

## SPDT USB Ethernet Controlled High Isolation Absorptive Switch 100 MHz to 50 GHz, 2.4mm

### FMSW5025



#### Features

- Ultra-Wideband SPDT PIN Diode Switch
- 100 MHz to 50 GHz
- 50 Ohm Absorptive Design
- Insertion Loss: 4.5 dB typ
- Isolation: 50 dB typ
- Maximum RF input Power: +23 dBm
- Bias Voltage: +5Vdc
- USB 2.0 Interface and Ethernet (IPv4)
- Field Replaceable Female 2.4mm output
- Operational Temperature Range -40°C to +85°C
- Downloadable User Manual and Software
- USB and Ethernet cables included

#### Applications

- Test & Measurement
- 5G Communication
- Military Electronic Systems
- Wireless Infrastructure
- Fiber Optics
- Research & Development

#### Description

The FMSW5025 is a Single Pole Double Throw (SPDT) USB/Ethernet RF Switch Module designed to cover a wide frequency range from 100 MHz to 50 GHz with excellent 50 dB typical isolation and 4.5 dB typical low insertion loss. The switch requires a +5Vdc bias voltage through USB, and has maximum input power handling of up to +23 dBm. The module supports both USB 2.0 and LAN (Ethernet) interfaces, allowing seamless control from a host PC or networked system. The rugged and compact package supports field replaceable 2.4mm female RF connectors. The SPDT switch can be controlled through an intuitive GUI (downloadable user manual), as well as with system design software such as LabVIEW. The robust construction and wide frequency range make it well-suited for bench-top test and measurement environments, as well as integration into radar and communication systems.

The RF Switch Module includes a USB 2.0 A extension cable and IPv4 Ethernet cable for flexible connectivity. Its advanced internal switching architecture ensures low signal distortion and high isolation between channels, providing consistent and reliable performance across the entire operating frequency range.

#### Electrical Specifications

| Description                | Min | Typ   | Max | Units |
|----------------------------|-----|-------|-----|-------|
| Frequency Range            | 0.1 |       | 50  | GHz   |
| Impedance                  |     | 50    |     | Ohms  |
| VSWR                       |     | 2.5:1 | 3:1 |       |
| IL Temperature Coefficient |     | 0.003 |     |       |
| Isolation                  | 40  |       |     | dB    |
| 0.1dB Compression Point    |     | 23    |     |       |
| Input IP3                  | 38  |       |     | dBm   |
| Input Power (CW)           |     |       | 23  | dBm   |
| DC Power Dissipation       |     | 0.95  |     | Watt  |
| Positive Operating Voltage |     | 5     |     | Vdc   |
| Current @ 5 Vdc            |     | 210   |     | mA    |
| Operating Temperature      | -40 |       | +85 | deg C |

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**Performance by Frequency**

| Description         | F1        | F2         | F3         | F4 | F5 | Units |
|---------------------|-----------|------------|------------|----|----|-------|
| Frequency Range     | 0.1 to 18 | 18 to 43.5 | 43.5 to 50 |    |    | GHz   |
| Insertion Loss, Max | 4         | 5          | 7.5        |    |    | dB    |
| Insertion Loss, Typ | 3.3       | 4.5        | 6.2        |    |    | dB    |
| Isolation, Min      | 50        | 40         | 50         |    |    | dB    |
| Isolation, Typ      | 65        | 50         | 55         |    |    | dB    |

**Mechanical Specifications**

**Size**

|                           |                    |
|---------------------------|--------------------|
| Length                    | 3.58 in [90.93 mm] |
| Width                     | 1.15 in [29.21 mm] |
| Height                    | 0.98 in [24.89 mm] |
| Weight                    | 0.1 lbs [45.36 g]  |
| Body Material and Plating | Aluminum, Nickel   |

**Configuration**

|                           |                  |
|---------------------------|------------------|
| Design                    | Absorptive, SPDT |
| RF Input/Output Connector | 2.4mm Female     |
| Control Connector         | USB 2.0 Type B   |
| Band Type                 | Wide Band        |

