

## SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 6 GHz Rated at 40 Watts < 100ns Speed with Heatsink

The Reflective FMSW1105 is a high power SPDT PIN Diode Switch that operates from DC to 6 GHz and incorporates an integrated heatsink to ensure optimum thermal dissipation for reliable operation. 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 +46 dBm, and incorporates TTL compatible driver circuitry for accurate logic control. Typical performance includes 0.9 dB insertion loss, 35 dB isolation, 1.2:1 VSWR, and < 100 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.

### 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		6	GHz
Impedance		50		Ohms
VSWR		1.2:1	1.5:1	
Insertion Loss		0.9	1.3	dB
IL Temp. Coefficient		0.003		dB/degC
Isolation	25	35		dB
Switching Time			100	ns
P0.1dB		55		dBm
Input IP3		55		dBm
Input Power (CW)			40	Watts
DC Power Dissipation		0.7		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 3	3 to 6				GHz
VSWR, Max	1.3:1	1.5:1				
VSWR, Typ	1.2:1	1.3:1				
Insertion Loss, Max	1	1.3				dB
Insertion Loss, Typ	0.8	1.1				dB
Isolation, Min	33	25				dB
Isolation, Typ	37	28				dB

Electrical Specification Notes:

Internal TTL Driver will become damaged if Negative Voltage is applied



### Features:

- Reflective SPDT High Power PIN Diode Switch
- GaN Semiconductor Technology
- Reflective Design
- Frequency Range: DC to 6 GHz
- Insertion Loss: 0.9 dB typ
- Isolation: 35 dB typ
- VSWR: 1.2:1 typ
- Maximum RF Input Power: +46 dBm
- Input IP3: +55 dBm typ
- Switching Speed: < 100 nsec
- 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 Communications
- VSAT
- SATCOM
- Test & Measurement
- Wireless Infrastructure
- Fiber Optics

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\*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	1.67 lbs [757.5 g]
Design	Reflective, SPDT
RF Connector	SMA Female

**Environmental Specifications**

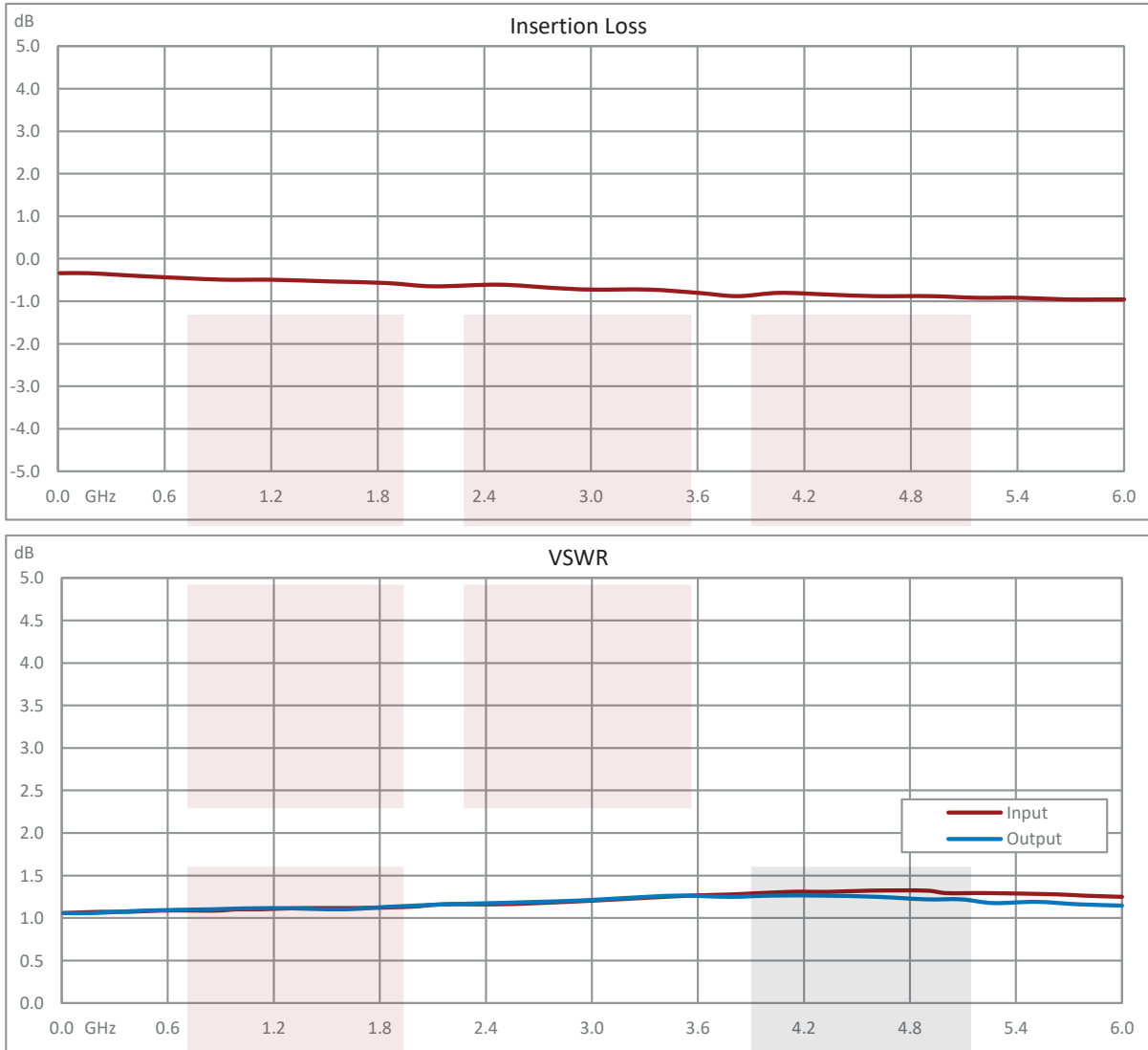
<b>Temperature</b>	
Operating Range	-45 to +85 deg C
Storage Range	-55 to +125 deg C
Humidity	100% RH @ 35°C, 95% RH @ 40°C
Shock	20G for 11ms Half Sinewave, 3 axis both directions
Vibration	25g RMS (15° 2KHz) endurance, 1 hr per axis
Altitude	30,000 ft. (Epoxy Sealed Controlled Environment)

