

SP4T Electromechanical Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 2M Lifecycles, 20W, 28V, TTL, Diodes, SMA

The FMSW6513 is a Single Pole Four Throw (SP4T) electromechanical relay switch that operates across a wide frequency range from DC to 26.5 GHz and can handle up to 20W of CW input power in a break before make condition. The 50 Ohm 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, and suppression diodes which limit voltage spikes or reverse current. Impressive typical performance includes 0.4 dB insertion loss and isolation greater than 70 dB. This switch requires +28Vdc 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 Solder Pins for DC 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 = +28 Vdc)

Switch Type	SP4T
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		26.5	GHz
Operating Voltage		+28		Volts
Actuating Current @ +28 Volts			200	mA
VSWR		1.2:1	1.8:1	
Insertion Loss		0.4	0.8	dB
Isolation	50	70		dB
Input Power (CW) (at 26.5 GHz)			20	Watts

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 6	6 - 12	12 - 18	18 - 26.5		GHz
VSWR, Max	1.25:1	1.4:1	1.5:1	1.8:1		
Insertion Loss, Max	0.2	0.4	0.5	0.8		dB
Isolation, Min	70	60	60	50		dB

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]
Weight	0.4 lbs [181.44 g]



Features:

- Single Pole Four Throw (SP4T) Electromechanical Relay Switch
- DC to 26.5 GHz Frequency Range
- Normally Open Actuator
- 2M Lifecycle Rating
- Insertion Loss 0.4 dB typ
- Isolation > 70 dB typ
- VSWR as low as 1.25:1 max
- +12 Volt DC Bias
- Terminal Solder Pins for DC Control
- SMA Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 20 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

SMA 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

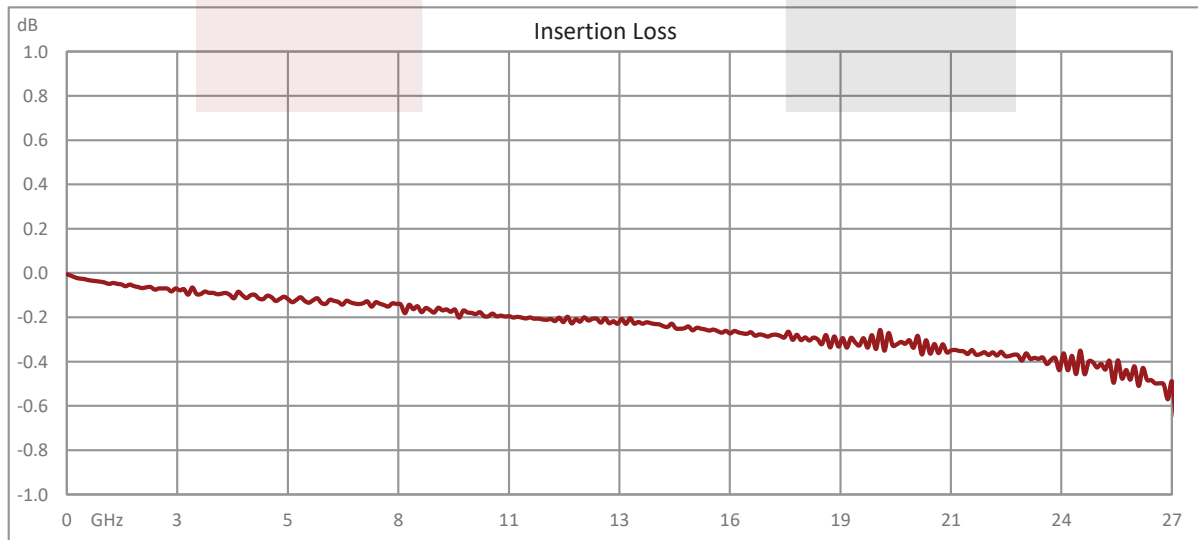
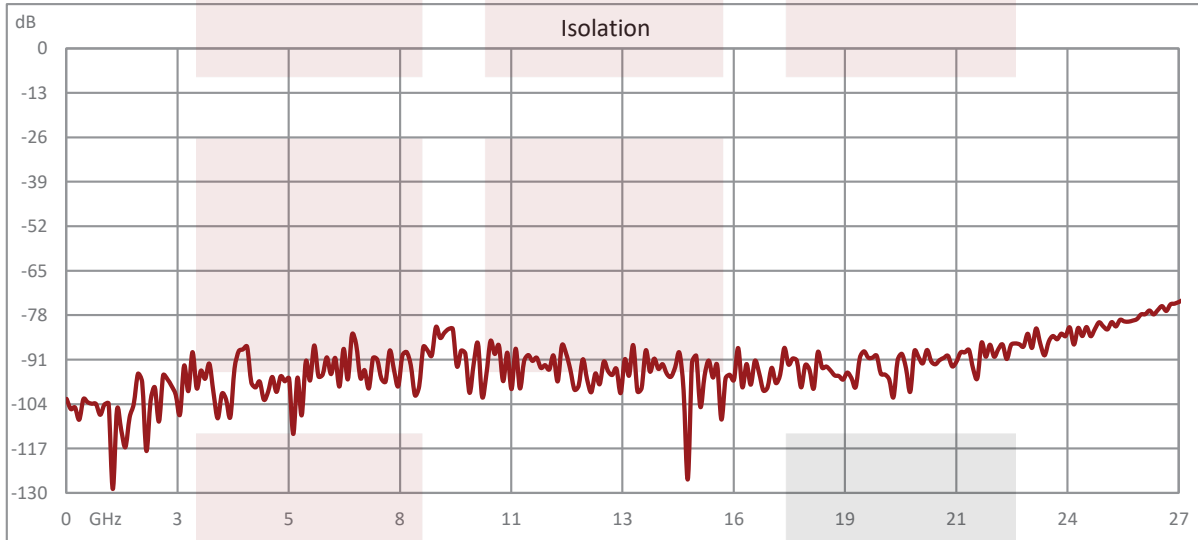
MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)

