



6 Bit TTL Programmable Phase Shifter, 8 GHz to 12 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, +30 dBm Max Pin, SMA

Phase Shifters and Trimmers Technical Data Sheet

PE82P5023

Features

- Programmable Phase Shifter
- 8 GHz to 12 GHz
- Phase Shift 0° to 360° typ
- TTL Digital Control
- 6 Control Bits
- Step Size 5.625° typ
- Insertion Loss 9.3 dB typ
- Phase Flatness +/- 5° typ
- Switching Speed 150 usec typ
- Input P1dB +25 dBm typ
- Maximum RF Input Power +30 dBm
- 50 Ohm Design
- DC Bias -5V @ 25 mA
- Micro-D9 Female Connector
- Field Replaceable Female SMA RF Connectors
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Gold 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 PE82P5023 is a 6 Bit Digitally Controlled Programmable Phase Shifter that operates across a frequency band from 8 GHz to 12 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 9.3 dB insertion loss, +/- 5° phase flatness, 150 nsec 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 25 mA DC current. The low profile pin package is aluminum with Gold 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	8		12	GHz
Impedance		50		Ohms
Phase Shift		360		Degrees
Phase LSB Step		5.625		Degrees
Input VSWR		1.7:1	3:1	
Insertion Loss*		10	12	dB
Phase Flatness		±7	±18	Degrees
IL Temperature Coefficient		0.008		dB/deg C
Input 1 dB Compression Point		25		dBm
Input IP3		41		dBm
Switching Speed		150		ns
DC Voltage		-5		Volts
DC Current		25		mA

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Input Power, CW 30 dBm
Control Bits 6

*at 0V DC Control

Absolute Maximum Rating

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

Mechanical Specifications

Size

Length	1.417 in [35.99 mm]
Width/Diameter	0.945 in [24 mm]
Height	0.433 in [11 mm]
Weight	0.05 lbs [22.68 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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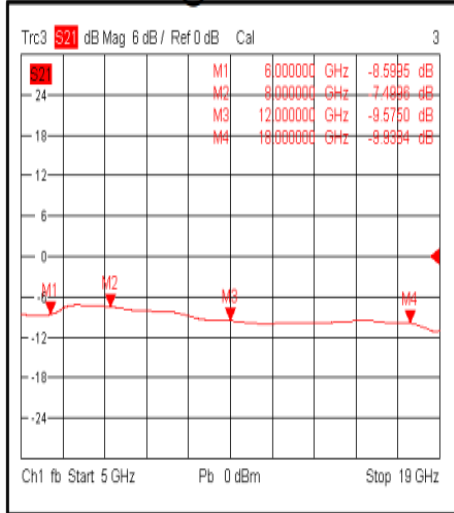


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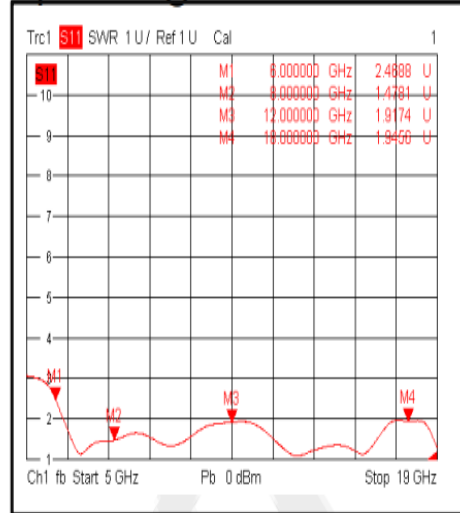
PE82P5023