**Environmental Specifications**

**Temperature**

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Operating Range | -40 to +85 deg C                                       |
| Storage Range   | -50 to +105 deg C                                      |
| Shock           | 20G for 11msec half sine wave, 3 axis both directions? |
| Vibration       | 25g RMS (15 degrees 2KHz) endurance, 1 hour per axis?  |

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

**Plotted and Other Data**

Notes:

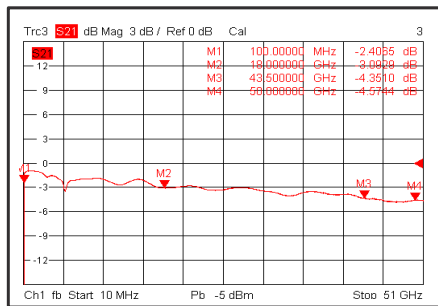
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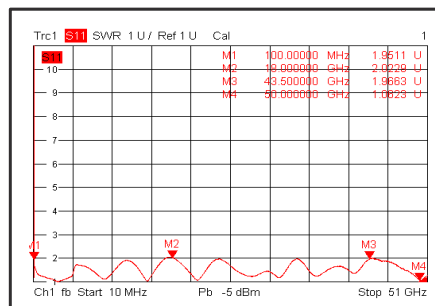


#### Typical Performance Data

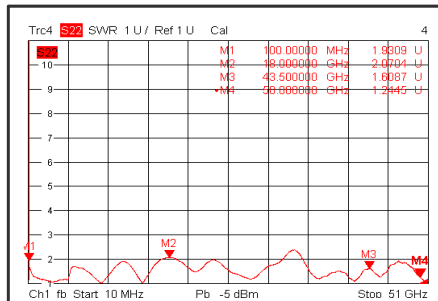
Insertion Loss @+25°C



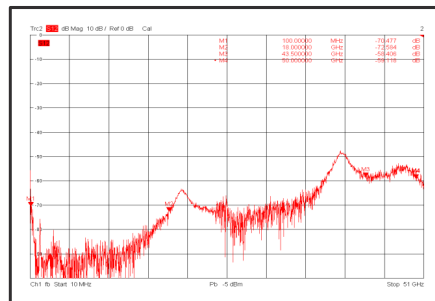
Input VSWR @+25°C



Output VSWR @+25°C



Isolation @+25°C

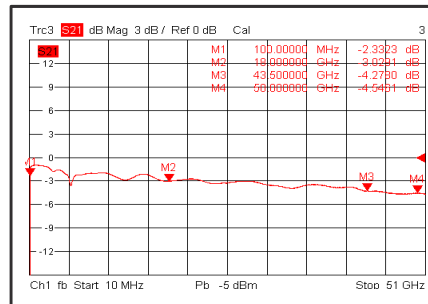


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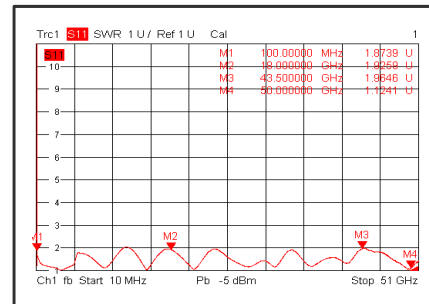
**FMSW5025**



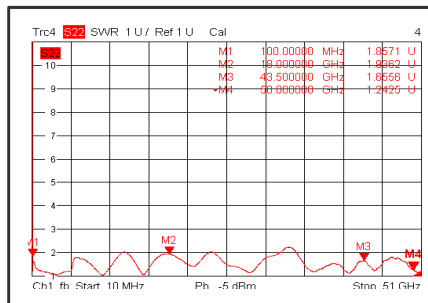
Insertion Loss @-40°C



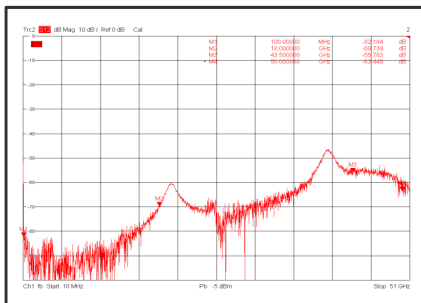
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-40°C

