

Transfer Electromechanical Relay Failsafe Switch, DC to 40 GHz, up to 10W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, 2.92mm

The FMSW6451 is a Transfer electromechanical relay switch that operates across a wide frequency range of DC to 40 GHz and can handle up to 10 Watts of Average power in a break before make condition. The 50 Ohm design features a Failsafe Actuator and is rated for 2 million lifecycles. Additional features include TTL control logic, suppression diodes which limit voltage spikes or reverse current, and indicators. Impressive typical performance includes 0.6 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 2.92mm female connectors and solder terminal 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

| | |
|--------------------|---|
| Switch Type | DPDT |
| Actuator Type | Failsafe |
| Switching Sequence | Break Before Make |
| 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 | | 40 | GHz |
| Impedance | | 50 | | Ohms |
| Operating Voltage | 11 | 12 | 13 | Volts |
| Actuating Current @ 12 Volts | | | 800 | mA |
| VSWR | | 1.4:1 | 1.8:1 | |
| Insertion Loss | | 0.6 | 1 | dB |
| Isolation | 50 | 80 | | dB |
| Switching Time | | | 20 | ms |

Performance by Frequency

| Description | F1 | F2 | F3 | F4 | F5 | Units |
|---------------------|--------|----------|-------------|-----------|----|-------|
| Frequency Range | DC - 6 | 6 - 12.4 | 12.4 - 26.5 | 26.5 - 40 | | GHz |
| VSWR, Max | 1.2:1 | 1.3:1 | 1.4:1 | 1.8:1 | | |
| Insertion Loss, Max | 0.2 | 0.4 | 0.7 | 1 | | dB |
| Isolation, Min | 85 | 80 | 65 | 50 | | dB |

Mechanical Specifications

| | |
|----------------|------------------|
| Size | |
| Length | 2 in [50.8 mm] |
| Width/Diameter | 1.26 in [32 mm] |
| Height | 1.26 in [32 mm] |
| Finish | NICKEL |
| Package Type | Connectorized |
| Operating Life | 2,000,000 Cycles |



Features:

- Transfer Electromechanical Relay Switch
- DC to 40 GHz Frequency Range
- Failsafe Actuator
- TTL Logic Control
- Suppression Diodes
- Indicators
- 2M Lifecycle Rating
- Insertion Loss 0.6 dB typ
- Isolation > 80 dB typ
- VSWR as low as 1.2:1 max
- +12 Volt DC Bias
- Solder Terminal Pins for DC Command Control
- 2.92mm Female Connectors
- -25°C to +65°C Operating Temperature
- Up to 10 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 2.92mm Female

Environmental Specifications

Temperature

Operating Range -25 to +65 deg C
Storage Range -55 to +100 deg C

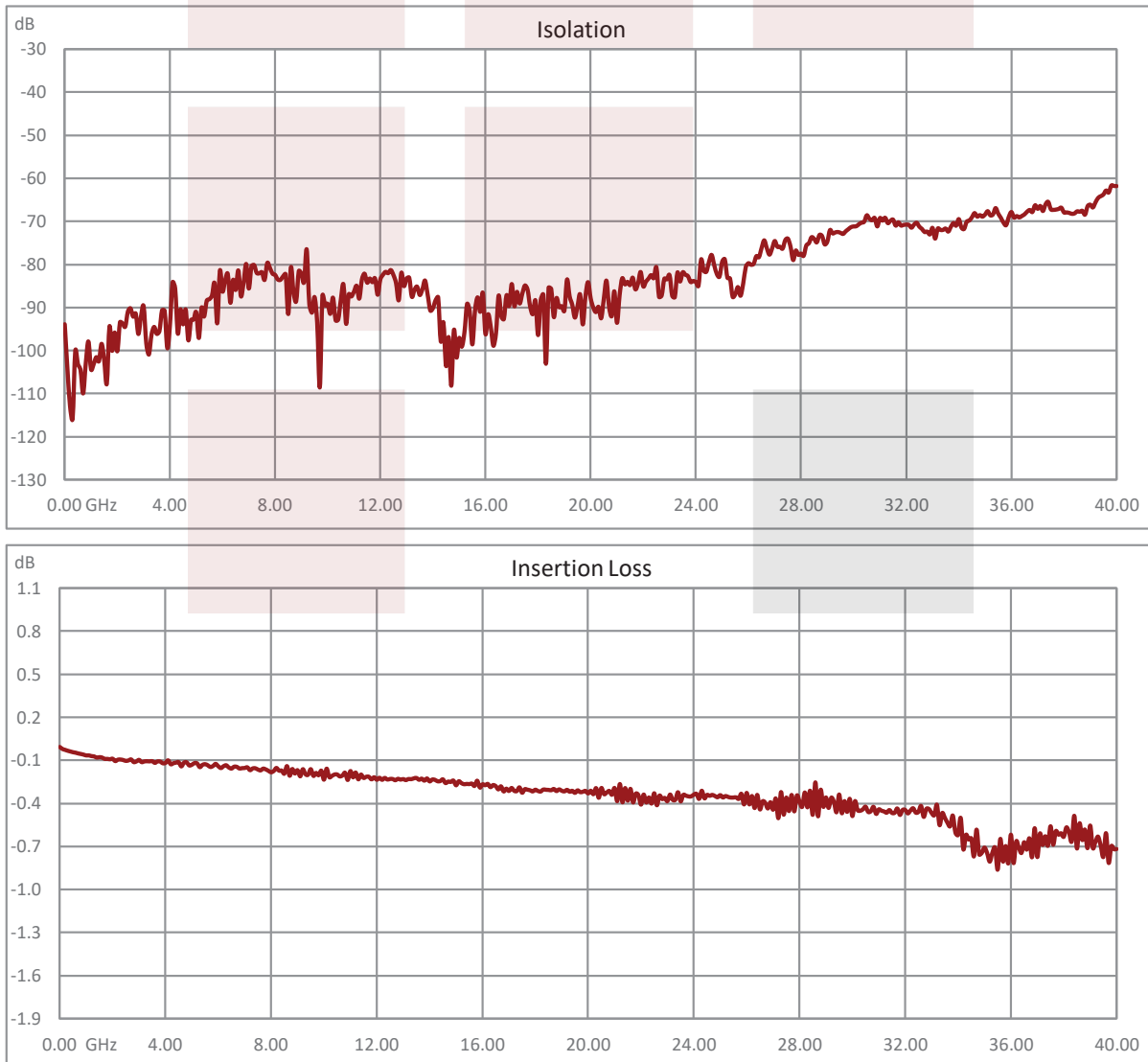
Humidity Moisture resistant or immersion sealing available
Shock MIL-STD-202 Method 213, Condition D, 500G (non oper)
Vibration MIL-STD-202 Method 214, Condition D, 10G RMS (non oper)