Typical Performance Data

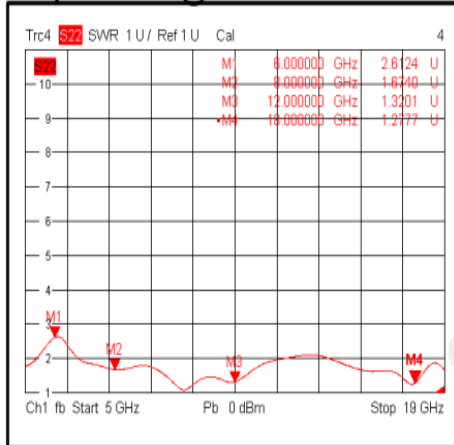
Insertion Loss @ +25°C



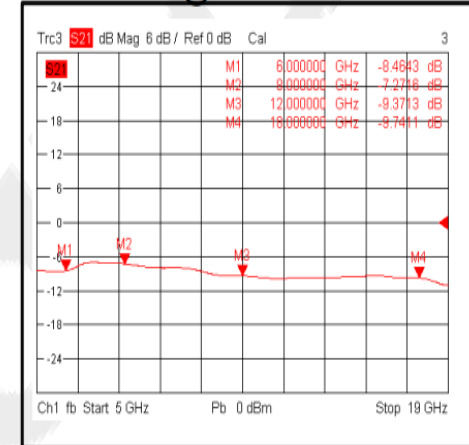
Input VSWR @ +25°C



Output VSWR @ +25°C



Insertion Loss @ -40°C



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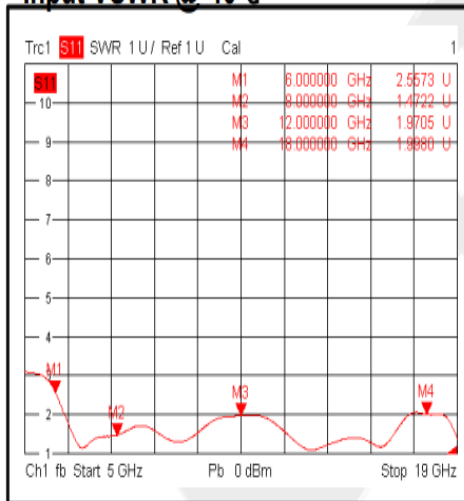
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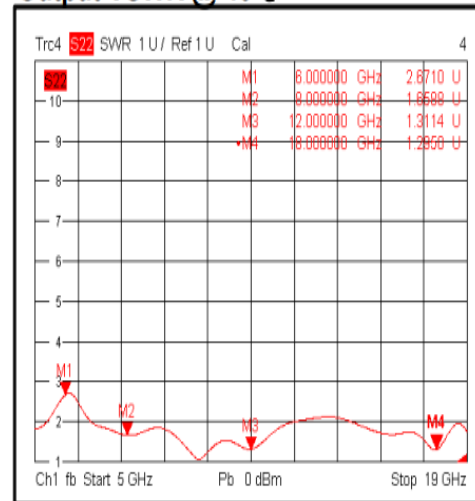
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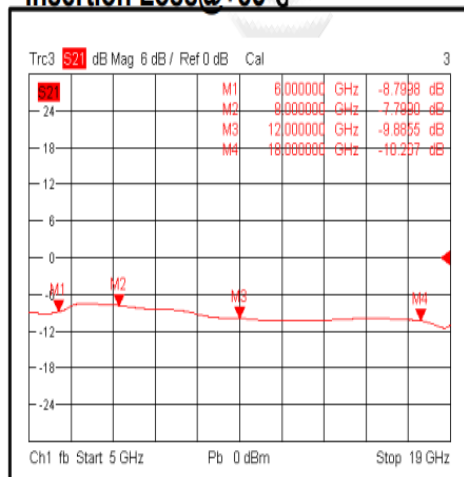
Input VSWR @-40°C



