

# Membrane Force Sensor

- **Model:** FA408
- **Type:** Strip force sensor

## Description :

Flexible pressure sensor (also called FSR) is an ultra-thin (thickness usually around 0.3mm), high-sensitivity resistive pressure sensor. When pressure is applied to the sensing area, the resistance of the sensor changes. The greater the pressure, the lower the resistance. At the same time it will cause the output voltage to change, the greater the pressure, the greater the output voltage.

For FSR FA408 , in addition to the change in force apply on will cause the resistance value to change, at the same time the area size of contact with the entire strip sensor and the degree of bending of the sensor will also have a great impact on the resistance value change.

There are many applications for this pressure sensor, such as robotic grip sensing, human and animal gait measurement, wheelchair sitting measurement, electronic musical instruments, smart boxing gloves, pressure measurement insoles and more. However, because the pressure detection is not very accurate, it is not recommended to use the situation where the accurate pressure detection is required.

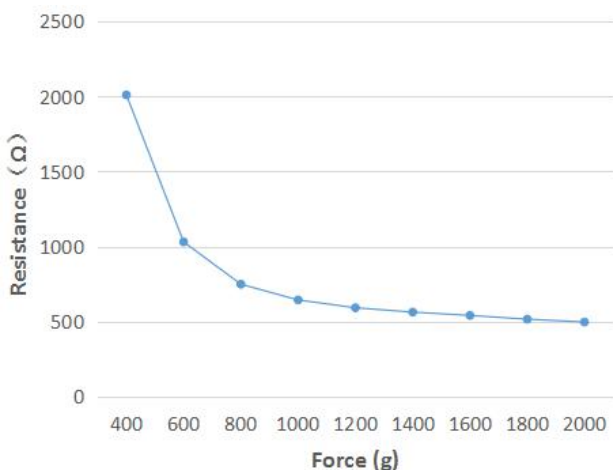
## Features and Benefits :

- Actuation force as low as 200g and sensitivity range to 20KG
- Can measures FSR bending degree
- Cost effective
- Ultra thin
- Long life, more than 2 million times work life
- Customize and adjust sensor length as needed
- Simple and easy to integrate