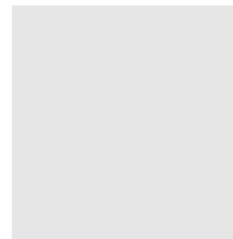
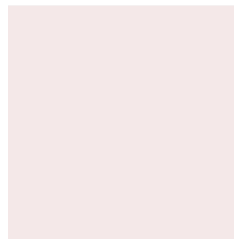
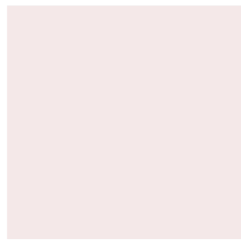
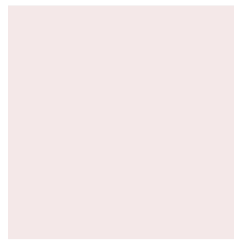
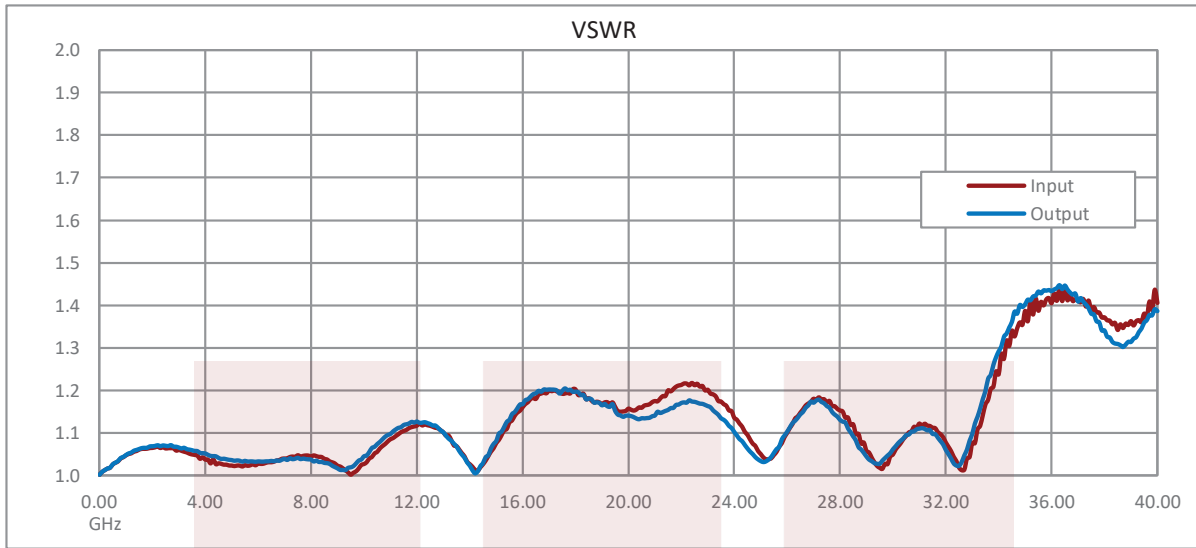
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

