

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



PE82P5022

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 ns 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

Applications

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

Description

The PE82P5022 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 ns 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.

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

Description	Min	Typ	Max	Units
Frequency Range	6		18	GHz
Impedance		50		Ohms
Phase LSB Step		5.625		Degrees
Input VSWR		1.5:1	2.5:1	
Output VSWR		1.8:1	3:1	
Insertion Loss		10	12	dB
Phase Flatness		±8	±18	Degrees
Phase Shift		360		Degrees
Insertion Loss Temperature Coefficient		0.008		dB/deg C
Input 1 dB Compression Point (P1 dB)		25		dBm
Input IP3		41		dBm
Switching Speed		500		ns
DC Voltage		5		Volts
DC Current			10	mA

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

Description	Min	Typ	Max	Units
Input Power, CW			30	dBm
Control Bits		6		

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	0.47 lbs [213.19 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

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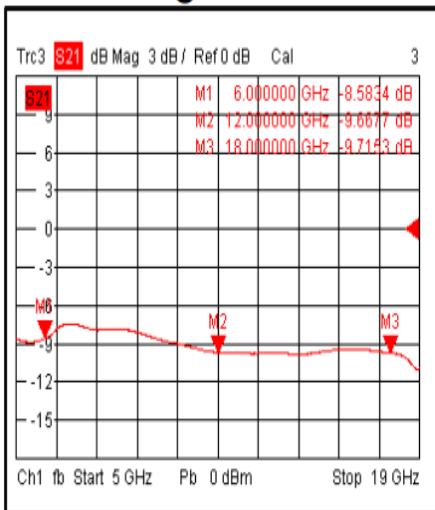
PE82P5022

