

SPDT Electromechanical Relay Failsafe Switch DC to 12.4 GHz, 2M Lifecycles, TNC, 50 Watts, 12V, Indicators, TTL, Diodes, Solder Pins

The FMSW6509 is a Single Pole Double Throw (SPDT) electromechanical relay switch that operates across a wide frequency range from DC to 12 GHz and can handle up to 50 Watts of average power in a break before make condition. The design is rated for 2 million lifecycles and features a Failsafe Actuator. Additional features include TTL control logic, suppression diodes which limit voltage spikes or reverse current, and indicators to monitor the switch position. Impressive typical performance includes 0.3 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 TNC 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	SPDT
Actuator Type	Failsafe
Actuator Options	Indicators, TTL Logic
TTL Control	on: 2.4 to 5.5 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			450	mA
VSWR		1.4:1	1.8:1	
Insertion Loss		0.3	0.6	dB
Isolation	60	80		dB
Input Power (CW) (at 12.4 GHz)			50	Watts

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 2	2 - 4	4 - 8	8 - 12		GHz
VSWR, Max	1.25:1	1.3:1	1.6:1	1.8:1		
Insertion Loss, Max	0.2	0.4	0.5	0.5		dB
Isolation, Min	80	80	70	70		dB

Mechanical Specifications

Size	
Length	1.95 in [49.53 mm]
Width/Diameter	2.75 in [69.85 mm]
Height	0.92 in [23.37 mm]
Weight	0.4 lbs [181.44 g]



Features:

- Single Pole Double Throw (SPDT) Electromechanical Relay Switch
- DC to 12 GHz Frequency Range
- Failsafe Actuator
- TTL Logic Control
- Suppression Diodes
- 2M Lifecycle Rating
- Insertion Loss 0.3 dB typ
- Isolation > 80 dB typ
- VSWR as low as 1.25:1 max
- +12 Volt DC Bias
- Terminal Solder Pins for DC Command Control
- TNC Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 50 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

TNC 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

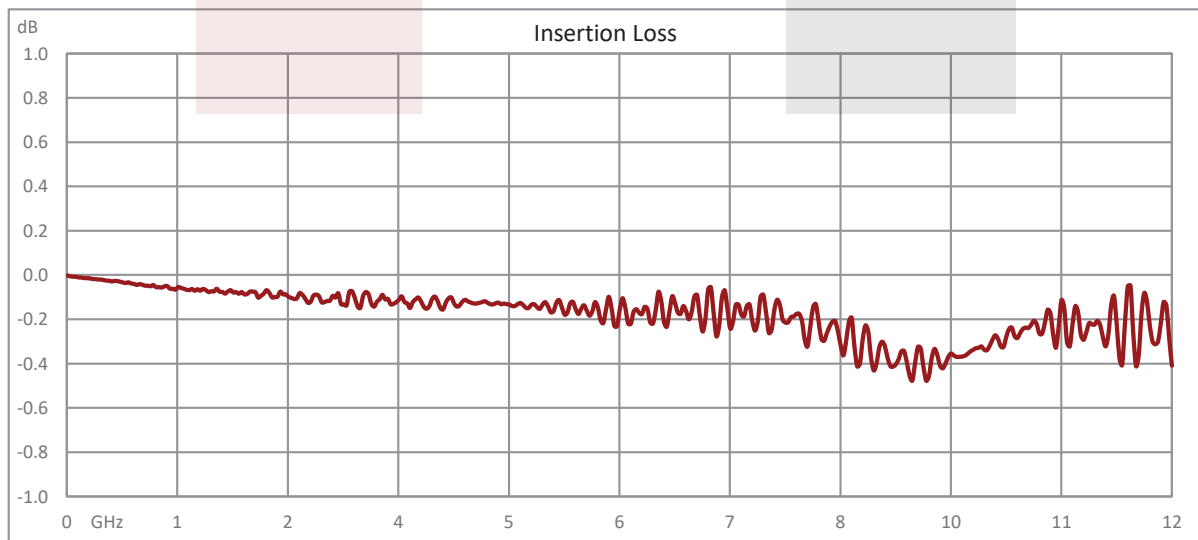
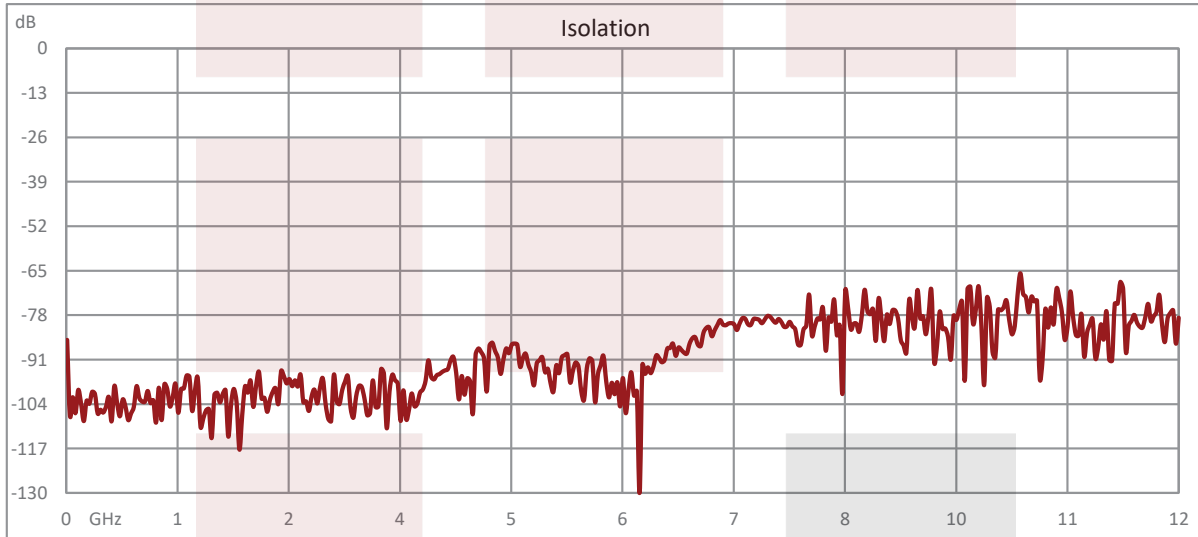
MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)