## Performance:

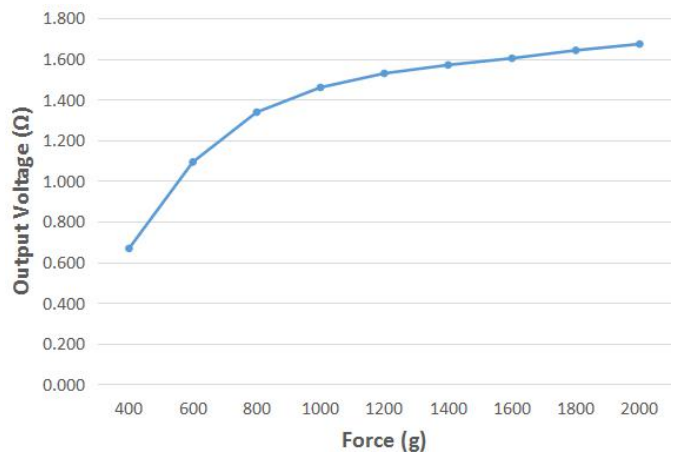
Pressure VS resistance

Figure 1

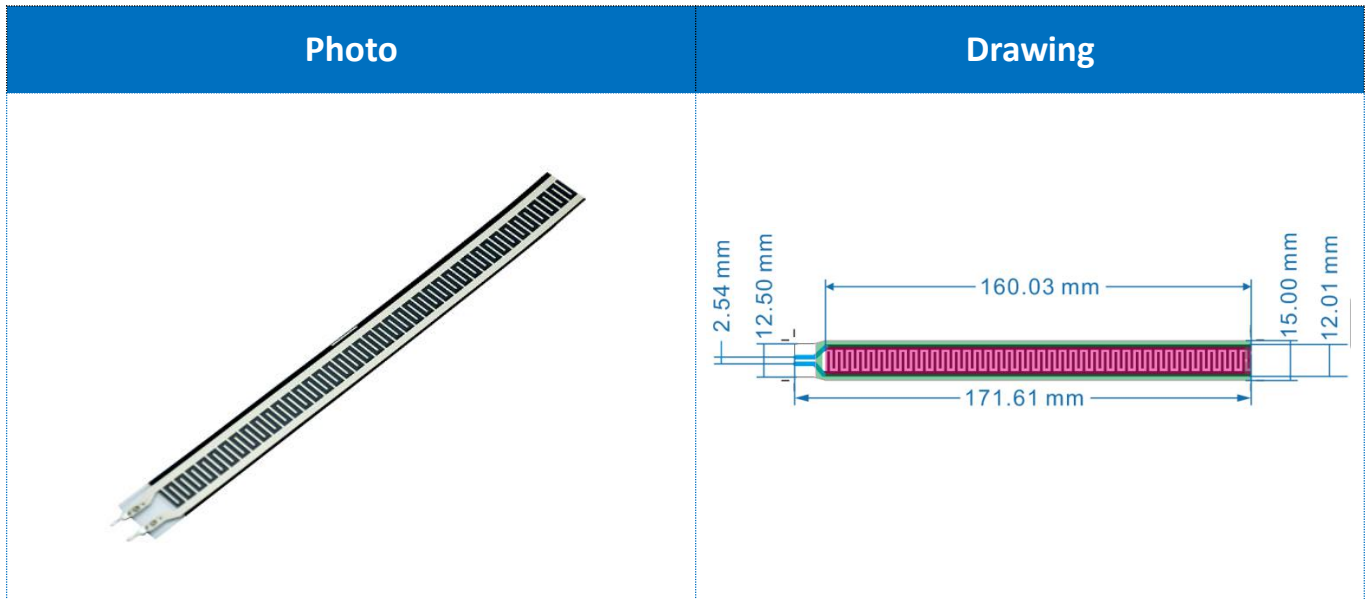


Pressure VS output voltage

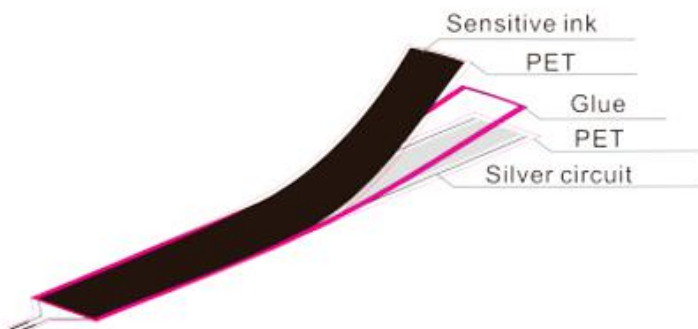
Figure 2



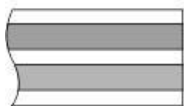
## Size:



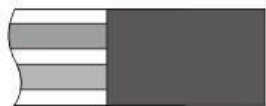
## Structure:



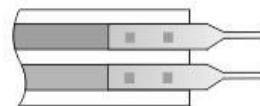
## Connector Information



**Bare Tail**



**Female connector**



**Male connector**

## pecification:

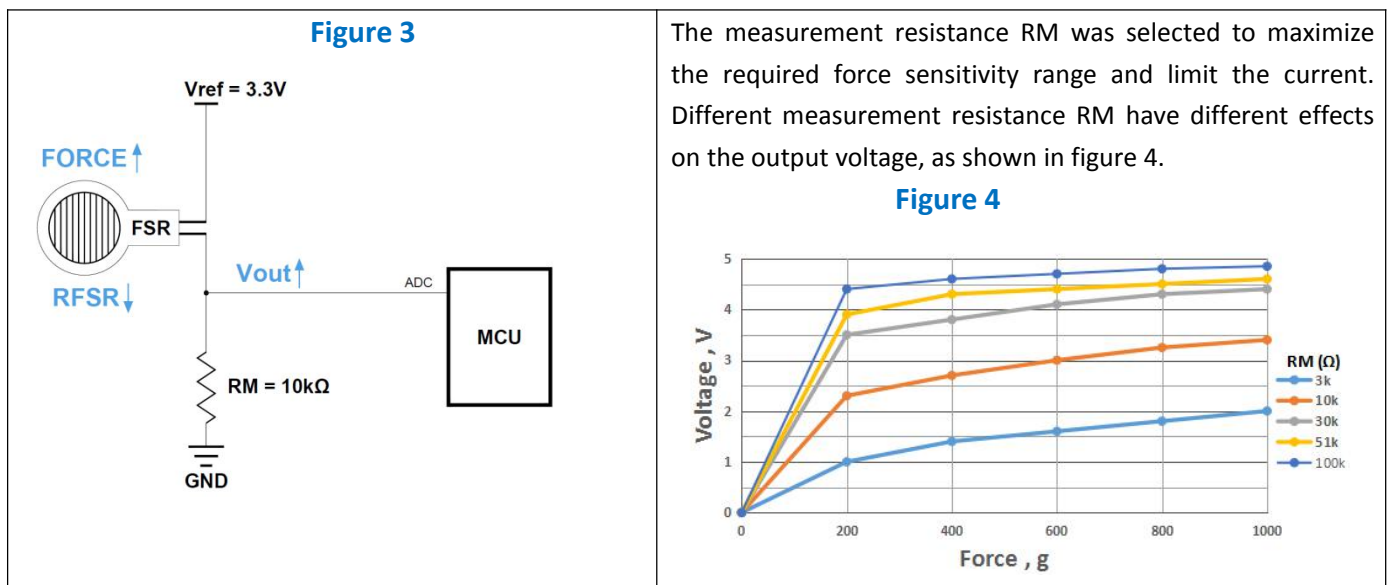
Item	Data
Sensing Area	Diameter 160*12mm
Force measure range	200g ~ 20KG
Thickness	≤0.3mm
Force repeatable (single part)	±2.5%, 8KG applied,10 times
Force repeatable (part to part)	±20%
Hysteresis	10% average
Drift	5%,10KG 24hours,logarithmic 10 time
Off resistance	>2MΩ
Force resolution	Continuous
Response time	<1 ms
Operating temperature	-30℃~60℃
Life time	> 2 million
Connector	Female 2.54mm / Male Pin 2.54mm /ZIF 1.0mm,2.54mm

## Integration and usage methods:

According to the characteristic that FSR resistance value is inversely proportional to the pressure applied on its surface, a basic circuit connection diagram is provided in figure 3 (the selection of Vref and RM values in the figure is a reference value, which can be adjusted by the user according to the actual situation).We put FSR and shunt resistor RM in series in the circuit, apply Vref reference voltage at both ends of the circuit, connect the ADC pin of MCU between FSR and RM, and use the ADC function of MCU to detect the Vout voltage value.

The calculation formula of the output voltage is as follows:

$$R_{FSR} = \frac{R_M}{V_{out}} (V_{ref} - V_{out})$$



If you have any questions about FSR, please feel free to contact our engineer .

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