

## SP12T Latching Electro-Mechanical Relay Switch From DC to 12.4 GHz, 120 Watts with Self Cut Off, Auto Reset, Indicators, Diodes, SMA

The SEMS-4080-SP12T-SMA is an SP12T Terminated Electromechanical Relay Switch that operates over a wide frequency band from DC to 12.4GHz with up to 240 Watts of input power (CW) handling capability. Rated for 2M life cycles for high reliability operation, this design uses a Latching Actuator with a break before make configuration, terminations, diodes, position indicators, self cut off, and auto reset circuitry. The switch exhibits exceptional electrical performance specified from 0.2 dB max for insertion loss and from 80 dB min for isolation, and guaranteed over -40°C to +85°C. The assembly requires an operating voltage of +28Vdc and is certified as RoHS and REACH compliant. External connectors include a 44 pin D-SUB male connector and SMA female connectors.

### Electrical Specifications

|                    |                                              |
|--------------------|----------------------------------------------|
| Switch Type        | SP12T, Absorptive                            |
| Actuator Type      | Latching                                     |
| Switching Sequence | Break before Make                            |
| Actuator Options   | Self Cut Off, Auto Reset, Indicators, Diodes |
| Polarity           | Negative Common                              |
| Indicator Rating   | 1 Watts / 30 Volts / 100 mA                  |
| Self Cut-Off Time  | 40 ms < CT < 120 ms                          |

| Description                  | Min | Typ | Max   | Units |
|------------------------------|-----|-----|-------|-------|
| Frequency Range              | DC  |     | 12.4  | GHz   |
| Impedance                    |     | 50  |       | Ohms  |
| Operating Voltage            | 24  | 28  | 30    | Volts |
| Actuating Current @ 28 Volts |     | 500 |       | mA    |
| VSWR                         |     |     | 1.6:1 |       |
| Insertion Loss               |     |     | 0.6   | dB    |
| Isolation                    | 60  |     |       | dB    |
| Input Power (CW)             |     |     | 120   | Watts |
| Termination Input Power (CW) |     |     | 1     | Watts |

### Performance by Frequency

| Description         | F1     | F2    | F3       | F4 | F5 | Units |
|---------------------|--------|-------|----------|----|----|-------|
| Frequency Range     | DC - 3 | 3 - 8 | 8 - 12.4 |    |    | GHz   |
| VSWR, Max           | 1.2:1  | 1.4:1 | 1.6:1    |    |    |       |
| Insertion Loss, Max | 0.2    | 0.4   | 0.6      |    |    | dB    |
| Isolation, Min      | 80     | 70    | 60       |    |    | dB    |
| Power In, Max (CW)  | 240    | 150   | 120      |    |    | Watts |

#### Electrical Specification Notes:

Average Power and Actuating Current values at 25°C.

Termination Average Power: 1W per termination / 3W total power.



### Features:

- Single Pole Twelve Throw Terminated Relay Switch
- DC to 12.4 GHz Frequency Range
- 2M Cycle Operating Life Min
- 120 Watt Avg Power Max
- -40 to +85 Deg C Operating Temperature
- Insertion Loss 0.6 dB Max
- VSWR 1.6:1 Max

### Applications:

- General Purpose High Performance Relay Switch
- Military Communications
- Communications Systems
- Test & Measurement

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## Mechanical Specifications

### Size

|                |                     |
|----------------|---------------------|
| Length         | 2.598 in [65.99 mm] |
| Width/Diameter | 2.68 in [68.07 mm]  |
| Height         | 2.68 in [68.07 mm]  |
| Weight         | 0.88 lbs [399.16 g] |
| Operating Life | 2,000,000 Cycles    |
| Switching Time | 50 ms Max           |

### Connectors

|                            |                   |
|----------------------------|-------------------|
| RF Connector Type          | SMA Female        |
| RF Connector Specification | MIL C 39012       |
| Control Connector          | 44 pin D-SUB Male |

## Environmental Specifications

### Temperature

|                 |                  |
|-----------------|------------------|
| Operating Range | -40 to +85 deg C |
| Storage Range   | -55 to +85 deg C |

|                 |                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------|
| Construction    | Splashproof                                                                                          |
| Humidity        | MIL-DTE-3928E, Cond.B                                                                                |
| Shock           | MIL-STD-202, Method 213B, Cond.C (survival)                                                          |
| Vibration       | MIL-STD-202, Method 204D, Cond.D (survival)                                                          |
| ESD Sensitivity | ESD Sensitive Material. Transport material in approved ESD bags. Handle in approved ESD Workstation. |



Environmental Specification Notes:  
 Environmental specifications are guaranteed but not tested.

