

8 GHz to 12 GHz Absorptive Digital Step Attenuator, 63 dB, 6 Bits, 1 dB Step Size, Field Replaceable SMA

PE70A5014



Features

- Absorptive Programmable Voltage Controlled Attenuator
- 8 GHz to 12 GHz
- Attenuation Range 0 to 63 dB
- 1 dB Step Size
- 6 Bits
- Digital TTL Logic Control
- Insertion Loss 5.3 dB
- Attenuation Flatness +/- 2.5 dB typ
- Input P0.1 dB Compression Power +30 dBm typ
- Input IP3 45 dBm typ
- Max RF input Power (CW) +30 dBm
- Switching Speed 150 nsec typ
- Dual DC Supply +5V/-5V @ 130mA/130mA
- 50 Ohm Design
- Field Replaceable Female SMA RF Connectors
- Micro-D9 Female connector for DC Bias and Command Control
- 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 Positive Control Line Per Bit

Applications

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

Description

The PE70A5014 is an Absorptive 6 Bit Digitally Controlled Programmable Attenuator that operates across a frequency band from 8 GHz to 12 GHz. The 50 Ohm design supports TTL control logic and has an attenuation range that covers 0 to 63 dB in 1 dB steps. Attenuation steps are 1, 2, 4, 8, 16, and 32 dB. Insertion loss is 5.3 dB typical with a maximum RF input power of +30 dBm. Additional typical performance includes attenuation flatness of +/- 2.5 dB, Input P0.1dB compression power of +30 dBm, input IP3 of 45 dBm, and switching speed of 150 nsec. The unit requires a dual bias supply of +5V/-5V with DC current of 130mA/130 mA. 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	Min	Typ	Max	Unit
Frequency Range	8		12	GHz
Impedance		50		Ohms
Attenuation Range		63		
Insertion Loss		5.3	6.5	dB
VSWR		1.4:1	1.8:1	
Input at 0.1 dB Compression Point		+30		dB
Input IP3			+45	dBm
Survival Power Average -40 to +85 deg C				
DC Voltage		+5		Vdc
TTL Low for Thru Path		0 to 0.8V		Vdc
TTL High for Attenuation		2-5V		Vdc
Step Size		1		dB
Switching Speed		150		ns

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Electrical Specifications (Values at +25°C, sea level)

Description	Min	Typ	Max	Unit
RF Input Power			30	dBm
DC Voltage		±5		Volts
Control Bits		6		Bits
Bias Current		130		mA
IL Temperature Coefficient		0.005		dB/deg C

*Referenced to Insertion Loss

Absolute Maximum Rating

Parameter	Rating
Biasing	+5V±10%/-5V±10%
RF Input power	+30dBm

Mechanical Specifications

Size

Length	1.5 in [38.1 mm]
Width	0.37 in [9.4 mm]
Height	0.79 in [20.07 mm]
Weight	0.05 lbs [22.68 g]
Connector 1	Field Replaceable SMA Female
Connector 2	Field Replaceable SMA Female

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:

- Values at 25 °C, sea level

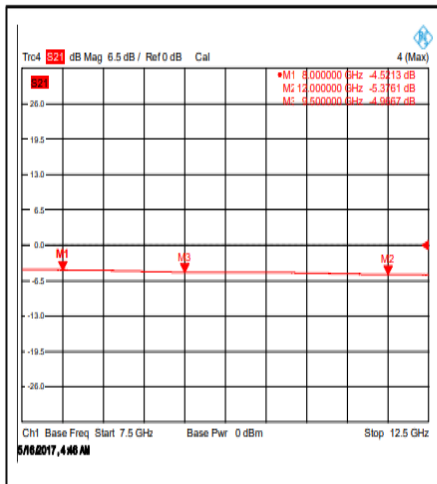
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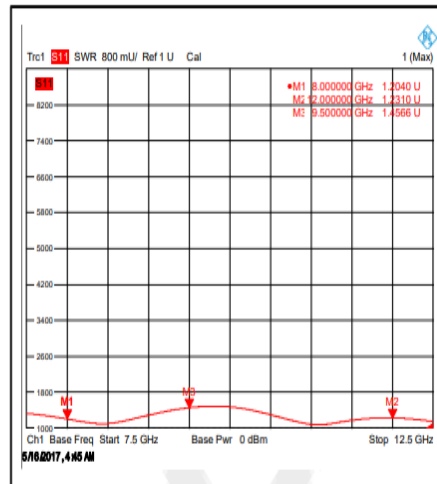
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Typical Performance Data

