



6 Bit TTL Programmable Phase Shifter, 1 GHz to 2 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, +27 dBm Max Pin, SMA

Phase Shifters and Trimmers Technical Data Sheet

PE82P5019

Features

- Programmable Phase Shifter
- 1 GHz to 2 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 +27 dBm typ
- Maximum RF Input Power +27 dBm
- 50 Ohm Design
- DC Bias +12V @ 200 mA
- Micro-D15 Female Connector
- Field Replaceable Female SMA RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Nickel Plated Package Design
- Guaranteed Environmental Test Conditions Altitude, Vibration, Humidity, Shock
- Single DC Control Operation
- Low Phase Error

Applications

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

Description

The PE82P5019 is a 6 Bit Digitally Controlled Programmable Phase Shifter that operates across a frequency band from 1 GHz to 2 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 4 dB insertion loss, +/- 5° phase flatness, 500 usec switching speed, an input 1 dB compression point of +27 dBm, and a maximum RF input power level of +27 dBm. The unit requires +12Vdc bias voltage with 200 mA max DC current. The low profile pin package is aluminum with Nickel plating and supports field replaceable SMA RF connectors and a Micro-D15 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.

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

Description	Minimum	Typical	Maximum	Units
Frequency Range	1		2	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Phase LSB Step		5.625		Degrees
Input VSWR		1.5:1	2.5:1	
Insertion Loss*		4	5.5	dB
Phase Flatness		±5	±15	Degrees
IL Temperature Coefficient		0.003		dB/deg C
Input 1 dB Compression Point		27		dBm
Input IP3		32		dBm
Switching Speed		500		ns
DC Voltage		12		Volts
DC Current			200	mA

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Input Power, CW 27 dBm
Control Bits 6

*at 0V DC Control

Absolute Maximum Rating

Parameter	Rating
Bias Voltage	+15V
RF Input power	+27dBm

Mechanical Specifications

Size

Length	1.772 in [45.01 mm]
Width/Diameter	1.693 in [43 mm]
Height	0.551 in [14 mm]
Weight	0.16 lbs [72.57 g]
Body Material and Plating	Aluminum, Nickel

Configuration

Input Connector	SMA Female
Input Connector Specification	Field Replaceable
Output Connector	SMA Female
Output Connector Specification	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:

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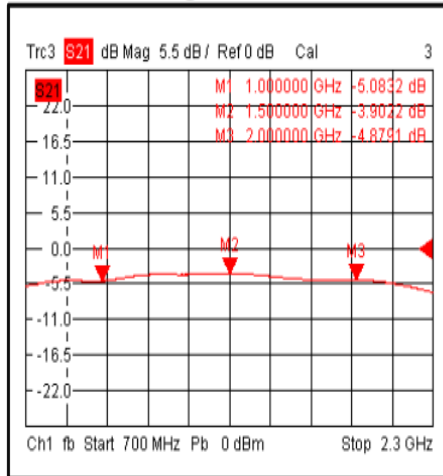


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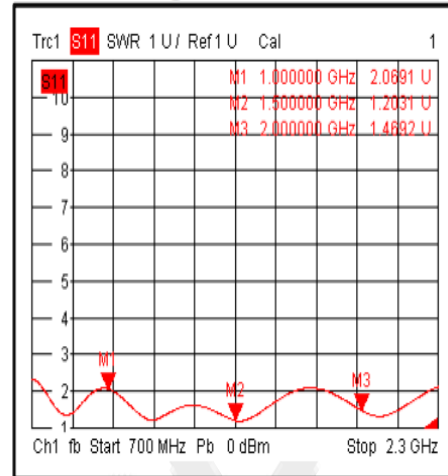
PE82P5019