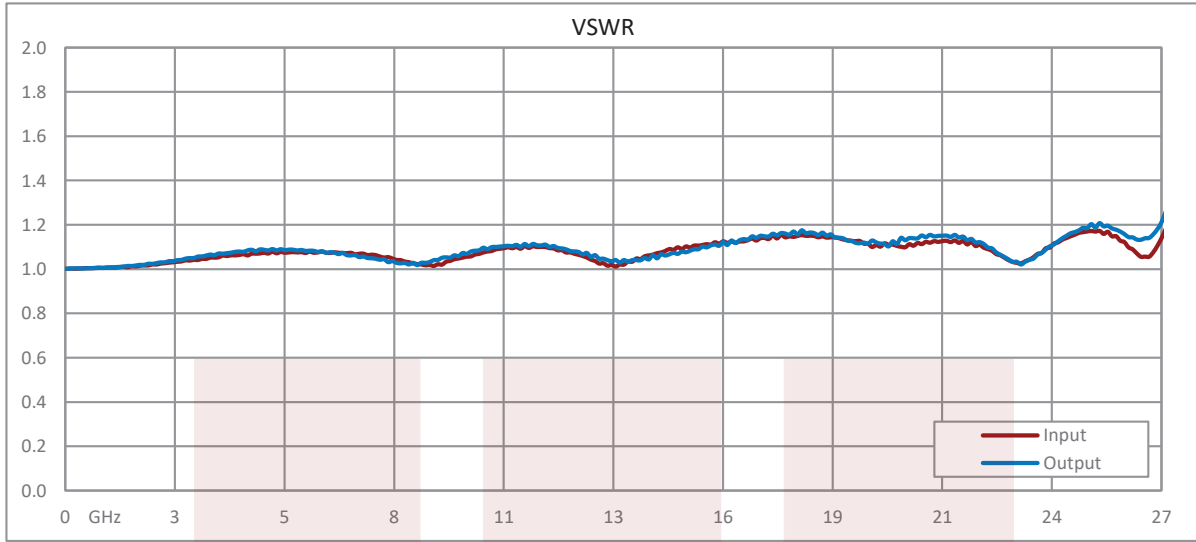
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

