

Mini Shutter Variable Optical Attenuator (Dark Type)

Description

Broadex Technologies offers a MEMS-based VOA with a shutter type mechanism that is extremely compact and easy to integrate into any optical network. This thermally actuated VOA is available in both bright and dark configurations and features very low insertion loss and polarization dependent loss along with high dynamic range and high off-state extinction. The hermetically sealed packaging is highly insensitive to shock and vibration and is ESD safe up to 500V. Broadex Technologies Shutter MEMS VOA is ideal for receiver protection or transponder power control, and it is also widely used in EDFAs for power equalization of all channels in multi-channel systems.

Features

- Compact size
- Low insertion loss, low PDL
- Low wavelength dependence loss
- Fast response time
- Hermetically sealed MEMS chip
- Insensitive to shock and vibration
- Low power consumption



Applications

- Optical network power management
- Gain-tilt control in EDFA
- Receiver protection
- Channel on/off switching
- Mux and Demux module, OADM node

Specifications

● Absolute Maximum ratings

| Parameters | Unit | Spec | | |
|-----------------------------|--------|------|---------|-----|
| | | min | Typical | max |
| Storage Temperature | Degree | -40 | | 85 |
| Operating Temperature | Degree | -5 | | 75 |
| Storage Relative Humidity | % | 5 | | 95 |
| Operating Relative Humidity | % | 5 | | 95 |
| Power Consumption | mW | 150 | | |
| ESD Level(HBM) | V | 500 | | |

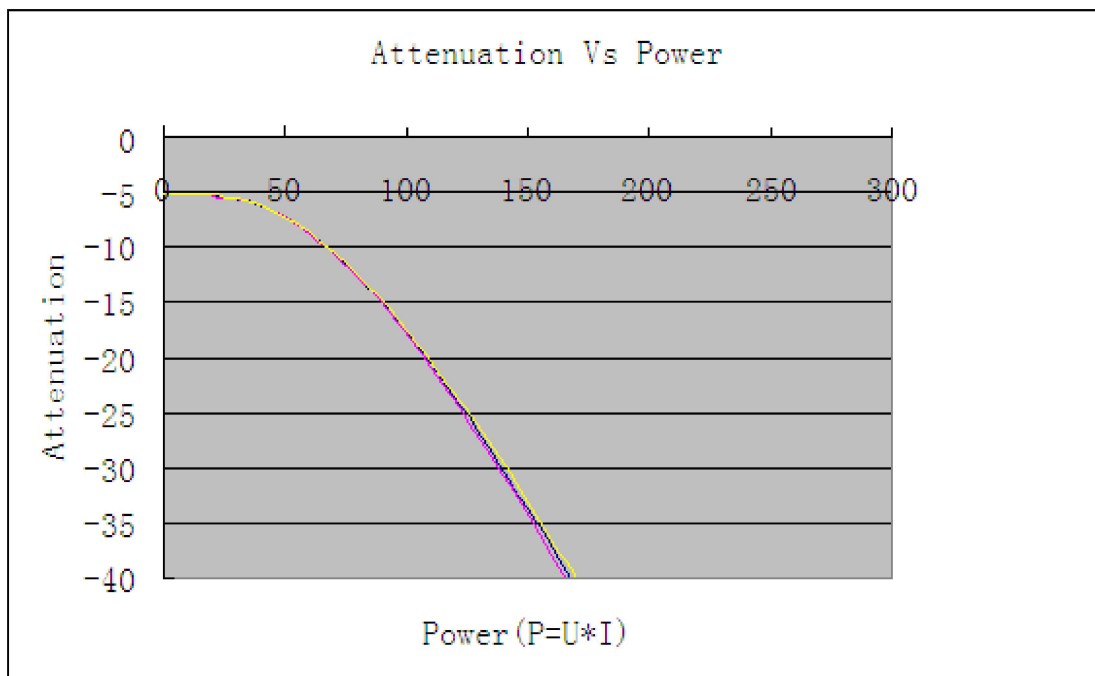
● Function and performance requirements

| Item | Parameters | Min | Typical | Max | Units |
|------|---------------------------------------|-----------|---------|------|-------|
| 1 | Operating Wavelength Range | 1525~1570 | | | nm |
| 2 | Insertion Loss@4V | | | 0.8 | dB |
| 3 | Attenuation Range(dynamic range) | 25 | | | dB |
| 4 | Polarization Dependent Loss | 0~10dB | | 0.2 | dB |
| | | 10~20dB | | 0.3 | dB |
| 5 | Temperature dependence of attenuation | @0dB | | ±0.3 | dB |
| | | @10dB | | ±1.2 | dB |
| | | @20dB | | ±1.5 | dB |
| 6 | Wavelength dependence of attenuation | @0dB | | 0.2 | dB |
| | | @10dB | | 0.3 | dB |
| | | @20dB | | 0.4 | dB |
| 7 | Attenuation accuracy | | | 0.5 | dB |
| 8 | PMD | | | 0.1 | PS |
| 9 | Resolution | | | 0.1 | dB |
| 10 | Repeatability | | | 0.1 | dB |
| 11 | Stability | | | 0.1 | dB |
| 12 | Attenuation Slop | | | 20 | |
| 13 | Return Loss | 45 | | | dB |
| 14 | Attenuation Dark | 30 | | | dB |
| 15 | Tuning speed | | | 20 | ms |
| 16 | Optical power capability | | | 23 | dBm |
| 17 | Drive voltage | | | 4.1 | V |

