MEMS Straight Fiber Optical Variable Attenuator – Attenuation > 70dB

(Protected by US Patent 10752492B2)

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Features

- High Reliability
- Direct DC drive
- Ultra Small
- ESD Insensitive

The MEMS Straight Series Fiber Optical Variable Attenuator uses a patented thermal activated micro-mirror, moving-in and -out optical paths, uniquely featuring large extinction ratio, high stability over wide temperature range, and very long life cycle. The thermal MEMS is insensitive to moisture and ESD without drift issues, providing a high reliability platform for over 25 years continuous operation. The MEMS Straight Series VOAs are configured in single and dual channels (activated at the same time). The VOAs are bidirectional and are Telcordia standards GR1221 qualified.

Agiltron provides customized design and modular assemblies to meet control and integration applications.

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength	Single Mode		1260 ~ 1610		nm
	Multimode	810-890	1260-1360	1500-1600	
Insertion Loss [1], [2]			0.6	1.0 / 1.2 [3]	dB
PDL (SM)				0.1	dB
Extinction Ratio	PM fiber	18			dB
Return Loss	SM, PM	50			dB
	MM	35			
Attenuation		70		85	dB
Response Time			3	7	ms
Repetition Rate				20	Hz
Durability		10^{13}			Cycle
Power Consumption (at maximum)				170	mW
Operating Temperature [4]		-5		+75	°C
Storage Temperature		-40		+85	°C
Optical Power Handling (CW)			300	500	mW
Package Dimension		10L x 6.6W x 4.6H			mm
Fiber Type	Single Mode	SMF-28 or equivalent			
	PM	Panda 150 PM or equivalent			
	Multimode	MM 50/125, MM 62.5/125 or equivalent			

Note:
[1]. Excluding connectors.
[2]. Multimode IL measured @ Light Source CPR < 14dB.
[3]. Dual band.
[4]. Lower temperature version is available, please call us

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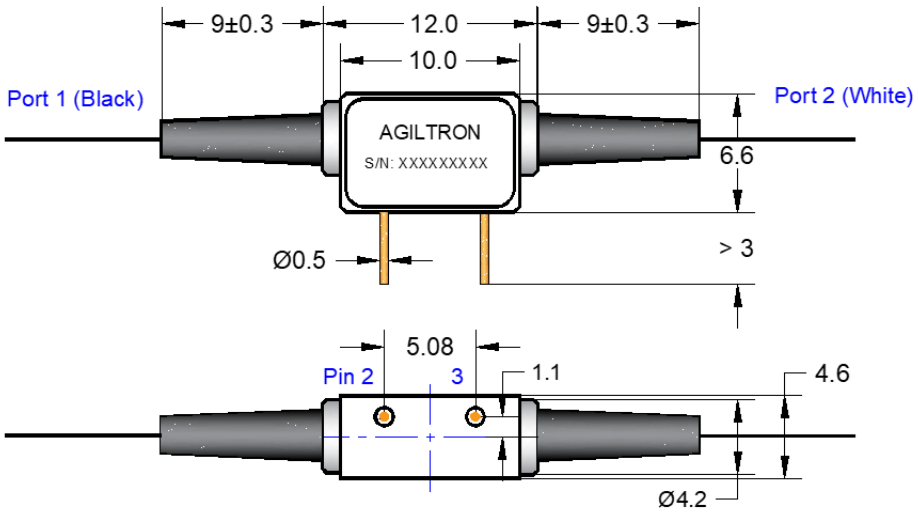
Mechanical Dimension (unit: mm)

