

## FEATURES

**Combined gyroscope and dual-axis, low  $g$  accelerometer**  
**Temperature compensated, high precision bias, and sensitivity performance**  
 **$\pm 30$  mg accelerometer bias stability over temperature**  
 **$\pm 2^\circ/\text{sec}$  gyroscope null stability over temperature**  
**2.5 mg rms typical accelerometer noise at 35.6 Hz**  
 **$0.1^\circ/\text{sec}$  rms typical gyroscope noise at 35.6 Hz**  
**Gyroscope: linear acceleration rejection of  $0.03^\circ/\text{sec}/g$**   
**Acceleration:  $\pm 32$  g overload performance**  
**SPI digital output with a 16-bit data-word and a 4-bit CRC**  
**Comprehensive electromechanical fail-safe features**  
**6 kHz data update rate**  
**Programmable filter response**  
**<16 mA quiescent current draw**  
**3.3 V or 5 V operation**  
 **$-40^\circ\text{C}$  to  $+105^\circ\text{C}$  temperature range**  
**16-lead inverted cavity SOIC package for robust EMI performance**  
**Qualified for automotive applications**

## APPLICATIONS

**Electronic stability control**  
**Chassis control**

## GENERAL DESCRIPTION

The **ADXC1500** is a yaw rate gyroscope and dual-axis accelerometer combined in a single package. It is designed for electronic stability control (ESC) and other high performance applications that require yaw rate and acceleration signals simultaneously. An internal temperature sensor compensates offset and sensitivity performance, providing excellent stability over the  $-40^\circ\text{C}$  to  $+105^\circ\text{C}$  temperature range.

A digital serial port interface (SPI) transmits the yaw rate and acceleration data to a host microcontroller. A 4-bit cyclical redundancy check (CRC) provides fault coverage for the transmitted SPI data, and internal fault detection routines ensure the integrity of all reported yaw rates and acceleration data. A fully integrated electromechanical continuous self test (CST) routine provides run-time diagnostic capability for assessing the health of each MEMS element.

An advanced gyroscope sensor design rejects the linear acceleration effects of shock and vibration, enabling the **ADXC1500** to operate in harsh environments. The accelerometer signal chain is designed to prevent overload conditions from occurring in these same harsh environments.

The **ADXC1500** is designed to operate at either 3.3 V or 5 V. At less than 16 mA current consumption, the **ADXC1500** can be used in energy sensitive applications.

## FUNCTIONAL BLOCK DIAGRAM

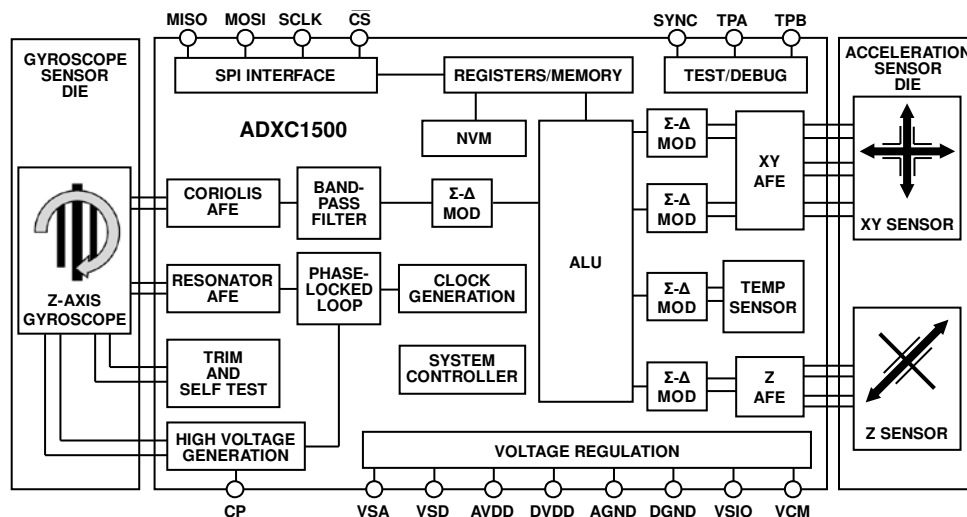


Figure 1.

For more information about the **ADXC1500**, contact the Analog Devices, Inc., *Customer Interaction Center* at [http://www.analog.com/technical\\_support](http://www.analog.com/technical_support) to connect with a technical support specialist.

Rev. SpC

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