FIBER OPTICAL ACCELEROMETER

MEMS SENSOR HEAD for OEM integration

OVERVIEW

sercalo's fiber optic accelerometer (FOA) is an opto-mechanical acceleration sensor. The sensing device is a micro-mechanical Silicon mirror (MEMS) which deflects a light beam proportional to the acceleration. It can be placed in a harsh environment and is separated from the measurement electronics by optical fibers.

The standard measurement direction is along the axial direction. A different variant in the same form factor is available for radial measurement. The sensor head is available in a housing of either stainless steel or ceramic material (MACOR). The steel housing is hermetically sealed and has a laser welded collimator. No epoxy is present in the optical path. This ensures an outstanding long term stability.

The miniature package withstands rugged environments and is intended for integration in customer defined packages.

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

FEATURES

- Insensitive to magnetic and electrical fields
- Reliable

APPLICATION EXAMPLES

- Vibration sensing in harsh environment
- Transformers and high voltage systems
- Antennas and Telecom Systems

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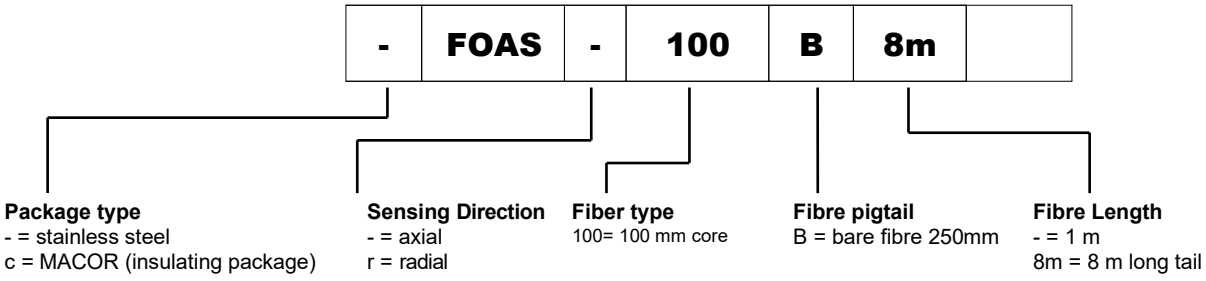
TECHNICAL SPECIFICATIONS FOR OPTICAL ACCELEROMETER

	Unit	*Min*	*Typ*	*Max*
Sensor				
Max Frequency (-3dB bandwidth)	Hz	1100		
Minimum frequency	Hz	0.5		
Linearity (dB/g) between 10 – 500 Hz	%			3
Maximum Acceleration Range	g			40
Maximum Shock Acceleration	g			1500
Noise Density	µg/µHz			100
Sensitivity	dB/g		0.06	
Temperature range FOAS	°C	-40		85
Temperature range c-FOAS	°C	-40		155
Temperature coefficient Sensitivity	%/°C		tbd	
Temperature coefficient bias	dB/°C	Canceled out by electronics (autotune)		
Signal Conditioner (EB-FOA card)				
Nominal Sensitivity (Interface)	mV/g		100	
Power Supply	V	11.5	12	12.5
Output Impedance	Ω			10
Amplitude Non-linearity	%			1
Transverse Sensitivity	%			3
Temperature Range	°C	-40		85
Size	mm	100x160		
General Specifications				
Immunity	-	100% passive sensing design		
Humidity	%RH	0		95
Material of Sensor Head	-	Stainless Steel or MACOR		
Optical Fiber Type	-	Multimode 100/125µm		
Sensor Head Dimensions: Length x Diameter	mm	28 x 6		
RoHS Compliance		2015/863/EU (no exceptions)		

ORDERING INFORMATION

Read Out Electronics: *EB-FOAS*

Sensor Head:



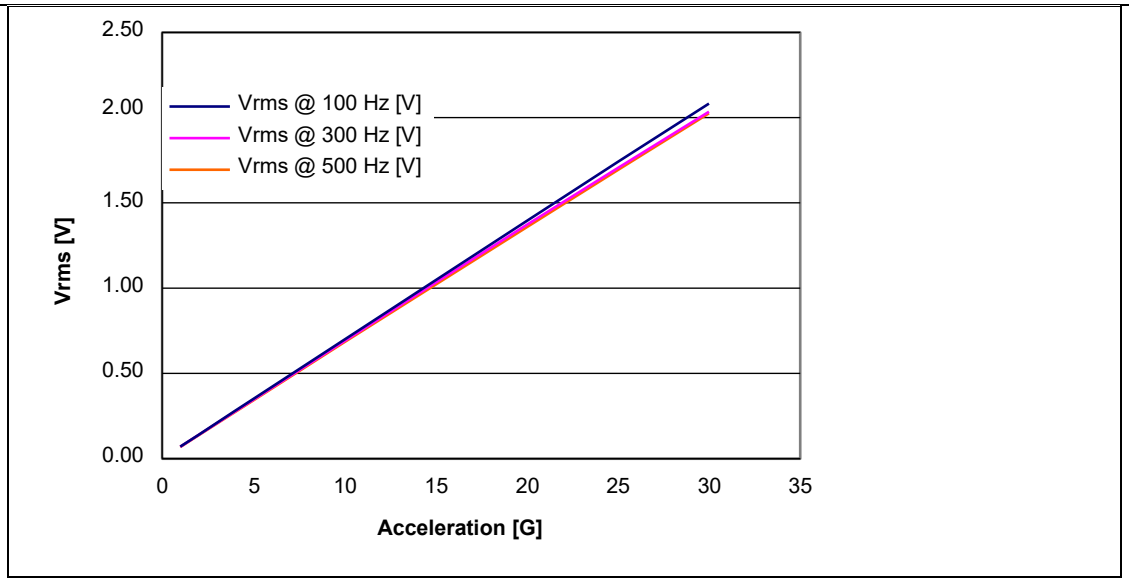


Figure 1: *Sensor Linearity over acceleration range at different frequencies.*

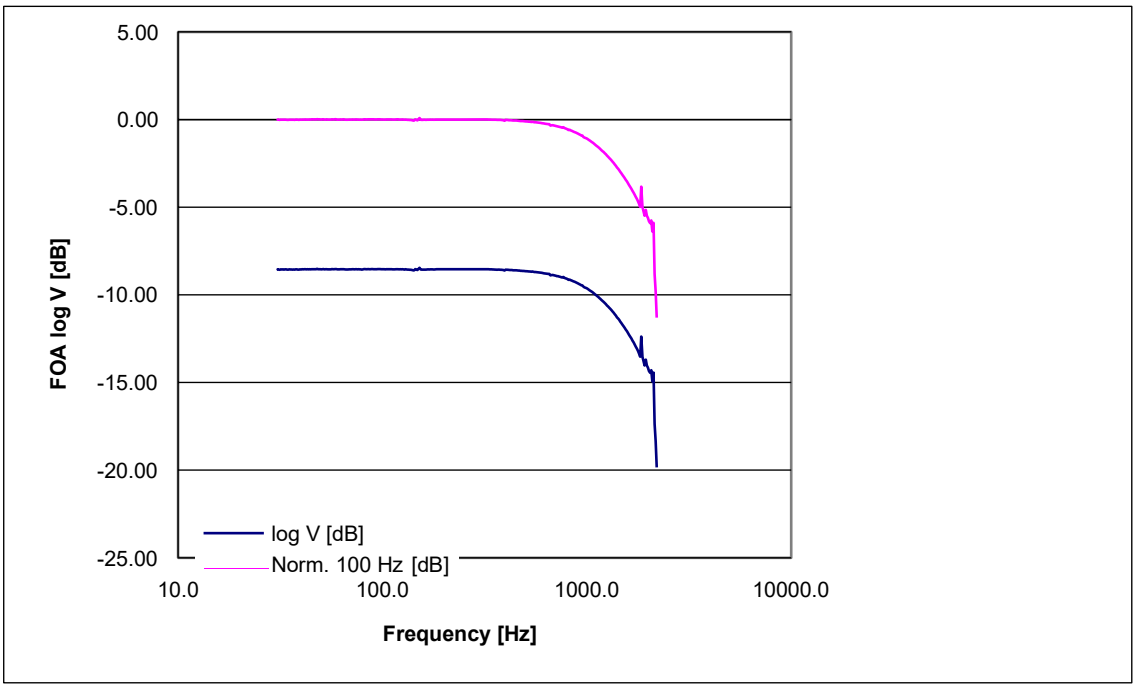


Figure 2: *typical frequency response*

