

SPDT USB Ethernet Controlled High Isolation Absorptive Switch 500 MHz to 43.5 GHz, 2.92mm



FMSW5022

Features

- Ultra-Wideband SPDT PIN Diode Switch
- 500 MHz to 43.5 GHz
- 50 Ohm Absorptive Design
- Insertion Loss: 4 dB typ
- Isolation: 53 dB typ
- Maximum RF input Power: +23 dBm
- Bias Voltage: +5Vdc
- USB 2.0 Interface and Ethernet (IPv4)
- Field Replaceable Female 2.92mm 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 FMSW5022 is a Single Pole Double Throw (SPDT) USB/Ethernet RF Switch Module designed to cover a wide frequency range from 500 MHz to 43.5 GHz with excellent 53 dB typical isolation and 4 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 2.92mm 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	0.5		43.5	GHz
Impedance		50		Ohms
VSWR		2:1	2.8:1	
Insertion Loss			5.2	dB
IL Temperature Coefficient		0.003		
Isolation	45			dB
0.1dB Compression Point		23		
Input IP3	38			dBm
DC Power Dissipation		0.6		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	0.5 to 8	8 to 26.5	26.5 to 43.5			GHz
Insertion Loss, Max	2.5	4.5	5.2			dB
Insertion Loss, Typ	2	4	4.5			dB
Isolation, Min	60	50	45			dB
Isolation, Typ	85	60	55			dB

Mechanical Specifications

Size

Length	3.54 in [89.92 mm]
Width	1.14 in [28.96 mm]
Height	0.97 in [24.64 mm]
Weight	0.05 lbs [22.68 g]
Body Material and Plating	Aluminum, Nickel

Configuration

Design	Absorptive, SPDT
RF Input/Output Connector	2.92mm 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
Humidity	100% RH at 35°C, 95%RH at 40°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:

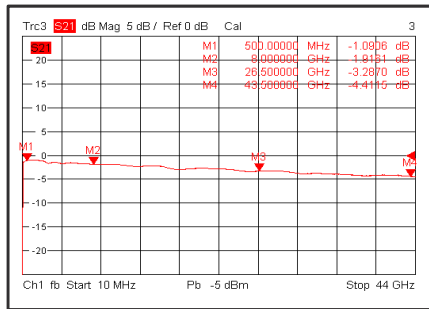
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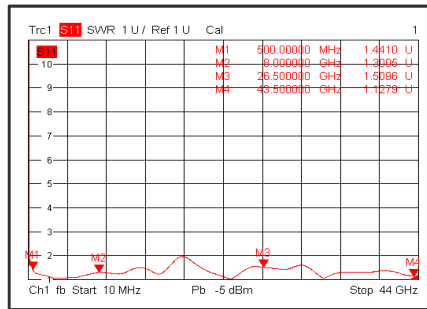
FMSW5022

