MEMS 3-axis accelerometer

A small surface mounted MEMS sensor offering best-in-class characteristics for inclination measurements including user selectable measurement range, and features better than 10 mg offset stability.

Features
- 3-axis high performance accelerometer with ±1.5 to ±6g user selectable measurement range
- Extensive self-diagnostics features
- Excellent bias stability and low noise level
- Mechanically damped sensing element design for superior vibration robustness
- SPI digital interface
- −40°C...+125°C operating range
- 3.0V...3.6V supply voltage with 1.2mA current consumption
- Proven capacitive 3D-MEMS technology
- Product platform qualified according to AEC-Q100 standard

Applications
SCA3300 is targeted at applications demanding high stability with tough environmental requirements.

Typical applications include:
- Professional Leveling
- Angle measurement and control
- Tilt compensation
- Inertial Measurement Units (IMUs) for heavy machine and automotive (ADAS)
- Motion Analysis and Control
- Navigation Systems
- Intelligent Transmission Control

Typical performance overview

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SCA3300-D01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Range</td>
<td>−40...+125 °C</td>
</tr>
<tr>
<td>Measurement range options</td>
<td>±6g/70Hz</td>
</tr>
<tr>
<td></td>
<td>±3g/70Hz</td>
</tr>
<tr>
<td></td>
<td>±1.5g/70Hz</td>
</tr>
<tr>
<td></td>
<td>±1.5g/10Hz</td>
</tr>
<tr>
<td>Offset Temperature Error</td>
<td>±15 mg/−0.86 °C</td>
</tr>
<tr>
<td>Sensitivity Temperature Error</td>
<td>±0.3%</td>
</tr>
<tr>
<td>Linearity ±1g range</td>
<td>±1mg</td>
</tr>
<tr>
<td>Linearity ±6g range</td>
<td>±15mg</td>
</tr>
<tr>
<td>Noise Density</td>
<td>37 ug/sqrt(Hz)</td>
</tr>
</tbody>
</table>

Figure 1. Vibration rectification error
An example of superior vibration robustness: DC Offset error during vibration. Sine sweep 500...5kHz 4g amplitude and 5kHz...25kHz 2g amplitude.

Figure 2. Long term stability
An example of ground breaking stability. Typical offset long term stability for X, Y, Z axis (HTOL for 1000h, V_supply=3.6V, T=+125°C).

info@murata.eu
www.murata.com