Mini etMEMS VOA with Input Power Monitor AGILTRON



(Vibration Insensitive, Directional and Unidirectional)

(patent protection US8666218B2)



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The mini MEMS Variable Optical Attenuator Integrated with Input Optical Power Monitor is a hybrid fiber optical device that integrates a thin-film tap of flat spectral response and a high sensitivity PIN photodiode for power monitoring applications with a MEMS VOA. The Power Monitor minimizes component assembly costs and module footprint. The thermal MEMS VOA has little temperature dependence and drift. It is intrinsically more reliable than electrostatic MEMS VOAs.

The Power Monitor has low insertion loss and low dark current with high temperature stability over a wide wavelength range from 1260nm to 1620nm band.

Features

- Integrated
- Low Loss Device
- Custom Tap Ratios Available
- Compact Design

Applications

- Channel Monitoring
- Power Monitoring in Optical Interface Modules
- Gain Monitoring for Amplifier
- **DWDM System Monitoring**

Specifications

Parameter	Min	Typical	Max	Unit	
Wavelength	1260		1620	nm	
Insertion Loss ^[1]		0.6	0.8	dB	
Polarization Dependent Loss ^[2]		0.15	0.8	dB	
Wavelength Dependence Loss ^{[3],[4]}			0.3	dB	
Attenuation Range		25	35	dB	
Attenuation Resolution	Continuous				
Polarization Mode Dispersion ^[2]	0.005	0.01	0.05	ps	
Return Loss	38			dB	
Response Time			5	ms	
TAP ratio	1	3	5	%	
Tap Response @ 1550nm	12	15	40	mA/W	
Wavelength Dependence Response		0.02	0.03	dB/nm	
Polarization Dependence Response [2]	0.02	0.10	0.25	dB	
Temperature Dependence Response			0.01	dB/°C	
Dark Current at 5V bias @ 23°C			1	nA	
3dB Bandwidth (cutoff frequency)		10		MHz	
Capacitance			6	pF	
Power Consumption		130	180	mW	
Operating Temperature	-5		75	°C	
Storage Temperature	-40		85	°C	
Reliability	Telcordia 1209 and 1221				

- [1]. Without connector and in room temperature. If the tap ratio higher than 3%, the insertion loss
- [2]. At attenuation equal or less than 20dB
- [3]. At 0dB attenuation and in whole temperature range
- [4]. Within 30nm Bandwidth

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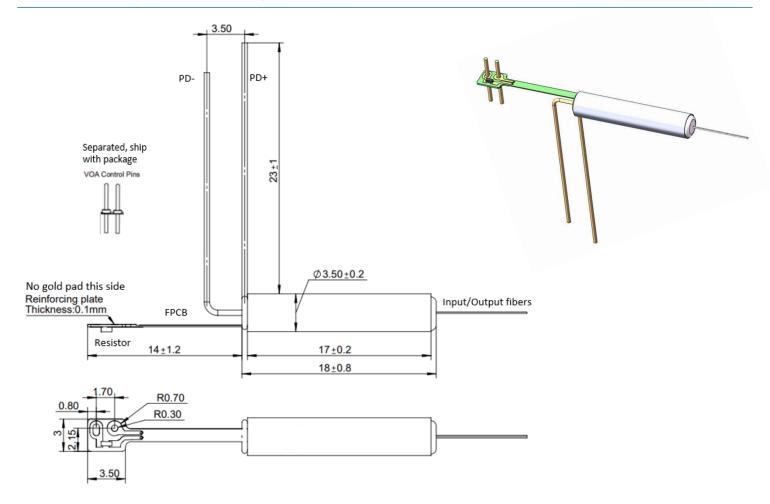
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Mechanical Footprint Dimensions (Unit:mm)



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

Electrical Driving Instruction

Handling and Operating Notes for VOA and Photodiode Connections

- The flexible PCB is for VOA driving. The VOA behaves as a resistive load, has no polarity, and is not sensitive to ESD.
- The maximum control voltage for the VOA is 5 V.
 - Applying a voltage higher than 5 V may damage the device.
- The PD+ and PD- pads are for connecting an external photodiode.
- The Tap photodiode is extremely sensitive to electrostatic discharge (ESD).
- Even minor ESD damage may not cause immediate failure, but can lead to gradual performance degradation.
- Always short the PD+ and PD- pins together during handling or transport.
- The black conductive foam covering the photodiode pins must not be removed until final assembly in an ESD-safe environment.



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Ordering Information

Prefix	Tap Ratio	Wavelength	VOA Off State	Directivity	Fiber Type	Fiber Cover	Fiber Length	Connector
MOAP-	3% = 03 Special = 00	C+L = 2 1310 = 3 1550 = 5 1260-1620 = B Special = 0	Transparent = 1 Opaque = 2	No = 1 Yes = 2	SMF-28 = 1 PM1550 =2 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/PC = 7 LC/APC = 8 Special = 0

Note:

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



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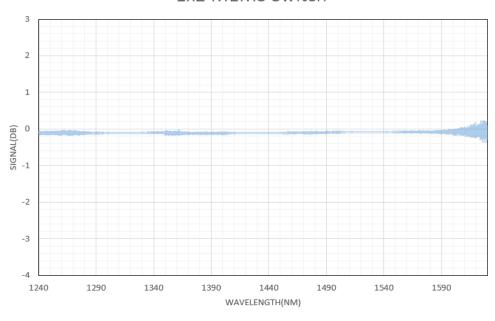
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Typical Insertion Loss vs Wavelength (1240-1630nm)

1x2 MEMS Switch



Response 0~20dB

