

Product Description

ATEK1231 is a wideband 5-bit Digital Step Attenuator with 31 dB attenuation range. Attenuator frequency of operation goes down to Low Frequency close to DC and goes up to 18 GHz.

RF Input and Outputs are internally matched to 50 ohms for ease of use.

Attenuator is housed in custom milled metal enclosure with USB interface which allows simple control and the bias supply.

Custom package and module options are available upon request.

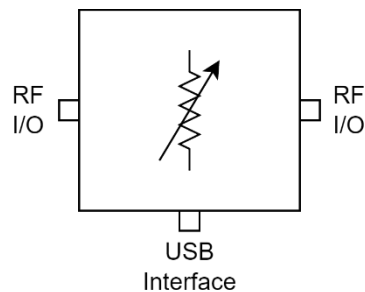
Product Features

- Frequency Range: LF - 18 GHz
- Gain: 4.3 dB at 8 GHz
- Attenuation Range: 31 dB
- USB interface for control and Vdd supply
- 36.4x59.9x24.8 mm compact size

Applications

- Wideband Receivers
- Telecommunication
- Test Equipment
- SATCOM
- SDR

Functional Block Diagram



Electrical Specifications

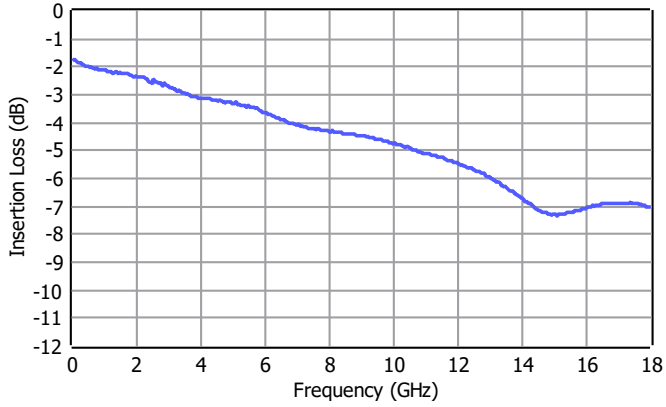
Conditions unless otherwise specified: Typical, T = 25 C, CW.

Parameter		Min	Typ	Max	Units
Operational Frequency Range		LF		18	GHz
Insertion Loss	0.01 GHz		1.8		dB
	4 GHz		3.1		
	8 GHz		4.3		
	12 GHz		5.5		
	18 GHz		7.1		
Attenuation Range	0.01 GHz		31		dB
	4 GHz		30		
	8 GHz		30		
	12 GHz		30		
	18 GHz		30		
State Error			0.7		
Input Return Loss			-10		dB
Output Return Loss			-12		dB
Input P1dB			TBD		dBm
Input IP3			TBD		dBm
Switching Speed			TBD		ns
Operating Temperature		-40		85	°C

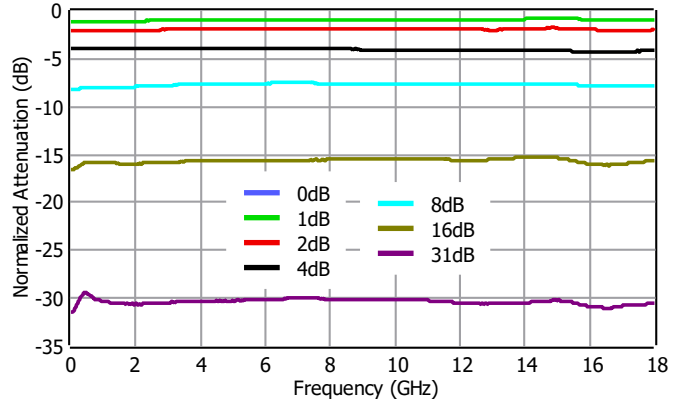
Typical Performance Plots

Conditions unless otherwise specified: Typical, T = 25 C, CW.

