

# MEMS Variable Optical Attenuator Integrated With Input Tap (current control)

patent pending

## Product Description

The MM Series VOA is based on a micro-electro-mechanical mechanism featuring integrated compact design, simple construction, easy direct drive, and excellent optical performance of ultra low insertion loss, low PDL, and broad wavelength operation range. The MM series VOA is compliant with the Telcordia 1209 and 1221 reliability standards. The MM series VOA is available in either normally-open or normally-closed configurations and with an integrated input tap option.

The VOA is driven by applying an electrical current



## Performance Specifications

MM Series TVOA	Min	Typical	Max	Unit
Wavelength		1260-1620		nm
Insertion Loss <sup>1</sup>		0.5	0.7	dB
Polarization Dependent Loss <sup>2</sup>		0.15	0.4	dB
Wavelength Dependence Loss <sup>3,4</sup>			0.2	dB
Temperature Dependence Loss <sup>3</sup>		0.05	0.2	dB
Attenuation Range		25	55	dB
Attenuation Resolution		Continuous		
Polarization Mode Dispersion		0.01	0.05	ps
Return Loss	45			dB
Response Time		1	2	ms
Driving Current <sup>5</sup>		28	35	mA
Device Resistance		40	60	$\Omega$
Optical Power		300	500	mW
Tap Response @ 1550nm	12	15	40	mA/W
Tap Wavelength Dependence Response	0.010	0.020	0.025	dB/nm
Tap Polarization Dependence Response <sup>3</sup>	0.02	0.10	0.25	dB
Tap Temperature Dependence Response			0.01	dB/°C
Tap Dark Current at 5V bias @ 23°C			1	nA
Tap Dark Current at 5V bias @ 70°C		30	70	nA
Tap 3dB Bandwidth (cutoff frequency)	10			MHz
Tap Capacitance		12		pF
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C
Reliability		Telcordia 1209 and 1221		
Package Dimension		$\Phi 6.1 \times 35.2$		mm

Notes:

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

## Features

- VOA + Tap
- Compact Size
- Low Cost
- High Reliability
- Low IL, PDL, WDL and TDL
- Direct Drive

## Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation



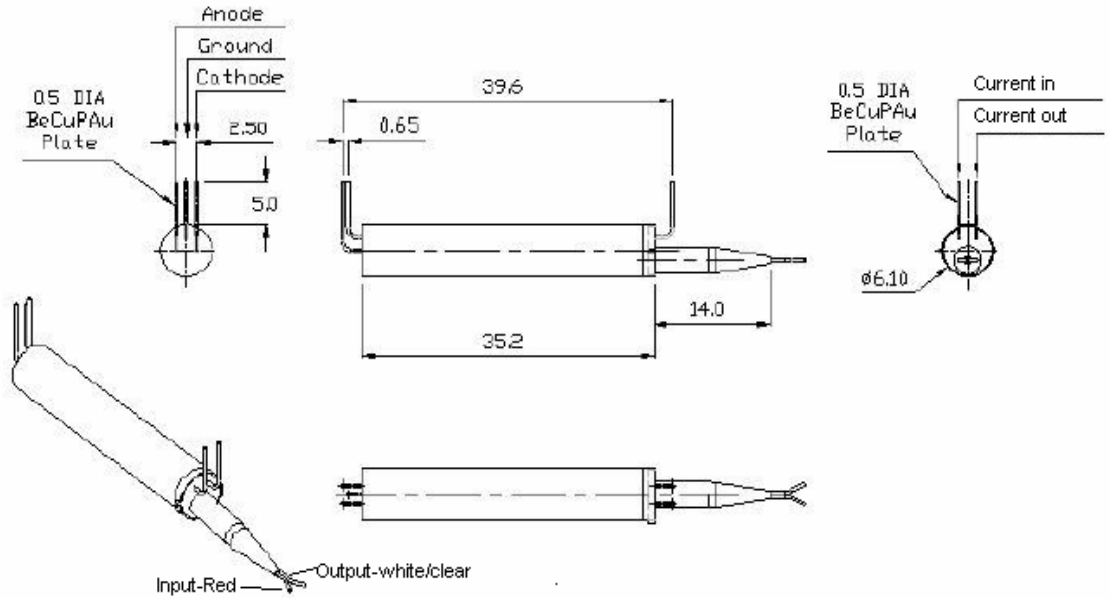
Revision: 060-12  
02-27-09

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www.agiltron.com

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## Mechanical Footprint Dimensions (Unit:mm)



