

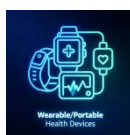
Highlights

- ✓ Single/Dual-channel low-noise analog front-end
- ✓ Ultra-low-power (supply current $\sim 130 \mu\text{A}$)
- ✓ Low input-referred noise ($\sim 3 \mu\text{Vrms}$)
- ✓ Programmable gain (50 to 720)
- ✓ Supports dry-electrode input
- ✓ Built-in high precision 1.8 V LDO

➤ Overview

FS108X Single/dual-channel, low-noise, wearable ECG-dedicated analog front-end (AFE). Pure analog output with no built-in ADC; external ADC/MCU sampling required. Key features: as low as $3 \mu\text{Vrms}$ noise + ultra-low power consumption of $130/200 \mu\text{A}$ + enhanced input impedance for dry electrode support + $3 \times 3 \text{ mm}$ QFN-20 package

➤ Target Applications



- Wearable ECG/Heart rate devices (ECG watch/wristband, etc.)
- Finger ECG/Heart rate recording
- Fitness, sports, and training
- Gaming peripherals

- Clinic ECG monitors
- HRV monitors
- Mobile/Remote ECG monitors, such as holter

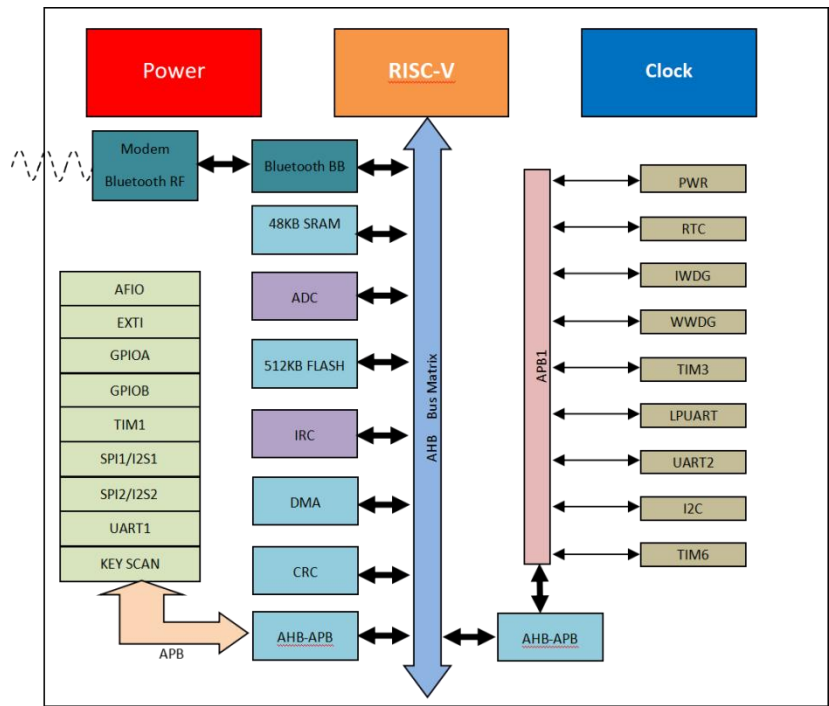


➤ Features

- Single/Dual-channel low-noise analog front-end
- Supply current: $\sim 130 \mu\text{A}$ (1-channel) $\sim 200 \mu\text{A}$ (2-channel)
- Shut down mode: $< 0.1 \mu\text{A}$
- Low input-referred noise: $\sim 3 \mu\text{Vrms}$
- Common-mode rejection ratio: $\sim 85 \text{ dB}$ (DC-100 Hz)
- Single supply operation: 2 V to 3.6 V
- Digital IO level: 1.8 V to 3.6 V
- Programmable gain: 50 to 720
- Built-in filter bandwidth: 0.5 to 220 Hz
- Built-in high precision 1.8 V LDO
- Built-in SPI-compatible serial interface
- Supports baseline fast restoring
- Supports DC-coupled input
- Supports dry-electrode input
- $\pm 4 \text{ kV}$ HBM ESD rating
- $3 \text{ mm} \times 3 \text{ mm}$ QFN-20 package

Fosilicon

Block Diagram



Specification

Items	Parameters
Supply Voltage	2 V ~ 3.6 V
Gain	50 to 720 (programmable)
Bandwidth	0.5 Hz to 220 Hz
Supply Current	~130 μ A (1-channel) ~200 μ A (2-channel)
Operating Temperature	0 $^{\circ}$ C ~ 70 $^{\circ}$ C (performance) -40 $^{\circ}$ C ~ +85 $^{\circ}$ C (operational)
Input-Referred Noise	~3 μ Vrms
CMRR	~85 dB (DC-100 Hz)
Shutdown Current	<0.1 μ A
Digital IO Level	1.8 V ~ 3.6 V
ESD Rating	$\pm$ 4 kV HBM
Package Size	QFN-20 (3 mm $\times$ 3 mm)



For more info, please contact
fea@fossilicon.com

About FS108X

The FS108X is a single/dual-channel bioelectrical signal conditioning IC for ECG and similar signals, integrating PGA, filtering, SPI, RLD, and LDO. It supports dry electrodes with adjustable gain of 50–720 and features high-pass, low-pass, and fast recovery. The QFN package measures 3×3mm, designed for wearable ECG/EMG applications with low power consumption and compact size.

Jan 1, 2026

Fossilicon