Typical Performance Data

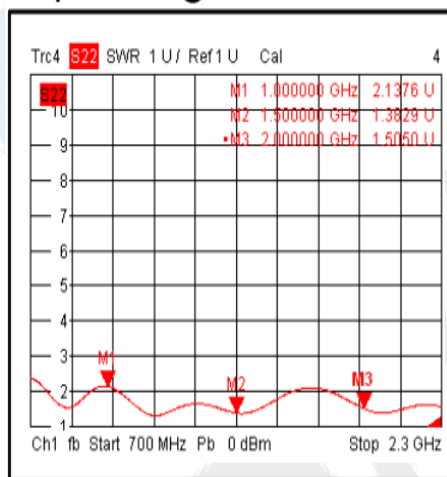
Insertion Loss @ +25°C



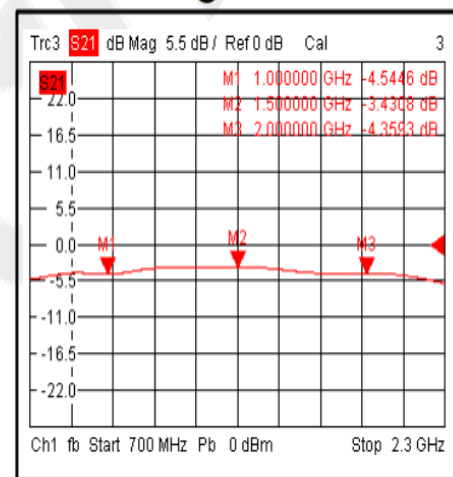
Input VSWR @ +25°C



Output VSWR @ +25°C



Insertion Loss @ -40°C



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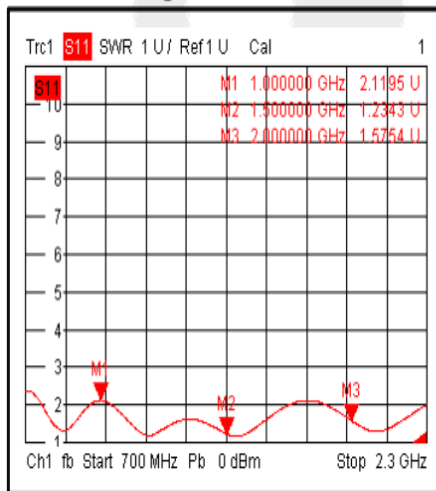


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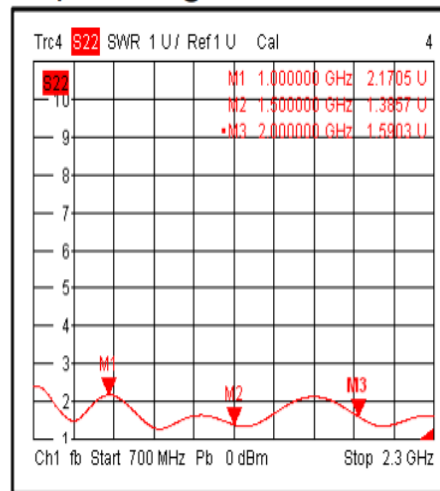
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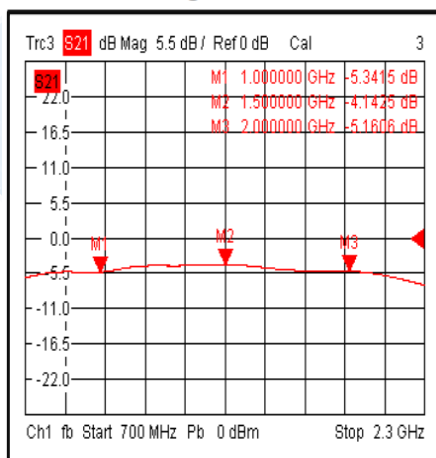
Input VSWR @-40°C



