

Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range, 0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm

The FM82P2009 is an Analog Phase Shifter module that operates across a broadband frequency from 22 GHz to 33 GHz and supports a single positive voltage control of 0 to +14 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 14 dB insertion loss, +/-30° phase flatness, a 0.1 dB compression point (P0.1dB) of +15 dBm, and a maximum RF input power level of +15 dBm. The rugged and small size aluminum package is gold plated and supports female 2.92mm RF connectors and solder pins for DC control and ground. 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
- 22 GHz to 33 GHz
- Phase Shift 0° to 360° typ
- Insertion Loss 14 dB typ
- Phase Flatness +/- 30° typ
- P0.1dB +15 dBm typ
- Maximum RF Input Power +15 dBm
- 50 Ohm Design
- Single Positive Voltage Control 0 to +10Vdc
- Solder Pins for DC Control Voltage and Ground
- Field Replaceable Female 2.92mm 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	22		33	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Control Voltage	0	14		Volts
Input VSWR		3:1	3.5:1	
Output VSWR		3.5:14:1		
Insertion Loss*		14	23	dB
Phase Flatness		±30		Degrees
IL Temperature Coefficient		0.003		dB/deg C
0.1 dB Compression Power		15		dBm
DC Current			1	mA
Input Power, CW			15	dBm

*at 0V DC Control

Absolute Maximum Rating

Parameter	Rating
Control Voltage	0V to +18V
RF Input power	+15dBm



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]

Applications:

- Test & Measurement
- Military & Commercial Communications

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Weight 0.018 lbs [8.16 g]
 Body Material and Plating Aluminum, Gold

Configuration

Input Connector 2.92mm Female
 Input Connector Spec. Field Replaceable
 Output Connector 2.92mm Female
 Output Connector Spec. Field Replaceable

Environmental Specifications

Temperature

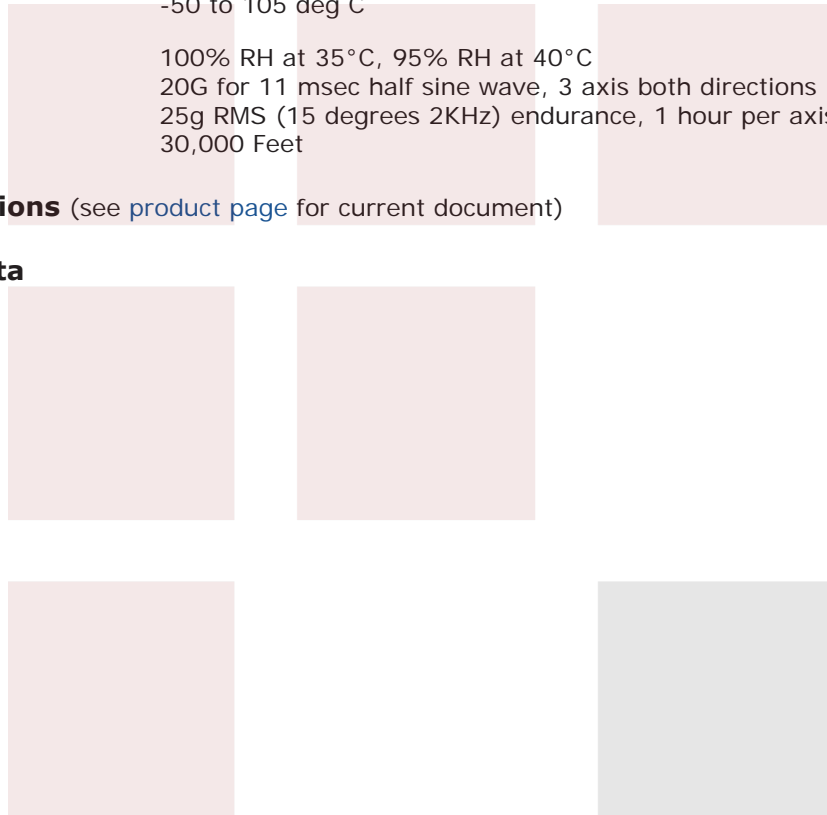
Operating Range -40 to 85 deg C
 Storage Range -50 to 105 deg C