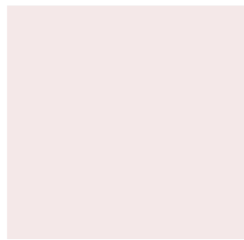
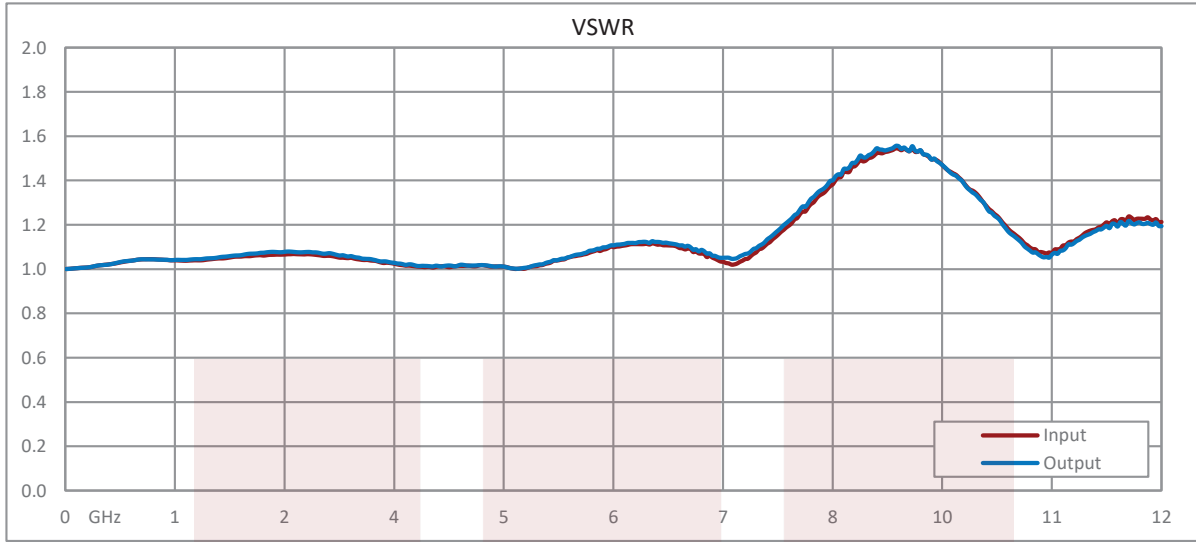
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

