

## SPDT, IP64 Rated Electromechanical Relay Failsafe Switch, DC to 18 GHz, 90W, 12VDC, SMA

The FMSW6542 is a Ruggedized Single Pole Double Throw (SP2T) electromechanical relay switch that operates across a frequency range from DC to 18 GHz and can handle up to 90 Watts of average power in a break before make condition. The 50 Ohm design is IP64 compliant with a Level 1 moisture seal and specially designed to operate reliably in harsh usage environments and conditions, such as over extreme temperatures and wet or dusty environments. Intrusion protection offers full protection against dust and other particulants. Moisture protection enables resistance to splashes in all directions. The switch has a Failsafe actuator and is rated for 2 million lifecycles. Impressive typical performance includes 0.2 dB insertion loss and isolation greater than 85 dB. The switch requires +12 Vdc bias voltage and operates over a wide temperature range of -54°C to +85°C. The rugged and compact package assembly supports SMA female connectors and solder terminal pins for DC control. 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

Description	Min	Typ	Max	Units
Frequency Range	DC		18	GHz
Impedance		50		Ohms
Operating Voltage	11	12	13	Volts
Actuating Current @ 12 Volts			200	mA
VSWR		1.2:1	1.4:1	
Insertion Loss		0.2	0.4	dB
Isolation	65	80		dB
Switching Time		20		ms

### Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC - 6	6 - 12	12 - 18			GHz
VSWR, Max	1.2:1	1.3:1	1.4:1			
Insertion Loss, Max	0.15	0.25	0.4			dB
Isolation, Min	85	70	65			dB

### Mechanical Specifications

<b>Size</b>	
Length	2.05 in [52.07 mm]
Width/Diameter	1.5 in [38.1 mm]
Height	0.52 in [13.21 mm]
Weight	0.05 lbs [22.68 g]



### Features:

- Single Pole Double Throw (SP2T) Ruggedized Electromechanical Relay Switch
- IP64 Level 1 Rated
- DC to 12 GHz Frequency Range
- Failsafe Actuator
- 2M Lifecycle Rating
- Insertion Loss 0.2 dB typ
- Isolation > 85 dB typ
- VSWR as low as 1.25:1 max
- Solder Terminal Pins for DC Control
- +12 Volt DC Bias
- SMA Female Connectors
- -54°C to +85°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

