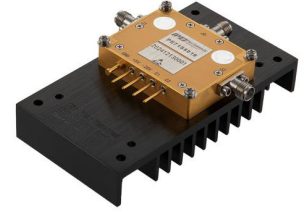


SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz Rated at 100 Watt (+50 dBm) with Heatsink



FMSW5019

Features

- Reflective SPDT High Power PIN Diode Switch
- Reflective Design
- Frequency Range: 20 MHz to 500 MHz
- Insertion Loss: 1.2 dB max
- Isolation: 55 dB min
- VSWR: 1.8:1 max
- Maximum RF Input Power: 100 Watt
- Input IP3: +55 dBm typ
- Switching Speed: 3 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 FMSW5019 is a single pole double throw (SPDT) PIN diode switch that operates across a wide frequency band from 20 MHz to 500 MHz. The 50 ohm reflective design supports TTL compatible driver circuitry for accurate logic control. Impressive typical performance includes 1.2 dB insertion loss max max, 55 dB isolation min min, and 3 usec switching speed max. The switch requires a dual bias voltage of +5Vdc/-28 Vdc, 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.

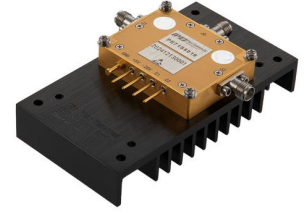
Electrical Specifications

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	20		500	MHz
Impedance		50		Ohms
VSWR		1.5:1	1.8:1	
Insertion Loss			1.2	dB
IL Temperature Coefficient		0.003		
Switching Time		2.5	3	us
0.1dB Compression Point		50		
Input IP3		55		dBm
Power In, Hot Switching (CW)			100	Watts
DC Power Dissipation		1.3		Watt
Positive Operating Voltage		5		Vdc
Negative Operating Voltage		-28		Vdc
Current @ 5 Vdc		250		mA
Current @ -28Vdc		50		mA

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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
Operating Temperature	-40		85	deg C

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	20 to 25	25 to 500				MHz
Insertion Loss, Max	1.2	0.8				dB
Insertion Loss, Typ	0.8	0.55				dB
Isolation, Min	55	60				dB
Isolation, Typ	60	65				dB

Electrical Specification Notes:

1. TTL pins cannot be connected to the negative voltage otherwise the internal driver will be damaged.
2. If the device operates in high power state, case temperature must be lower than 60 degrees C.
3. 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%/-28V±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

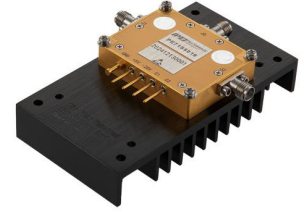
Size

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	Copper, Gold

Configuration

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

SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz Rated at 100 Watt (+50 dBm) with Heatsink



FMSW5019

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

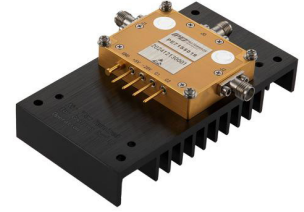
Optional

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

Plotted and Other Data

Notes:

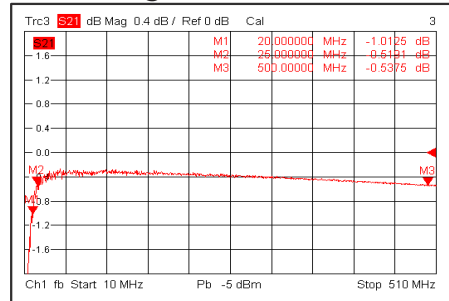
SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz Rated at 100 Watt (+50 dBm) with Heatsink



