

SMA Reflective SPDT PIN Diode Switch From 30 MHz to 3.5 GHz Rated at 100 Watt (+50 dBm) with Heatsink



FMSW5010

Features

- Reflective SPDT High Power PIN Diode Switch
- Reflective Design
- Frequency Range: 30 MHz to 3.5 GHz
- Insertion Loss: 1.2 dB max
- Isolation: 28 dB typ
- VSWR: 1.8:1 max
- Maximum RF Input Power: 100 Watt
- Input IP3: +45 dBm typ
- Switching Speed: 12 usec
- TTL Compatible Driver Circuitry
- 50 Ohm Design
- SMA Female Connectors
- Compact Package Design withstands up to 95% Relative Humidity
- -40°C to +85°C Operating Temperature

Applications

- Aerospace & Defense
- Microwave Radio
- Military & Commercial Communication
- VSAT
- SATCOM
- Test & Measurement
- Wireless Infrastructure
- Fiber Optics

Description

The FMSW5010 is a single pole double throw (SPDT) PIN diode switch that operates across a wide frequency band from 30 MHz to 3.5 GHz. The 50 ohm reflective design supports TTL compatible driver circuitry for accurate logic control. Impressive typical performance includes 1.2 dB insertion loss max, 25 dB isolation min, and 12 usec switching speed. The switch requires a bias voltage of +5Vdc, and has maximum input power handling of up to 100 W. The rugged and compact package supports field replaceable SMA female RF connectors and solder terminal pins for DC bias voltage and TTL control. The switch is designed for high reliability with a wide operational temperature range of -40°C to +85°C, and meets a series of environmental test conditions including Altitude, Vibration, Humidity, and Shock.

Electrical Specifications

TTL Control Logic

Off/Isolation: "0" 0 to 0.8 V
On/Low Loss: "1" 2.8 to 5 V

Description	Min	Typ	Max	Units
Frequency Range	0.3		3.5	GHz
Impedance		50		Ohms
VSWR		1.5:1	1.8:1	
Insertion Loss			1.2	dB
IL Temperature Coefficient		0.003		
Isolation	25			dB
Switching Time		12		us
0.1dB Compression Point		50		
Input IP3		45		dBm
Power In, Hot Switching (CW)			100	Watts
DC Power Dissipation		0.25		Watt
Positive Operating Voltage		5		Vdc
Current @ 5 Vdc		50		mA
Operating Temperature	-40		85	deg C

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Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	0.3 to 3	3 to 3.5				GHz
Insertion Loss, Max	1.1	1.2				dB
Insertion Loss, Typ	0.8	0.9				dB
Isolation, Min	28	25				dB
Isolation, Typ	30	28				dB

Electrical Specification Notes:

1. TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.
2. Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could be damaged.

Absolute Maximum Rating

Parameter	Rating
Biasing	+5V±10%
TTL Control Voltage	0~0.8V/2.8~5V



ESD Sensitive Material,
Transport material in
Approved ESD bags.
Handle only in approved
ESD Workstation.

Mechanical Specifications

Size

Length	1.73 in [43.94 mm]
Width	1.38 in [35.05 mm]
Height	0.37 in [9.4 mm]
Weight	0.05 lbs [22.68 g]
Body Material and Plating	Aluminum, Gold

Configuration

Design	Reflective, SPDT
RF Input/Output Connector	SMA Female
Band Type	Ultra-Wideband

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
Altitude	30,000 ft. (Epoxy Sealed Controlled environment)? 60,000 ft. 1.0psi min
Hermetic Seal	Optional

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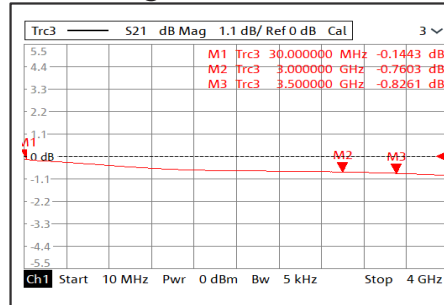
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

