1210 – 1650 nm MEMs Optical Attenuator

Description

The VOA series optical attenuator is an electronically variable optical attenuator based on an electrostatic rotating mirror. The device offers high repeatability, low power consumption, fast response time, and is compliant with Telcordia GR-1221 standards. The MEMS optical attenuator is hermetically sealed. The VOA series comes with full customization capability. A BNC connection is available for easy system and machine integration.

Features

- 45 dB attenuation
- Low voltage (0-8 V)
- High repeatability
- Fast response
- Low initial insertion loss
- Stable across temperature
- Continuous attenuation

Applications

- Test and Measurement
- Datacenters
- RF over Fiber (RFoF)

Electro-Optical Characteristics (T = 25°C)

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Wavelength	λ	1250		1650	nm	Others available
Insertion Loss	OIL	-	0.3	1	dB	
Optical Return Loss	ORL	-	50		dB	Taken at 1310 & 1550 nm
Repeatability	R	-	0.05		dB	Attenuation < 20 dB
Bias Voltage	V	0		7	V	
Cycles		-	10		10^9	
Polarization Depend Loss	P_{DL}	-	0.2	-	dB	Attenuation < 10 dB
		-	0.5	-		Attenuation < 20 dB
Switching Time	Ts		0.5	3	ms	Off to On
Optical Power handling	Po	-	-	500	mW	
Wavelength Dependent Loss	WDL	-	0.5	-	dB	
Attenuation temperature change	-	-		1	dB	From 25 – 80°c at 20 dB Attenuation
Ripple	-	-	0.05	-	dB	20 dB attenuation
PMD	-	-	0.1	-	ps	

Absolute Maximum Rating (T = 25°C)

Parameter	Symbol	Condition	Min.	Max.	Unit
Voltage	V_r	VOA	-	8	V
Forward Current	I_F	-	-	0.05	mA
Input Optical Power	P_{in}		-	600	mW
Fiber Bend Radius	R	SMF28	30	-	mm
Storage Temperature	T_{stg}	-	-25	90	°C
Storage Humidity	H_{stg}	-	-	85	% RH
Operating Temperature	T_{op}	-	-25	80	°C
Soldering Temperature	T_{st}	60 sec	-	200	°C
ESD Susceptibility	-	HBM	100	-	V

Device Pin Configuration (Bottom View)