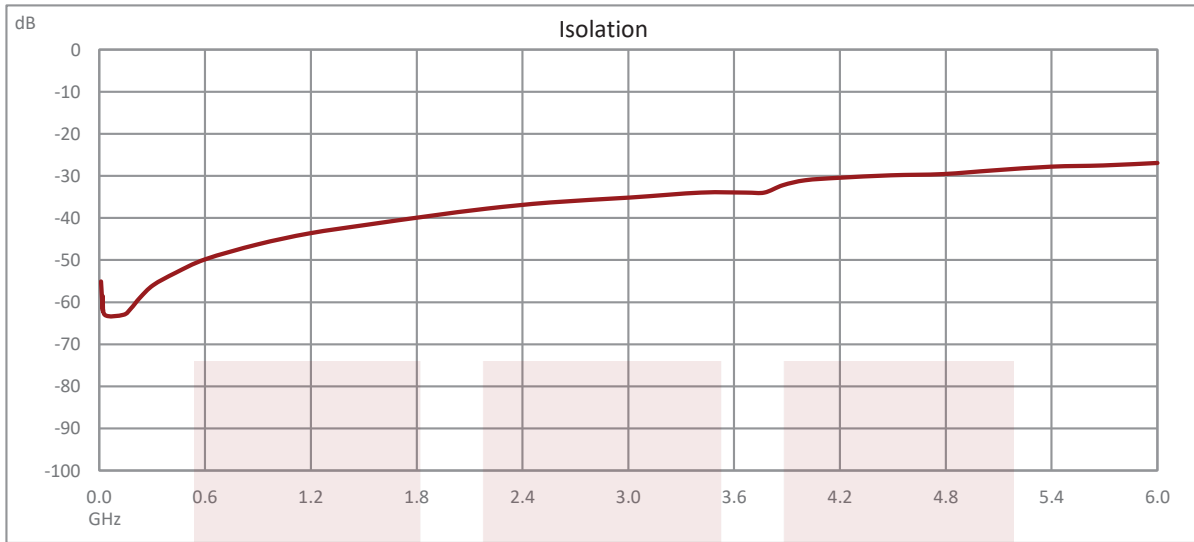
**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

Notes:

