

SP4T E-M Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 90W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, SMA

The FMSW6472 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a wide frequency range of DC to 26.5 GHz and can handle up to 90 Watts 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. The output ports are terminated in 50 ohms when switched in the isolation (off) state. Additional features include TTL control logic, suppression diodes which limit voltage spikes or reverse current, and indicators. Impressive typical performance includes 0.4 dB insertion loss and isolation greater than 80 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 SMA female connectors and terminal 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.



Features:

- Single Pole Four Throw Electromechanical Relay Switch
- DC to 26.5 GHz Frequency Range
- Normally Open Actuator
- TTL Logic Control
- Suppression Diodes
- Indicators
- 2M Lifecycle Rating
- Insertion Loss 0.4 dB typ
- Isolation > 80 dB typ
- Internally Terminated
- VSWR as low as 1.2:1 max
- +12 Volt DC Bias
- Terminal Solder Pins for DC Command Control
- SMA Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 90 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

Electrical Specifications

Switch Type	SP4T, Terminated
Actuator Type	Normally Open
Switching Sequence	Break Before Make
Actuator Options	Indicators, TTL Logic, Solder Pins
TTL Control	on: 2.4 to 5 Volts off: 0 to 0.8 Volts

Description	Min	Typ	Max	Units
Frequency Range	DC		26.5	GHz
Impedance		50		Ohms
Operating Voltage	11	12	13	Volts
Actuating Current @ 12 Volts			420	mA
VSWR		1.3:1	1.7:1	
Insertion Loss		0.4	0.7	dB
Isolation	70	80		dB
Switching Time			20	ms

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 6	6 - 12	12 - 18	18 - 26.5		GHz
VSWR, Max	1.2:1	1.3:1	1.4:1	1.7:1		
Insertion Loss, Max	0.15	0.25	0.4	0.7		dB
Isolation, Min	80	80	80	70		dB

Applications:

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

Fairview Microwave
301 Leora Ln., Suite 100
Lewisville, TX 75056
Tel: 1-800-715-4396 / (972) 649-6678
Fax: (972) 649-6689
www.fairviewmicrowave.com
sales@fairviewmicrowave.com

Mechanical Specifications

Size	
Length	2.52 in [64.01 mm]
Width/Diameter	2.25 in [57.15 mm]
Height	2.25 in [57.15 mm]
Finish	NICKEL
Package Type	Connectorized
Operating Life	2,000,000 Cycles

Connectors	
RF Connector Type	SMA Female

Environmental Specifications

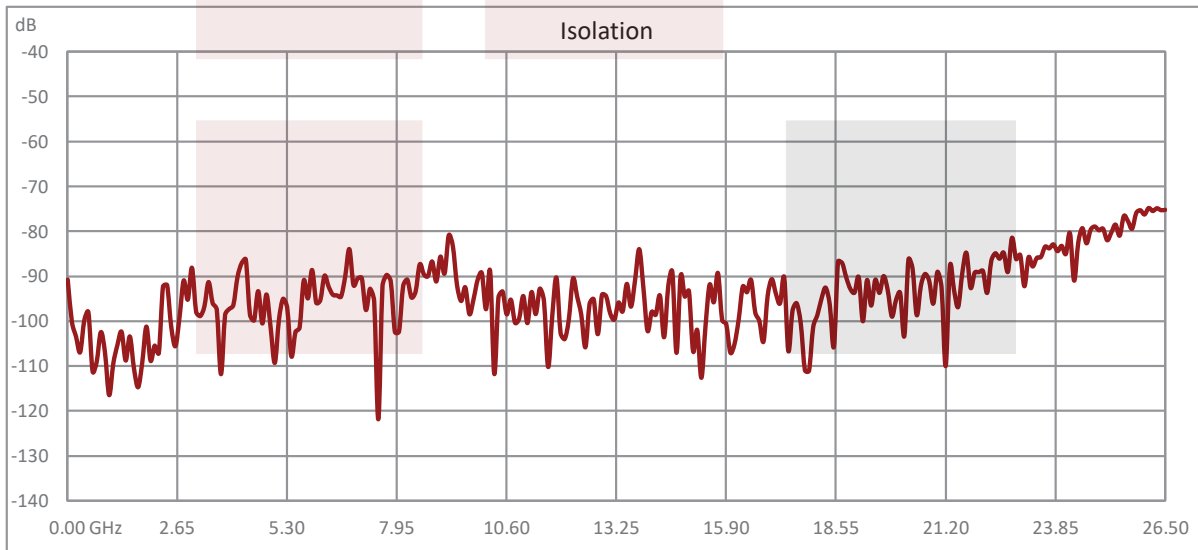
Temperature	
Operating Range	-25 to +65 deg C
Storage Range	-55 to +100 deg C
Humidity	Moisture resistant or immersion sealing available
Shock	MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration	MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)

