SPDT Failsafe DC to 18 GHz Electro-Mechanical Relay Switch, up to 240W, 28V, SMA

The SEMS-4050-SPDT-SMA is an SPDT Electromechanical Relay Switch that operates over a wide frequency band from DC to 18GHz with up to 240 Watts of input power (CW) handling capability. Rated for 10M life cycles for high reliability operation, this design uses a Failsafe Actuator with a break before make configuration. The switch exhibits exceptional electrical performance specified from 0.15 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 solder terminals and SMA female connectors.

### Electrical Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>DC</td>
<td></td>
<td>18</td>
<td>GHz</td>
</tr>
<tr>
<td>Impedance</td>
<td>50</td>
<td></td>
<td></td>
<td>Ohms</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>24</td>
<td>28</td>
<td>30</td>
<td>Volts</td>
</tr>
<tr>
<td>Actuating Current @ 28 Volts</td>
<td>102</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>VSWR</td>
<td></td>
<td></td>
<td>1.4:1</td>
<td></td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>0.35</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>60</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input Power (CW)</td>
<td>100</td>
<td></td>
<td></td>
<td>Watts</td>
</tr>
<tr>
<td>Switching Time</td>
<td>10</td>
<td></td>
<td></td>
<td>ms</td>
</tr>
</tbody>
</table>

### Performance by Frequency

<table>
<thead>
<tr>
<th>Description</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>DC</td>
<td>3</td>
<td>8</td>
<td>12.4</td>
<td>18</td>
<td>GHz</td>
</tr>
<tr>
<td>VSWR, Max</td>
<td>1.1:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
<td>1.4:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insertion Loss, Max</td>
<td>0.15</td>
<td>0.2</td>
<td>0.25</td>
<td>0.35</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Isolation, Min</td>
<td>80</td>
<td>75</td>
<td>65</td>
<td>60</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Power In, Max (CW)</td>
<td>240</td>
<td>150</td>
<td>120</td>
<td>100</td>
<td></td>
<td>Watts</td>
</tr>
</tbody>
</table>

Electrical Specification Notes:
Average Power and Actuating Current values at 25°C.

### Mechanical Specifications

**Size**
- Length: 1.5 in [38.1 mm]
- Width/Diameter: 1.5 in [38.1 mm]
- Height: 0.5 in [12.7 mm]
- Weight: 0.166 lbs [75.3 g]
- Package Type: Connectorized
- Operating Life: 10,000,000 Cycles

**Features:**
- Single Pole Double Throw Relay Switch
- DC to 18 GHz Frequency Range
- 10M Cycle Operating Life Min
- 240 Watt Avg Power Max
- -40 to +85 Deg C Operating Temperature
- Insertion Loss 0.15 dB Max
- VSWR 1.1:1 Max

**Applications:**
- General Purpose High Performance Relay Switch
- Military Communications
- Communications Systems
- Test & Measurement
### Connectors
- **RF Connector Type**: SMA Female
- **RF Connector Specification**: MIL-C-39012
- **Control Connector**: Solder Pin

**Mechanical Specification Notes:**
- Solder Pins: 250°C max/30sec.

### Environmental Specifications

#### Temperature
- **Operating Range**: -40 to +85 deg C
- **Storage Range**: -55 to +85 deg C

#### Construction
- **Shock**: MIL-STD-202, Method 213B, Cond.C
- **Vibration**: MIL-STD-202, Method 204D, Cond.D

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

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

### Plotted and Other Data

**Notes:**
- Values shown are typical at 25°C.
Typical Performance Data

**Insertion Loss**

![Insertion Loss Graph]

**VSWR**

![VSWR Graph]
SPDT Failsafe DC to 18 GHz Electro-Mechanical Relay Switch, up to 240W, 28V, 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: SPDT Failsafe DC to 18 GHz Electro-Mechanical Relay Switch, up to 240W, 28V, SMA SEMS-4050-SPDT-SMA


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