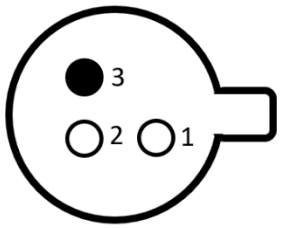


Fig 1A: Bottom View

Pin	Function
1	V+
2	GND / V-
3	Case Ground

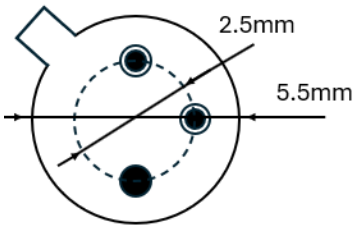
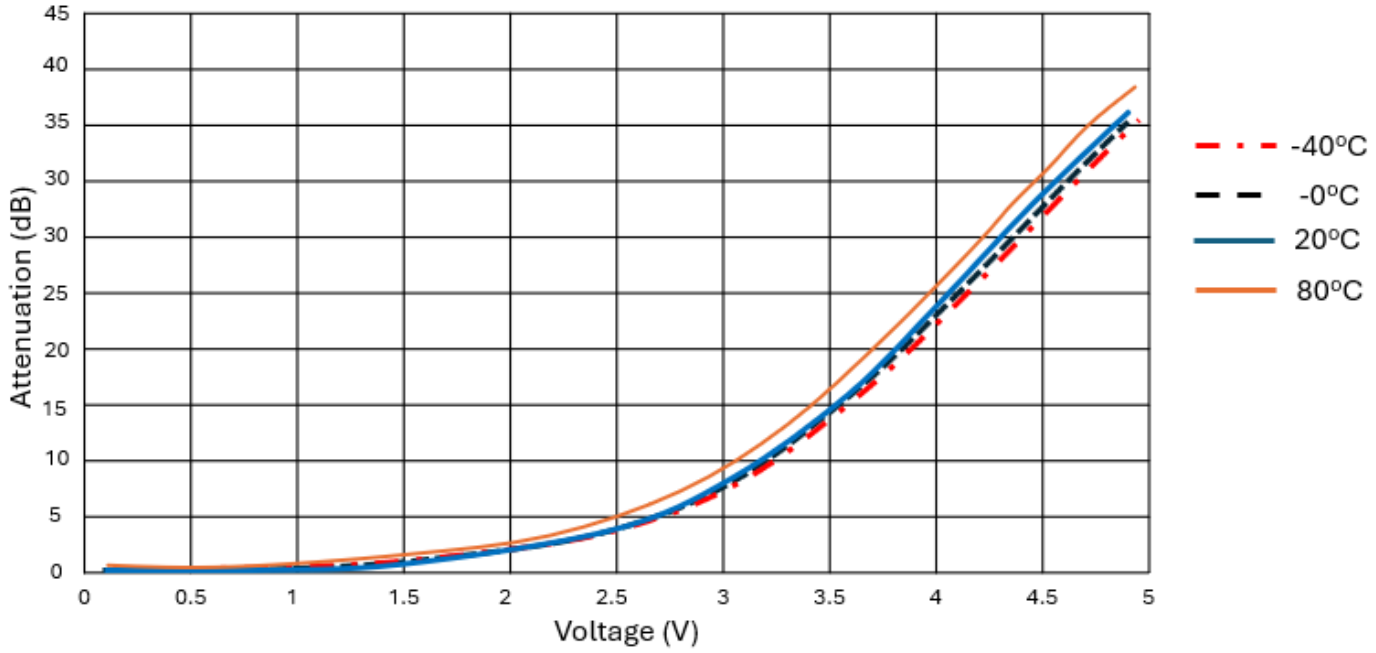


Fig 1B: Pin Dimensions

Typical Performance Curves (Top = 25°C)



Device Dimensions

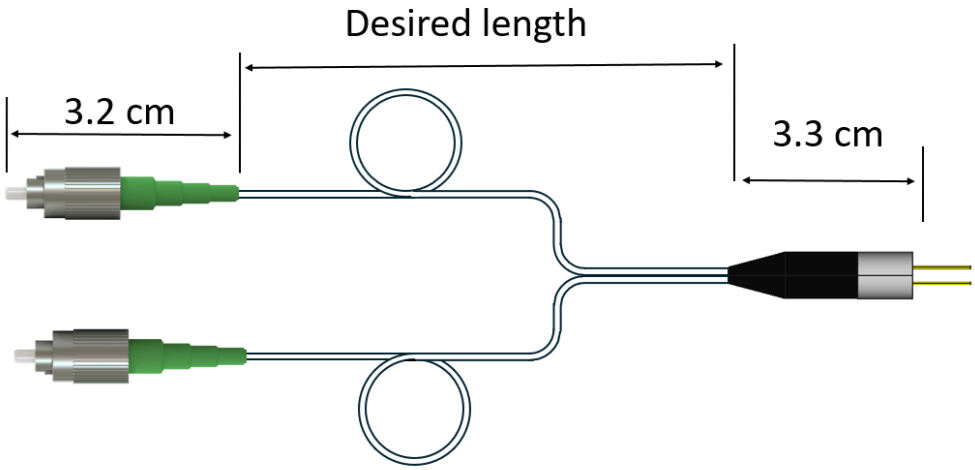


Fig 2: Device mechanical drawing. (All units in mm). Fiber and connector size differs based on build configuration.

