

1 MHz to 43.5 GHz Absorptive Digital Control Attenuator, 31.5 dB, 6 Bits, 0.5 dB Step Size, Field Replaceable 2.92mm

PE70A5015



Features

- Absorptive Programmable Voltage Controlled Attenuator
- 1 MHz to 43.5 GHz
- Attenuation Range 0 to 31.5 dB typ
- 0.5 dB Step Size
- 6 Bits
- Digital TTL Logic Control
- Insertion Loss 7 dB typ
- Attenuation Flatness +/- 0.6 dB typ
- Input P0.1 dB Compression Power +26 dBm typ
- Input IP3 41 dBm
- Max RF Input Power (CW) +27 dBm
- Switching Speed 200 nsec typ
- DC Supply +5V/-5V @ 10 mA/10 mA
- 50 Ohm Design
- Field Replaceable 2.92mm Female 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 and Commercial Communications
- Military Electronic Systems
- Research & Development

Description

The PE70A5015 is an Absorptive 6 Bit Digitally Controlled Programmable Attenuator that operates across a wide frequency band from 1 MHz to 43.5 GHz. The 50 Ohm design supports TTL control logic and has an attenuation range that covers 0 to 31.5 dB in 0.5 dB steps. Attenuation steps are 0.5, 1, 2, 4, 8, and 16 dB. Insertion loss is 6.5 dB typical with a maximum RF input power of +27 dBm. Additional typical performance includes attenuation flatness of +/- 0.6 dB, Input P0.1dB compression power of +26 dBm, input IP3 of 41.5 dBm, and switching speed of 200 nsec. The unit requires a DC bias supply of +5V with DC current of 10mA max. The low profile pin package is aluminum with Gold plating and supports field replaceable 2.92mm 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	0.001		43.5	GHz
Impedance		50		Ohms
Attenuation Range		31.5		
Insertion Loss		7	10	dB
VSWR		1.7:1	2.2:1	
Input at 0.1 dB Compression Point		+26		dB
Input IP3			+41	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		0.5		dB
Switching Speed		200		ns

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

Description	Min	Typ	Max	Unit
RF Input Power			27	dBm
Control Bits		6		Bits
Bias Current			10/10	mA
IL Temperature Coefficient		0.005		dB/deg C

*Referenced to Insertion Loss

Absolute Maximum Rating

Parameter	Rating
Biasing	+5V±10%
RF Input power	+27dBm

Mechanical Specifications

Size

Length	1.46 in [37.08 mm]
Width	0.37 in [9.4 mm]
Height	1.1 in [27.94 mm]
Weight	0.05 lbs [22.68 g]
Connector 1	Field Replaceable 2.92mm Female
Connector 2	Field Replaceable 2.92mm 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

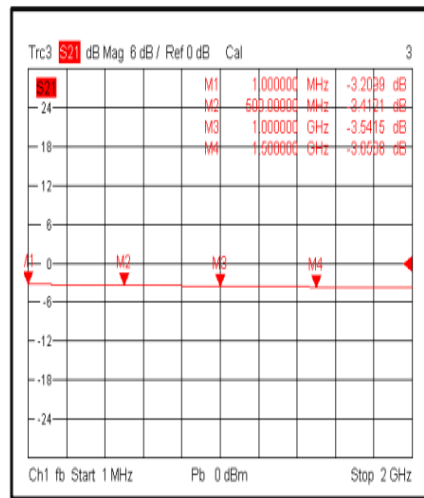
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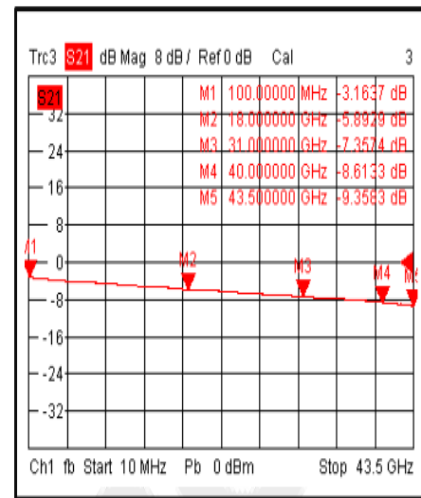
PE70A5015