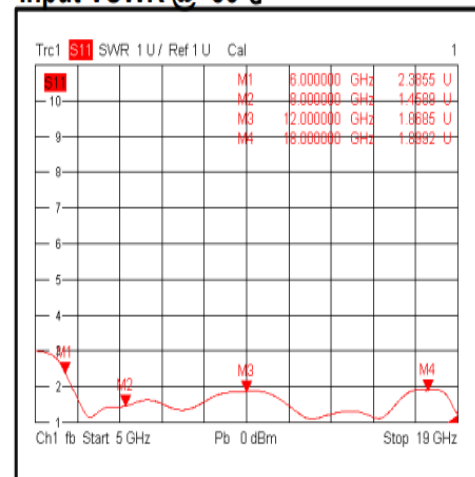
Output VSWR @-40°C



Insertion Loss @+85°C



Input VSWR @+85°C



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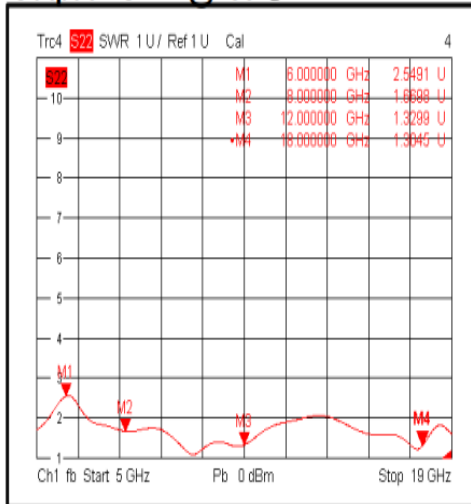
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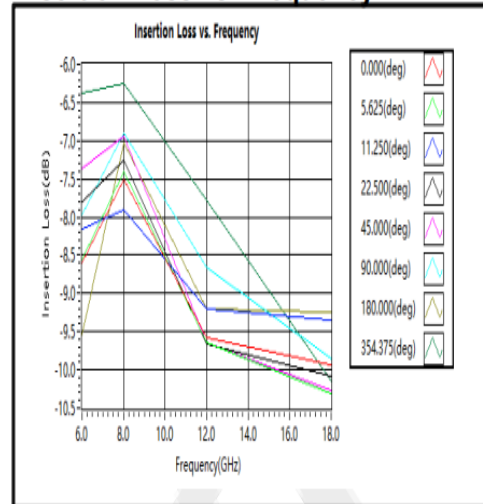
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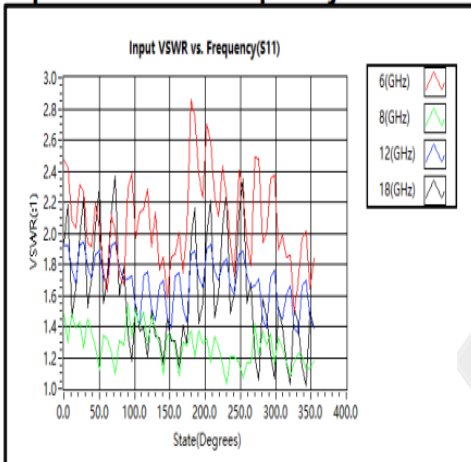
Output VSWR @+85°C



