

Fiber-Fiber™ MEMS Broadband Optical Attenuator

(Protected by US 11125947 and pending Patents)

Product Description

The **Fiber-Fiber™** series VOA is based on fiber to fiber direct coupling with a micro-electro-mechanical (MEMS) shutter in between. It eliminates the need for lens and optical coating, featuring low loss, ultra-broadband without altering fiber transmission character, high power, compact size, and easy drive. The current MEMS chips accommodate fiber with core diameter from 3 to 105 μm. VOAs with fiber of larger diameters can be made with special chip fabrication run with a NRE charge. The **Fiber-Fiber™** series VOA is compliant with the Telcordia 1209 and 1221 reliability standards. The VOA is driven by directly applying a low electrical voltage.



Features

- Low Insertion Loss
- High Reliability
- Broadband
- High Optical Power

Performance Specifications

Parameter	Min	Typical	Max	Unit
Wavelength	380 ^[1]		2000	nm
Band Width	broad same as fiber transmission			
Insertion Loss ^[2]		0.5	1.0	dB
Attenuation Resolution		Continuous		dB
Attenuation Range (Core < 8 μm)	35	40	60	dB
Return Loss	28	30	40	dB
Response Time	5	20	30	ms
Optical Power Handling (CW) ^[5]		300	500	mW
Polarization Extinction Ratio	18	20	30	ms
Driving Voltage (full range) ^[6]		3.5	5	VDC
Power Consumption	0	80 ^[3]	220 ^[4]	mW
Reliability	Telcordia 1209 and 1221			
Operating Temperature	-40 ~ 80			°C
Storage Temperature	-40 ~ 85			°C
Fiber Type	50/125, 62.5/125,			
Package Dimension	See drawing below			
				mm

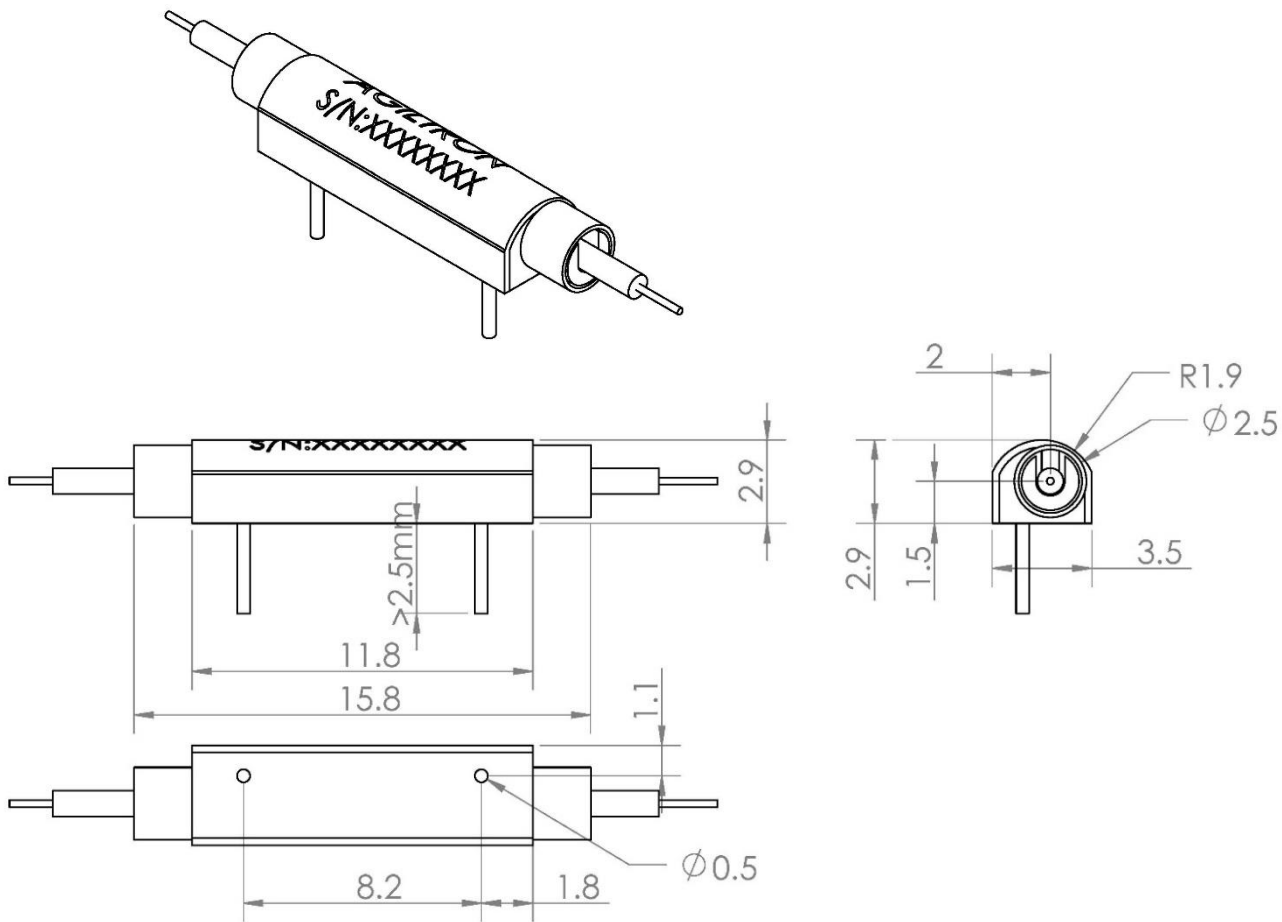
Notes:

- [1] Transmission is the same as the fiber without wavelength alternation
- [2] Measure with CPR < 20 laser/LED source and excluding connectors
- [3] About 15dB
- [4] At full attenuation
- [5] The power handling is related to wavelength: 50mW for 380nm, 200mW for 980nm, 500mW for 1060nm
- [6] The full range voltage is related to the fiber core size, the value for SM28 fiber only

Applications

- Dynamic gain equalization
- Sensor
- Instrumentation

Mechanical Dimensions-Package



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

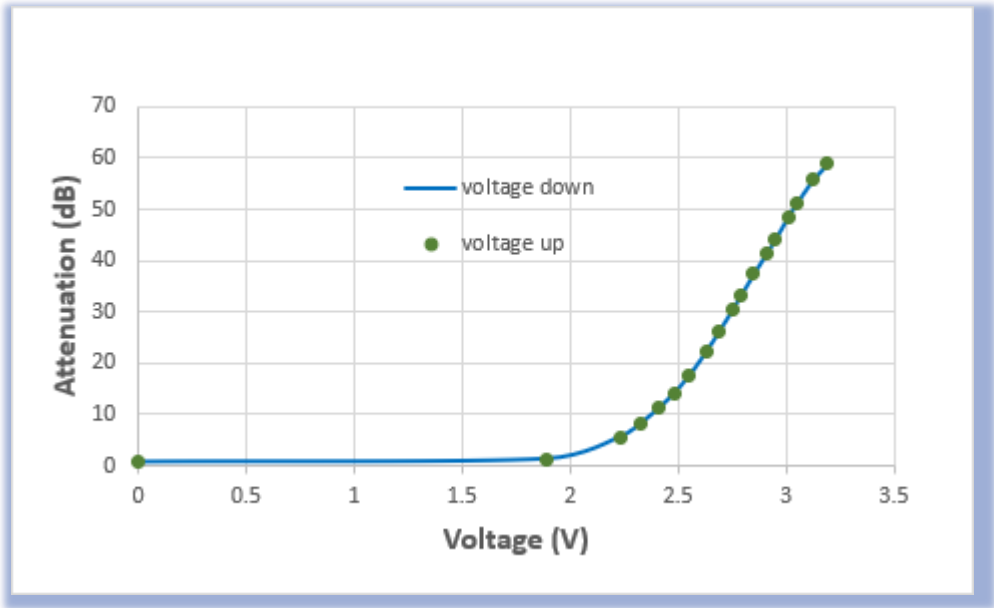
Electrical Driving Information

Pin No.	Definition	Voltage(V)	Pin No.	Definition	Voltage(V)
1	VOA	0 ~ 4.7	2	VOA	0

- NOTE:
- No polarity, electrostatic insensitive
 - The full range voltage is related to the fiber core size, the value for SM28 fiber only

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Typical Response



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Ordering Information

Prefix	Configuration	Type	Test Wavelength	Fiber Type	Fiber Cover	Fiber Length	Connector
FVOA-	Standard = 11 Special = 00	Normally Open=1	488 = 4 532 = 5 630 = 6 780 = 7 850 = 8 980 = 9 1060 = 1 1310 = 3 1550 = C 2000 = 2 Special = 0	Pick from below table	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

Fiber Type Selection Table:

01	SMF-28	34	PM1550	67	GIF 50/125 μm
02	SMF-28e	35	PM1950	68	GIF 62.5 μm
03	Corning XB	36	PM1310	69	105/125 μm
04	SM450	37	PM400	70	FG105LCA
05	SM1950	38	PM480	71	FG50LGA
06	SM600	39	PM630	72	FG10LDA
07	Hi780	40	PM850	73	
08	SM800	41	PM980	74	
09	Hi980	42	PM780	75	
10	Hi1060	43	PM350	76	
11	SM300	44		77	
12	SM400	45	PM460	78	
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