### 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  
Control Connector

SMA Female  
Solder Terminals

**Environmental Specifications**

**Temperature**

Operating Range  
Storage Range

-54 to +85 deg C  
-55 to +100 deg C

Ingress Protection (IP) Rating

IP64

Shock

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

Vibration

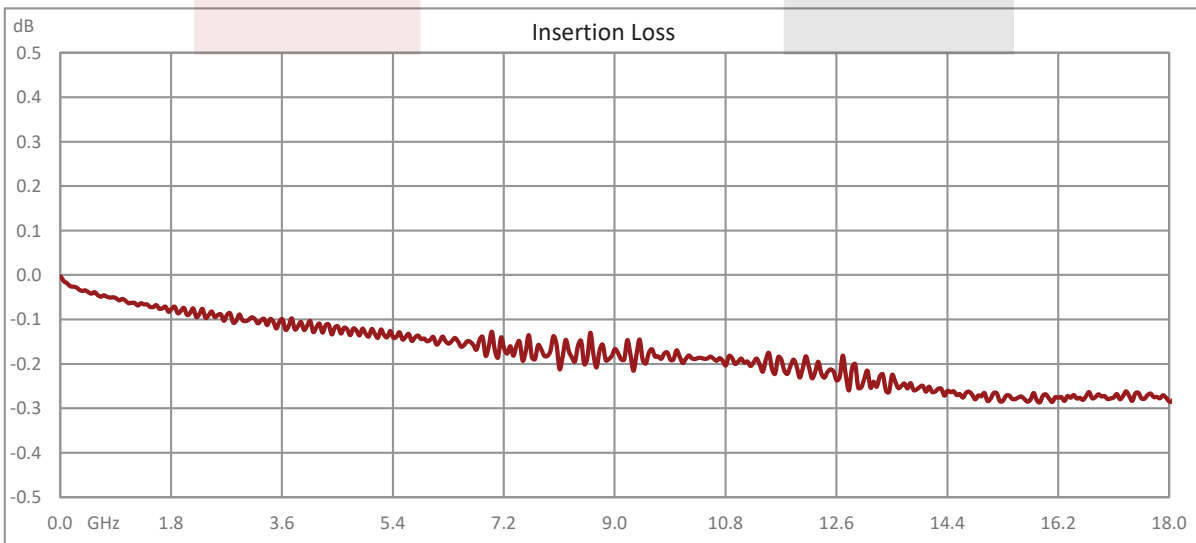
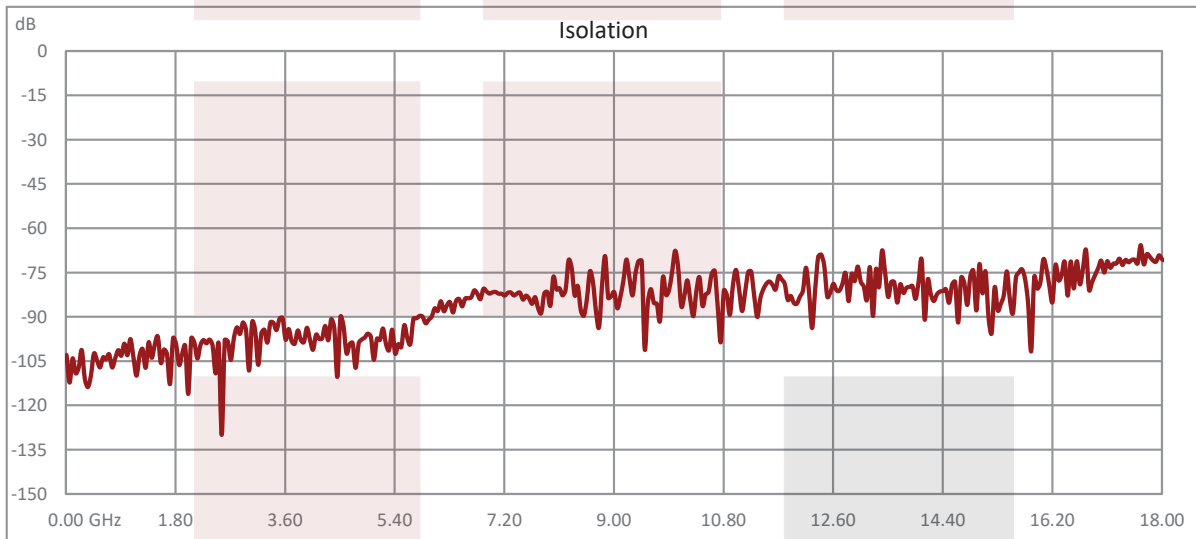
MIL-STD-202 Method 204, Condition D, 10G RMS (non oper)

