

FEATURES

- User selectable sensor g ranges: $\pm 60 g$, $\pm 120 g$, $\pm 240 g$, $\pm 480 g$**
- Dual x-axis and y-axis sensor**
- Compliant to PSI5 Version 2.1 airbag substandard**
 - Synchronous operation**
 - PSI5-P10P-500/3L and others**
- Daisy-chain operation with bidirectional communication**
- Application level serial peripheral interface (SPI) communication**
- Selectable 16-bit or 10-bit sensor data**
- Independently programmable g range and time slot for each axis**
- Independent fault discrimination for each axis**
- Fully differential analog signal chain**
- 0.25 μs data interpolation routine**
- User selectable, continuous auto-zero operation**
- High resistance to electromagnetic interference (EMI) and radio frequency interference (RFI)**
- SPI mode supply voltage: 3.3 V and 5 V, +5%**
- PSI5 mode supply voltage range: 4.5 V to 11.0 V**
- Qualified for automotive applications**

APPLICATIONS

- Front impact crash sensing**
- Side impact crash sensing**

GENERAL DESCRIPTION

The ADXL251 is a dual-axis, integrated satellite sensor with user selectable g ranges, compliant to the PSI5 Version 2.1 airbag substandard, and backwards compliant to PSI5 Version 1.3. The ADXL251 (x-axis/y-axis) enables low cost solutions for front impact and side impact airbags, as well as satellite sensor and electronic control unit (ECU) main sensor applications. Acceleration data is sent to the control module via a digital, 2-wire current loop PSI5 bus. Communication via the SPI bus is also available for ECU applications.

The device uses an ECC protected one time programmable (OTP) memory. The sensor g range is configurable to provide full-scale measurement of $\pm 60 g$, $\pm 120 g$, $\pm 240 g$, or $\pm 480 g$ acceleration. The user can program each axis independently with multiple g ranges in different time slots. In PSI5 mode, there are four programmable time slots available. The device transmits 16-bit or 10-bit acceleration data to the control module, and can be configured to include either a 1-bit parity check, or a 3-bit cyclic redundancy check (CRC).

The ADXL251 is available in a 4 mm \times 4 mm LFCSP package and is specified to operate over the full automotive temperature range, -40°C to $+125^{\circ}\text{C}$.

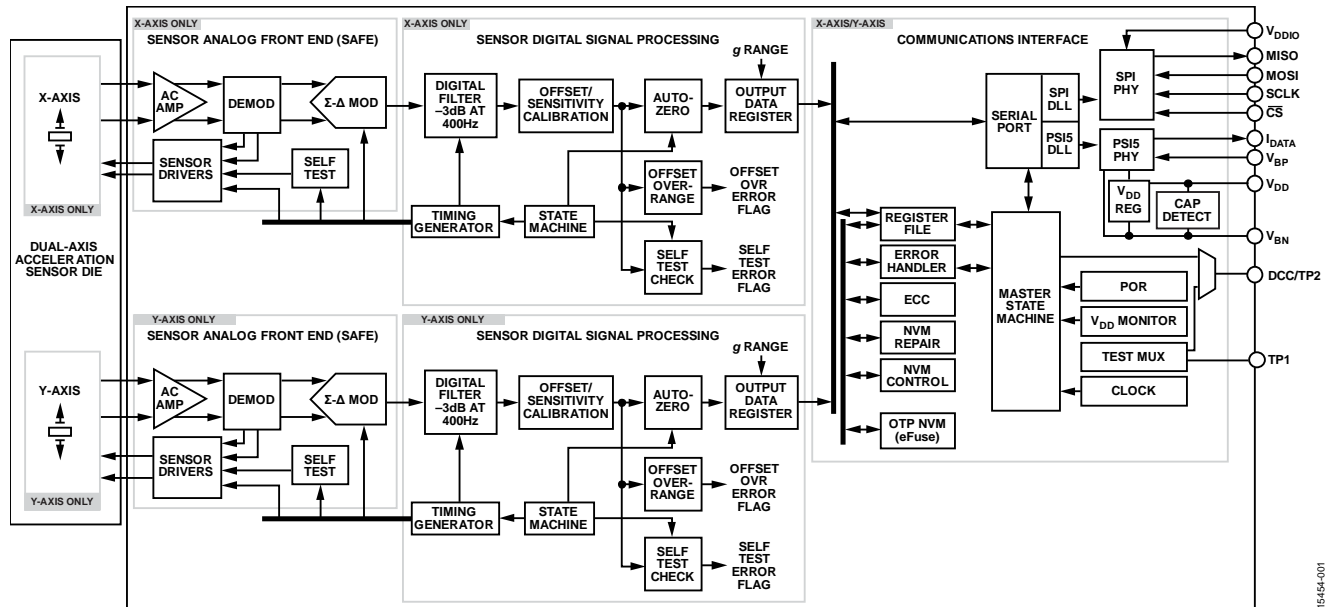
FUNCTIONAL BLOCK DIAGRAM


Figure 1.

For more information about the ADXL251, contact the Analog Devices, Inc., Customer Interaction Center at http://www.analog.com/technical_support to connect with a technical support specialist.

Rev. SpA

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