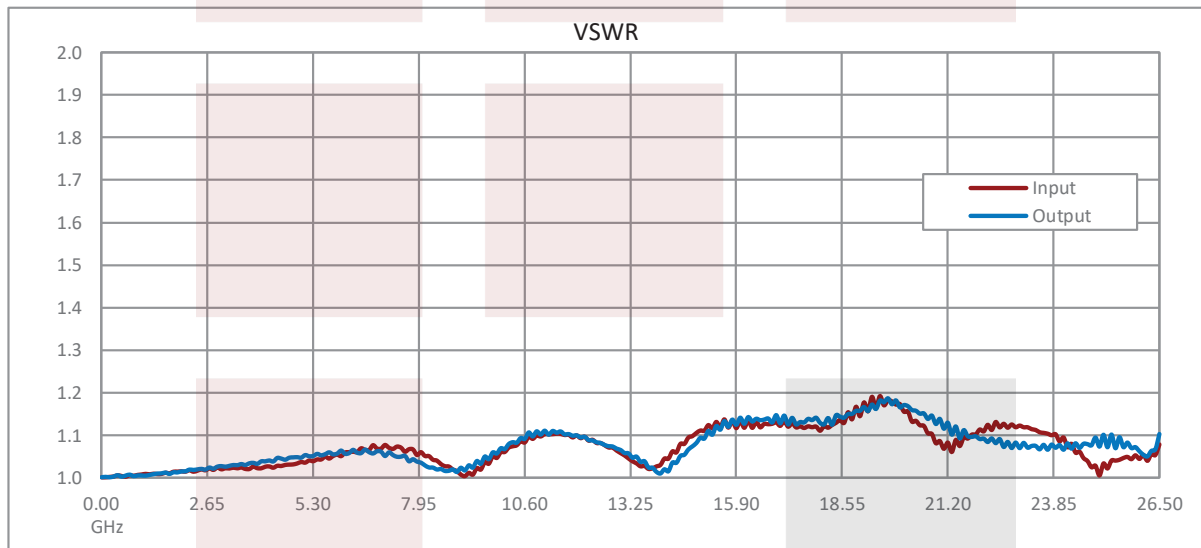
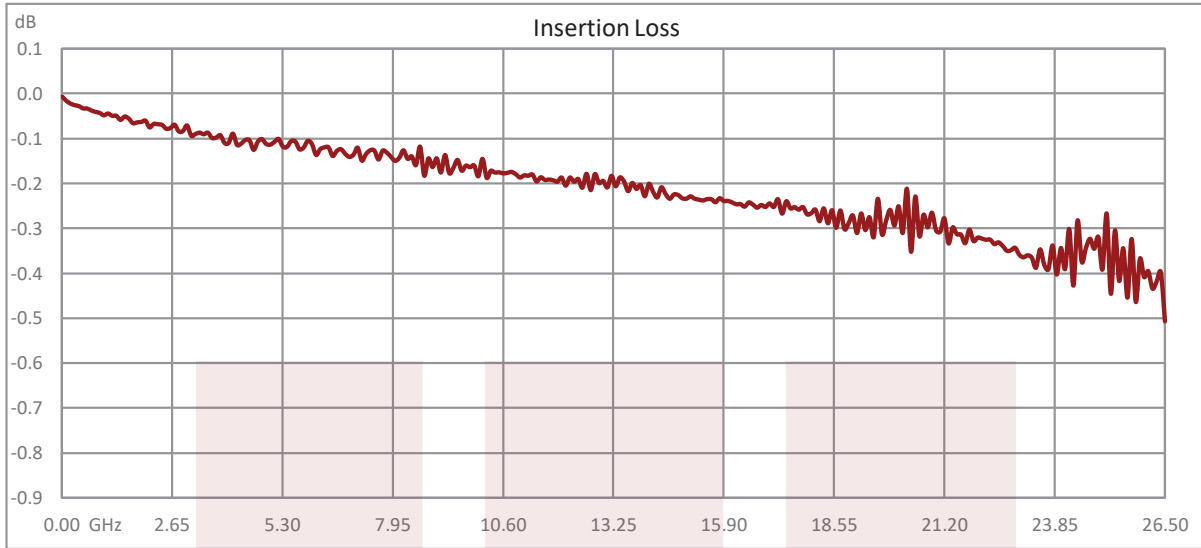
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

