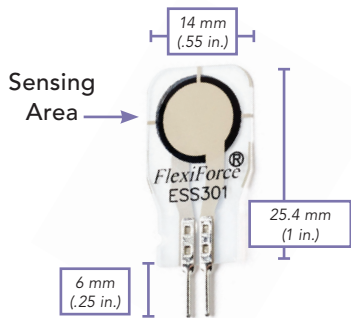


# FlexiForce™

## Standard 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. The ESS301 can be used with our test & measurement, prototyping, and embedding electronics, including the OEM Development Kit, FlexiForce Quickstart Board, and the ELF™ System\*. You can also use your own electronics, or multimeter.



## 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
Pin Spacing	2.54 mm (0.1 in.)

## 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

✓ ROHS COMPLIANT

\* Sensor will require an adapter/extender to connect to the ELF System. Contact your Tekscan representative for assistance.

\*\*Length does not include pins. Please add approximately 6 mm (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

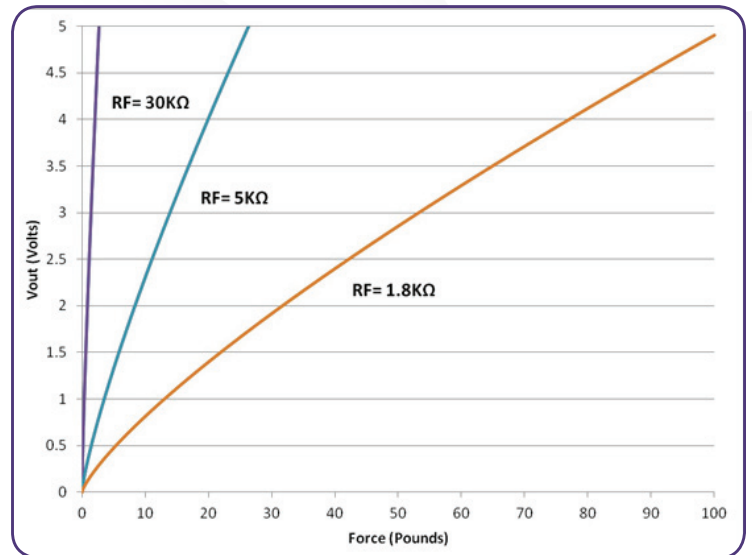
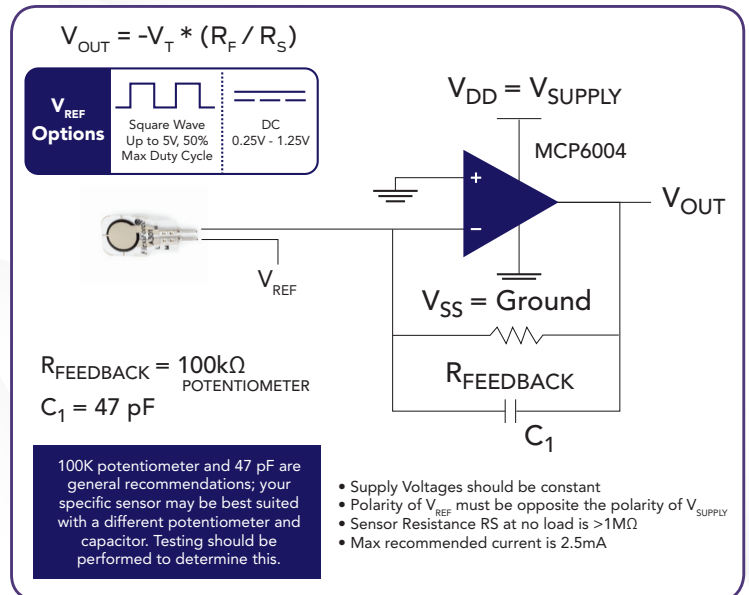
4.4 N (0 - 1 lb) †

† This sensor can measure up to 445 N (100 lb). 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 on the right is an illustration of how a sensor can be used to measure varying force ranges by changing the feedback resistor (the graph on the right should not be used as a calibration chart).

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

## Recommended Circuit



	Typical Performance	Evaluation Conditions
Linearity (Error)	< ±3% of full scale	Line drawn from 0 to 50% load
Repeatability	< ±2.5%	Conditioned sensor, 80% of full force applied
Hysteresis	< 4.5% of full scale	Conditioned sensor, 80% of full force applied
Drift	< 5% per logarithmic time scale	Constant load of 111 N (25 lb)
Response Time	< 5μsec	Impact load, output recorded on oscilloscope
Operating Temperature	-40°C - 60°C (-40°F - 140°F)	Convection and conduction heat sources
Acceptance Criteria	±40% sensor-to-sensor variation	

\*All data above was collected utilizing an Op Amp Circuit. If your application cannot allow an Op Amp Circuit, visit [www.tekscan.com/flexiforce-integration-guides](http://www.tekscan.com/flexiforce-integration-guides), or contact a FlexiForce Applications Engineer.

Force reading change per degree of temperature change = 0.36%/°C (±0.2%/°F).



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