Freescale Semiconductor
Technical Data

Document Number: MMA2260D
Rev 3, 03/2006

±1.5g X-Axis Micromachined Accelerometer

MMA2260

The MMA series of silicon capacitive, micromachined accelerometers feature signal conditioning, a 2-pole low pass filter and temperature compensation. Zero-g offset full scale span and filter cut-off are factory set and require no external devices. A full system self-test capability verifies system functionality.

MMA2260D: X AXIS SENSITIVITY MICROMACHINED ACCELEROMETER ±1.5g

Features

- Integral Signal Conditioning
- High Sensitivity
- Linear Output
- 2nd Order Bessel Filter
- Calibrated Self-test
- EPROM Parity Check Status
- Transducer Hermetically Sealed at Wafer Level for Superior Reliability
- Robust Design, High Shock Survivability

D SUFFIX
EG SUFFIX (Pb-FREE)
16-LEAD SOIC
CASE 475-01

Typical Applications

- Tilt Monitoring
- Inclinometers
- Appliance Control
- Mechanical Bearing Monitoring
- Vibration Monitoring and Recording
- Sports Diagnostic Devices and Systems
- Trailer Brake Controls
- Automotive Aftermarket

ORDERING INFORMATION

Device	Temperature Range	Case No.	Package
MMA2260D	–40 to +105°C	475-01	SOIC-16
MMA2260DR2	–40 to +105°C	475-01	SOIC-16, Tape & Reel
MMA2260EG	–40 to +105°C	475-01	SOIC-16
MMA2260EGR2	–40 to +105°C	475-01	SOIC-16, Tape & Reel

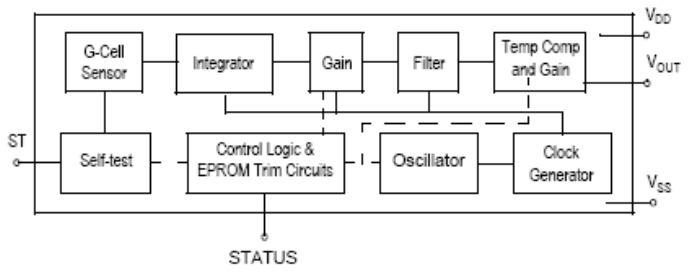

Figure 1. Simplified Accelerometer Functional Block Diagram

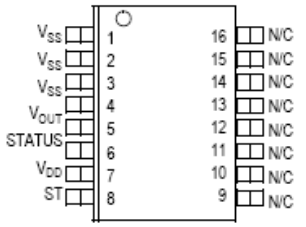

Figure 2. Pin Connections

BASIC CONNECTIONS

Pinout Description

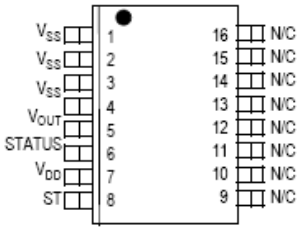

Table 3. Pin Description

Pin No.	Pin Name	Description
1 thru 3	V_{SS}	Redundant connections to the internal V_{SS} and may be left unconnected.
4	V_{OUT}	Output voltage of the accelerometer.
5	STATUS	Logic output pin to indicate fault.
6	V_{DD}	The power supply ground.
7	V_{SS}	The power supply input.
8	ST	Logic input pin used to initiate self-test.
9 thru 13	Trim pins	Used for factory trim. Leave unconnected.
14 thru 16	—	No internal connection. Leave unconnected.

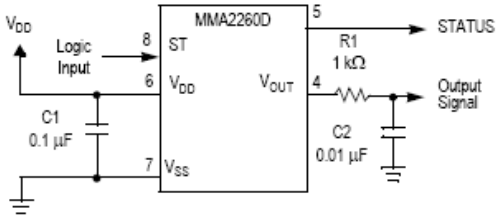

Figure 5. SOIC Accelerometer with Recommended Connection Diagram

PCB Layout

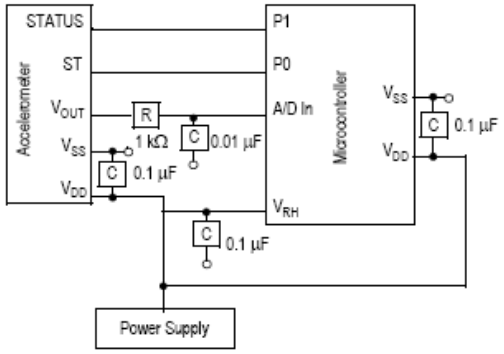

Figure 6. Recommended PCB Layout for Interfacing Accelerometer to Microcontroller

NOTES:

1. Use a 0.1 µF capacitor on V_{DD} to decouple the power source.
2. Physical coupling distance of the accelerometer to the microcontroller should be minimal.
3. Place a ground plane beneath the accelerometer to reduce noise, the ground plane should be attached to all of the open ended terminals shown in Figure 6.
4. Use an RC filter of 1 kΩ and 0.01 µF on the output of the accelerometer to minimize clock noise (from the switched capacitor filter circuit).
5. PCB layout of power and ground should not couple power supply noise.
6. Accelerometer and microcontroller should not be a high current path.
7. A/D sampling rate and any external power supply switching frequency should be selected such that they do not interfere with the internal accelerometer sampling frequency. This will prevent aliasing errors.