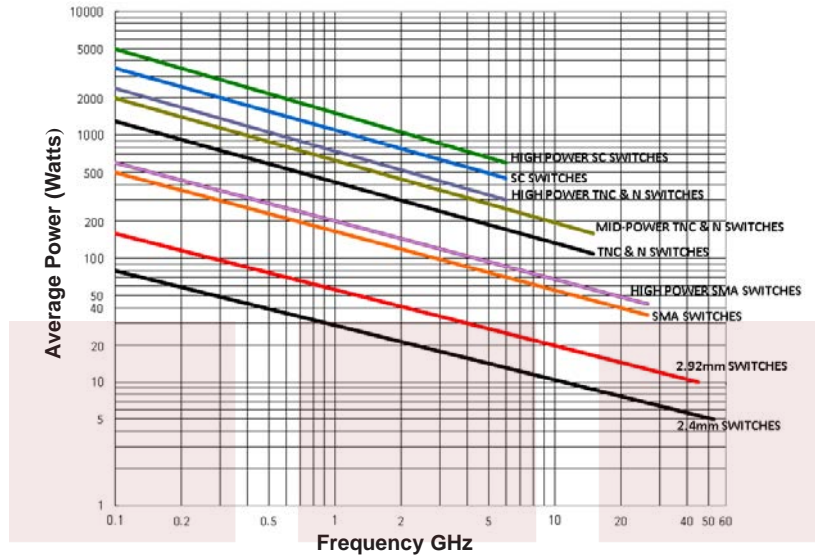
Notes:

Typical Performance Data

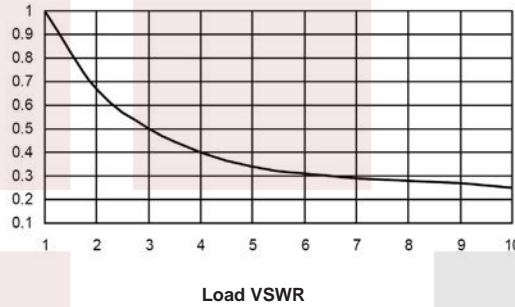




Power Handling vs. Frequency



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: ≤ 1.20:1
 Operation: Cold Switching

SP4T E-M Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 90W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, SMA 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.

