

## Analog Phase Shifter, 8 GHz to 18 GHz, 360 degree Phase Range, 0V to +13V Control Voltage, Max Pin +26 dBm, SMA

The FM82P2002 is an Analog Phase Shifter module that operates across a broadband frequency from 8 GHz to 18 GHz and supports a single positive voltage control of 0 to +13 Vdc. The design offers a continuously variable monotonic phase shift response that ranges from 0° to 360° while maintaining consistent insertion loss versus phase shift characteristics. The 50 Ohm design exhibits impressive typical performance which includes 6 dB insertion loss, +/-15° phase flatness, a 0.1 dB compression point (P0.1dB) of +23 dBm, and a maximum RF input power level of +26 dBm. The low profile pin package is aluminum with gold plating and supports field replaceable SMA RF connectors and solder pins for DC control. With the connectors removed, the package can be drop mounted onto a PWB. The module has an operational temperature range from -40°C to +85°C and is guaranteed to meet a series of environmental test conditions for Altitude, Vibration, Humidity, and Shock.



### Features:

- Analog Phase Shifter
- 8 GHz to 18 GHz
- Phase Shift 0° to 360° typ
- Insertion Loss 6 dB typ
- Phase Flatness +/- 15° typ
- P0.1dB: +23 dBm typ
- Maximum RF Input Power +26 dBm
- 50 Ohm Design
- Voltage Control: 0 to +13Vdc
- Solder Pins for DC Control Voltage and Ground
- Field Replaceable Female SMA RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Gold Plated Package Design
- Guaranteed Environmental Test Conditions Altitude, Vibration, Humidity, Shock
- Single DC Control Operation
- Low Phase Error

### Electrical Specifications (Values at +25° C, Sea Level)

Description	Min	Typ	Max	Units
Frequency Range	8		18	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Control Voltage	0	13		Volts
Return Loss*		8	6	dB
Insertion Loss*		6	8	dB
Phase Flatness		±15		Degrees
IL Temperature Coefficient		0.003		dB/deg C
0.1 dB Compression Power		23		dBm
DC Current		5		mA
Input Power, CW			26	dBm

\*at 0V DC Control

### Absolute Maximum Rating

Parameter	Rating
Control Voltage	0V to +15V
RF Input power	+26dBm



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

### Mechanical Specifications

Size	
Length	0.8 in [20.32 mm]
Width/Diameter	0.56 in [14.22 mm]
Height	0.38 in [9.65 mm]
Weight	0.018 lbs [8.16 g]

### Applications:

- Test & Measurement
- Military & Commercial Communications
- Military Electronic Systems

Fairview Microwave  
301 Leora Ln., Suite 100  
Lewisville, TX 75056  
Tel: 1-800-715-4396 / (972) 649-6678  
Fax: (972) 649-6689  
[www.fairviewmicrowave.com](http://www.fairviewmicrowave.com)  
[sales@fairviewmicrowave.com](mailto:sales@fairviewmicrowave.com)

Body Material and Plating      Aluminum, Gold

**Configuration**

Input Connector	SMA Female
Input Connector Spec.	Field Replaceable
Output Connector	SMA Female
Output Connector Spec.	Field Replaceable