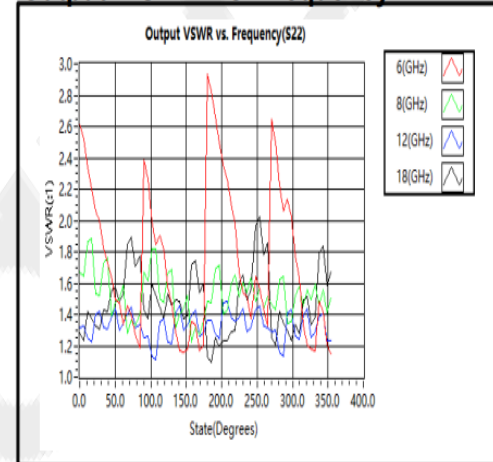
Insertion Loss vs. Frequency



Input VSWR vs. Frequency



Output VSWR vs. Frequency



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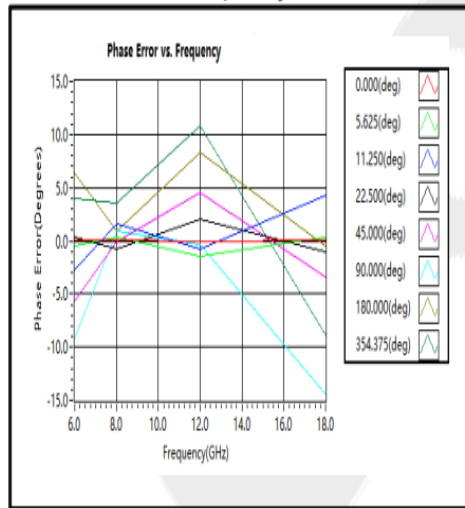
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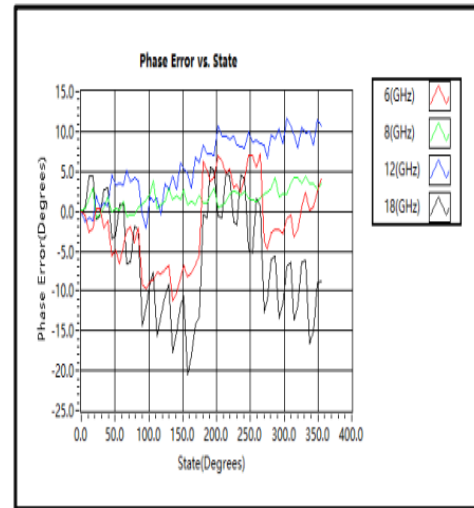
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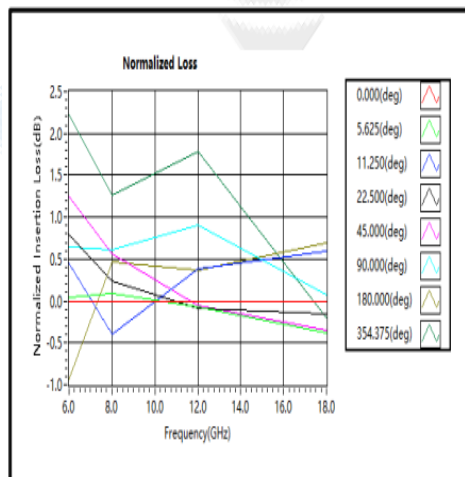
Phase Error vs. Frequency



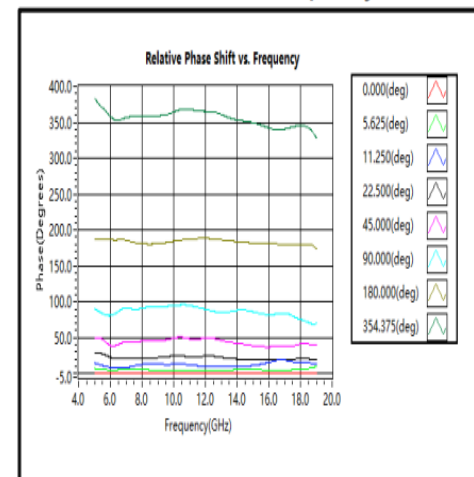
Phase Error vs. State



Normalized Loss. All States



Relative Phase Shift vs. Frequency



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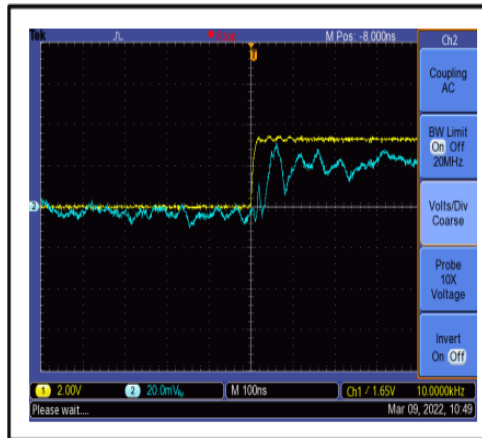
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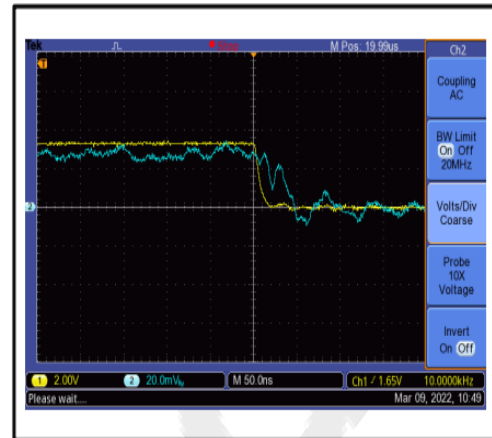
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Speed