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

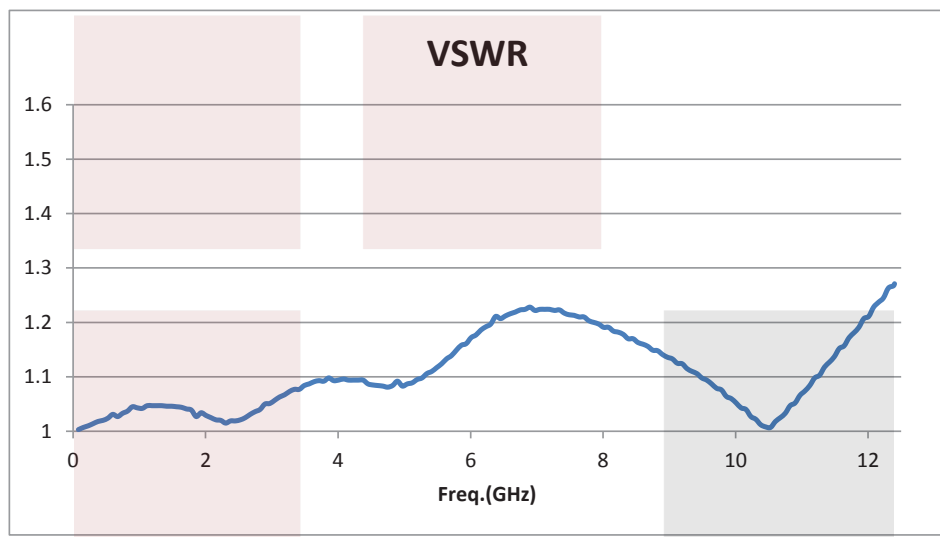
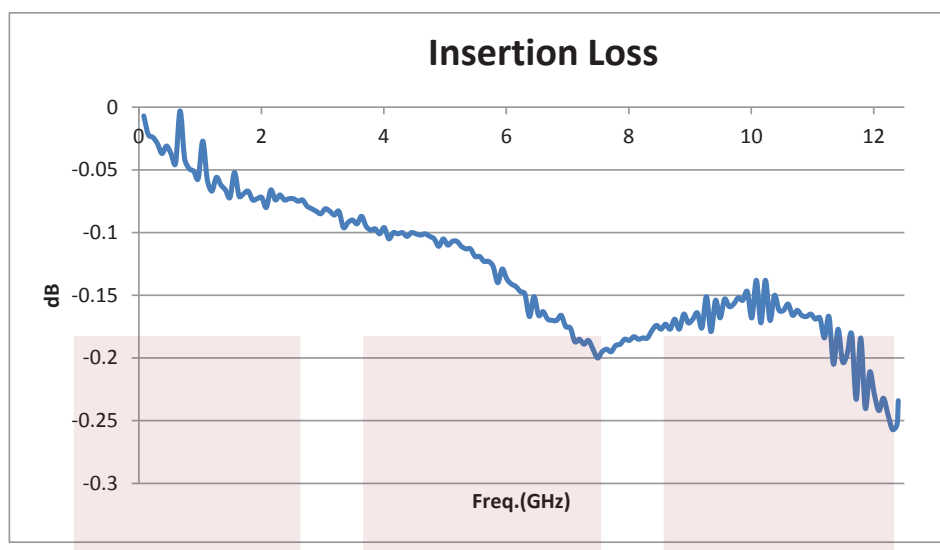
|                 |            |
|-----------------|------------|
| RoHS Compliant  |            |
| REACH Compliant | 12/17/2014 |