## 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	
	Input tap current control=12	1310 = 3 1550 = 5 C+L=2 1310/1550=8 Special = 0	Transparent=1 Opaque=2	Standard=5 Special=0	SMF-28 =1 Special =0	Bare fiber=1 900um tube =3 Special=0	0.25m= 1 0.5m = 2 1.0m= 3 Special =0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC = 7 Special = 0



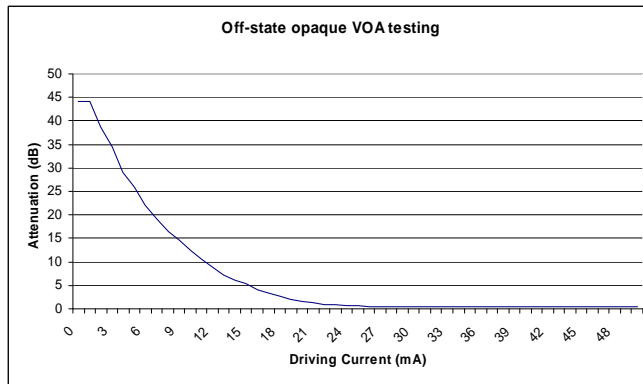
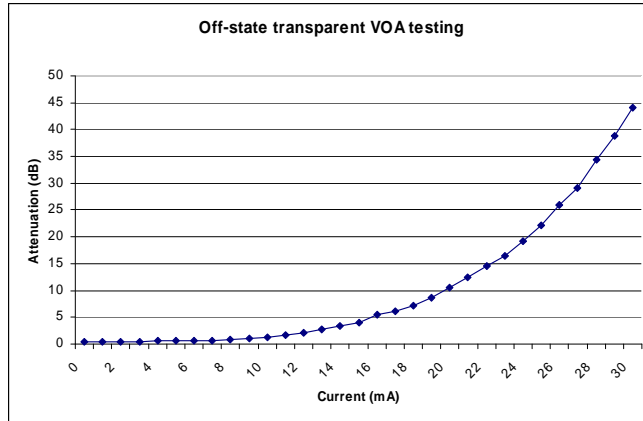
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# MEMS VOA Typical Performance Charts (1)

## VOA Performance (tested with open-loop)

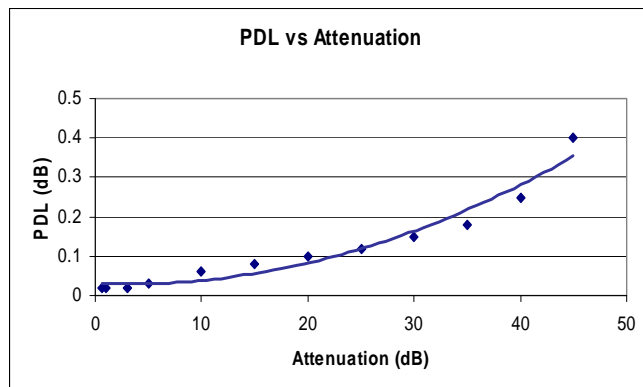
### Features

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



### Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation

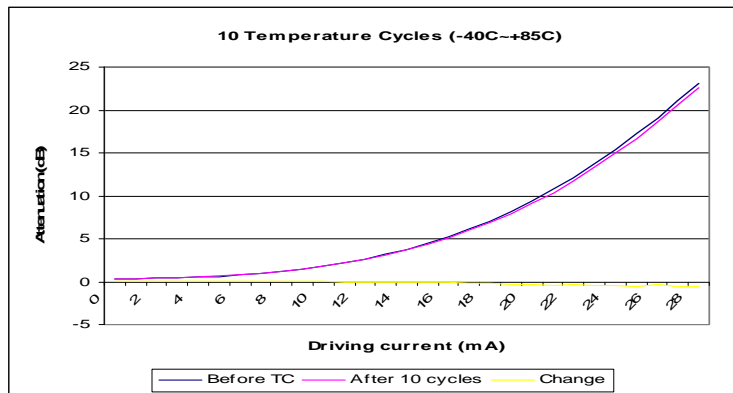
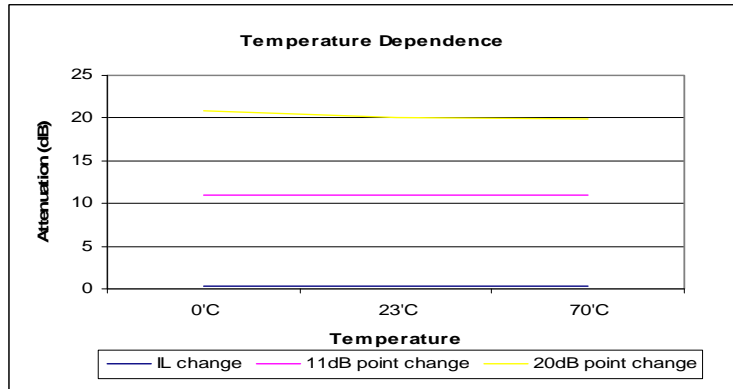