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)

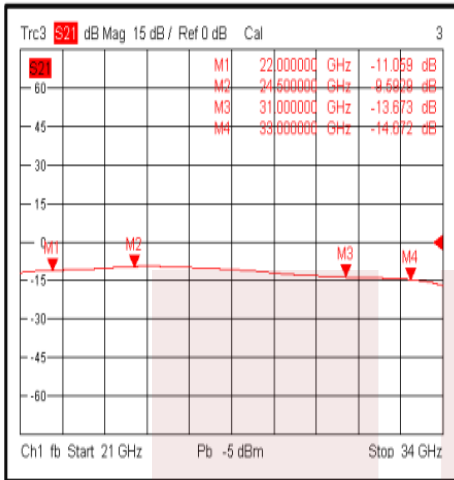
Plotted and Other Data

Notes:

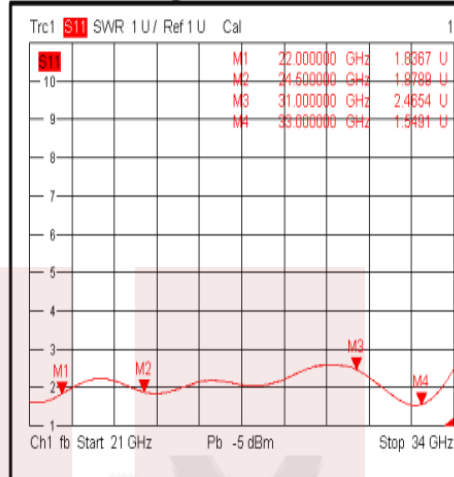


Typical Performance Data

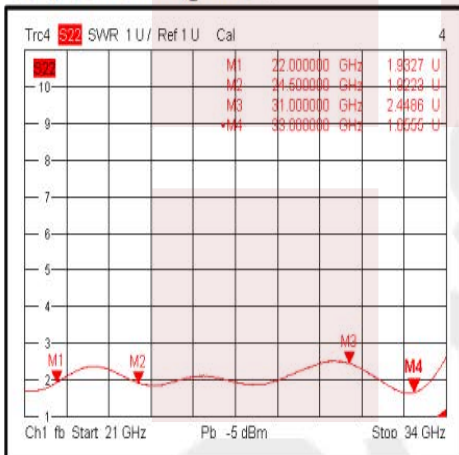
Insertion Loss @ +25°C



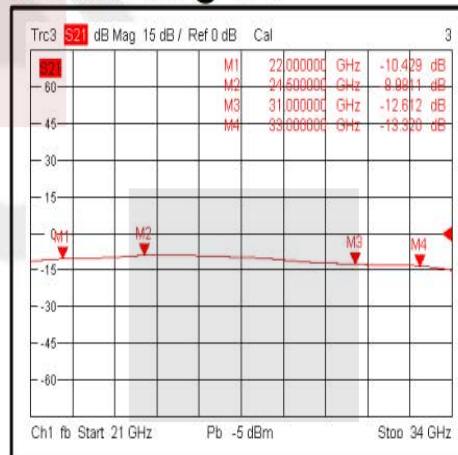
Input VSWR @ +25°C



