

## SP4T Normally Open Electro-Mechanical Relay Switch From DC to 22 GHz, 20 Watts with Indicators, TTL, Diodes, SMA

The FMSW6128 is an SP4T Electromechanical Relay Switch that operates over a wide frequency band from DC to 22 GHz and has a rating of 20 Watts input power (CW). Rated for 1M life cycles for high reliability operation, this design uses a Normally Open Actuator with a break before make configuration, TTL logic driver, position indicators and suppression diodes. The switch exhibits exceptional electrical performance specified from 0.3 dB max for insertion loss and 75 dB min for isolation, and guaranteed over -55°C to +85°C. The assembly requires an operating voltage of +12Vdc and is certified as RoHS compliant. External connectors include solder terminals and SMA female connectors.

### Electrical Specifications

|                    |                                           |
|--------------------|-------------------------------------------|
| Switch Type        | SP4T, Reflective                          |
| Actuator Type      | Normally Open                             |
| Switching Sequence | Break Before Make                         |
| Actuator Options   | Indicators, TTL Logic, Diodes             |
| TTL Control        | on: 2.4 to 5 Volts<br>off: 0 to 0.8 Volts |

| Description                     | Min | Typ | Max   | Units |
|---------------------------------|-----|-----|-------|-------|
| Frequency Range                 | DC  |     | 22    | GHz   |
| Impedance                       |     | 50  |       | Ohms  |
| Operating Voltage               |     | 12  |       | Volts |
| Actuating Current @ 12 Volts    |     | 310 |       | mA    |
| VSWR                            |     |     | 1.6:1 |       |
| Insertion Loss                  |     |     | 0.6   | dB    |
| Isolation                       | 60  |     |       | dB    |
| Input Power (CW)<br>(at 22 GHz) |     |     | 20    | Watts |

### Performance by Frequency

| Description         | F1     | F2    | F3     | F4      | F5      | Units |
|---------------------|--------|-------|--------|---------|---------|-------|
| Frequency Range     | DC - 4 | 4 - 8 | 8 - 12 | 12 - 18 | 18 - 22 | GHz   |
| VSWR, Max           | 1.2:1  | 1.3:1 | 1.4:1  | 1.5:1   | 1.6:1   |       |
| Insertion Loss, Max | 0.3    | 0.35  | 0.4    | 0.5     | 0.6     | dB    |
| Isolation, Min      | 75     | 70    | 65     | 60      | 60      | dB    |

### Mechanical Specifications

|                           |                      |
|---------------------------|----------------------|
| Size                      |                      |
| Length                    | 2.75 in [69.85 mm]   |
| Width/Diameter            | 1.75 in [44.45 mm]   |
| Height                    | 1.75 in [44.45 mm]   |
| Weight                    | 0.37 lbs [167.83 g]  |
| Body Material and Plating | Aluminum             |
| Package Type              | Connectorized Module |
| Operating Life            | 1,000,000 Cycles     |
| Switching Time            | 15 ms Max            |



### Features:

- Single Pole Four Throw Relay Switch
- DC to 22 GHz Frequency Range
- 1M Cycle Operating Life Min
- Normally Open Actuator
- TTL Logic Driver, Position Indicators, Suppression Diodes
- Insertion Loss 0.6 dB max
- Isolation 60 dB min
- 20 Watts Avg Power Max
- Switching Sequence Break Before Make

### Applications:

- Test & Measurement
- Communications System
- Instrumentation

Fairview Microwave  
1130 Junction Dr. #100  
Allen, TX 75013  
Tel: 1-800-715-4396 / (972) 649-6678  
Fax: (972) 649-6689  
[www.fairviewmicrowave.com](http://www.fairviewmicrowave.com)  
[sales@fairviewmicrowave.com](mailto:sales@fairviewmicrowave.com)