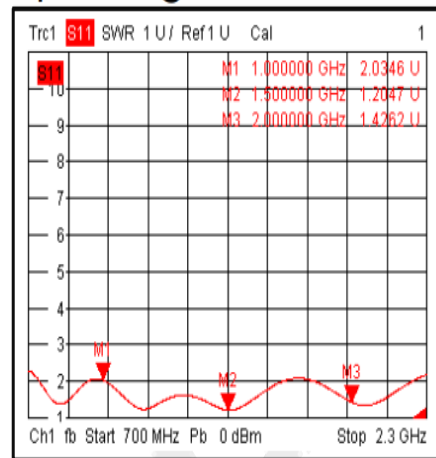
Output VSWR @-40°C



Insertion Loss @+85°C



Input VSWR @+85°C



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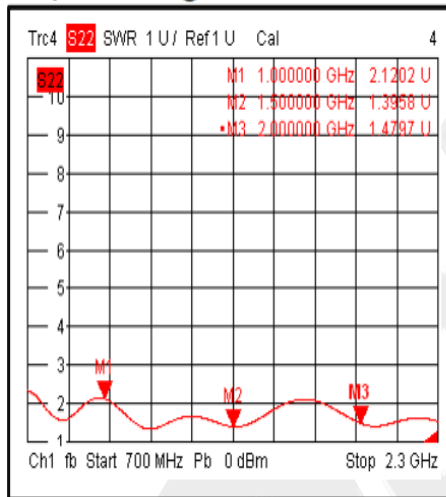
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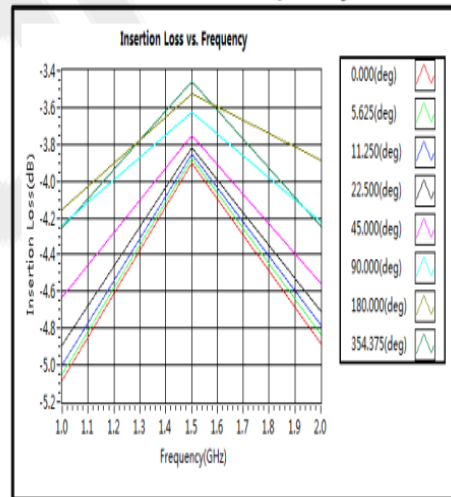
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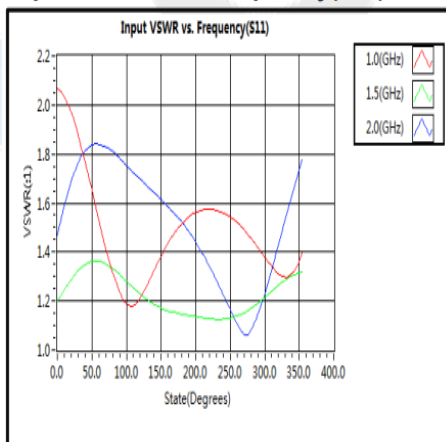
Output VSWR @+85°C



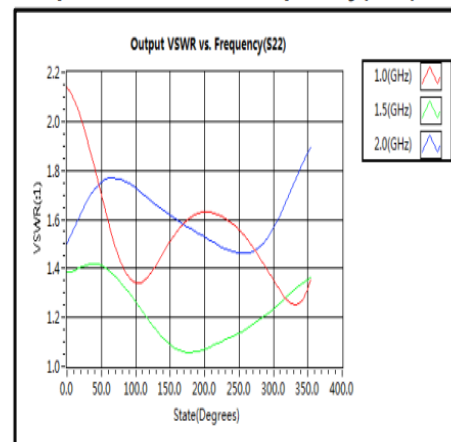
Insertion Loss vs. Frequency



Input VSWR vs. Frequency(s11)



Output VSWR vs. Frequency(s22)



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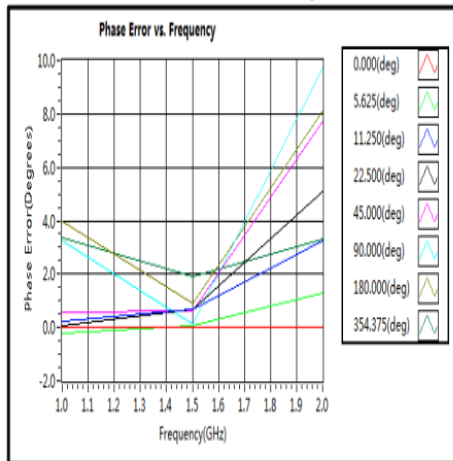
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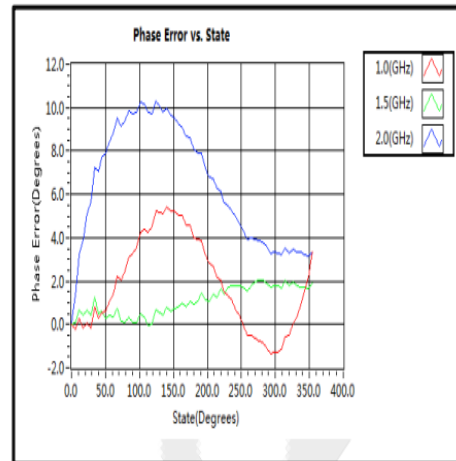
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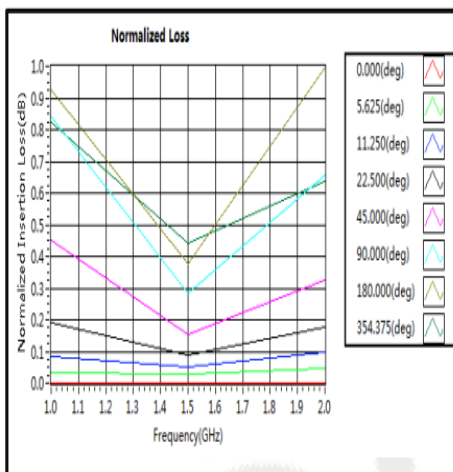
Phase Error vs. Frequency



