



HL9747/HL9746/HL9745/HL9743/HL9741

16/14/12/10/8 Bit 250MSPS Dual channel Digital-to-Analog Converter (DAC)

1 Main features:

- ◆ Converted bits: 16/14/12/10/8 bits
- ◆ Clock frequency: 250 MSPS
- ◆ Output current: 8 ~ 32 mA
- ◆ Supply voltage: 1.8V, 3.3V
- ◆ Power consumption: 310 mW
- ◆ Data interface: CMOS input with dual ports or select interleaved single-ended interface
- ◆ SFDR: 78dBc@50MHz output
- ◆ IMD3: 82dBc@50MHz output
- ◆ NSD: -162dBm/Hz @50MHz output
- ◆ Internal auxiliary 10-bit current DAC with source/draw current capability for eliminating external offset zeros

- ◆ Encapsulation: QFN72

2. Typical applications

- ◆ Wireless communication : WCDMA, CDMA200

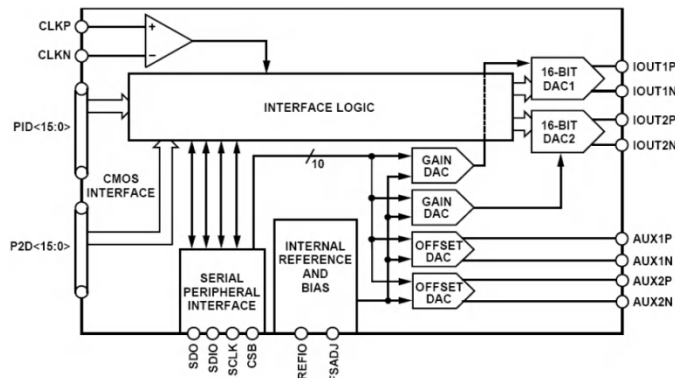
3. TD-SCDMA, WiMAX

- ◆ Broadband point-to-point communication
- ◆ RF signal generator
- ◆ Arbitrary waveform generator
- ◆ Instrumentation and automatic test equipment
- ◆ Radar and aviation systems

3 Product Description

This chip is a 16/14/12/10/8 bit, 250 MSPS dual-channel DAC. It includes: external data receiving circuit, clock receiving circuit,

digital decoding circuit, voltage reference circuit, DAC core circuit and other main modules. The DAC core adopts the current rudder structure, and provides two operating modes: baseband mode and mixing mode. The chip is suitable for the application of direct frequency conversion transmission and has the function of gain and offset compensation. The chip has a mixing output mode, which can shift the signal energy from the fundamental frequency to the mirror frequency, so that analog output synthesis can be achieved in the frequency range above Nyquist. The chip uses CMOS interface to realize data input. The output current can be adjusted in the range of 8mA to 32mA and is powered by 1.8V and 3.3V supplies. The chip realizes the configuration function by serial peripheral interface SPI interface. The internal structure block diagram of the chip is as follows:



4 Product Highlights

- ◆ Low noise and low intermodulation distortion (IMD) to synthesize high quality broadband signals.
- ◆ Special switching output structure to enhance dynamic performance.
- ◆ Programmable current outputs with dual auxiliary Dacs provide both flexibility and enhanced system functionality.

5 Compared with similar foreign products

	precision	Clock frequency	Data port	Power dissipation	Output current	SFDR	Encapsulation form
AD9747 (ADI)	16Bit	250MHz	Dual port CMOS or interleaving Type single-ended interface	310mW@250MSPS	8.6 - 31.7mA	70dBc@50 MHz	LFCSP72
DAC904 (TI)	14Bit	165MSPS	—	170mW@165MSPS	0 - 20mA	64dBc@100 MHz	TSSOP28
HL9747	16Bit	250MHz	Dual port CMOS or interleaving Type single-ended interface	310mW@250MSPS	8 - 32mA	78dBc@50 MHz	QFN72