

# Straight MEMS Variable Optical Attenuator

(patents pending)

## Product Description

The Straight MM Series VOA is based on a proprietary micro-electro-mechanical mechanism featuring fiber to fiber coupling technology with great compatibility to all types of fibers and operation wavelength. The MM Series VOA is fully compliant with the Telcordia 1209 and 1221 reliability standards. It is available in either normally-transparent or normally-dark configurations. The VOA is continuously driven By applying an electrical current at low voltage.



## Features

- Broad-Band
- Low Cost
- High Reliability
- Low IL, PDL, WDL & TDL
- Direct Current Drive
- Low Power Consumption

## Performance Specifications

MM Series VOA	Min	Typical	Max	Unit
Operation Wavelength	430	S+C+L	2000	nm
Insertion Loss <sup>1</sup>		0.6	0.8	dB
Polarization Dependent Loss <sup>2</sup>		0.15	0.4	dB
Wavelength Dependent Loss <sup>2, 4</sup>		0.3	0.6	dB
Temperature Dependent Loss <sup>3</sup>		0.05	0.2	dB
Attenuation Range		25	60	dB
Attenuation Resolution		Continuous		
Polarization Mode Dispersion <sup>2</sup>		0.01	0.05	ps
Return Loss	50			dB
Response Time <sup>5</sup>		2.5	5	ms
Operating Temperature	-5		75	°C
Electrical Resistance		10		Ωm
Driving Current			60	mA
Optical Power Handling		100	800 <sup>7</sup>	mW
Storage Temperature	-40		85	°C
Reliability		Telcordia 1209 and 1221		
Fiber Type		SMF28, Hi 780, Hi980		
Package Dimension <sup>6</sup>		Φ6.0x30		mm

Notes:

1. Without connector and at room temperature; for SM S+C+L bands
2. At attenuation of 20dB or less
3. At 0 attenuation and at whole temperature range
4. Within 30nm bandwidth
5. Faster version (<1ms) is available
6. Standard package
7. Special order

## Applications

- Power Control
- Power Regulate
- Channel Balance
- Instrumentation



# Straight MEMS Variable Optical Attenuator

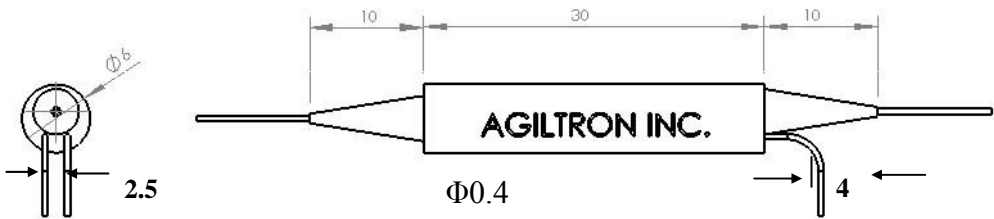
## Electrical Configurations

Parameter (Two Pin)	Typical <sup>7</sup>	Maximum <sup>7</sup>	Unit
Control Current	40	60	mA
Control Current Slope		200	A/Sec

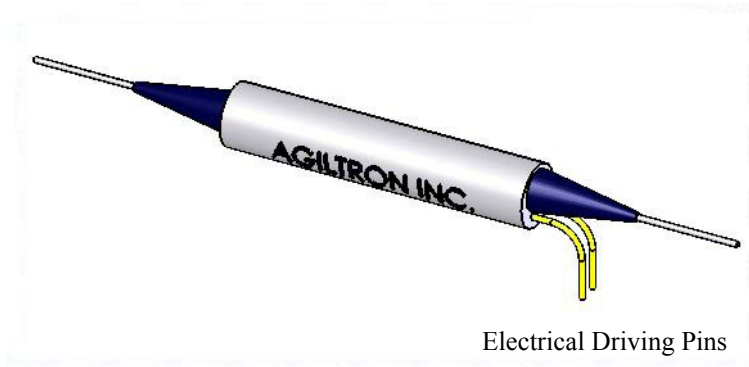
Note:

7: At 20dB attenuation

## Mechanical Footprint Dimensions (mm)



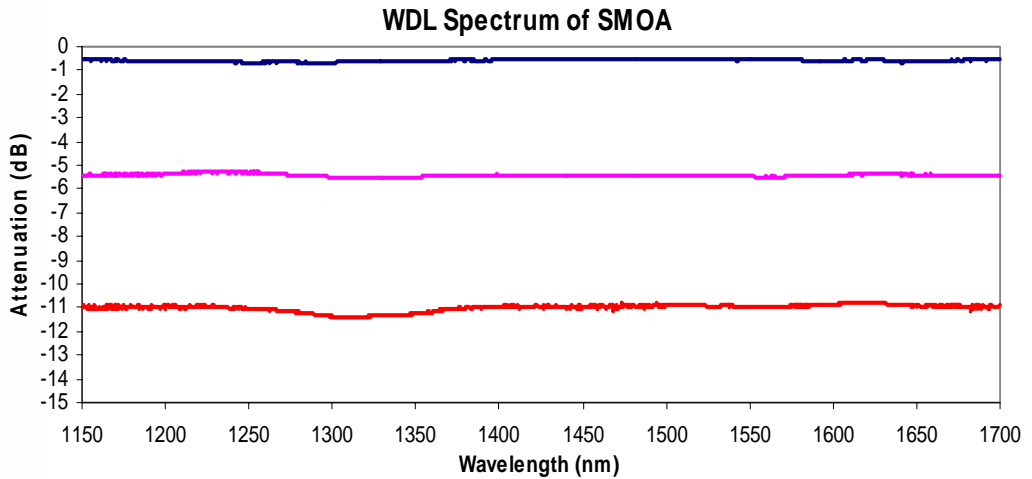
Electrical Driving Pins



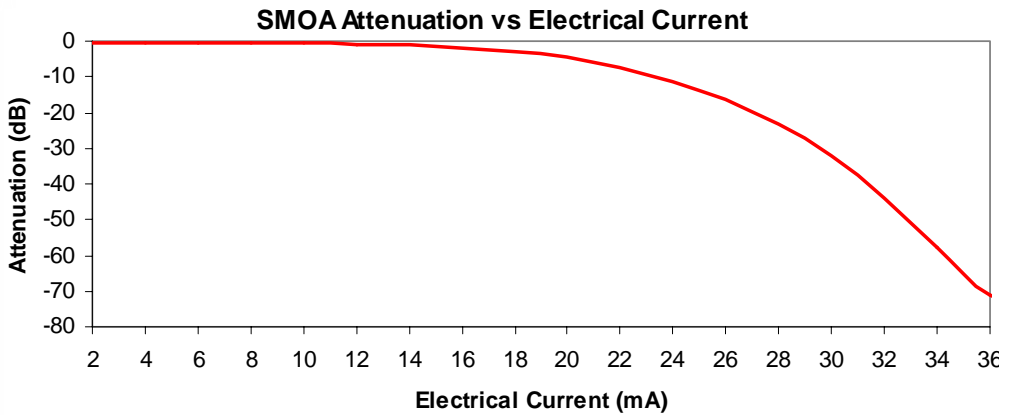
Electrical Driving Pins

# Straight MEMS Variable Optical Attenuator (SMOA)

## WDL Spectrum



## Attenuation Response



### Package Type 1 (Standard)

## Ordering Information

SMOA -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Type	Wavelength	Off State	Package Type	Fiber Type	Fiber Length	Connector			
Voltage control=11 Current Control=22	S+C+L=1 1310=3 1550=5 1310&1550=2 980=9 850=8 660=6 Special=0*	Normally transparent=1 Normally opaque=2	Standard=1 Special=0	SMF-28=1 Special=0	Bare fiber=1 900um tube=3 Special=0	0.25m=1 0.5m=2 1.0 m=3 Special=0	None=1 FC/PC=2 FC/APC=3 SC/PC=4 SC/APC=5 ST/PC=6 LC=7 Special=0		

\*: Wavelength from 450nm to 2000nm available

