

*miniature*

## **Variable Optical Attenuator**

*coaxial design*

### **OVERVIEW**

**Sercalo**'s fiber optic Variable Optical Attenuator is based on an electrostatic MEMS mirror. A voltage between 0-6.5 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 high attenuation (dark) type. The dark variant has better linearity and is used in applications where the light is cut at power off.

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

The component is compliant to ROHS requirements 2011/65/EU.

### **APPLICATIONS**

- *Telecom*
- *Instrumentation*
- *Test and measurement*

### **FEATURES**

- 3.5 mm diameter
- Laser welded package
- Reliable
- 0-6.5 V
- ROHS compliant

**Sercalo's** COAXIAL TYPE VOA is non latching and returns to the default position at power-off, i.e. the bright variant returns to the minimum insertion loss position, whereas the dark variant returns to the high attenuation state (I.e it is blocking the light at power off). The VOA works over the wavelength range of the fiber, but wavelength dependent loss is specified within one single band (50 nm).

The VOA is also available for specialty fiber at 650, 750, 850 and 980 nm. Also variants with Polarisation Maintaining fibers are available.

### TECHNICAL SPECIFICATIONS for *Single Mode fiber*

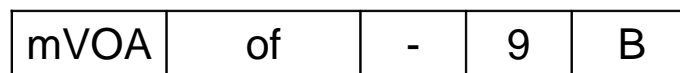
	Unit	Min	Typ	Max
<b>Optical Specifications</b>				
Wavelength range <sup>1</sup> (SMF 28ultra type)	nm	1250		1670
Insertion Loss <sup>2</sup> @ min. attenuation	dB		0.5	1.0
Max. Attenuation <sup>3</sup>	dB	30	40	
Wavelength d. Loss @ 10 dB (C Band)	dB		0.1	
Wavelength d. Loss @ 20 dB (C Band)	dB		0.3	
Polarisation d. Loss @ 10 dB	dB		0.10	
Polarisation d. Loss @ 20 dB	dB		0.10	
Return loss	dB	50	55	
Switching time (linear scale)	ms		0.5	2
Cycle Rate	Hz		50	100
Durability	cycles	No wear out		
<b>Electrical Specifications</b>				
Operation voltage	V		5.0	6.7
ESD Protection	V	500		
Pins	Nb			2
<b>Package</b>				
Operation temperature	°C	-10		70
Storage temperature	°C	-40		85
Pigtail length	cm	50		100
Weight	g	2.5		
Dimensions diameter x Length	mm	3.5 x 14 on 4.2 mm header		
ROHS Compliance		2011/65/EU (no exceptions)		

<sup>1</sup> Insertion loss is for smf28ultra fiber.

<sup>2</sup> Values for standard range at 25°C, without connectors. For Dark Variant minimum IL is reached at 6.5 V.

<sup>3</sup> For Bright variant the max. attenuation is reached at 5 V. For dark variant max. attenuation is > 40 dB at 0 V.

### ORDERING INFORMATION



**VOA type:**

mVOA = 1250 – 1650 nm

**Bright or dark:**

- = bright at 0V  
of = dark at 0V

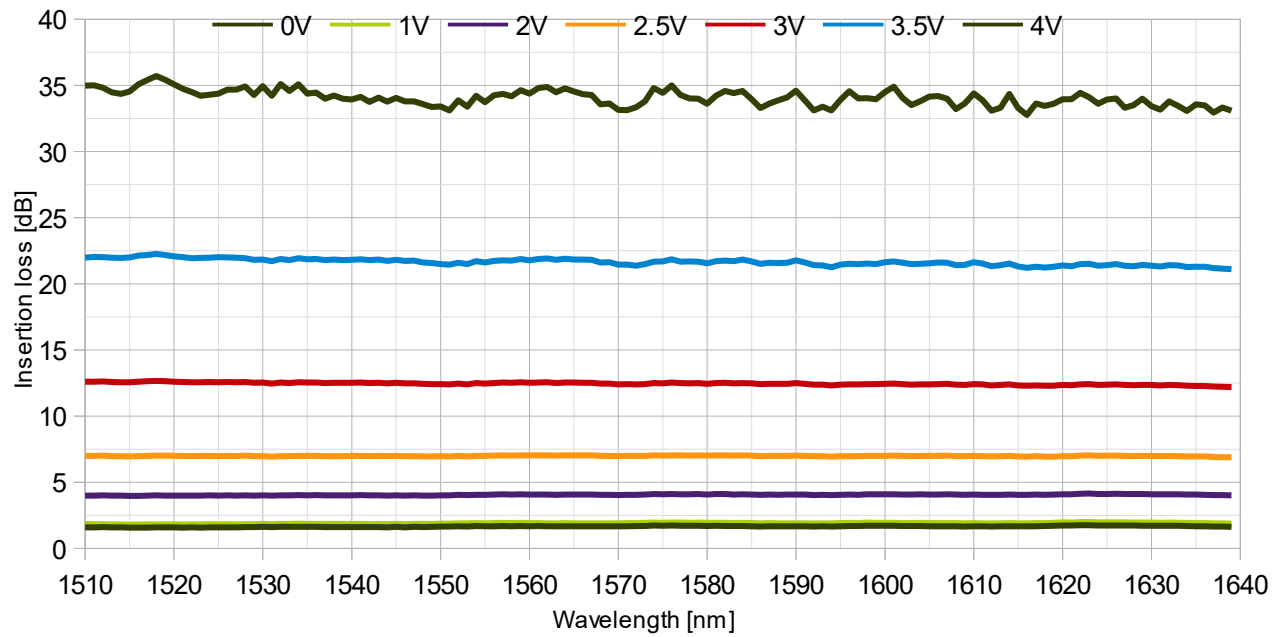
**Fiber type:**

9 = SMF28Ultra  
Z = ZBL  
4 = SM600  
6 = SM850  
6PM = HP850PM  
7 = SM980  
7PM = HP980PM

**Fiber sleeve type:**

B = 250 um bare fiber

## WAVELENGTH DEPENDENT LOSS



## PACKAGE DIMENSIONS (hermetically sealed TO41 Header)

