SingleTact is the most refined miniature force sensor that is performance oriented. Ultra-thin, single-element capacitive sensor with industry-leading sensitivity and repeatability that accurately and reliably quantifies forces.

**SingleTact FEATURES**

- **Ultra-thin force sensors** come in sizes of 8mm and 15mm diameter that is only 0.35mm thick.

- **Highly sensitive and repeatable sensors** provide high dynamic range and errors less than 1.0%.

- **Simple Analog 3-wire interface** for immediate DAQ integration.

- **I2C interface** for digital integration.

- **Arduino and DAQ Software** to begin collecting data right out of the box.

- **Custom designed solutions available for OEM applications.**
## SENSOR PERFORMANCE

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force Resolution</td>
<td>&lt; 0.2% of Full Scale (FS)</td>
</tr>
<tr>
<td>Maximum Force</td>
<td>300% of FS</td>
</tr>
<tr>
<td>Sensor Compression</td>
<td>10µm at full load</td>
</tr>
<tr>
<td>Typical Repeatability Error</td>
<td>&lt; 1.0% (1 sigma of FS)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C – 200°C</td>
</tr>
<tr>
<td>Temperature Sensitivity</td>
<td>Up to 0.2%/°C</td>
</tr>
<tr>
<td>Linearity Error</td>
<td>&lt; 2.0%</td>
</tr>
<tr>
<td>Drift</td>
<td>2% in 1 min, 4% in 10min; at 50% load</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>&lt; 4.0%</td>
</tr>
<tr>
<td>Sensor Response Time</td>
<td>&lt; 1ms (Measured using Oscilloscope)</td>
</tr>
<tr>
<td>Contact Surface Material</td>
<td>Polymide</td>
</tr>
<tr>
<td>Sensor Thickness</td>
<td>0.35mm</td>
</tr>
<tr>
<td>Tail Length</td>
<td>50mm</td>
</tr>
<tr>
<td>Typical Baseline Capacitance</td>
<td>8mm: 75 pF; 15mm : 230 pF @ 100kHz</td>
</tr>
<tr>
<td>Typical Capacitance Change</td>
<td>8mm: 2.2 pF; 15mm : 5.5 pF @ 100kHz</td>
</tr>
<tr>
<td>ESD Sensitivity</td>
<td>Not sensitive to ESD</td>
</tr>
<tr>
<td>Material Grade</td>
<td>UL grade 94 V-1 or better</td>
</tr>
</tbody>
</table>

## SENSOR CHARACTERISTICS

### Typical Uncalibrated Output

![Graph showing typical uncalibrated output](image1)

### Typical Calibrated Output

![Graph showing typical calibrated output](image2)

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PINOUTS DIAGRAM FOR SENSOR & I2C BOARD

1. GND
2. GND (Both GNDs must be connected)
3. Sense

1. Vcc (3.7V to 12V)
2. Analog output (2V swing, 0.5 to 1.5V = full scale range)
3. I2C interface (SCL)
4. Programming (Data)
5. Programming (Clock)
6. I2C interface (SDA)
7. Frame Sync (pulse for each new measurement)
8. Ground

ELECTRONICS SPECIFICATIONS

- Update Rate: >100 Hz
- Analog Out: 0.5–1.5V
- Digital Interface: I2C (100kHz), 10-bit resolution
- IO Voltage: 3.3V
- Supply Voltage: 3.7-12V
- Input Current: 2.7mA
- Weight: Sensor 0.23g/ Electronics 1.6g
- RoHS: Compliant
- Operating Temperature: -40°C – 85°C

SOFTWARE

Download SingleTact Software

www.singletact.com/software-download
SENSOR MECHANICAL SPEC-15mm

SENSORS
S15-4.5N
+Full scale Range: 0.45kg (1.0lbs)
+Minimal Detectable Force: 0.9g

S15-45N
+Full scale Range: 4.5kg (10lbs)
+Minimal Detectable Force: 9g

S15-450N
+Full scale Range: 45kg (100lbs)
+Minimal Detectable Force: 90g

CABIBRATED SENSORS
CS15-4.5N
+Full scale Range: 0.45kg (1.0lbs)
+Minimal Detectable Force: 0.9g

CS15-45N
+Full scale Range: 4.5kg (10lbs)
+Minimal Detectable Force: 9g

CS15-450N
+Full scale Range: 45kg (100lbs)
+Minimal Detectable Force: 90g
SENSOR MECHANICAL SPEC-8mm

SENSORS
- S8-1N
  + Full scale Range: 100g (0.22lbs)
  + Minimal Detectable Force: 0.2g

- S8-10N
  + Full scale Range: 1.0kg (2.2lbs)
  + Minimal Detectable Force: 2g

- S8-100N
  + Full scale Range: 10kg (22lbs)
  + Minimal Detectable Force: 20g

CABIBRATED SENSORS
- CS8-1N
  + Full scale Range: 100g (0.22lbs)
  + Minimal Detectable Force: 0.2g

- CS8-10N
  + Full scale Range: 1.0kg (2.2lbs)
  + Minimal Detectable Force: 2g

- CS8-100N
  + Full scale Range: 10kg (22lbs)
  + Minimal Detectable Force: 20g

EXPLDED VIEW

TOP ELECTRODE
SENSOR DIELECTRIC
BOTTOM ELECTRODE
ADHESIVE
STIFFENER