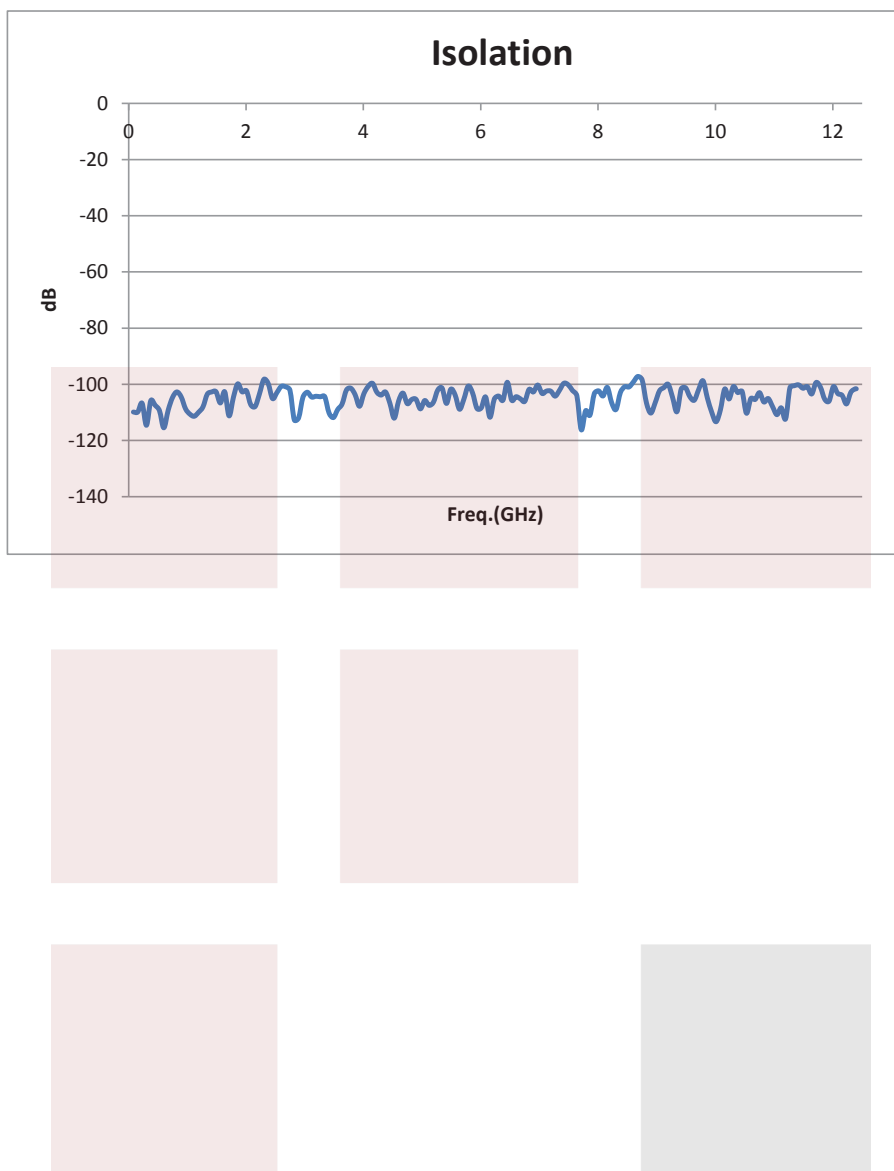
## Plotted and Other Data

Notes:

- Values shown are typical at 25°C.