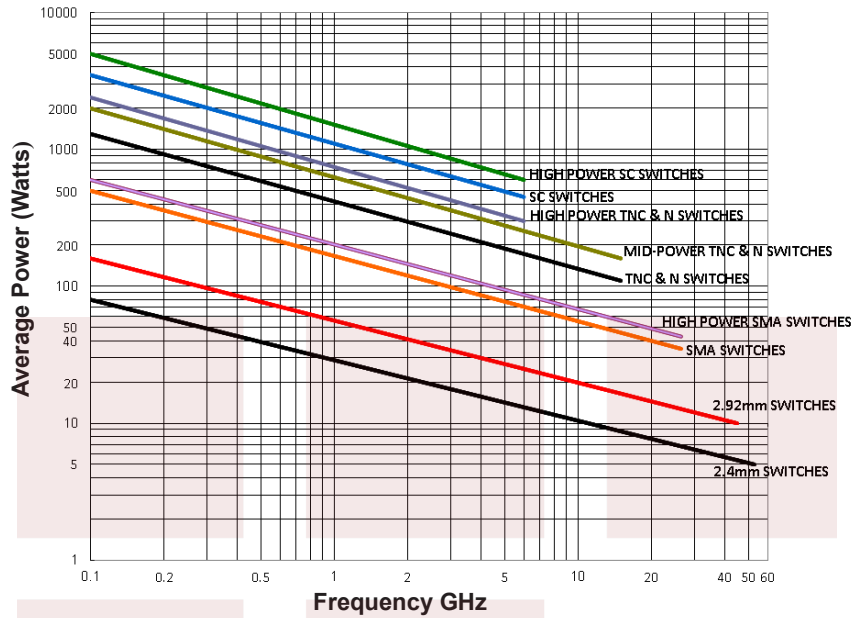
Notes:

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

SPDT Electromechanical Relay Failsafe Switch DC to 12.4 GHz, 2M Lifecycles, TNC, 50 Watts, 12V, Indicators, 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.

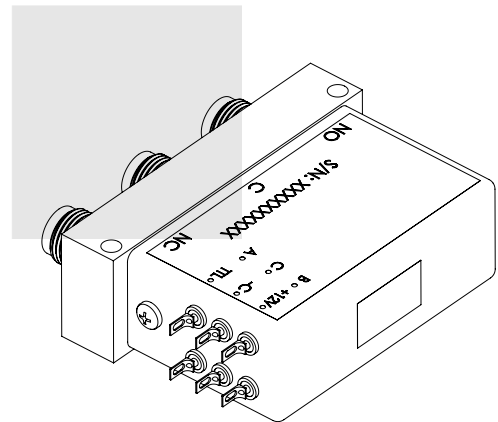
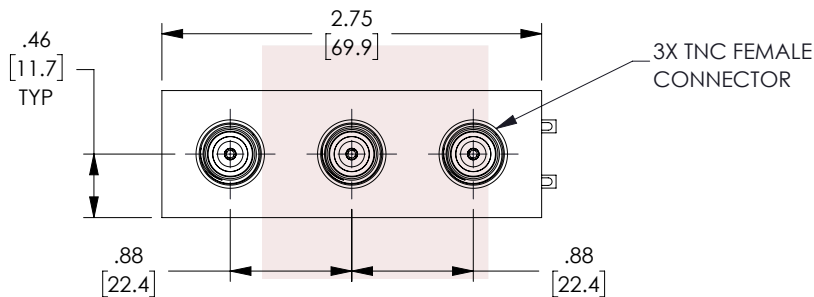
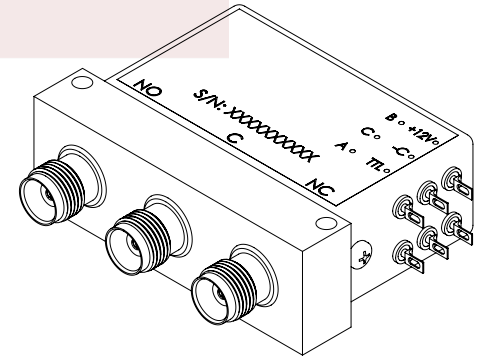
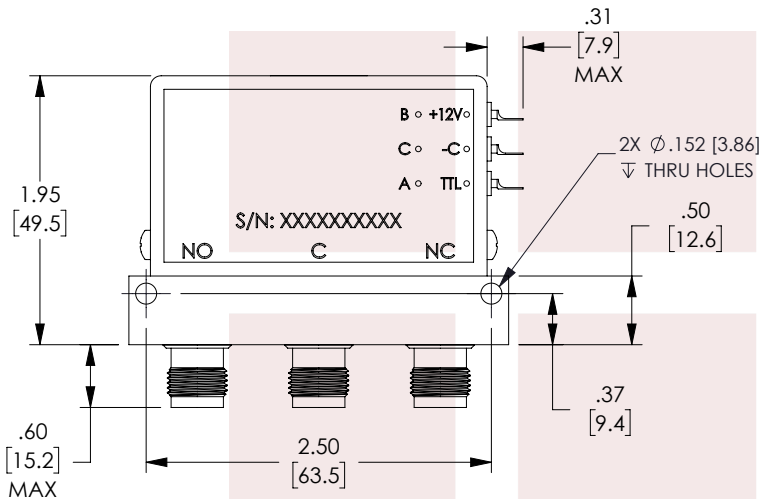
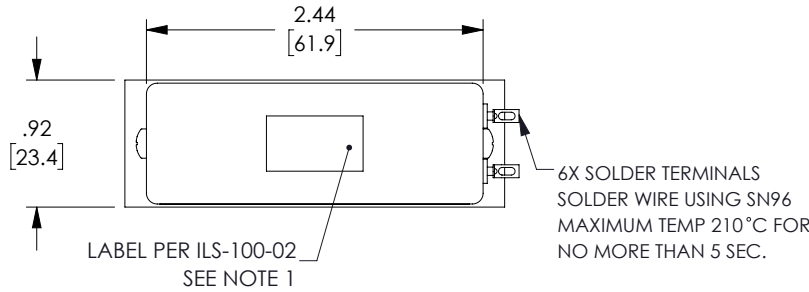
For additional information on this product, please click the following link: [SPDT Electromechanical Relay Failsafe Switch DC to 12.4 GHz, 2M Lifecycles, TNC, 50 Watts, 12V, Indicators, TTL, Diodes, Solder Pins FMSW6509](#)

