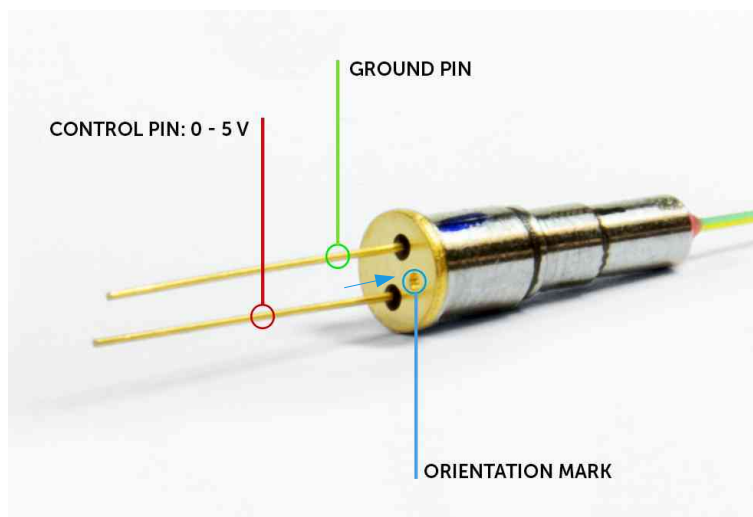




*miniature*  
**VARIABLE  
 OPTICAL  
 ATTENUATOR**  
*coaxial design*

## OVERVIEW

**Sercalo**'s fiber optic Variable Optical Attenuator is based on an electrostatic MEMS mirror. A voltage between 0-5 V on the drive pin sets the optical attenuation. When power is removed the VOA returns into its default state.

There are 2 variants available with different default states: The normally open (bright) type or normally closed (dark) type.

The open type has its lowest loss state at 0 V.

The dark variant reaches it's lowest insertion loss at a voltage between 4.5 – 5 V. It has better linearity at high attenuation. When the voltage is increased beyond the minimum point, the attenuation increases again.

The MEMS component is hermetically sealed. No epoxy is present in the optical path. The optical collimator is assembled using laser welding techniques: the result is good repeatability, long term stability and excellent reliability. The component withstands rugged environments. The part is designed to conform to Telcordia 1221 reliability standards. It can directly be mounted on printed circuit boards.

The component is compliant to RoHS requirements 2015/863/EU.

## FEATURES

- 3.5 mm diameter
- Laser welded package
- Reliable
- 0-5 V
- RoHS compliant

## APPLICATIONS

- Telecom
- Instrumentation
- Test and measurement

### Contact

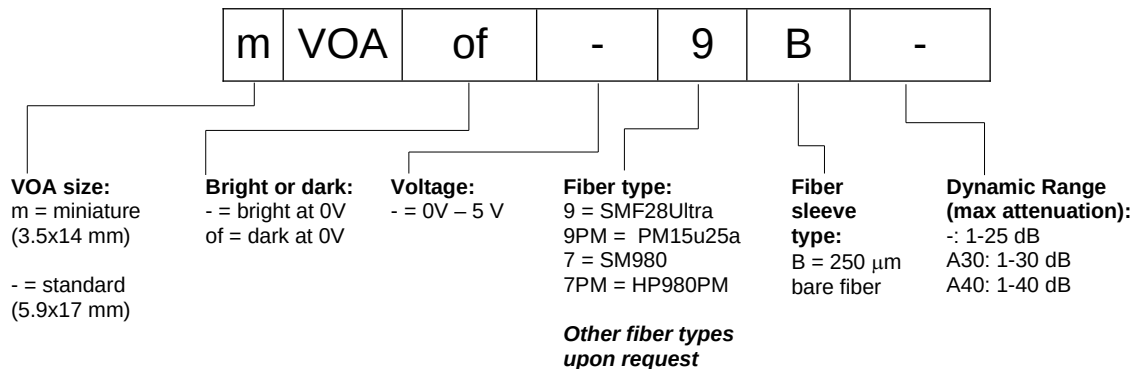
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## TECHNICAL SPECIFICATIONS for SMF28ultra single mode fiber