Typical Performance Data

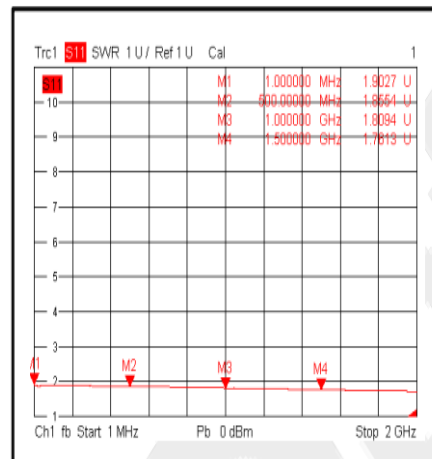
Insertion Loss(1MHz-1.5GHz) @+25°C



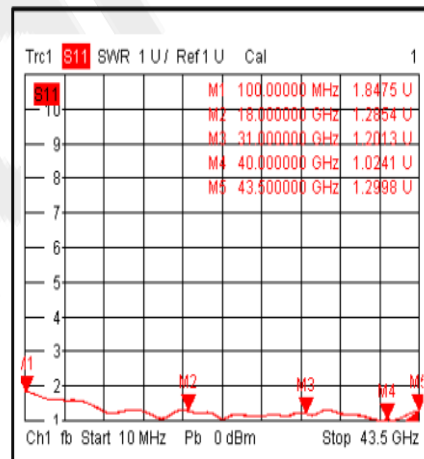
Insertion Loss(100MHz-43.5GHz) @+25°C



Input VSWR(1MHz-1.5GHz) @+25°C



Input VSWR(100MHz-43.5GHz) @+25°C

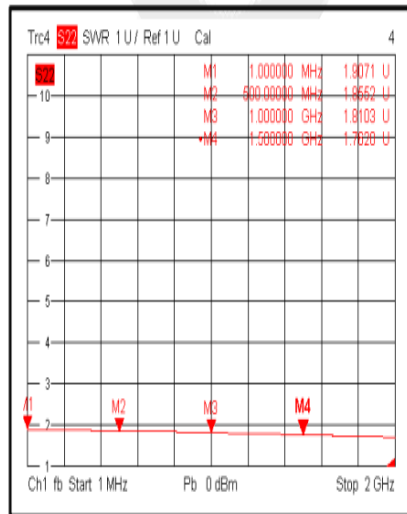


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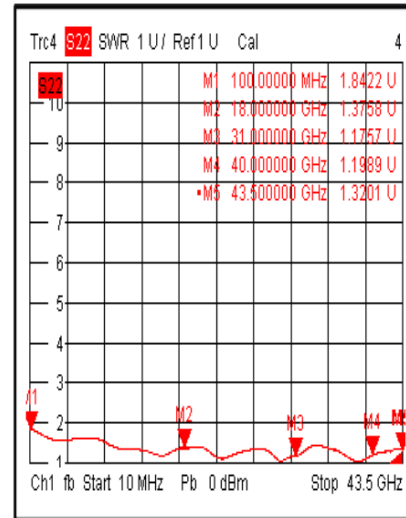


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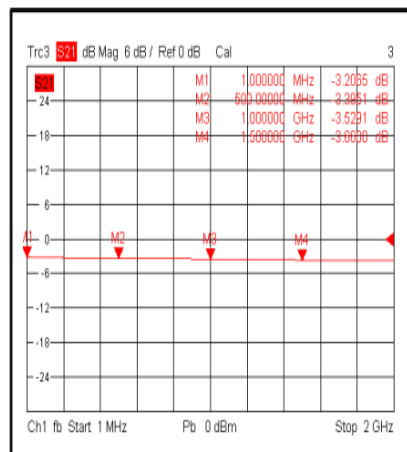
Output VSWR(1MHz-1.5GHz) @+25°C



