



STEVAL-MKI001V1

MEMS analog output evaluation board based on LIS3L02AS4

Data Brief

Features

- 2.4 V to 3.6 V single supply operation
- Low power consumption
- ± 2 g / ± 6 g user selectable full-scale
- 0.5 mg resolution over 100 Hz bandwidth
- Embedded self-test and power down
- Output voltage, offset and sensitivity ratiometric to the supply voltage
- High shock survivability
- Lead-free and ECOPACK™ compatible

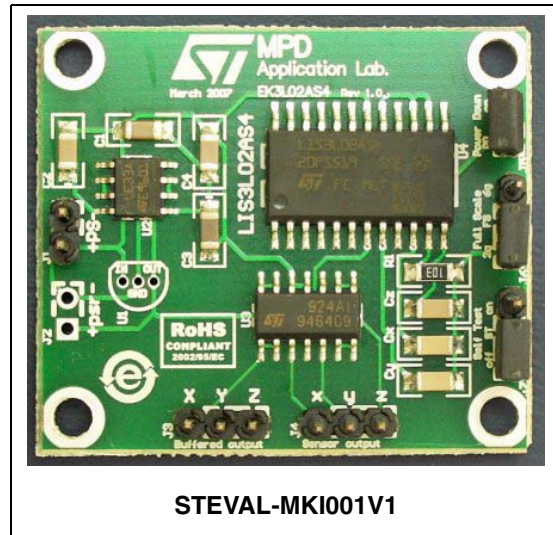
Applications

- Mobile terminals
- Gaming and virtual reality input devices
- Free-fall detection for data protection
- Antitheft systems and inertial navigation
- Appliance and robotics

Description

The STEVAL-MKI001V1 is an evaluation kit designed to provide the user with a platform for evaluating the LIS3L02AS4 MEMS accelerometer in the SO24 package with analog output. It implements a typical application composed of the LIS3L02AS4 accelerometer and the TS924 rail-to-rail precision buffer. The supply voltage is generated by an LE33 voltage regulator, which ensures the correct power required by the LIS3L02AS4 device.

All parts on the STEVAL-MKI001V1 evaluation kit board are STMicroelectronics components.



1 General circuit description

The sensing element, capable of detecting the acceleration, is manufactured using a dedicated process developed by ST to produce inertial sensors and actuators in silicon.

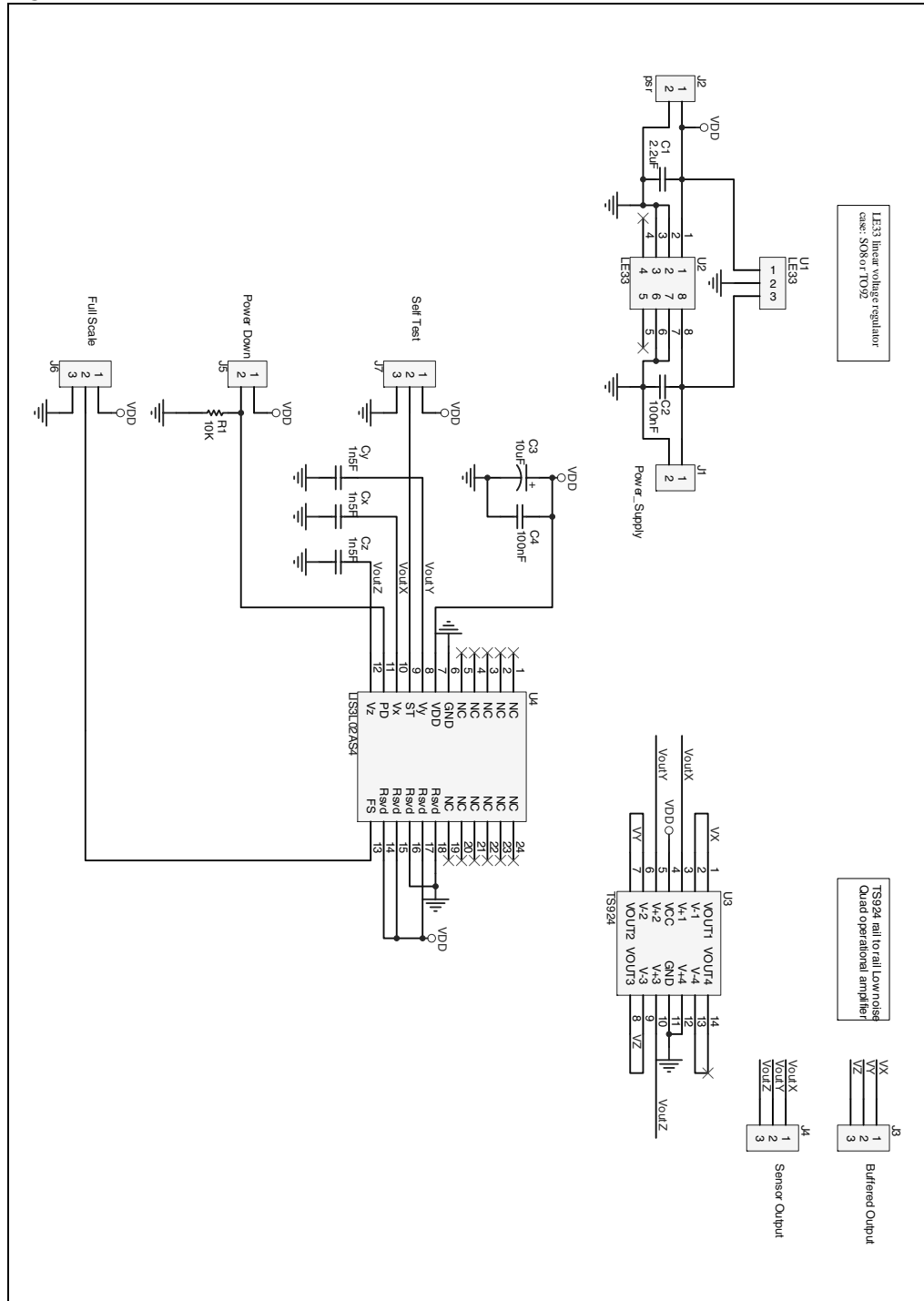
The IC interface is manufactured using a standard CMOS process that allows high level of integration to design a dedicated circuit which is trimmed to better match the sensing element characteristics.

The LIS3L02AS4 has a user selectable full scale of $\pm 2g$, $\pm 6g$ and it is capable of measuring accelerations over a bandwidth of 1.5 KHz for all axes. The device bandwidth may be reduced by using external capacitances. A self-test capability allows to check the mechanical and electrical signal path of the sensor.

The LIS3L02AS4 is available in plastic SMD package and it is specified over an extended temperature range of -40°C to $+85^{\circ}\text{C}$.

2 Board schematic

Figure 1. Scheme



3 Revision history

Table 1. Document revision history

Date	Revision	Changes
21-Aug-2007	1	Initial release
16-Oct-2007	2	Content reworked to improve readability, no technical changes

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

