

6 Bit TTL Programmable Phase Shifter, 6 GHz to 18 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, SMA

The FM82P5022 is a 6 Bit Digitally Controlled Programmable Phase Shifter that operates across a frequency band from 6 GHz to 18 GHz. The 50 Ohm design has a phase shift range from 0° to 360° with 6 control bits and a step size of 5.625°. Impressive typical performance includes 5 dB insertion loss, +/- 7° phase flatness, 500 usec switching speed, an input 1 dB compression point of +25 dBm, and a maximum RF input power level of +30 dBm. The unit requires +5Vdc bias voltage with 10 mA max DC current. The low profile pin package is aluminum with Nickel plating and supports field replaceable SMA RF connectors and a Micro-D9 female connector for DC Bias and Command Control functions. 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:

- Programmable Phase Shifter
- 6 GHz to 18 GHz
- Phase Shift 0° to 360° typ
- TTL Digital Control
- 6 Control Bits
- Step Size 5.625° typ
- Insertion Loss 4 dB typ
- Phase Flatness +/- 5° typ
- Switching Speed 500 usec typ
- Input P1dB +25 dBm typ
- Maximum RF Input Power +30 dBm
- 50 Ohm Design
- DC Bias +12V @ 10 mA
- Micro-D9 Female Connector
- Field Replaceable Female SMA RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Nickel Plated Package Design
- 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	6		18	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Phase LSB Step		5.625		Degrees
Input VSWR		1.5:1	2.5:1	
Output VSWR		1.8:13:1		
Insertion Loss*		10	12	dB
Phase Flatness		±8	±18	Degrees
IL Temperature Coefficient		0.008		dB/deg C
Input 1 dB Compression Point		25		dBm
Input IP3		41		dBm
Switching Speed		500		ns
DC Voltage		5		Volts
DC Current			10	mA
Input Power, CW			30	dBm
Control Bits		6		

*at 0V DC Control

Applications:

- Test & Measurement

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sales@fairviewmicrowave.com

Absolute Maximum Rating

Parameter	Rating
Bias Voltage	+5V ±10%
RF Input power	+30dBm



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

Mechanical Specifications
Size

Length	1.102 in [27.99 mm]
Width/Diameter	0.787 in [19.99 mm]
Height	0.394 in [10.01 mm]
Weight	0.022 lbs [9.98 g]
Body Material and Plating	Aluminum, Nickel

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

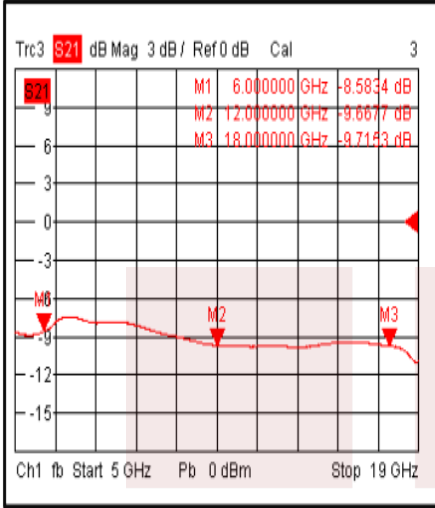
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

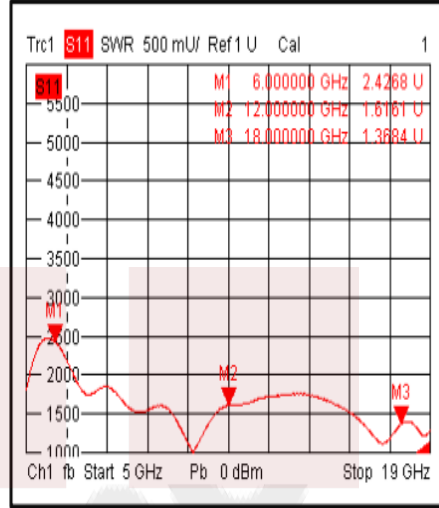
Notes:

Typical Performance Data

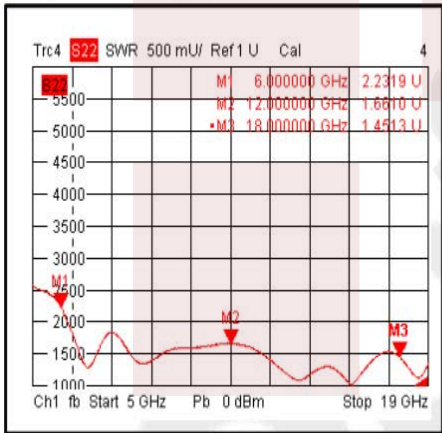
Insertion Loss@+25°C



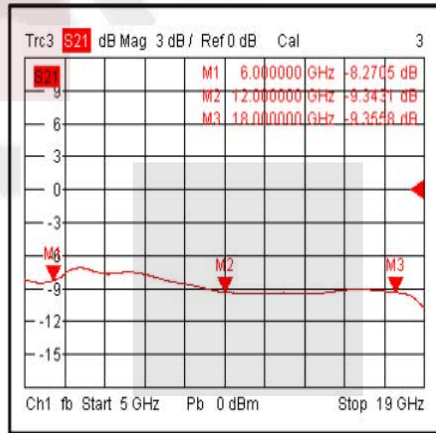
Input VSWR @+25°C



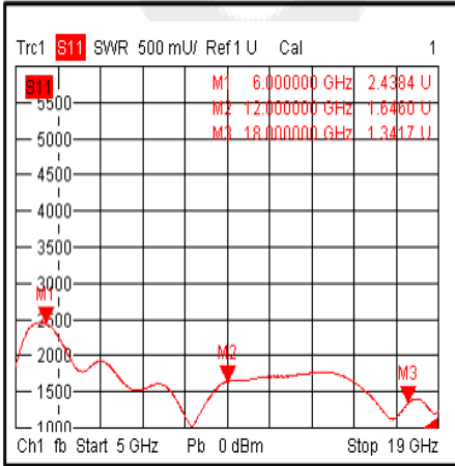
Output VSWR @+25°C



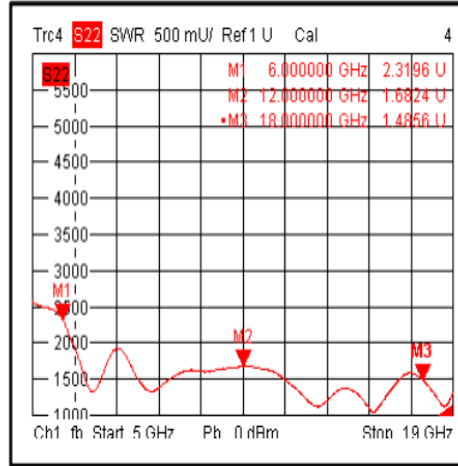
Insertion Loss @-40°C



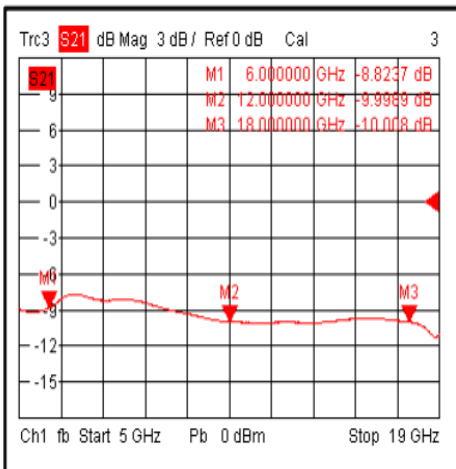
Input VSWR @-40°C



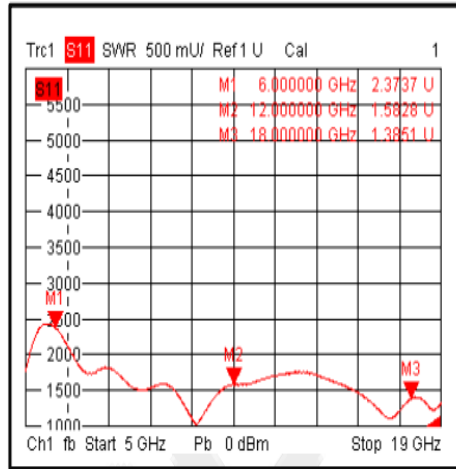
Output VSWR @-40°C