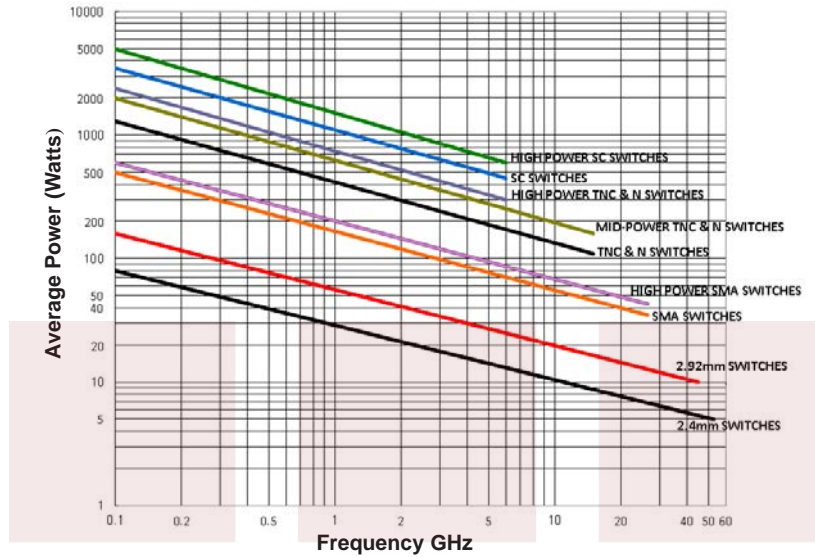
Notes:

Typical Performance Data

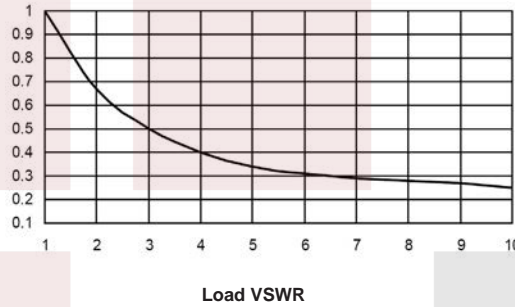




Power Handling vs. Frequency



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

Transfer Electromechanical Relay Failsafe Switch, DC to 40 GHz, up to 10W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, 2.92mm 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.

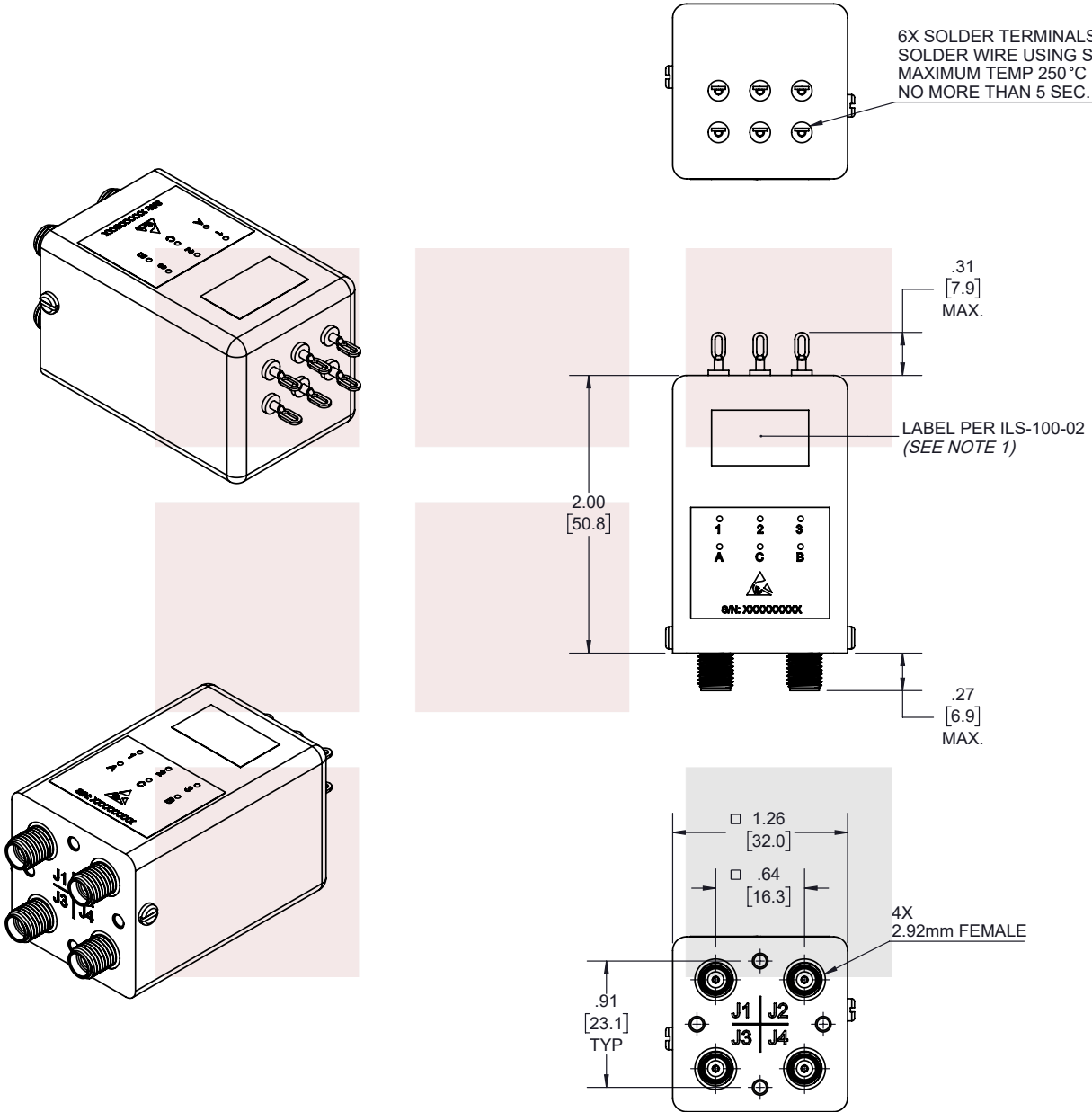
For additional information on this product, please click the following link: [Transfer Electromechanical Relay Failsafe Switch, DC to 40 GHz, up to 10W, 2M Lifecycles, 12V, Indicators, TTL, Suppression Diodes, 2.92mm FMSW6451](#)

