

## Voltage Variable PIN Diode Attenuator from 0 to 40 dB 400 MHz to 6 GHz and SMA 15-Pin D-Subminiature Control



### SAA-0406-040-SMA

#### Features

- PIN Diode Attenuator
- 0.4 GHz to 6 GHz Frequency Range
- Operating Temperature -50°C to +100°C
- 40 dB Attenuation
- 0 - 10 VDC Linear Voltage Control Range
- 15 Pin D-SUB Connector with mating D-SUB
- Guaranteed to meet MIL-STD-202F Environmental Test Conditions

#### Applications

- Electronic Warfare
- Test & Measurement
- Electronic Countermeasures
- Military & Space
- Radar
- Military Communications Systems
- Microwave Radio

#### Description

The SAA-0406-040-SMA is a Non-Reflective Linear Voltage Controlled 40 dB PIN Diode Attenuator that operates from 0.4 GHz to 6 GHz. Typical performance includes 3 dB insertion loss, 1.5:1 VSWR, attenuation accuracy of 0.37 dB, and fast switching time of < 5  $\mu$ s. The attenuator has a control voltage range of 0 to +10 Vdc (linearized), uses a dual +/- 12 VDC supply, and is rated for an input power of +23 dBm CW at P1dB. The rugged and compact package assembly supports SMA Female connectors and a 15 pin D-SUB connector for DC control and biasing. Operating temperature is -50°C to +100°C. And for highly reliable operation, the model is guaranteed to meet MIL-STD-202F environmental test conditions for Humidity, Shock, Vibration, Altitude, and Temperature Cycle.

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

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.4		6	GHz
Attenuation Range	0		40	dB
Insertion Loss		3	4	dB
VSWR		1.5:1	2:1	
Input at 0.1 dB Compression Point		+23		dBm
Accuracy of Attenuation				
0 dB to 12 dB			0.5	dB
12 dB to 24 dB			0.24	dB
24 dB to 36 dB			0.47	dB
36 dB to 40 dB			0.43	dB
Switching Time		5	10	us
Switching Speed			10	us
Control Voltage	0		10	Volts
DC Power Supply				
to 12 VDC			59	mA
to -12 VDC			36	mA
Attenuation Range	0		40	dB

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### Mechanical Specifications

#### Size

Length	2 in [50.8 mm]
Width	1.81 in [45.97 mm]
Height	0.88 in [22.35 mm]
Weight	0.2 lbs [90.72 g]
Input Connector	SMA Female
Output Connector	SMA Female
Power and Control	15-Pin D-Subminiatur

### Environmental Specifications

#### Temperature

Operating Range	-50 to +100 deg C
Storage Range	-65 to +125 deg C
Humidity	MIL-STD-202F, METHOD 103B COND. B
Shock	MIL-STD-202F, METHOD 213B COND. B
Vibration	MIL-STD-202F, METHOD 204D COND. B
Altitude	MIL-STD-202F, METHOD 105C COND. B
Temperature Cycle	MIL-STD-202F, METHOD 107
Salt Spray	MIL-STD-202F, METHOD 105C COND. B

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

### Plotted and Other Data

#### Notes:

- Values at +25 °C, sea level  
ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.

