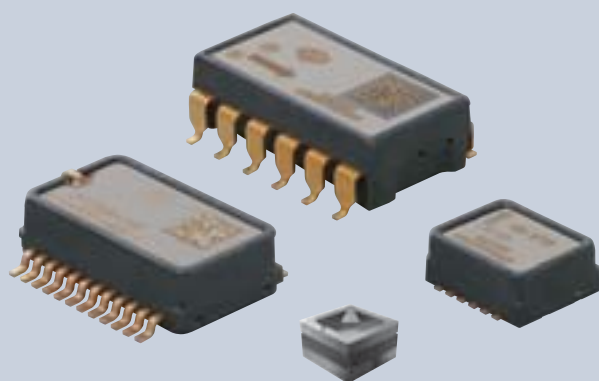
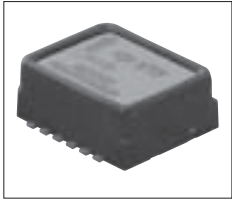


# MEMS Sensors & Sensing Elements



# Accelerometers



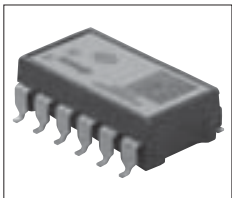
Murata is the global market leader in low-g acceleration sensors for automotive applications. The extensive accelerometer product range includes high performance analog and digital accelerometers for both safety critical automotive and industrial applications.

Murata accelerometers are based on the company's proprietary 3D MEMS technology and offer a number of excellent product features for the most demanding applications. The sensing element and the measuring ASIC are assembled in a dual-in-line or dual flat lead plastic package with pins for the surface mount and re-flow soldering. They are environmentally protected with silicone gel, resulting in excellent performance and reliability in humid environments and at temperature cycling. In addition, the robust sensing element design with over damped frequency response enables excellent performance even in harsh and vibrating environments.

| Series  | No. of Axes | Range          | Supply Voltage | Temperature Range | Sensitivity          | Signal Bandwidth | Output Type    | Typical Applications  |
|---------|-------------|----------------|----------------|-------------------|----------------------|------------------|----------------|---|
| SCA600  | 1           | ±1.5 to ±12.3g | 5V             | -40 to +125 °C    | 0.15 to 2V/g         | 50 to 400Hz      | Analog         | Automotive safety critical applications, IMU, Industrial applications |
| SCA800  | 1           | ±2g            | 3.3V           | -40 to +125 °C    | 900LSB/g             | 50Hz             | Digital/SPI    |   |
| SCA1000 | 2           | ±1.7g<br>±4g   | 5V             | -40 to +125 °C    | 1.2V/g<br>0.55V/g    | 50Hz<br>115Hz    | Analog/Digital |   |
| SCA2100 | 2           | ±2g            | 3.3V           | -40 to +125 °C    | 900LSB/g             | 45Hz             | Digital/SPI    |   |
| SCA3100 | 3           | ±2g<br>±6g     | 3.3V           | -40 to +125 °C    | 900LSB/g<br>650LSB/g | 45Hz             | Digital/SPI    |   |
| SCA100T | 2           | ±12g           | 5V             | -40 to +125 °C    | 0.17V/g              | 400Hz            | Analog/Digital | Automotive security applications, Industrial applications             |

For more information, please refer to the product datasheets available online at [www.murata.com](http://www.murata.com)

# Inclinometers



Murata inclination sensors are an optimum choice for high accuracy leveling and inclination measurement instruments. The highest accuracy is available with the SCA103T series which uses a differential measurement principle to compensate for all common mode error and noise effects.

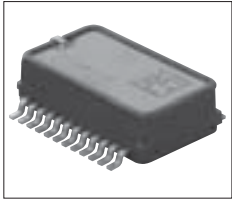
With the best shock durability available on the MEMS market, Murata inclinometers provide trouble-free measurements in moving machines, vehicles, airplanes, construction machines and handheld devices.

