

# Small Form-Factor Pluggable (SFP) eMEMS™ Variable Optical Attenuator

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

## Product Description

Agiltron's eMEMS™ Series SFP VOA is based on a proprietary micro-electro-mechanical mechanism featuring compact design, simple construction, easy direct drive, and excellent optical performance. The SFP VOA integrates a single channel VOA and tap power monitor into MSA compliant compact SFP form factor and provides I<sup>2</sup>C communication interface for easy system integration.

The device has a built-in firmware that linearizing the attenuation to the control signal. The power tap provides a digital warning when the output optical signal level below certain level. Either normally-open or normally-closed configurations are available



## Features

- SFP Compact Form
- Hot Pluggable
- Duplex LC Connector
- Optical Power Monitoring
- I<sup>2</sup>C Communication Interface
- Low Power Consumption

## Performance Specifications

| Parameter                                   |        | Min                         | Typical | Max  | Unit |
|---|--------|-----------------------------|---------|------|------|
| Wavelength                                  |        | 1310±50 / 1480±50 / 1550±50 |         |      | nm   |
| Insertion Loss <sup>1</sup>                 |        |                             | 1       | 1.5  | dB   |
| Attenuation Range                           | Bright | 25                          | 30      |      | dB   |
|   | Dark   | 40                          |         |      | dB   |
| Polarization Dependent Loss                 | @10dB  |                             | 0.15    | 0.3  | dB   |
|   | @20dB  |                             | 0.3     | 0.5  | dB   |
| Wavelength Dependent Loss                   | @10dB  |                             | 0.3     | 0.5  | dB   |
|   | @20dB  |                             | 0.7     | 1.2  | dB   |
| Attenuation Accuracy                        | @20dB  |                             | 0.5     |      | dB   |
| Attenuation Resolution                      |        |                             |         | 0.1  | dB   |
| Polarization Mode Dispersion                |        |                             | 0.01    | 0.05 | ps   |
| Return Loss                                 |        | 40                          |         |      | dB   |
| Response Time                               |        |                             | 5       | 10   | ms   |
| Power consumption <sup>2</sup>              |        |                             | 140     | 200  | mW   |
| Optical Power Handling                      |        |                             | 300     | 500  | mW   |
| Operating Temperature                       |        | -5                          |         | 75   | °C   |
| Storage Temperature                         |        | -40                         |         | 85   | °C   |
| Package Dimension                           |        |                             | SFP     |      | mm   |
| Notes:                                      |        |                             |         |      |      |
| 1. Include both input and output connectors |        |                             |         |      |      |

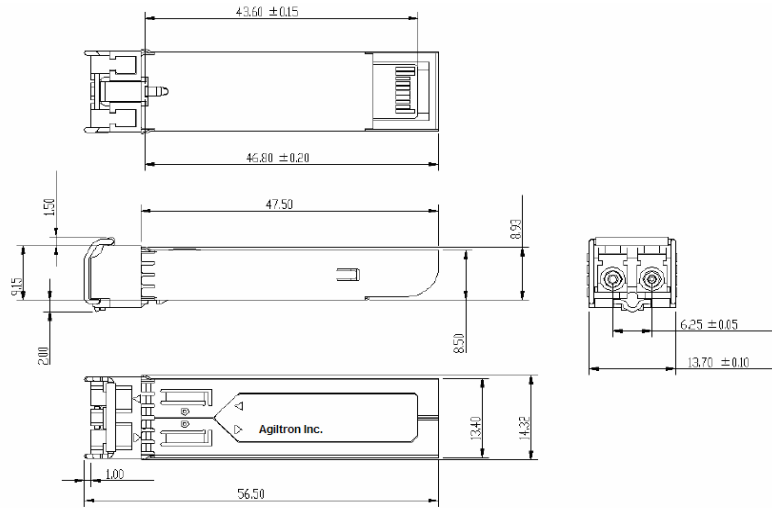
## Applications

- Power Control
- Power Regulate
- Instrumentation



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## Mechanical Footprint Dimensions (mm)