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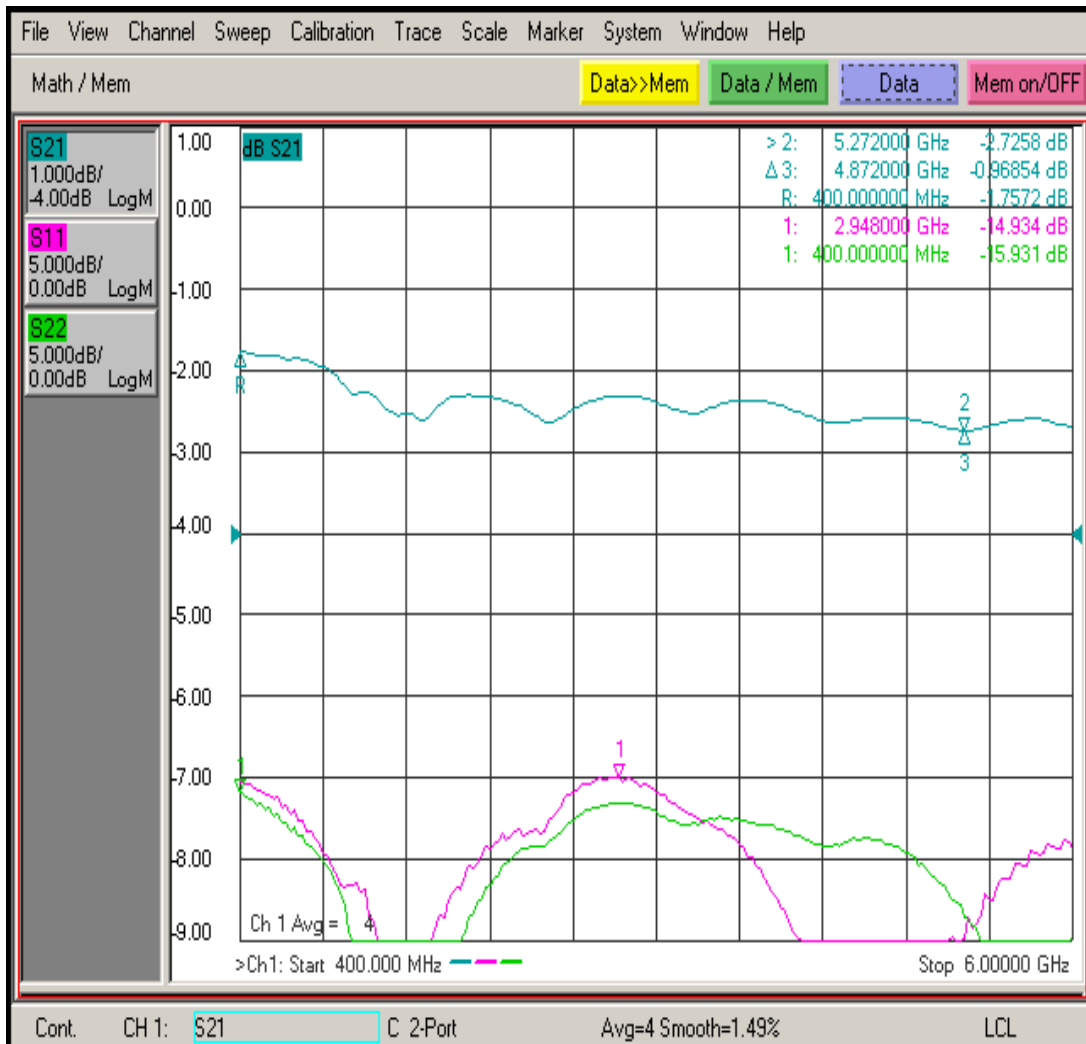


## SAA-0406-040-SMA

### Functional Block Diagram

### Performance Data

#### Insertion Loss and Return Loss

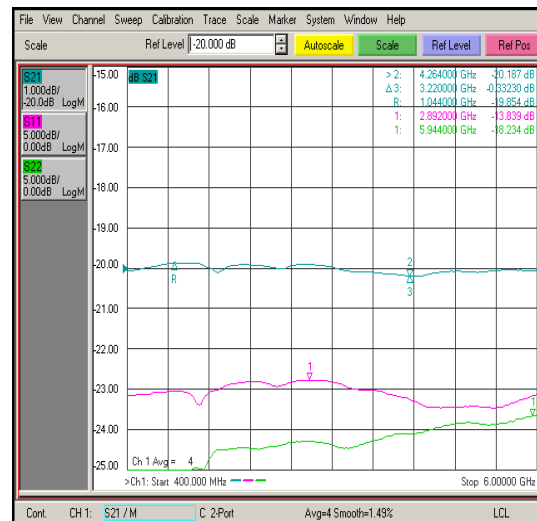


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### 20dB Attenuation



### 40dB Attenuation



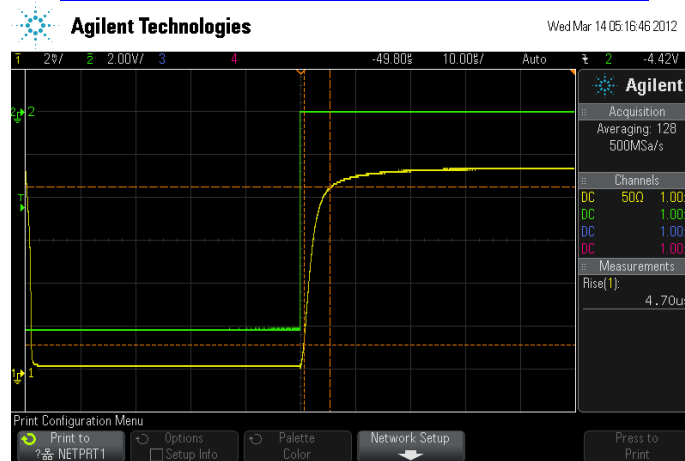
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### Delay ON Time