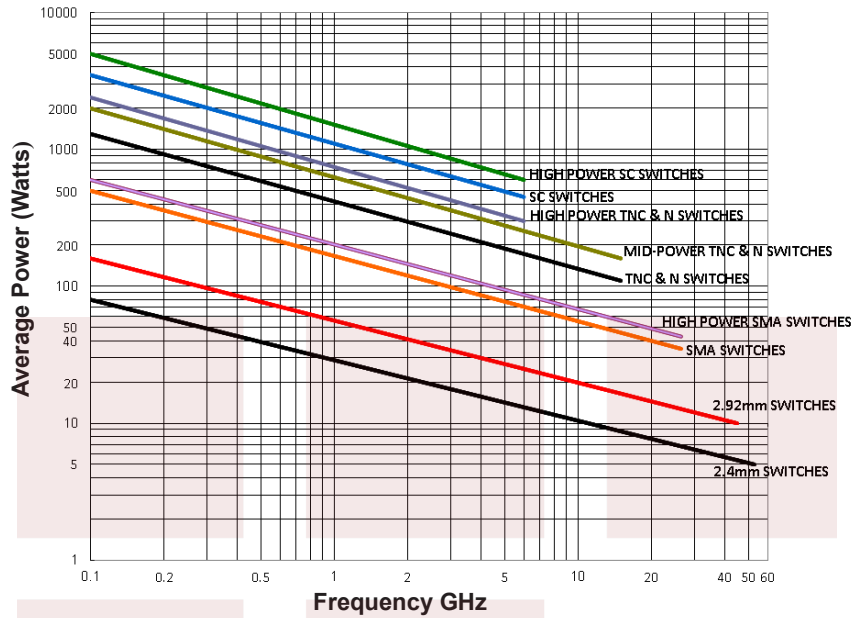
Notes:

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: ≤ 1.20:1
 Operation: Cold Switching

SP4T Electromechanical Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 2M Lifecycles, 20W, 28V, TTL, 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.

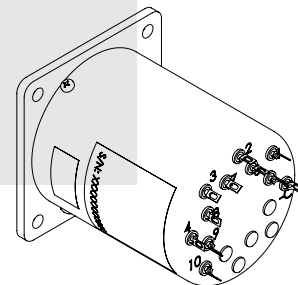
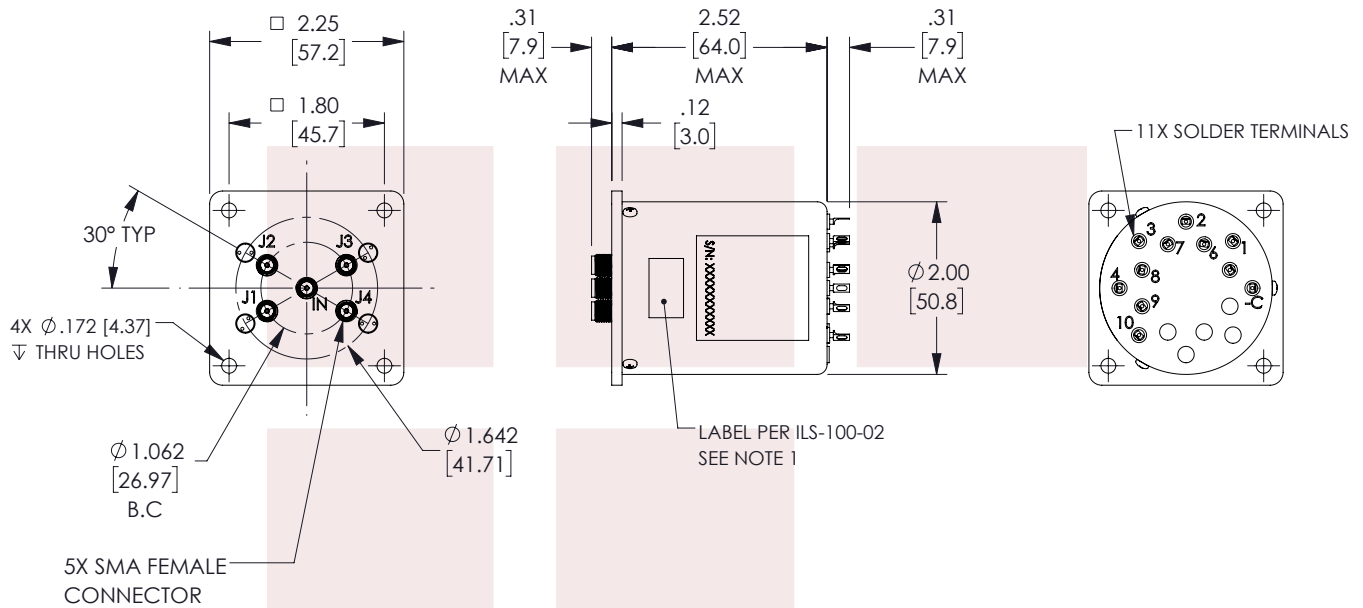
For additional information on this product, please click the following link: [SP4T Electromechanical Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 2M Lifecycles, 20W, 28V, TTL, Diodes, SMA FMSW6514](#)