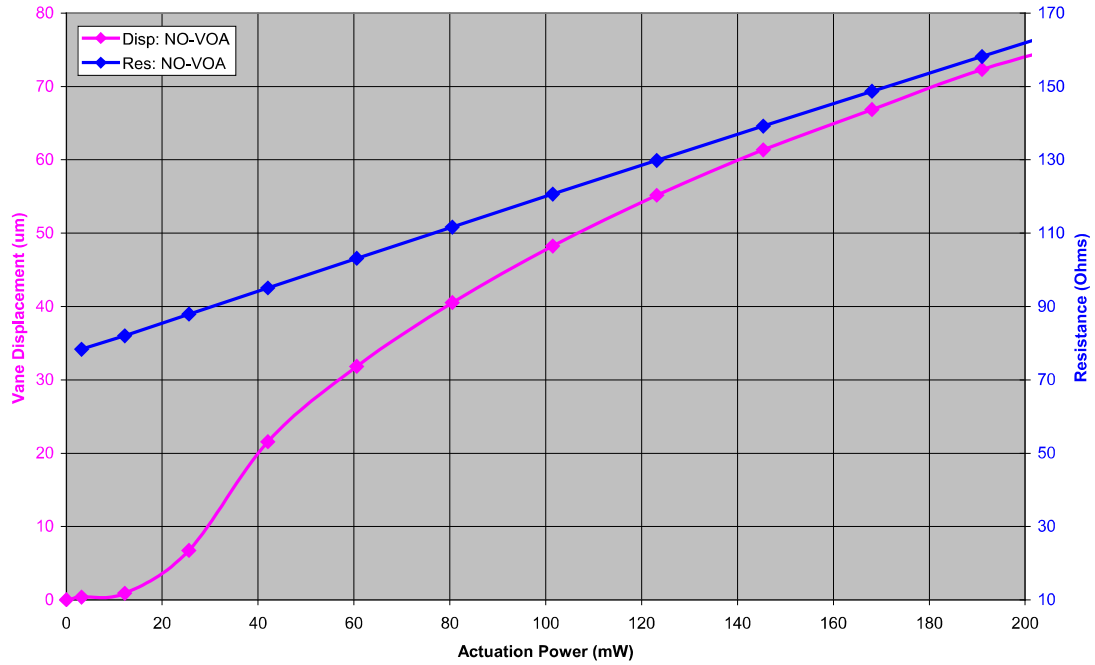
● **Design and Construction**

| Parameters | Spec | Unit |
|-------------------|---|------|
| Package Dimension | 17*8.3*6.1 | mm |
| Connector | N/A | |
| Fiber type | G652 D fiber | |
| Fiber Length | 100 or customized | cm |
| Fiber color | Input fiber color is white; Output fiber color is red | |

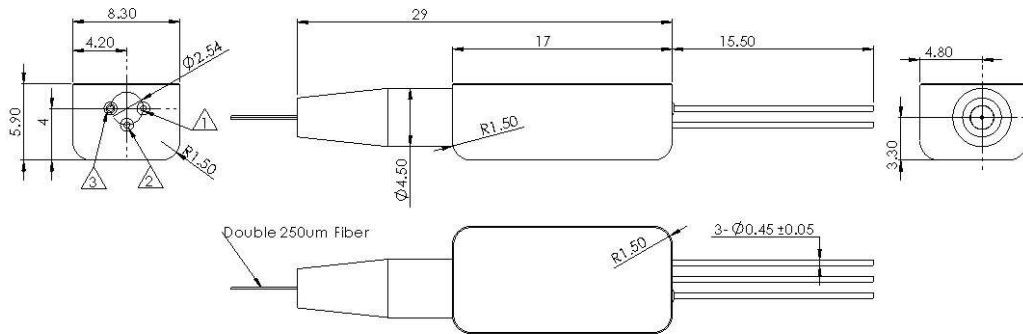
Typical Attenuation Plot



Resistance & Position versus Power



Mechanical Drawing



| Pin Number | Description | Comment |
|------------|-------------|---|
| 1 | drive | Connected to stabilized negative or positive supply |
| 2 | drive | Connected to stabilized negative or positive supply |
| 3 | N/C | Supporting PIN |

Packaging



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