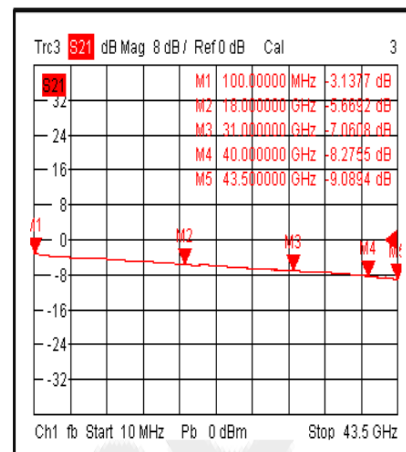
Output VSWR(100MHz-43.5GHz) @+25°C



Insertion Loss(1MHz-1.5GHz) @-40°C



Insertion Loss(100MHz-43.5GHz) @-40°C

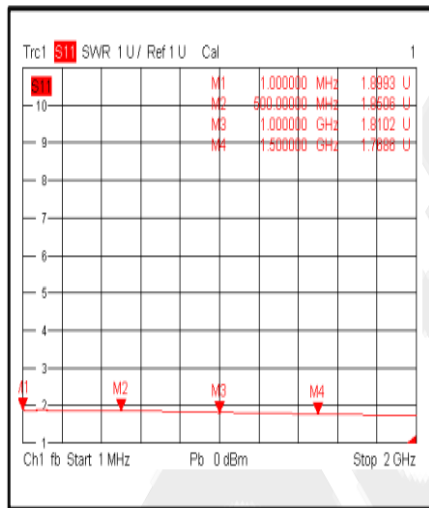


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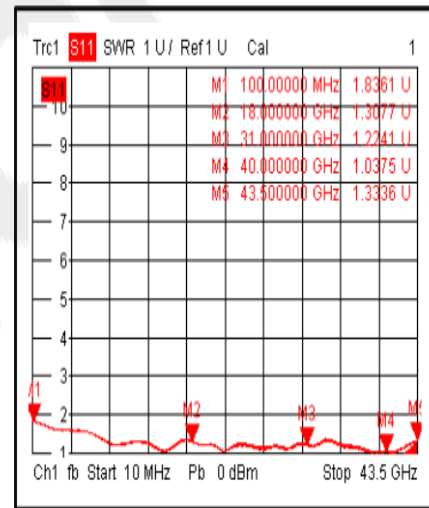
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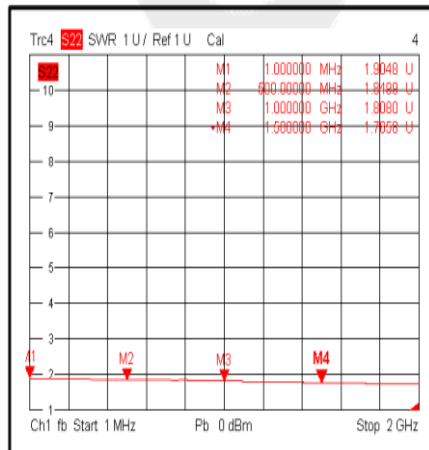
Input VSWR(1MHz-1.5GHz) @-40°C