**Typical Performance Data**





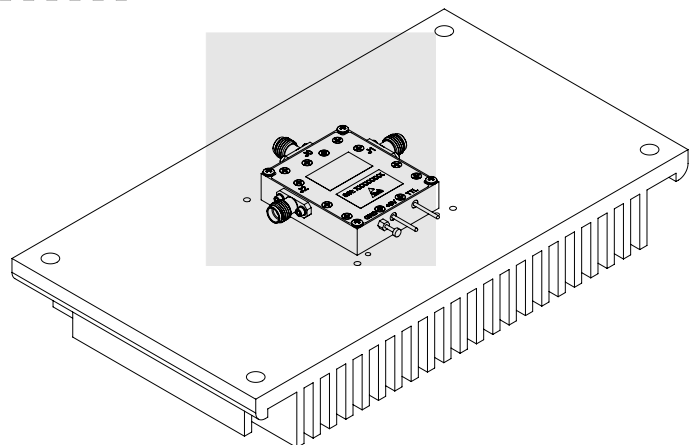
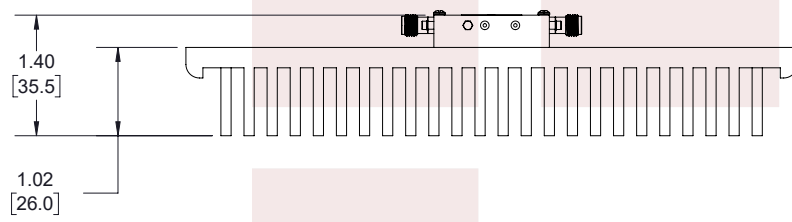
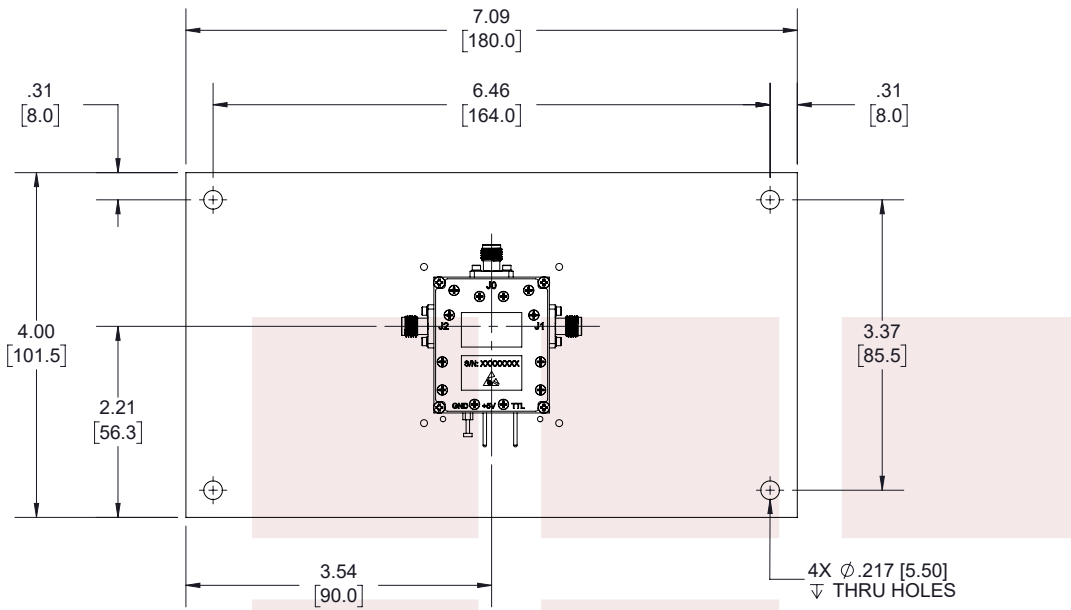
SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 6 GHz Rated at 40 Watts < 100ns Speed with Heatsink from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 6 GHz Rated at 40 Watts < 100ns Speed with Heatsink FMSW1105](https://www.fairviewmicrowave.com/sma-spdt-pin-diode-switch-6-ghz-40-watts-fmsw1105-p.aspx)

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



**LABEL**



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TITLE  
SMA Reflective SPDT GaN High Power PIN Diode Switch from DC to 6 GHz Rated at 40 Watts < 100ns Speed with Heatsink

