

Eclipse™ Variable Optical Attenuators/Modulators

High-speed Attenuation Control in a Compact Package with Optional Modulator



Boston Applied Technologies' Eclipse™ Variable Optical Attenuators (VOAs), including dual-function VOA/PIMs (Polarization Independent Modulators), enable all solid-state, high-speed performance in a very compact package. Depending on the specific application, the VOAs may be set to maintain an electronically adjustable value of either attenuation or output power. The VOA/PIMs enable modulation of an optical signal traveling over standard single mode fiber while simultaneously maintaining a specified level of attenuation. All VOAs are electrically controlled, and employ OptoCeramic® electro-optic technology. Evaluation kits with control circuit are available for easy lab bench operation.

Features

- Precise, high-speed attenuation control
- Excellent optical performance
- All solid-state construction in a compact rugged package
- Superb temperature stability
- Meets or exceeds Telcordia GR1221, GR910, and GR1209 specifications
- Optional modulator offers polarization insensitive modulation up to 750KHz
- Enabling hybrid integration for space and cost saving and performance enhancement

Applications

- Channel Equalization/pre-emphasis
- Optical amplification
- Instrumentation
- Metropolitan and long-haul networks
- Wavelength tagging (VOA/modulator only)
- Encoding of supervisory channel information (VOA/modulator only)



Variable Optical Attenuators/Polarization Independent Modulators

VOA001 and PIM 001:	Multi-wavelength device operates in 1310nm, C and L bands. Normally opaque at zero applied voltage. PIM001 includes modulator.
VOA002 and PIM002:	Single-wavelength device operates in 1310nm, C and L bands. Normally transparent at zero applied voltage. PIM002 includes modulator.

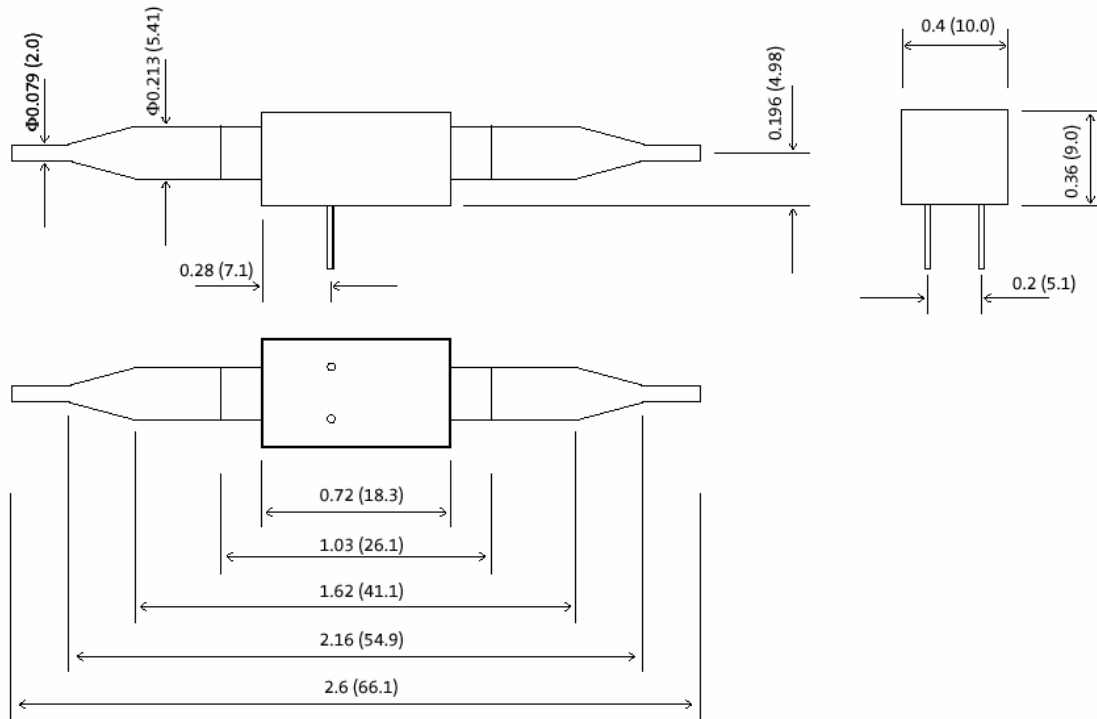
Key Optical Specifications

Attributes ^{1,2}	Performance			
	VOA001	VOA002	PIM001	PIM002
Insertion Loss	≤ 0.9 dB	≤ 0.6dB (≤ 0.4 dB, A version)	≤ 0.9 dB	≤ 0.6dB (≤ 0.4 dB, A version)
Dynamic Range ³	≥ 20 dB	≥ 25 dB	≥ 20 dB	≥ 25 dB
Spectral Flatness @ 15 dB Attenuation	0.5 dB maximum 0.3 dB typical	0.1 dB typical ⁴	0.5 dB maximum 0.3 dB typical	0.1 dB typical ⁴
Polarization Dependent Loss @ 1550nm and 15dB Attenuation	0.5 dB maximum 0.3 dB typical	0.1 dB typical ⁴	0.5 dB maximum 0.3 dB typical	0.1 dB typical ⁴
Response Time (Full Range) ⁵	<30 μs	<30 μs	<30 μs	<30 μs
Input Power	≤ 500 mW	≤ 500 mW	≤ 500 mW	≤ 500 mW
Return Loss	≥ 55 dB	≥ 55 dB	≥ 55 dB	≥ 55 dB
Device Capacitance	500 pF typical	500 pF typical	500 pF typical	500 pF typical
Modulation Rate	N/A	N/A	≤ 750 kHz	≤ 750 kHz
Modulation Depth ⁶	N/A	N/A	0.5 dB typical	0.5 dB typical
Operating Temperature Range	0°C to 70°C	0°C to 70°C	0°C to 70°C	0°C to 70°C
Storage Temperature Range	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
Dimensions (Approximate)	26 x 10 x 9 mm 1.03 x 0.40 x 0.36 inches	26 x 10 x 9 mm 1.03x 0.40x 0.36 inches	26 x 10 x 9 mm 1.03 x 0.40 x 0.36 inches	26 x 10 x 9 mm 1.03x 0.40 x 0.36 inches

Notes:

1. Unless otherwise specified, all measurements are at 25°C.
2. Meets or exceeds Telcordia GR1221, GR910, and GR1209 specifications.
3. Contact BATI regarding VOAs with integral shutter allowing maximum attenuation of ≥ 70 dB (Shutter VOAs).
4. For applications attenuating a single wavelength utilizing BATI's feedback circuit. Contact BATI for special multi-wavelength VOA002.
5. Devices with less than 1μs are also available.
6. Measured at 3 dB attenuation with a 20V sinusoidal signal at 150 kHz.

Mechanical Footprint of VOA/Modulator



Notes:

1. All dimensions are in inches with a tolerance of 0.005 inch. (Dimensions in parentheses are in millimeters).
2. Pin diameter is 0.018 inch.

For More Information

For More information about Boston Applied Technologies' leadership in variable optical attenuation and modulation technology and other optical networking modules and components, visit our website at www.bostonati.com.

To obtain additional technical information or to place an order for this product, please contact us:

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