Typical Performance Data

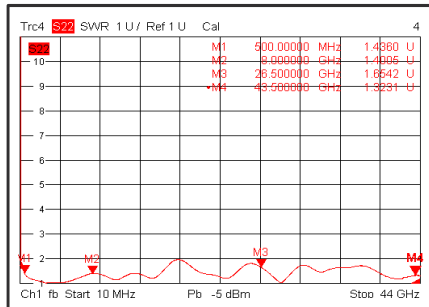
Insertion Loss @+25°C



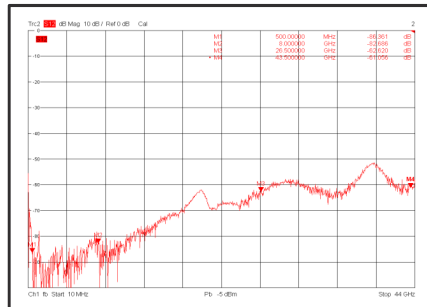
Input VSWR @+25°C



Output VSWR @+25°C



Isolation @+25°C

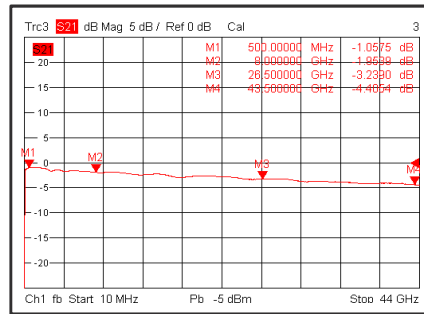


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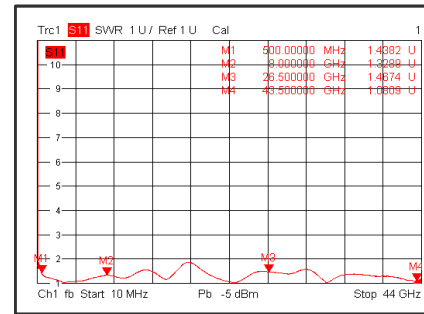


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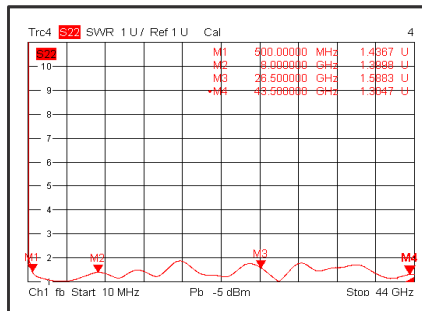
Insertion Loss @-40°C



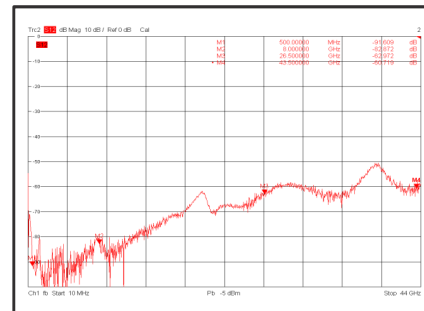
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-40°C

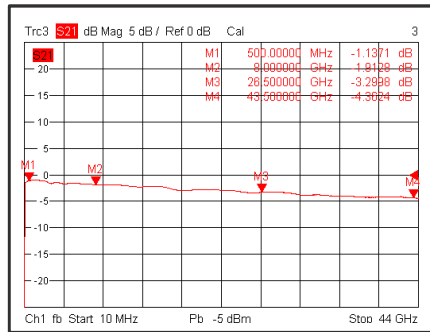


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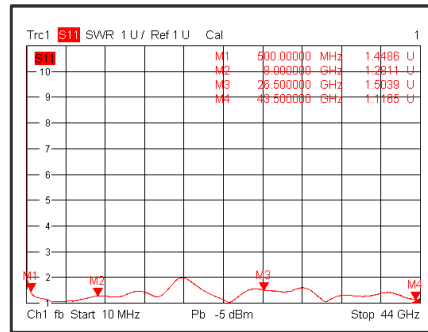


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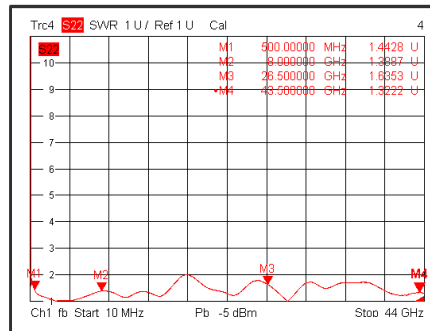
Insertion Loss @+85°C



