

SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 18 GHz Rated at 10 Watts 50ns Speed

The FMSW1102 is a high power Reflective SPDT PIN Diode Switch that operates from DC to 18 GHz. The module utilizes Gallium Nitride (GaN) and chip-and-wire technology in the manufacturing process that ensures state-of-the-art power performance with excellent power-to-volume ratio that's ideal for broadband high power applications. The 50 ohm reflective design has impressive RF input power handling capability for cold switching up to +40 dBm, and incorporates TTL compatible driver circuitry for accurate logic control. Typical performance includes 1.3 dB insertion loss, 35 dB isolation, 1.6:1 VSWR, and 50 nsec switching speed. Operational temperature range is -45°C to +85°C and the bias voltage requirement is +5Vdc. The rugged and compact package supports SMA female connectors and is designed to meet a series of environmental conditions including Altitude, Vibration, Humidity, and Shock. Model FMSW1107 is the same switch design but includes an integrated heatsink.



Electrical Specifications

TTL Control Logic

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

Description	Min	Typ	Max	Units
Frequency Range	DC		18	GHz
Impedance		50		Ohms
VSWR		1.6:1	2:1	
Insertion Loss		1.3	2.3	dB
IL Temp. Coefficient		0.003		dB/degC
Isolation	23	35		dB
Switching Time		50	100	ns
P0.1dB		40		dBm
Input IP3		55		dBm
Input Power (CW)			10	Watts
DC Power Dissipation		0.5		Watt
Positive Operating Voltage		5		Vdc
Current @ 5 Vdc		100		mA
Operating Temperature	-45		+85	deg C

Performance by Frequency

Description	F1	F2	F3	F4	F5	Units
Frequency Range	DC to 6	6 to 12	12 to 18			GHz
VSWR, Max	1.3:1	1.8:1	2:1			
VSWR, Typ	1.15:1	1.6:1	1.6:1			
Insertion Loss, Max	1.3	1.8	2.3			dB
Insertion Loss, Typ	0.8	1.3	1.7			dB
Isolation, Min	40	30	23			dB
Isolation, Typ	45	35	25			dB

Electrical Specification Notes:

Features:

- Reflective SPDT High Power PIN Diode Switch
- GaN Semiconductor Technology
- Reflective Design
- Frequency Range: DC to 18 GHz
- Insertion Loss: 1.3 dB typ
- Isolation: 35 dB typ
- VSWR: 1.6:1 typ
- Maximum RF Input Power: +40 dBm
- Input IP3: 55 dBm typ
- Switching Speed: 50 nsec typ
- TTL Compatible Driver Circuitry
- 50 Ohm Design
- SMA Female Connectors
- Compact Package Design withstands up to 95% Relative Humidity
- -45°C to +85°C Operating Temperature

Applications:

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

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Note that below 100 Mhz the power handling capability is reduced by 6 dB and the noise figure will increase above 1L Internal TTL Driver will become damaged if Negative Voltage is applied

*Cold Switching: Before changing any TTL signal(s), the RF input power must be blanked or the switch could become 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

Length	1.57 in [39.88 mm]
Width	1.34 in [34.04 mm]
Height	0.37 in [9.4 mm]
Weight	0.21 lbs [95.25 g]
Design	Reflective, SPDT
RF Connector	SMA Female