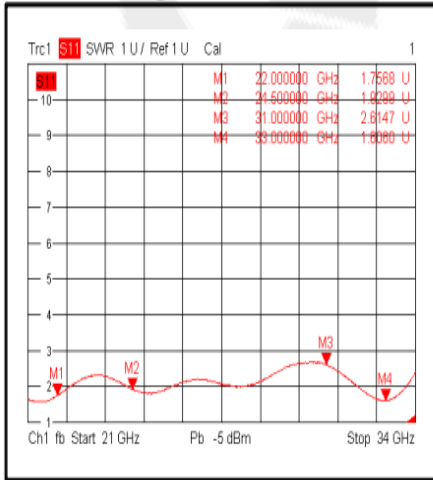
Output VSWR @ +25°C



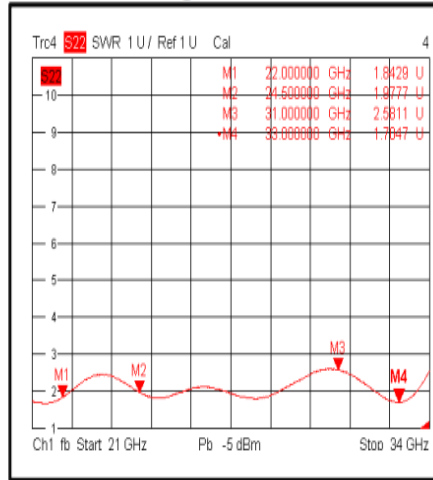
Insertion Loss @ -40°C



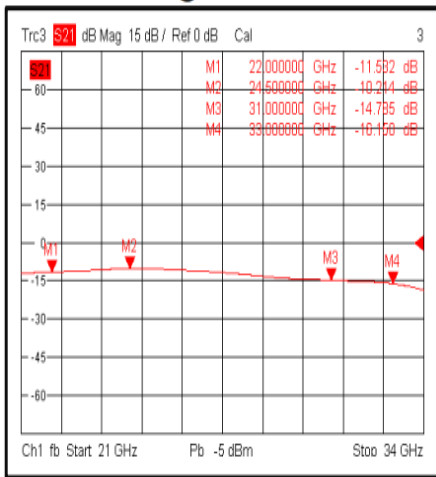
Input VSWR @ -40°C



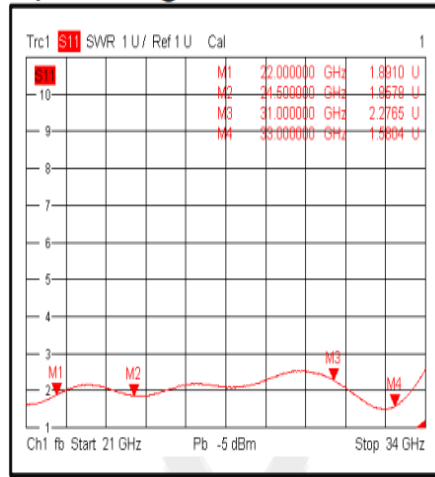
Output VSWR @ -40°C



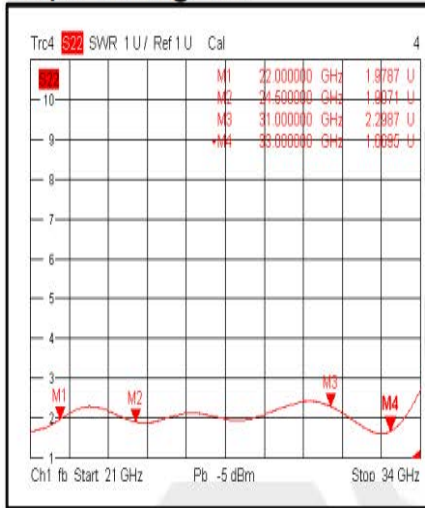
Insertion Loss @ +85°C