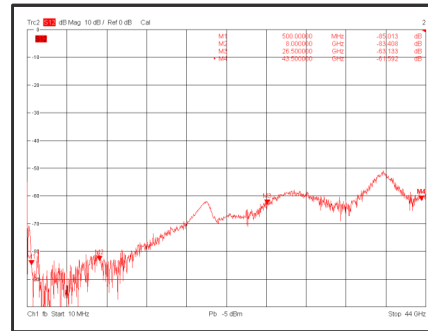
Input VSWR @+85°C



Output VSWR @+85°C



Isolation @+85°C

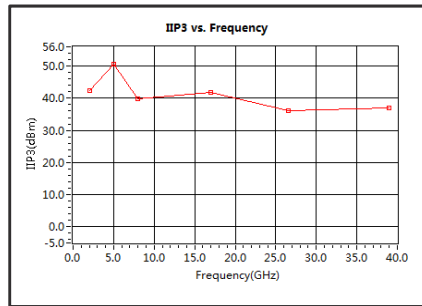


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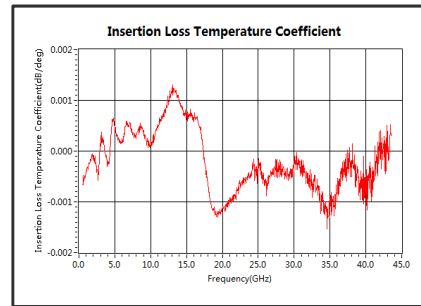


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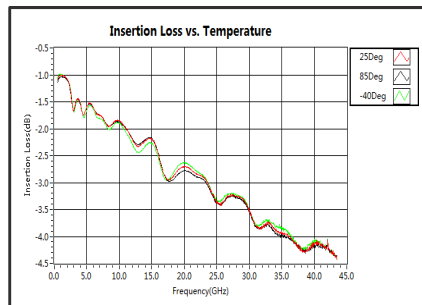
IIP3



Insertion Loss Temperature Coefficient



Insertion Loss vs. Temperature



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SPDT USB Ethernet Controlled High Isolation Absorptive Switch 500 MHz to 43.5 GHz, 2.92mm 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.

