*et*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 proprietary micro-electro-mechanical mechanism featuring compact design, simple construction, easy direct drive, and excellent optical performance. The *et*MEMS™ series VOA is compliant with the Telcordia 1209 and 1221 reliability standards.

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.

Features

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

Applications

- Power Control
- Power Regulate
- Channel Balance
- Instrumentation

Performance Specifications

MM Series VOA		Min	Typical	Max	Unit
Central Wavelength		1310±50 / 1480±50 / 1550±50			nm
Insertion Loss[1]			0.5	0.8	dB
Attenuation Range		25	30		dB
Polarization Dependent Loss	@10dB		0.15	0.3	dB
	@20dB		0.25	0.5	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		
Polarization Mode Dispersion			0.01	0.05	ps
Return Loss		45			dB
Repeatability				0.1	dB
Response Time			3	6	ms
Driving Voltage at 10 dB attenuation				3	V
Driving Voltage at 30 dB attenuation			5	5.2[3]	V
Device Resistance			100		ohm
Power Consumption[4]			80	130	mW
Optical Power Handling			100	500[5]	mW
Operating Temperature		-5		75	°C
Storage Temperature		-40		85	°C
Reliability		Telcordia 1209 and 1221			
Fiber Type		Corning SMF28 or equivalent			
Package Dimension		See drawing below			mm

Notes:

1. Excluding connectors
2. Reference to room temperature
3. Over this value will damage the device
4. For full dynamic range.
5. Requires mounting to a metal frame for cooling.

RoHS Compliant

Revision: 4-24-18

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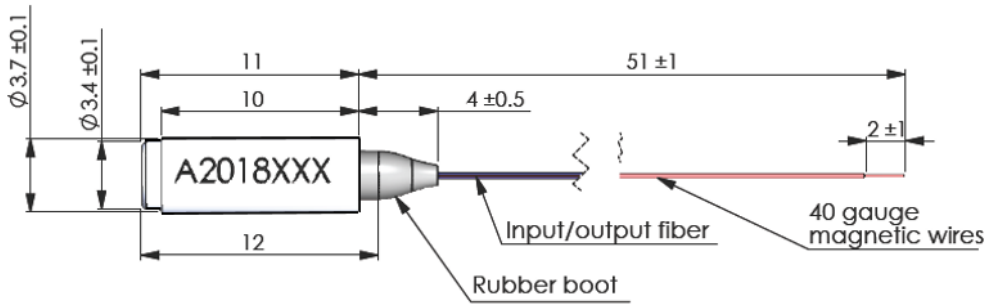
Mechanical Footprint Dimensions (mm)



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
	Drive Voltage 5V=11 3.5V=22 Special-00	1310=3 1550 = 5 S+C+L=2 1260~1620= 8 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