**Environmental Specifications**

**Temperature**

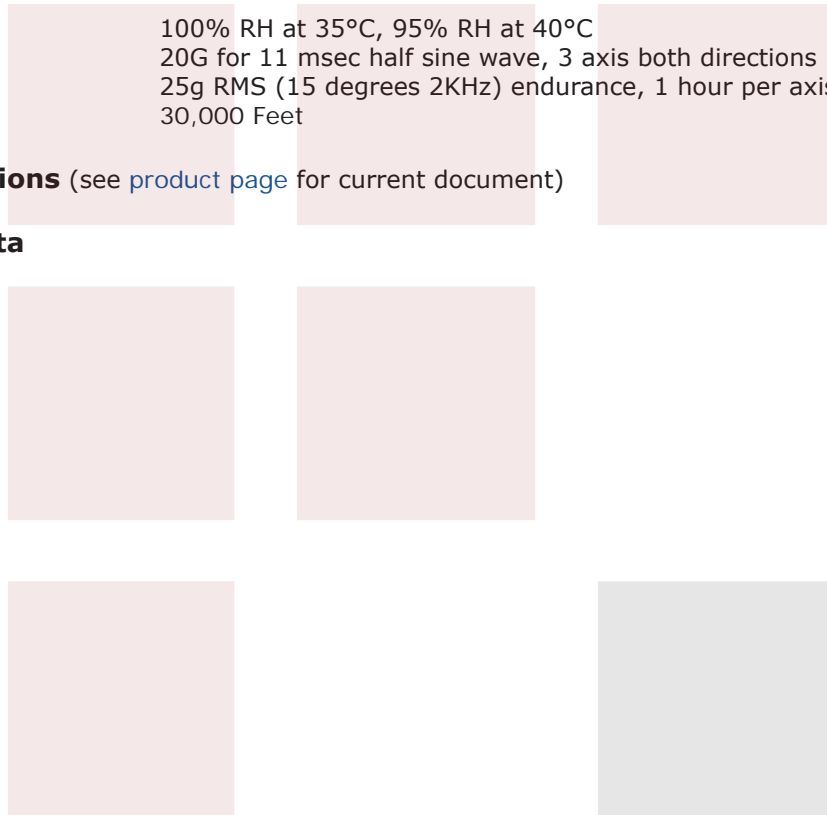
Operating Range	-40 to 85 deg C
Storage Range	-50 to 105 deg C

Humidity	100% RH at 35°C, 95% RH at 40°C
Shock	20G for 11 msec half sine wave, 3 axis both directions
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Altitude	30,000 Feet

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

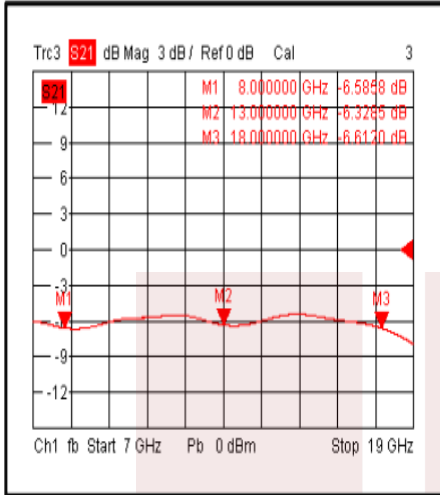
**Plotted and Other Data**

Notes:

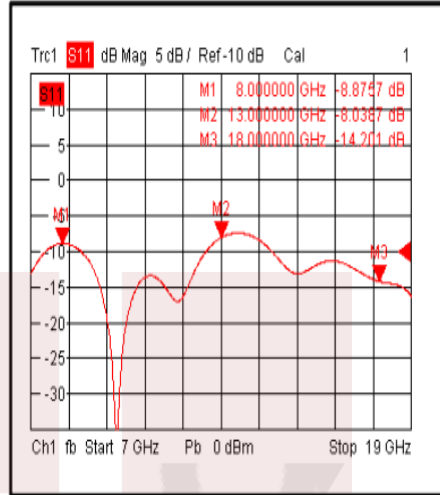


**Typical Performance Data**

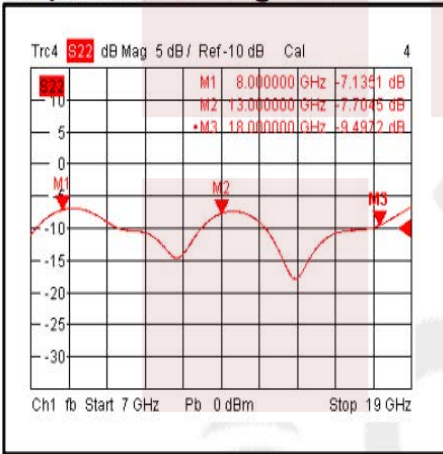
**Insertion Loss @ +25°C**



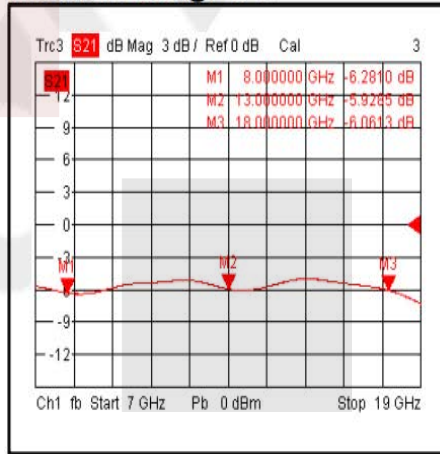
**Input Return Loss @ +25°C**



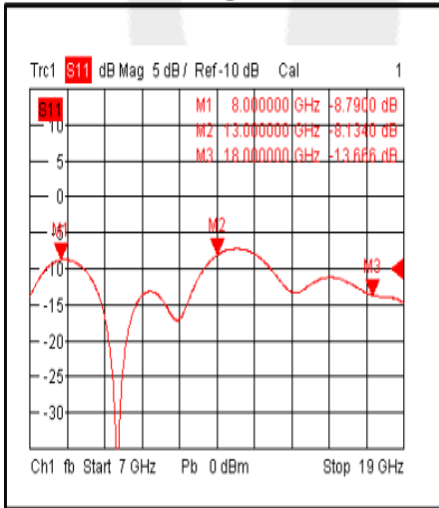
**Output Return Loss @ +25°C**



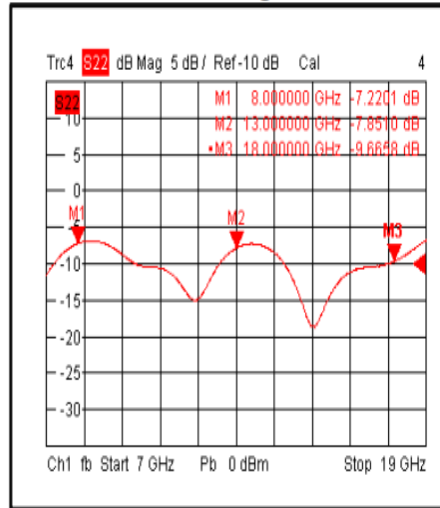
**Insertion Loss @ -40°C**



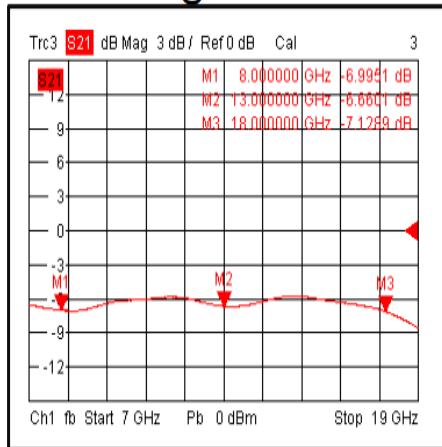
**Input Return Loss @ -40°C**



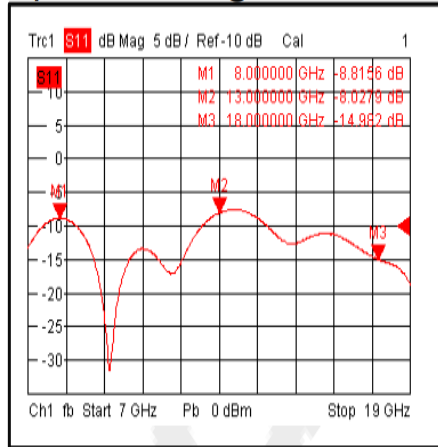
**Output Return Loss @ -40°C**



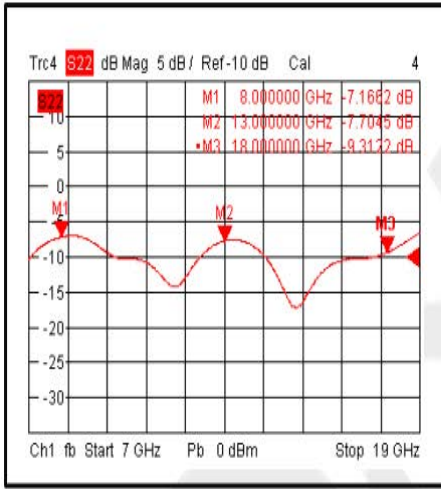
