

# MEMS Variable Optical Attenuator (Polarization Maintaining)

(patents pending)

## Product Description

The MM Series VOA is based on a micro-electro-mechanical mechanism featuring compact design, simple construction, easy direct drive, and excellent optical performance. The MM series VOA is compliant with the Telcordia 1209 and 1221 reliability standards. The MM series VOA is available in either normally-transparent or normally-dark configurations. The VOA is driven with an electrical current at low voltage or directly with converted voltage, and the attenuation can be continuously adjusted with the applied current.



## Performance Specifications

MM Series PM VOA	Min	Typical	Max	Unit
Wavelength	1310±50 or 1550±50			nm
Insertion Loss <sup>1</sup>		0.4	0.7	dB
Wavelength Dependent Loss <sup>3, 4</sup>			0.2	dB
Temperature Dependent Loss <sup>3</sup>		0.05	0.2	dB
Attenuation Range		25	50	dB
Attenuation Resolution	Continuous			
Extinction Ratio	18	23	35	dB
Return Loss	45			dB
Response Time		1	2	ms
Operating Temperature	-5		75	°C
Driving Voltage <sup>5</sup>		2.5	3	V
Driving Current <sup>5</sup>		28	35	mA
Optical Power		300	500	mW
Storage Temperature	-40		85	°C
Reliability	Telcordia 1209 and 1221			
Fiber Type	Corning panda PM 400/250			
Dimension	L18.0xφ6.0			mm

Notes:

1. Without connector and at room temperature
2. At attenuation of 20dB
3. At 0 dB attenuation and at whole temperature range
4. Within 30nm bandwidth
5. At 20dB for normally transparent version, at 0.7dB for normally opaque version

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## Features

- Compact
- Low Cost
- High Reliability
- Low Insertion Loss
- Low Power Consumption

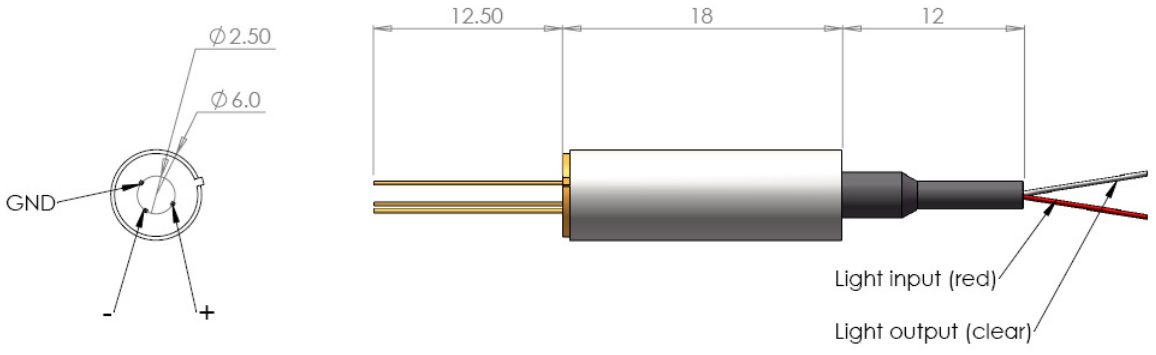
## Applications

- Power Control
- Power Regulate
- Channel Balance
- Instrumentation



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## Mechanical Footprint Dimensions (mm)



Standard Package A

## Ordering Information

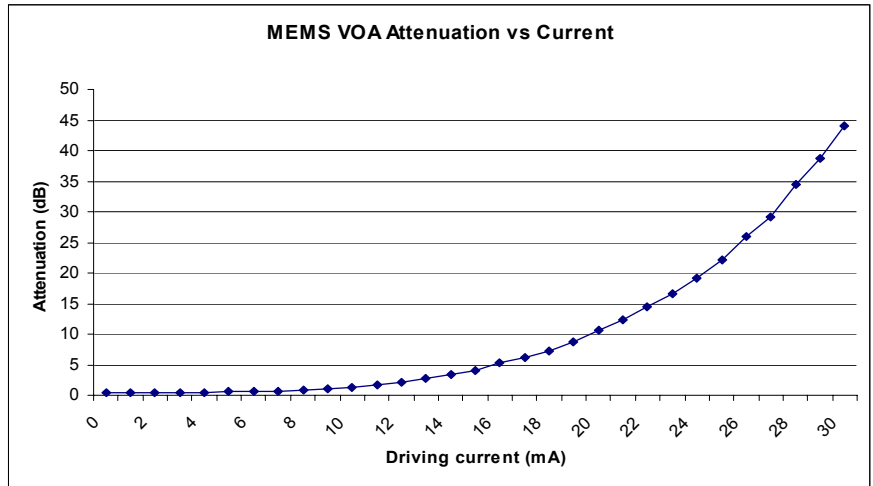
MMOA-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Type	Wavelength	Off State	Package	Fiber	Fiber Length	Connector			
PM voltage control=81 PM current control=82	1310=3 1550=5 C+L=2 1310/1550=8 Special=0	Transparent=1 Opaque=2	Standard=5 Special=0	Panda 250um=1 Panda 400um=2 Special=0	Bare fiber=1 900um loose 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		