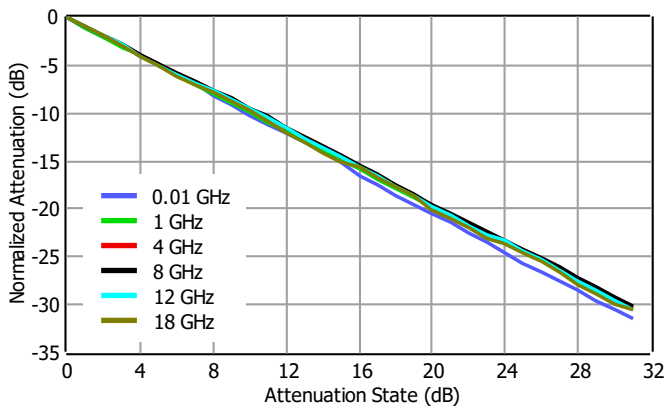
Insertion Loss



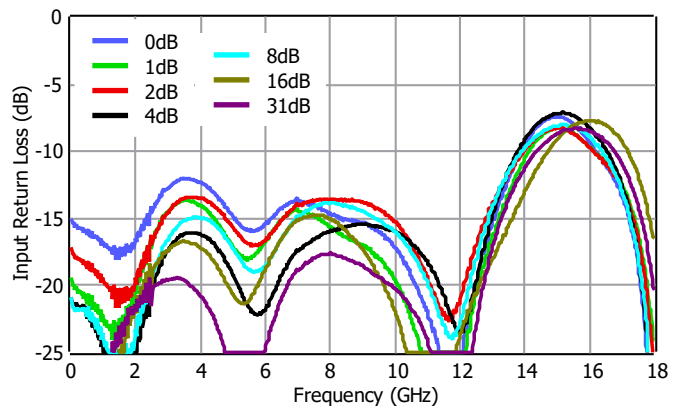
Normalized Attenuation



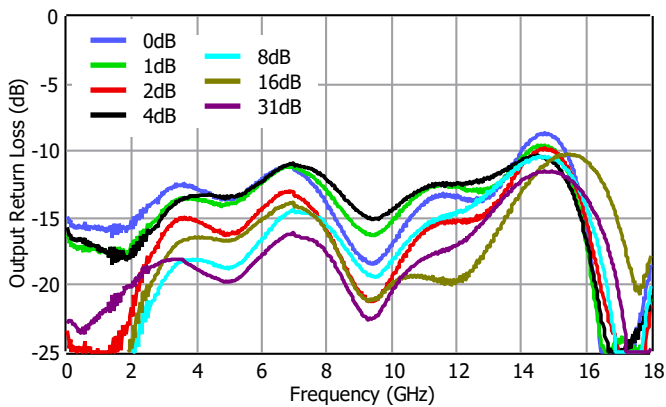
Normalized Attenuation vs. Attenuation State, Frequency



Input Return Loss



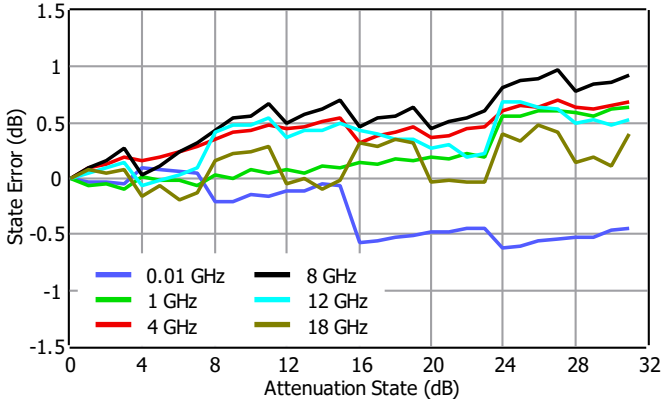
Output Return Loss



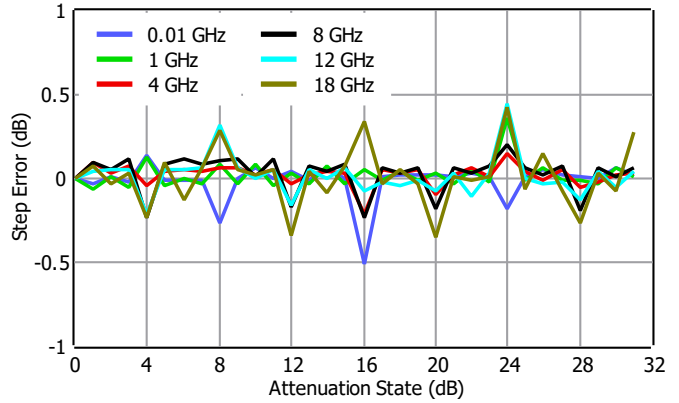
Typical Performance Plots

Conditions unless otherwise specified: Typical, T = 25 C, CW.

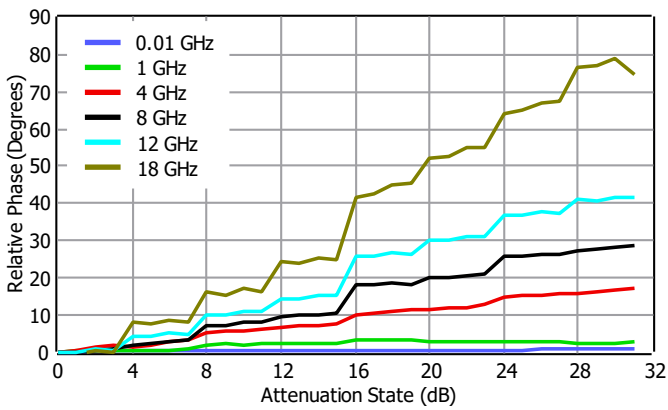
State Error vs. Attenuation State, Frequency