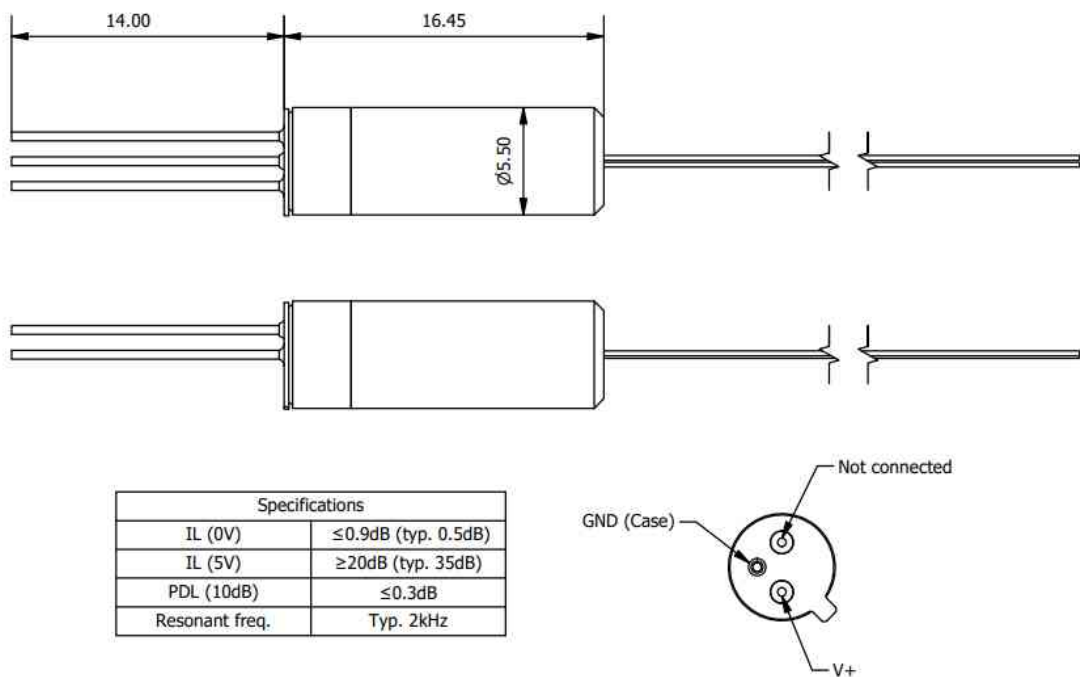
|                                                  | Unit       | Min                         | Typ  | Max  |
|--------------------------------------------------|------------|-----------------------------|------|------|
| <b>Optical Specifications</b>                    |            |                             |      |      |
| Wavelength range <sup>1</sup> (SMF 28ultra type) | nm         | 1250                        |      | 1670 |
| Insertion Loss <sup>2</sup> @ min. attenuation   | dB         |                             | 0.5  | 1.0  |
| Max. Attenuation <sup>3</sup>                    | dB         | 25                          | 45   |      |
| Polarisation Extinction Ratio @ 10 dB            | dB         | 18                          | 25   |      |
| Polarisation Extinction Ratio @ 20 dB            | dB         | 18                          | 25   |      |
| Wavelength d. Loss @ 10 dB (C Band)              | dB         |                             | 0.1  | 0.6  |
| Wavelength d. Loss @ 20 dB (C Band)              | dB         |                             | 0.3  | 1.2  |
| Polarisation d. Loss @ 10 dB                     | dB         |                             | 0.10 |      |
| Polarisation d. Loss @ 20 dB                     | dB         |                             | 0.10 |      |
| Return loss                                      | dB         | 50                          | 55   |      |
| Maximum Optical Power level                      | mW         |                             |      | 500  |
| Switching time (linear scale)                    | ms         |                             |      | 1    |
| Cycle Rate                                       | Hz         |                             | 50   | 100  |
| Durability                                       | cycle<br>s | No wear out                 |      |      |
| <b>Electrical Specifications</b>                 |            |                             |      |      |
| Operation voltage <sup>4</sup>                   | V          |                             | 5.0  | 6.7  |
| Current consumption                              | nA         |                             |      | 10   |
| ESD (internal protection diode)                  | V          | 500                         |      |      |
| Pins                                             | Nb         |                             |      | 2    |
| Pin Length                                       | mm         | 8                           | 13   |      |
| <b>Package</b>                                   |            |                             |      |      |
| Operation temperature                            | °C         | -10                         |      | 70   |
| Storage temperature                              | °C         | -40                         |      | 85   |
| Pigtail length                                   | cm         | 50                          |      | 100  |
| Weight                                           | g          | 2.5                         |      |      |
| standard Dimensions: diameter x length           | mm         | 6.0 x 17 on TO46 header     |      |      |
| minisize Dimensions: diameter x length           | mm         | 3.5 x 14 on TO41 header     |      |      |
| RoHS Compliance                                  |            | 2015/863/EU (no exceptions) |      |      |

<sup>1</sup> Insertion loss is for smf28ultra fiber. <sup>2</sup> without connectors. <sup>3</sup> For dark variant attenuation max attenuation is at 0 V. <sup>4</sup> For dark Variant minimum IL is reached at 4.5 – 5.5 V.