| Series  | No. of Axes | Range                       | Supply Voltage | Temperature Range | Sensitivity   | Signal Bandwidth | Output Type    | Typical Applications   |
|---------|-------------|-----------------------------|----------------|-------------------|---------------|------------------|----------------|--|
| SCA100T | 2           | ±30°, ±0.5g<br>±90°, ±1g    | 5V             | -40 to +125 °C    | 4V/g<br>2V/g  | 18Hz             | Analog/Digital | Levelling instruments, Moving machines, Rotating lasers, Construction levels |
| SCA103T | 1           | ±15°, ±0.26g<br>±30°, ±0.5g | 5V             | -40 to +125 °C    | 16V/g<br>8V/g | 18Hz             | Analog/Digital |  |
| SCA61T  | 1           | ±30°, ±0.5g<br>±90°, ±1g    | 5V             | -40 to +125 °C    | 4V/g<br>2V/g  | 18Hz             | Analog/Digital |  |
| SCA830  | 1           | ±90°, ±1g                   | 3.3V           | -40 to +125 °C    | 32000 LSB/g   | 6.25Hz           | Digital/SPI    |  |

Murata Electronics Oy's product range also includes inclination modules and sub-assemblies.

For more information, please refer to the product datasheets available online at [www.murata.com](http://www.murata.com)

# Gyroscopes



Murata Electronics Oy develops and manufactures gyroscope components based on the company's proven 3D MEMS technology and highly integrated electronics.

Industrial gyros offer a performance level that typically has been available only for expensive module products. The sensing elements and measuring circuitry are assembled into a premolded plastic dual-in-line (DIL) package, protected with silicon gel and covered with a stainless steel lid. All products are RoHS compatible and suitable for lead-free reflow soldering.

| Series  | No. of Axes                         | Range                            | Supply Voltage            | Temperature Range | Sensitivity  | Signal Bandwidth | Output Type | Typical Applications  |
|---------|-------------------------------------|----------------------------------|---------------------------|-------------------|--|------------------|-------------|---|
| SCC1300 | 1-axis gyro<br>3-axis accelerometer | ±100°/s, ±2.0g<br>±300°/s, ±6.0g | 5V analog<br>3.3V digital | -40 to +125 °C    | 50LSB/(°/s),<br>1800LSB/g<br>18LSB/(°/s),<br>650LSB/g            | 50Hz, 45Hz       | Digital/SPI | Platform stabilization<br>Motion analysis and control,<br>Guidance and navigation systems |
| SCR1100 | 1-axis gyro                         | ±100°/s<br>±300°/s               | 5V analog<br>3.3V digital | -40 to +125 °C    | 50LSB/(°/s)<br>18LSB/(°/s)                                       | 50Hz             | Digital/SPI |   |
| SCC2130 | X-axis gyro<br>3-axis accelerometer | ±125°/s/6g                       | 3.3V                      | -40 to +125 °C    | 50LSB/(°/s),<br>1962LSB/g  | 60Hz/10Hz        | Digital/SPI |   |
| SCR2100 | X-axis gyro                         | ±125°/s                          | 3.3V                      | -40 to +125 °C    | 50LSB/(°/s)  | 60Hz/10Hz        | Digital/SPI |   |
| SCC2230 | Z-axis gyro<br>3-axis accelerometer | ±125°/s/6g<br>±125°/s/2g         | 3.3V                      | -40 to +125 °C    | 50LSB/(°/s),<br>1962LSB/g (6g)<br>50LSB/(°/s),<br>5886LSB/g (2g) | 60Hz/10Hz        | Digital/SPI |   |

For more information, please refer to the product datasheets available online at [www.murata.com](http://www.murata.com)

# Pressure Sensing Elements



Murata SCB10H capacitive absolute pressure sensing elements have been designed for applications that require a small size and ultra low power consumption. The SCB10H pressure sensing elements are ideal for implantable medical devices thanks to their inherent accuracy, reliability, small size and enabled low power consumption.

The SCB10H pressure sensing element allows the possibility for volume OEM customers to integrate pressure measurement functions in an optimal way into their products.

| Parameter                    | Unit   | B012          | B080           | B250                              | Typical Applications  |
|------------------------------|--------|---------------|----------------|-----------------------------------|---|
| Measuring range              | kPa    | 30 to 120     | 100 to 800     | 100 to 2500                       | Medical devices,<br>Flow meters,<br>Barometers,<br>Altimeters |
| Capacitance at min. pressure | pF     | 7.8           | 7.5            | 7.3                               |   |
| Capacitance at max. pressure | pF     | 11.8          | 13.4           | 13.9                              |   |
| Capacitance dynamics         | pF     | 4.0           | 5.9            | 6.6                               |   |
| Sensitivity                  | fF/kPa | 55 (@100 kPa) | 6.2 (@350 kPa) | 1.3 (@100 kPa)<br>6.5 (@2500 kPa) |   |

