

MEMS Ultra Mini Variable Optical Attenuator

(US patent 8,666,218 and other patents pending)

Product Description

The *et*MEMS™ Series VOA is based on a patented micro-electro-mechanical mechanism featuring ultra-compact design, simple construction, easy direct drive, and excellent optical performance. The *et*MEMS™ series VOA is compliant with the Telcordia 1209 and 1221 high reliability standards. The electrical connection is a flexible PCB with two holes at the end to mate with two pins on the board. Temperature compensation resistor can also be mounted to the device.

The *et*MEMS™ series VOA is available in either normally-open or normally-closed configurations and with an integrated tap option. The VOA is driven by applying an electrical voltage.



Performance Specifications

SM series VOA	Min	Typical	Max	Unit
Wavelength	1310	1480	1550	nm
Band Width		+/-50		nm
Insertion Loss ^[1]		0.5	1	dB
Wavelength Dependent Loss	@10dB	0.2	0.4	dB
	@20dB	0.4	0.7	dB
Temperature Dependent Loss ^[2]	@10dB	0.4	0.7	dB
	@20dB	0.8	1.2	dB
Attenuation Resolution		Continuous		dB
Return Loss	45			dB
Response Time		3	6	ms
Power Handling		300	500	mW
Driving Voltage ^[3]		5	6	VDC
Power Consumption ^[3]		80	120	mW
Reliability		Telcordia 1209 and 1221		
Operating Temperature		-5 ~ 70		°C
Storage Temperature		-40 ~ 85		°C
Fiber Type		SMF-28		
Package Dimension		See drawing below		mm

Notes:

[1]: Excluding connectors

[2]: Reference to room temperature

[3]: For full dynamic range, other drive voltage available

Features

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

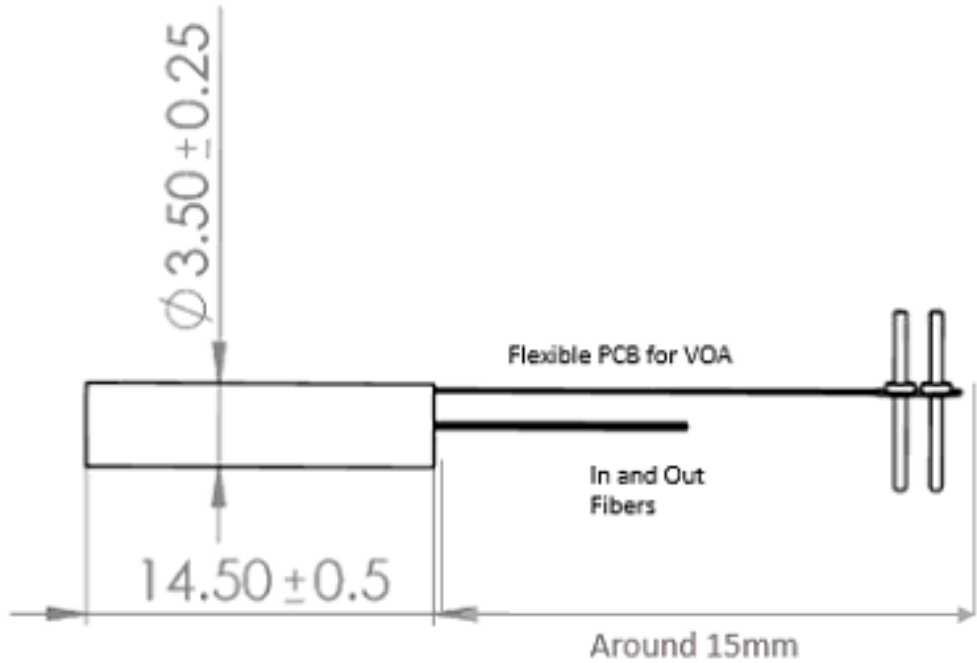
Applications

- Power Control
- Power Regulate
- Channel Balance
- Instrumentation



eMEMS™ Variable Optical Attenuator

Mechanical Footprint Dimensions (mm)