**Insertion Loss @ +85°C**



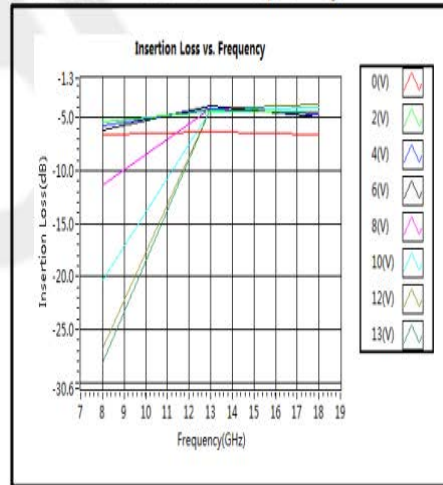
**Input Return Loss @ +85°C**



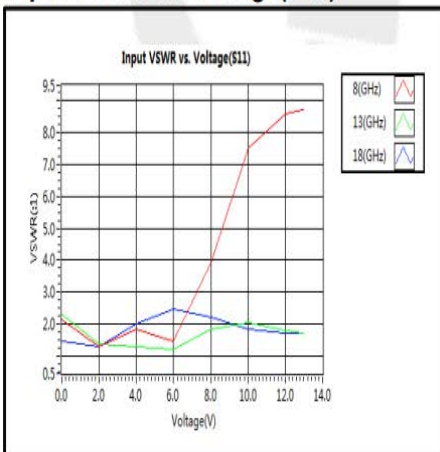
**Output Return Loss @ +85°C**



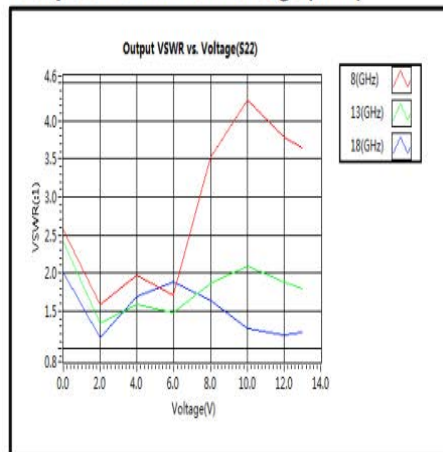
**Insertion Loss vs. Frequency**



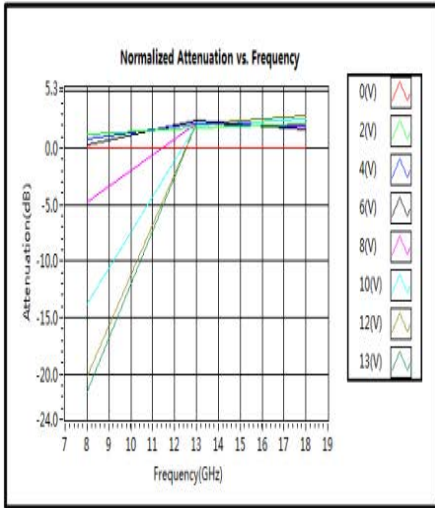
**Input VSWR vs. Voltage(S11)**



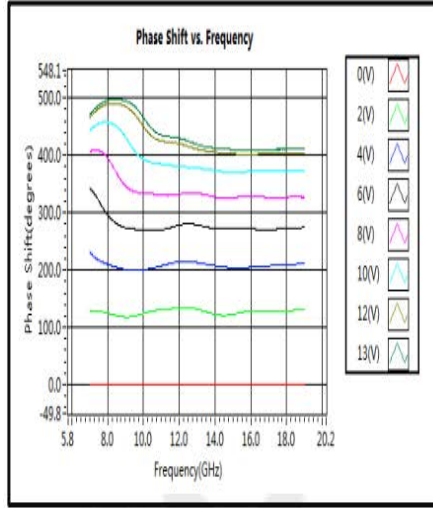
**Output VSWR vs. Voltage(S22)**



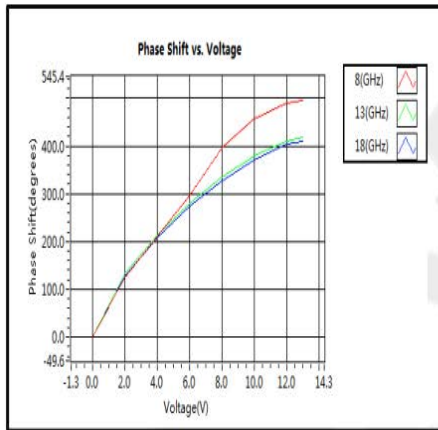
**Normalized Attenuation vs. Frequency**