# MEMS VOA Typical Performance Charts (2)

## Features

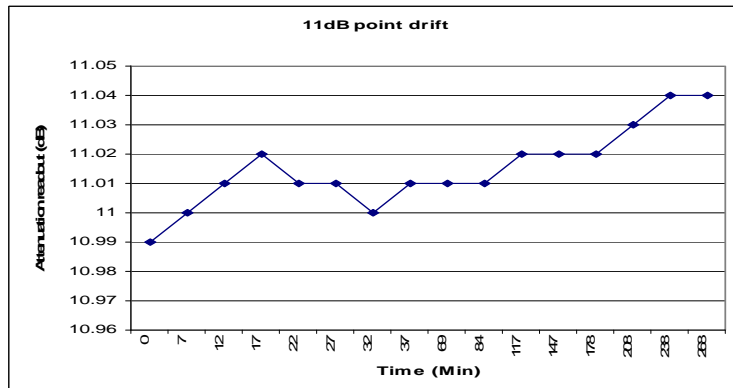
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## VOA Performance



## Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation



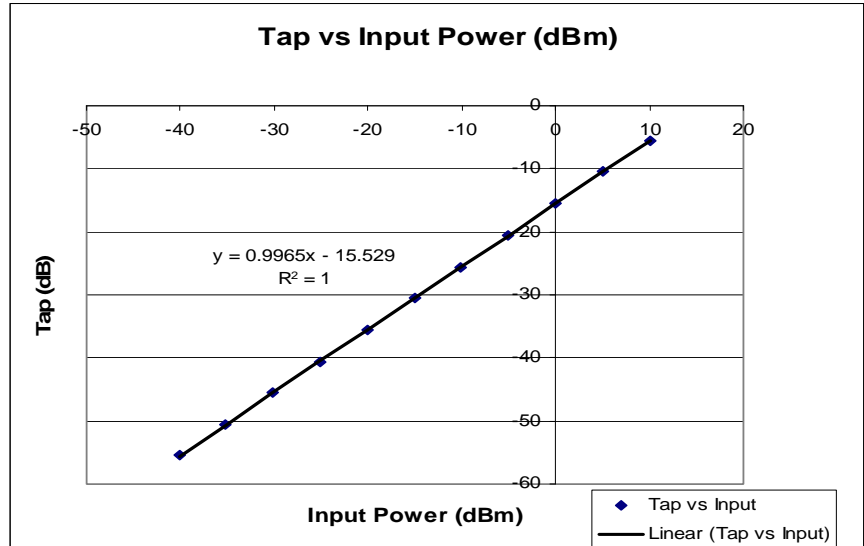
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# MEMS VOA Typical Tap Performance Charts (1)

