

Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range, 0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm

Phase Shifters and Trimmers Technical Data Sheet

PE82P2009

Features

- Analog Phase Shifter
- 22 GHz to 33 GHz
- Phase Shift 0° to 360° typ
- Insertion Loss 14 dB typ
- Phase Flatness +/- 30° typ
- P0.1dB +15 dBm typ
- Maximum RF Input Power +15 dBm
- 50 Ohm Design
- Single Positive Voltage Control 0 to +10Vdc
- Solder Pins for DC Control Voltage and Ground
- Field Replaceable Female 2.92mm RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Gold 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

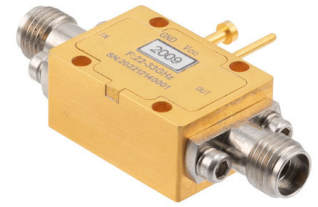
The PE82P2009 is an Analog Phase Shifter module that operates across a broadband frequency from 22 GHz to 33 GHz and supports a single positive voltage control of 0 to +14 Vdc. The design offers a continuously variable monotonic phase shift response that ranges from 0° to 360° while maintaining consistent insertion loss versus phase shift characteristics. The 50 Ohm design exhibits impressive typical performance which includes 14 dB insertion loss, +/-30° phase flatness, a 0.1 dB compression point (P0.1dB) of +15 dBm, and a maximum RF input power level of +15 dBm. The rugged and small size aluminum package is gold plated and supports female 2.92mm RF connectors and solder pins for DC control and ground. 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	22		33	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Control Voltage	0	14		Volts
Input VSWR		3:1	3.5:1	
Output VSWR		3.5:1	4:1	
Insertion Loss*		14	23	dB
Phase Flatness		±30		Degrees
IL Temperature Coefficient		0.003		dB/deg C
0.1 dB Compression Power		15		dBm
DC Current			1	mA
Input Power, CW			15	dBm

*at 0V DC Control

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Absolute Maximum Rating

Parameter	Rating
Control Voltage	0V to +18V
RF Input power	+15dBm

Mechanical Specifications

Size

Length	0.8 in [20.32 mm]
Width/Diameter	0.56 in [14.22 mm]
Height	0.38 in [9.65 mm]
Weight	0.03 lbs [13.61 g]
Body Material and Plating	Aluminum, Gold

Configuration

Input Connector	2.92mm Female
Input Connector Specification	Field Replaceable
Output Connector	2.92mm Female
Output Connector Specification	Field Replaceable

Environmental Specifications

Temperature

Operating Range	-40 to 85 deg C
Storage Range	-50 to 105 deg C

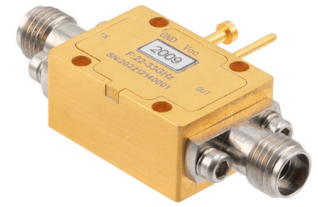
Humidity	100% RH at 35°C, 95% RH at 40°C
Shock	20G for 11 msec half sine wave, 3 axis both directions
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Altitude	30,000 Feet

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

Plotted and Other Data

Notes:

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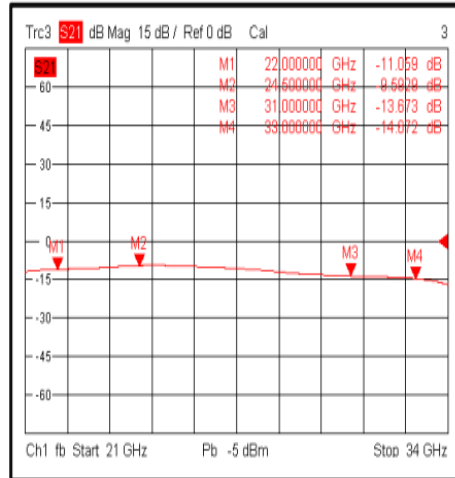
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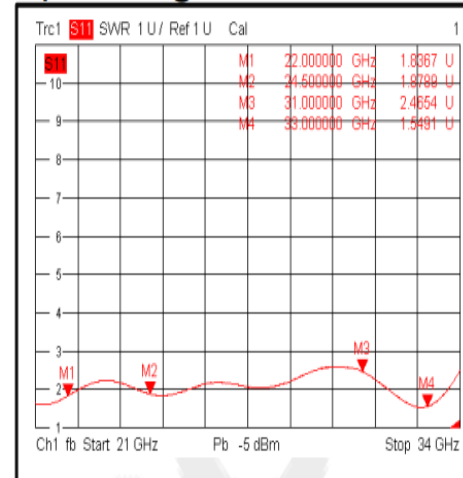
PE82P2009

