



Analog Phase Shifter, 6 GHz to 15 GHz, With an Adjustable Phase of 120 Deg. Per GHz and SMA

## Phase Shifters and Trimmers Technical Data Sheet

PE82P2001

### Features

- Analog Phase Shifter Module
- Frequency Range 6 to 15 GHz
- Single Positive DC Voltage Control 0 to 5 Vdc
- Continuously Variable Monotonic Phase Shift 0 to >600o
- High Resolution
- Low Conversion Loss 7 dB typical
- Control Port Modulation Bandwidth 50 MHz
- Integrated DC blocking capacitors
- Hermetically Sealed Package
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

### Applications

- Electronic Warfare
- Radar
- Telecom Infrastructure
- Fiber Optic
- Military
- Test Instrumentation
- Space Systems

### Description

The PE82P2001 is an analog phase shifter module that operates across a frequency band of 6 to 15 GHz and supports a single positive voltage control of 0 to +5Vdc. The design offers a continuously variable monotonic phase shift response that ranges from 0 to >600 degrees depending on frequency, while maintaining consistent insertion loss versus phase shift characteristics. The control port can support a modulation bandwidth of 50 MHz. The drop-in compact package is hermetically sealed with field SMA replaceable connectors. Operating temperature range is -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for fine and gross leak and temperature cycle.

### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range	6		15	GHz
Impedance		50		Ohms
Phase Adjustment		120		Deg/GHz

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Analog Phase Shifter, 6 GHz to 15 GHz, With an Adjustable Phase of 120 Deg. Per GHz and SMA PE82P2001](#)



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### Performance by Frequency

Description	Frequency	Min.	Typ.	Max.	Units
Phase Shift Range:	6 - 10 GHz	600	800		degrees
	10 - 15 GHz	360	600		degrees
Insertion Loss	6 - 15 GHz		7	10	dB
Return Loss (Input And Output)	6 - 15 GHz		7		dB
Control Voltage Range	6 - 15 GHz		0 - 5		Volt
Modulation Bandwidth	6 - 15 GHz		50		MHz
Phase Voltage Sensitivity	6 - 15 GHz		120		deg /Volt
Insertion Phase Temperature Sensitivity	6 - 15 GHz		0.5		deg /°C

### Mechanical Specifications

#### Size

Length	0.64 in [16.26 mm]
Width/Diameter	0.7 in [17.78 mm]
Height	0.29 in [7.37 mm]
Weight	0.056 lbs [25.4 g]

#### Configuration

Input Connector	SMA Female
Output Connector	SMA Female

### Environmental Specifications

#### Temperature

Operating Range	-55 to 85 deg C
Storage Range	-65 to 150 deg C

Temperature Cycle  
Hermetic Seal

ESD Sensitive

MIL-STD-883, Method 101C, Cond B  
Gross Leak MIL-STD-883 Method 1014C1/Fine Leak  
MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc  
ESD Sensitive Material, Transport material in Approved  
ESD bags. Handle only in ESD Workstation.



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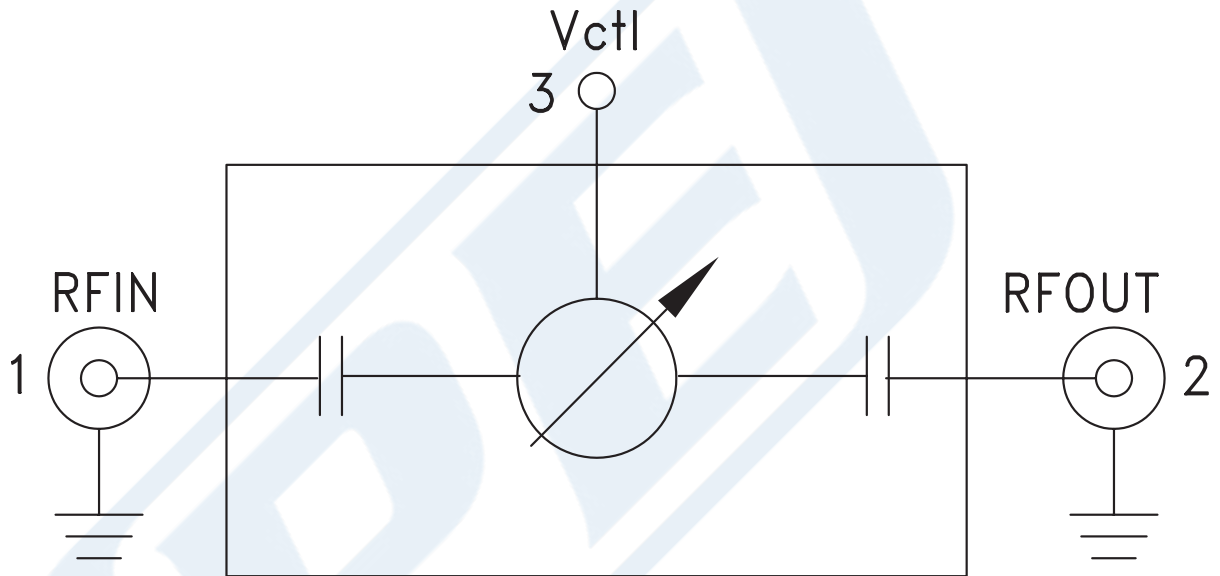
PE82P2001