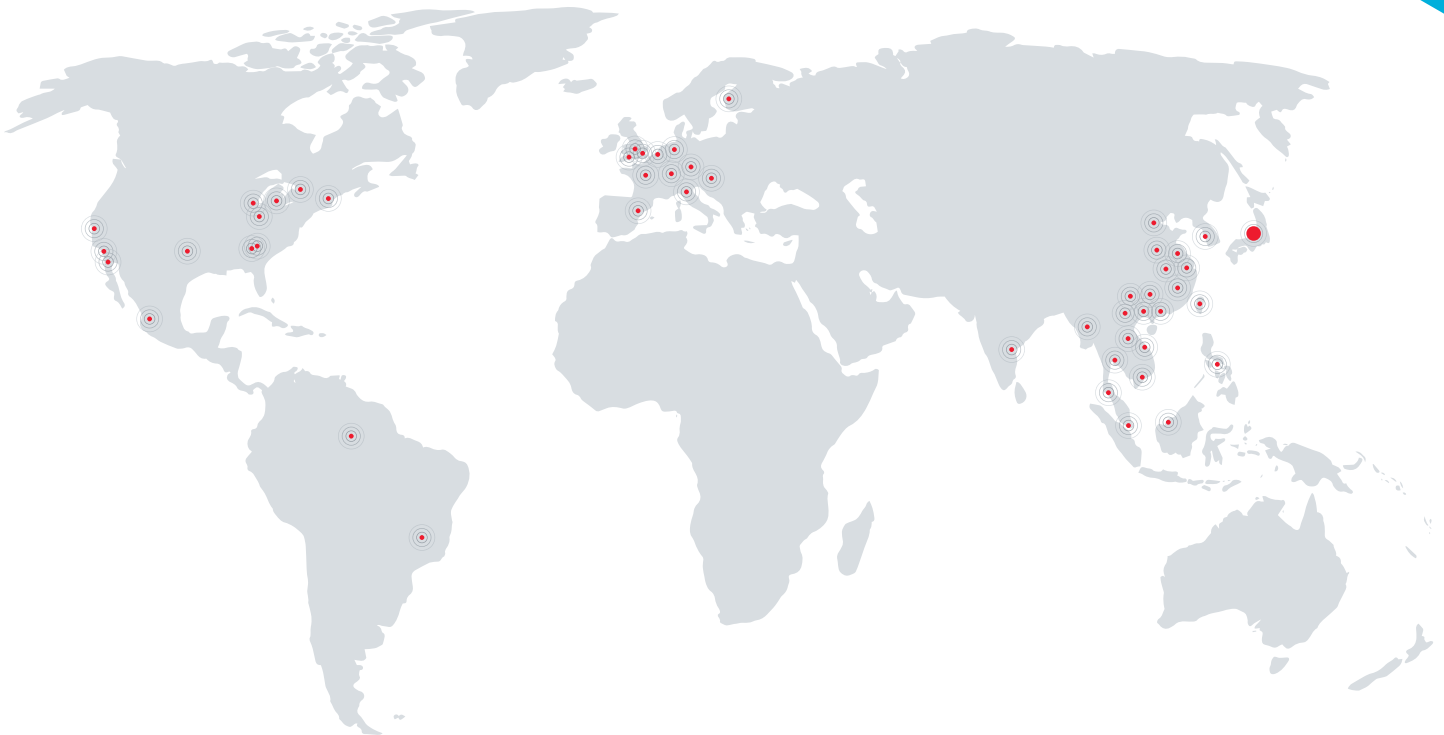
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## EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (<http://www.murata.com/en-eu/support/compliance/rohs>).

# Global Locations

For details please visit [www.murata.com](http://www.murata.com)



## ⚠ Note

### 1 Export Control

#### For customers outside Japan:

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

#### For customers in Japan:

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2 Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- ① Aircraft equipment
- ② Aerospace equipment
- ③ Undersea equipment
- ④ Power plant equipment
- ⑤ Medical equipment
- ⑥ Transportation equipment (vehicles, trains, ships, etc.)
- ⑦ Traffic signal equipment
- ⑧ Disaster prevention / crime prevention equipment
- ⑨ Data-processing equipment
- ⑩ Application of similar complexity and/or reliability requirements to the applications listed above

3 Product specifications in this catalog are as of August 2016. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4 Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5 This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

6 Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7 No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

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[www.murata.com](http://www.murata.com)

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INNOVATOR IN ELECTRONICS