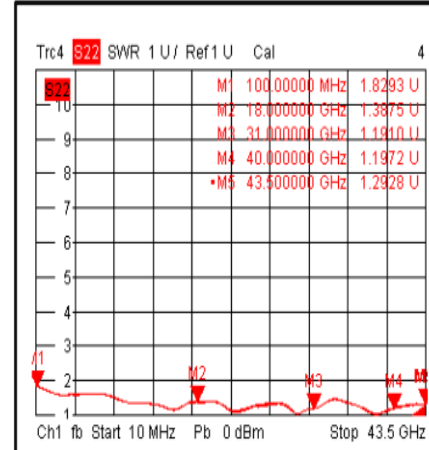
Input VSWR(100MHz-43.5GHz) @-40°C



Output VSWR(1MHz-1.5GHz) @-40°C



Output VSWR(100MHz-43.5GHz) @-40°C

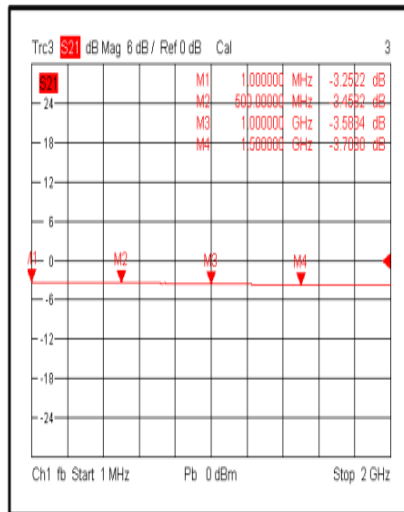


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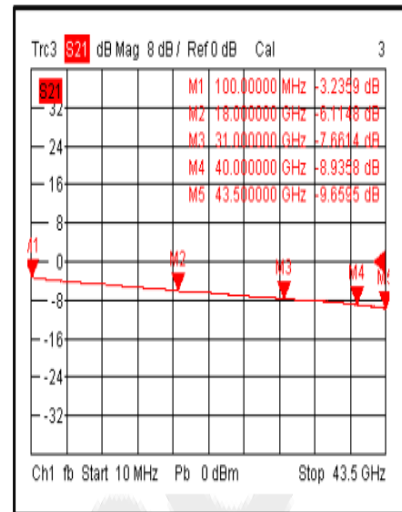


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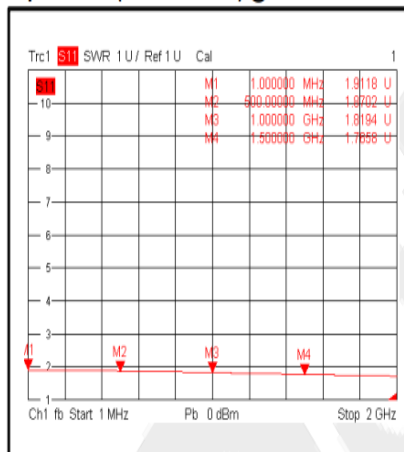
Insertion Loss(1MHz-1.5GHz) @+85°C



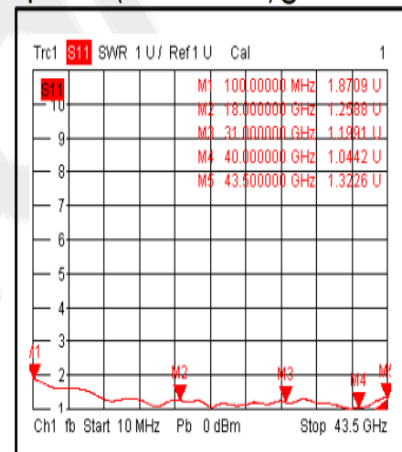
Insertion Loss(100MHz-43.5GHz) @+85°C



Input VSWR(1MHz-1.5GHz) @+85°C



Input VSWR(100MHz-43.5GHz) @+85°C

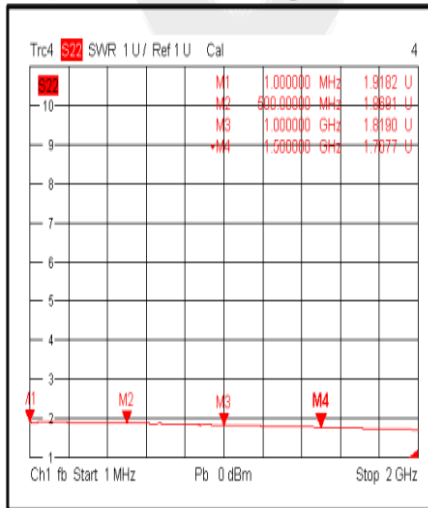


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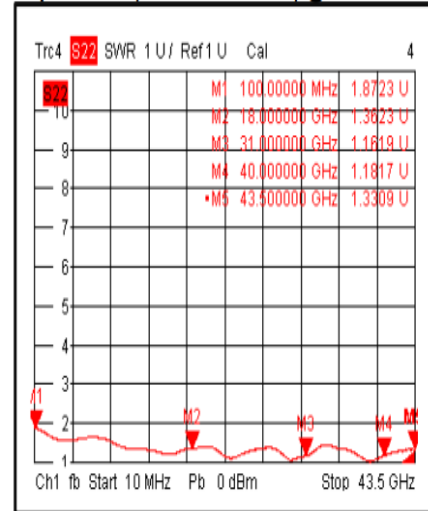


