



6 Bit TTL Programmable Phase Shifter, 4 GHz to 8 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, +30 dBm Max Pin, SMA

Phase Shifters and Trimmers Technical Data Sheet

PE82P5020

Features

- Programmable Phase Shifter
- 4 GHz to 8 GHz
- Phase Shift 0° to 360° typ
- TTL Digital Control
- 6 Control Bits
- Step Size 5.625° typ
- Insertion Loss 6 dB typ
- Phase Flatness +/- 15° typ
- Input P1dB +27 dBm typ
- Maximum RF Input Power +30 dBm
- 50 Ohm Design
- DC Bias -5V @ 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

Applications

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

Description

The PE82P5020 is a 6 Bit Digitally Controlled Programmable Phase Shifter that operates across a frequency band from 4 GHz to 8 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 6 dB insertion loss, +/- 15° phase flatness, an input 1 dB compression point of +27 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.

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

Description	Minimum	Typical	Maximum	Units
Frequency Range	4		8	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Phase LSB Step		5.625		Degrees
Input VSWR		1.5:1	2:1	
Insertion Loss*		6	8.5	dB
Phase Flatness		±15	±30	Degrees
DC Bias		-5		V
IL Temperature Coefficient		0.008		dB/deg C
Input 1 dB Compression Point		27		dBm
Input IP3		43		dBm
DC Voltage		-5		Volts
DC Current			10	mA
Input Power, CW			30	dBm
Control Bits		6		

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*at 0V DC Control

Absolute Maximum Rating

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

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	0.09 lbs [40.82 g]
Body Material and Plating	Aluminum, Gold

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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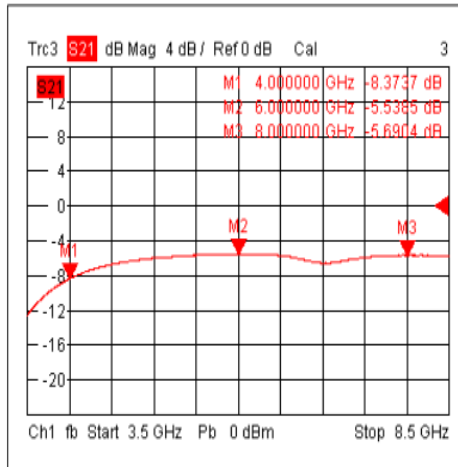
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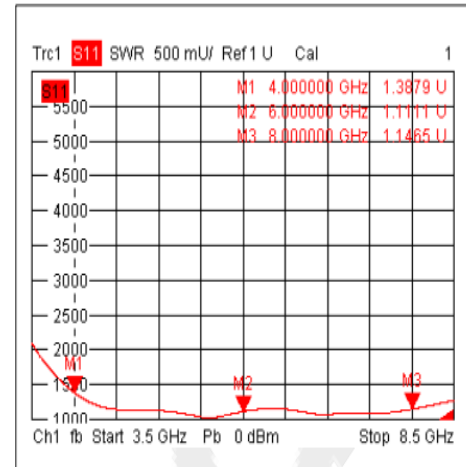
PE82P5020