All Pin diameter = .45mm

## Electrical Pin Assignment

The electrical pad layout is defined as below per the MSA agreement

|    |            |
|----|------------|
| 20 | GND        |
| 19 | N/C        |
| 18 | N/C        |
| 17 | GND        |
| 16 | 3.3V Power |
| 15 | 3.3V Power |
| 14 | GND        |
| 13 | N/C        |
| 12 | N/C        |
| 11 | GND        |

Top of Board (label Side)

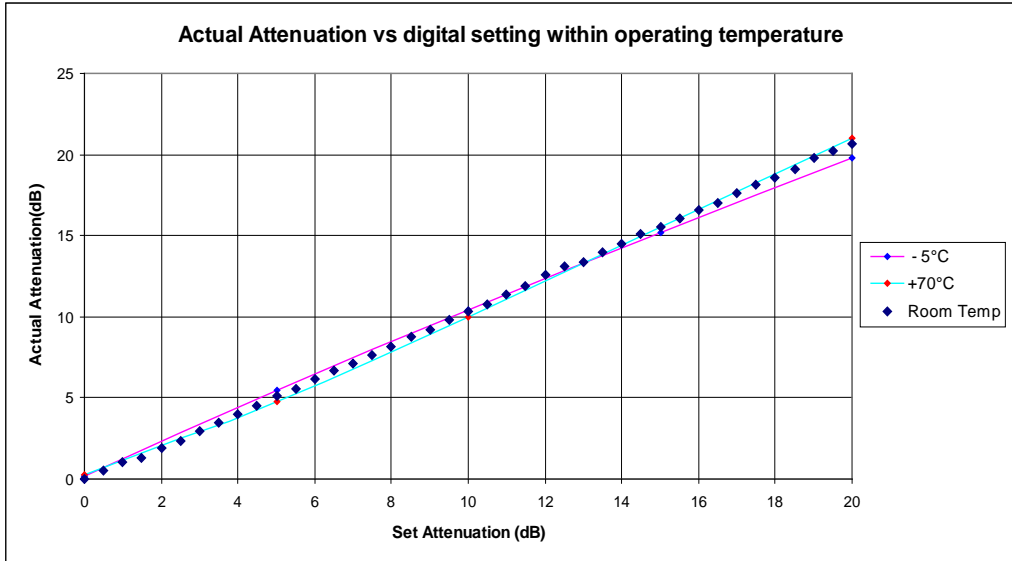
|    |                            |
|----|----------------------------|
| 1  | GND                        |
| 2  | Fault Alarm                |
| 3  | Optical Shutter Mode       |
| 4  | Serial Data                |
| 5  | Serial Clock               |
| 6  | GND                        |
| 7  | N/C                        |
| 8  | Loss of Output Power Alarm |
| 9  | GND                        |
| 10 | GND                        |

Bottom of Board (as viewed thru top of the board)



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## Typical Performance Chart



## Ordering Information

|       |                          |  |                             |                              |                            |  |                          |                          |
|-------|--------------------------|--|-----------------------------|------------------------------|----------------------------|--|--------------------------|--------------------------|
| SFOA- | <input type="checkbox"/> | <input type="checkbox"/>                                   | <input type="checkbox"/>    | <input type="checkbox"/>     | <input type="checkbox"/>   | <input type="checkbox"/>                           | <input type="checkbox"/> | <input type="checkbox"/> |
|       | Type                     | Wavelength   | Off State                   | Mode                         | Fiber                      | FiberLength  |                          | Connector                |
|       | Standard=11              | 1310=3<br>1550 = 5<br>C+L=2<br>1260-1620= 8<br>Special = 0 | Transparent=1<br>Opaque = 2 | Singlemode=1<br>Multimode =2 | None = 0<br>SMF=1<br>MMF=2 | 0.05M=5<br>0.1M=1<br>0.2M =2<br>0.3M =3<br>0.4 M=4 |                          | LC/PC = 1<br>Special = 0 |