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

**Plotted and Other Data**

Notes:

**Functional Block Diagram**



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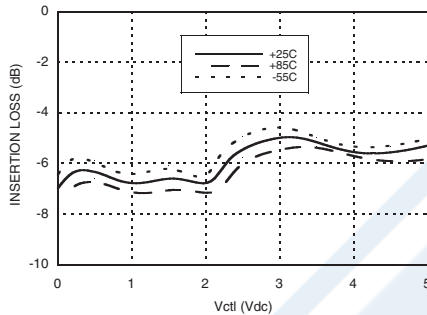
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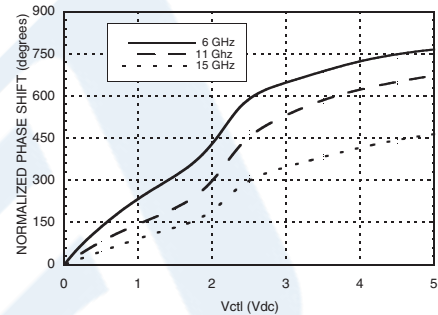
PE82P2001

Typical Performance Data

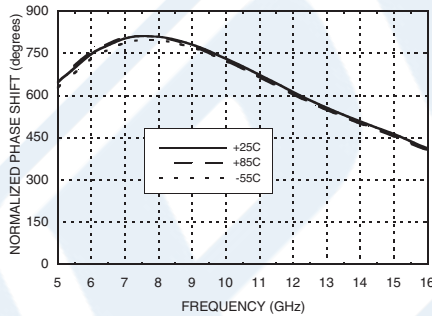
Insertion Loss vs. Control Voltage



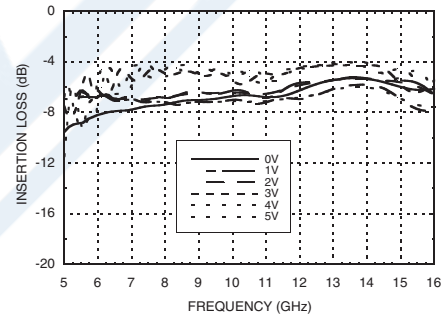
Phase Shift vs. Control Voltage



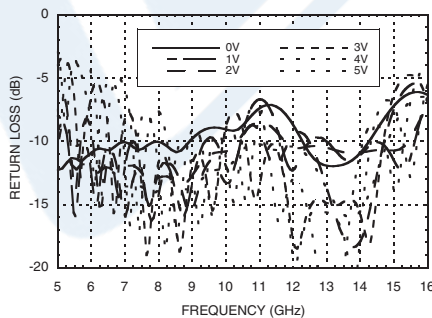
Phase Shift vs. Frequency @ Vctl = 5V (Relative to Vctl = 0V)



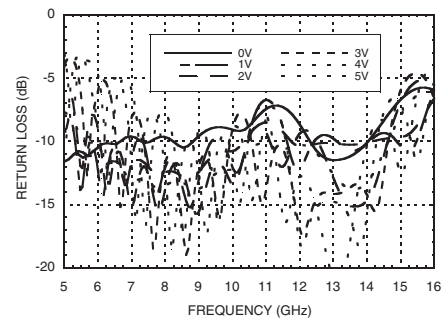
Insertion Loss vs. Frequency



Input Return Loss vs. Frequency, Vctl = 0 to +5V



Output Return Loss vs. Frequency, Vctl = 0 to +5V



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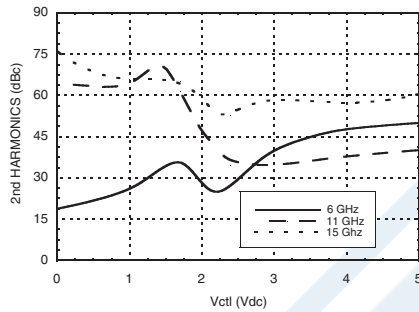