URL: <https://www.fairviewmicrowave.com/sp4t-normally-open-26.5-ghz-electro-mechanical-relay-switch-20w-28v-sma-fmsw6514-p.aspx>

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	05/19/2022	T.GALLA

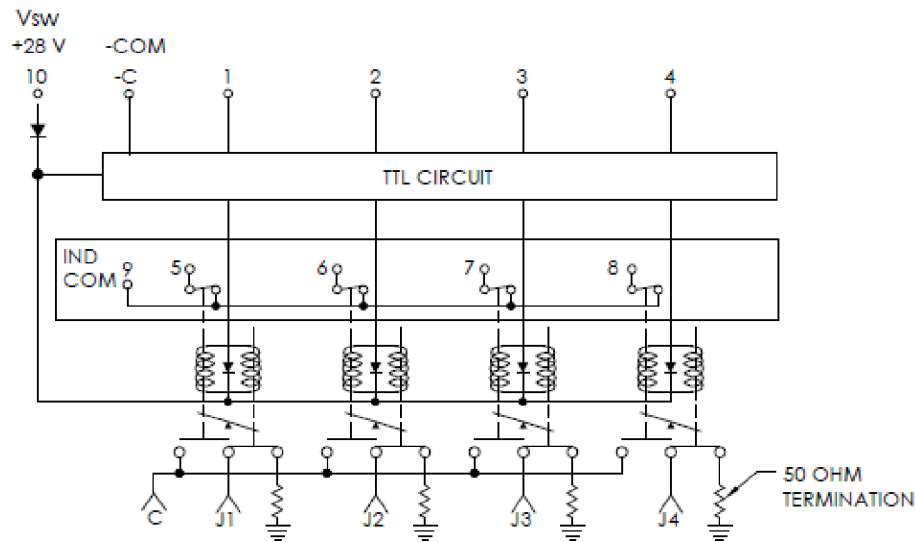


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	<small>FRACTIONS: .X = ±.2 [5.08] .XX = ±.02 [.51] .XXX = ±.005 [.13]</small> <small>ANGLES ± 1°</small>		<small>CABLE LENGTH (L) TOLERANCES:</small> L ≤ 12 [305] = +1 [25] / -0 12 [305] < L ≤ 60 [1524] = +2 [51] / -0 60 [1524] < L ≤ 120 [3048] = +4 [102] / -0 120 [3048] < L ≤ 300 [7620] = +6 [152] / -0 300 [7620] < L = +5%L / -0	
TITLE SP4T Electromechanical Relay Normally Open Switch, Terminated, DC to 26.5 GHz, 2M Lifecycles, 20W, 28V, TTL, Diodes, SMA			ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY. SCALE: N/A	
SIZE A	CAGE CODE 3FKR5	DRAWN BY KGLEBOVA	ITEM NO. FMSW6514	REV A

T-Rev.D



SCHEMATIC

(SHOWN IN NORMALLY OPEN AND INTERNALLY TERMINATE POSITIONS)

TRUTH TABLE/PIN ASSIGNMENT :
PIN ASSIGNMENT

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

PIN -C. -COM
PIN 10. Vsw +28V
PIN 9. IND COM

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TTL, Diodes, SMA

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DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES: CABLE LENGTH (L) TOLERANCES:

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120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
300 [7620] < L = +5%L / -0

THIRD-ANGLE PROJECTION



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SHEET 2 OF 2

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

SCALE N/A

SIZE A	CAGE CODE 3FKR5	DRAWN BY KGLEBOVA	ITEM NO. FMSW6514	REV A
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