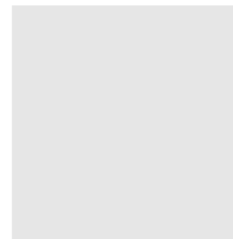
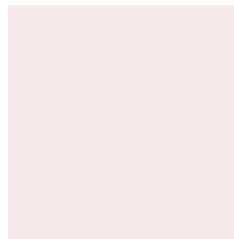
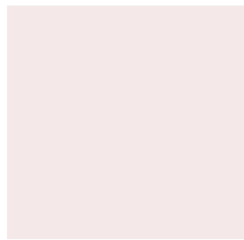
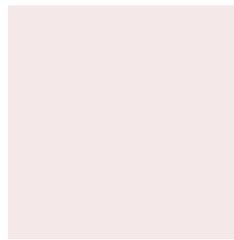
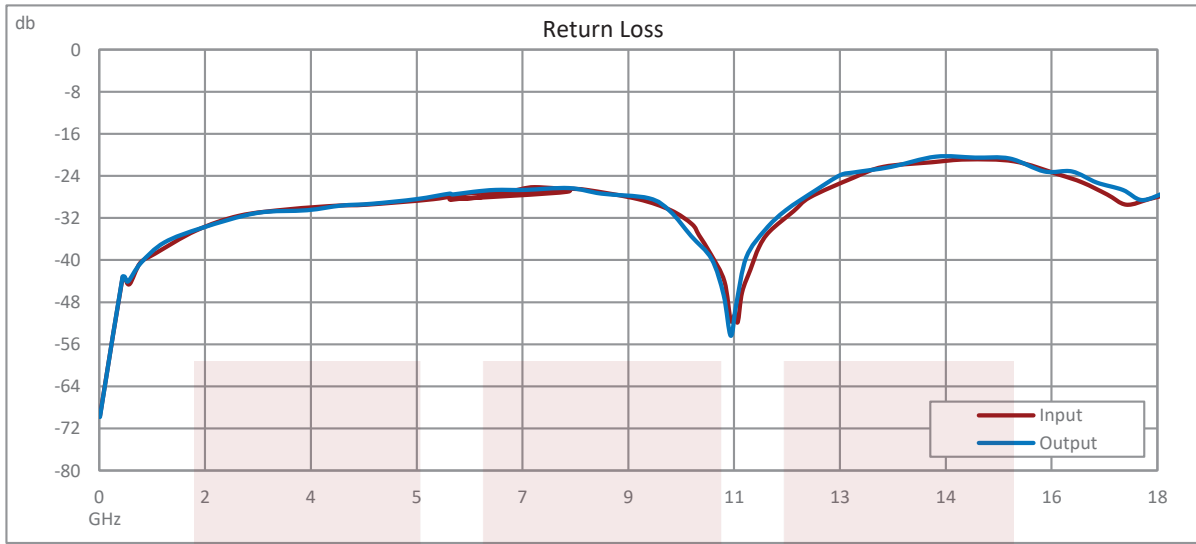
**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

Notes:

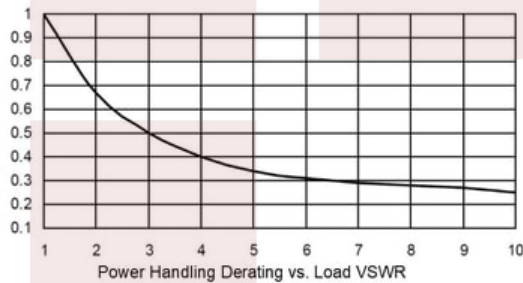
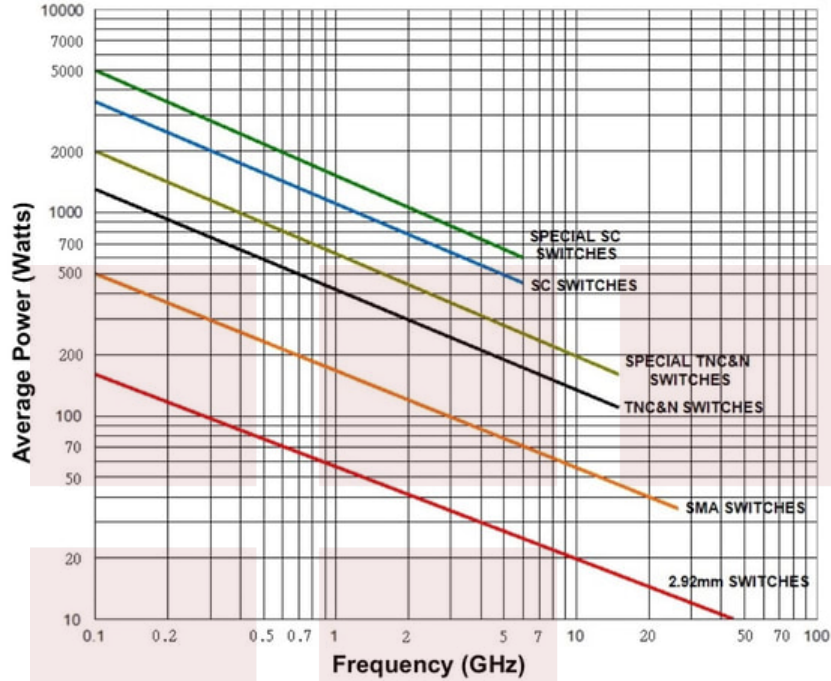
**Typical Performance Data**