Typical Performance Data

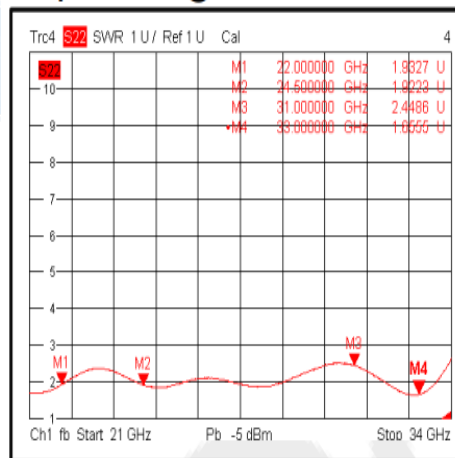
Insertion Loss @ +25°C



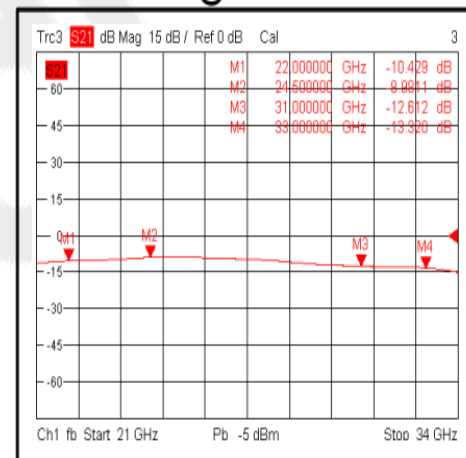
Input VSWR @ +25°C



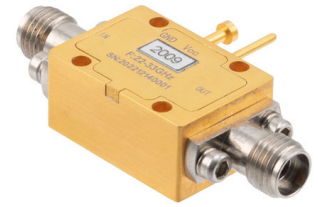
Output VSWR @ +25°C



Insertion Loss @ -40°C



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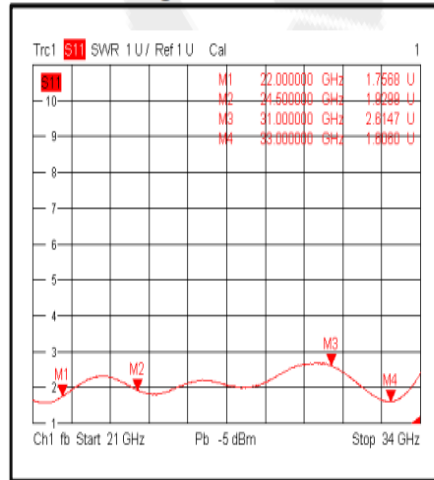


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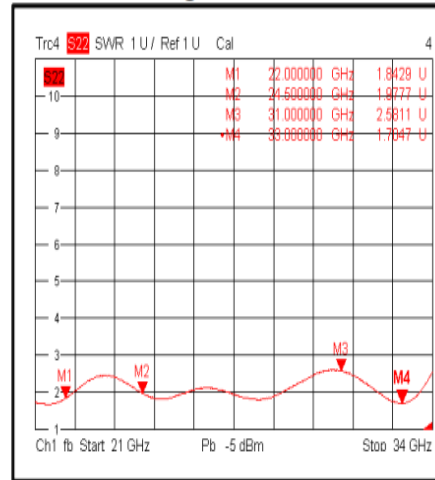
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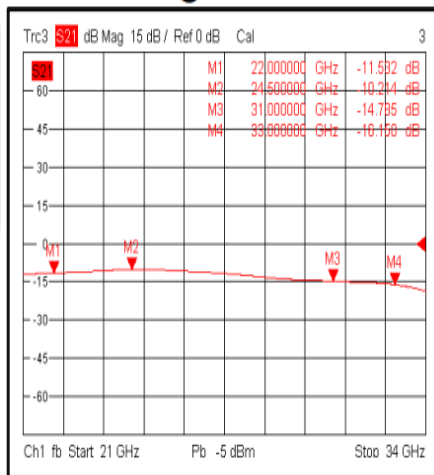
Input VSWR @ -40°C