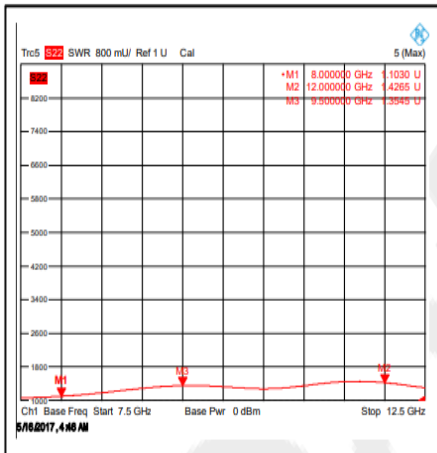
Insertion Loss @+25°C



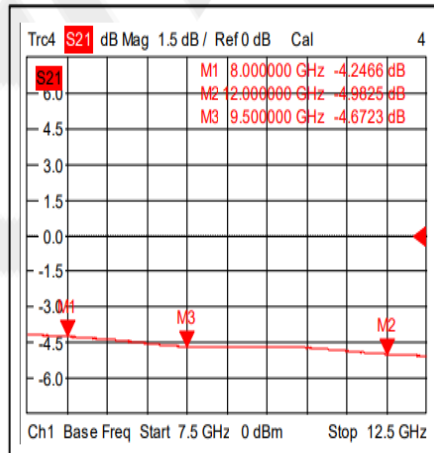
Input VSWR @+25°C



Output VSWR @+25°C



Insertion Loss @-40°C

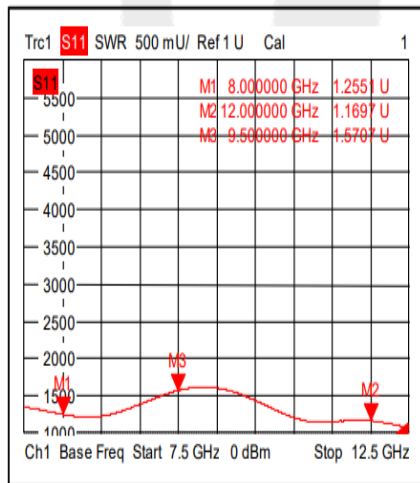


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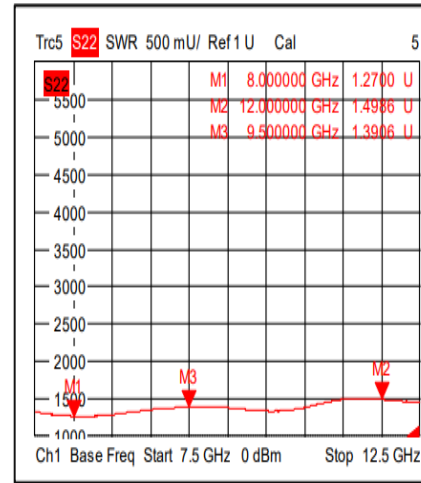
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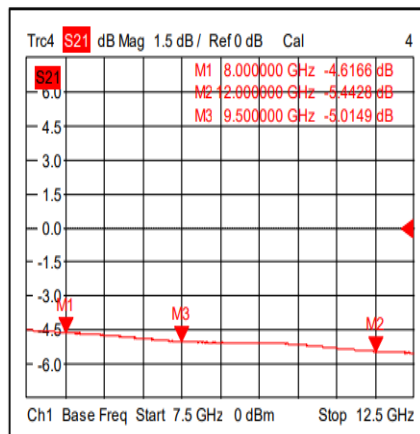
Input VSWR @-40°C



