

RF Interface for WCDMA telephones

Dialog Semiconductor's DA9036 is a highly integrated analog front end solution for WCDMA phones. Designed to provide data conversion of both transmit and receive RF channels the part integrates high speed precision data converters which are matched to provide identical gain and phase error performance.

The receive chain takes differential I/Q signals and performs low pass filtering to precondition the ADC inputs and remove high frequency components. The paths are AC coupled to remove external DC offsets and also have DC compensation to cancel internally generated offsets. The I and Q signals are then fed to two 8 bit ADC's. The conversion results are then multiplexed and fed out over an 8 bit parallel interface.

The transmit chain consists of 10 bit parallel data input and synchronisation buffer, two high speed 10 bit DACs followed by a 5th order low pass filters (3.5MHz bandwidth) and programmable gain stages. The transmit signal chain is designed for low phase and group delay mismatch.

These main RF converters are supported by low power monitoring converters used for measurement and control. Three DAC channels are provided: the DAC outputs may be updated upon receiving new data or can have the voltage change synchronized to an external strobe signal.

Complementing the DAC's is a 10 bit ADC with a 3 channel input multiplexer. The ADC may be configured for single or continuous conversions with measurements being taken immediately if controlled by an external strobe. In continuous mode the converter will make measurements every 168/84 clock cycles. The ADC also includes a programmable averaging feature, the user can select the number of measurements to be averaged and an interrupt is generated on completion and the result stored in a register location.

The DA9036 has a 5 pin GPIO expansion port for interfacing to external circuits. When configured as outputs the pins respond immediately to changes in the GPIO registers.

Designed for low power operation inactive blocks may be powered down to minimize current consumption.



Features

- Highly integrated solution interfacing to industry standard RF solutions
- Minimum external component count
- Low power design with dedicated operating modes to minimise active power.

Functions

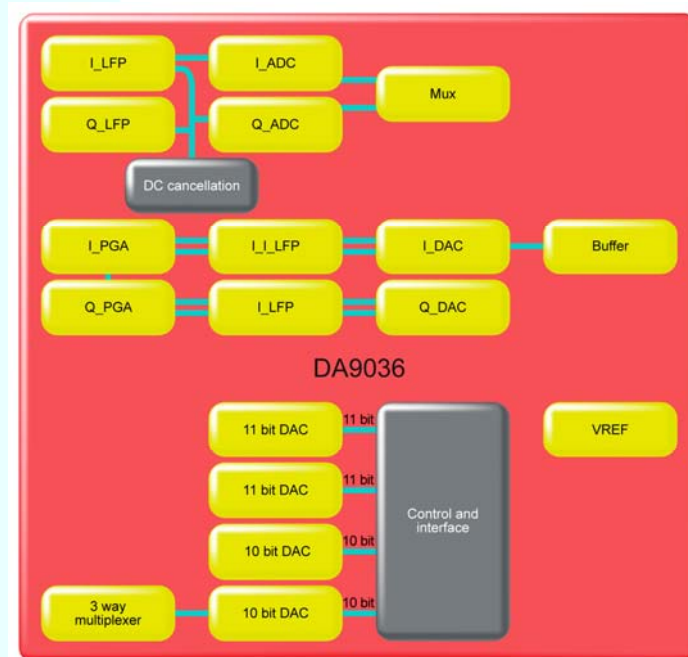
- 8 bit I/Q receive ADC's
- 10 bit I/Q transmit DACs
- 10 and 11 bit control DAC's
- 10 bit/3 channel monitoring ADC

Applications

- W-CDMA telephones

Product brief

Overview



Receive I/O Path

- Differential architecture for enhanced noise immunity
- 8 bit resolution with 15.36MHz conversion rate.
- Better than 1° phase mismatch, 0.2db gain mismatch between channels.
- THD at pass band -47dBc max
- Crosstalk better than 50dB minimum at full scale input signal

Transmit I/Q path

- LPF pass band DC to 1.92 Mhz
- 10 bit resolution with 15.36MHz conversion rate
- Better than 1° phase mismatch, 0.3db gain mismatch between channels.
- THD at pass band -48dBc max
- Output signals up to 1.5Vpkpk supported

General purpose ADC

- 3 channel analog multiplexer with 70dB isolation between channels.
- 40KHz maximum conversion rate
- 10 bit +/-1LSB differential linearity

General purpose DACs

- 3 independent very low DAC channels
- 2KHz conversion rates, 5µs settling
- 10 bit +/-1LSB differential linearity, 2 x 11 bit +/-1LSB differential linearity

Package

- 64BGA 5*5*1mm, 0.5mm pitch

Dialog Semiconductor worldwide offices

Germany (Headquarters)

Tel: (+49) 7021 805-0

Fax: (+49) 7021 805-100

Japan

Tel: (+81) 3 3215 5123

Fax: (+81) 3 3215 5124

Korea

Tel: (+82) 2 6007 2303

Fax: (+82) 2 6007 2001

Taiwan

Tel: (+886) 37 598 166

Fax: (+886) 37 595 026

USA

Tel: (+1) 888 809 3816

Fax: (+1) 408 328 9275

United Kingdom

Tel: (+44) 1793 757700

Fax: (+44) 1793 757800

Email: enquiry@diasemi.com

Web: www.dialog-semiconductor.com

This publication is issued to provide outline information only, which (unless agreed by Dialog Semiconductor in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to products or services concerned. Dialog Semiconductor reserves the right to alter without notice the specification, design, price or conditions of supply of the product. Customer takes note that Dialog Semiconductor's products are not designed for use in devices or systems intended for supporting or monitoring life nor for surgical implants into the body. Customer shall notify the company of any such intended use so that Dialog Semiconductor may determine suitability. Customer agrees to indemnify Dialog Semiconductor for all damages that may be incurred due to use without the company's prior written permission of products in such applications.
© Dialog Semiconductor 2008. All rights reserved.