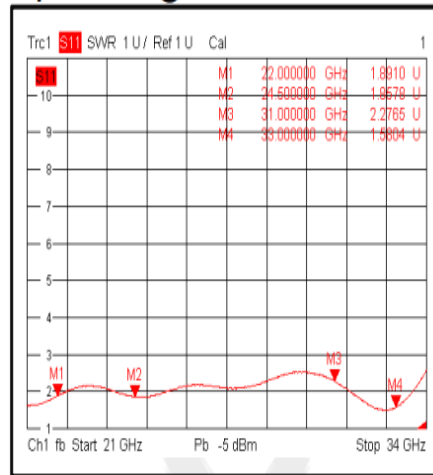
Output VSWR @ -40°C



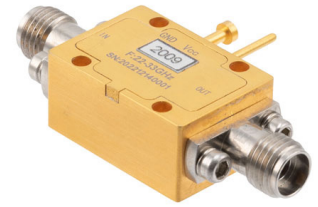
Insertion Loss @ +85°C



Input VSWR @ +85°C



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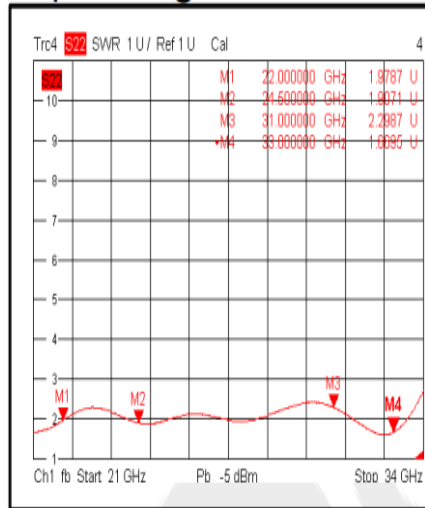


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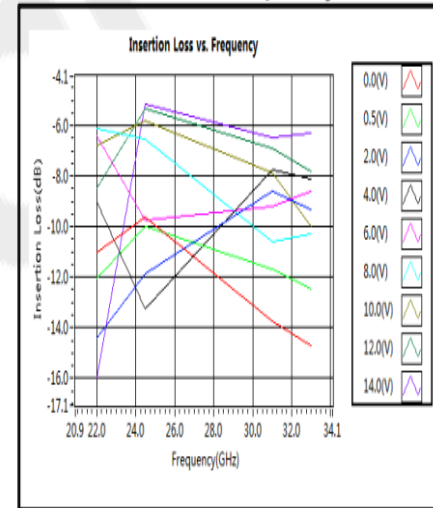
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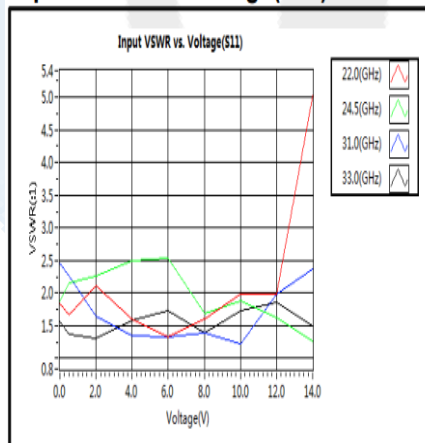
Output VSWR @ +85°C



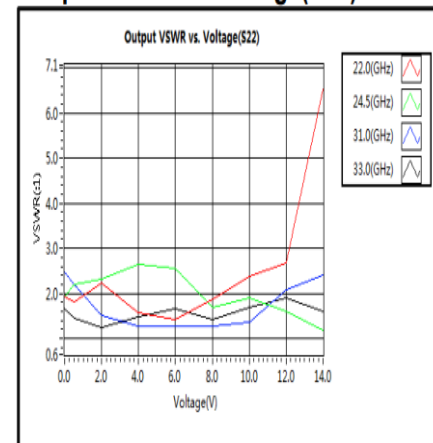
Insertion Loss vs. Frequency



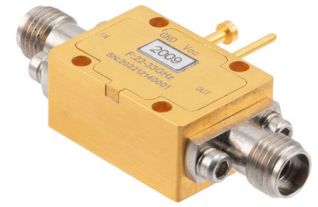
Input VSWR vs. Voltage(S11)



Output VSWR vs. Voltage(S22)



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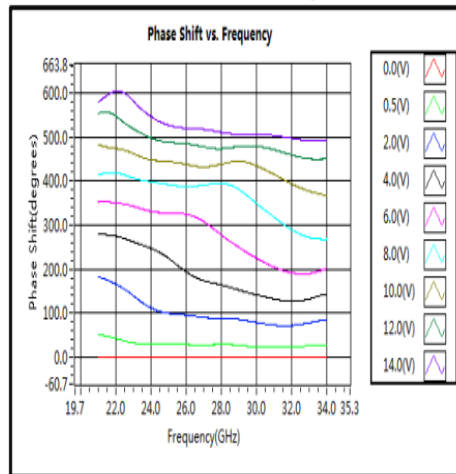