**Typical Performance Data**



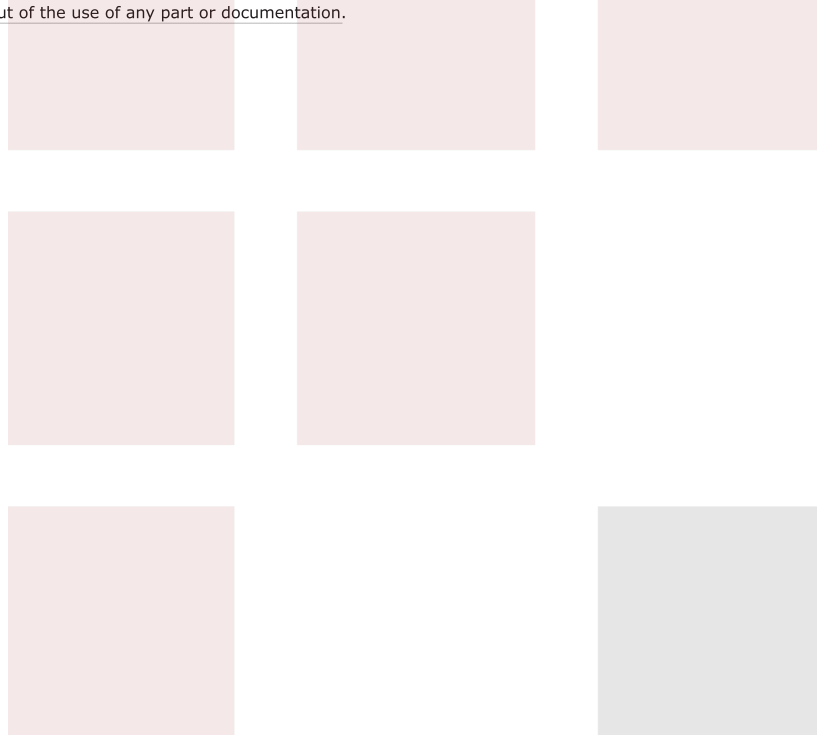


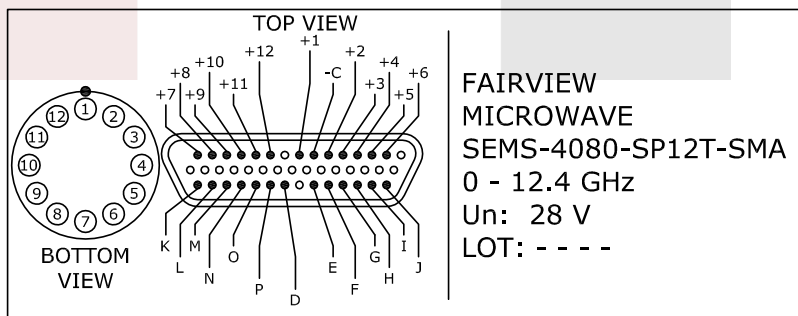
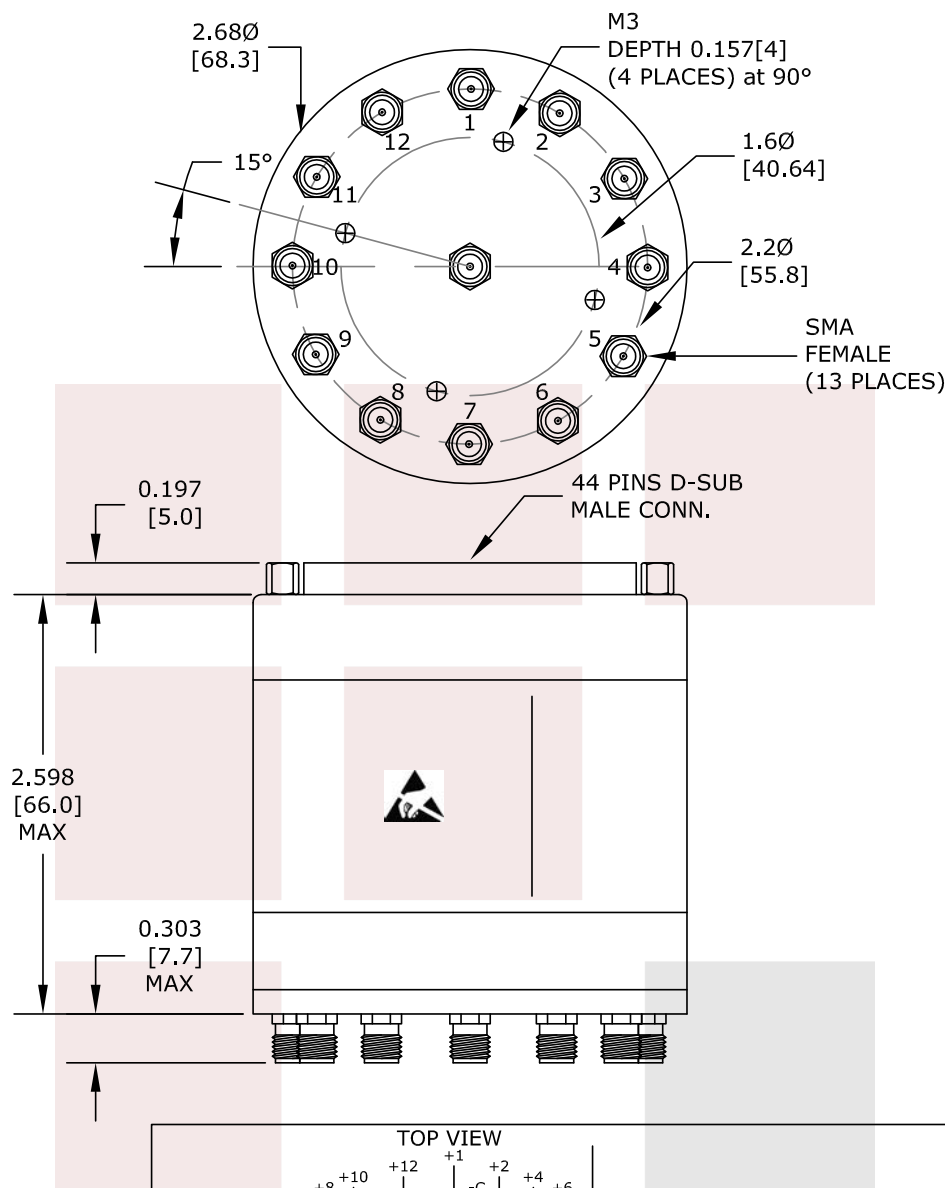
SP12T Latching Electro-Mechanical Relay Switch From DC to 12.4 GHz, 120 Watts with Self Cut Off, Auto Reset, Indicators, Diodes, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Allen, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SP12T Latching Electro-Mechanical Relay Switch From DC to 12.4 GHz, 120 Watts with Self Cut Off, Auto Reset, Indicators, Diodes, SMA SEMS-4080-SP12T-SMA](#)

