



# HIGH-SPEED VARIABLE OPTICAL ATTENUATOR

## Key Features

- Super-fast (< 200 ns) attenuation response
- Low power consumption
- Compact dimensions for easy integration
- VOA temperature control/monitor
- Hermetically sealed

## Applications

- Signal level regulation
- Stabilization of optical source
- Q-switch

The voltage controlled high-speed VOA (variable optical attenuator) based on an electro-optic element offers high-speed performances as well as compact dimensions for easy integration or limited space environments.

The main characteristics are:

- Less than 200 ns attenuation tuning speed (full range),
- Low power consumption,
- Compact dimensions,
- Optimized electronic driver with temperature control / monitor.

## Technical specifications



- Performances specifications

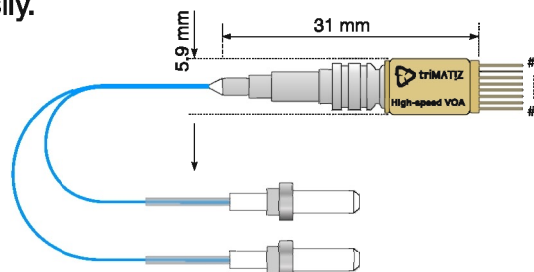
<b>Wavelength range *</b>	1530 nm ~ 1570 nm
<b>Minimum insertion loss</b>	< 1.8 dB
<b>Attenuation tuning range</b>	> 30 dB
<b>Polarization dependant loss</b>	0.5 dB max. for attenuation < 10 dB
<b>Wavelength dependant loss</b>	0.5 dB max. for attenuation < 10 dB
<b>Attenuation tuning speed</b>	< 200 ns.
<b>Return loss @ <math>V_{\pi}</math></b>	> 40 dB
<b>Operating temperature</b>	0 °C ~ 70 °C

- Trimatiz dedicated driver circuit specifications

<b>Power supply</b>	+5.0 V $\pm$ 0.25 V (2.5 A)
<b>Control signal</b>	0 V ~ +1.5 V
<b>Dimensions (VOA + driver)</b>	W 55 x D 145 x H 15 (mm)

- Design and integration

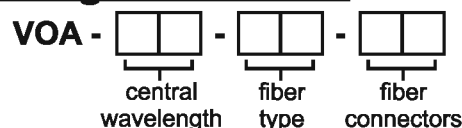
Due to the design and assembly of the components, the VOA module has a considerable flexibility when positioned on a circuit board. The dedicated driver board with the VOA mounted is compact and can be integrated easily.



High-speed VOA pinout description

1	VOA control	5	N.C.
2	VOA control	6	N.C.
3	Thermister	7	TEC -
4	Thermister	8	TEC +

## Ordering information



Example:

**VOA - W1 - SM - C1**  
(standard VOA)

central wavelength	fiber type	fiber connectors	
W1 - 1550 nm	SM - SMF	C1 - none	C3 - FC/APC
WX - other	PM - PMF	C2 - FC/UPC	CX - other

\* Customization for wavelength from 500nm to 1700nm is available. For specific requests and customization, please contact us.

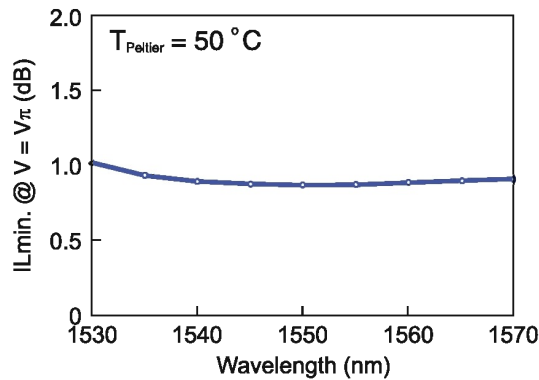
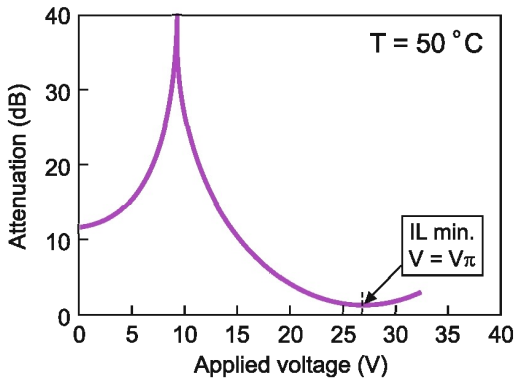
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## Typical characteristics