**Power Handling vs. Frequency**

**Power Handling vs. Frequency**



Power handling chart and derating curves based on the following conditions:

- Ambient temperature: 40°C or less
- Altitude: Sea level
- Load VSWR: 1.20:1 Maximum
- Relative Humidity: 40-50%
- Cold switching: RF signal off

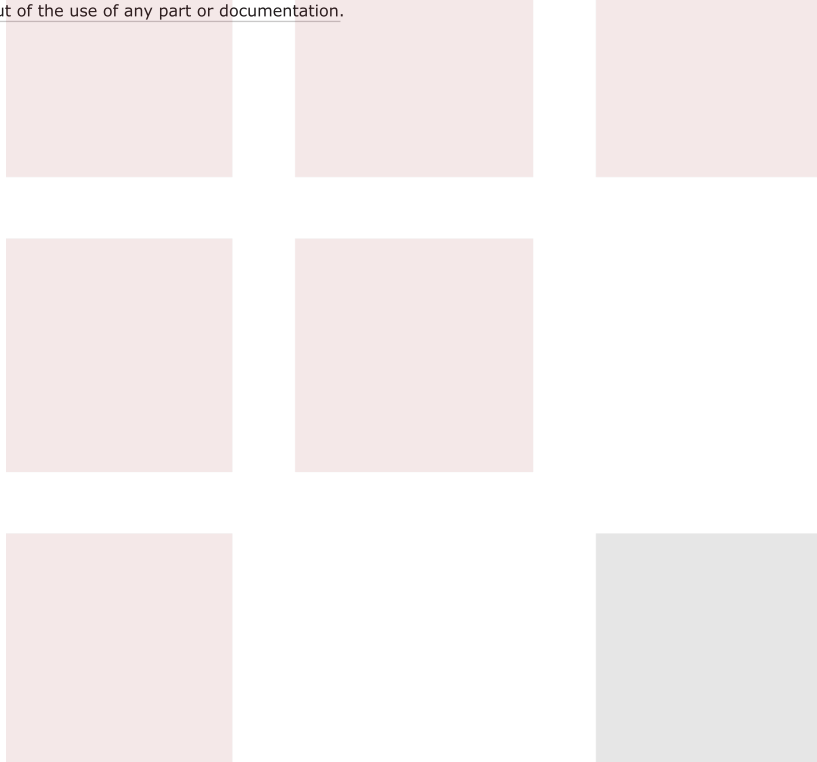
Note: specifications subject to change without notice