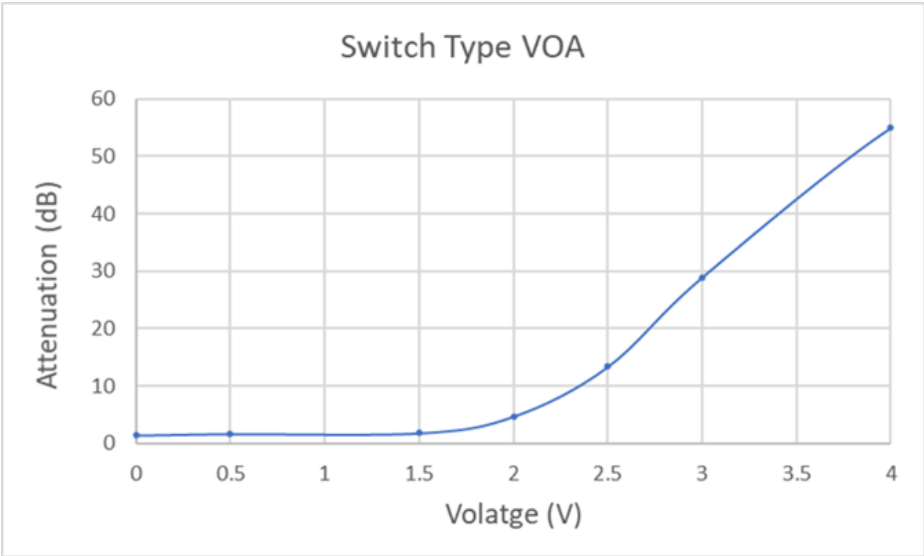


*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Electrical Driving Requirements

1. Resistance load device, insensitive to ESD.
2. Highly recommend to add 70 ohm resistor in series on Pin 3 in driver to smooth the attenuation slope.
3. **Warning: Damaged if applying voltage over the maximum (even for a short time)**
4. Pin 2 = 0V, Pin 3 = 4.5V (maximum)

Response Curve *



Note: Measured with adding a 70 ohm resistor on Pin 3 of MSOA.

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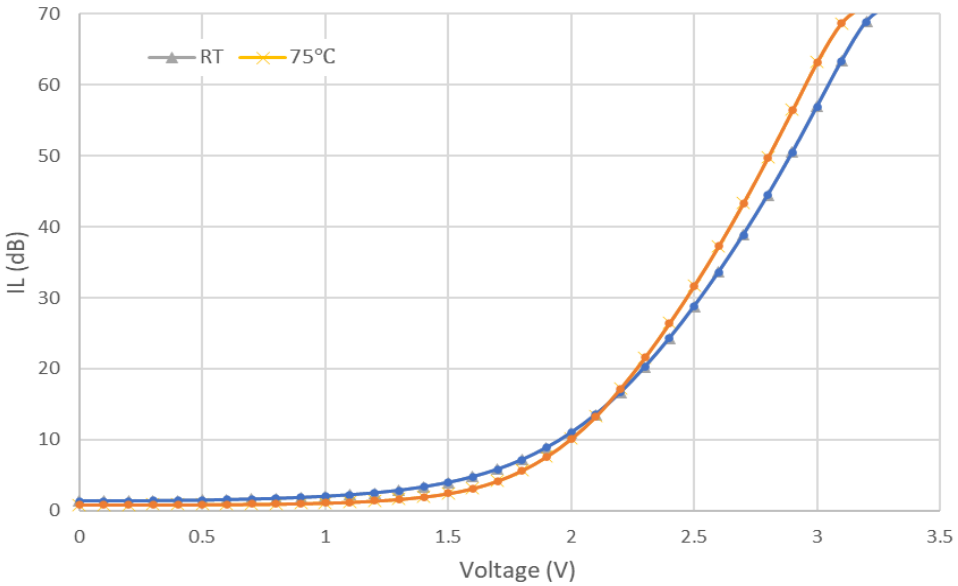
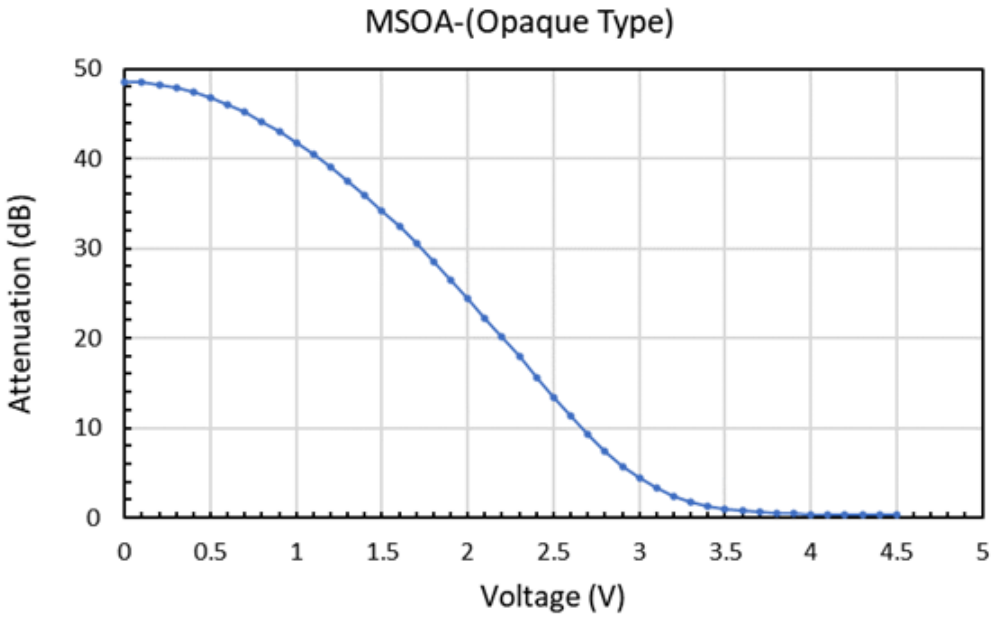
Typical Attenuation vs. Voltage w/ T compensation for Transparent Type



