

# 0.5mm Movement Free Space *etMEMS*<sup>™</sup> Attenuator/Shutter Chip

(Protected by US patents pending)

## Product Description

The *etMEMS*<sup>™</sup> series of free space variable optic attenuator (FS-VOA) is based on a proprietary patent pending micro-electro-mechanical mechanism featuring exceptionally compact size with large shutter movement, simple construction, and easy direct drive. The *etMEMS*<sup>™</sup> series of FS-VOA is designed to completely block a collimated light beam  $\leq 500 \mu\text{m}$  in diameter and be operated in air without the need for hermetic seal and is fully compliant with the Telcordia 1209 and 1221 reliability standards. The device is ideally suited to be integrated into laser systems.

The different movement FS-VOA chip up to 700um is available, please contact us.

## Performance Specifications

FS Series VOA/Shutter	Min	Typical	Max	Unit
Attenuation Resolution	Continuous			
Shutter Movement	500			$\mu\text{m}$
Response Time	20		40	ms
Optical Power Handling	500			mW
Driving Voltage <sup>[1]</sup>	3.5		4.5	V
Device Resistance	70 <sup>[2]</sup>		100	Ohm
Power Consumption	210		250	mW
Resonant Frequency	200			Hz
Operating Temperature	-5		75	°C
Storage Temperature	-40		85	°C
Reliability	Telcordia 1209 and 1221			
Package Dimension	See drawing below			mm

Notes:

[1]. For full dynamic range.

[2]. At voltage 4V.

## Features

- Compact
- High Reliability
- Low IL, PDL, WDL & TDL
- Intrinsic tolerance to ESD

## Applications

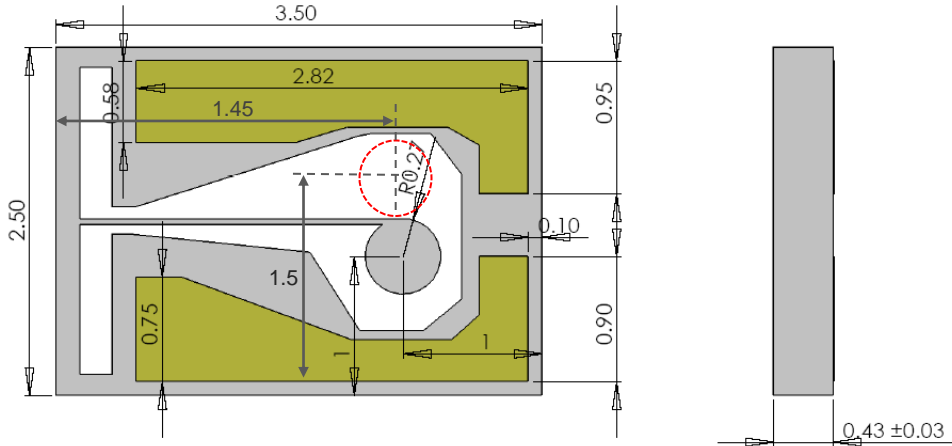
- Power Control
- Power Regulate
- Channel Balance
- Instrumentation



Revised on 01/17/23

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## Mechanical Footprint Dimensions (mm)