**Connectors**

|                                         |                            |
|-----------------------------------------|----------------------------|
| RF Connector Type                       | SMA Female                 |
| RF Connector Contact Material & Plating | Beryllium Copper, Gold     |
| RF Connector Body Material & Plating    | Passivated Stainless Steel |
| Control Connector                       | Solder Pin                 |

**Environmental Specifications**

**Temperature**

|                 |                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------|
| Operating Range | -55 to +85 deg C                                                                                     |
| ESD Sensitivity | ESD Sensitive Material. Transport material in Approved ESD bags. Handle in approved ESD Workstation. |



Environmental Specification Notes:  
 Designed to meet MIL-DTL-3928

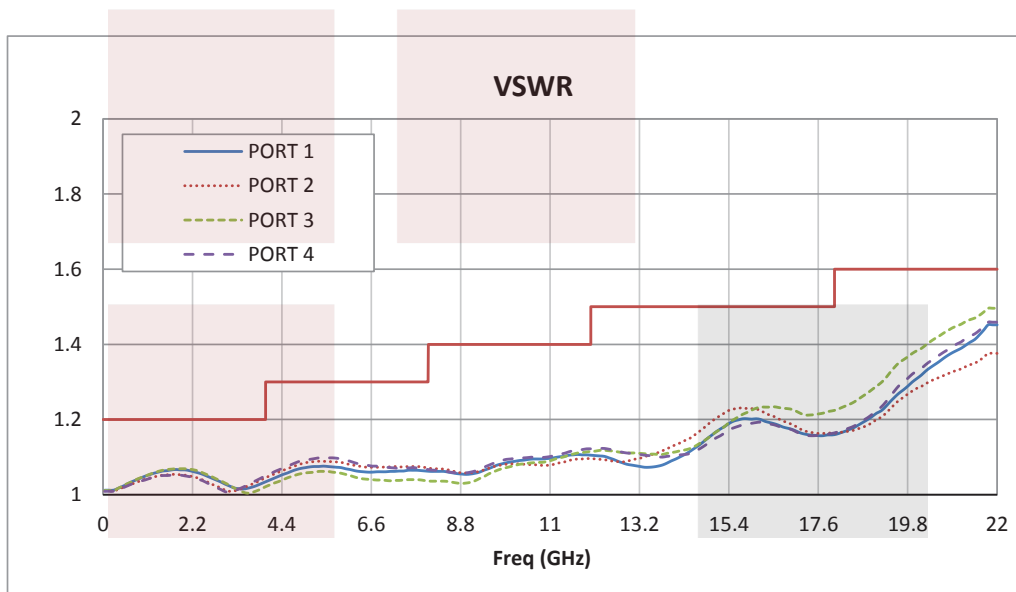
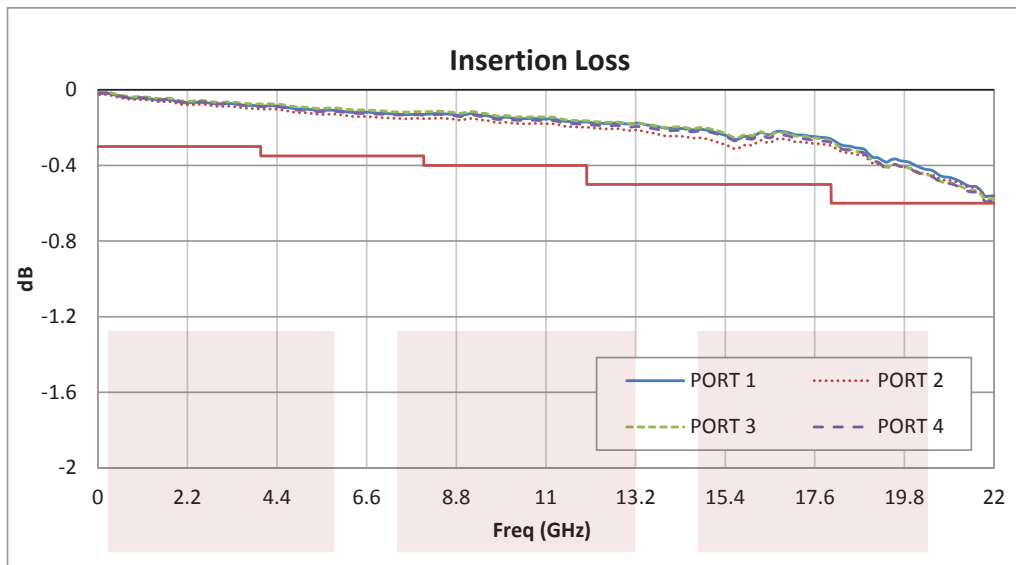
**Compliance Certifications** (visit [www.FairviewMicrowave.com](http://www.FairviewMicrowave.com) for current document)