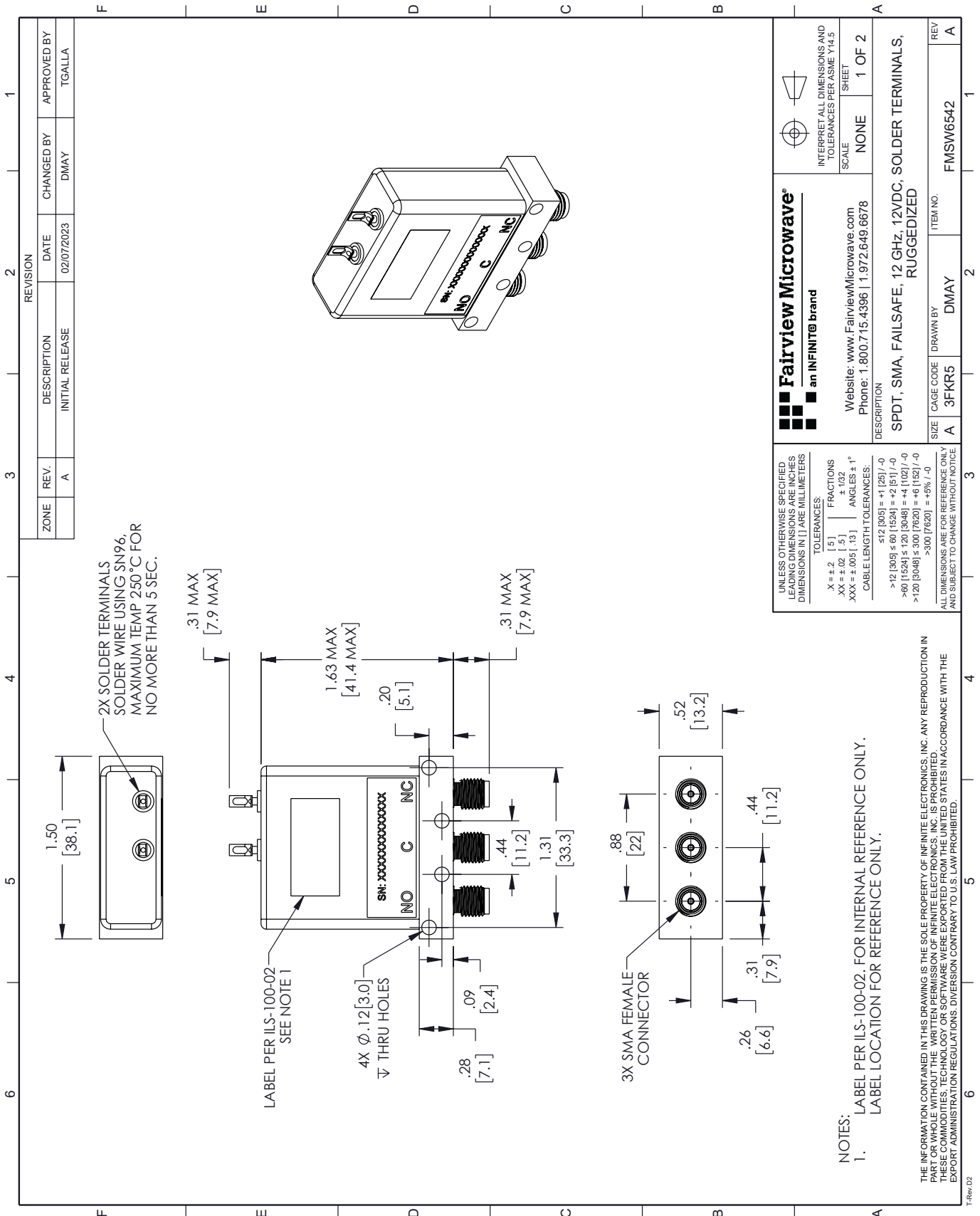
SPDT, IP64 Rated Electromechanical Relay Failsafe Switch, DC to 18 GHz, 90W, 12VDC, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

