

The FlexiForce™ A502 is a square sensor, with a sensing area measuring 50.8 mm x 50.8 mm (2 in. x 2 in.). This sensor is available off-the-shelf for easy proof of concept. The A502 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.

Benefits

- **Thin and Flexible**
Easily integrates into tight spaces for non-intrusive force measurement between mating surfaces.
- **Easy to Use**
Compatible with a variety of electronics and ready-to-use for testing, prototyping, or embedding.
- **Low-power**
- **Ideal for prototyping & integration**

Physical Properties

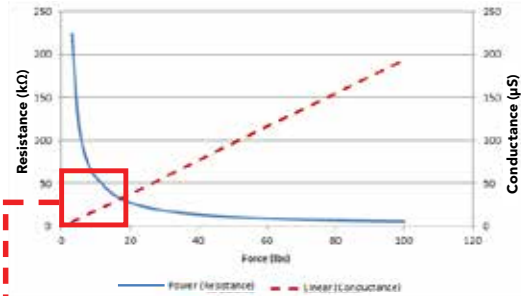
Thickness	0.203 mm (0.008 in.)	Connector	2-pin Male Square Pin
Length	81.3 mm (3.20 in.)**	Substrate	Polyester
Width	55.9 mm (2.20 in.)	Pin Spacing	2.54 mm (0.1 in.)
Sensing Area	50.8 mm x 50.8 mm (2 in. x 2 in.)		

- * 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 87 mm (3.4 in.).

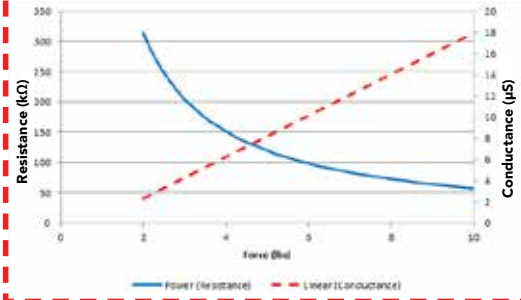
	Typical Performance	Evaluation Conditions
Linearity (Error)	< ±3% of full scale	Line drawn from 0 to 50% load
Repeatability	< ±2.5%	Conditioned sensor, 80% of full force applied
Hysteresis	< 4.5% of full scale	Conditioned sensor, 80% of full force applied
Drift	< 5% per logarithmic time scale	Constant 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
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.

Typical Performance



Superior performance and range compared to other sensors of its kind



Voltage (V)	Force (lbs)	Resistance (kΩ)	Conductance (μS)
0.5	20	34.36	29.11
0.5	40	17.14	58.33
0.5	60	11.57	86.41
0.5	80	8.71	114.76
0.5	100	6.97	143.54

- Sensor acceptance criteria $\pm 40\%$ of nominal
- Sensor resistance measured 20 seconds after applied load
- Sensor loaded through a polycarbonate puck equal to 68% (2.72 in²) of total active area
- Sensor was not attached to any drive circuitry

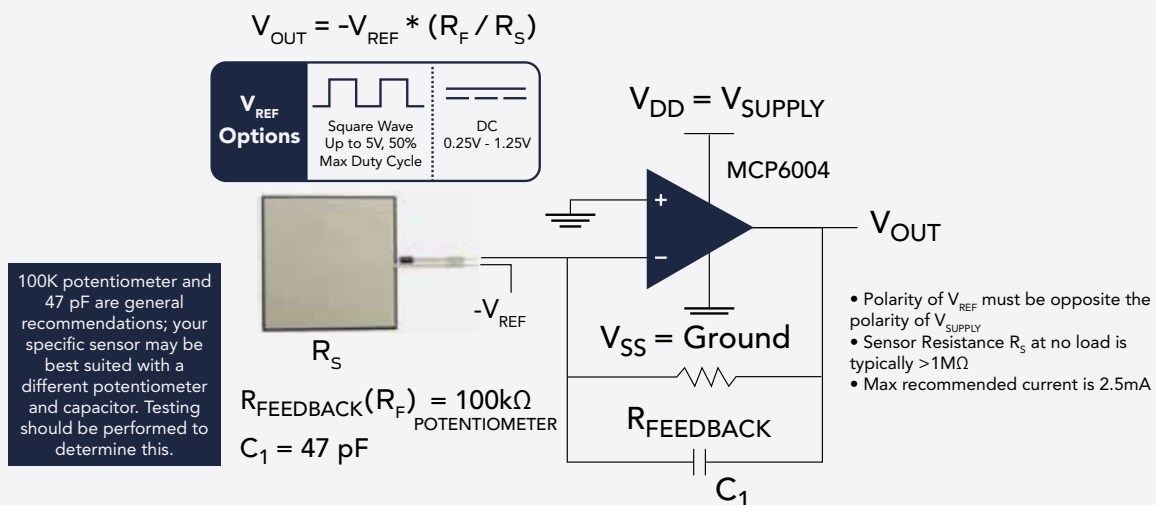
Standard Force Ranges as Tested with Inverting Op-Amp Circuit

222 N (0 - 50 lb) [†]

[†]This sensor can measure up to 44,448 N (10,000 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. Calibration is recommended. See [FlexiForce Best Practices](#) for details.

Recommended Circuit



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Sensor Datasheet
SD_Rev H_121824

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