StretchFABRIC Sensing Element

SSD18 – StretchFABRIC Sensing Element

For sensors purchased before 20/12/2018, please refer to the OSEF StretchFABRIC Datasheet or contact us at sales@stretchsense.com

Technical Datasheet

Product overview

StretchFABRIC sensors are soft, flexible, and precise making them ideal for the measurement of soft object deformation. They connect to 10-channel SPI Sensing Boards which pair with the Android and iOS data visualization apps.

StretchFABRIC sensors come bonded onto white fabric providing an integration zone for easy sewing into garments. They connect to 10 Channel SPI boards via 2-pin female connectors.
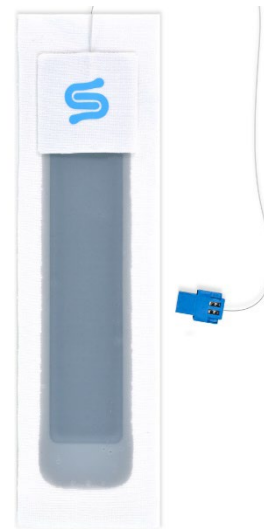

Figure 1: StretchFABRIC sensor

Features

- Soft, flexible, and lightweight for unobtrusive and comfortable measurement of motion
- Easy sewing integration into garments
- Highly precise measurement of deformation

Applications

- Smart garments
- Sports and fitness
- Wearables
- VR/AR

The data displayed in this document uses aggregated test data tested at room temperature.
These values are indicative only; individual sensing element performance may vary.
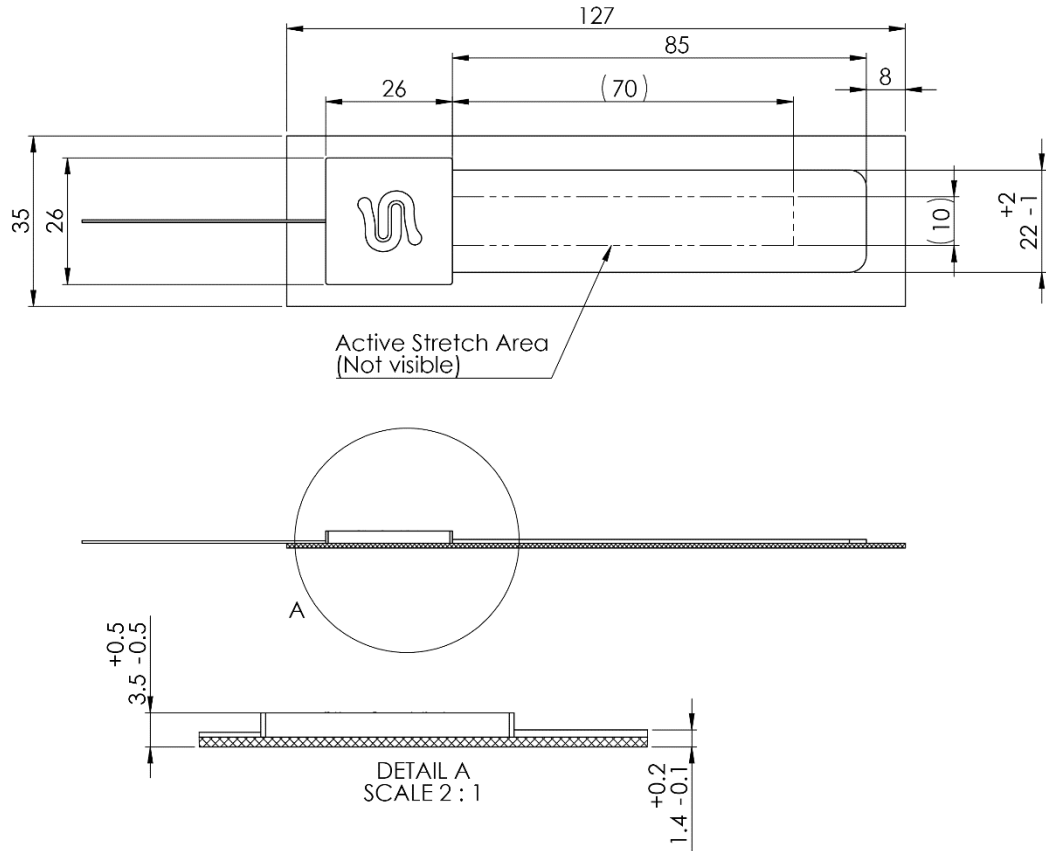
Contents