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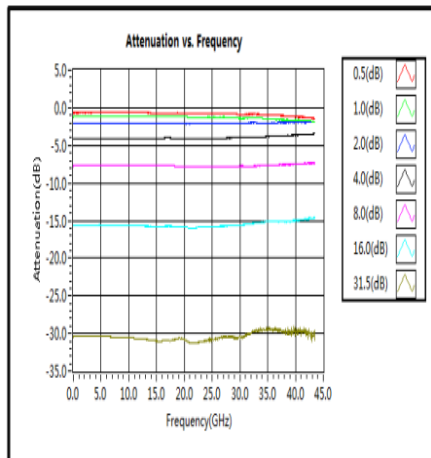
Output VSWR(1MHz-1.5GHz) @+85°C



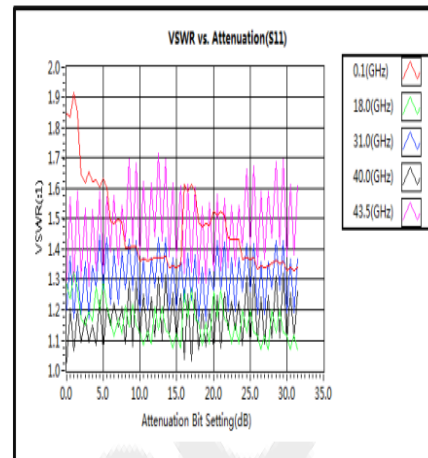
Output VSWR(100MHz-43.5GHz) @+85°C



Attenuation vs. Frequency



VSWR vs. Attenuation (S11)

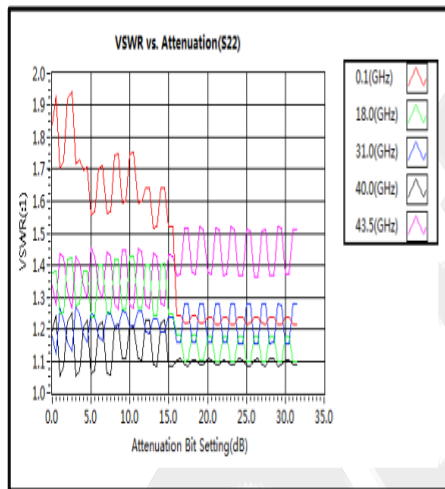


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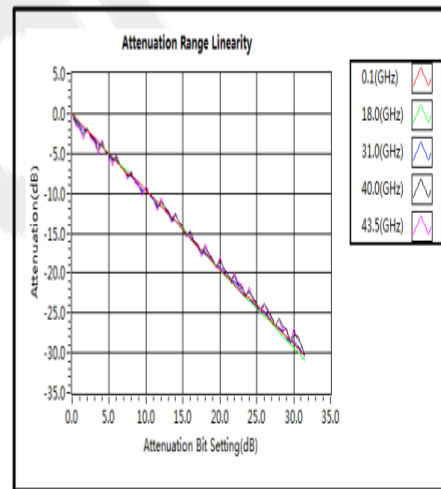


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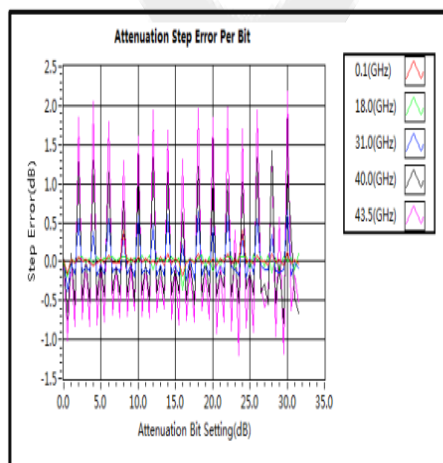
VSWR vs. Attenuation (S22)