URL: <http://www.fairviewmicrowave.com/sp12t-latching-electro-mechanical-relay-switch-auto-reset-sems-4080-sp12t-sma-p.aspx>

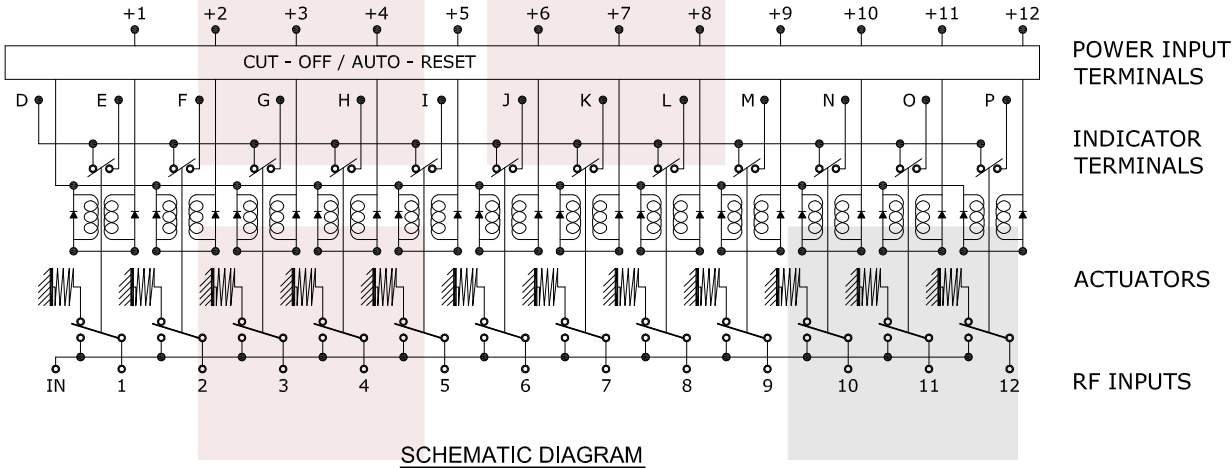
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|                                                                                                                                                     |        |                                                                                                                                                                                     |       |                    |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------|-------------|
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| TITLE<br>SP12T Latching Electro-Mechanical Relay Switch From<br>DC to 12.4 GHz, 120 Watts with Self Cut Off, Auto<br>Reset, Indicators, Diodes, SMA |        | DWG NO<br>SEMS-4080-SP12T-SMA                                                                                                                                                       |       | CAGE CODE<br>3FKR5 |             |
| CAD FILE                                                                                                                                            | 082815 | SHEET                                                                                                                                                                               | SCALE | N/A                | SIZE A 2233 |

| Voltage  | RF Continuity               | Indicator |
|----------|-----------------------------|-----------|
| - C + 1  | IN $\longleftrightarrow$ 1  | D.E       |
| - C + 2  | IN $\longleftrightarrow$ 2  | D.F       |
| - C + 3  | IN $\longleftrightarrow$ 3  | D.G       |
| - C + 4  | IN $\longleftrightarrow$ 4  | D.H       |
| - C + 5  | IN $\longleftrightarrow$ 5  | D.I       |
| - C + 6  | IN $\longleftrightarrow$ 6  | D.J       |
| - C + 7  | IN $\longleftrightarrow$ 7  | D.K       |
| - C + 8  | IN $\longleftrightarrow$ 8  | D.L       |
| - C + 9  | IN $\longleftrightarrow$ 9  | D.M       |
| - C + 10 | IN $\longleftrightarrow$ 10 | D.N       |
| - C + 11 | IN $\longleftrightarrow$ 11 | D.O       |
| - C + 12 | IN $\longleftrightarrow$ 12 | D.P       |



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CAD FILE

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N/A

SIZE

A 150