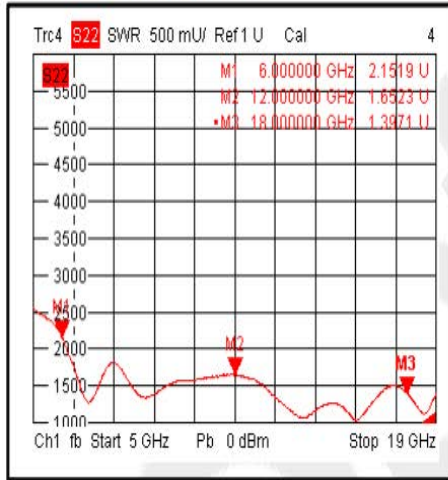
Insertion Loss @+85°C



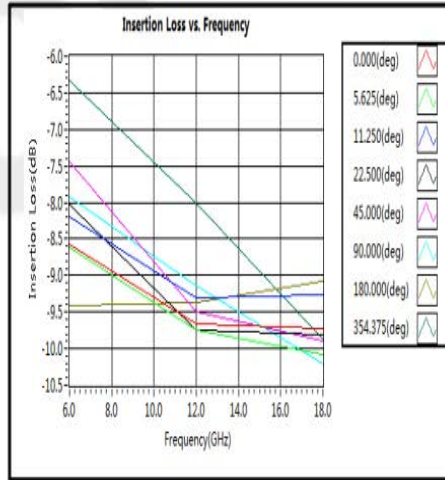
Input VSWR @+85°C



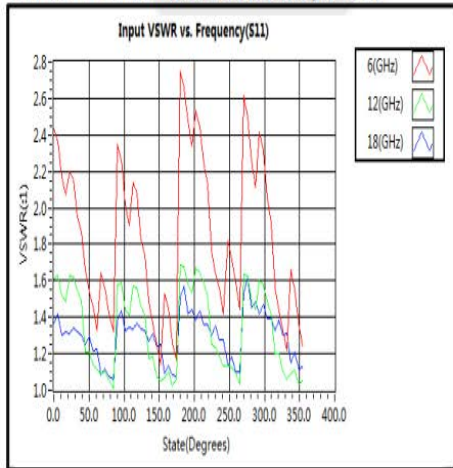
Output VSWR @+85°C



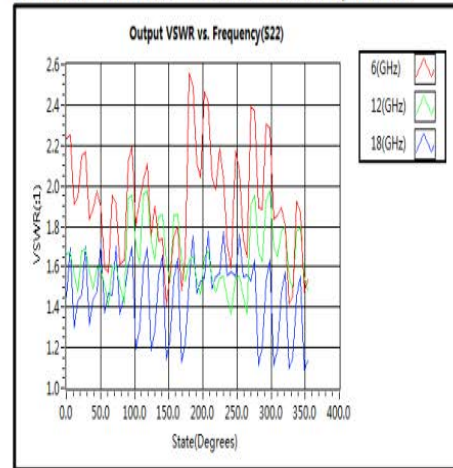
Insertion Loss vs. Frequency



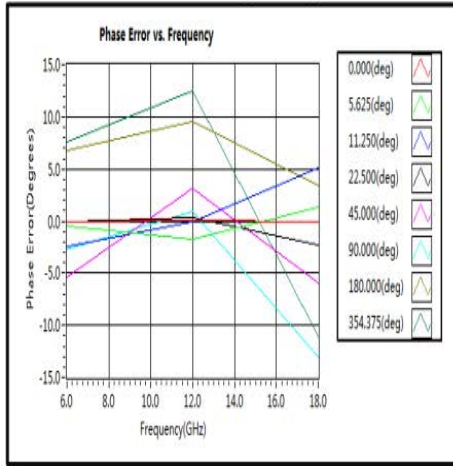
Input VSWR vs. Frequency(S11)



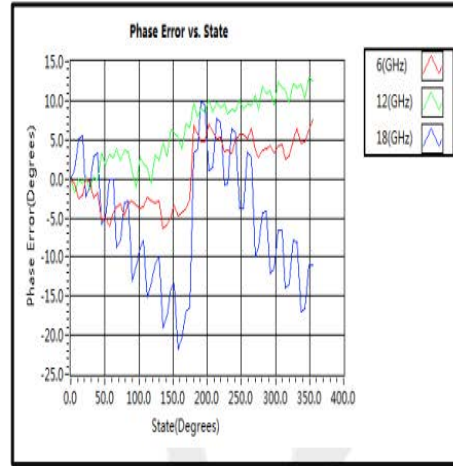
Output VSWR vs. Frequency(S22)