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

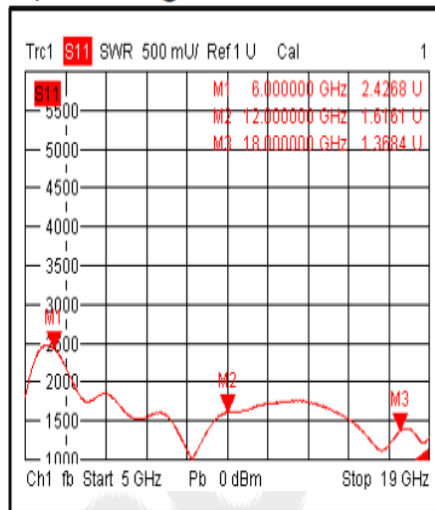
Plotted and Other Data

Typical Performance Data

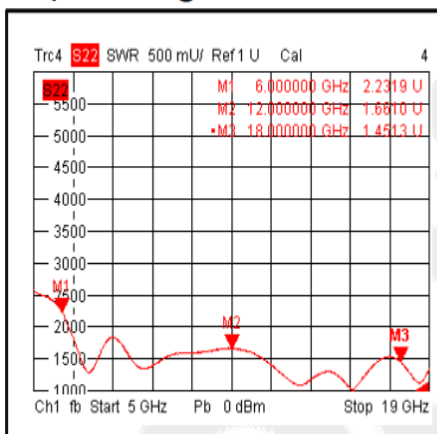
Insertion Loss@+25°C



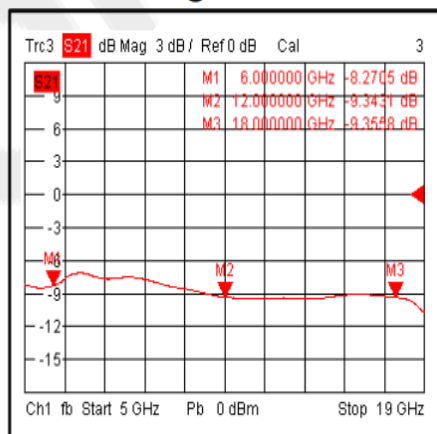
Input VSWR @+25°C



Output VSWR @+25°C



Insertion Loss @-40°C

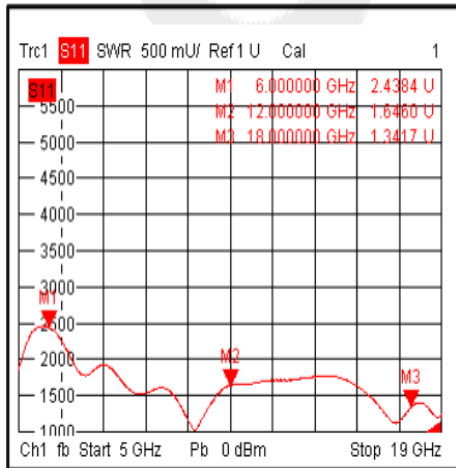


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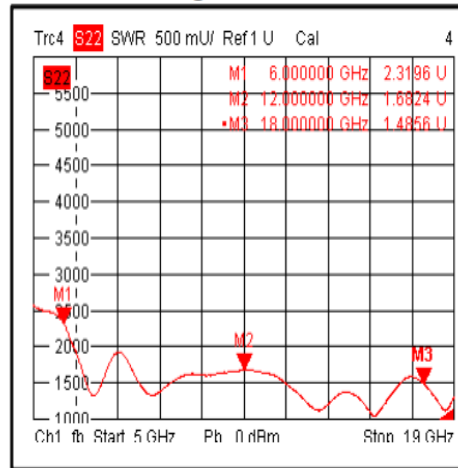


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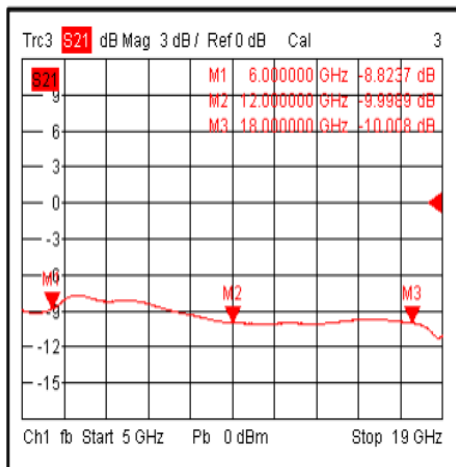
Input VSWR @-40°C



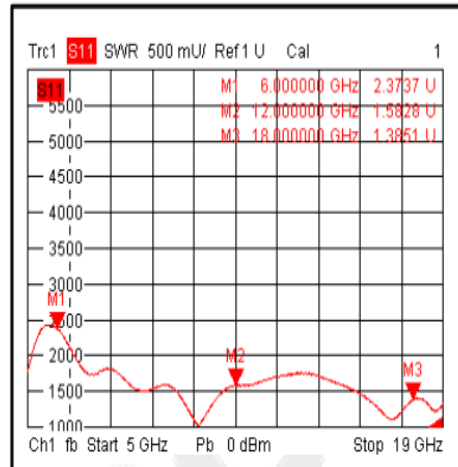
Output VSWR @-40°C



Insertion Loss @+85°C



Input VSWR @+85°C

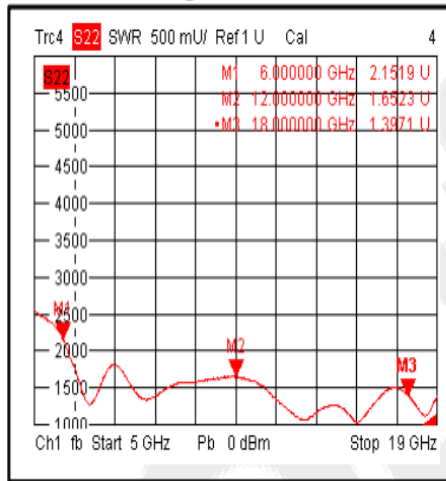


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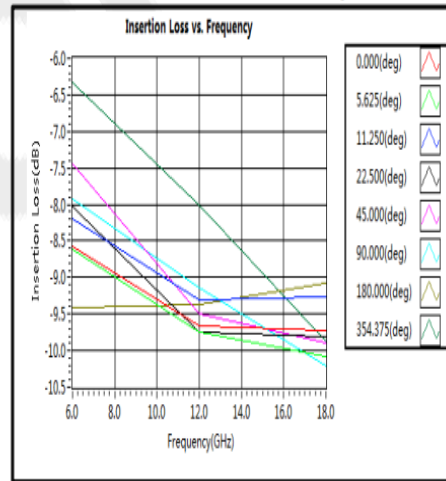