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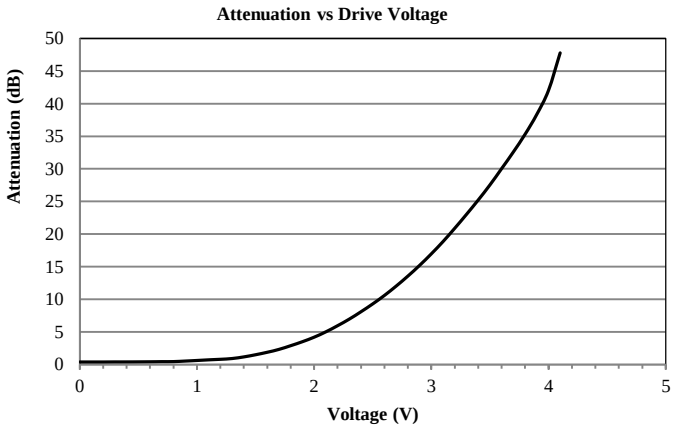
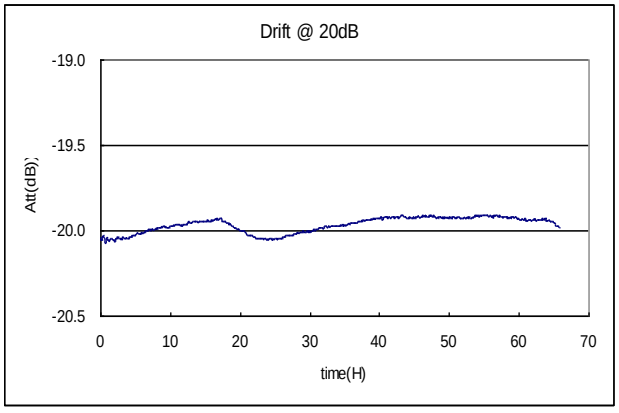
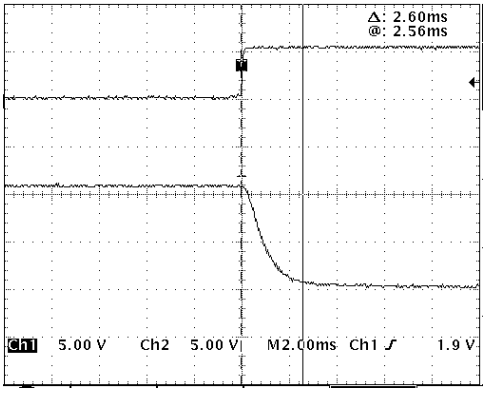
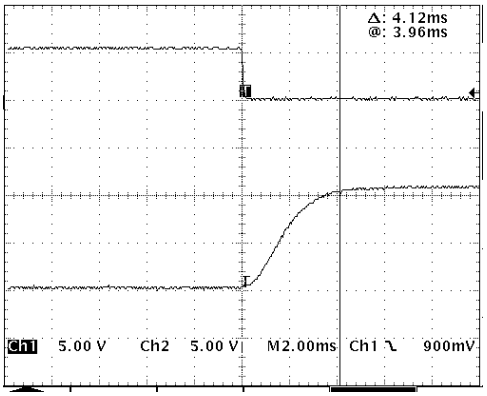
Typical Performance Charts









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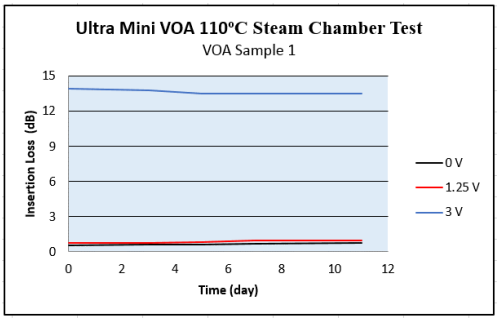
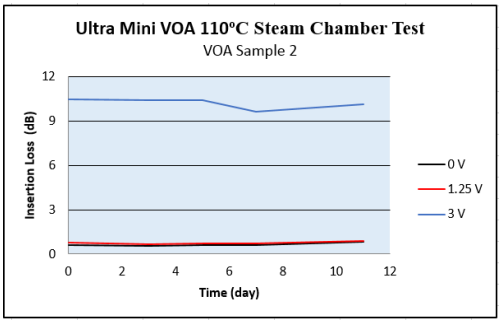
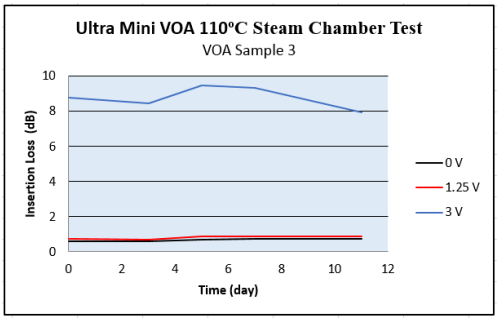
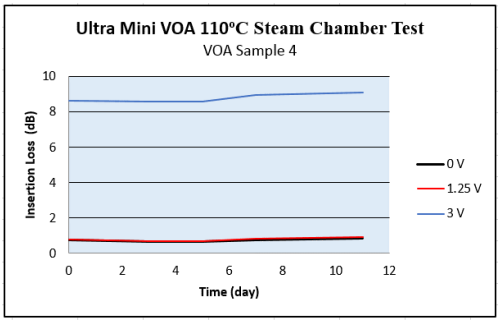
Temperature/Humidity Test Charts

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









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