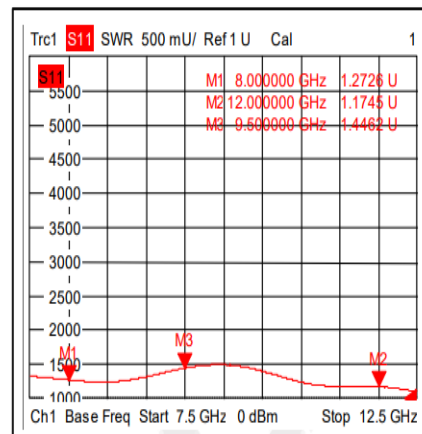
Output VSWR @-40°C



Insertion Loss @+85°C



Input VSWR @+85°C

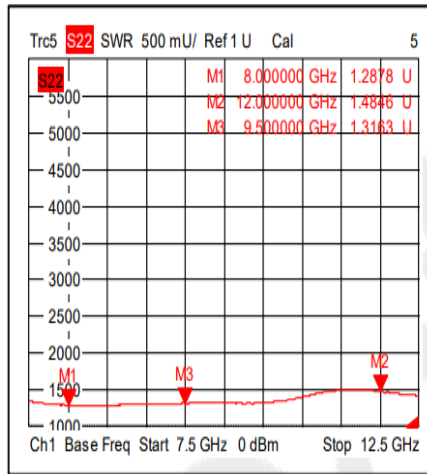


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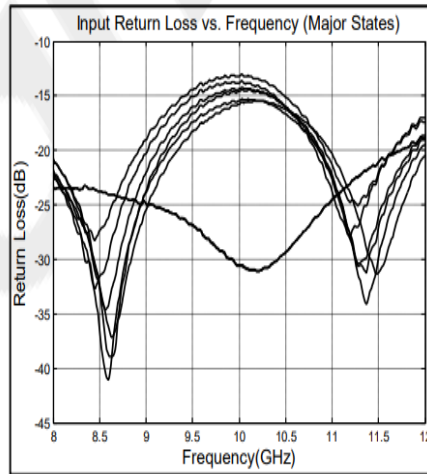


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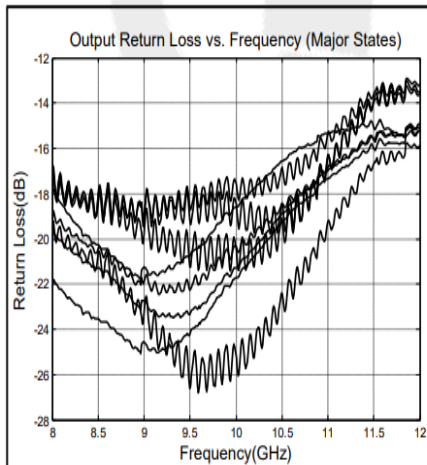
Output VSWR @+85°C



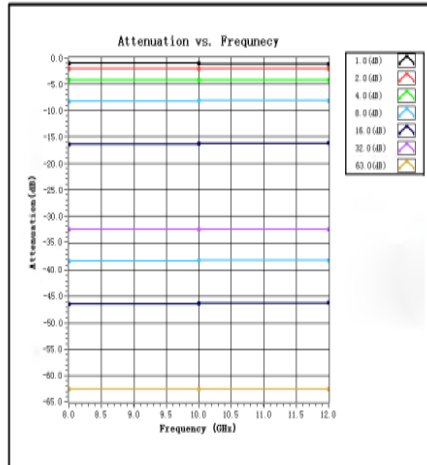
Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Attenuation Flatness vs. Frequency