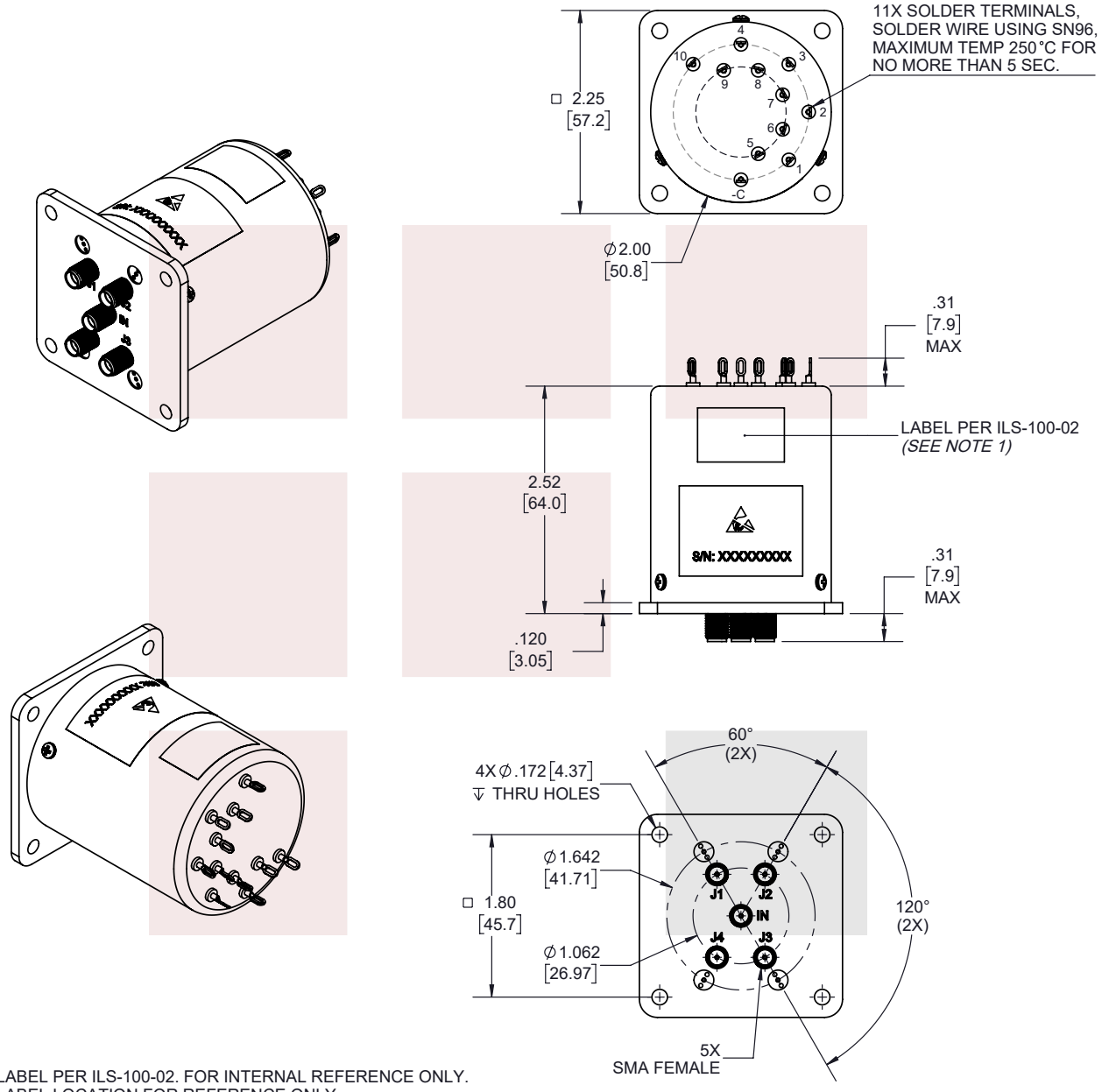
For additional information on this product, please click the following link: [SP4T E-M Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 90W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, SMA FMSW6472](#)

URL: <https://www.fairviewmicrowave.com/sp4t-normally-open-26.5-ghz-terminated-electro-mechanical-relay-switch-12v-sma-fmsw6472-p.aspx>

