

StretchFABRIC Sensing Element

#0SEF — StretchFABRIC Sensing Element



Technical Data Sheet

Product overview

StretchFABRIC Sensing Elements allow developers to experiment with stretch sensors sewn into garments. The sensors are soft, flexible and precise making them ideal for measurement of soft object deformation.

Designed for early discovery and testing, stretch sensors are a versatile tool for use in motion tracking use cases. They connect to a 10-channel SPI Sensing Board which pairs with the Android and iOS data visualization apps.

StretchFABRIC Sensing Elements come bonded onto white Lycra® fabric providing an integration zone for easy sewing or gluing into garments. These Sensing Elements will perform better when characterized using a quadratic trendline.



Figure 1 – StretchFABRIC Sensing Element

Features

- **Soft, flexible and lightweight for unobtrusive and comfortable measurement of motion**
- **Easy sewing or gluing integration methods 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.

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1. Physical Specifications

1.1 Technical Drawing

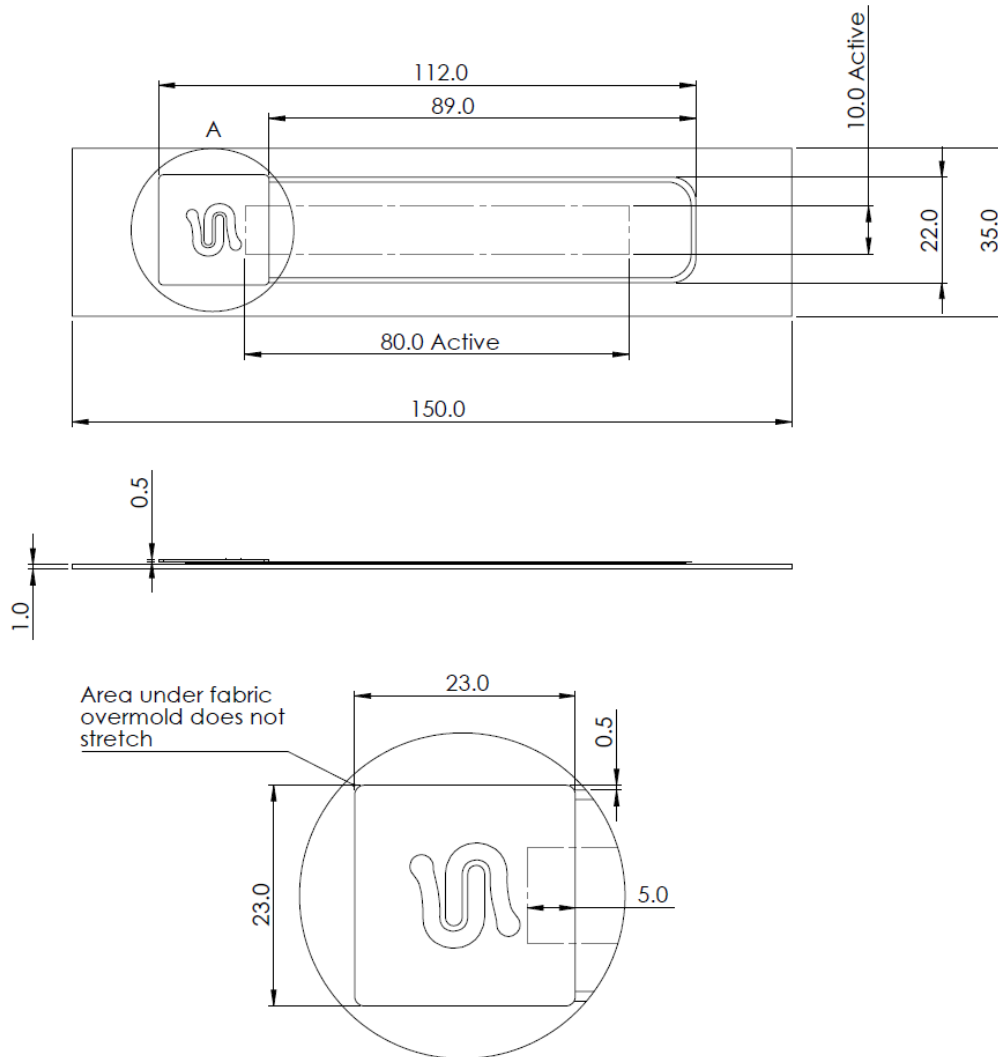


Figure 2 - Engineering Drawing of a StretchFABRIC Sensing Element

1.2 Dimensions

Zone	Length (mm)	Tolerance (%)	Width (mm)	Tolerance (%)
Active Sensing Zone	80.0	±2.00	10.0	±2.00
Overall Silicone Zone	112	±2.00	22.0	±2.00
Fabric Backing	150	±4.00	35.0	±4.00
Coaxial Cable length	1000	±1.00	0.445	-

2. Specifications

2.1 Sensing Characteristics

Parameter	Min	Typ	Max	Units	Notes
Predictive Accuracy	1.77	1.94	2.34	mm	Using linear trendline (R ² Value of 0.997)
	1.00	1.20	1.88	mm	Using quadratic trendline (R ² Value of 0.999)
Base Capacitance	692	734	815	pF	
Sensitivity	13.5	14.8	16.7	pF/mm	
Operating Temperature Range	10.0		30.0	°C	Recommended range only
Maximum Extension		60.0		%	Recommended value only
Connection pitch		2.54		mm	

All values shown at 3 s.f.