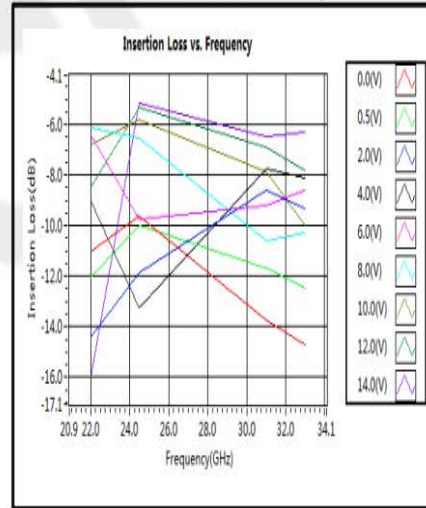
Input VSWR @ +85°C



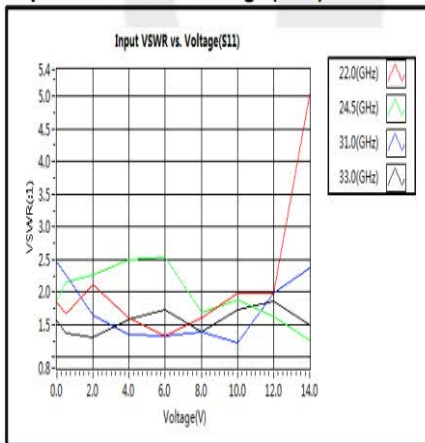
Output VSWR @ +85°C



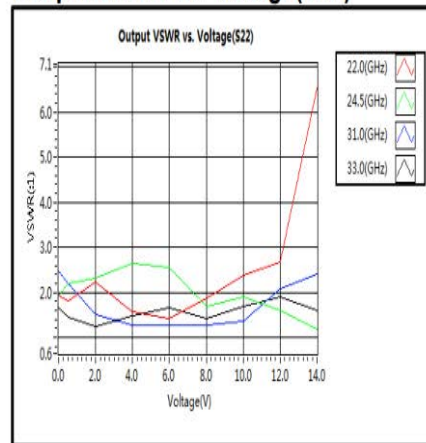
Insertion Loss vs. Frequency



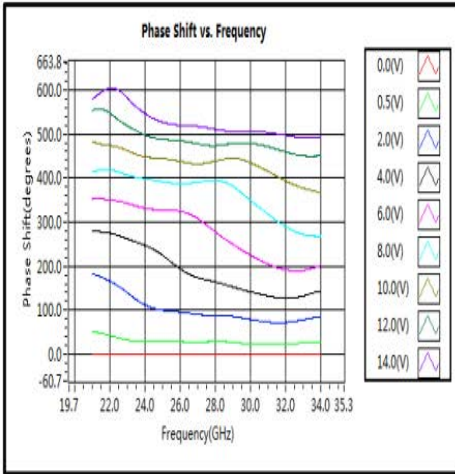
Input VSWR vs. Voltage(S11)



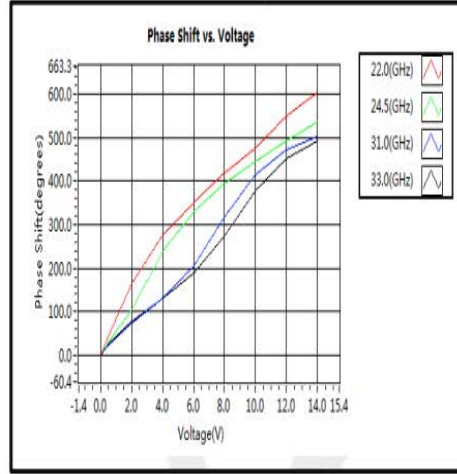
Output VSWR vs. Voltage(S22)