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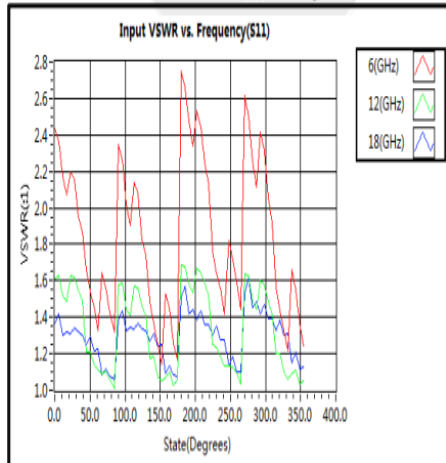
Output VSWR @+85°C



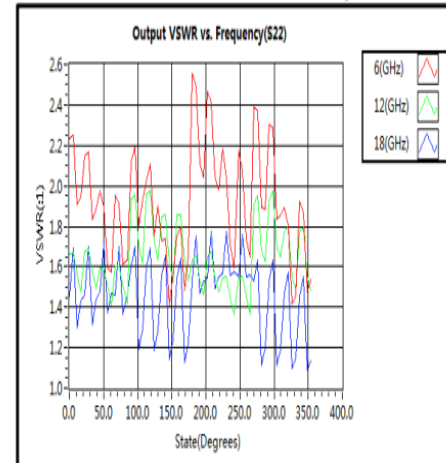
Insertion Loss vs. Frequency



Input VSWR vs. Frequency(S11)



Output VSWR vs. Frequency(S22)

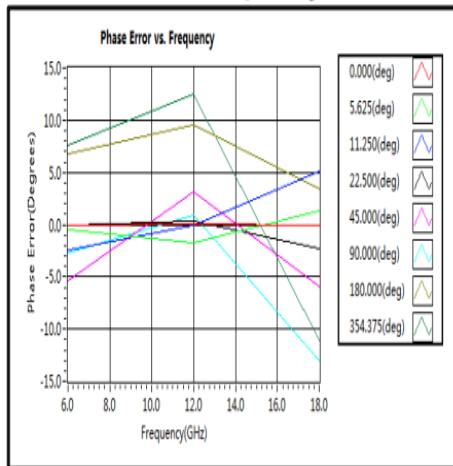


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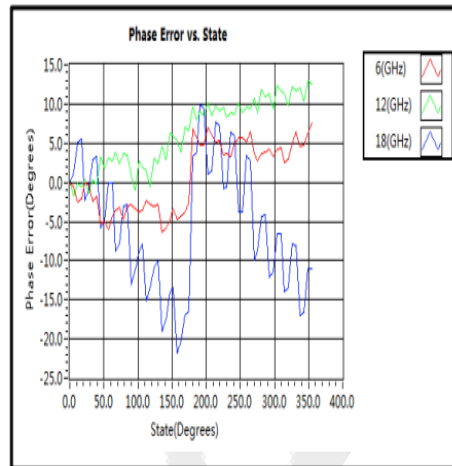


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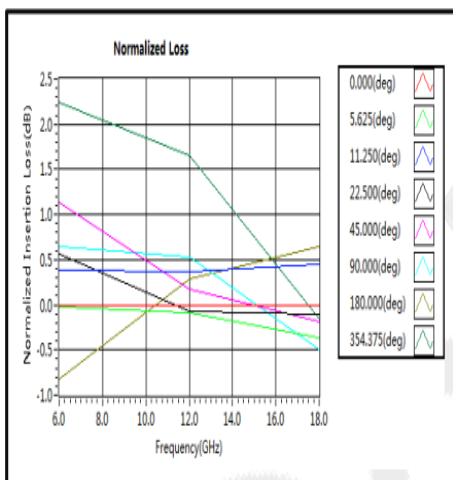
Phase Error vs. Frequency