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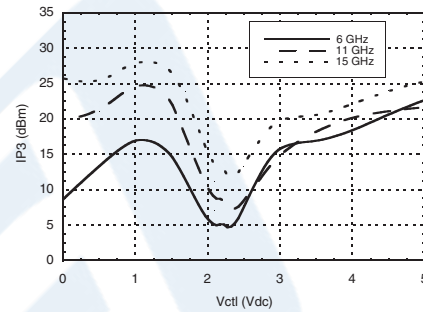
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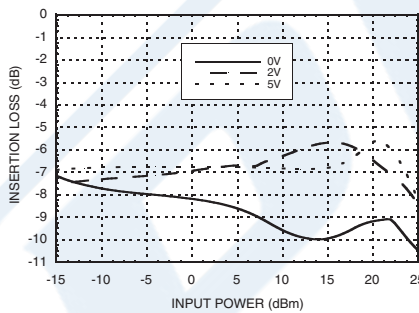
**Second Harmonics vs. Control Voltage,**  
*Pin = -10 dBm*



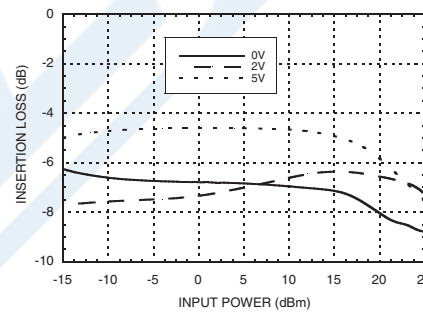
**Input IP3 vs. Control Voltage**



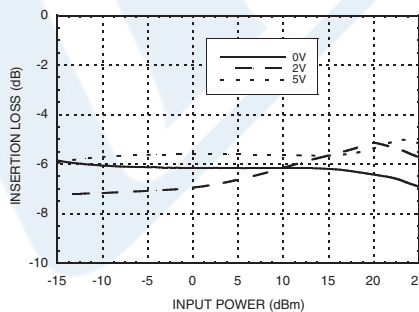
**Insertion Loss vs. Pin @ 7 GHz**



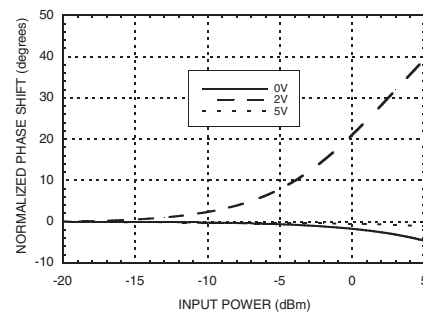
**Insertion Loss vs. Pin @ 11 GHz**



**Insertion Loss vs. Pin @ 15 GHz**



**Phase Shift vs. Pin @ 7 GHz**



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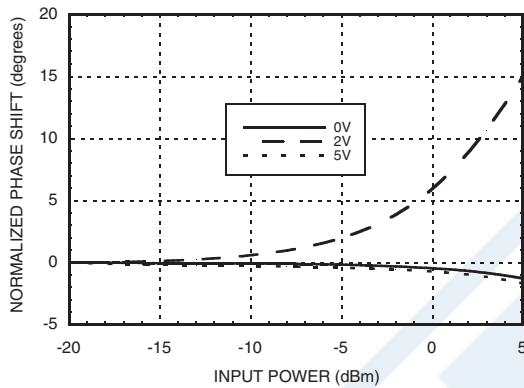


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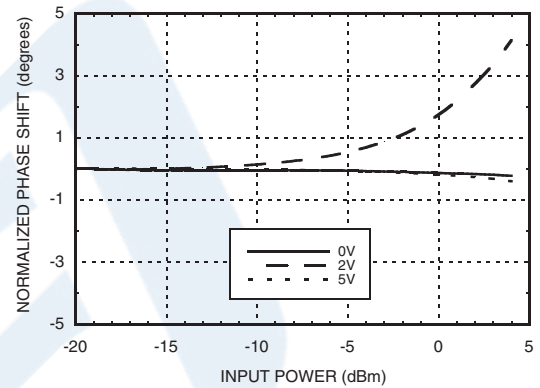
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**Phase Shift vs. Pin @ 11 GHz**