Environmental Specifications
Temperature

Operating Range	-45 to +85 deg C
Storage Range	-55 to +125 deg C

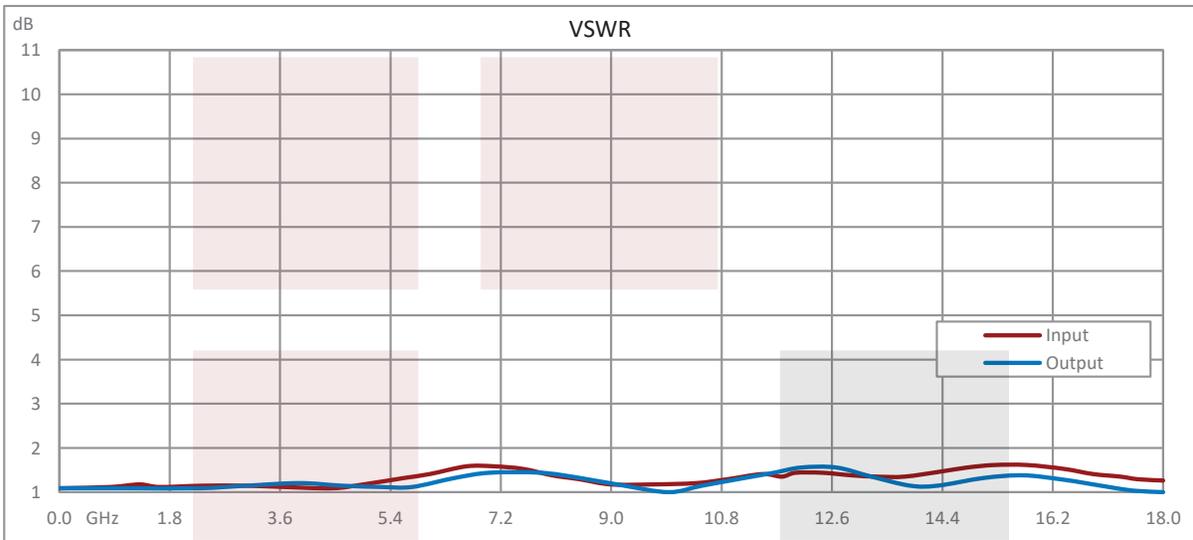
Humidity	100% RH @ 35°C, 95% RH @ 40°C
Shock	20G for 11ms Half Sinewave, 3 axis both directions
Vibration	25g RMS (15° 2KHz) endurance, 1 hr per axis
Altitude	30,000 ft. (Epoxy Sealed Controlled Environment)

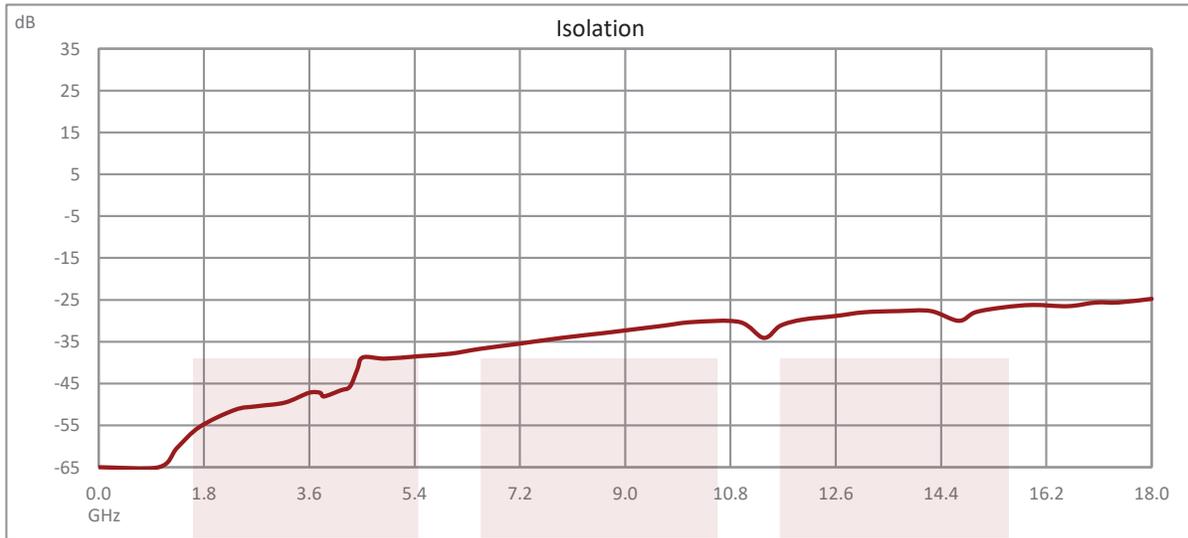
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

