

## MEMS analog output evaluation board based on LIS3L02AS4

Data Brief

### Features

- 2.4 V to 3.6 V single supply operation
- Low power consumption
- $\pm 2$  g /  $\pm 6$  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

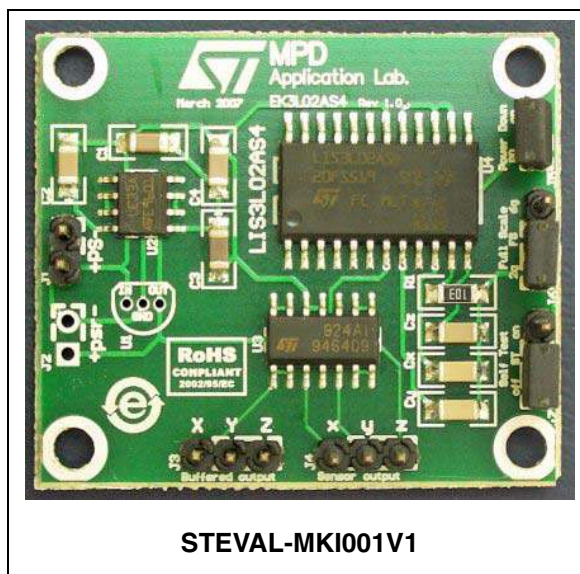
### Applications

- 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.

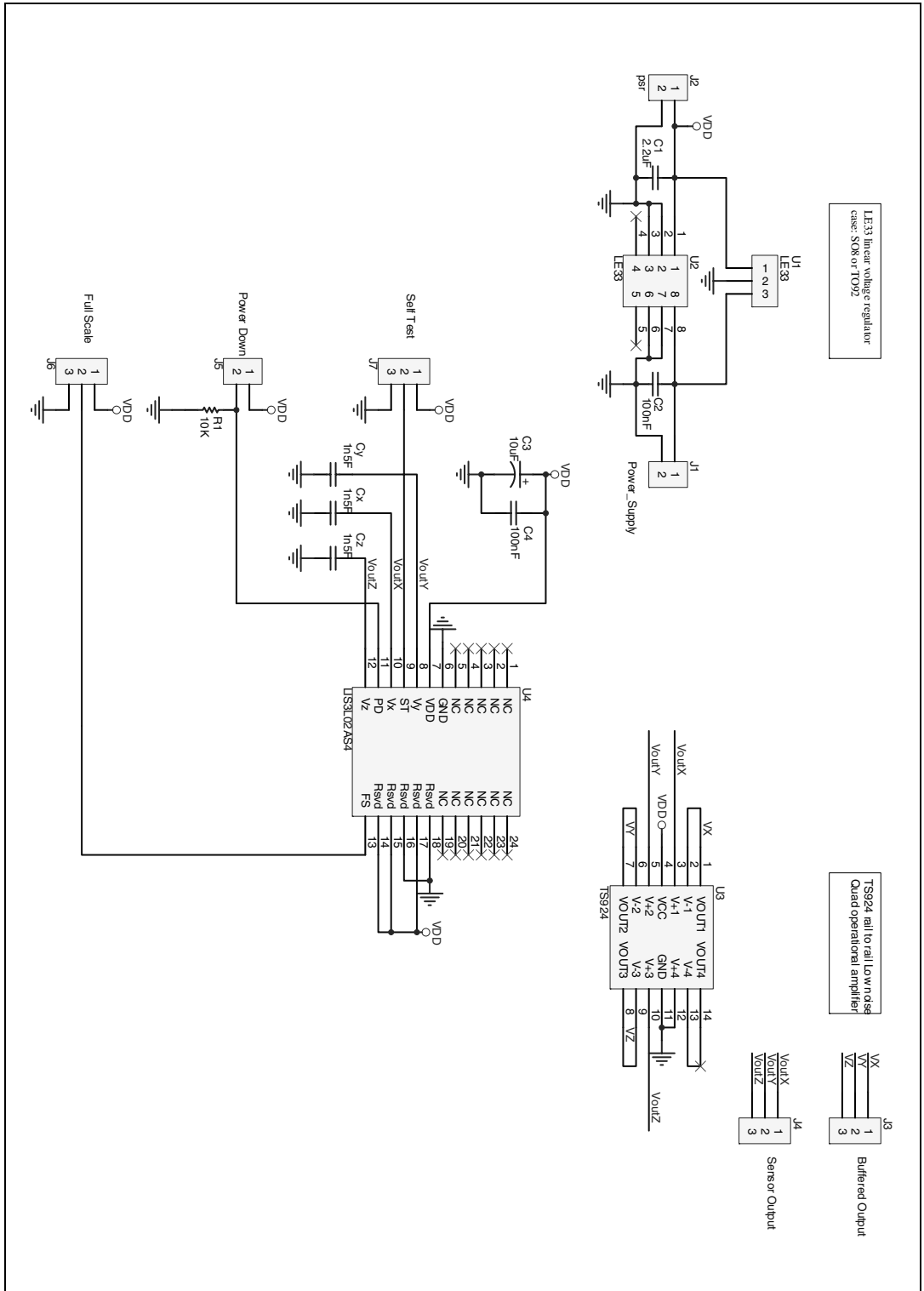
The IC interface is manufactured using a standard CMOS process that allows high level of integration to design a dedicated circuit which is trimmed to better match the sensing element characteristics.

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  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

## 2 Board schematic

Figure 1. Scheme



### 3 Revision history

**Table 1. Document revision history**

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

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