Device Nomenclature

VOA-1216-XX-X

Product Line – MEMS VOA

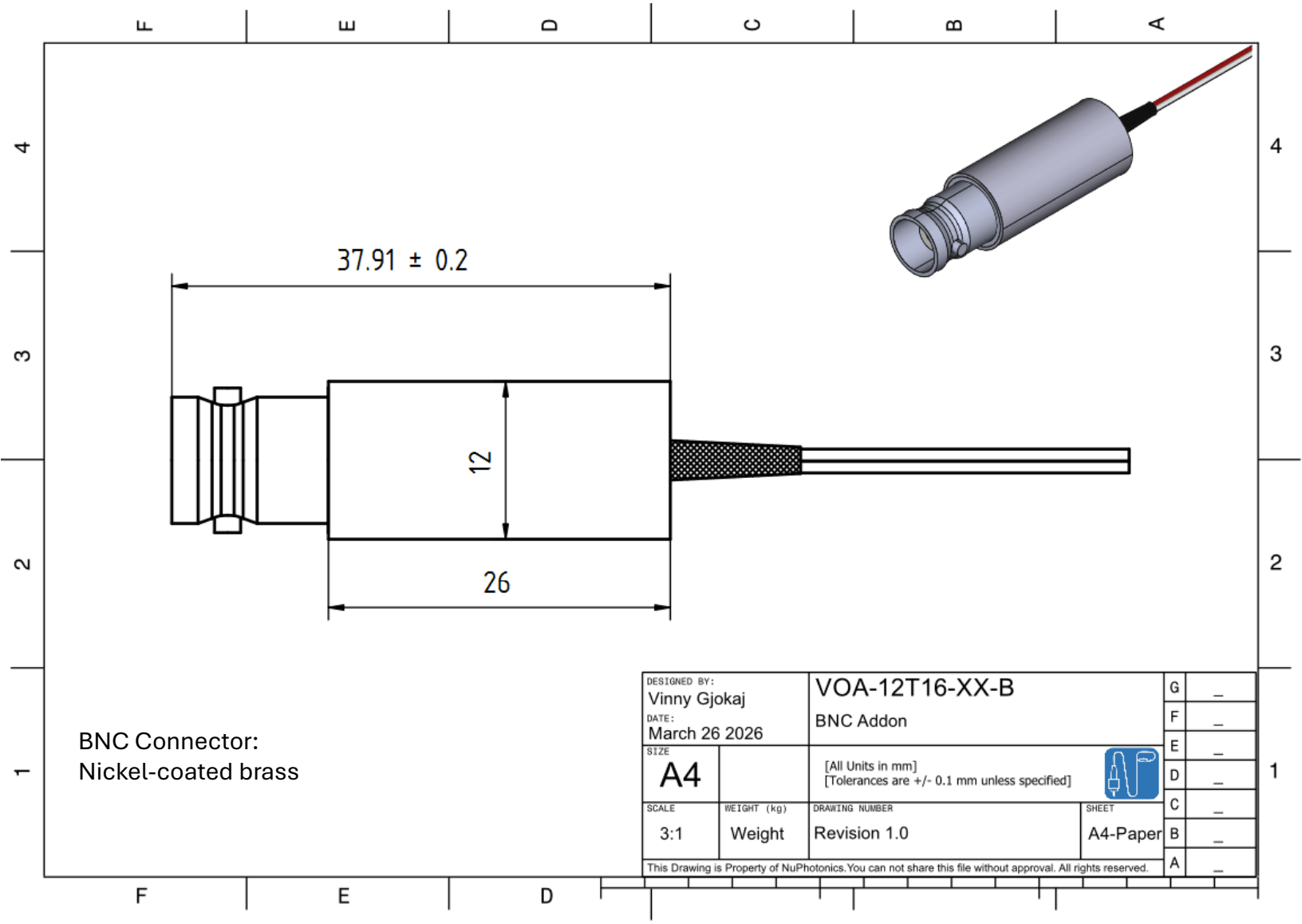
Wavelength Range – 1210-1650

Build
A) Standard Build
B) BNC Connection

Optical Connector
(00) No Connector
(FA) FC/APC
(FP) FC/PC
(SA) SA/APC
(SP) SC/PC

Example – VOA-1216-FA-B
1210–1650 nm MEMS VOA, FC/APC, BNC connection

BNC Connection (Option B)



DESIGNED BY: Vinny Gjokaj		VOA-12T16-XX-B	
DATE: March 26 2026		BNC Addon	
SIZE A4		[All Units in mm] [Tolerances are +/- 0.1 mm unless specified]	
SCALE 3:1	WEIGHT (kg) Weight	DRAWING NUMBER Revision 1.0	SHEET A4-Paper

This Drawing is Property of NuPhotonics. You can not share this file without approval. All rights reserved.

BNC Connector:
Nickel-coated brass

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Beta Build – Device is available for external evaluation and engineering sampling. Specifications are subject to minor change.
Production Build – Device is released for production. Minor cosmetic or appearance variations may occur.
Obsolete – Device is no longer in production and is not supported.

Revision History

1.1 – March 2026 – Grammatical and spelling error correction. Updated Disclaimer section. Added BNC Option.

1.0 – January 2024 – Initial Release