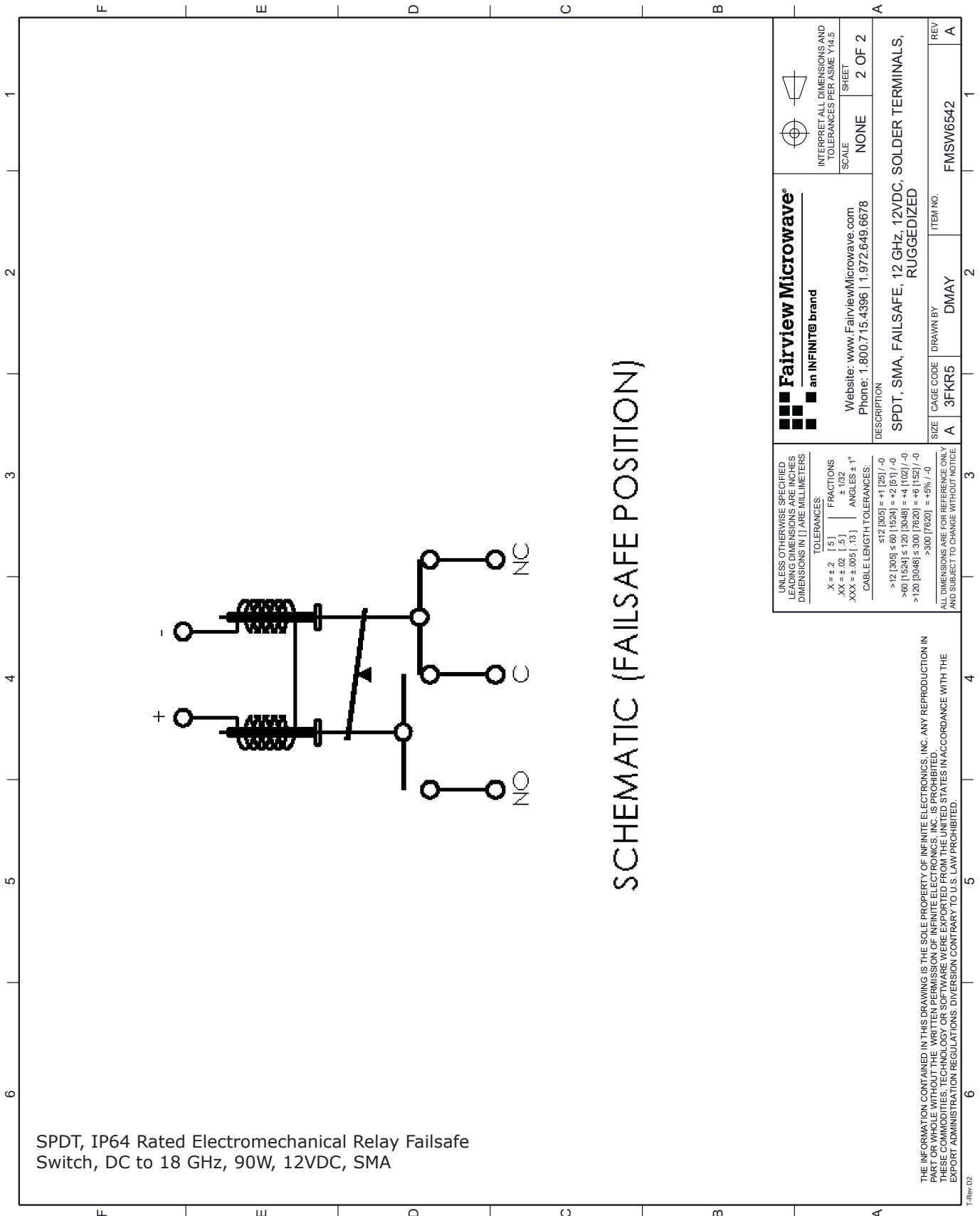
For additional information on this product, please click the following link: [SPDT, IP64 Rated Electromechanical Relay Failsafe Switch, DC to 18 GHz, 90W, 12VDC, SMA FMSW6542](#)

URL: <https://www.fairviewmicrowave.com/spdt-failsafe-18-ghz-electro-mechanical-relay-switch-sma-fmsw6542-p.aspx>

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<p>UNLESS OTHERWISE SPECIFIED, LEADING DIMENSIONS ARE INCHES AND DIMENSIONS IN [ ] ARE MILLIMETERS.</p> <p>TOLERANCES:</p> <p>.X = ±.2 [ .5 ]     FRACTIONS     ±.132</p> <p>.XX = ±.02 [ .5 ]     ANGLES ± 1°</p> <p>.XXX = ±.005 [ .13 ]</p> <p>CABLE LENGTH TOLERANCES:</p> <p>512 [ 205 ] = +1 [ 25 ] / -0</p> <p>&gt;12 [ 305 ] ≤ 60 [ 1524 ] = +2 [ 51 ] / -0</p> <p>&gt;60 [ 1524 ] ≤ 120 [ 3048 ] = +4 [ 102 ] / -0</p> <p>&gt;120 [ 3048 ] ≤ 300 [ 7620 ] = +6 [ 152 ] / -0</p> <p>&gt;300 [ 7620 ] = +5% / -0</p> <p>ALL DIMENSIONS ARE FOR REFERENCE ONLY AND SUBJECT TO CHANGE WITHOUT NOTICE.</p>			
<p>DESCRIPTION</p> <p>SPDT, SMA, FAILSAFE, 12 GHz, 12VDC, SOLDER TERMINALS, RUGGEDIZED</p>		<p>SIZE: A</p> <p>CAGE CODE: 3FKR5</p> <p>DRAWN BY: DMAY</p> <p>ITEM NO.: FMSW6542</p>	
<p>REV: A</p>		<p>REV: A</p>	

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