URL: <https://www.fairviewmicrowave.com/spdt-failsafe-12.4-ghz-electro-mechanical-relay-switch-indicators-50w-12v-tnc-fmsw6509-p.aspx>

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



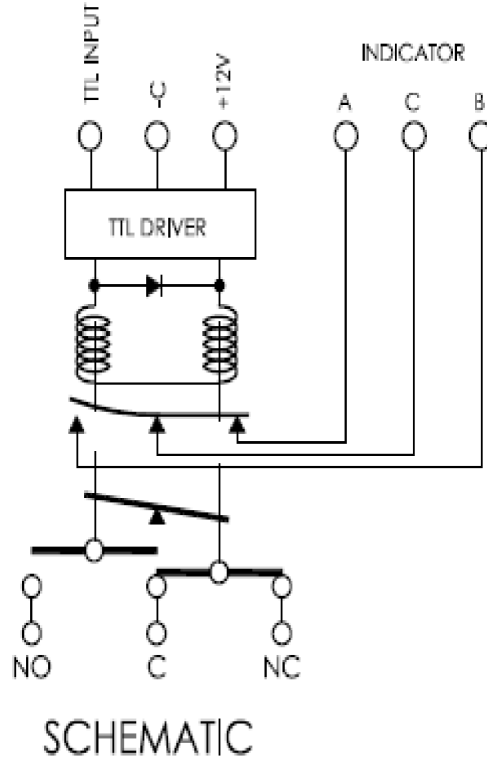
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CABLE LENGTH (L) TOLERANCES:		SHEET 1 OF 2	
.X = ±.2 [5.08] FRACTIONS ± 1/32		SCALE N/A	
.XX = ±.02 [.51] ANGLES ± 1°		REV A	
.XXX = ±.005 [.13]		ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.	
SIZE A	CAGE CODE 3FKR5	DRAWN BY KGLEBOVA	ITEM NO. FMSW6509
			REV A

T-Rev.D



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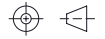
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.XX = ±.02 [.51] ANGLES ± 1°
.XXX = ±.005 [.13]

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

THIRD-ANGLE PROJECTION



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SHEET 2 OF 2

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SCALE

N/A

SIZE A	CAGE CODE 3FKR5	DRAWN BY KGLEBOVA	ITEM NO. FMSW6509	REV A
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