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 ΔΣ A/D converter without any external analog components.

Features

- 32 MHz 32-bit RXMCUs, built-in FPU, up to 256 KB flash
- Up to two units of 24-bit ΔΣ converter
  - Programmable data rate from 7.6 sps to 15.6 ksp
  - 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 ΔΣ 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

[Diagram showing the RX 32-bit CPU (RXv2 Core) 32 MHz Floating-Point Operation Unit, Memory, Timers, System, Communication Functions]
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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

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

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

Ordering References

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Direct link to RX23E-A product page

Direct link to RX23E-A RSSK page