

Features and Benefits

- Actuation Force as low as 0.2N and sensitivity range to 20N
- Cost Effective
- Ultra Thin
- Robust; up to 10M actuations
- Simple and easy to integrate

Description

Interlink Electronics FSR 400 Series is part of the single zone Force Sensing Resistor family. Force Sensing Resistors, or FSR's, are robust polymer thick film (PTF) devices that exhibit a decrease in resistance with increase in force applied to the surface of the sensor. This force sensitivity is optimized for use in human touch control of electronics devices such as automotive electronics, medical systems, industrial and robotics applications.

The FSR 400 Series sensors come in six different models with four different connecting options. A battery operated demo is available. Call us for more information at +1 805-484-8855



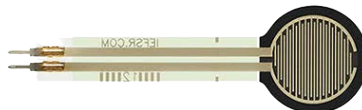
FSR® 400 Short
5mm Circle x 20mm



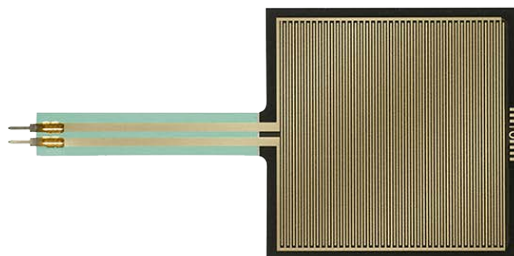
FSR® 400
5mm Circle x 38mm



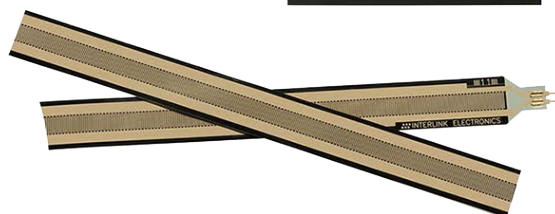
FSR® 402 Short
13mm Circle x 25mm



FSR® 402
13mm Circle x 56mm



FSR® 406
38mm Square x 83mm



FSR® 408
10mm Square x 622mm strip

Device Characteristics

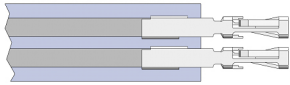
Actuation Force*	~0.2N min
Force Sensitivity Range*	~0.2N – 20N
Force Resolution	Continuous (analog)
Force Repeatability Single Part	+/- 2%
Force Repeatability Part to Part	+/- 6% (Single Batch)
Non-Actuated Resistance	>10 Mohms
Hysteresis	+10% Average (RF+ - RF-)/RF+
Device Rise Time	< 3 Microseconds
Long Term Drift 1kg load, 35 days	< 5% log10(time)
Operating Temperature Performance Cold: -40°C after 1 hour Hot: +85°C after 1 hour Hot Humid: +85°C 95RH after 1 hour	-5% average resistance change -15% average resistance change +10% average resistance change
Storage Temperature Performance Cold: -25°C after 120 hours Hot: +85°C after 120 hours Hot Humid: +85°C 95RH after 240 hours	-10% average resistance change -5% average resistance change +30% average resistance change
Tap Durability Tested to 10 Million actuations, 1kg, 4Hz	-10% average resistance change
Standing Load Durability 2.5kg for 24 hours	-5% average resistance change
EMI	Generates no EMI
ESD	Not ESD Sensitive
UL	All materials UL grade 94 V-1 or better
RoHS	Compliant

Connector Information

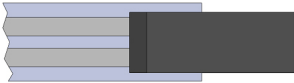
Bare Tail



Female Tin Contacts
PN: TE 2-487406-4



Female Tin Contacts with 2 Pin Housing
PN: TE 2-487406-4
PN: TE 487378-1



Solder Tabs
PN: TE 1-88997-2



Other Available Part Numbers:
Hardware Development Kit, PN 54-76247

Application Information

For specific application needs please contact Interlink Electronics support team. An Integration Guide and Hardware Development Kit (HDK) are also available. FSRs are two-wire devices with a resistance that depends on applied force. Below is a force vs. resistance graph that illustrates a typical FSR response characteristic. Please note that the graph values are reference only and actual values are dependent upon actuation system mechanics and sensor geometry.

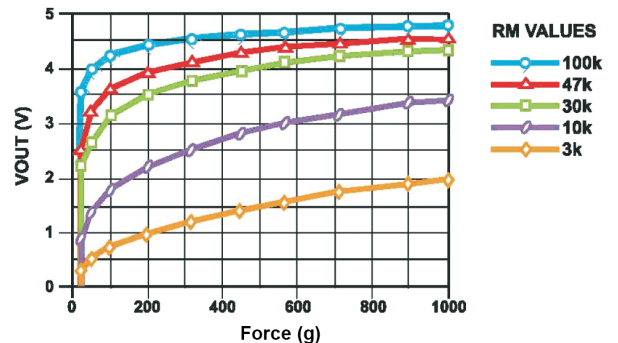
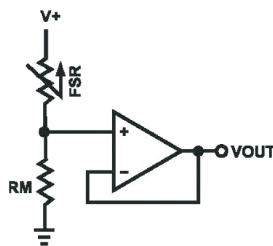
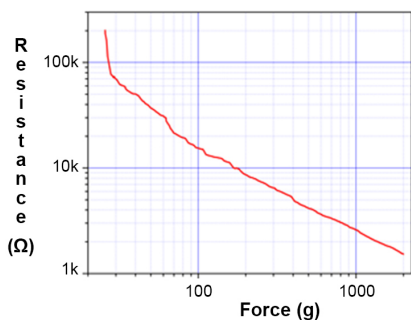
For simple force-to-voltage conversion, the FSR device is tied to a measuring resistor in a voltage divider (see figure below) and the output is described by the following equation.

$$V_{OUT} = \frac{R_M V_+}{(R_M + R_{FSR})}$$

In the shown configuration, the output voltage increases with increasing force. If RFSR and R are swapped, the output swing will decrease with increasing force. The measuring resistor, R, is chosen to maximize the desired force sensitivity range and to limit current. Depending on the impedance requirements of the measuring circuit, the voltage divider could be followed by an op-amp.

A family of force vs. VOUT curves is shown on the graph below for a standard FSR in a voltage divider configuration with various RM resistors. A 10kΩ resistor was used for these examples. Please note that the graph values are for reference only and will vary between different sensors and applications.

Refer to the FSR Integration Guide for more integration methods and techniques.





Force Sensing Resistor®

Connector Information

Application Information

For



Sensor Mechanical Data

Exploded View



Force Sensing Resistor®

Connector Information

Application Information

For



Force Sensing Resistor®

Connector Information

Application Information

For



Force Sensing Resistor®

Connector Information

Application Information

For

Orderable Part Numbers

Hardware Development Kit, 54-00019

This Hardware Development Kit includes

- FS P Demo Board (ty.)
- FS P Sensor (ty.)
- FS P cm Sensor (ty.)
- Pin onnector (ty.)
- SB Flash drive with product literature (ty.)

FLSP 10cm Sensor with Solder

Tab, P -

FSLP 10cm Sensor with

Female Contacts, P -

FSLP 10cm Sensor 4-Pin Tail,

P -

FSLP 10cm Sensor with

Female Contacts & Housing,

P -

Application Information

For

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