

FEATURES

- 8 channels of LNA, VGA, AAF, ADC, and digital demodulator/decimator**
- Low power: 150 mW per channel, TGC mode, 40 MSPS;**
65 mW per channel, CW mode; <30 mW at power-up
- 10 mm × 10 mm, 144-ball CSP-BGA**
- TGC channel input-referred noise: 0.8 nV/√Hz, maximum gain**
- Flexible power-down modes**
- Fast recovery from low power standby mode: <2 μs**
- Low noise preamplifier (LNA)**
 - Input-referred noise: 0.78 nV/√Hz, gain = 21.6 dB**
 - Programmable gain: 15.6 dB/17.9 dB/21.6 dB**
 - 0.1 dB compression: 1.00 V p-p/.75 V p-p/.45 V p-p**
 - Flexible active input impedance matching**
- Variable gain amplifier (VGA)**
 - Attenuator range: 45 dB, linear-in-dB gain control**
 - Postamp gain (PGA): 21 dB/24 dB/27 dB/30 dB**
- Antialiasing filter (AAF)**
 - Programmable second-order LPF from 8 MHz to 18 MHz or**
13.5 MHz to 30 MHz and HPF
- Analog-to-digital converter (ADC)**
 - SNR: 75 dB, 14 bits up to 125 MSPS**
- Configurable serial LVDS**
- CW mode harmonic rejection I/Q demodulator**
 - Individual programmable phase rotation**
 - Dynamic range per channel: >160 dBc/√Hz**
 - Close-in SNR: 156 dBc/√Hz, 1 kHz offset, -3 dBFS**
- Digital demodulator/decimator**
 - I/Q demodulator with programmable oscillator FIR**
decimation filter: 16 taps per decimation factor

GENERAL DESCRIPTION

The AD9670 is designed for low cost, low power, small size, and ease of use for medical ultrasound. It contains eight channels of a variable gain amplifier (VGA) with a low noise preamplifier (LNA), a CW harmonic rejection I/Q demodulator with programmable phase rotation, an antialiasing filter (AAF), an analog-to-digital converter (ADC), and a digital demodulator and decimator for data processing and bandwidth reduction.

Each channel features a maximum gain of up to 52 dB, a fully differential signal path, and an active input preamplifier termination. The channel is optimized for high dynamic performance and low power in applications where a small package size is critical.

The LNA has a single-ended-to-differential gain that is selectable through the SPI. Assuming a 15 MHz noise bandwidth (NBW) and a 21.6 dB LNA gain, the LNA input SNR is 94 dB. In CW Doppler mode, each LNA output drives an I/Q demodulator that has independently programmable phase rotation with 16 phase settings.

Power-down of individual channels is supported to increase battery life for portable applications. Standby mode allows quick power-up for power cycling. In CW Doppler operation, the VGA, AAF, and ADC are powered down. The ADC contains several features designed to maximize flexibility and minimize system cost, such as a programmable clock, data alignment, and programmable digital test pattern generation. The digital test patterns include built-in fixed patterns, built-in pseudorandom patterns, and custom user-defined test patterns entered via the serial port interface. This product is protected by a U.S. patent.

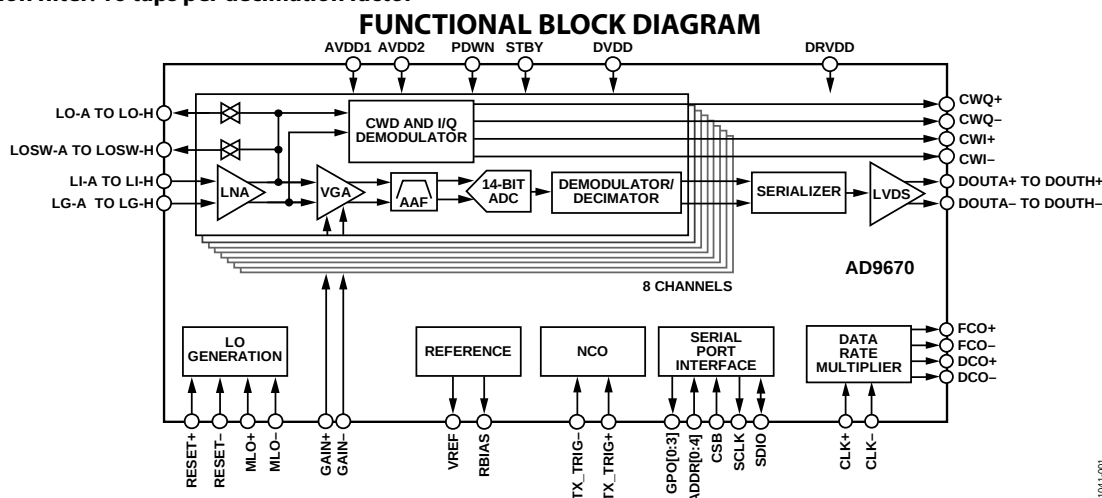


Figure 1.

11041-001

For more information about the AD9670, contact Analog Devices, Inc., at highspeed.converters@analog.com.

Rev. Sp0

Document Feedback

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, U.S.A.
Tel: 781.329.4700 ©2013 Analog Devices, Inc. All rights reserved.
Technical Support www.analog.com

