Press

RELEASES

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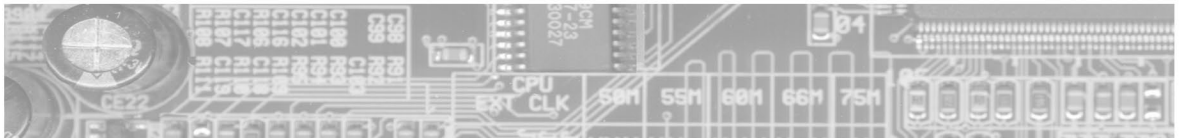
5V Analog Front End with 16/20/24-bit High Precision ΔΣ ADC

Tokyo, Japan, June 13th, 2024 — Nisshinbo Micro Devices Inc., a leader in advanced semiconductor products, is proud to announce the launch of our latest series of high-precision Analog Front End ICs, the NA2202, NA2203, and NA2204, designed to meet the demanding requirements of modern sensor applications. These new devices integrate advanced features to provide unparalleled precision and performance in analogue signal processing.

The NA2202/NA2203/NA2204 are 5V CMOS-based AFE ICs that integrate a high-gain Programmable Gain Amplifier (PGA) and a 16/20/24-bit Delta-Sigma (ΔΣ) Analog-to-Digital Converter (ADC). This combination ensures exceptional signal accuracy and resolution, making it an ideal choice for various industrial and consumer applications, including pressure sensors, flowmeters, thermostats and more.

The AFE ICs utilize a Programmable Gain Amplifier (PGA) to enhance analogue signals from sensors connected to multiple input terminals, allowing signal amplification up to 512 times through a combination of PGA1 and PGA2. These amplified signals are then converted to digital data by a high-precision 16, 20 or 24-bit ΔΣ-ADC and, after processing for offset and gain calibration, transmitted to a microcontroller (MCU) via SPI communication. A built-in level shifter ensures the digital signals are output at the DVDD level, compatible with a 5V MCU.

These devices can handle negative voltage power supplies, enabling the input of signals near 0V without GND noise interference. They support up to 4 differential inputs or 8 single-ended inputs and feature two excitation current sources, making them suitable for applications like temperature controllers with resistance temperature detectors. The ADC reference voltage can be configured using either external or internal reference sources. The AFE ICs offer multiple operating modes: Normal Mode, Low Power Mode



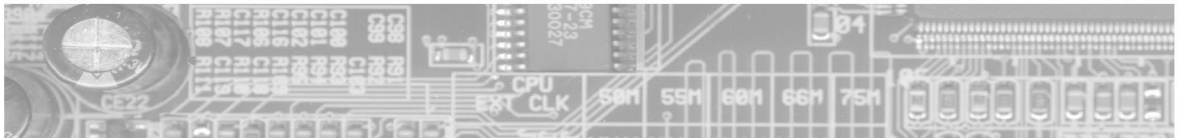
(with conversion speed and current consumption reduced to a quarter of Normal Mode), Sleep Mode (where all circuits are off except bias and REG circuits), and Standby Mode (with all circuits off and current consumption of 0.1 μA or less).

Availability and Pricing

The AFE ICs are available in a QFN4040-24-NB package, measuring only 4.0 × 4.0 × 0.7 mm, making them suitable for space-constrained applications. More Information about availability, samples and pricing, please visit email: sales.europe@macnica.com.

NA2202 NA2203 NA2204 Specifications:

- Supply Voltage:
  Analog +2.7 to +5.5 V (unipolar) or ±2.5 V (bipolar)
  Digital +2.7 to +5.5 V
- Ambient Operating Temperature: -40 °C to 125 °C
- ADC Resolution NA2202/NA2203/NA2204: 16/20/24-bit (No missing codes)
- Data Rate: 3.125 k to 9.6 ksps
- Input mode:
  Differential: 4 inputs,
  Single-ended: 8 inputs
  Pseudo-differential
- PGA: 1 V/V to 128 V/V
- System Calibration for offset & gain drift
- Built-in Regulator: 2.048 V ±20 mV
- Built-In Oscillator: 1.2288 MHz ±3%
- 50 Hz/60 Hz Rejection Mode
- Current Consumption:
  Analog 2.9 mA (Normal)
  Low Power Mode 0.9 mA
  Digital 0.26 mA
- Conversion mode Single / Continuous
- Excitation Current Source: 2 systems (0.1, 0.25, 0.5, 1.0 mA)
- Communication Interface: SPI
- CS (Chip Select)
- Error detection: CRC8, Check Sum
- Package NA2202NB NA2203NB NA2204NB: QFN4040-24-NB (4.0 × 4.0 × 0.7 mm)
- Datasheet: NA2202 NA2203 NA2204 Consumer version