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	2/1/2021	T.GALLA



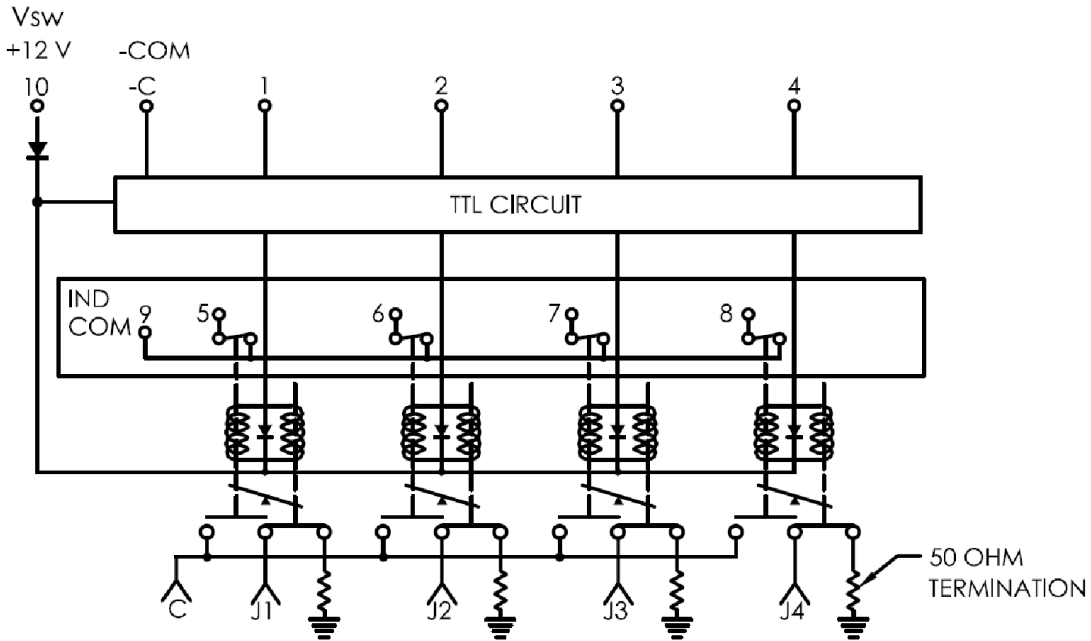
NOTES:

- 1. LABEL PER ILS-100-02. FOR INTERNAL REFERENCE ONLY. LABEL LOCATION FOR REFERENCE ONLY.

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	<p>TOLERANCES:</p> <p>.X = ± .2 [5.08] FRACTIONS ± 1/32 ANGLES ± 1°</p>		<p>CABLE LENGTH (L) TOLERANCES:</p> <p>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</p>		<p>SHEET 1 OF 2</p>
<p>TITLE</p> <p>SP4T E-M Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 90W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, SMA</p>				<p>SCALE N/A</p>	
<p>ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.</p>				<p>SIZE A CAGE CODE 3FKR5 DRAWN BY K.DANG ITEM NO. FMSW6472 REV A</p>	

T-Rev.D



SCHEMATIC

(SHOWN IN NORMALLY OPEN AND INTERNALLY TERMINATE POSITIONS)

PIN ASSIGNMENT

TERMINALS LOGIC INPUT PINS	RF PATH				INDICATOR			
	J1	J2	J3	J4	5	6	7	8
1 ("1")	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
2 ("1")	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
3 ("1")	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
4 ("1")	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON

PIN -C. -COM
PIN 10. Vsw +12V
PIN 9. IND COM

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.X = ±.2 [5.08] FRACTIONS L ≤ 12 [305] = +1 [25] / -0
.XX = ±.02 [.51] ± 1/32 12 [305] < L ≤ 60 [1524] = +2 [51] / -0
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300 [7620] < L = +5%L / -0

THIRD-ANGLE PROJECTION



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SHEET 2 OF 2

SCALE N/A

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SIZE A	CAGE CODE 3FKR5	DRAWN BY K.DANG	ITEM NO. FMSW6472	REV A
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