Speed



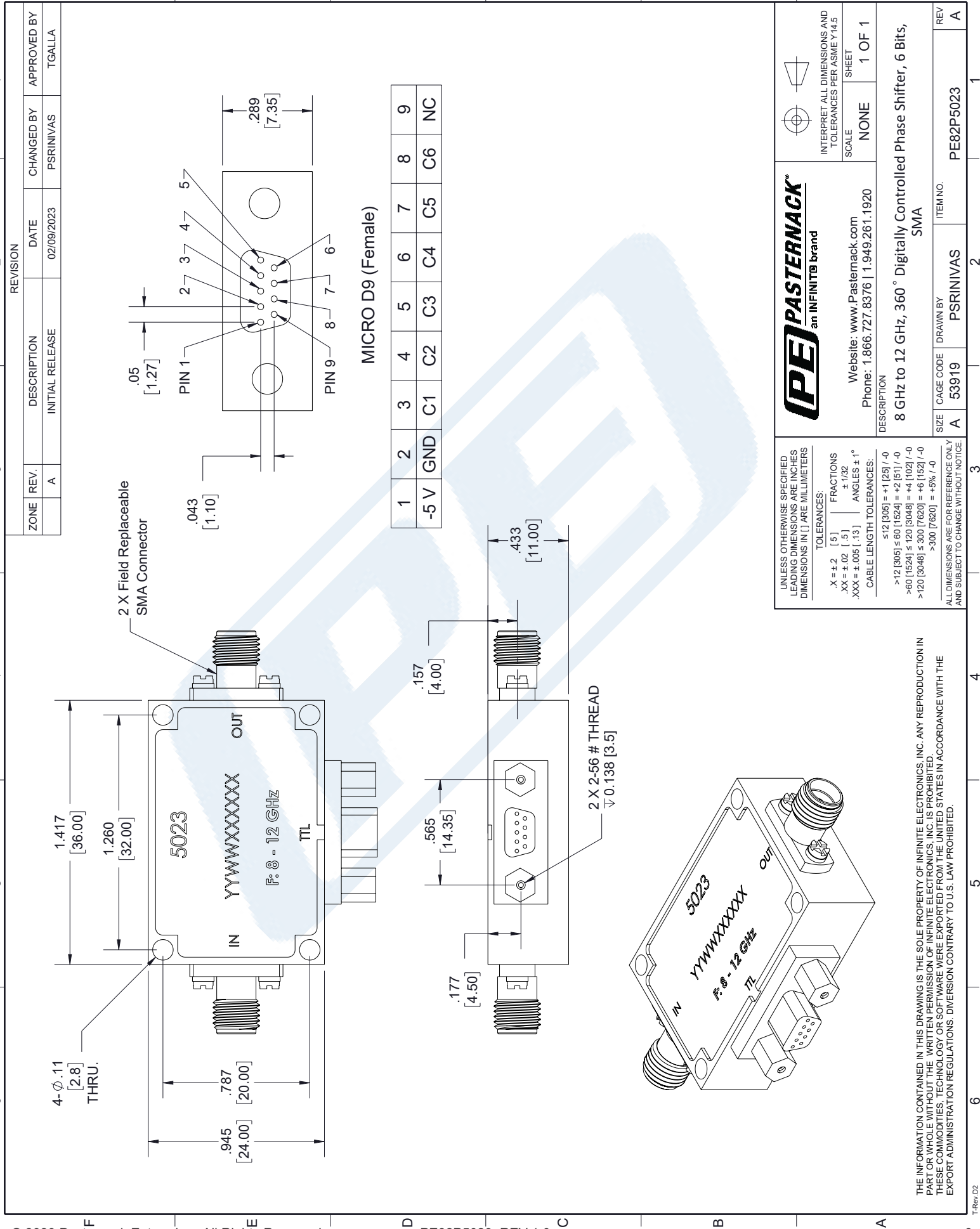
6 Bit TTL Programmable Phase Shifter, 8 GHz to 12 GHz, 360 degree Phase Range, 5.625 degree Control Step Size, +30 dBm Max Pin, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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URL: <https://www.pasternack.com/programmable-phase-shifter-18-ghz-0-0-degrees-sma-pe82p5023-p.aspx>

PE82P5023 CAD Drawing

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

DESCRIPTION
8 GHz to 12 GHz, 360 ° Digitally Controlled Phase Shifter, 6 Bits, SMA

SIZE	CAGE CODE	DRAWN BY	ITEM NO.	REV
A	53919	PSRINIVAS	PE82P5023	A



INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5
SCALE NONE
SHEET 1 OF 1