

### FEATURES

- Single-axis (**ADXL195**) and dual-axis (**ADXL295**) configurations
- $\pm 120\text{ g}$  baseband acceleration channel
  - 12-bit resolution at 62.5 mg/LSB
  - 512 kHz data interpolation rate
- 40  $g_{AVG}$  high frequency signal processing channel
  - 10-bit resolution at 83.3 mg avg/LSB
  - 128 kHz data interpolation rate
- Sensor frequency response down to dc
- On-demand electromechanical self-test
- On-demand HF signal injection self-test
- Fully differential circuitry for high resistance to EMI/RFI
- Independent x- and y-axis sense structures for robust FMEA performance
- Independent x- and y-axis arming thresholds
- Low noise
  - 1 LSB rms (12-bit baseband acceleration channel)
  - 2 LSB rms (10-bit high frequency acceleration channel)
- Qualified for automotive applications
- Temperature range:  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$
- 3.3 V and 5 V operation

### APPLICATIONS

- Enhanced crash sensing
- Shock detection

### GENERAL DESCRIPTION

The **ADXL195/ADXL295** are dual spectrum accelerometers that measure baseband acceleration in up to two axes (XL-X and XL-Y), as well as high frequency (HF) acceleration energy. Identical, independent X and Y sense structures are implemented to achieve the best possible fail-safe performance.

The XL-X and XL-Y channels output baseband acceleration information with a nominal full-scale range of  $\pm 120\text{ g}$  and a bandwidth of 408 Hz. The acceleration data is provided as a 12-bit, two's complement word with a resolution of 62.5 mg/LSB.

HF acceleration within the frequency band of 15.5 kHz to 23 kHz is rectified and filtered to generate an average  $g$  ( $g_{AVG}$ ) energy measurement. The HF channel has a nominal full-scale range of 40  $g_{AVG}$  and a bandwidth of 393 Hz. When combined with the XL-X and XL-Y information, HF acceleration information allows for enhanced vehicle impact detection and discrimination.

The **ADXL195/ADXL295** are available in a 16-lead, narrow-body SOIC package with an exposed pad. The **ADXL195/ADXL295** can operate at 3.3 V and 5 V and are specified for operation from  $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ .

### FUNCTIONAL BLOCK DIAGRAM

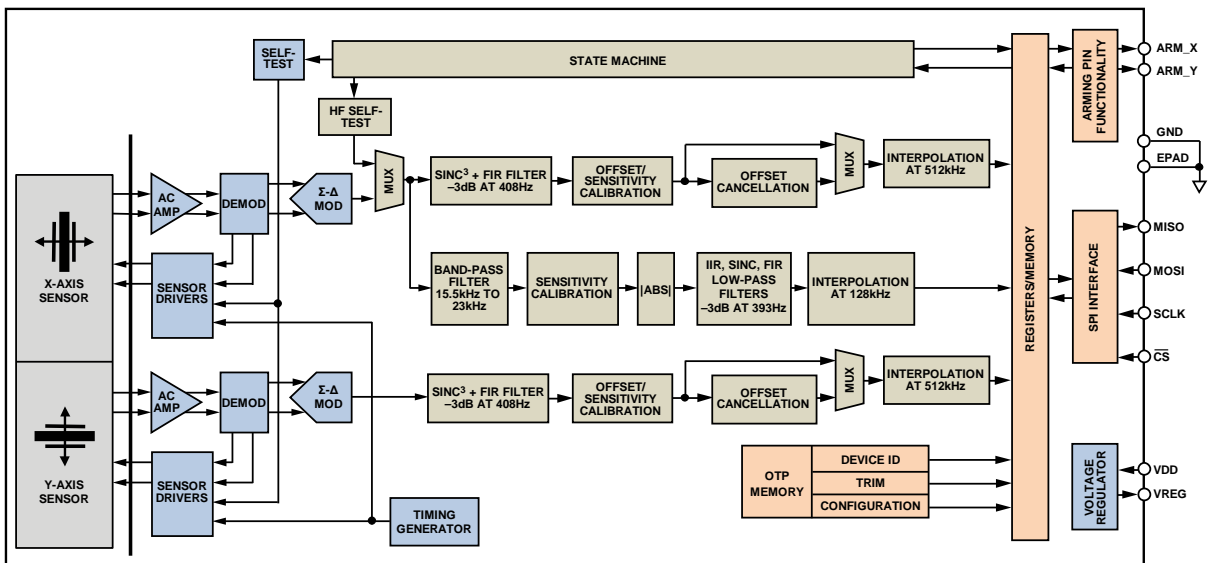


Figure 1.

For more information about the **ADXL195/ADXL295**, please contact the Analog Devices, Inc., *Customer Interaction Center* at [http://www.analog.com/en/content/technical\\_support\\_page/fca.html](http://www.analog.com/en/content/technical_support_page/fca.html) to connect with a technical support specialist.

#### Rev. SpA

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**NOTES**