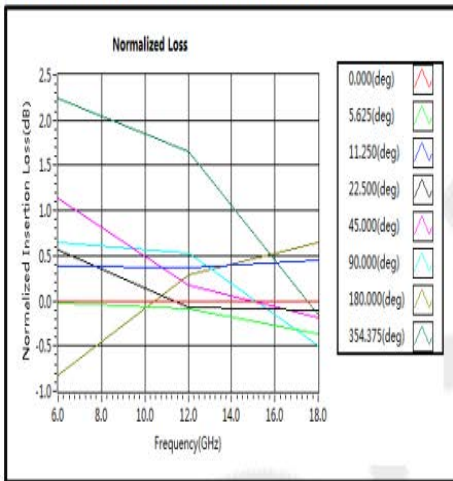
Phase Error vs. Frequency



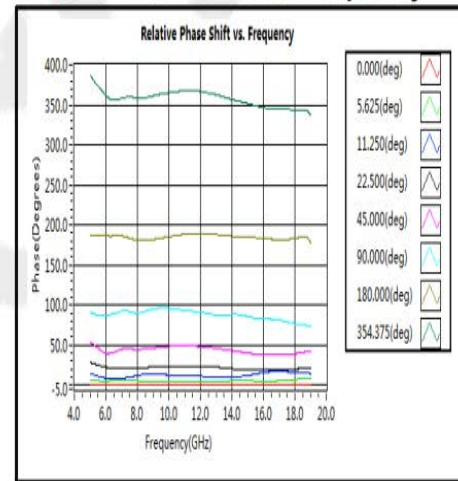
Phase Error vs. State



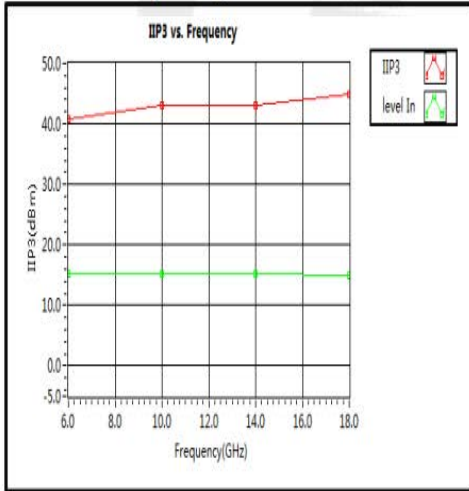
Normalized Loss. All States



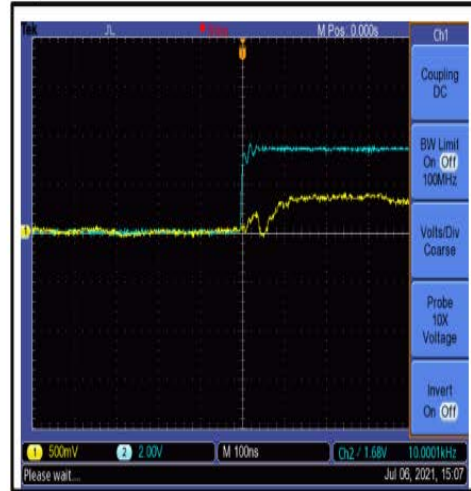
Relative Phase Shift vs. Frequency



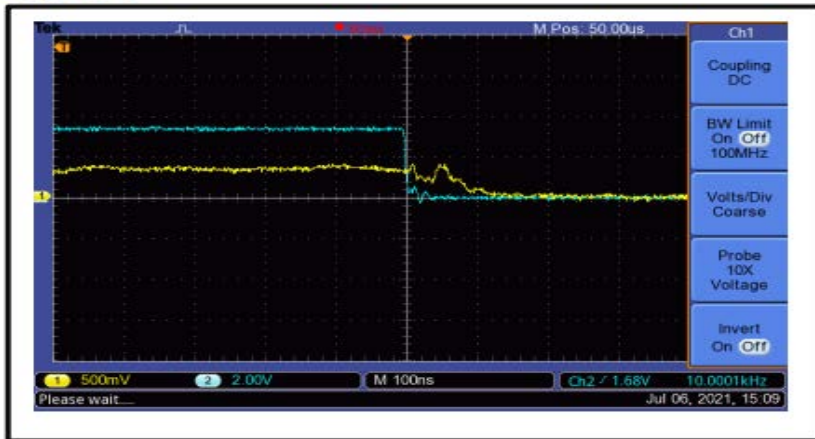
IIP3 vs. Frequency



Speed



Speed

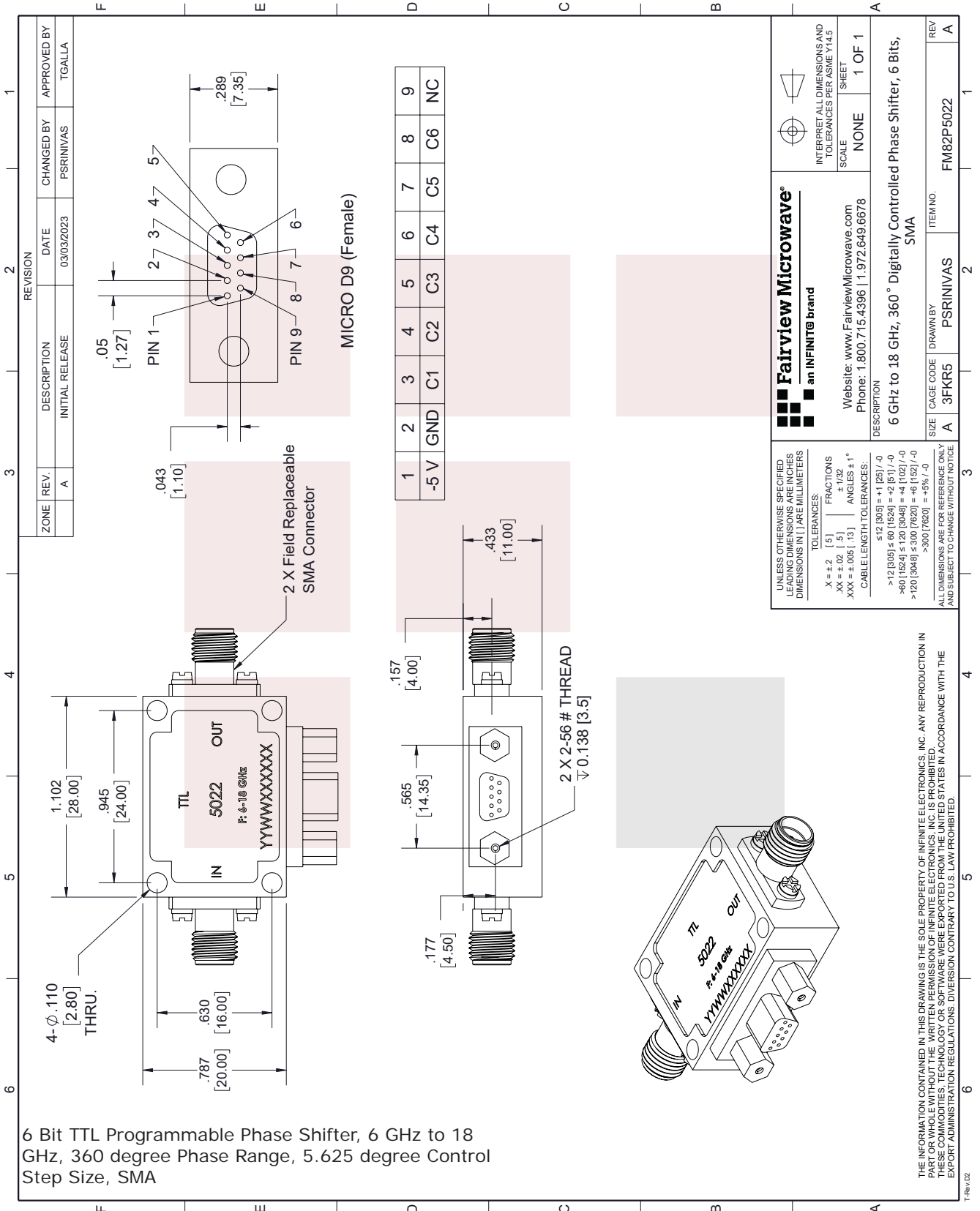


6 Bit TTL Programmable Phase Shifter, 6 GHz to 18 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [6 Bit TTL Programmable Phase Shifter, 6 GHz to 18 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, SMA FM82P5022](#)

URL: <https://www.fairviewmicrowave.com/sma-programmable-phase-shifter-6-18-ghz-fm82p5022-p.aspx>

The information contained in 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 any liability arising out of the use of any part or documentation.



6 Bit TTL Programmable Phase Shifter, 6 GHz to 18 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, SMA

<p>Fairview Microwave an INFINIT[®] brand</p>		<p>INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5</p>	
<p>Website: www.FairviewMicrowave.com</p> <p>Phone: 1.800.715.4396 1.972.649.6678</p>		<p>SCALE: NONE</p>	<p>SHEET: 1 OF 1</p>
<p>DESCRIPTION: 6 GHz to 18 GHz, 360° Digitally Controlled Phase Shifter, 6 Bits, SMA</p>			
<p>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, DIMENSIONS IN PAREMETERS ARE IN MILLIMETERS.</p> <p>TOLERANCES: .X = ±.2 [5] FRACTIONS ± 1/32 .XX = ±.02 [.5] ANGLES ± 1° .XXX = ±.005 [.13]</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> <p>CAGE CODE: 3FKR5</p> <p>DRAWN BY: PSRNINIVAS</p> <p>ITEM NO.: FM82P-5022</p>		
<p>ALL DIMENSIONS ARE FOR REFERENCE ONLY AND SUBJECT TO CHANGE WITHOUT NOTICE.</p>		<p>REV: A</p>	

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