

## Shutter Variable Optical Attenuator (Bright 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

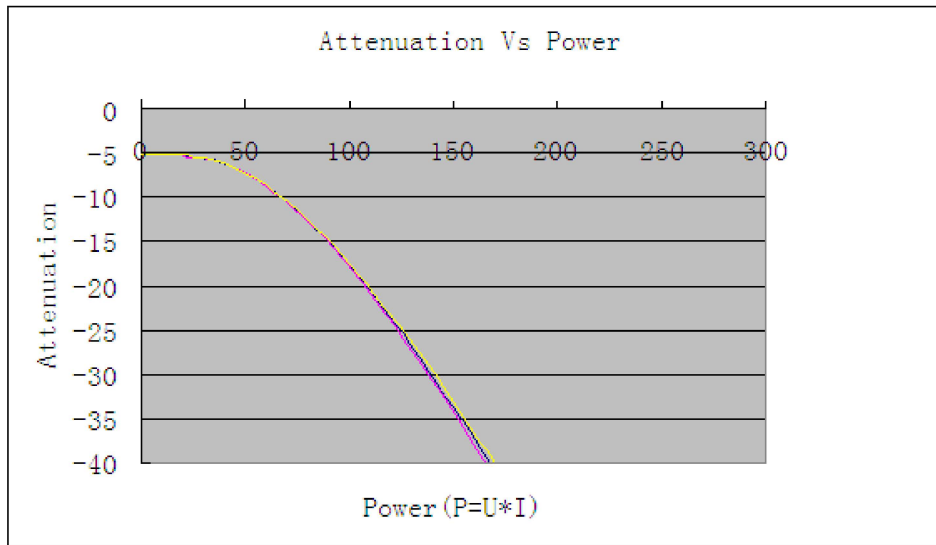
## Specifications

Parameters		Min	Typical	Max	Units
Operating Wavelength Range		1528~1568			nm
Insertion Loss @0V <sup>1</sup>			0.6	0.8	dB
Attenuation @3.9V		20			dB
Attenuation Range <sup>2</sup>				25	dB
Polarization Dependent Loss	0~10dB			0.2	dB
	10~20dB			0.3	dB
Temperature Dependence of Attenuation <sup>3</sup>	0dB			±0.2	dB
	0~10dB			±0.5	dB
	10~20dB			±0.7	dB
Wavelength Dependence of Attenuation <sup>4</sup>	0dB			0.1	dB
	0~10dB		0.2	0.25	dB
	10~15dB		0.3	0.35	dB
	15~20dB		0.4	0.45	dB
Resolution			0.1		dB
Repeatability				0.1	dB
Return Loss		45			dB
Response Time				20	ms
Optical Power Capability				27	dBm
Drive Voltage			5	6	V
Power Consumption				150	mW
Operating Temperature Range		-5		75	°C
Storage Temperature Range		-40		85	°C
Package Dimension		12.7 x 6.5 x 25.4			mm
Fiber Length		1000			mm
Fiber Type		ITU-T G.652.D Compliant, the output fiber marked red			
Connector Type(Default)		N/A			

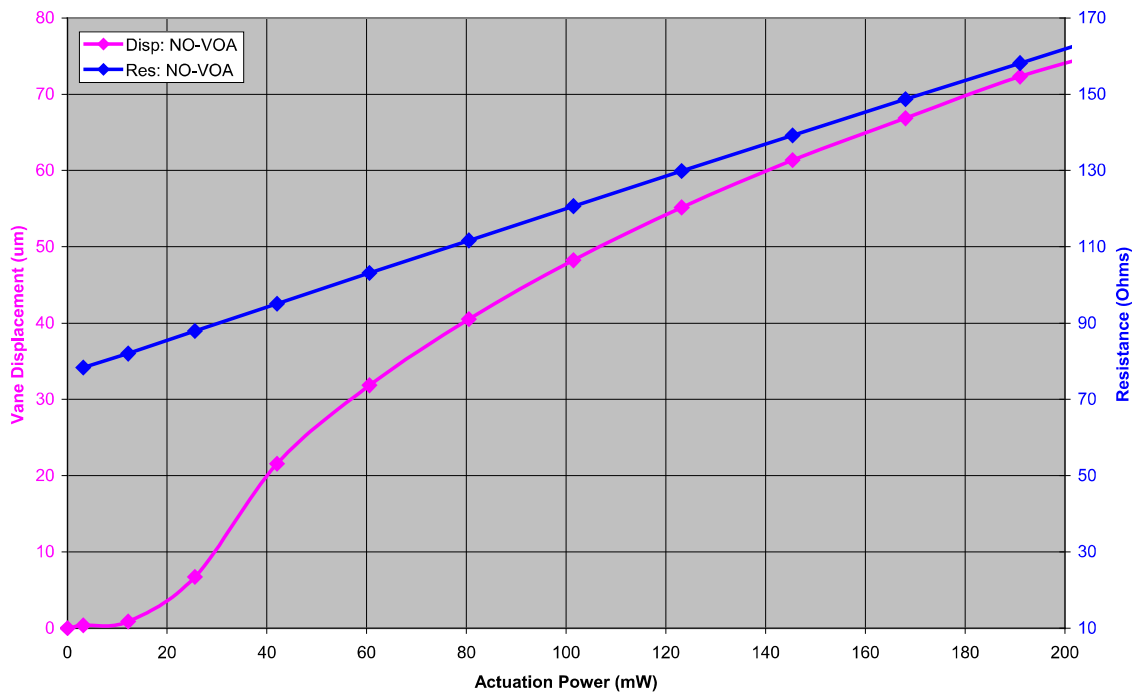
### Notes:

1. Over entire operating temperature range and valid for the entire life span
2. Bright type, Attenuation is 0dB when device is power off
3. Relative to 23 ± 3 °C, under constant drive power(P=U\*I)
4. Over the wavelength range and attenuation range

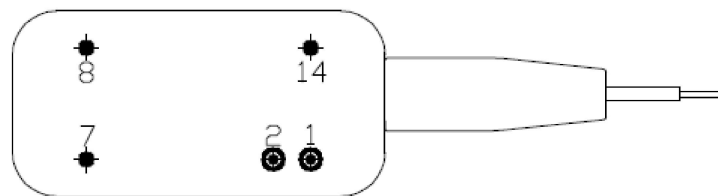
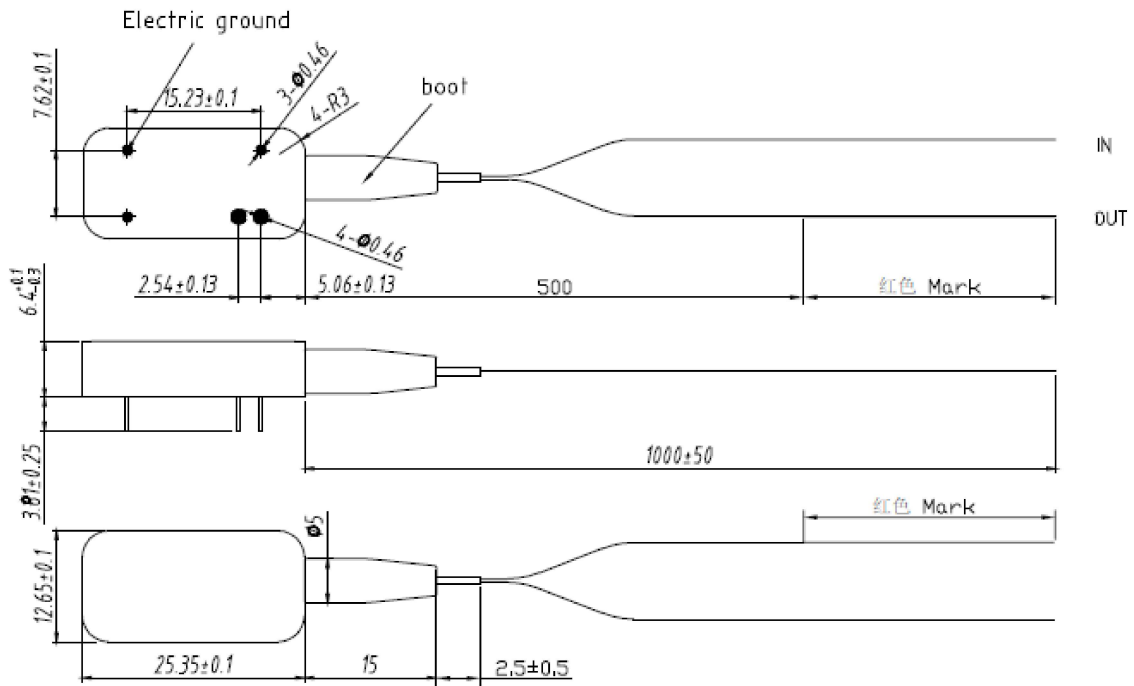
**Typical Attenuation Plot**



**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
7	N/C	Supporting PIN
8	N/C	Supporting PIN
14	N/C	Supporting PIN

**Packaging:**



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