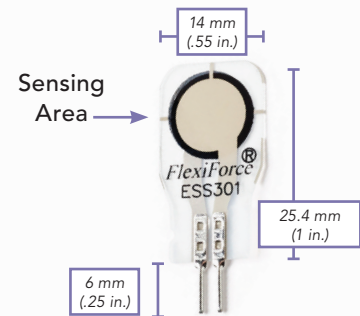


# FlexiForce<sup>®</sup>

## Enhanced Stability Series

### Model ESS301

#### Actual size of sensor



The ESS301 is our standard force sensor ideal for conditions with high temperature and humidity. This sensor is made from Tekscan's Enhanced Stability Series (ESS) pressure sensitive ink. This allows better performance in a wider range of operating and storage conditions. ESS301 was developed with OEM customers in mind and designed to reach the majority of our OEM customer's test expectations. This sensor is designed to use with your own electronics or multimeter.

### BENEFITS

- Operates in temperatures up to 85°C (approximately 185° F) and with a relative humidity up to 95%
- Better performance in a wider range of operating and storage conditions
- Thin and flexible
- Easy to use
- Available off-the-shelf
- Ideal for prototyping and integrating

### PHYSICAL PROPERTIES

Thickness	0.203 mm (0.008 in.)
Length	25.4 mm (1 in.)*
Width	14 mm (0.55 in.)
Sensing Area	9.53 mm (0.375 in.) diameter
Connector	2-pin Male Square Pin
Substrate	Polyester (ex: Mylar)
Pin Spacing	2.54 mm (0.1 in.)

✓ **ROHS COMPLIANT**

\* Length does not include pins, please add approximately 6mm (0.25 in.) for pin length for a total length of approximately 32 mm (1.25 in).

## STANDARD FORCE RANGES

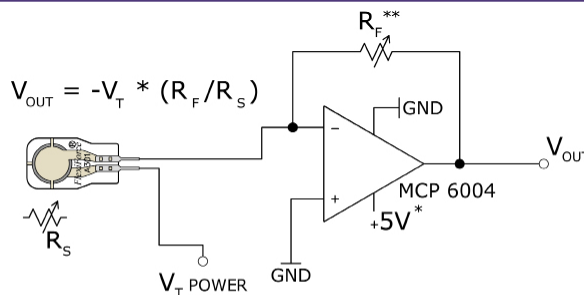
(as tested with circuit shown below)

FlexiForce ESS301 sensors have a force range up to 100 lbs using the recommended circuitry. The force range can be extended by reducing the drive voltage,  $V_T$ , or the resistance value of the feedback resistor,  $R_F$ . Conversely, the sensitivity can be increased for measurement of lower forces by increasing  $V_T$  or  $R_F$ .

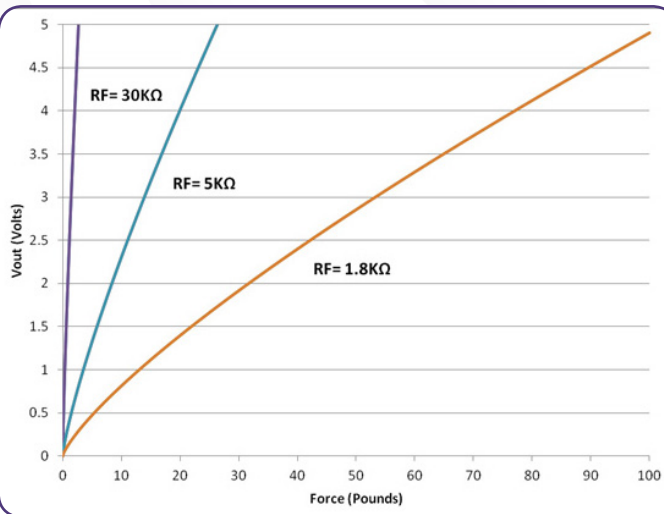
Sensor output is a function of many variables, including interface materials. Therefore, Tekscan recommends the user calibrate each sensor for the application. The graph below is an illustration of how a sensor can be used to measure varying force ranges by changing the feedback resistor (the graph below should not be used as a calibration chart).

Test Conditions: Input Voltage- 0.45V; Load Applied - 1lb; Measured Current- 79uA

## Recommended Circuit



- \* Supply Voltages should be constant
- \*\* Reference Resistance  $R_F$  is 1k $\Omega$  to 100k $\Omega$
- Sensor Resistance  $R_S$  at no load is >5M $\Omega$
- Max recommended current is 2.5mA



	Typical Performance	Evaluation Conditions
Linearity (Error)	< $\pm 8.6\%$	Line drawn from 0 to 50% load
Repeatability	< $\pm 2.5\%$ of full scale	Conditioned sensor, 80% of full force applied
Hysteresis	< 5.5 % of full scale	Conditioned sensor, 80% of full force applied
Drift	< 3.8% per logarithmic time scale	Constant load
Response Time	< 5 $\mu$ sec	Impact load, output recorded on oscilloscope
Operating Temperature	-40 $^{\circ}$ C - 85 $^{\circ}$ C (-40 $^{\circ}$ F - 185 $^{\circ}$ F)	Time required for the sensor to respond to an input force
Max Humidity	95%	



ISO 9001 & 13485



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