

# PodiSense FSR datasheet

## Description

The FSR is designed to detect shear and normal forces, featuring resistance that decreases with increasing force. It enables precise pressure distribution analysis on its surface through Python scripts. Optimized for human touch control, it's ideal for automotive electronics, medical systems, and industrial robotics applications. Customizable sizes range from 4mm<sup>2</sup> to 2500mm<sup>2</sup>, with adjustable force range and sensitivity. Custom connectors are available upon request.

## Features and Benefits

- Kinetics in 3D
- Force range from 0.1N to 140N with linear sensitivity
- Scalable to the desired force range and sensitivity
- Range of sizes
- Repeatable readings
- Robust

## Applications

### Tactile control feedback

Switch control for motor driven devices

### Detect slips

Sense whether a touch is accidental or intended by reading the shear force

### Use force for UI feedback

Detect more or less user force to make a more intuitive interface

### Find centroid of force

A single cell can determine centroid of force

### Detect presence, position, or motion

Of a person or patient in a bed, chair, or medical device

### Many other force measurement applications

## Performance Characteristics

### Specifications

Feature	Condition	Value
<b>Pressure range</b>	customised	1 - 1400 kPa (0.1-140N)
<b>Pressure Sensitivity</b>		350 Pa/mV (350mN/mV)
<b>Hysteresis</b>		=<5%
<b>Response</b>		20ms
<b>Recovery</b>		50ms
<b>Durability</b>	Lifetime (tested)	200000+ cycles
<b>Thickness Range</b>	customised	0.4-1.5mm
<b>Size</b>	customised	4-40mm diameter
<b>Non-Actuated Resistance</b>		1.5MΩ
<b>Repeatability</b>	Single part	2%
<b>Zero-drift time</b>	Unloaded	0.5%/1h
<b>Reproducibility</b>	Part to Part	5%
<b>Relaxation (Creep)</b>	Loaded	5%/30min
<b>Linearity R<sup>2</sup></b>		0.99
<b>Temp Operating Range</b>	(Recommended)	-30 - +100 °C

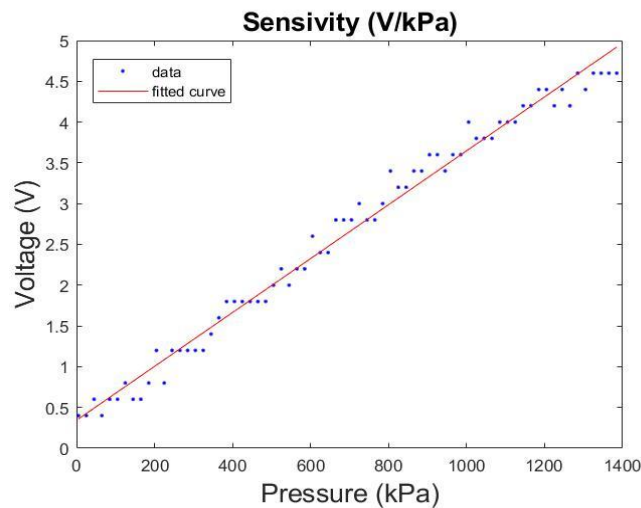
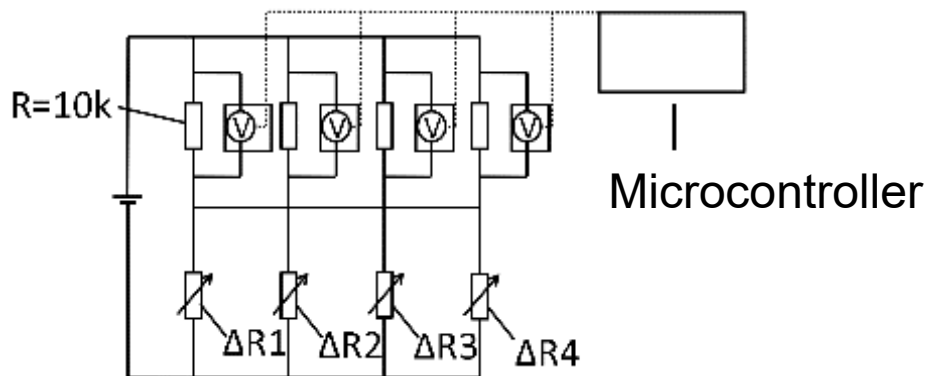
Specifications are based on measurements at 10 kg (100N)

\*\*\* Custom sensors allow for adjustable maximum actuation force.

\*\*\* Custom size and thickness

## Application Information

The PodiSense FSRs are five-wire sensors whose resistance changes with applied force. For straightforward force-to-voltage conversion, each FSR negative terminal connects to a resistor in a voltage divider setup, as illustrated in the figure below. Positive terminal connects to a 3.3V supply.



Stepwise loading from 0 to 140 N at increments of 2N

## Schematic

