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 $\Delta\textstyle\sum$ A/D converter without any external analog components.

Features

- 32 MHz 32-bit RX MCUs, built-in FPU, up to 256 KB flash
- Up to two units of 24-bit $\Delta\textstyle\sum$ converter
  - Programmable data rate from 7.6 sps to 15.6 ksps
  - Up to 23.5 bits effective resolution (Gain = 1, Data rate = 10 sps)
  - Rail-to-rail PGA (Gain from 1 to 128, Offset drift 10 nV/°C, Gain drift 1 ppm/°C)
- High Precision Analog Front End
  - Low drift 4ppm/°C voltage reference
  - Programmable matching current sources
- Various communication interfaces for system flexibility
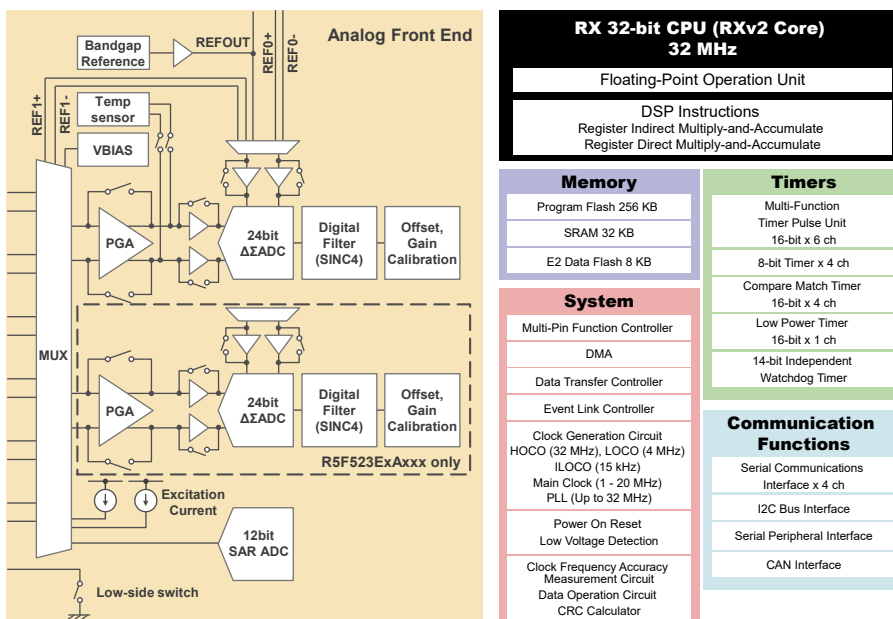- Vcc: 1.8V~5.5V, AVcc0 : 2.7V~5.5V

Benefits

- ADC and MCU in a single package contribute to flexibility of system design and size reduction
- 2 units of ADC enable simultaneous measurement of 2 independent signals
- Simultaneously multiple $\Delta\textstyle\sum$ ADC start by using ELC
- Remove 50/60Hz noise by using Sinc4+Digital filter

Applications

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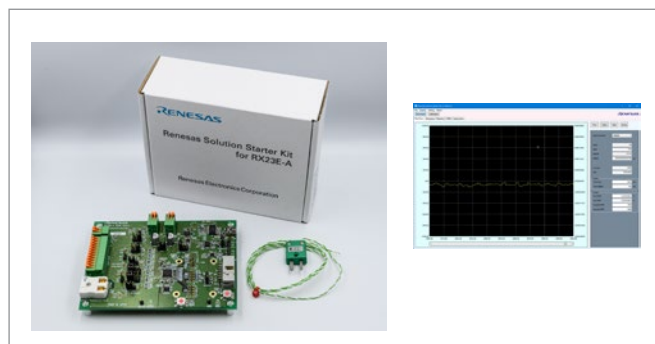 - Logic Controller Analog Input

Block Diagram

RX23E-A MCU GROUP

RX23E-A Renesas Solution Starter Kit (RSSK)

**Jump-start 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
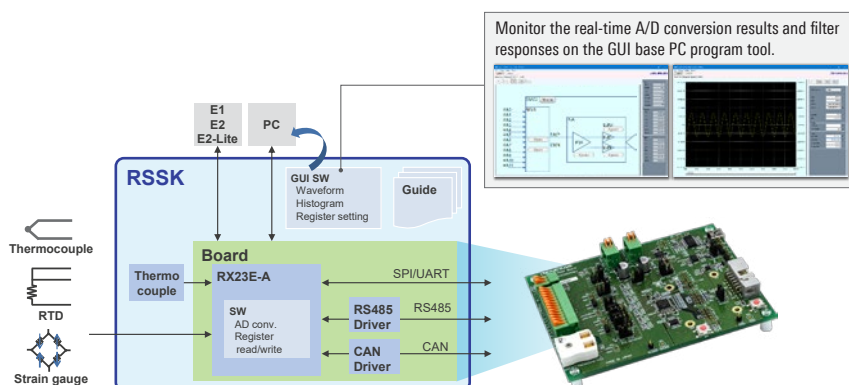- Download reference software from **www.renesas.com**
- Part name: **RTK0ESXB10C00001BJ**

Renesas Solution Starter Kit for RX23E-A

GUI Tool to visualize AFE Performance

**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.

Ordering References

Part number for -40 to +85°C	R5F523E6ADFL	RSF523E5ADFL	R5F523E6ADNF	R5F523E5ADNF	R5F523E6SDFL	RSF523E5SDFL	R5F523E6SDNF	R5F523E5SDNF
Part number for -40 to +105°C	R5F523E6AGFL	RSF523E5AGFL	R5F523E6AGNF	R5F523E5AGNF	R5F523E6SGFL	RSF523E5SGFL	R5F523E6SGNF	R5F523E5SGNF
Number of DSAD	2 Units				1 Unit			
Code Flash	256KB	128KB	256KB	128KB	256KB	128KB	256KB	128KB
RAM	32KB	16KB	32KB	16KB	32KB	16KB	32KB	16KB
Pin Count	48pin	48pin	40pin	40pin	48pin	48pin	40pin	40pin
Package	LFQFP	LFQFP	HWQFN	HWQFN	LFQFP	LFQFP	HWQFN	HWQFN
Package Size	7mm × 7mm	7mm × 7mm	6mm × 6mm	6mm × 6mm	7mm × 7mm	7mm × 7mm	6mm × 6mm	6mm × 6mm

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

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