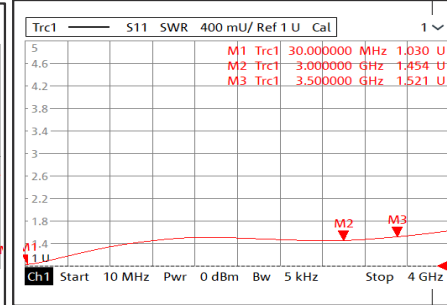
Notes:

Typical Performance Data

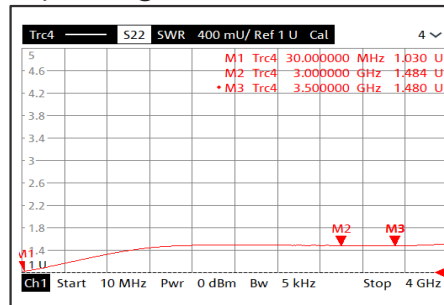
Insertion Loss @+25°C



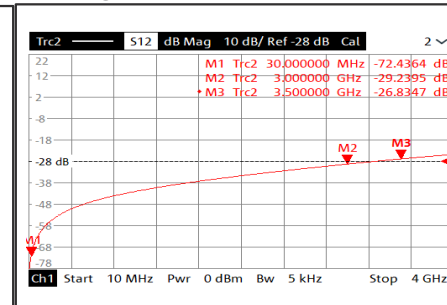
Input VSWR @+25°C



Output VSWR @+25°C



Isolation @+25°C

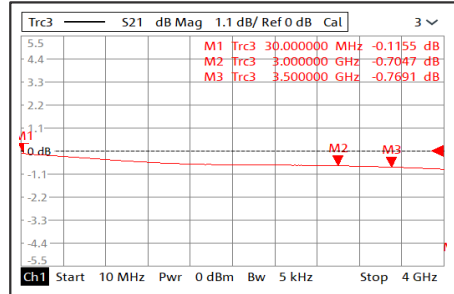


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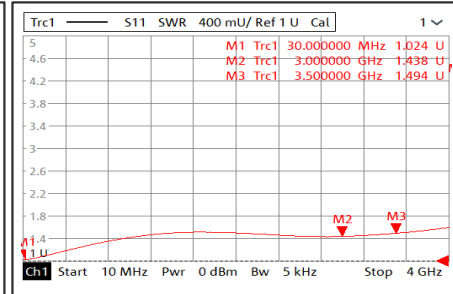
FMSW5010