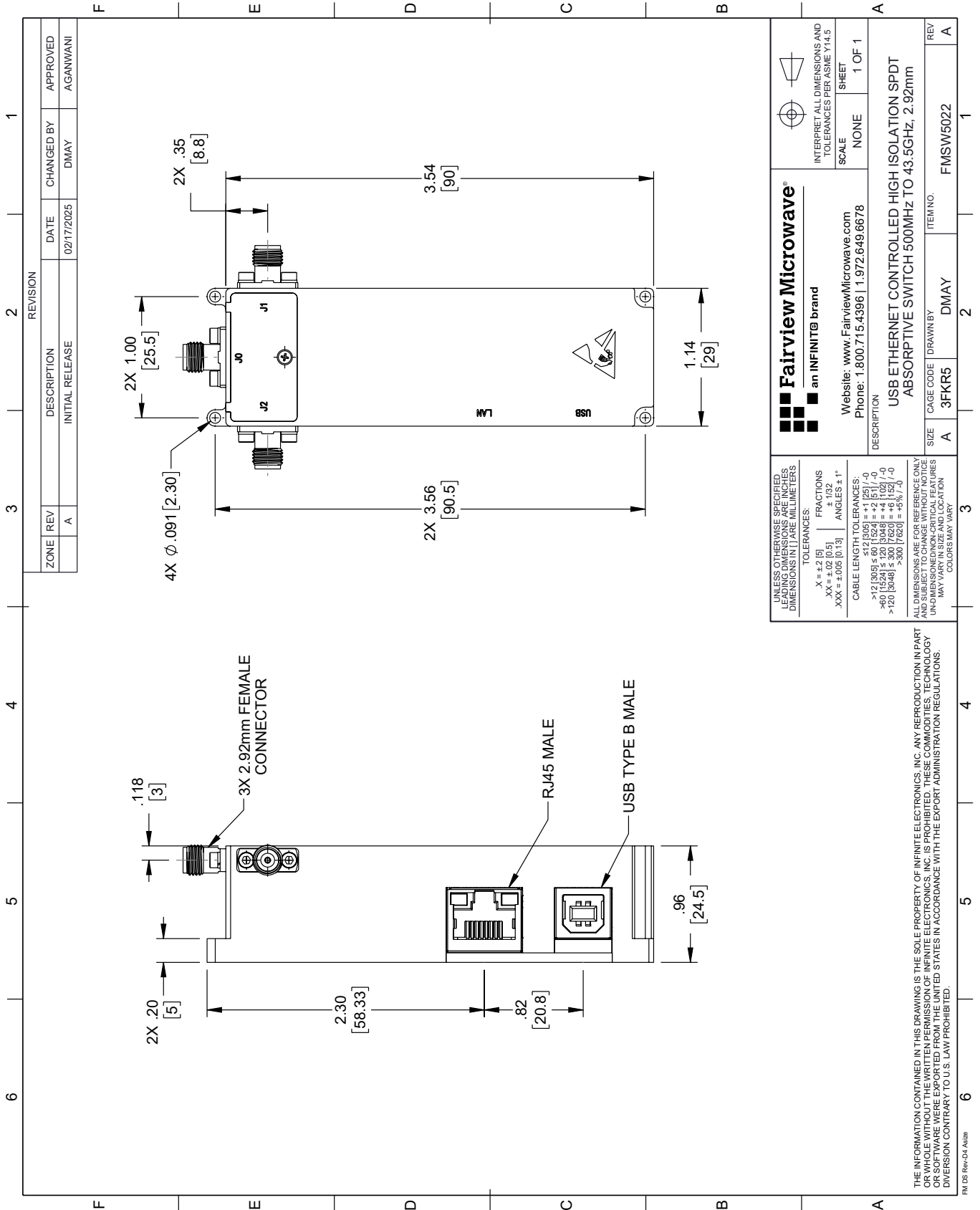
For additional information on this product, please click the following link: [SPDT USB Ethernet Controlled High Isolation Absorptive Switch 500 MHz to 43.5 GHz, 2.92mm FMSW5022](https://www.fairviewmicrowave.com/2.92mm-spd-p-diode-switch-absorptive-43.5-ghz-fmsw5022-p.aspx)

URL: <https://www.fairviewmicrowave.com/2.92mm-spd-p-diode-switch-absorptive-43.5-ghz-fmsw5022-p.aspx>

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FMSW5022 CAD Drawing

SPDT USB Ethernet Controlled High Isolation Absorptive Switch 500 MHz to 43.5 GHz, 2.92mm



Fairview Microwave
an INFINIT® brand

Website: www.FairviewMicrowave.com
Phone: 1.800.715.4396 | 1.972.649.6678

DESCRIPTION: USB ETHERNET CONTROLLED HIGH ISOLATION SPDT ABSORPTIVE SWITCH 500MHz TO 43.5GHz, 2.92mm

SCALE: NONE SHEET: 1 OF 1

INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5

UNLESS OTHERWISE SPECIFIED, LEADING DIMENSIONS ARE IN INCHES. DIMENSIONS IN [] ARE MILLIMETERS.

TOLERANCES:
 .X = ±.2 [5] FRACTIONS ±.132
 .XX = ±.02 [0.5] ANGLES ± 1°
 .XXX = ±.005 [0.13]

CABLE LENGTH TOLERANCES:
 <12 [305] ≤ 60 [1524] = ±.1 [25] / -0
 >60 [1524] ≤ 120 [3048] = ±.4 [102] / -0
 >120 [3048] ≤ 300 [7620] = ±.6 [15] / -0

ALL DIMENSIONS ARE FOR REFERENCE ONLY. UNLESS OTHERWISE SPECIFIED, DIMENSIONS MAY VARY IN SIZE AND LOCATION. COLORS MAY VARY.

REVISION TABLE:

REV	DESCRIPTION	DATE	BY
A	INITIAL RELEASE	02/17/2025	DMAY

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