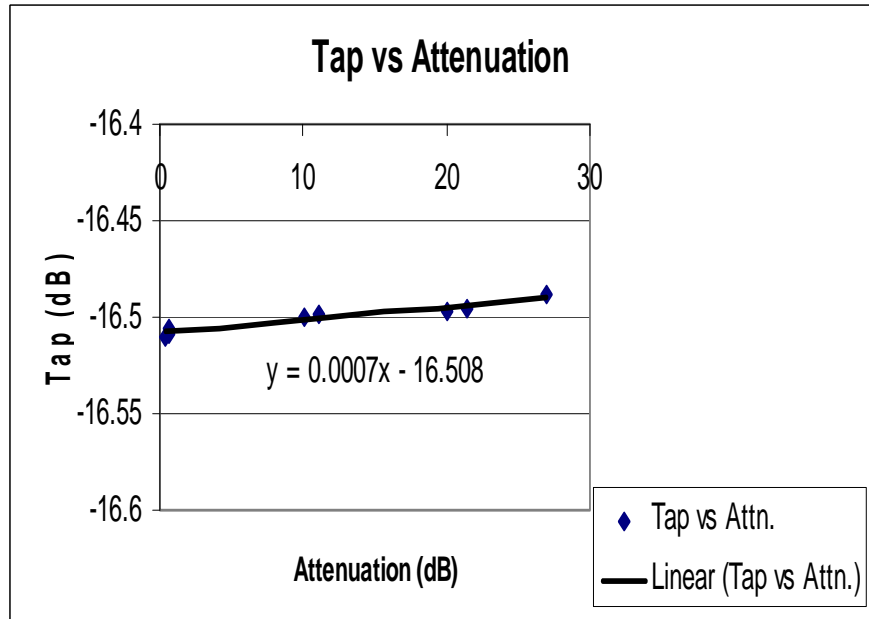
## Features

- VOA + Tap
- Compact
- Low Cost
- High Reliability
- Low IL, PDL, WDL & TDL
- Direct Low Voltage Drive



## Applications

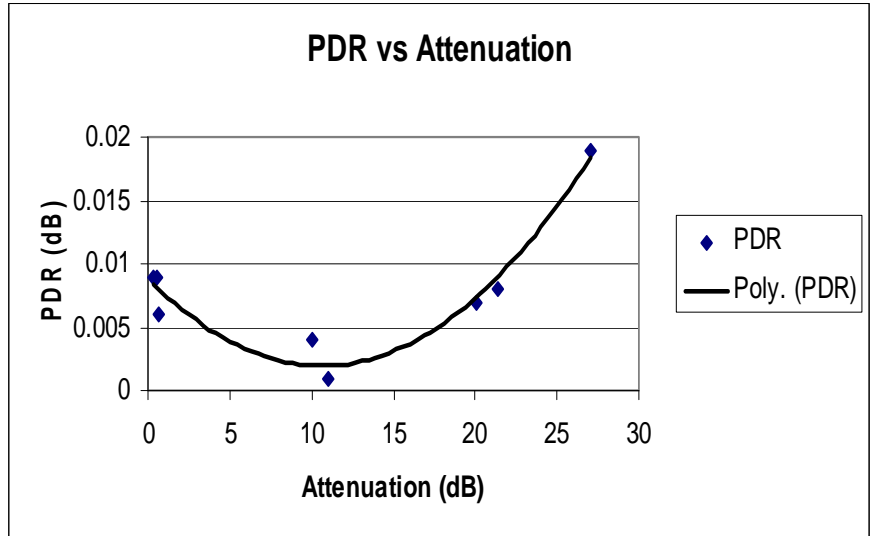
- Power Control
- Power Regulation
- Channel Balance
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# MEMS VOA Typical Tap Performance Charts (2)

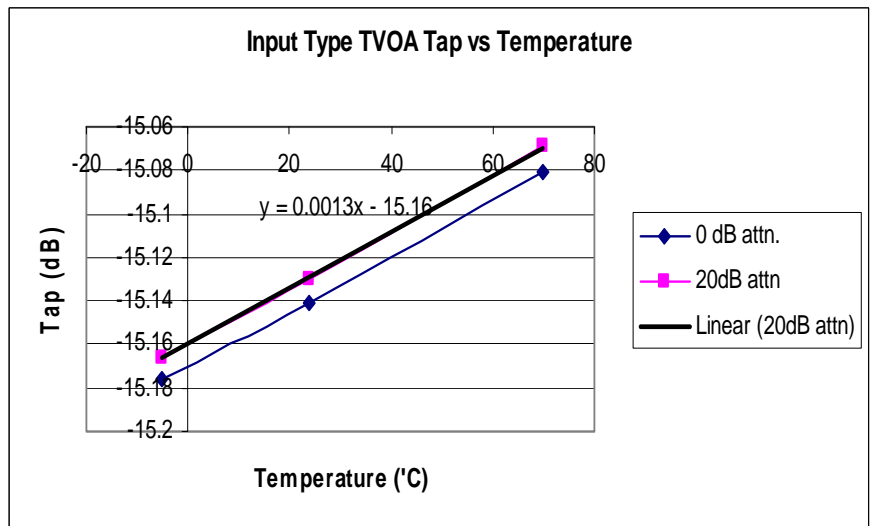
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## Applications

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