Note: Measured with adding a resistor on Pin 3 of MSOA.

Typical Attenuation vs. Voltage for Opaque Type



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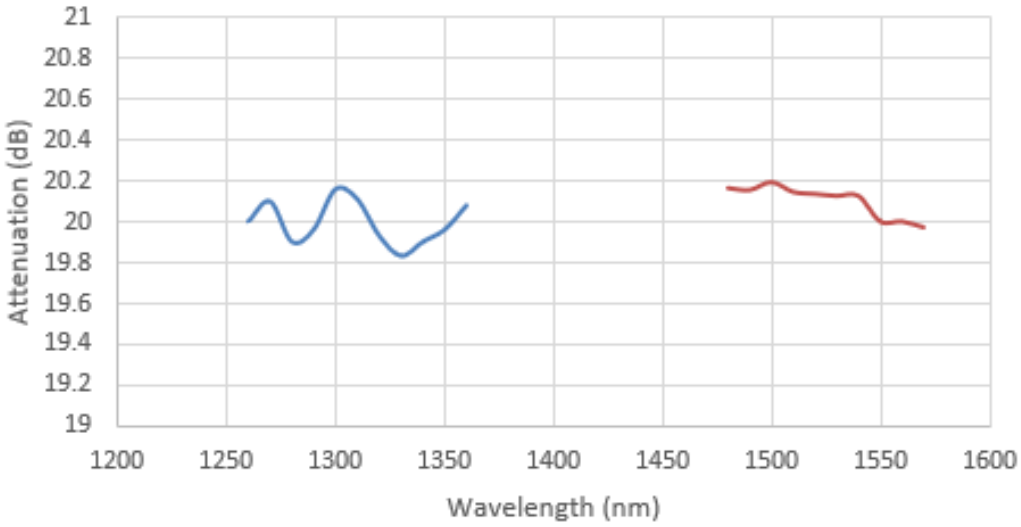
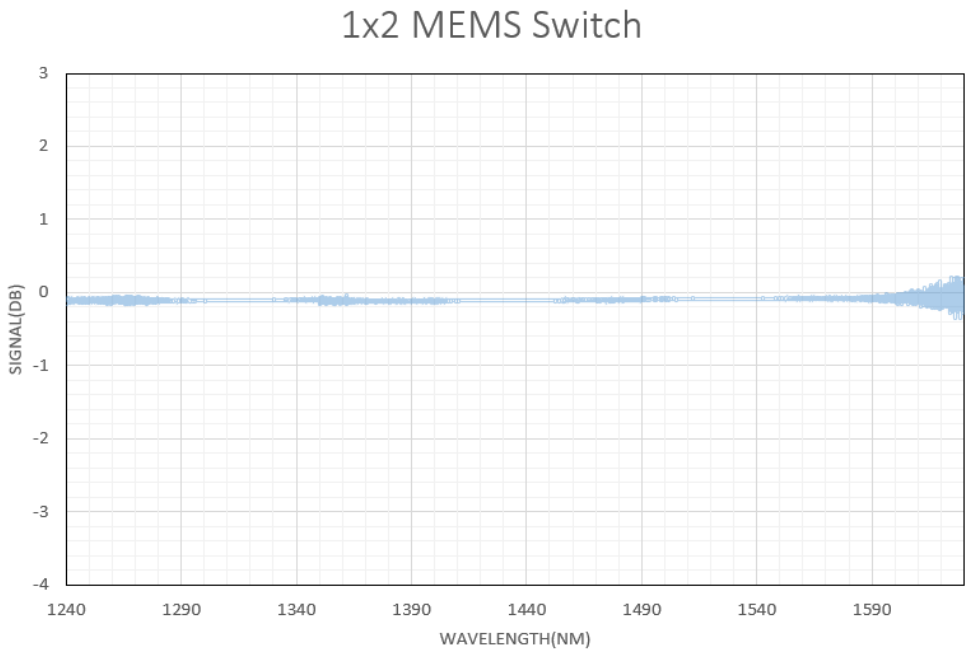
Typical Attenuation vs. Wavelength for WDL at 20 dB