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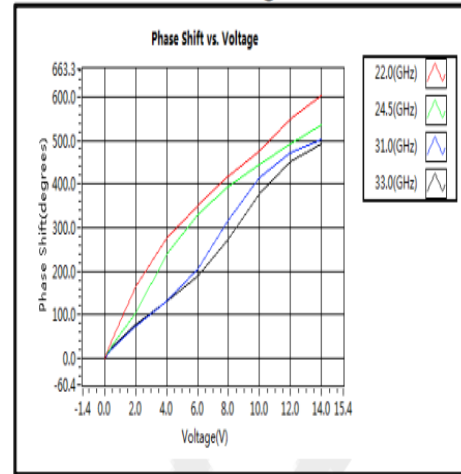
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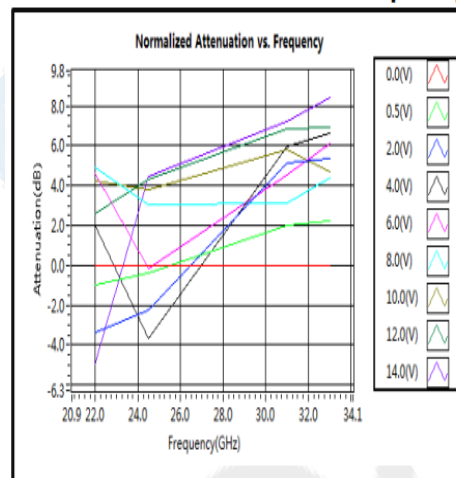
Phase Shift vs. Frequency



