

etMEMS™ Multimode Variable Optical Attenuator Integrated With Input Tap

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

Product Description

The etMEMS™ Series VOA is based on a micro-electro-mechanical mechanism featuring integrated compact design, simple construction, easy direct drive, and excellent optical performance of ultra low insertion loss, low PDL, and broad wavelength operation range. The VOA integrated with input tap power monitor is able to monitor the input power and adjust the attenuation to control the output power. The MM series VOA is design for multimode fiber application. The MM series VOA is available in either normally-open or normally-closed configurations and with an integrated input tap option.

The VOA is driven by applying an electrical voltage



Performance Specifications

etMEMS™ Series MTOA	Min	Typical	Max	Unit
Wavelength	700	850	1000	nm
Insertion Loss ^[1]		0.6	1.0	dB
Modes Dependent Loss ^[2]		0.2	0.5	dB
Wavelength Dependence Loss ^{[3],[4]}		0.4	0.7	dB
Attenuation Range	25	30	35	dB
Attenuation Resolution		Continuous		
Return Loss	20	25		dB
Response Time		3	6	ms
Driving Voltage ^[5]		4.5	5.2 ^[7]	V
Device Resistance	80	100		Ω
Optical Power handling (CW)		300	500	mW
Tap Response @ 850nm	5	10	15	mA/W
Tap directivity		N/A or 20		dB
Tap Wavelength Dependence Response ^[6]	0.01	0.02	0.04	dB/nm
Tap Temperature Dependence Response			0.1	dB/°C
Tap Dark Current For PD		5		nA
Tap Dark Current For APD		0.05		nA
Tap 3dB Bandwidth (cutoff frequency)		1		MHz
Tap Capacitance (PD)		1.5		pF
Tap Capacitance (APD)		15		pF
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C
Reliability		Telcordia 1209 and 1221		
Package Dimension		Φ6.1 X 35.2		mm

Notes:

[1].Without connector and measured by light source CPR-14 dB.

[2].At 0dB attenuation

[3].At 0dB attenuation and at whole temperature range

[4].Within 40nm Bandwidth

[5].At 20dB attenuation for transparent version, at 0.8dB attenuation for opaque version.

[6].This is related to tap ratio. The spec data is regarding 3% tap.

[7].Over this value will damage the device.

Features

- VOA + Tap
- Compact Size
- Low Cost
- High Reliability
- Low IL, PDL, WDL and TDL
- Direct Drive

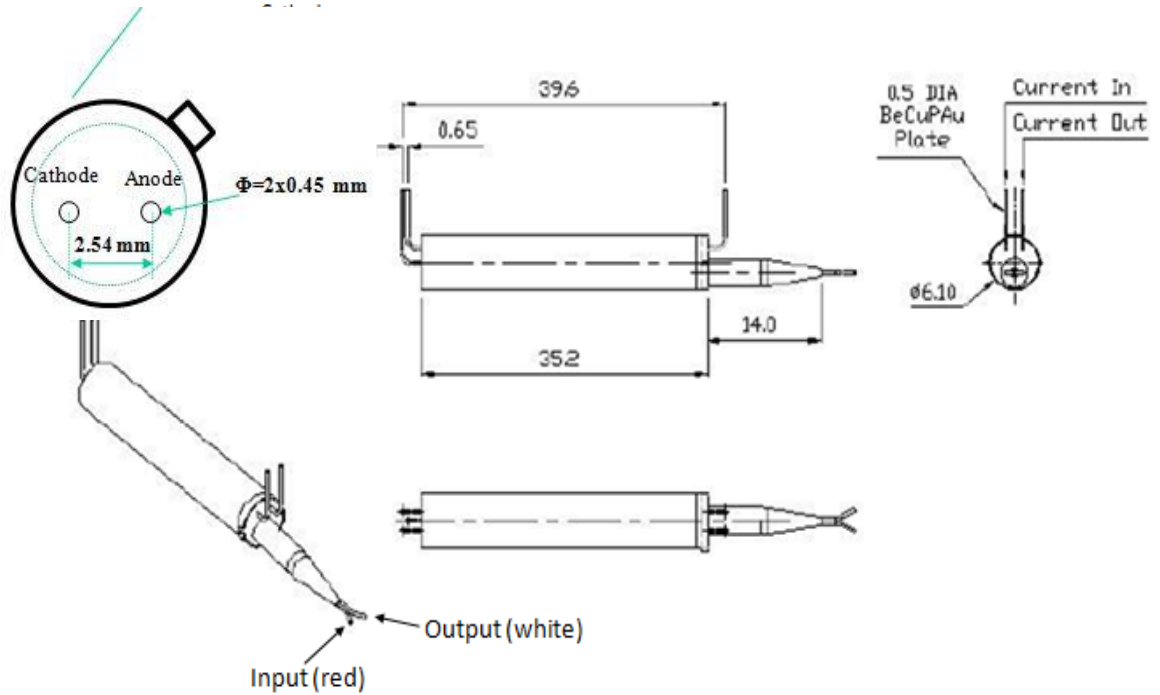
Applications

- Power Control
- Power Regulation
- Channel Balance
- Instrumentation



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Mechanical Footprint Dimensions (Unit:mm)



Ordering Information

Prefix	Type	Wavelength	Off State	Directivity	Fiber	Fiber Cover	Fiber Length	Connector
MTOA-	Input tap VL ^[1] = 21	850=8 C+L=2 1310=3 1260-1620=4 1550=5 Special = 0	Transparent=1 Opaque=2	No=1 Yes=2 Special =0	50/125 =1 62.5/1250=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 = 7 Special = 0

[1]. Input tap VL voltage control

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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Typical Insertion Loss vs Wavelength (1240-1630nm)

1x2 MEMS Switch