URL: <https://www.fairviewmicrowave.com/dpdt-failsafe-40-ghz-electro-mechanical-relay-switch-indicators-ttl-12v-2.92mm-fmsw6451-p.aspx>

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| REVISIONS | | | |
|-----------|-----------------|-----------|----------|
| REV. | DESCRIPTION | DATE | APPROVED |
| A | INITIAL RELEASE | 1/26/2021 | T.GALLA |



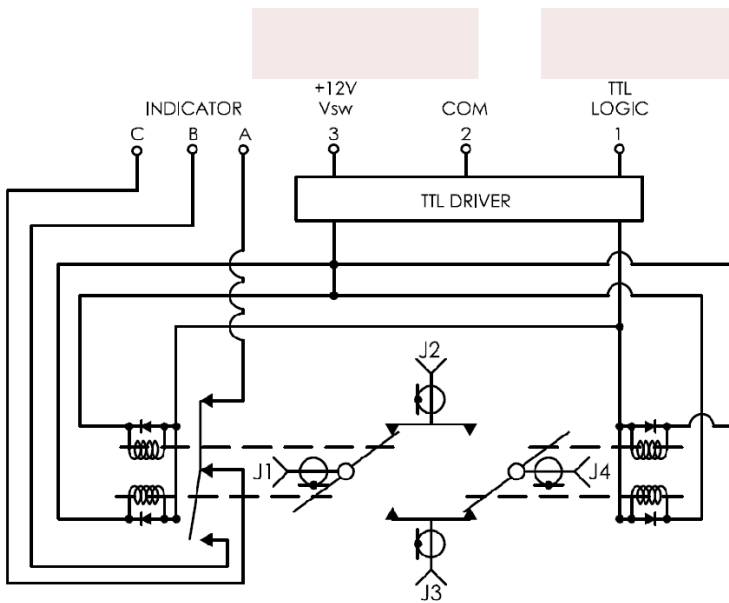
NOTES:

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| <p>SIZE A</p> | <p>CAGE CODE 3FKR5</p> | <p>DRAWN BY K.DANG</p> | <p>ITEM NO. FMSW6451</p> <p>REV A</p> | | | | | | | | | | | | | | | |

T-Rev.D



| VOLTAGE | LOGIC INPUT | RF PATH | INDICATOR PATH |
|--------------|-------------|--------------|----------------|
| DE-ENERGIZED | OFF | J1-J2, J3-J4 | A-C |
| ENERGIZED | ON | J1-J3, J2-J4 | B-C |

SCHEMATIC

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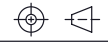
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THIRD-ANGLE PROJECTION



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SHEET 2 OF 2

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SCALE N/A

| | | | | |
|-----------|--------------------|--------------------|----------------------|----------|
| SIZE A | CAGE CODE 3FKR5 | DRAWN BY K.DANG | ITEM NO. FMSW6451 | REV A |
|-----------|--------------------|--------------------|----------------------|----------|

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