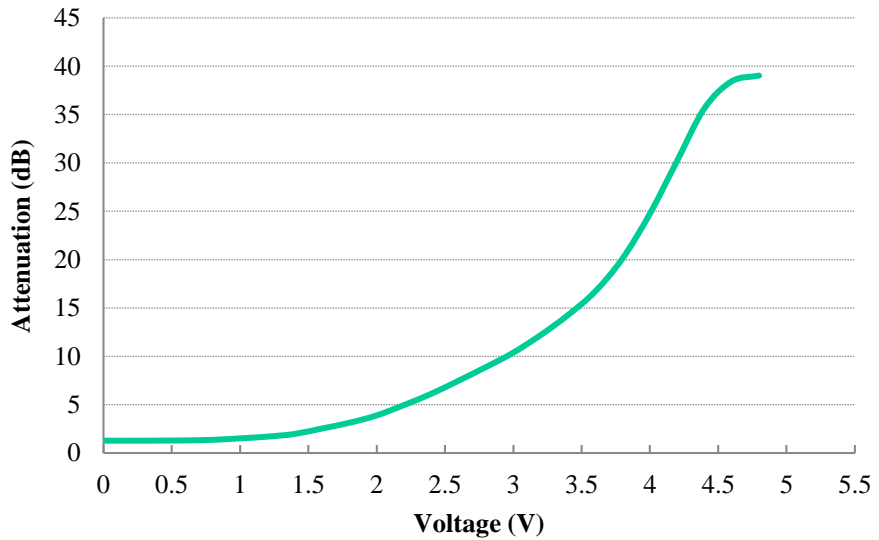


### NOTES

- The red dash-line represents the shutter's position under ~4.5V.

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

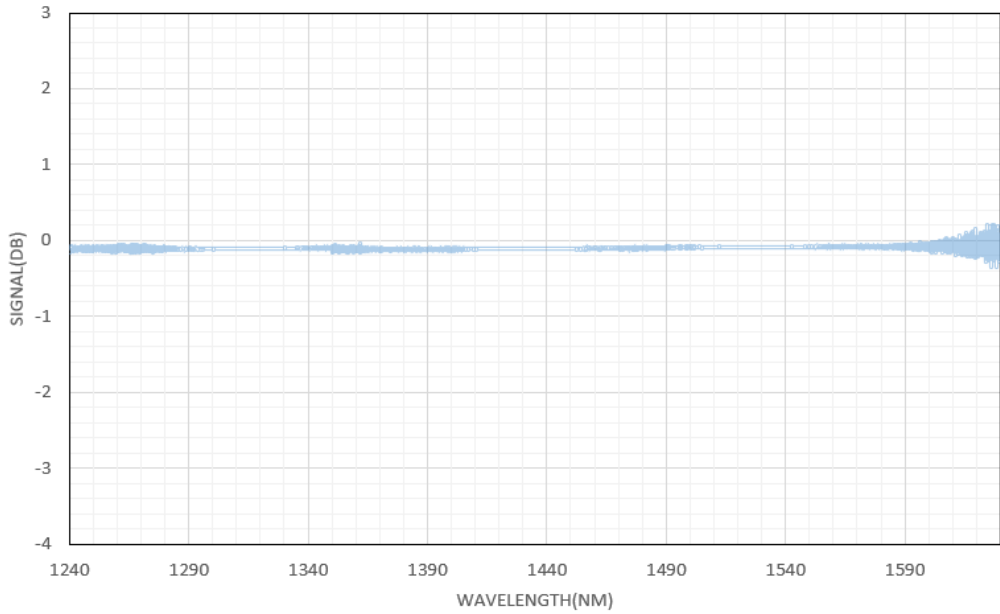
## VOA Performance



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## Typical Insertion Loss vs Wavelength (1240-1630nm)

1x2 MEMS Switch



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## Electronic Driving Instruction

### NOTES

- Electrode pads on front surface are for control voltage without polarity.
- Do not apply more than 6V.

## Ordering Information

**P/N: FSVOA-50111010C (Standard)**

	<b>50</b>	<b>1</b>	<input type="checkbox"/>	<b>1</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>0</b>	<b>C</b>
Prefix	Shutter size	Wavelength	VOA Type	Shutter Surface	Chip Package	Chip Design	Electric connection	
FSVOA-	Ø500um = 50 <sup>[1]</sup>	Broadband = 1	Standard = 1 Special = 0	Gold = 1	Bare = 2 Surmount = 1 <sup>[2]</sup> Special = 0	Standard = 1 Special = 0	No PIN = 0	

[1]. Different shutter size is available, please check another size FS-VOA chip datasheet.

[2]. Flying wires type; two leads are provided