Typical Performance Data

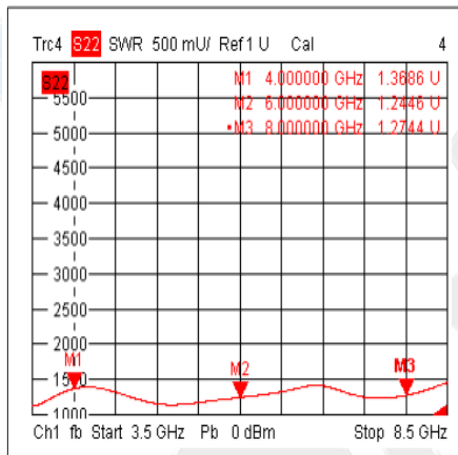
Insertion Loss @+25°C



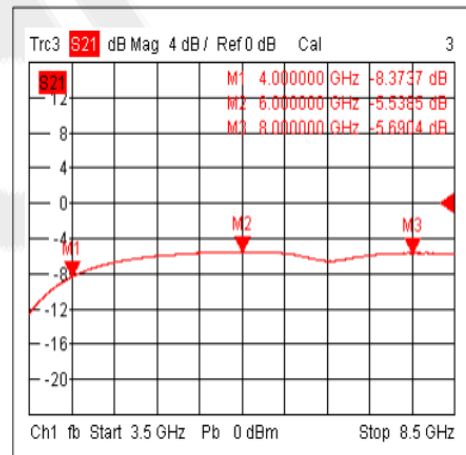
Input VSWR @+25°C



Output VSWR @+25°C



Insertion Loss @-40°C



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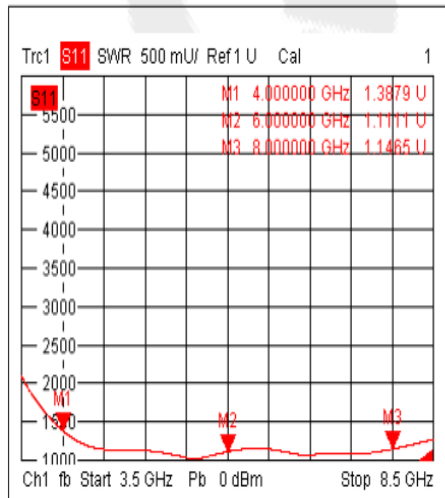
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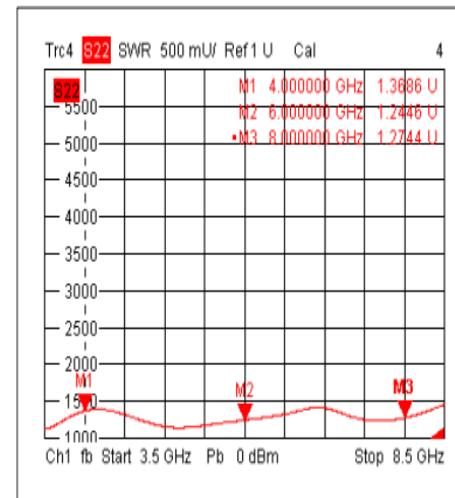
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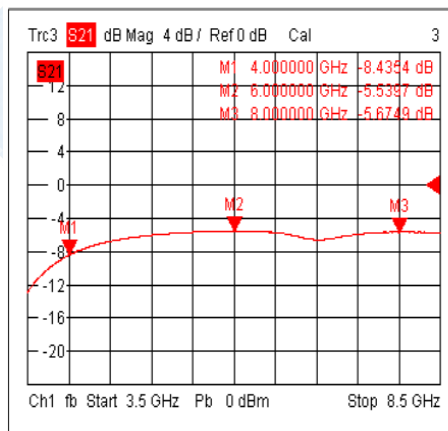
Input VSWR @-40°C



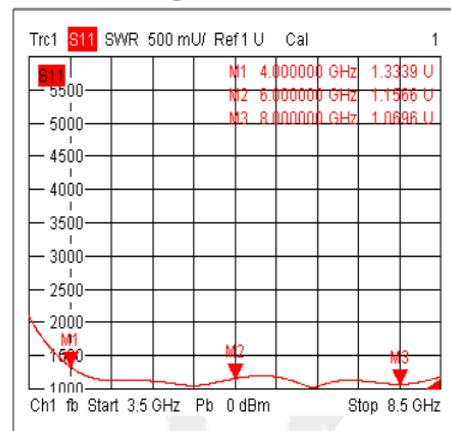
Output VSWR @-40°C



Insertion Loss @+85°C



Input VSWR @+85°C



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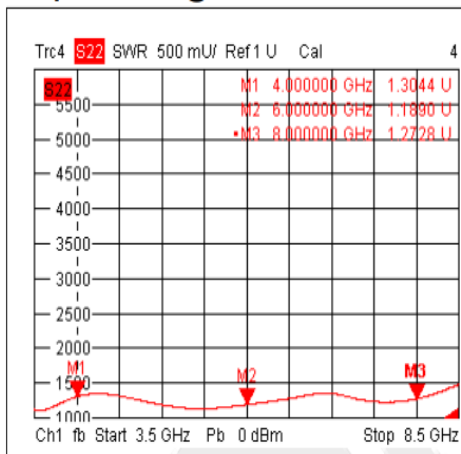


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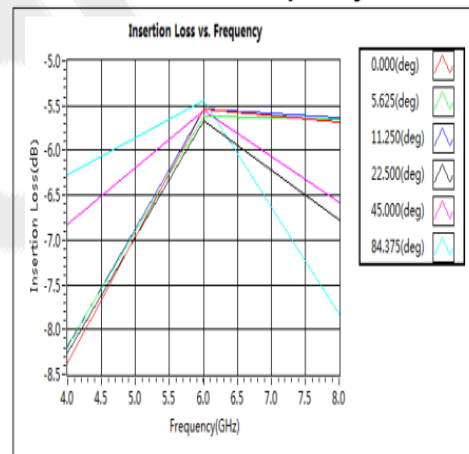
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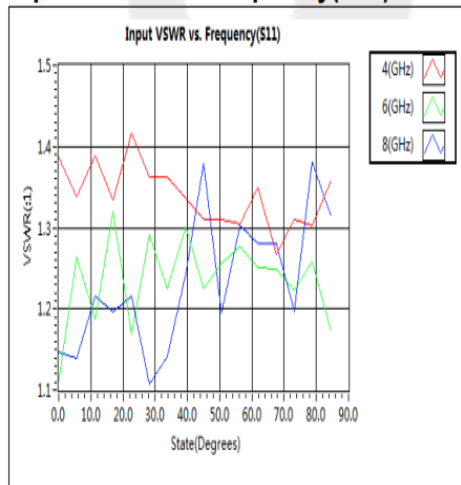
Output VSWR @+85°C