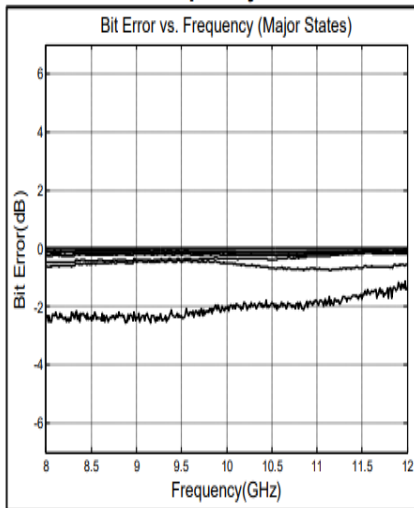


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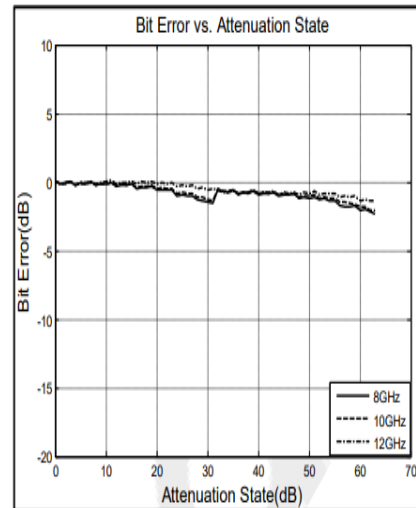
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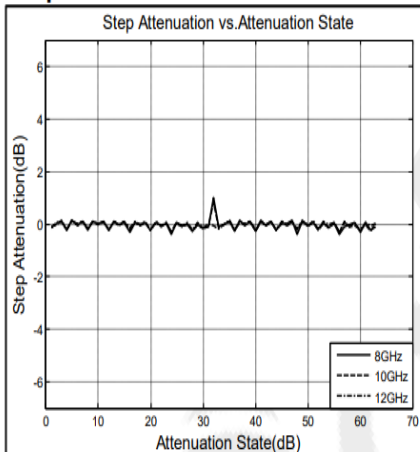
Bit Error vs. Frequency



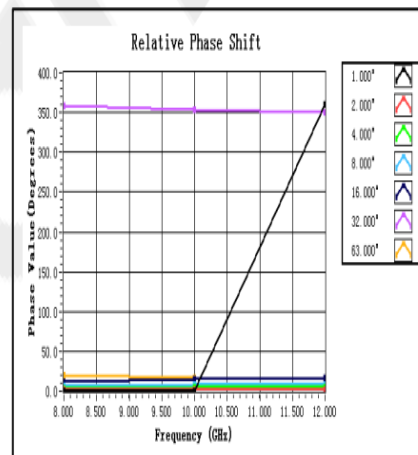
Bit Error vs. Attenuation State



Step Attenuation vs. Attenuation State

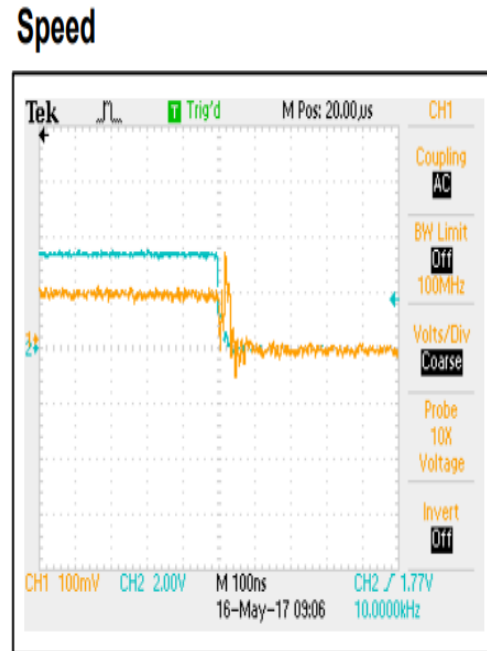
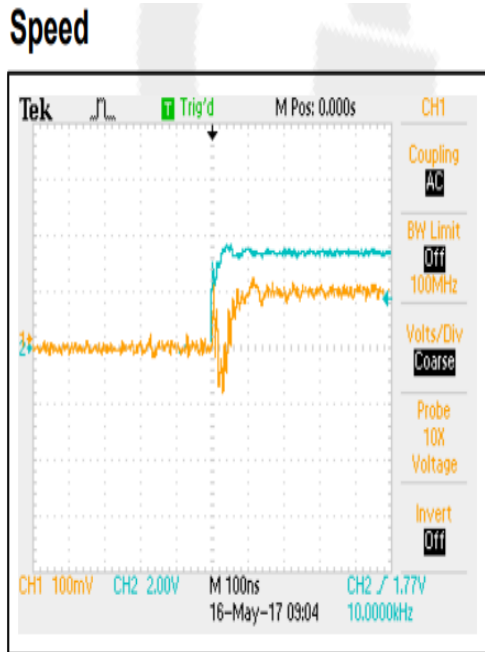


Relative Phase Shift



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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: [8 GHz to 12 GHz Absorptive Digital Step Attenuator, 63 dB, 6 Bits, 1 dB Step Size, Field Replaceable SMA PE70A5014](https://www.pasternack.com/bench-top-63db-ttl-controlled-sma-female-sma-female-30-dbm-attenuator-pe70a5014-p.aspx)

URL: <https://www.pasternack.com/bench-top-63db-ttl-controlled-sma-female-sma-female-30-dbm-attenuator-pe70a5014-p.aspx>

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PE70A5014 CAD Drawing

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