2.2 Capacitance vs Extension

Linear Fit

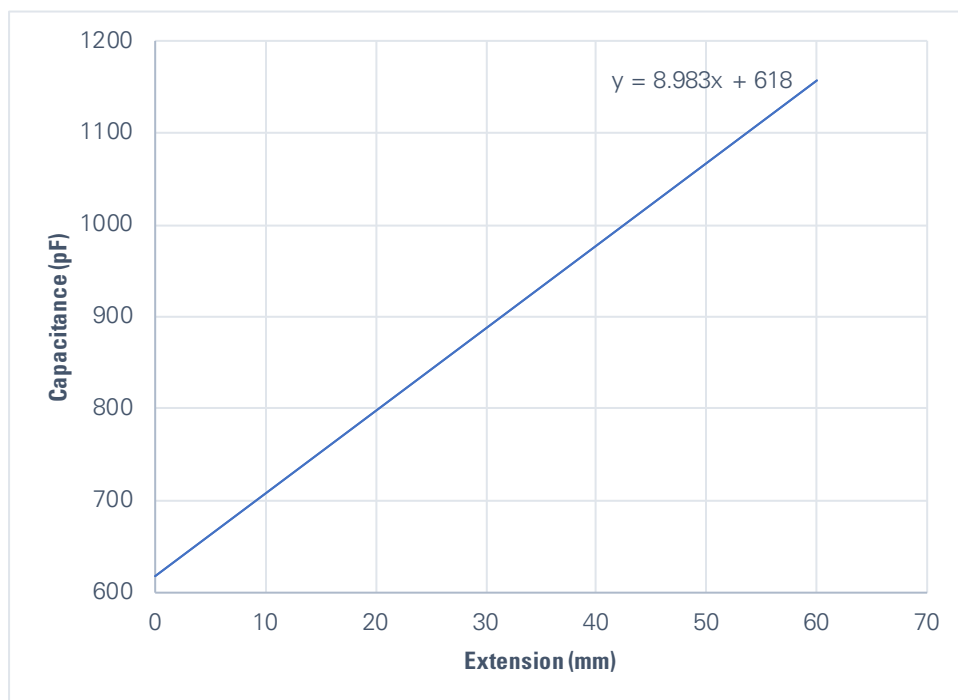


Figure 3: Typical StretchFABRIC Sensing Element performance based on a linear fit

Quadratic Fit

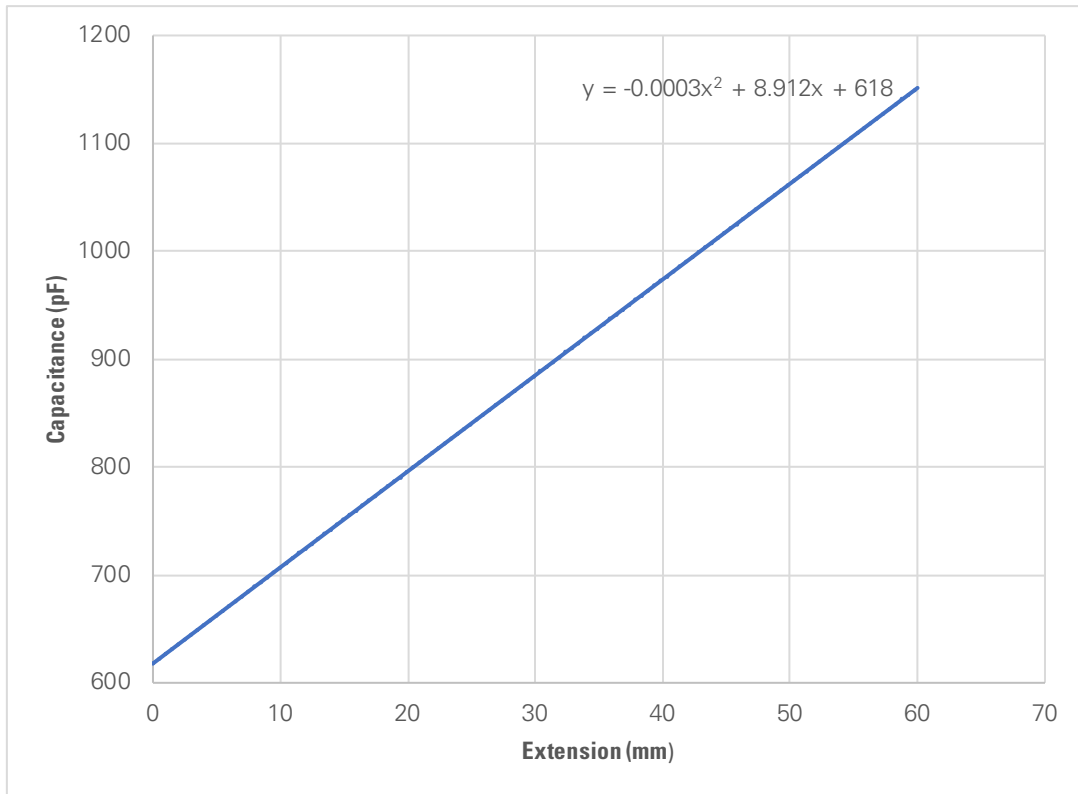


Figure 4: Typical StretchFABRIC Sensing Element performance based on a quadratic fit

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