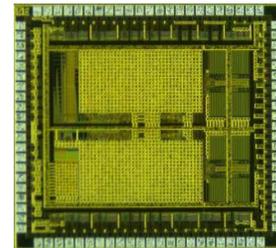
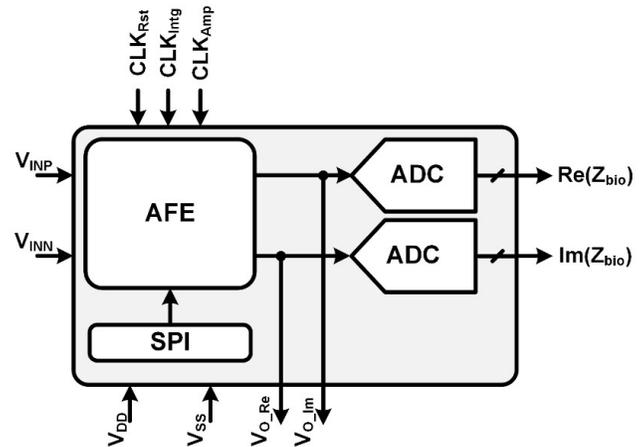


Overview

A high-accuracy impedance measurement IC achieving 99.7% accuracy and 50 kS/s throughput, designed for broadband bio-impedance sensing. It employs a synchronous cyclic integration technique with a scalable capacitive transimpedance stage, enabling single-cycle I/Q demodulation without requiring an analog LPF.

Fabricated in 180-nm CMOS, the IC operates from 100 Hz to 100 kHz while consuming just 50 μ W from a 1.2 V supply.

Block Diagram



Key Features

- High Throughput
- Synchronous cyclic integration Architecture
- High Accuracy
- Low Power Consumption
- Scalable Architecture

Applications

- Lung Ventilation Monitoring
- Breast Cancer Monitoring
- Cardiac Activities Monitoring
- Skin Impedance Tomography

Specifications

Process [nm]	180
V_{DD} [V]	1.2
Power [μ W]	50
Frequency Range [Hz]	100 – 100k
Stimulus Current [μ A]	10 – 100
Impedance Range [Ω]	10 – 30k
Throughput [S/s]	50k (at 100k Hz)
Magnitude Error [%]	<2
Phase Error [%]	<2
Accuracy [%]	99.7
Chip Area [mm ²]	3.99