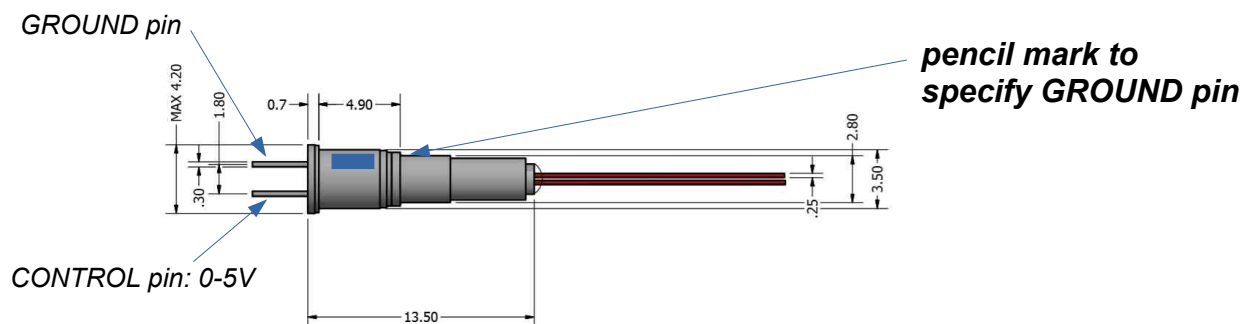
## ORDERING INFORMATION



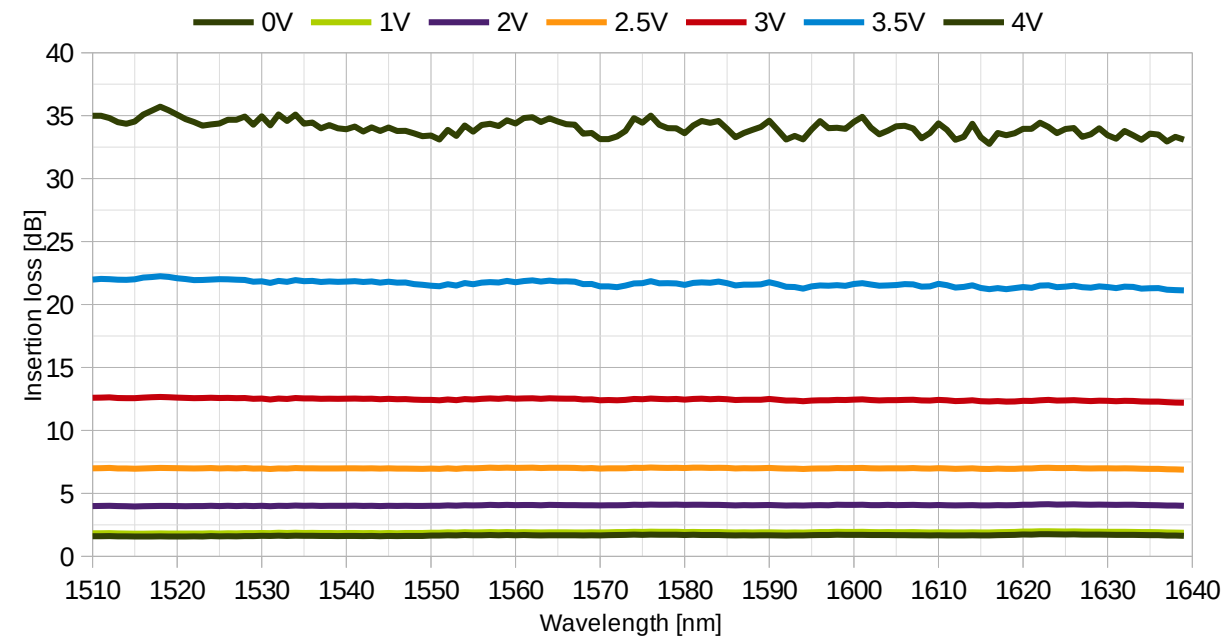
**Standard size VOA: PACKAGE DIMENSIONS (mm)** Hermetically sealed TO46 Header



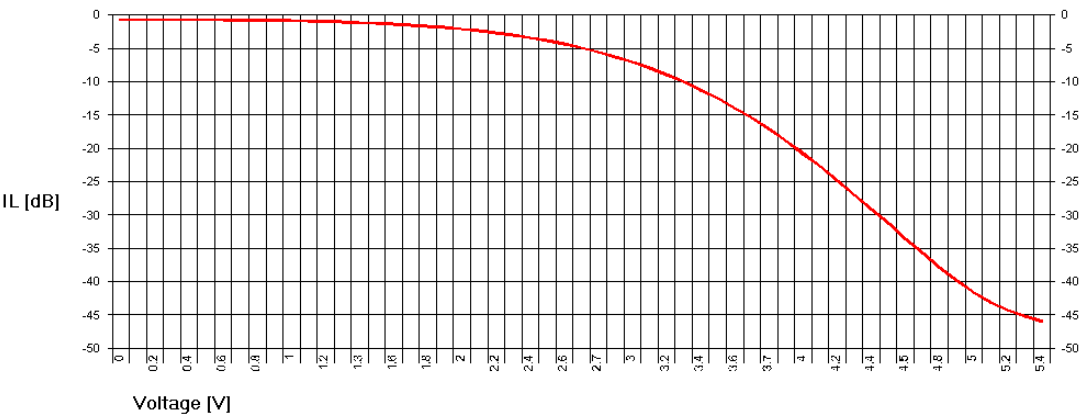
**Miniature size: PACKAGE DIMENSIONS (mm)** Hermetically sealed TO41 Header



WAVELENGTH DEPENDENT LOSS



TYPICAL RESPONSE OF BRIGHT VARIANT: *minimum attenuation at 0V*



TYPICAL RESPONSE OF DARK VARIANT: *minimum attenuation at 4.5 – 5.5 V*