**Phase Shift vs. Pin @ 15 GHz**



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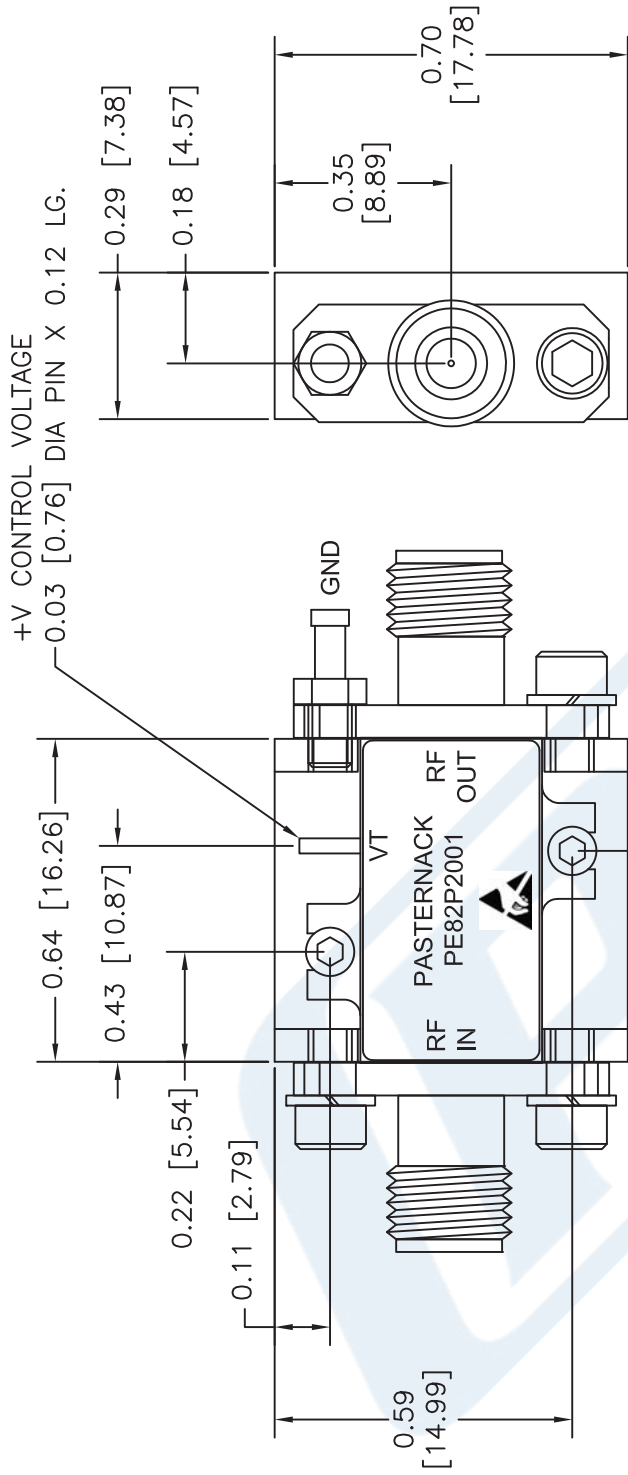
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URL: <https://www.pasternack.com/analog-phase-shifter-15-ghz-sma-120-deg-per-ghz-pe82p2001-p.aspx>



# PE82P2001 CAD Drawing

Analog Phase Shifter, 6 GHz to 15 GHz, With an Adjustable Phase of 120 Deg. Per GHz and SMA



SMA FEMALE  
(Field Replaceable)  
TYP.

Lot No. \_\_\_\_\_  
#0-80 HARDWARE THRU  
0.074 [1.88] DIA THRU  
(REMOVE HARDWARE TO  
MOUNT ASSEMBLY)

NOTE:  
HEAT SINK REQUIRED FOR PROPER OPERATION,  
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

DWG TITLE  
**PE82P2001**

NOTES:  
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.  
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.  
3. DIMENSIONS ARE IN INCHES [mm].

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FSCM NO. 53919

CAD FILE 051816

SCALE N/A

SIZE A

2233