Typical Insertion Loss vs Wavelength (1240-1630nm)



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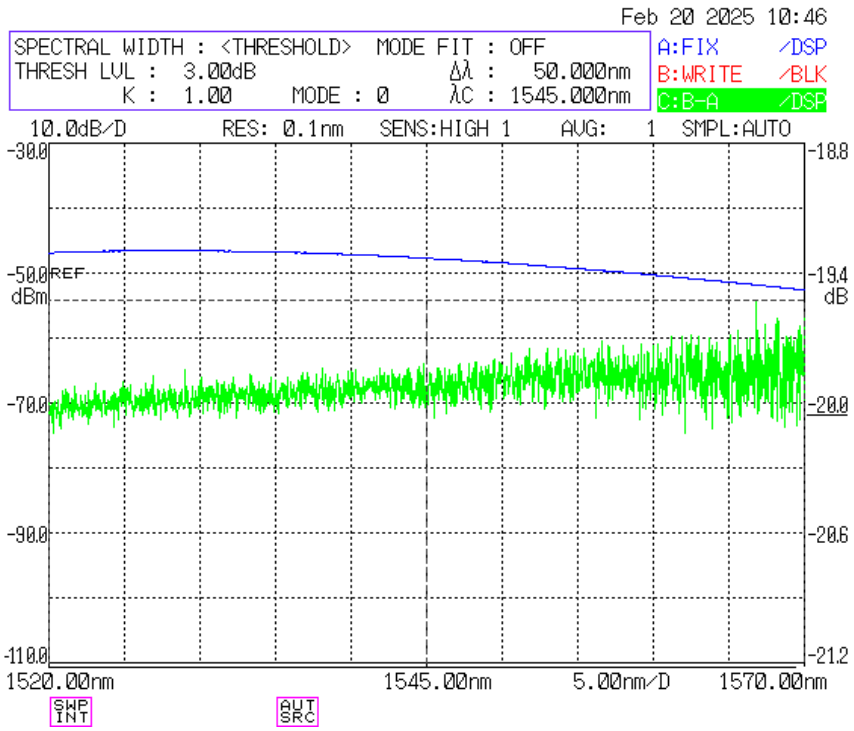
Typical Wavelength Dependence @20dB Attenuation



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Ordering Information

	☐☐	☐	☐	H	☐	☐	☐	☐
Prefix	**Non-Power State**	**Wavelength**	**Temperature Range**	**Package**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
MSOA-	Transparent=01 Opaque [1] =02	1260~1620=B 1060=1 1310=3 1550=5 850=8 850/1310=A Special=0	-5 to 75 ^{0}C= 1 -40 to 75 ^{0}C= 2 Special = 0	H [2]	SMF-28=1 PM1550=B PM1310=D PM980=E PM850=F MM 50/125=5 MM 62.5/125=6 Special=0	Bare fiber=1 900 µm 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 LC=7 Special=0

[1]. Opaque means the light is blocked when no electrical power is present.
[2]. H: High attenuation MEMS VOA, Attenuation >70 dB.

Note:
"transparent" means no attenuation without applying a controlling voltage, the "opaque" means the highest attenuation without applying a controlling voltage.