- Insertion loss characteristics

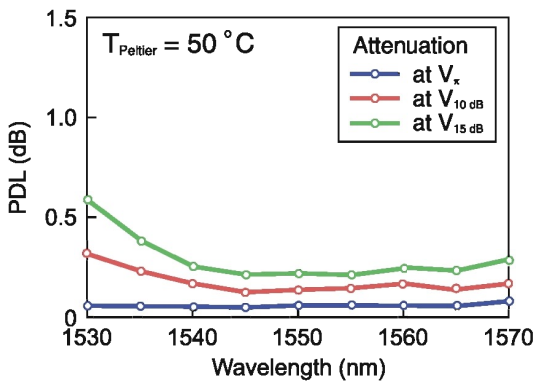
The unique and patented configuration of the electro-optic element in the high-speed VOA can make the driving voltage as low as around 40V.

The insertion loss at the minimum attenuation ( $V=V_{\pi}$ ) is lower than 1.5dB for a large temperature range (which can be controlled and stabilized by the Peltier element). The wavelength dependency is smaller than 0.5 dB.



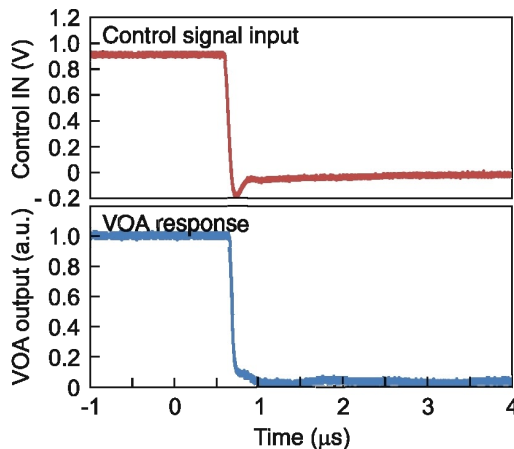
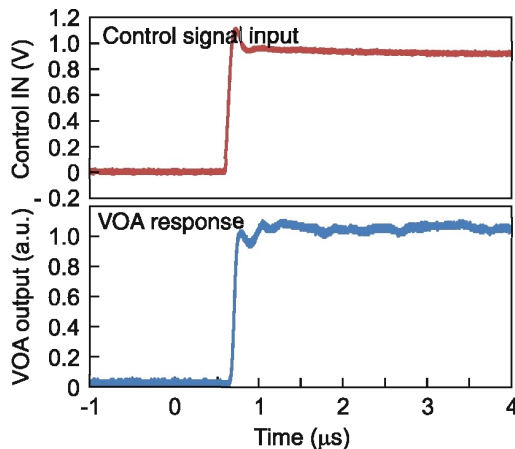
- Polarization dependence loss (PDL) characteristics

The PDL is very small when  $V=V_{\pi}$  within the specified wavelength operation band as it can be seen on the following experimental measurements. The PDL is smaller than 0.5 dB even for larger attenuations.



- Transient response characteristics

The high-speed VOA has a fast response time. The attenuation tuning speed is typically less than 150 ns ( $IL_{min} \leftrightarrow -35$  dB) at  $T = 50^{\circ}C$ .



### Contact information

#### Trimatiz Limited

801, La Pacifique B,  
4-7-12 Minamiyawata, Ichikawa,  
272-0023 Chiba, JAPAN

TEL: +81-47-379-4400  
FAX: +81-47-370-0010  
E-mail: info@trimatiz.com  
URL: www.trimatiz.com

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