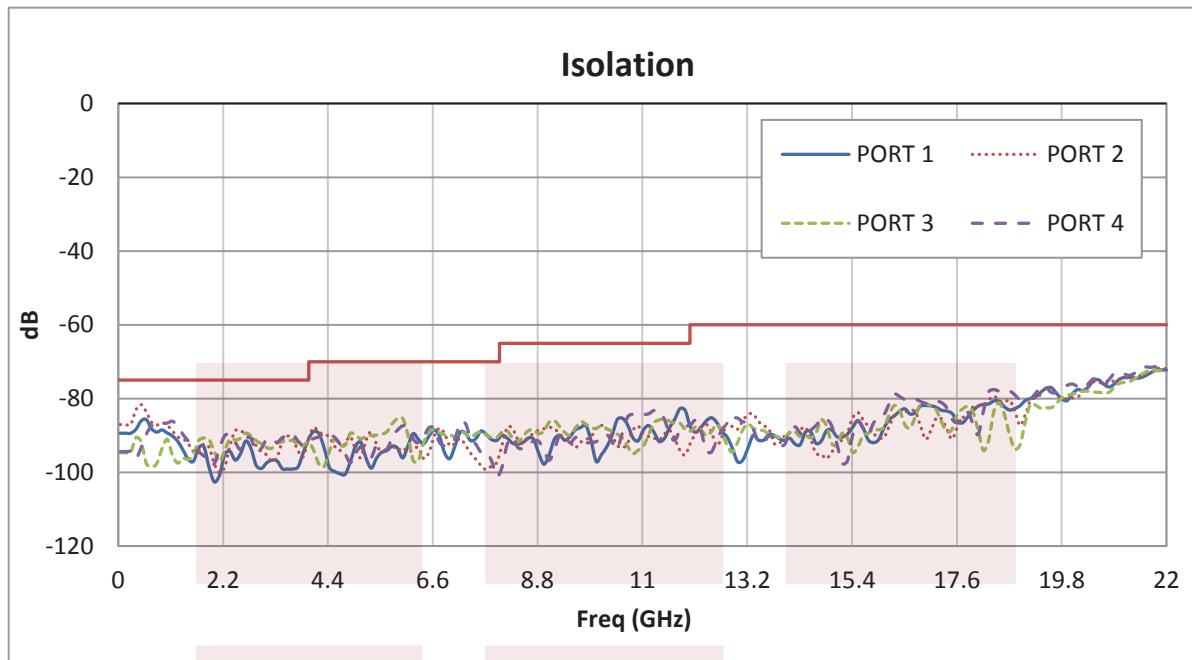
RoHS Compliant

**Plotted and Other Data**

Notes:

**Typical Performance Data**



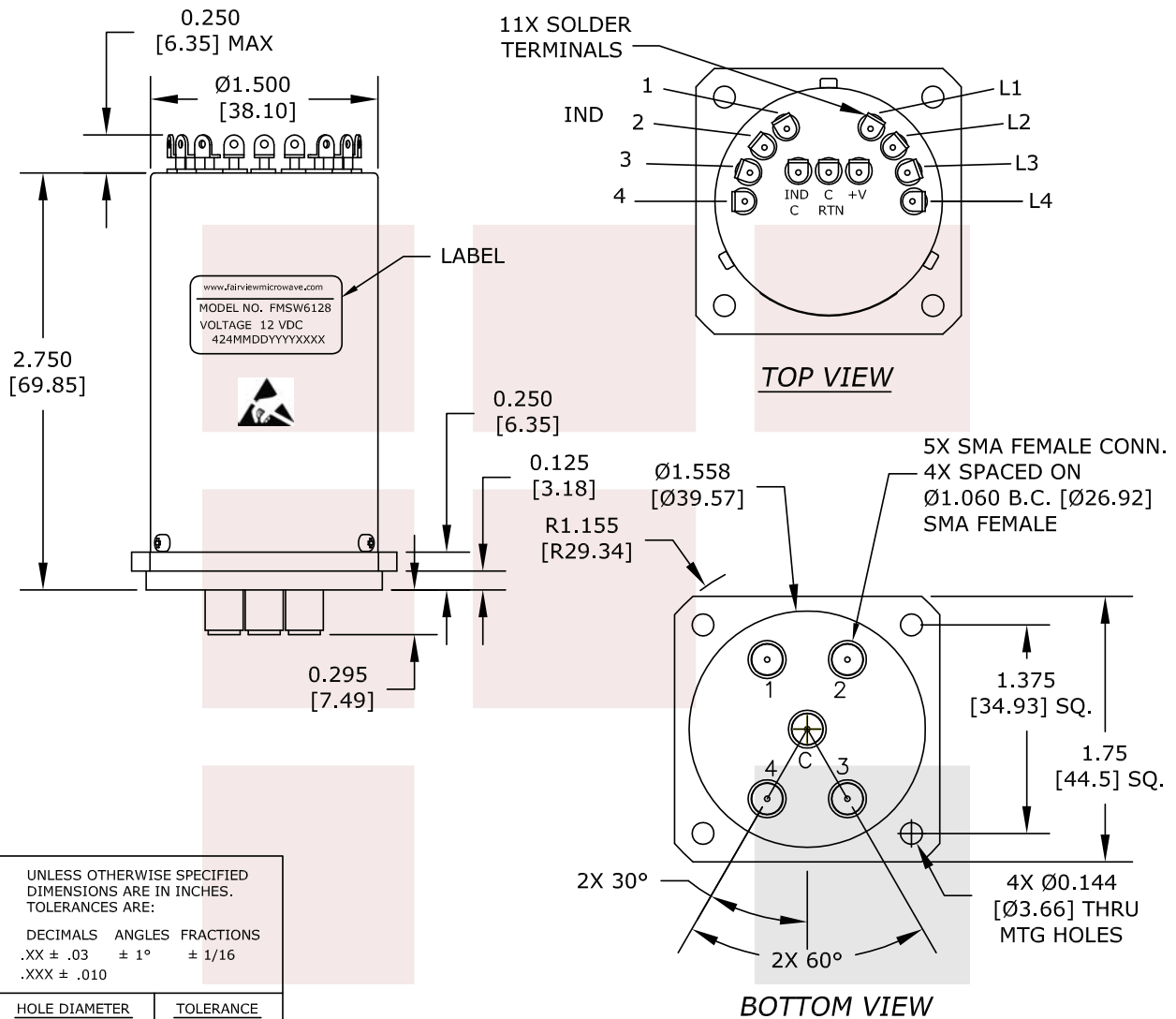


SP4T Normally Open Electro-Mechanical Relay Switch From DC to 22 GHz, 20 Watts with Indicators, TTL, Diodes, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SP4T Normally Open Electro-Mechanical Relay Switch From DC to 22 GHz, 20 Watts with Indicators, TTL, Diodes, SMA FMSW6128](http://www.fairviewmicrowave.com/sp4t-normally-open-electro-mechanical-relay-switch-indicators-ttl-fmsw6128-p.aspx)

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\* THESE DIMENSIONS AND TOLERANCES  
SUPERSEDE NOTE #1 ON TITLE BLOCK.

