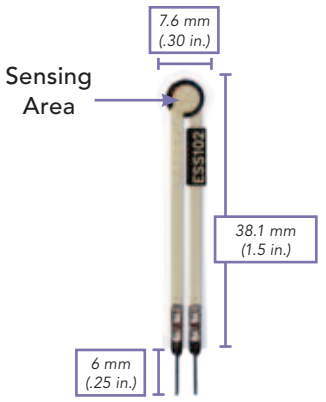
FlexiForce™
Standard Model ESS102

The ESS102 is a 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. The ESS102 can be used with our test & measurement, prototyping, and embedding electronics, including the FlexiForce Sensor Characterization Kit, FlexiForce Prototyping Kit, FlexiForce Quickstart Board, and the ELF™ System*. You can also use your own electronics, or multimeter.

Actual size of sensor



Benefits

- Operates in temperatures up to 85°C approximately 185°F) and with a relative humidity up to 95%
- Thin and flexible
- Easy to use, ideal for prototyping and integrating
- Available off-the-shelf

Physical Properties

Thickness	0.203 mm (0.008 in.)
Length	38.1 mm (1.5 in.)**
Width	7.6 mm (0.30 in.)
Sensing Area	3.8 mm (0.15 in.) diameter
Connector	2-pin Male Square Pin
Substrate	Polyester
Pin Spacing	2.54 mm (0.1 in.)

✓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).*

***

	Typical Performance	Evaluation Conditions
Linearity (Error)	< ±8.6% of full scale	Line drawn from 0 to 50% load
Repeatability	< ±2.5%	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 of 111 N (25 lb)
Response Time	< 5µsec	Impact load, output recorded on oscilloscope
Operating Temperature	-40°C - 85°C (-40°F - 185°F)	Convection and conduction heat sources
Durability	≥ 3 million actuations	Perpendicular load, room temperature, 22 N (5 lb)
Temperature Sensitivity	0.36%/°C (± 0.2%/°F)	Conductive heating

*****All data above was collected utilizing an Op Amp Circuit (shown on the next page).** If your application cannot allow an Op Amp Circuit, visit www.tekscan.com/flexiforce-integration-guides, or contact a FlexiForce Applications Engineer.

ISO 9001:2008 Compliant & 13485:2016 Registered

Tekscan™

Standard Force Ranges
as Tested with Circuit Shown

4.4 N (0 - 1 lb) †

†**This sensor can measure up to 44 N (10 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 (**Figure 1** should not be used as a calibration chart).

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

Recommended Circuit

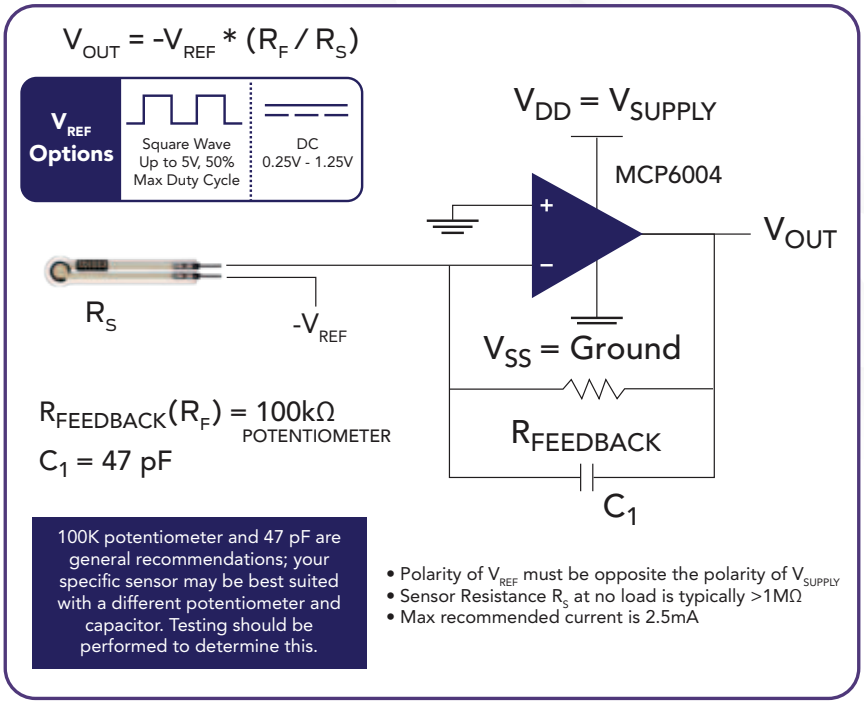
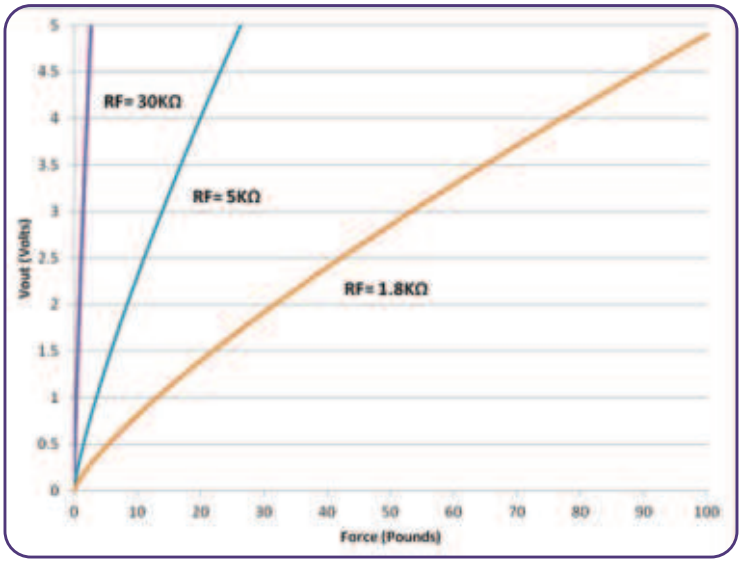


Figure 1



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