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Contact:

Press
Macnica ATD Europe GmbH
Josef Sigl
Tel. +49-89-899143-11
Email: sales.europe@macnica.com

Sales
Macnica ATD Europe GmbH
Tel. +49-84188198-121
Email: sales.europe@macnica.com

About Nisshinbo Micro Devices Inc.
Established in January 2022, Nisshinbo Micro Devices Inc. is a merger of the former companies Ricoh Electronic Devices Co, Ltd., and New Japan Radio Co, Ltd, both members of the Nisshinbo Group.

The history of the two companies goes back to 1959, resulting in more than 60 years of experience in the electronics industry. Today, it is one of the leading global suppliers of advanced analogue products. Its portfolio offers a comprehensive range of ICs for Power Management, Supervisory, Operational Amplifiers, Battery Management, RF, Audio & Video, Optoelectronic devices, Motor drivers to name a few. These products enable electronics engineers to design advanced applications for consumer, industrial and automotive markets.

The company is headquartered in Tokyo, Japan, and has development, sales, and manufacturing facilities across the country. In addition, it has regional sales and support offices in North America, Europe, and Asia.

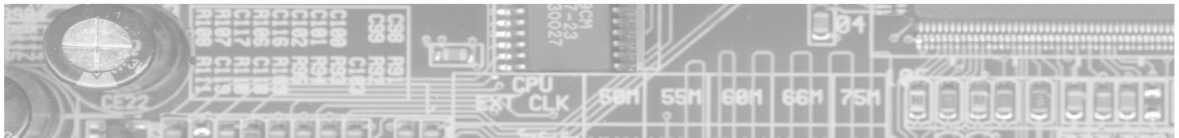
For more details, please visit: https://www.nisshinbo-microdevices.co.jp/en/

About Macnica ATD Europe GmbH
Macnica's ATD Europe GmbH, (former Macnica GmbH), was originally established in the UK in 2006, and moved to Germany in July 2008, to increase efficacy of its service for European customers.

By it's acquisition of the Munich based company Scantec Mikroelektronik in 2014 Macnica Europe formed a powerful semiconductor distribution with headquarter in Ingolstadt and offices in Munich, Regensburg, Milton Keynes (UK) and Warsaw offering an attractive and competitive portfolio of highly sophisticated devices.

Macnica provides end to end support from design-in to production through its global service network to its customers, regardless of the final destination of the product shipment to customers' manufacturing locations.

About Macnica ATD Europe S.A.S.
Founded in 1990 as ATD Electronique, Macnica ATD Europe headquarter offers innovative components dedicated to imaging applications for the European market. Its product



portfolio includes: image sensors (CCD, CMOS, InGaAs, Thermal etc.), optics, interface circuits, FPGA & IPs, imaging processors, cables and OLED microdisplays.

It also covers development tools and design services enabling fast and efficient realization of new high-performance camera systems for markets such as machine vision, medical, life sciences, surveillance, automotive and others. After the acquisition of the company by Macnica Inc. as of October 1, 2020 the company operates under the name Macnica ATD Europe.

About Macnica, Inc.
Macnica was established in 1972 as a semiconductor distribution company headquartered in Yokohama, Japan, and has over 85 sales offices worldwide in eastern Asia, Europe and the USA. Total number of employees is over 3,900 and its consolidated revenue for fiscal 2021 was approximately US$ 7.6 B.

Macnica is famous for having an excellent engineering team of more than 900 application support engineers, IC designers and software developers with strong focus on providing technical support for its customers including custom design services. Macnica is continuing to extend its presence globally by having successful partners in strategic areas in the electronics market.

More information about Macnica: https://www.macnica.com/global/en/home.html.