Typical Performance Data





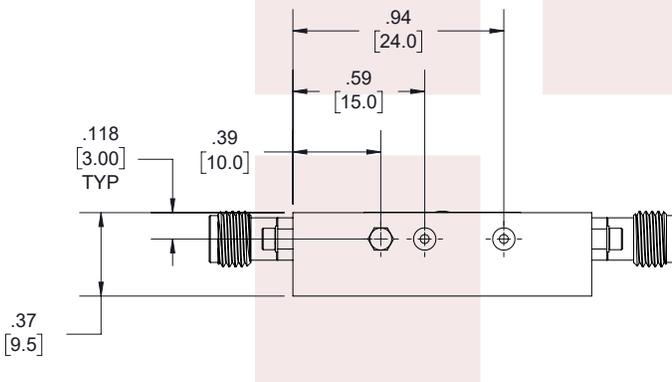
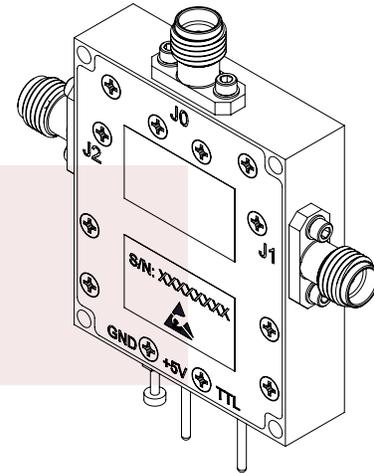
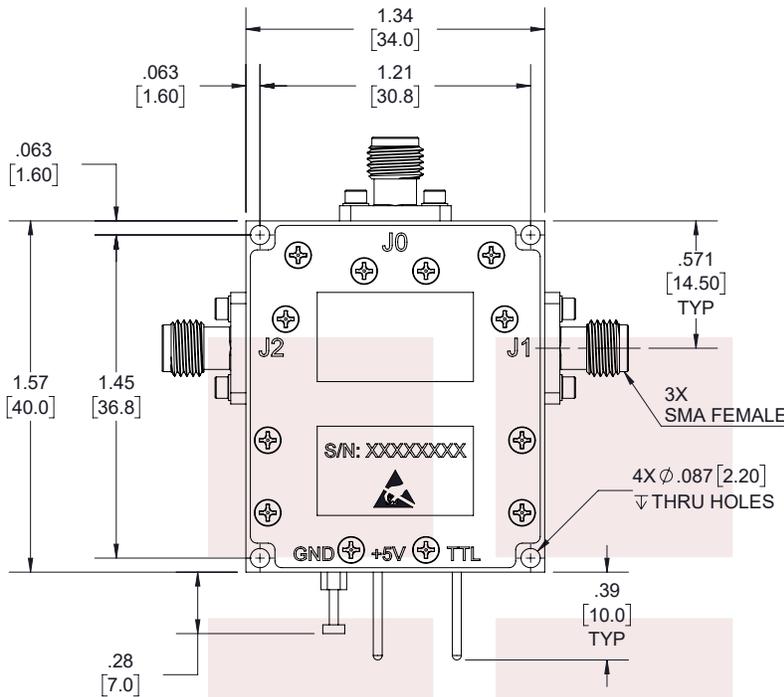
SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 18 GHz Rated at 10 Watts 50ns Speed from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 18 GHz Rated at 10 Watts 50ns Speed FMSW1102](#)

URL: <https://www.fairviewmicrowave.com/sma-spdt-pin-diode-switch-18-ghz-10-watts-fmsw1102-p.aspx>

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	8/17/2020	T.GALLA



Truth Table	
Control Input TTL	Signal Path State
1	J0-J1
0	J0-J2

LABEL



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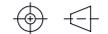
TITLE
SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 18 GHz Rated at 10 Watts 50ns Speed

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

TOLERANCES: CABLE LENGTH (L) TOLERANCES:

.X = ±.2 [5.08]	FRACTIONS ± 1/32	L ≤ 12 [305] = +1 [25] / -0
.XX = ±.02 [.51]	ANGLES ± 1°	12 [305] < L ≤ 60 [1524] = +2 [51] / -0
.XXX = ±.005 [.13]		60 [1524] < L ≤ 120 [3048] = +4 [102] / -0
		120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
		300 [7620] < L = +5%L / -0

THIRD-ANGLE PROJECTION



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SHEET 1 OF 1

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

SCALE N/A

SIZE A	CAGE CODE 3FKR5	DRAWN BY K.DANG	ITEM NO. FMSW1102	REV A
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T-Rev.D