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

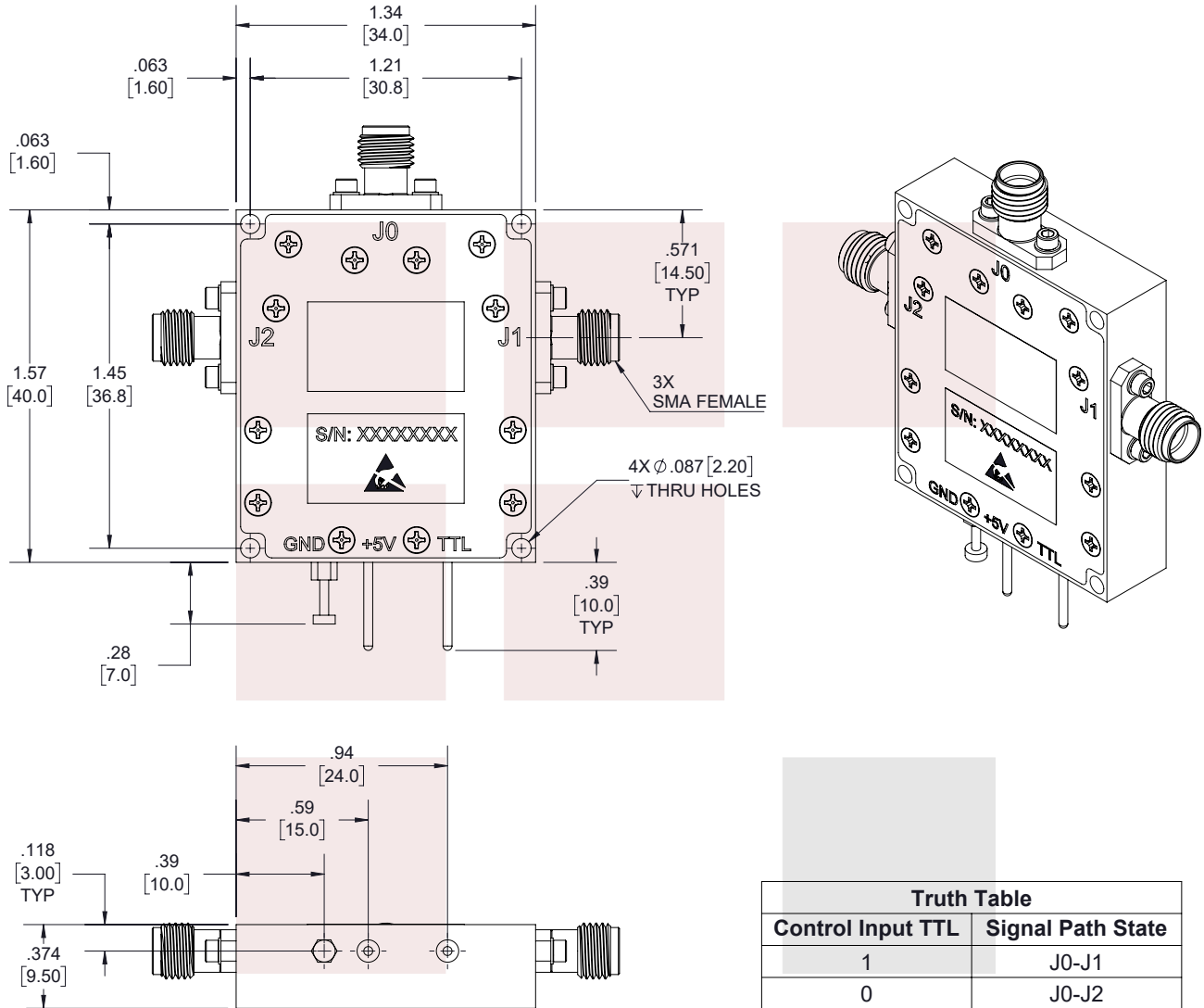
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.X = ±.2 [5.08]	FRACTIONS ± 1/32	L ≤ 12 [305] = +1 [25] / -0	
.XX = ±.02 [.51]	ANGLES ± 1°	12 [305] < L ≤ 60 [1524] = +2 [51] / -0	
.XXX = ±.005 [.13]		60 [1524] < L ≤ 120 [3048] = +4 [102] / -0	
		120 [3048] < L ≤ 300 [7620] = +6 [152] / -0	
		300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

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SIZE	CAGE CODE	DRAWN BY	ITEM NO.	FMSW1105	REV	A
A	3FKR5	K.DANG				

T-Rev.D

**SWITCH DETAIL**



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

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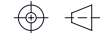
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SHEET 2 OF 2

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SCALE N/A

SIZE A	CAGE CODE 3FKR5	DRAWN BY K.DANG	ITEM NO. FMSW1105	REV A
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T-Rev.D