1.   Physical Specifications

1.1   Technical Drawing

1.2   Dimensions

Figure 2: Engineering Drawing of a StretchFABRIC Sensing Element

Zone	Length (mm)	Tolerance (mm)	Width (mm)	Tolerance (mm)
Active Sensing Zone	70.0	±1.00	10.0	±1.00
Overall Silicone Zone	85.0	±2.00	22.0	±2.00
Fabric Backing	127	±2.00	35.0	±4.00
Coaxial Cable Length	1000	±1.00	0.445	-

2.   Specifications

2.1   Sensing Characteristics

The data below was collected under the following testing conditions:

- The sensors were clamped on both ends
- The sensors were pre-stretched to remove any slack
- The sensors underwent uniaxial stretch up to 80% stretch

Parameter	Min	Typ.	Max	Units	Notes
Base Capacitance	410	445	480	pF	
Sensitivity	3.98	5.30	6.30	pF/mm	
Noise With Standard 10 Channel Circuit (3 Sigma)	0.13	0.16	0.50	pF	
Operating Temperature Range	10.0		30.0	˚C	Recommended range only
Connection Pitch		2.54		mm	

All values shown at 3 s.f.

Base capacitance includes a cable capacitance of 117 ± 3pF
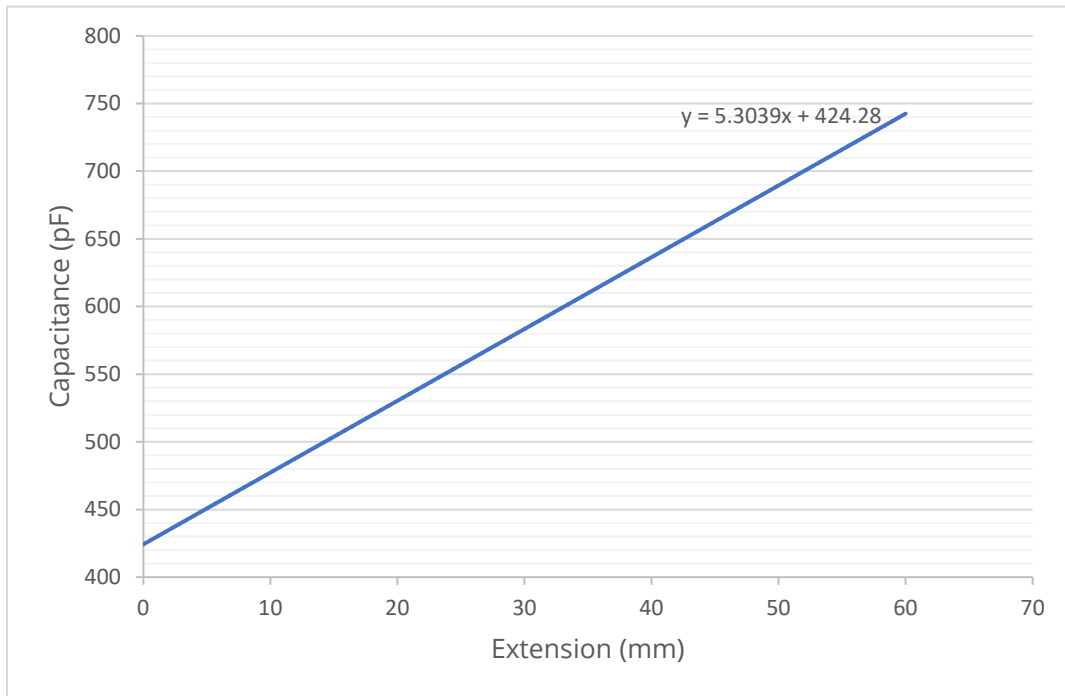
2.2   Capacitance vs Extension

Linear Fit

$$y = 5.3039x + 424.28$$

Figure 3: Typical StretchFABRIC Sensing Element performance based on a linear fit

