16-Channel, LIDAR Signal Processor

Data Sheet

ADAL6110-16

FEATURES

16-channel, LIDAR signal processor
Frame rates up to 1.9 kHz at 50 MHz SPI clock
Automatic gain control
DC balance
Ambient light cancellation
Independent channel configurability
Programmable timing controls
Low power operation: <375 mA typical current consumption
Low voltage supply: 1.8 V typical and 3.3 V typical
Low data processing overhead
4-wire SPI
7 mm × 7 mm, 48-lead LFCSP

APPLICATIONS

Autonomous systems collision avoidance
Corridor mapping
Dynamic suspension and flight control
Drone altitude monitoring
Industrial distance measurement
Mounted safety curtain systems
Parking spot monitoring
Blind spot detection

GENERAL DESCRIPTION

The ADAL6110-16 is a light detection and ranging (LIDAR) signal processor IC that supports simultaneous capture of up to 16 channels. Each channel is integrated with a 16-bit analog to digital converter (ADC) to measure the optical return signal. The ADAL6110-16 stores the captured waveforms to static random access memory (SRAM) storage. The data output readout and functional configuration of the LIDAR signal processor occurs over a 4-wire serial port interface (SPI).

The LIDAR signal processor features a dc balance control to reject signal offset and corruption due to modulated interference, eliminating the need for external dc cancellation circuitry. In addition, the LIDAR signal processor has a built-in automatic gain control (AGC) that modifies the gain of the system to ensure the signal of interest is automatically scaled to the measurement range.

The ADAL6110-16 simplifies the traditional multichannel LIDAR system implementation by integrating the transimpedance amplifier (TIA), gain and sampling stages, as well as providing the transmitter fire signal, all of which are managed by on-chip control logic. No external components are required between the photodiodes and the TIA interface of each channel in the LIDAR signal processor.
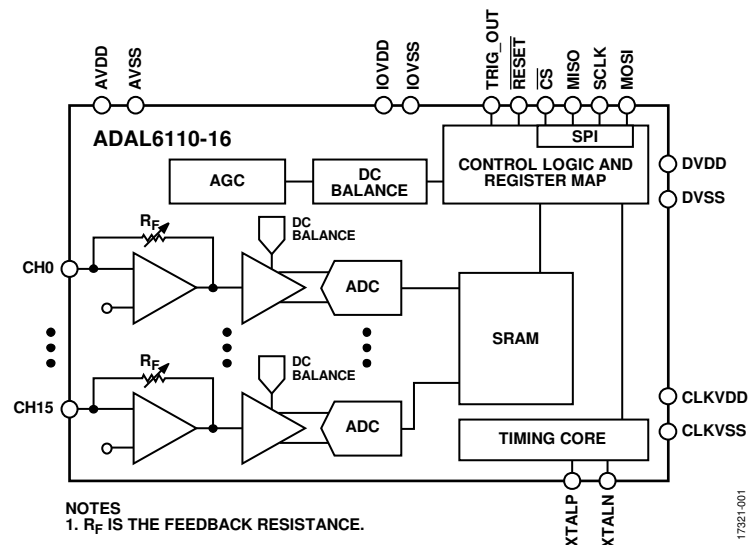
FUNCTIONAL BLOCK DIAGRAM

Figure 1.

For more information about the ADAL6110-16, contact lidar@analog.com for additional information..

NOTES

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DEVICES

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