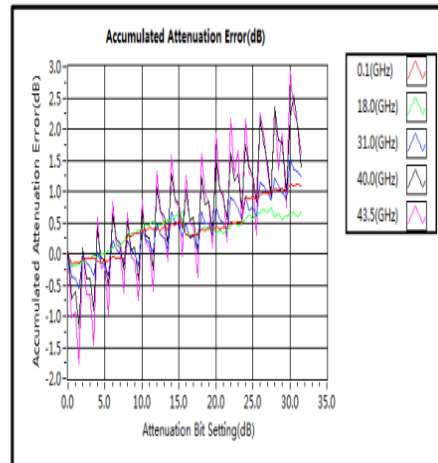
Attenuation Range Linearity



Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error (dB)

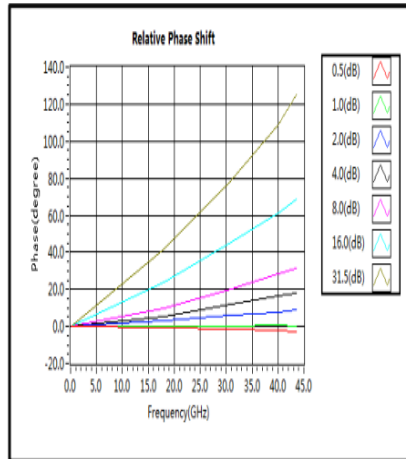


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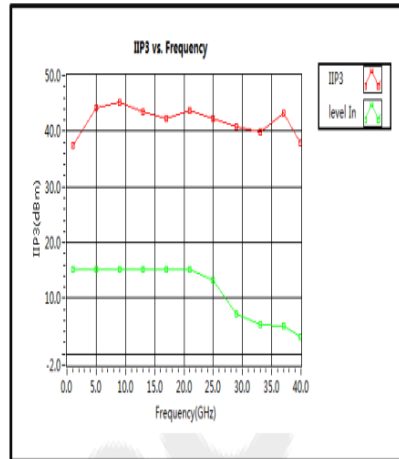


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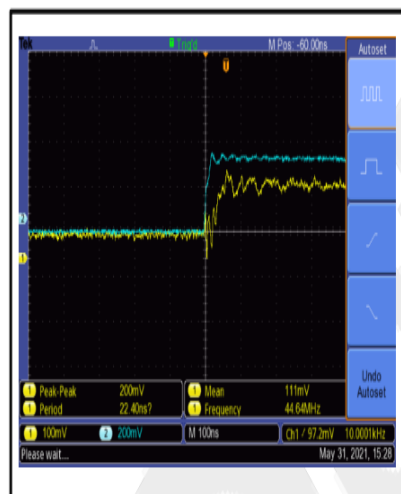
Relative Phase Shift



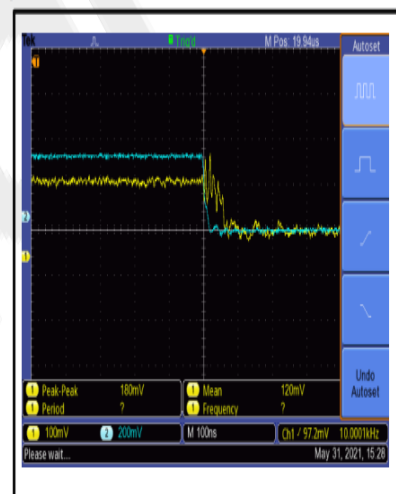
IIP3



Speed



Speed



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1 MHz to 43.5 GHz Absorptive Digital Control Attenuator, 31.5 dB, 6 Bits, 0.5 dB Step Size, Field Replaceable 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.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [1 MHz to 43.5 GHz Absorptive Digital Control Attenuator, 31.5 dB, 6 Bits, 0.5 dB Step Size, Field Replaceable 2.92mm PE70A5015](#)

URL: <https://www.pasternack.com/bench-top-31.5db-ttl-controlled-2.92mm-female-2.92mm-female-26-dbm-attenuator-pe70a5015-p.aspx>

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PE70A5015 CAD Drawing
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