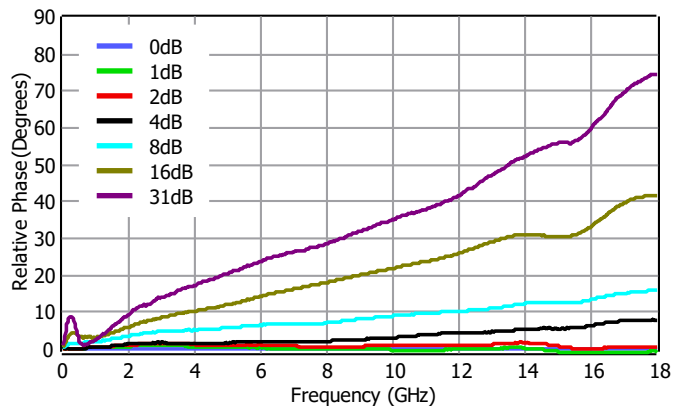
Step Error vs Attenuation State, Frequency



Relative Phase vs. Attenuation State, Frequency

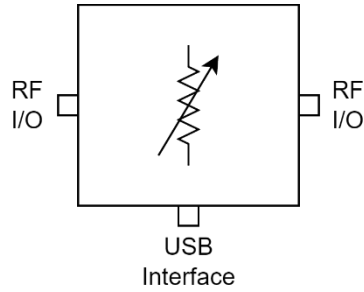


Relative Phase vs. Attenuation State



Applications Information

Signal entering from RF IN goes to RF OUT with an attenuation level set by through USB interface. Typical application schematic to operate the attenuator is given below.



Bias and control requirements for State selection is provided through USB interface. Easy to use GUI is provided for the operator as shown below.

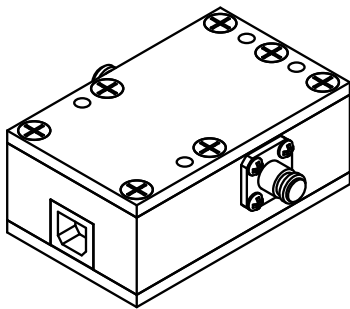
Attenuation Level (dB)
0 dB
1 dB
2 dB
3 dB
4 dB
5 dB
6 dB
7 dB
8 dB
9 dB
10 dB
11 dB
12 dB
13 dB
14 dB
15 dB
16 dB
17 dB
18 dB
19 dB
20 dB
21 dB
22 dB
23 dB
24 dB
25 dB
26 dB
27 dB
28 dB
29 dB
30 dB
31 dB

Absolute Maximum Ratings

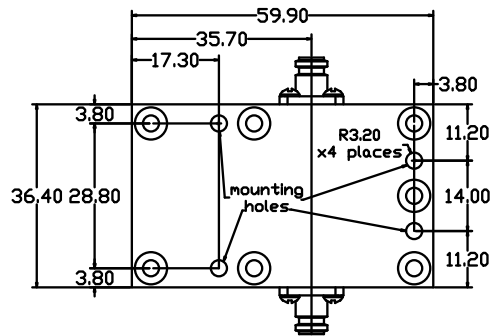
Parameter	Value/Range
Supply Voltage (Vdd)	TBD
RF Input Power	TBD
Storage Temperature	-55 to +125°C

Operation of this device outside the parameter ranges given above may cause damage. These conditions should not be applied simultaneously.

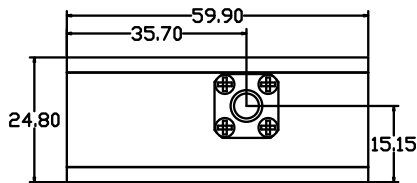
Mechanical and Marking Information



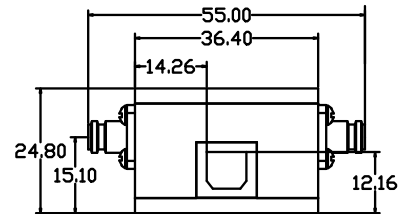
3D View



Top View



Side View A



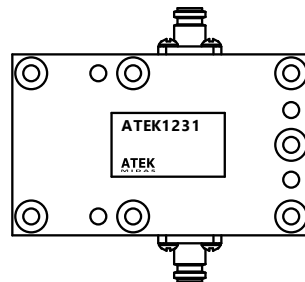
Side View B

All dimensions are in mm.

USB type B- connector for control and power supply.

4 mounting holes with 3.2 mm radius.

2 RF SMA connectors for RF I/O interface.



Handling Precautions



Caution!
ESD-Sensitive Device
Handle Accordingly

Contact Information

For the latest specifications, additional product information, support, and sales.

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Revisions

Revision No	Revision Date	Revision Reason	Section / Page No
1.0	18.10.2022	Initial Release	