

# High Speed Variable Optical Attenuator (VOA)

## Features / Benefits

- High Speed ( $\mu$ s) attenuation control
- Broadband wavelength range
- No moving parts and continuous tuning
- Low insertion loss
- Low PDL over operating wavelength range
- Solid state technology

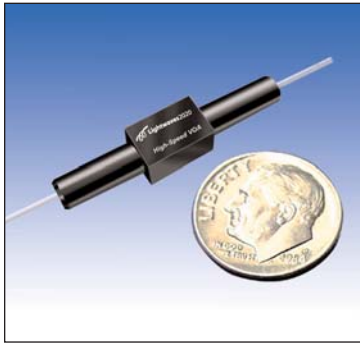
## Applications

- Channel balance in DWDM systems
- Power equalization in optical add/drop and optical cross-connects
- Gain-tilt and power adjustment in EDFAs
- Receiver protection



The Lightwaves2020's high-speed Variable Optical Attenuator (VOA) is based on novel optical material offering fast response in  $\mu$ s, in contrast with conventional LC-based VOA with speed in *ms*. The dramatic increase in response speed enables the new VOA suitable for demanding 40Gbs applications.

An optional driver-PCB, on which the VOA is mounted, is provided. The device is driven by 0-5 VDC voltage to produce required optical power attenuation and switching



# High Speed Variable Optical Attenuator (VOA)

## Optical Specifications

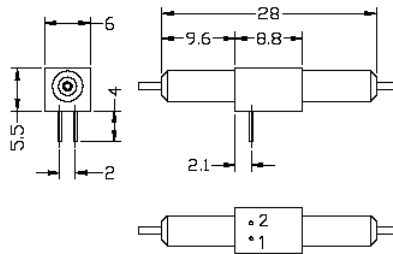
Parameters	Unit	Performance		
Operating Wavelength Range	nm	1550nm-band (C-band or C+L-band)	1310nm-band (O-band)	1310/1550nm (Dual-band)
Insertion Loss	dB	< 0.9	< 1.2	
Attenuation	dB	Option 0: >28, Option 1: >32, Option 2: >38		
PDL @ $\lambda c^2$ at 15dB attenuation	dB	< 0.3		
Response Time	$\mu$ s	< 10		
Return Loss	dB	> 55		
PMD	ps	< 0.1		
Maximum Optical Power	mW	500		
Driving Voltage (with driver)	V	0 to 5		

Note: 1. All specification referred without connectors  
 2. Measured wavelength C-band or C+L-band: 1550nm  
 O-band: 1310nm

## Mechanical and Package Specifications

Parameters	Unit	Performance
Dimensions	mm	28 x 6 x 5.5
Driver PCB Dimension	mm	46 x 24 x 11

## Dimensions



Units: mm

## Ordering Information



**Operation Mode**  
 1= normal off  
 2= normal on

**Wavelength Range**  
 C= 1525-1565nm (C-band)  
 E= 1525-1615nm (C+L-band)  
 O= 1270-1350nm (O-band)  
 D= 1270-1350nm & 1525-1615nm  
 (Dual-band)

**FiberType**  
 0= w/o driver  
 1= with driver  
 0= SMF-28e

**Attenuation**  
 0= 28dB  
 1= 32dB  
 2= 38dB

**Connector**  
 0= None  
 1= FC/UPC  
 2= FC/APC  
 3= SC/UPC  
 4= SC/APC  
 5= LC/UPC  
 6= MU/UPC

**Pigtail Type**  
 0= 250 $\mu$ m bare fiber  
 1= 900 $\mu$ m tight buffer fiber



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