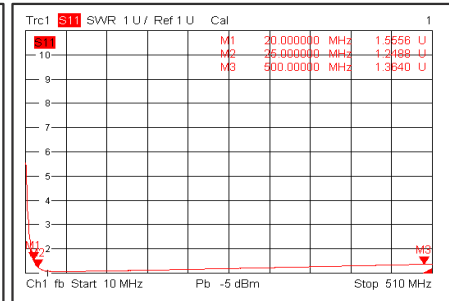
FMSW5019

Typical Performance Data

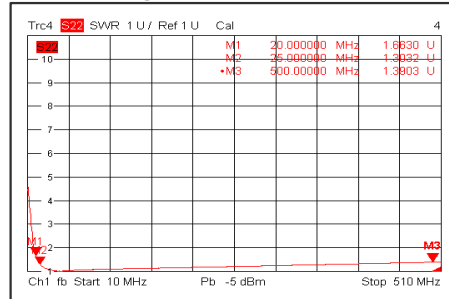
Insertion Loss @+25°C



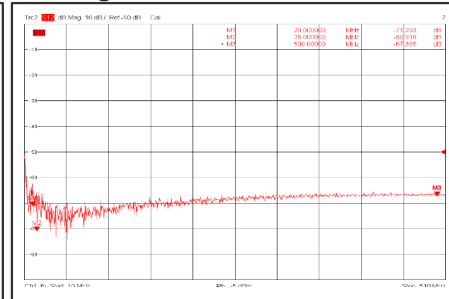
Input VSWR @+25°C



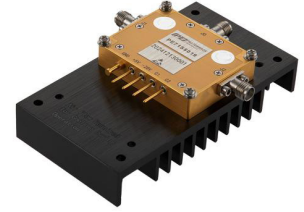
Output VSWR @+25°C



Isolation @+25°C

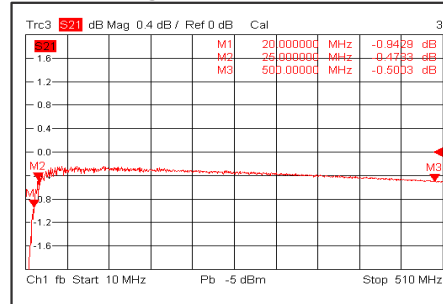


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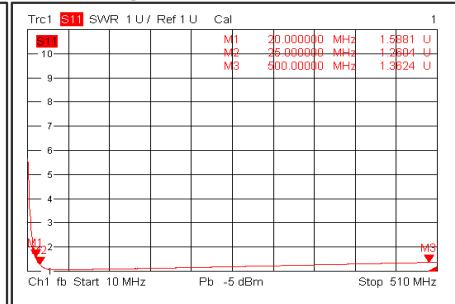


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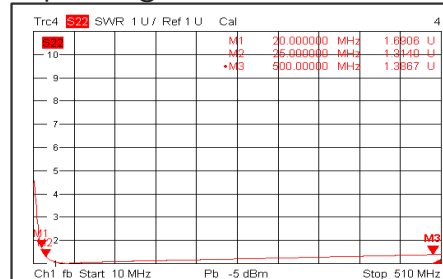
Insertion Loss @-40°C



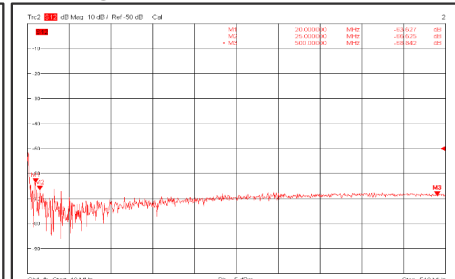
Input VSWR @-40°C



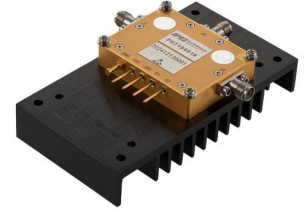
Output VSWR @-40°C



Isolation @-40°C

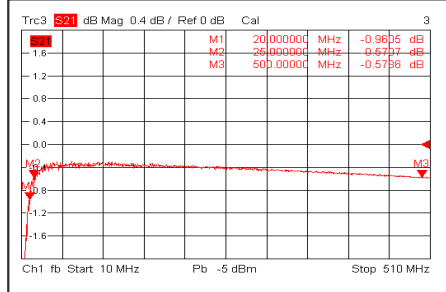


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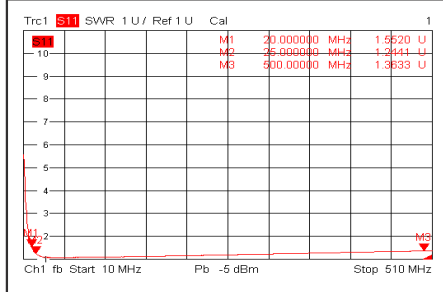