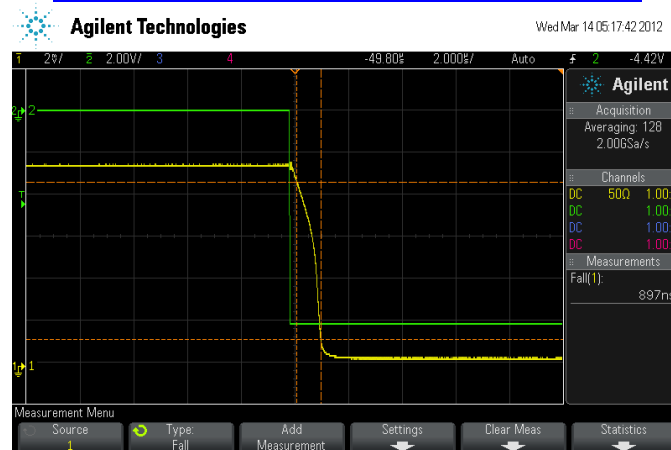
#### Measured @ 4GHz, 5dBm with a Crystal Detector



Channel 1 (Yellow Trace): RF output

Channel 2 (Green Trace): 10 Volt Input from Signal Generator

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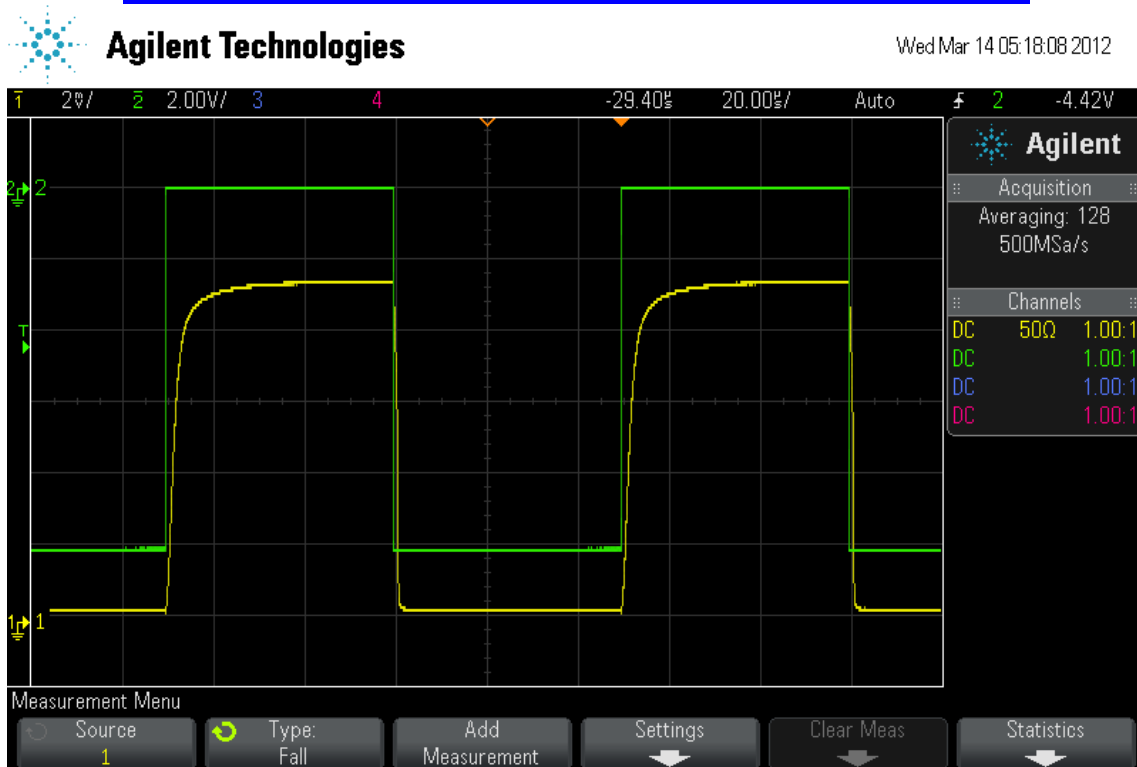
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## Switching

### Measured @ 4GHz, 5dBm with a Crystal Detector



**Channel 1 (Yellow Trace): RF output**  
**Channel 2 (Green Trace): 10 Volt Input from Signal Generator**

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Voltage Variable PIN Diode Attenuator from 0 to 40 dB 400 MHz to 6 GHz and SMA 15-Pin D-Subminiature Control from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