# MEMS PM VOA Typical Performance Charts (1)

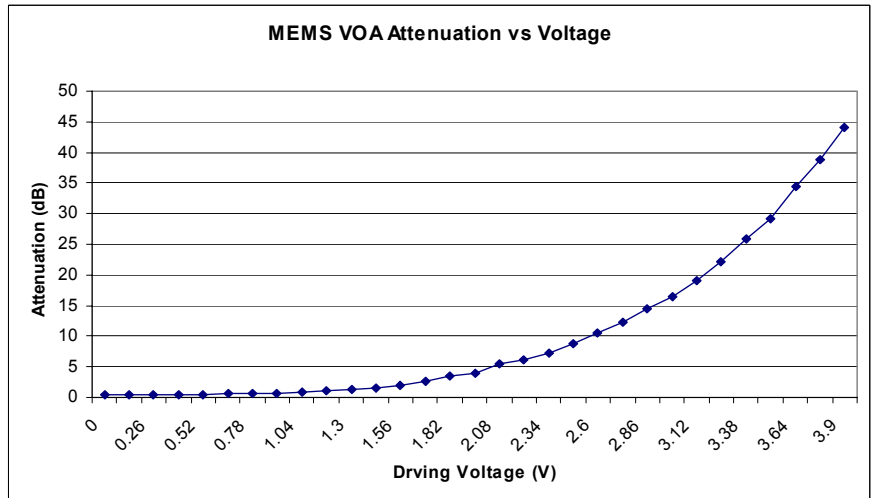
## Features

- Compact
- Low Cost
- High Reliability
- Low IL & TDL
- Low Power Consumption



## Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

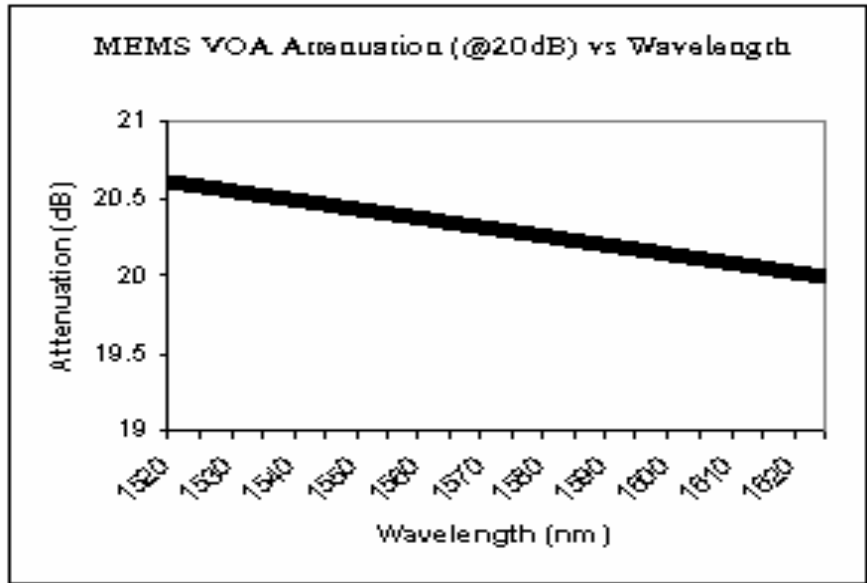


# MEMS PM VOA Typical Performance Charts (2)

## VOA Performance

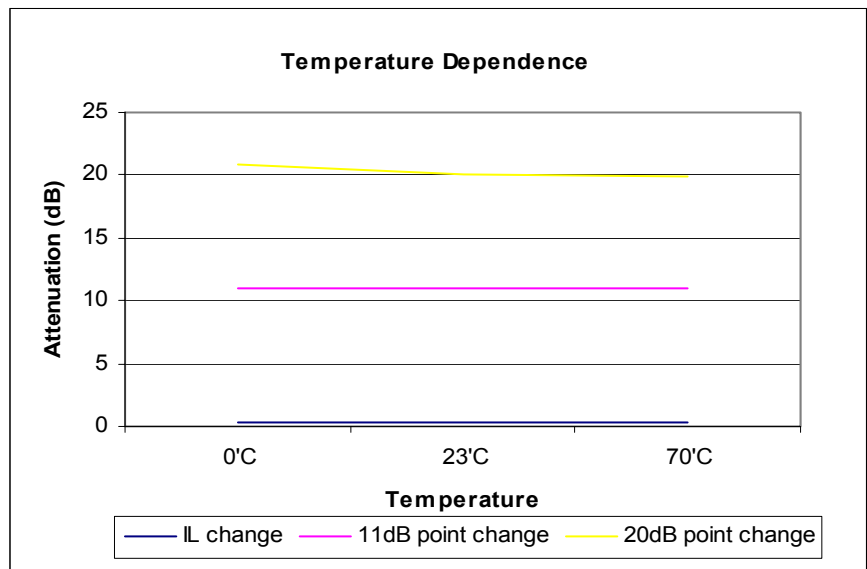
### Features

- Compact
- Low Cost