Quadratic Fit
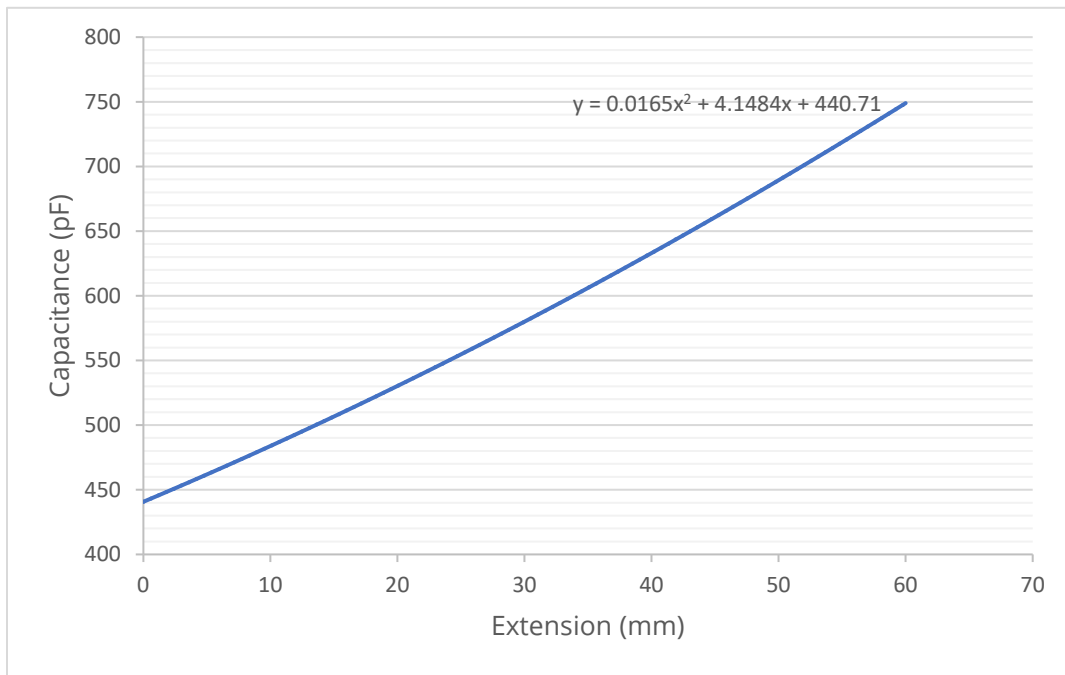

$$y = 0.0165x^2 + 4.1484x + 440.71$$

Figure 4: Typical StretchFABRIC Sensing Element performance based on a quadratic fit

Disclaimer, Intellectual Property and Licensing

All resources including technical information, statements and recommendations are based on information StretchSense believes to be reliable, but the accuracy or completeness is not guaranteed. StretchSense is not liable for any loss of profit, revenue, savings, business, use, data (including data and design inputs), and/or goodwill or consequential, indirect, incidental or special damage or loss of any kind under or in connection with these resources.

For StretchSense's intellectual property policies, please refer to our website at https://stretchsense.com/legal/intellectual-property/

StretchSense has licensed technology from Parker Hannifin Corporation and from Auckland UniServices Limited:

PARKER HANNIFIN CORPORATION

StretchSense products that utilise certain dielectric electro-active polymer (DEAP) technology are manufactured and supplied under licence from the Quick Coupling Division of Parker Hannifin Corporation, Minneapolis, MN, USA ("Parker"). Such licence enables StretchSense to manufacture and supply Parker DEAP transducer products generally for evaluation and application validation purposes, and commercially for consumer electronics, motion capture and augmented/virtual reality, and sports and fitness industries. Commercial use in other industries is subject to Parker's prior consent.

AUCKLAND UNISERVICES LIMITED

StretchSense products that utilise certain sensor and dielectric elastomer generator technologies are manufactured and supplied under license from Auckland UniServices Limited in Auckland, New Zealand ("UniServices"). These licensed technologies originally being created by the Biomimetics Lab at the Auckland Bioengineering Institute. Such license enables StretchSense to manufacture and supply sensor and dielectric elastomer generator products for evaluation, application validation, and commercial purposes for all fields.