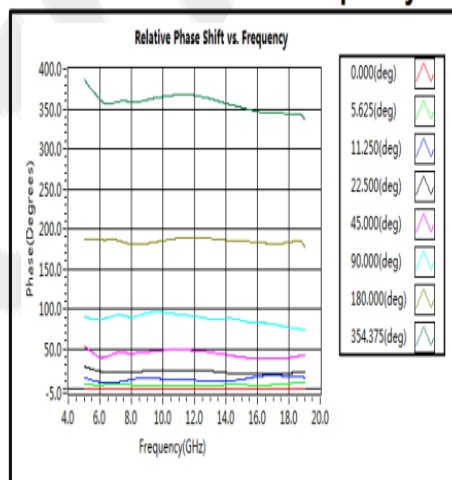
Phase Error vs. State



Normalized Loss. All States



Relative Phase Shift vs. Frequency

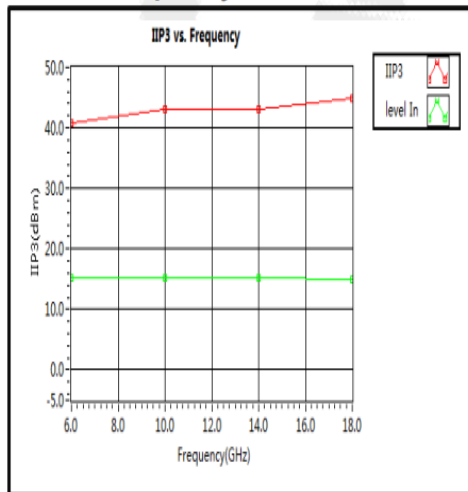


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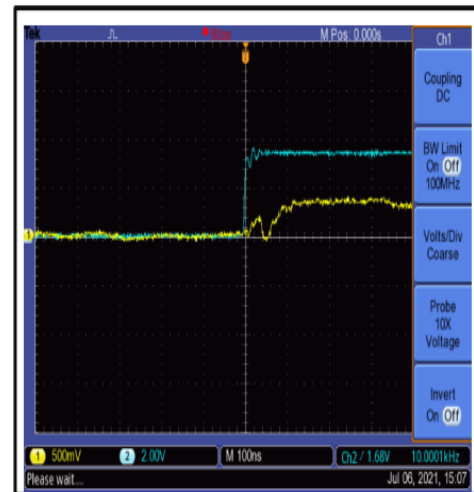


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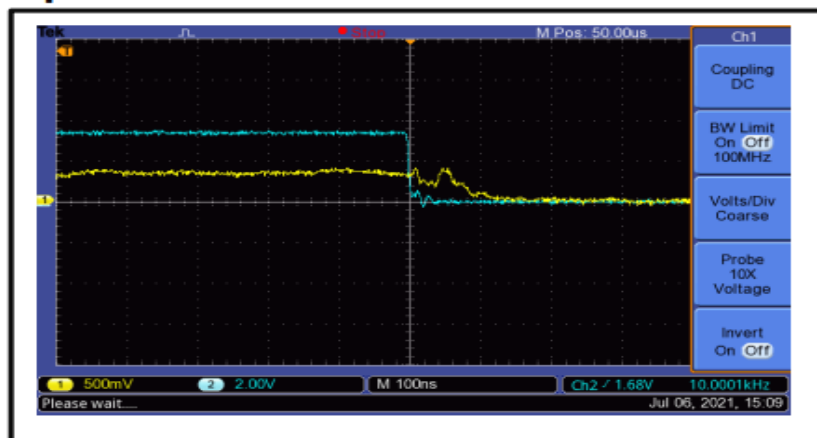
IIP3 vs. Frequency



Speed



Speed



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Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [6 Bit TTL Programmable Phase Shifter, 6 GHz to 18 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, SMA PE82P5022](https://www.pasternack.com/programmable-phase-shifter-18-ghz-0-0-degrees-sma-pe82p5022-p.aspx)

URL: <https://www.pasternack.com/programmable-phase-shifter-18-ghz-0-0-degrees-sma-pe82p5022-p.aspx>

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