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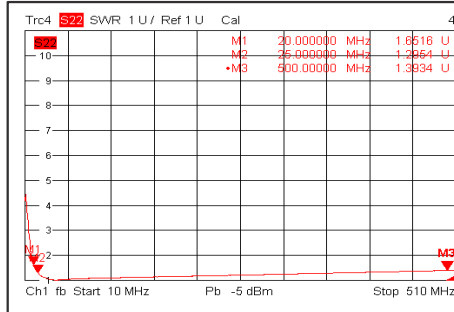
Insertion Loss @+85°C



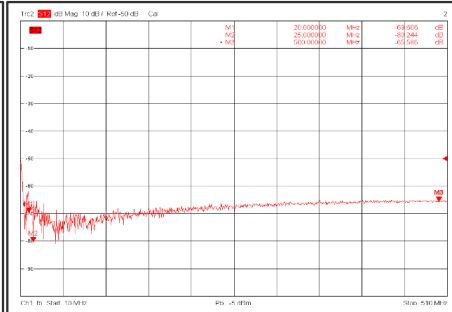
Input VSWR @+85°C



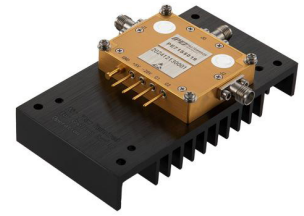
Output VSWR @+85°C



Isolation @+85°C

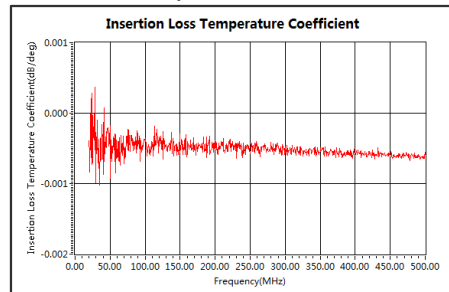


SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz Rated at 100 Watt (+50 dBm) with Heatsink

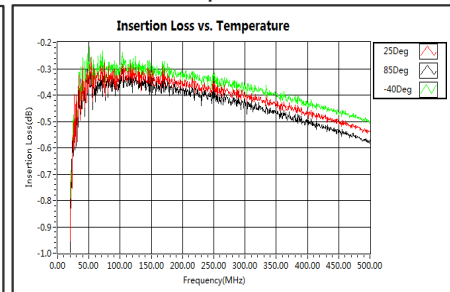


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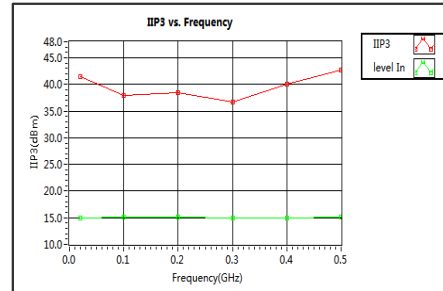
Insertion Loss Temperature Coefficient



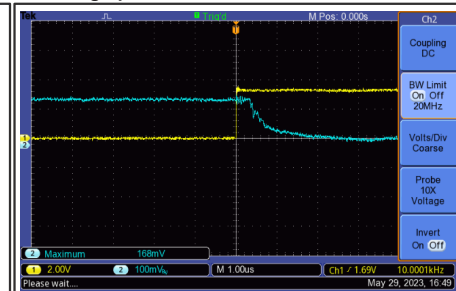
Insertion Loss vs. Temperature



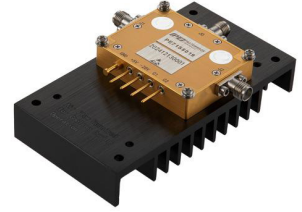
IIP3



Switching Speed



SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz Rated at 100 Watt (+50 dBm) with Heatsink



FMSW5019

SMA Reflective SPDT PIN Diode Switch From 20 MHz to 500 MHz 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 20 MHz to 500 MHz Rated at 100 Watt \(+50 dBm\) with Heatsink FMSW5019](https://www.fairviewmicrowave.com/sma-spd-t-pin-diode-switch-500-mhz-fmsw5019-p.aspx)

URL: <https://www.fairviewmicrowave.com/sma-spd-t-pin-diode-switch-500-mhz-fmsw5019-p.aspx>

The information contained within this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part in order to implement improvements. Fairview Microwave reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Fairview Microwave does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Fairview Microwave does not assume liability arising out of the use of any part or document.

