Ideal for Industrial Temperature / Strain Measurement
RX23E-A MCU GROUP

MCU with High-Precision On-Chip Analog Front End

Renesas RX23E-A MCU is a Digital Signal Processing (DSP)/Floating Point Unit (FPU) compatible 32-bit microcomputer with a built-in high-precision AFE that enables precise measurement of less than 0.1% without correction. RX23E-A is also a single chip solution that could achieve maximum effective resolution (up to 23-bit) of the 24-bit $\Delta\Sigma$ A/D converter without any external analog components.

Features

- 32 MHz 32-bit RX MCUs, built-in FPU, up to 256 KB flash
- Integrated dual 24-bit Delta Sigma converter for high precision analog to digital conversion
  - Low RMS noise
  - Low temperature drift
  - Integrated low drift voltage reference
  - Integrated rail-to-rail PGAs
- Up to 23-bit, 23,5 ENOB (Gain = 1,10spb)
- Various communication interfaces for system flexibility
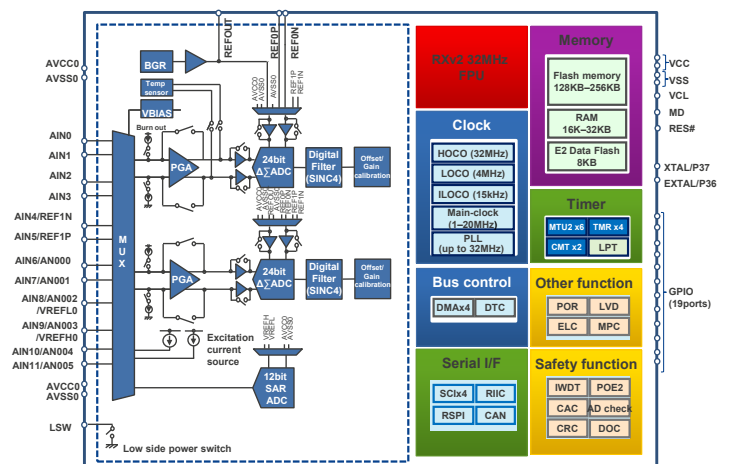- Vcc: 1.8V~5.5V, AVcc0 : 2.7V~5.5V

Applications

- IA Sensing Applications
  - Temperature Controller
  - Temperature Sensor
  - Pressure Sensor
  - Data Recorder
  - Weight Scale
  - Force Sensor
  - Logic Controller Analog Input
- Building Automation
- Broad-based IoT Applications

Benefits

- Single chip solution adding flexibility on the users' system configuration with software tunable features
- MCU integrated high end analog front end for highly precise measurements of two independent analog signals
- Simultaneously multiple $\Delta\Sigma$ ADC start by using ELC
- Remove 50/60Hz noise by using Sinc4+Digital filter

Block Diagram

RX23E-A MCU GROUP

RX23E-A Renesas Solution Starter Kit (RSSK)

**Jumpstart evaluation and development
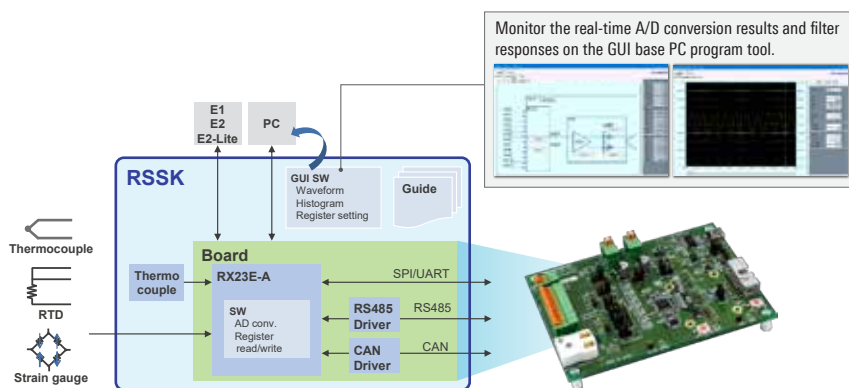without analog hardware design know-how**

- Complete RX23E-A RSSK designed to save the workload of Industrial Sensor application development.
- Quick evaluation with a hardware board and packaged temperature sensor.
- Download reference software from www.renesas.com

Features

Quick and easy set up of analog configuration and calibration on packaged PC GUI software

- PC GUI software connects to users' PC directly.
- Set up parameters for easy tuning and calibration with the GUI.
- Easy-to-check signal waveforms to save the workload on fine-tuning the analog parameters.

Monitor the real-time A/D conversion results and filter responses on the GUI base PC program tool.

Inside the Renesas Solution Starter Kit

- Hardware & Reference Software packaged kit

- Mounted sensor connectors & necessary circuits

- GUI tool to visualize AFE performance

- Pre-programmed MCU sample software

Ordering References

Part name	Description	Status
RTK0ESXB10C00001BJ	Renesas Solution Starter Kit for RX23E-A	MP

	R5F523E6ADFL	RSF523E5ADFL	R5F523E6ADNF	R5F523E5ADNF
Code Flash	256KB	128KB	256KB	128KB
RAM	32KB	16KB	32KB	16KB
Pin Count	48pin	48pin	40pin	40pin
Package	LFQFP	LFQFP	HWQFN	HWQFN
Package Size	7mm x 7mm	7mm x 7mm	6mm x 6mm	6mm x 6mm
Temperature*	-40°C to +85°C			

*105°C product can be purchased through direct contact.

For more information about the Renesas RX MCU family, please visit: **www.renesas.com/RX**

Direct link to RX23E-A product page

Direct link to RX23E-A RSSK page

Renesas Electronics Corporation
www.renesas.com