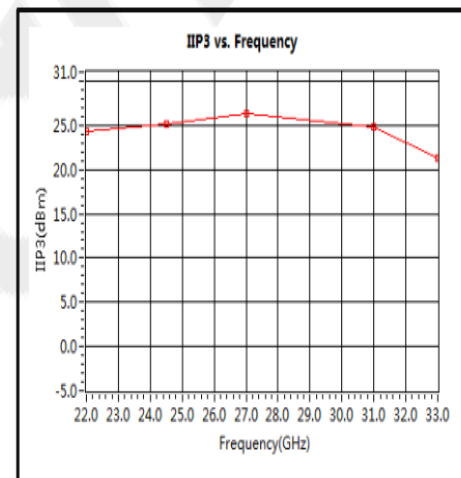
Phase Shift vs. Voltage



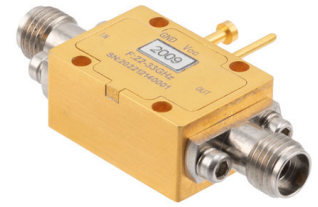
Normalized Attenuation vs. Frequency



IIP3



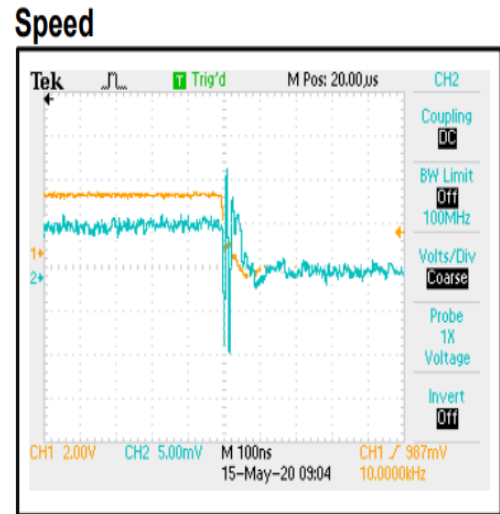
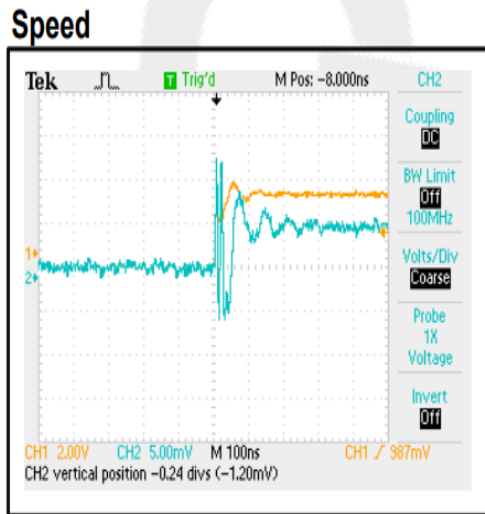
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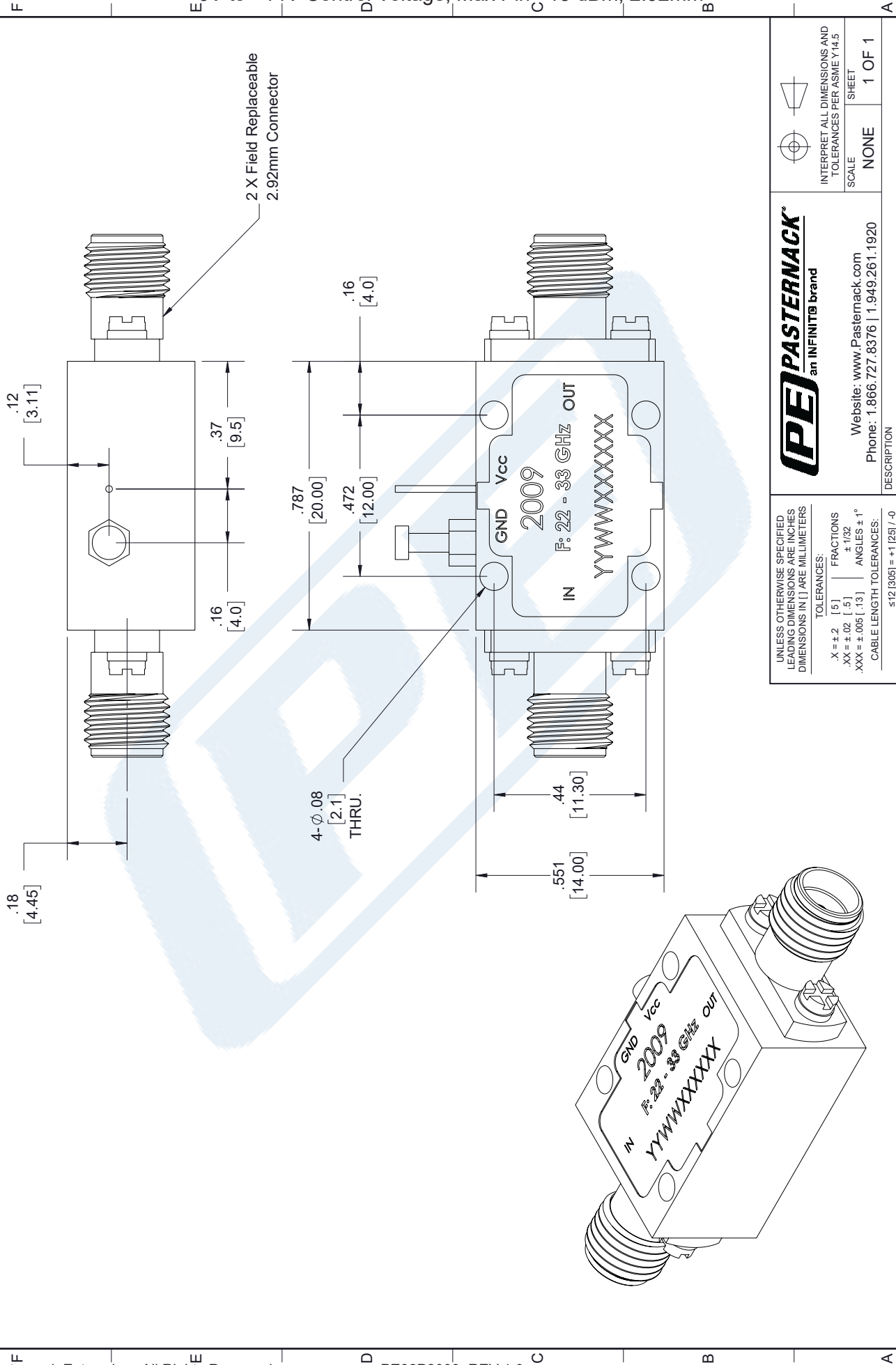
Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range, 0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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URL: <https://www.pasternack.com/analog-phase-shifter-33-ghz-0-0-degrees-2.92mm-pe82p2009-p.aspx>

PE82P2009 CAD Drawing

Analog Phase Shifter, 22 GHz to 33 GHz, 360 degree Phase Range,
0V to +14V Control Voltage, Max Pin +15 dBm, 2.92mm



UNLESS OTHERWISE SPECIFIED
LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES:
X = ± .2 [5] FRACTIONS
XX = ± .02 [.5] ± 1/32
XXX = ± .005 [.13] ANGLES ± 1°

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

ALL DIMENSIONS ARE FOR REFERENCE ONLY
AND SUBJECT TO CHANGE WITHOUT NOTICE



Website: www.Pasternack.com
Phone: 1.866.727.8376 | 1.949.261.1920

DESCRIPTION

22 GHz to 33 GHz 360 ° Voltage Controlled Phase Shifter, 2.92mm

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