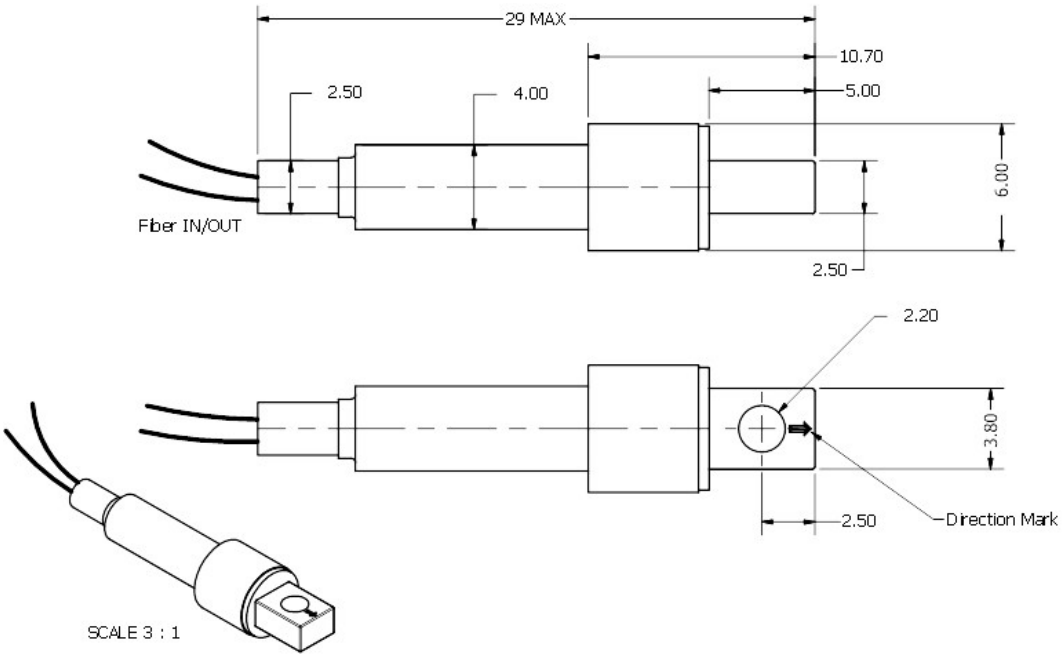


Figure 3: *Housing Dimension Steel type: FOAS*

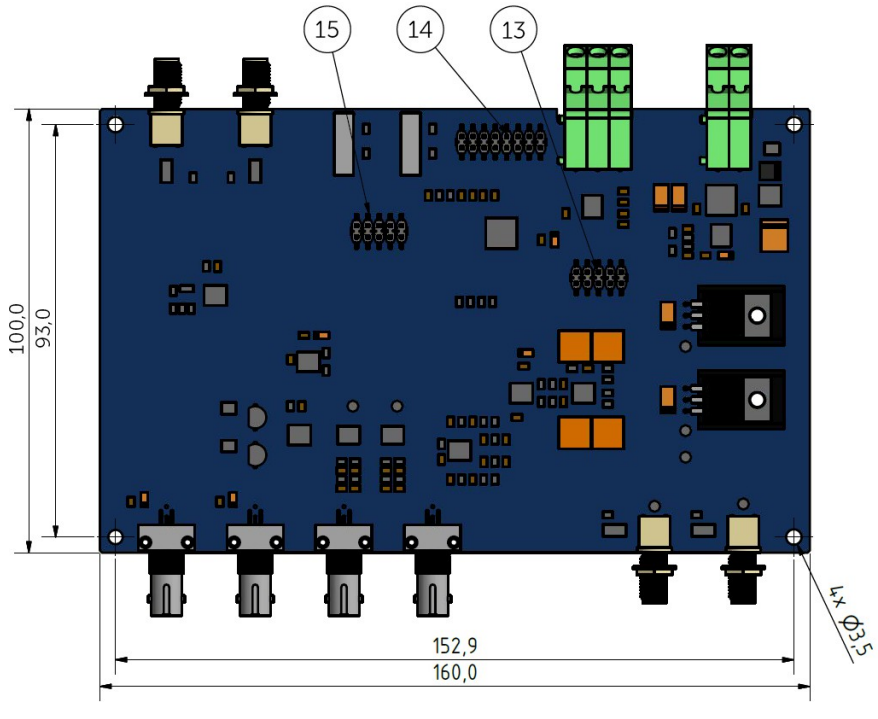


Figure 4: *Dimensions of the Signal conditioning card.*