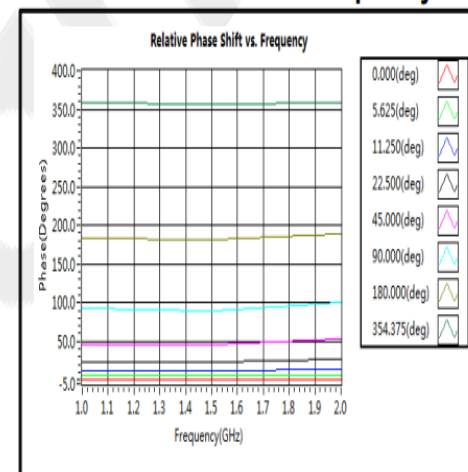
Phase Error vs. State



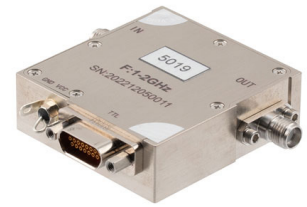
Normalized Loss. All States



Relative Phase Shift vs. Frequency



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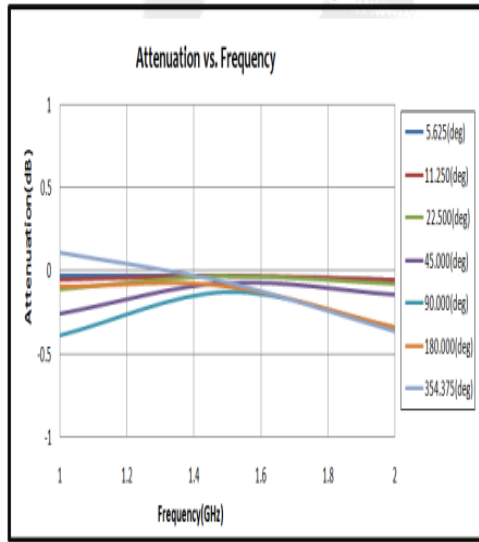


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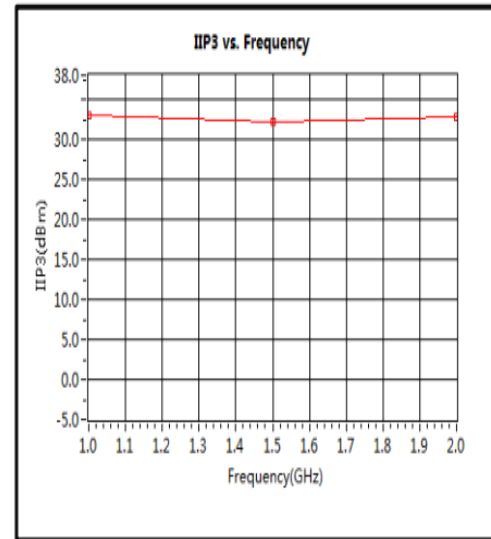
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Attenuation vs. Frequency



IIP3



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URL: <https://www.pasternack.com/programmable-phase-shifter-2-ghz-0-0-degrees-sma-pe82p5019-p.aspx>

PE82P5019 CAD Drawing

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