Electrical Driving Instruction

NOTES

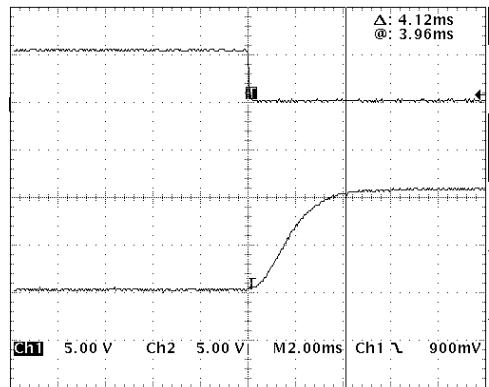
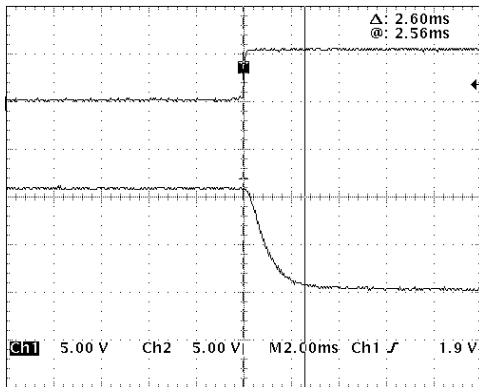
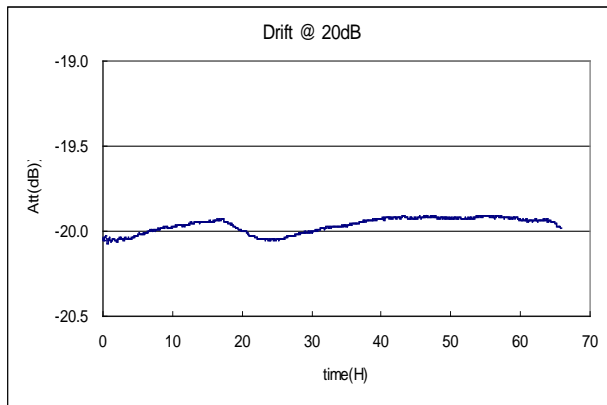
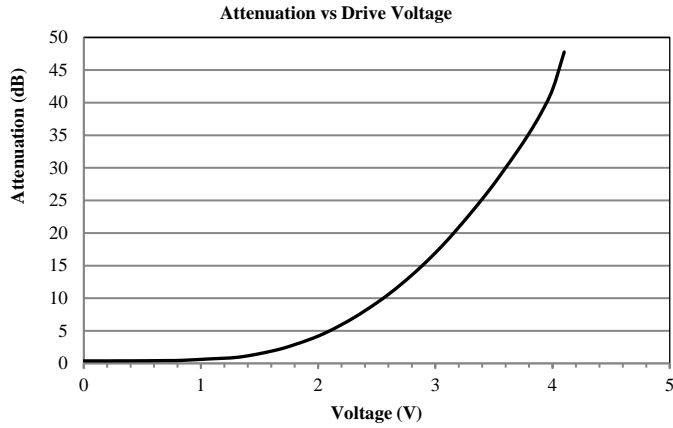
- 40 gauge magnetic wire 1 and wire 2 are for control voltage without polarity.
- Do not apply voltage more than 5.2V.

Ordering Information

UMOA-	Type	Wavelength	Off State	Package	Fiber	Fiber Length	Connector	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Drive Voltage 5V=11 Driving Voltage 3.5V=22 5V T compensation=13 3.5V T compensation=12 Special=00	1260-1620= 8 1310=3 1550 = 5 S+C+L=2 Special = 0	Transparent=1 Opaque = 2	L14.5mm=1 L12mm=2 Special=0	SMF-28 =1 Special = 0	Bare fiber=1 900um loose 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 /PC= 7 LC/APC=8 Special = 0

etMEMS™ Variable Optical Attenuator

Typical Performance Charts



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Temperature/Humidity Test Charts

Ultra Mini VOA Thermal Shock Test						
Cold @ -40°C and Hot @ 85°C, 100 cycles						
	Driving Voltage @ 0V Insertion Loss (dB)		Driving Voltage @ 1.25V Attenuation (dB)		Driving Voltage @ 3V Attenuation (dB)	
	Before	After	Before	After	Before	After
VOA 1	0.71	0.66	0.95	0.89	13.5	13.01
VOA 2	0.61	0.58	0.7	0.67	9.62	10.01
VOA 3	0.59	0.55	0.62	0.57	8.88	8.45
VOA 4	0.72	0.87	0.89	1.04	9.31	9.5
VOA 5	0.78	0.72	0.81	0.77	8.95	9.2
VOA 6	0.62	0.67	0.73	0.79	12.42	12.7
VOA 7	0.66	0.65	0.71	0.72	11.92	12.19
VOA 8	0.67	0.64	0.76	0.74	11.23	11.85
VOA 9	0.79	0.85	0.84	0.91	9.21	9.03
VOA 10	0.84	0.81	0.88	0.85	9.21	9.04
VOA 11	0.61	0.93	1.06	1.33	12.99	12.41
VOA 12	0.75	0.68	0.87	0.81	11.35	11.44

