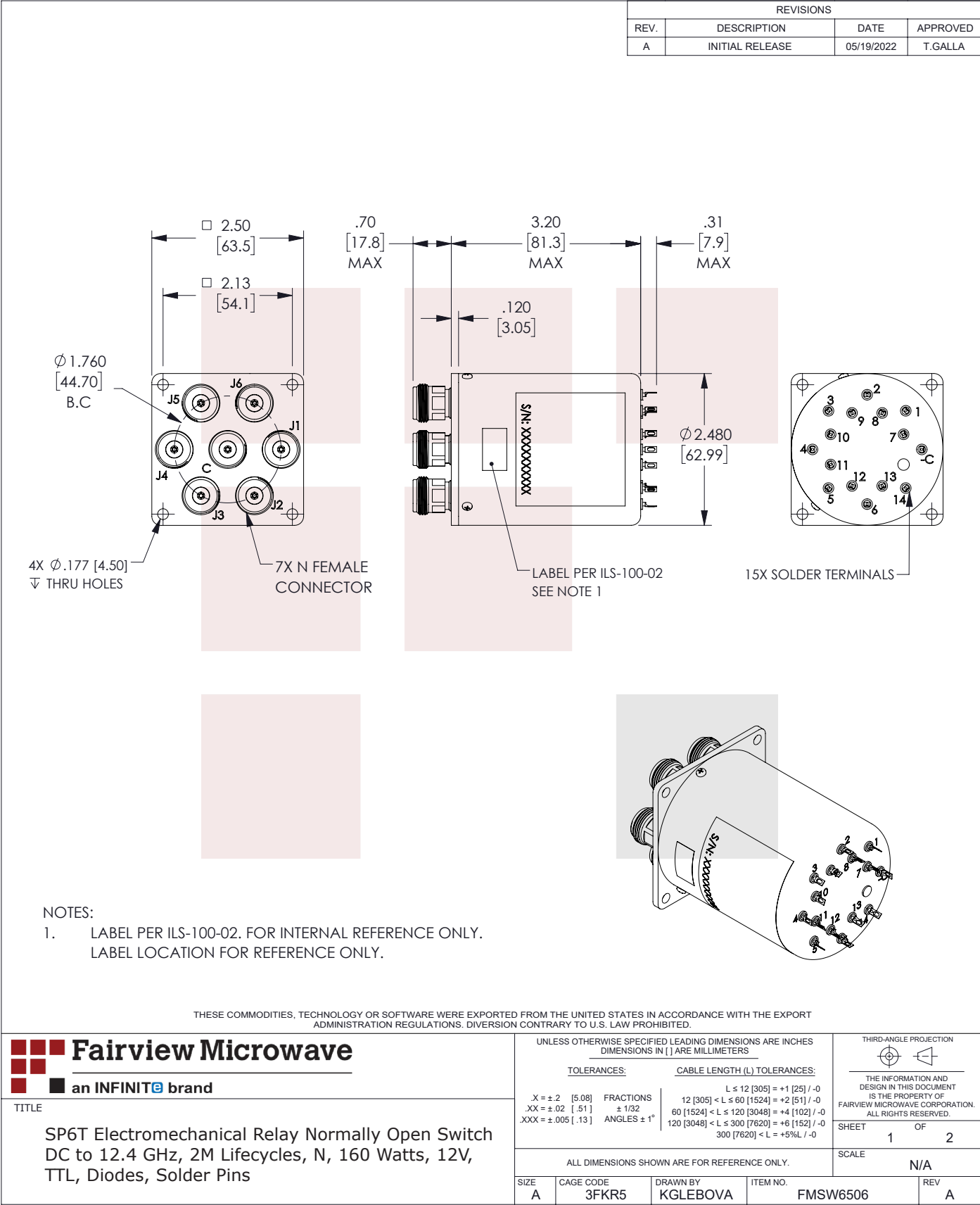
SP6T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 12V, TTL, Diodes, Solder Pins from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SP6T Electromechanical Relay Normally Open Switch DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 12V, TTL, Diodes, Solder Pins FMSW6506](#)

URL: <https://www.fairviewmicrowave.com/sp6t-normally-open-12.4-ghz-electro-mechanical-relay-switch-160w-12v-n-fmsw6506-p.aspx>

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V_{sw}
+12V
14

-COM
-C
1

2

LOGIC INPUT
3

4

5

6

TTL CIRCUIT

IND
COM
13

7

8

9

10

11

12

C

J1

J2

J3

J4

J5

J6

RF POSITION
SCHEMATIC

TRUTH TABLE/PIN ASSIGNMENT :
PIN ASSIGNMENT

| TERMINALS LOGIC INPUT PINS | RF PATH | | | | | | INDICATOR | | | | | |
|----------------------------------|---------|-----|-----|-----|-----|-----|-----------|-----|-----|-----|-----|-----|
| | J1 | J2 | J3 | J4 | J5 | J6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 ("1") | ON | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| 2 ("1") | OFF | ON | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF |
| 3 ("1") | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF |
| 4 ("1") | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF |
| 5 ("1") | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF | ON | OFF |
| 6 ("1") | OFF | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF | ON |

PIN -C, -COM

PIN 14, V_{sw} +12V

PIN 13, IND COM

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TITLE

SP6T Electromechanical Relay Normally Open Switch
DC to 12.4 GHz, 2M Lifecycles, N, 160 Watts, 12V,
TTL, Diodes, Solder Pins

UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES:

X = ±.2 [.508]

XX = ±.02 [.51]

XXX = ±.005 [.13]

FRACTIONS

± 1/32

ANGLES ± 1°

CABLE LENGTH (L) TOLERANCES:

L ≤ 12 [305] = +1 [25] / -0

12 [305] < L ≤ 60 [1524] = +2 [51] / -0

60 [1524] < L ≤ 120 [3048] = +4 [102] / -0

120 [3048] < L ≤ 300 [7620] = +6 [152] / -0

300 [7620] < L = +5%L / -0

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

SIZE
A

CAGE CODE
3FKR5

DRAWN BY
KGLEBOVA

ITEM NO.
FMSW6506

REV
A

THIRD-ANGLE PROJECTION

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SHEET
2

OF
2

SCALE
N/A

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