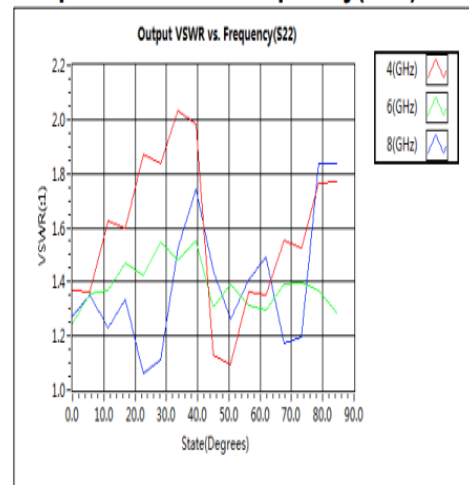
Insertion Loss vs. Frequency



Input VSWR vs. Frequency(S11)



Output VSWR vs. Frequency(S22)



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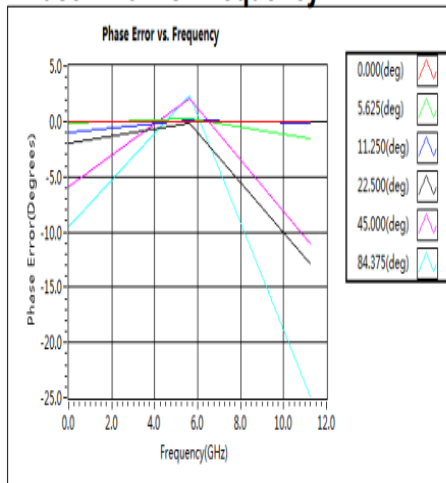


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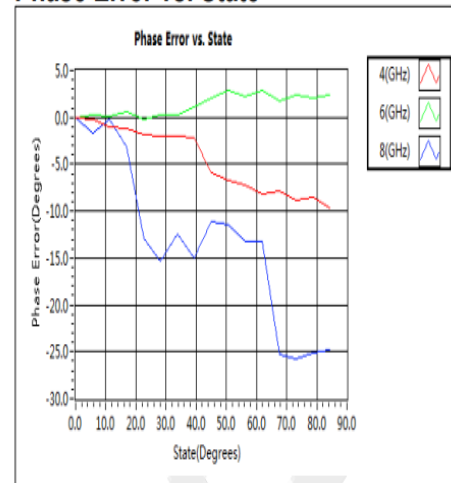
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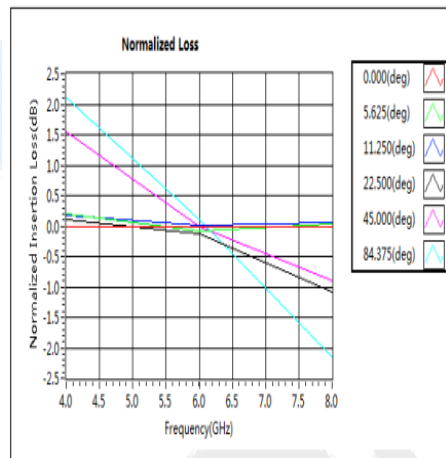
Phase Error vs. Frequency



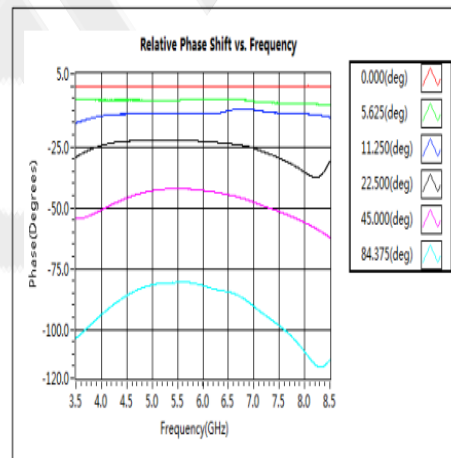
Phase Error vs. State



Normalized Loss . All States



Relative Phase Shift vs. Frequency



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URL: <https://www.pasternack.com/programmable-phase-shifter-8-ghz-0-0-degrees-sma-pe82p5020-p.aspx>

PE82P5020 CAD Drawing

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