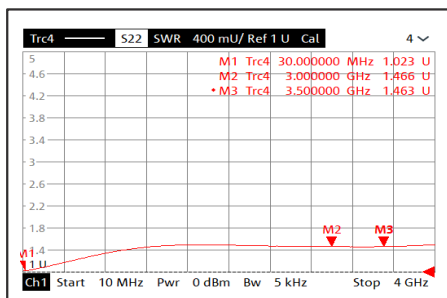
Insertion Loss @-40°C



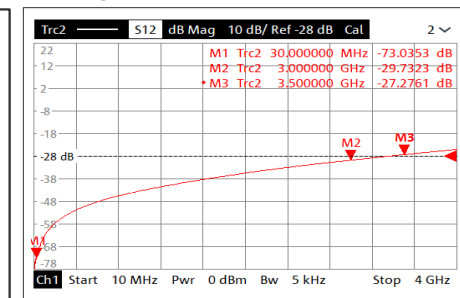
Input VSWR @-40°C



Output VSWR @-40°C



Isolation @-40°C

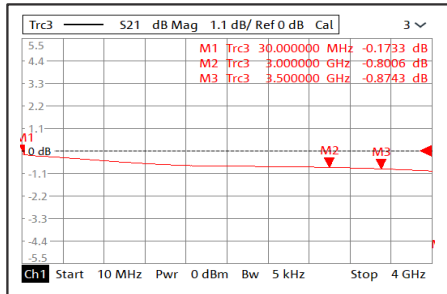


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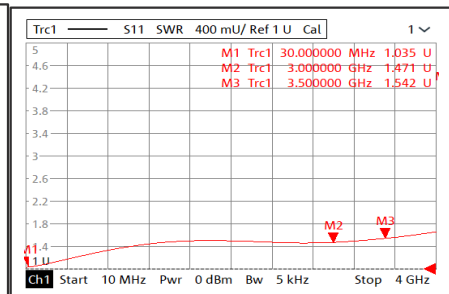
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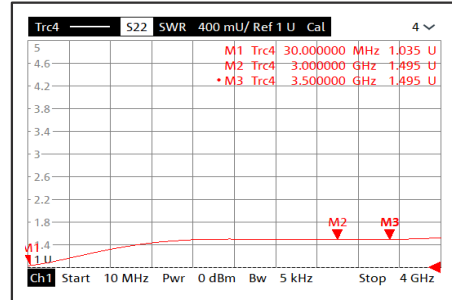
Insertion Loss @+85°C



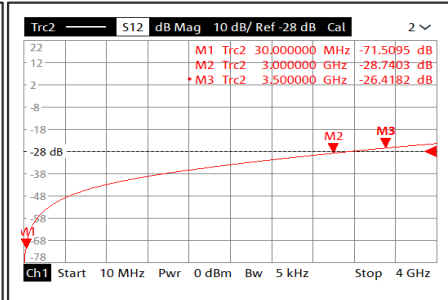
Input VSWR @+85°C



Output VSWR @+85°C



Isolation @+85°C

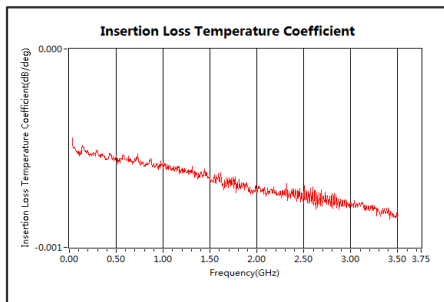


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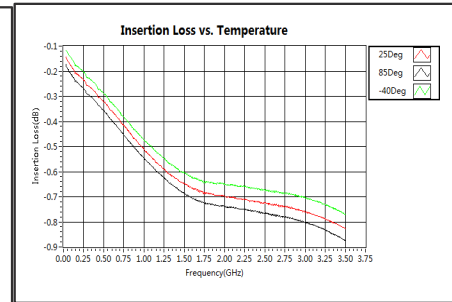


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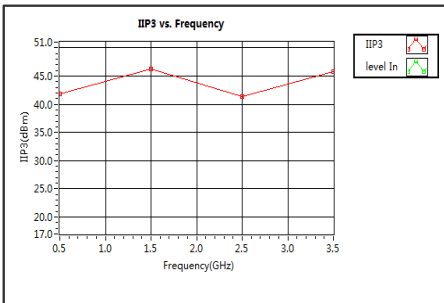
Insertion Loss Temperature Coefficient



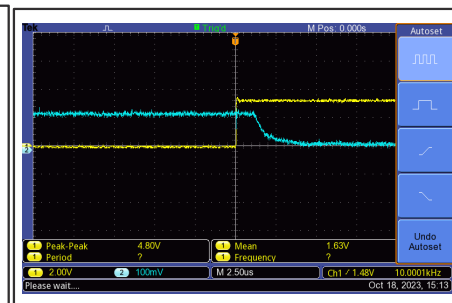
Insertion Loss vs. Temperature



IIP3



Switching Speed



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SMA Reflective SPDT PIN Diode Switch From 30 MHz to 3.5 GHz Rated at 100 Watt (+50 dBm) with Heatsink 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: [SMA Reflective SPDT PIN Diode Switch From 30 MHz to 3.5 GHz Rated at 100 Watt \(+50 dBm\) with Heatsink FMSW5010](https://www.fairviewmicrowave.com/sma-spd-t-pin-diode-switch-3.5-ghz-fmsw5010-p.aspx)

URL: <https://www.fairviewmicrowave.com/sma-spd-t-pin-diode-switch-3.5-ghz-fmsw5010-p.aspx>

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