- High Reliability
- Low IL, WDL, TDL
- Low Power Consumption



### Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

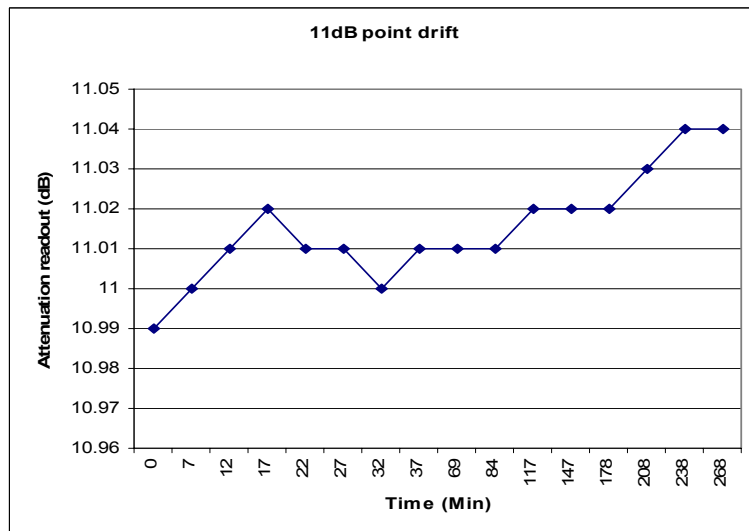
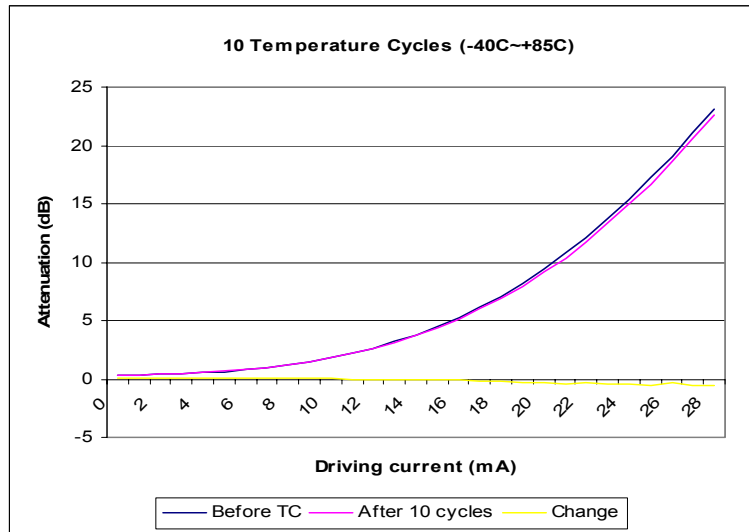


# MEMS PM VOA Typical Performance Charts (3)

## VOA Performance

### Features

- Compact
- Low Cost
- High Reliability
- Low IL, WDL, TDL
- Low Power Consumption



### Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

