High Speed
Variable Optical Attenuator (VOA)

Features / Benefits
- High Speed (μs) 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 μs, 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

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

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

## Mechanical and Package Specifications

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Unit</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>mm</td>
<td>28 x 6 x 5.5</td>
</tr>
<tr>
<td>Driver PCB Dimension</td>
<td>mm</td>
<td>46 x 24 x 11</td>
</tr>
</tbody>
</table>

## Dimensions

![Dimensions Diagram](image)

Units: mm

## Ordering Information

<table>
<thead>
<tr>
<th>V</th>
<th>O</th>
<th>A</th>
<th>-</th>
<th>H</th>
<th>S</th>
<th>P</th>
<th>0</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

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

### Fiber Type
0= SMF-28e
1= 980µm patch cord

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

### 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)

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

### Pigtail Type
0= 250µm bare fiber
1= 900µm tight buffer fiber

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