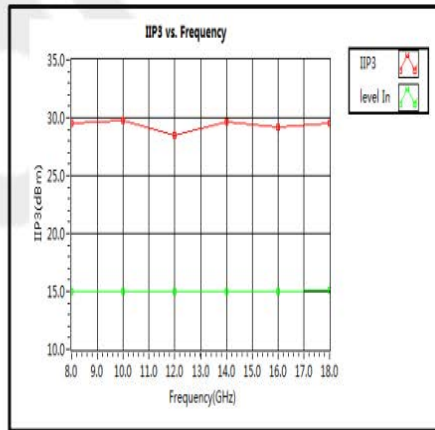
**Phase Shift vs. Frequency**



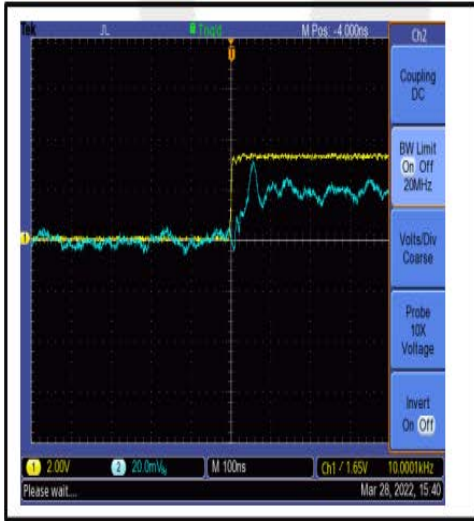
**Phase Shift vs. Voltage**



**IIP3**



Speed



Speed

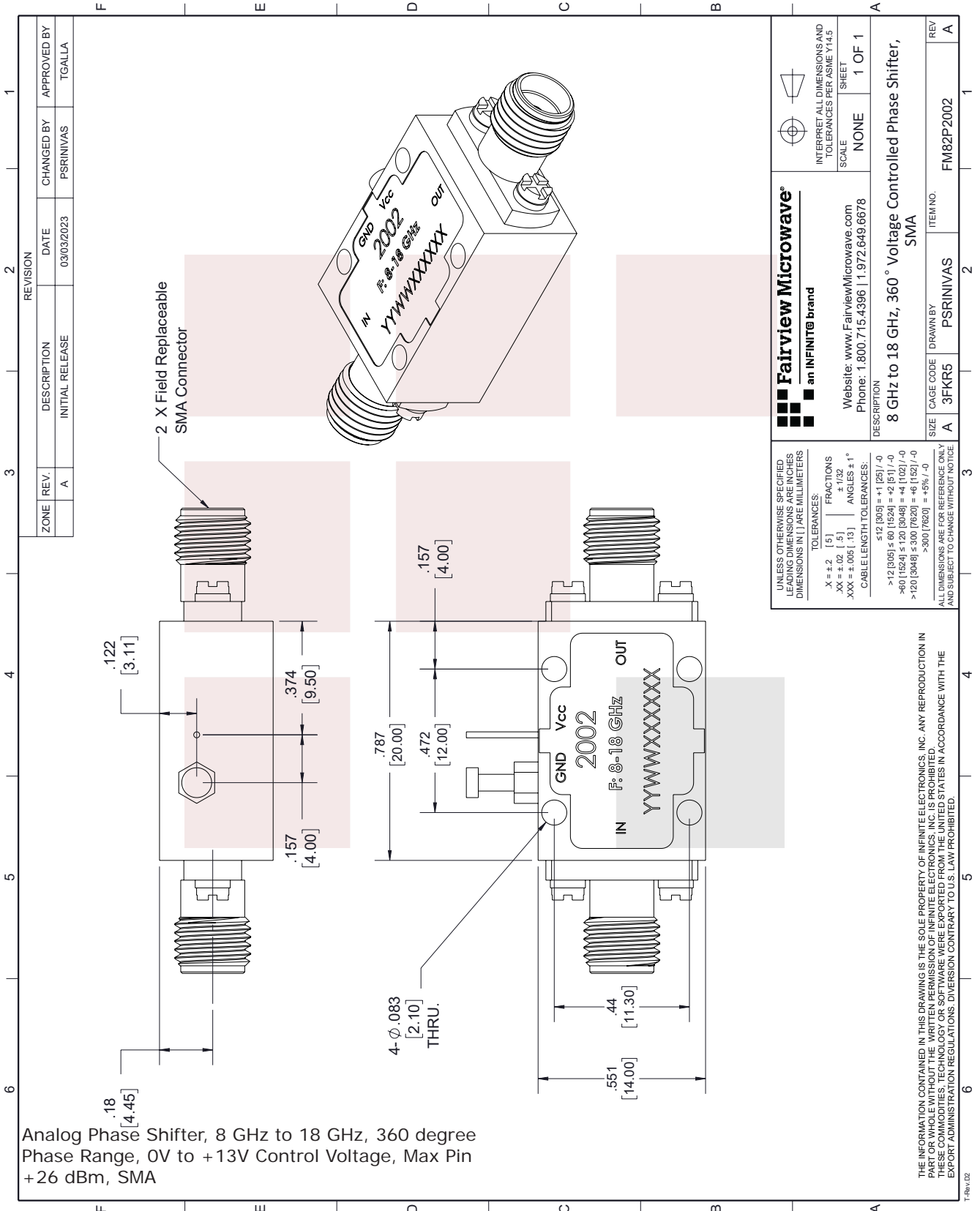


Analog Phase Shifter, 8 GHz to 18 GHz, 360 degree Phase Range, 0V to +13V Control Voltage, Max Pin +26 dBm, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [Analog Phase Shifter, 8 GHz to 18 GHz, 360 degree Phase Range, 0V to +13V Control Voltage, Max Pin +26 dBm, SMA FM82P2002](https://www.fairviewmicrowave.com/sma-analog-phase-shifter-8-18-ghz-fm82p2002-p.aspx)

URL: <https://www.fairviewmicrowave.com/sma-analog-phase-shifter-8-18-ghz-fm82p2002-p.aspx>

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ZONE	REV.	DESCRIPTION	DATE	CHANGED BY	APPROVED BY
A	A	INITIAL RELEASE	03/03/2023	PSRINIVAS	TGALLA

<p><b>Fairview Microwave</b> an INFINIT<sup>®</sup> brand</p>		<p>INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5</p>
<p>Website: <a href="http://www.FairviewMicrowave.com">www.FairviewMicrowave.com</a></p> <p>Phone: 1.800.715.4396   1.972.649.6678</p>		<p>SCALE: NONE</p> <p>SHEET: 1 OF 1</p>
<p>DESCRIPTION: 8 GHz to 18 GHz, 360° Voltage Controlled Phase Shifter, SMA</p>		
SIZE	CAGE CODE	ITEM NO.
A	3FKR5	FM82P2002
REV	DRAWN BY	REV
A	PSRINIVAS	A

Analog Phase Shifter, 8 GHz to 18 GHz, 360 degree Phase Range, 0V to +13V Control Voltage, Max Pin +26 dBm, SMA