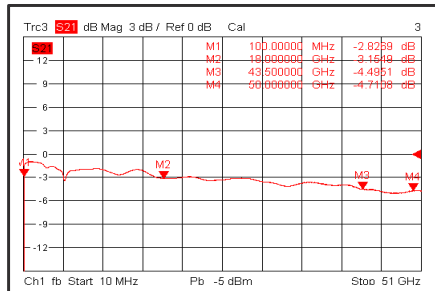


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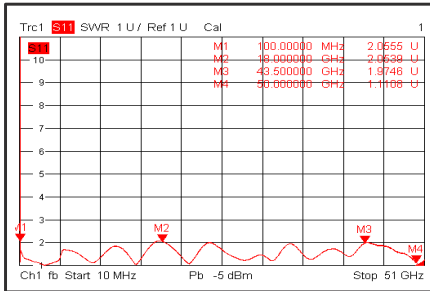
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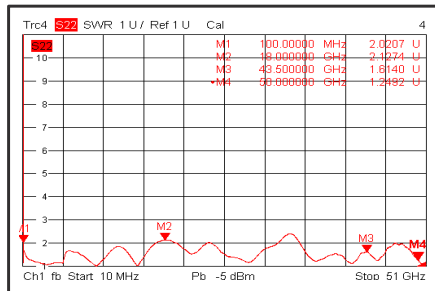
Insertion Loss @+85°C



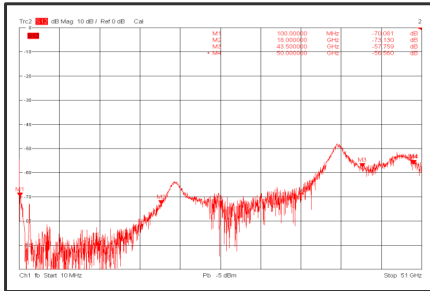
Input VSWR @+85°C



Output VSWR @+85°C



Isolation @+85°C

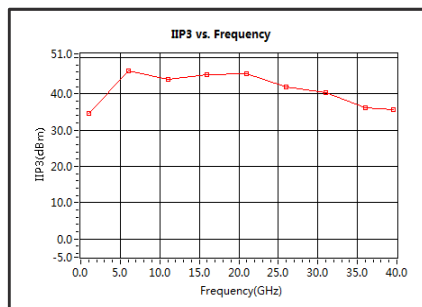


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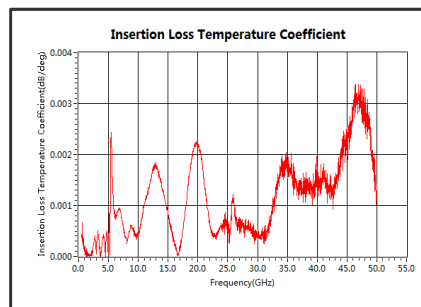
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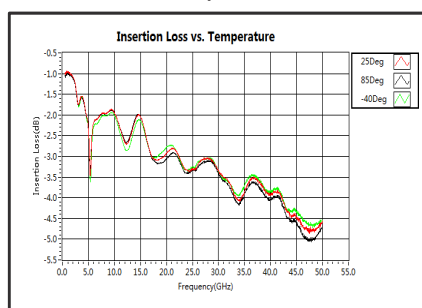
**IIP3**



**Insertion Loss Temperature Coefficient**



**Insertion Loss vs. Temperature**



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SPDT USB Ethernet Controlled High Isolation Absorptive Switch 100 MHz to 50 GHz, 2.4mm 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 USB Ethernet Controlled High Isolation Absorptive Switch 100 MHz to 50 GHz, 2.4mm FMSW5025](#)

URL: <https://www.fairviewmicrowave.com/2.4mm-spd-p-diode-switch-absorptive-50-ghz-23-watts-fmsw5025-p.aspx>

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FMSW5025 CAD Drawing
SPDT USB Ethernet Controlled High Isolation Absorptive Switch 100 MHz to 50 GHz, 2.4mm