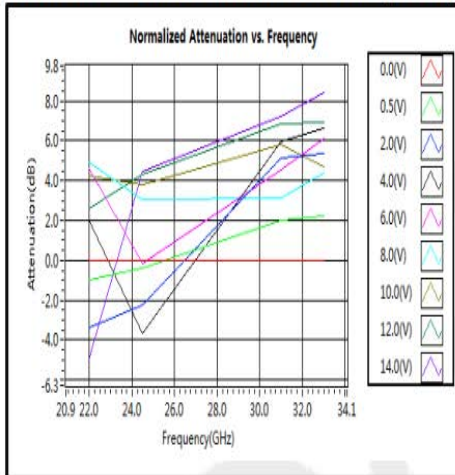
Phase Shift vs. Frequency



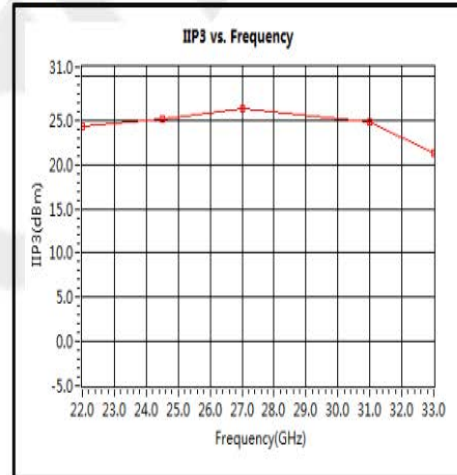
Phase Shift vs. Voltage



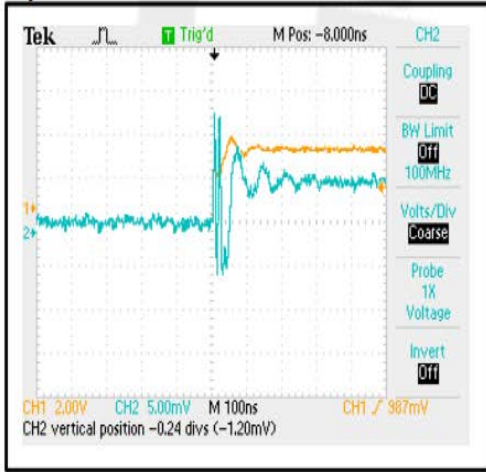
Normalized Attenuation vs. Frequency



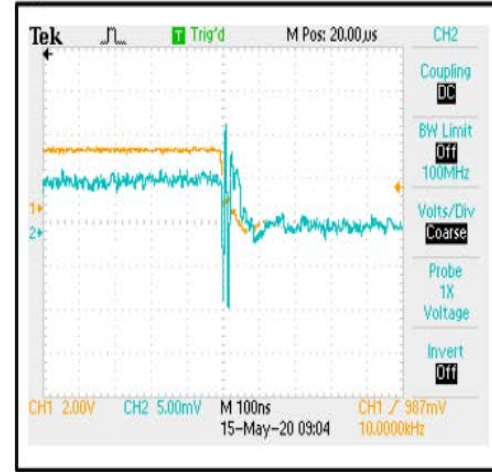
IIP3



Speed



Speed

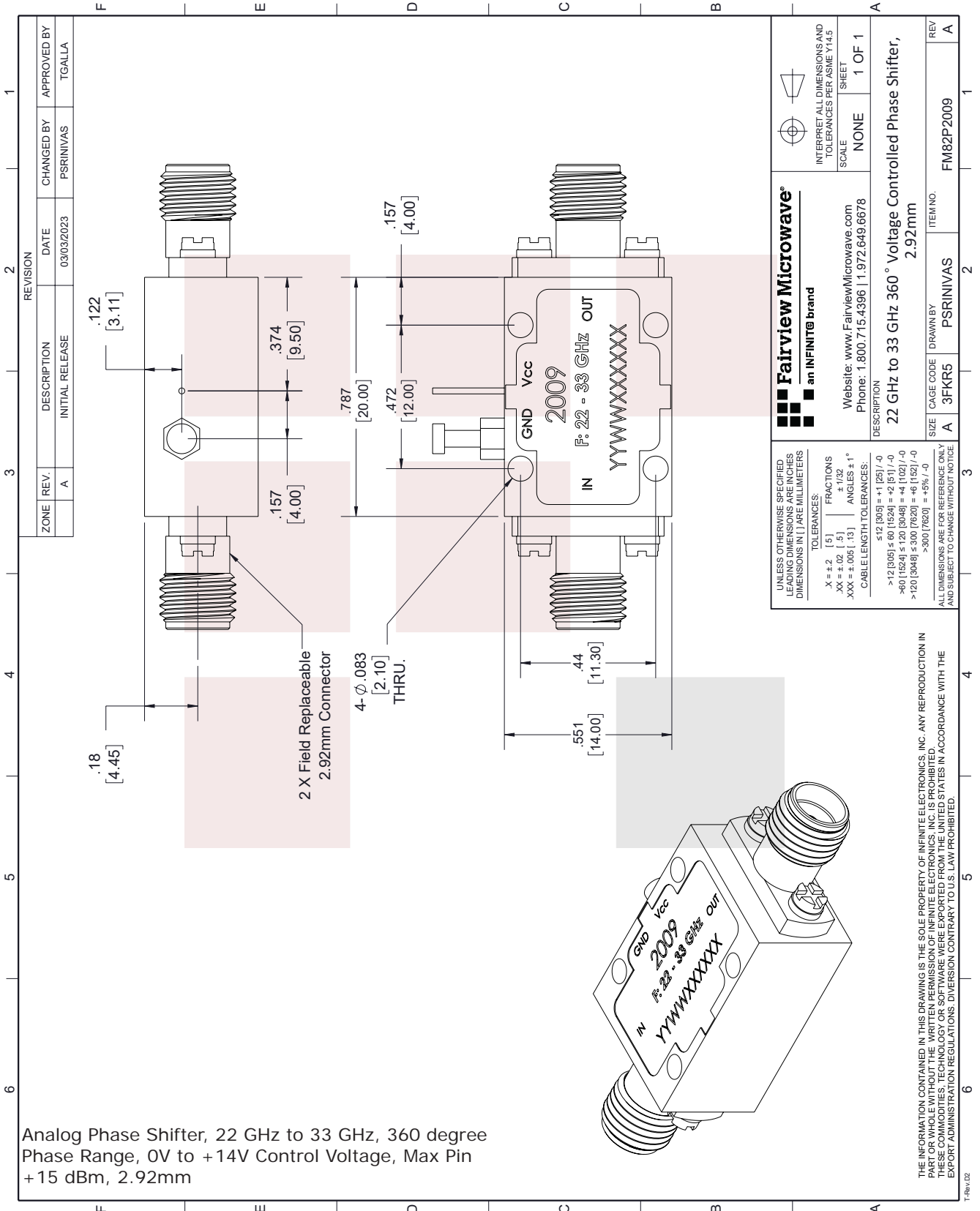


Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range, 0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range, 0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm FM82P2009](#)

URL: <https://www.fairviewmicrowave.com/2.92mm-analog-phase-shifter-24.5-33-ghz-fm82p2009-p.aspx>

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

<p>Fairview Microwave an INFINIT[®] brand</p> <p>Website: www.FairviewMicrowave.com Phone: 1.800.715.4396 1.972.649.6678</p>	<p>INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5</p> <p>SCALE: NONE</p> <p>SHEET: 1 OF 1</p>
	<p>DESCRIPTION: 22 GHz to 33 GHz, 360° Voltage Controlled Phase Shifter, 2.92mm</p>
<p>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS.</p> <p>TOLERANCES: .X = ±.2 [5] .XX = ±.02 [5] .XXX = ±.005 [13] FRACTIONS ± 1/32 ANGLES ± 1°</p> <p>CABLE LENGTH TOLERANCES: ≤ 12 [305] = ± 1 [25] / -0 > 12 [305] ≤ 60 [1524] = ± 2 [51] / -0 > 60 [1524] ≤ 120 [3048] = ± 4 [102] / -0 > 120 [3048] ≤ 300 [7620] = ± 6 [152] / -0 > 300 [7620] = ± 5% / -0</p>	<p>SIZE: A</p>

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