## FAIRVIEW MICROWAVE INC.

ALLEN, TX 75013 WWW.FAIRVIEWMICROWAVE.COM

### NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

### TITLE

SP4T Normally Open Electro-Mechanical Relay Switch  
From DC to 22 GHz, 20 Watts with Indicators, TTL,  
Diodes, SMA

### DWG NO

FMSW6128

### CAGE CODE

3FKR5

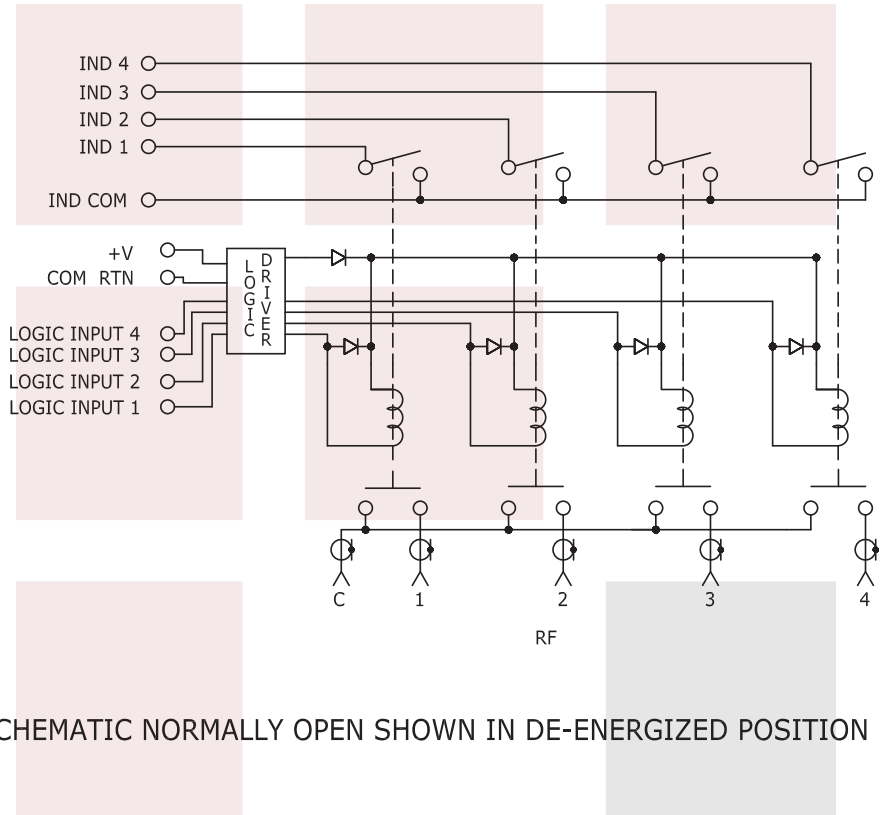
CAD FILE 031115

SHEET

SCALE N/A

SIZE A

200



SCHEMATIC NORMALLY OPEN SHOWN IN DE-ENERGIZED POSITION

|                                                                                                                                                         |  |                                                                                                                                                                                                                        |  |                                       |                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------|------------------------------|
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| <div>TITLE</div> <div>SP4T Normally Open Electro-Mechanical Relay Switch</div> <div>From DC to 22 GHz, 20 Watts with Indicators, TTL, Diodes, SMA</div> |  | <div>DWG NO</div> <div>FMSW6128</div>                                                                                                                                                                                  |  | <div>CAGE CODE</div> <div>3FKR5</div> |                              |
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|                                                                                                                                                         |  |                                                                                                                                                                                                                        |  | <div></div> <div>200</div>            |                              |