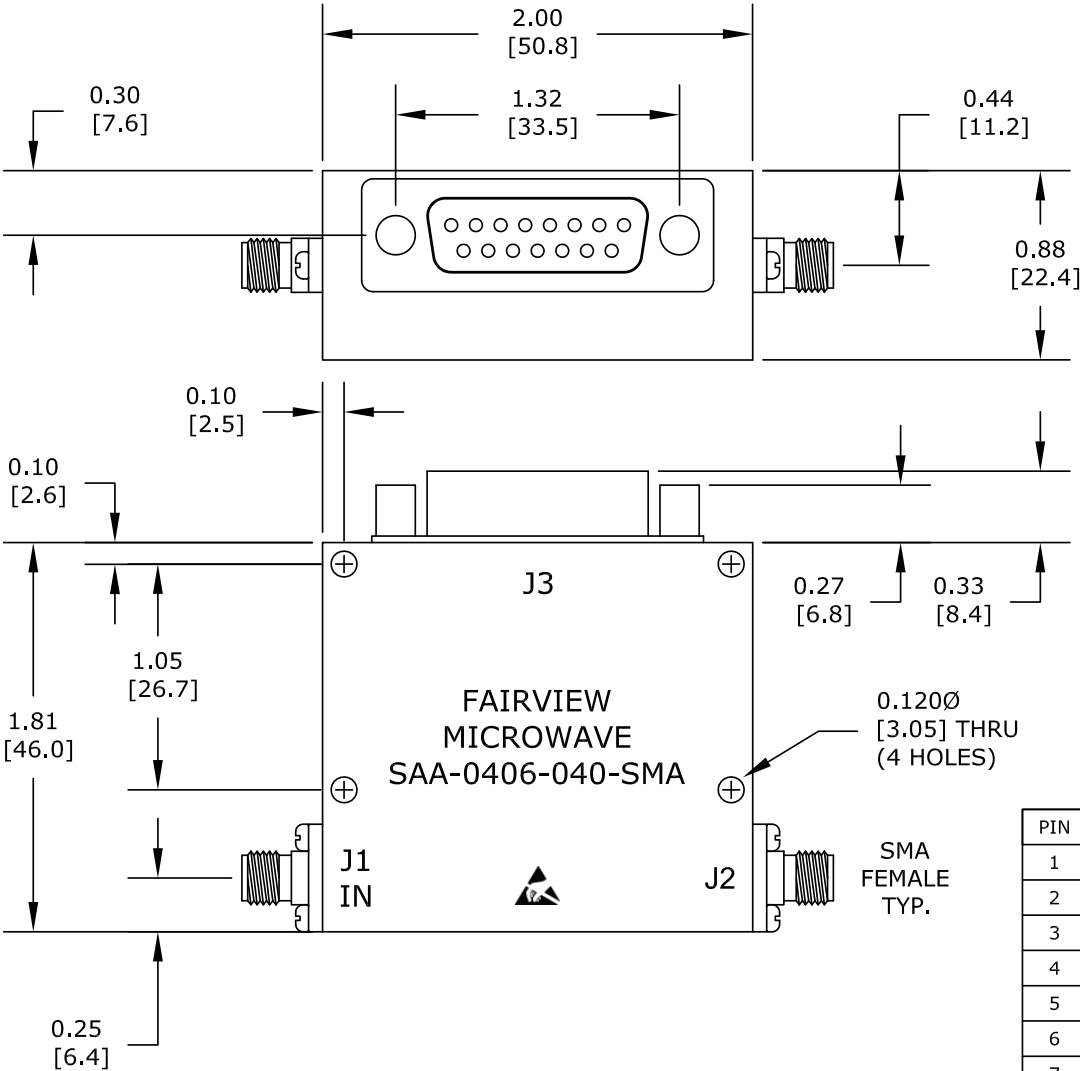
For additional information on this product, please click the following link: [Voltage Variable PIN Diode Attenuator from 0 to 40 dB 400 MHz to 6 GHz and SMA 15-Pin D-Subminiature Control SAA-0406-040-SMA](https://www.fairviewmicrowave.com/40db-voltage-variable-attenuator-pin-diode-6-ghz-saa-0406-040-sma-p.aspx)

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SAA-0406-040-SMA CAD Drawing

Voltage Variable PIN Diode Attenuator from 0 to 40 dB 400 MHz to 6 GHz and SMA 15-Pin D-Subminiature Control



PIN	DESCRIPTION
1	GROUND
2	ANALOG IN
3	NO CONNECTION
4	GROUND
5	NO CONNECTION
6	NO CONNECTION
7	NO CONNECTION
8	NO CONNECTION
9	NO CONNECTION
10	NO CONNECTION
11	NO CONNECTION
12	NO CONNECTION
13	+VDC
14	-VDC
15	NO CONNECTION

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TITLE		DWG NO SAA-0406-040-SMA		CAGE CODE 3FKR5	
		CAD FILE 081914	SHEET	SCALE N/A	SIZE A 2233