

## Low Power Analog Front End

### GENERAL DESCRIPTION

NJU9101 is a Low Power Analog Front End IC for use in micro-power sensing applications, especially electrochemical sensors. It provides a complete signal processing solution between sensor and micro-processor as smart-sensor module.

NJU9101 has 2 channel low power operational amplifiers. These amplifiers provide potentiostat and trans-impedance-amplifier to constitute gas sensor systems. NJU9101 has calibration circuit by using output data of built-in high precision ADC. It is suitable for temperature variation of sensor.

NJU9101 operates over voltage range of 2.4V to 3.6V. Total average current consumption can be less than 5 $\mu$ A.

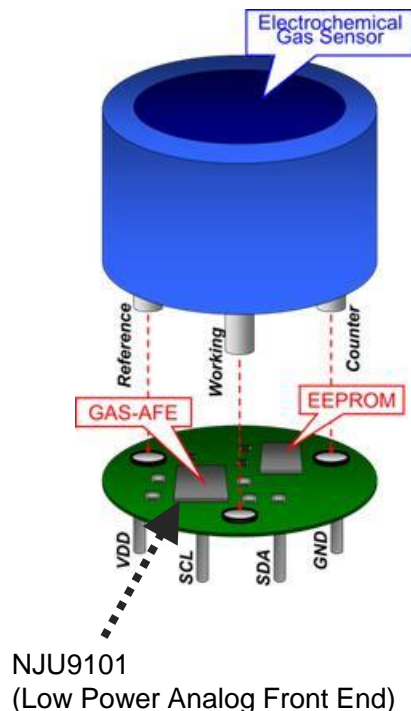
### TARGET APPLICATION

- Gas Monitor
- Blood Glucose Meter
- Current Sensing Systems
- Low Power Systems
- Photodiode Sensing Systems
- Portable equipment

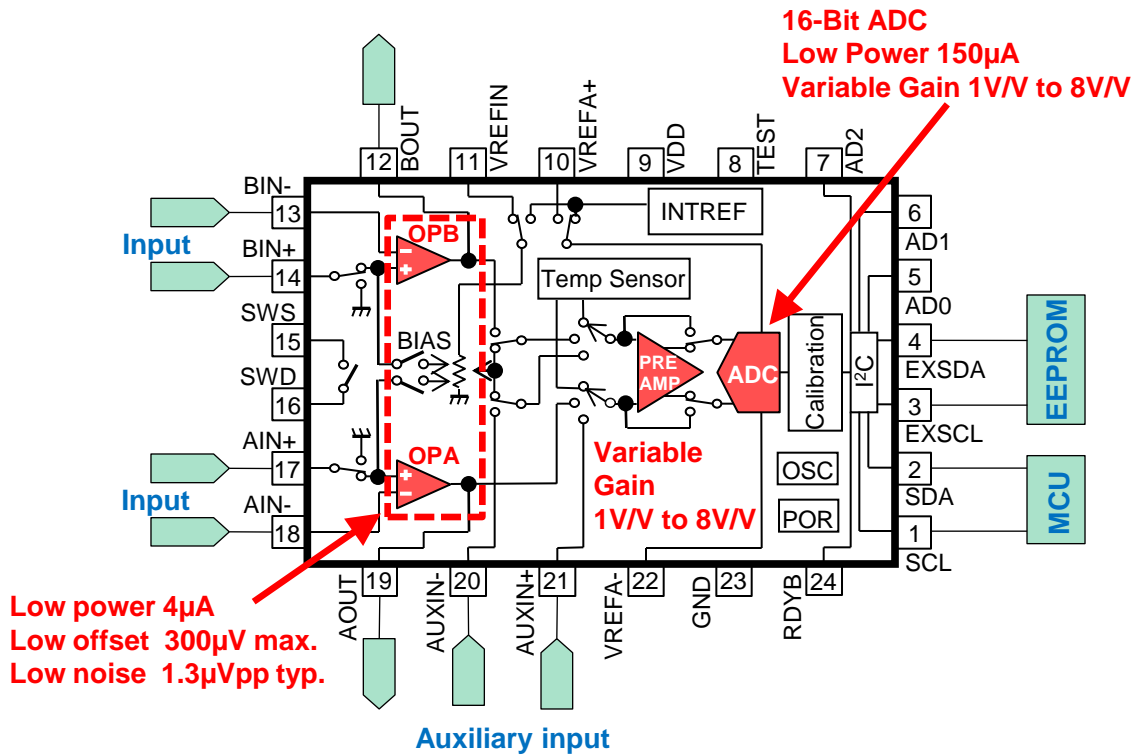
### FEATURES

- |  |   |
|--|---|
| - Supply Voltage                             | +2.4V to +3.6V  |
| - Low Current Consumption                    | 4 $\mu$ A (OPA, OPB)<br>150 $\mu$ A (ADC)                       |
| - Low Noise Amplifier                        | 1.3 $\mu$ Vpp typ. (0.1 to 10Hz)                                |
| - Low Offset Voltage Amplifier               | 300 $\mu$ V max.  |
| - RF immunity Amplifier                      |   |
| - Programmable Cell Bias Voltage             | OPA: 0.3V to 1.7V (7 steps)<br>OPB: 0.25V to 1.75V (50mV steps) |
| - Programmable Gain Pre-Amplifier            | 1V/V to 8V/V  |
| - High Resolution Programmable Gain ADC      | 1V/V to 8V/V<br>16-Bit (NFB $\approx$ 16-Bit)<br>32sps to 2ksps |
| - System Calibration for offset & gain drift |   |
| - Control external EEPROM as a Master device |   |
| - Built-in Temperature Sensor                |   |
| - Auxiliary Input for additional Sensor      |   |
| - SPDT Analog Switch                         | 10 $\Omega$   |
| - Ambient Operating Temperature              | -40 $^{\circ}$ C to +85 $^{\circ}$ C                            |
| - Interface                                  | I <sup>2</sup> C (3-Bit selectable slave address)               |
| - Package                                    | EQFN-24-LE (4mm x 4mm)  |

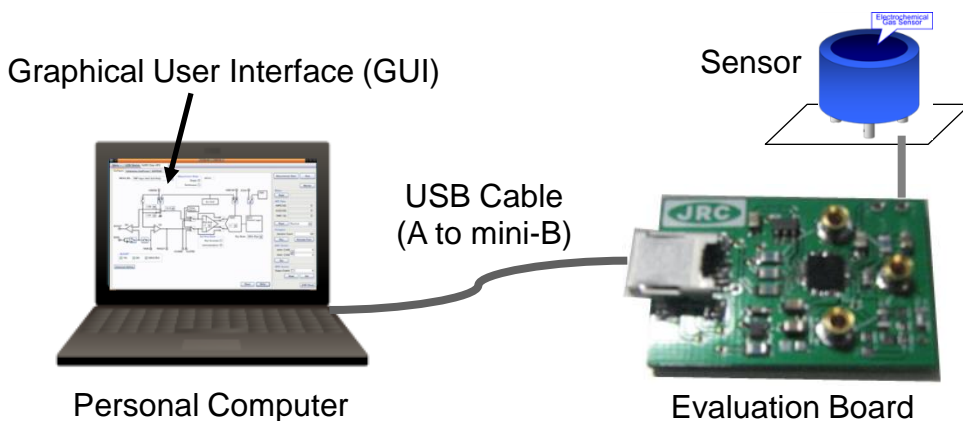
### Smart Sensor Module



## BLOCK DIAGRAM



## EVALUATION ENVIROMENT



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