48MHz ARM Cortex M23 with Integration of 24-bit Sigma Delta ADC

The RA2A1 group uses the high-performance Arm® Cortex®-M23 core and offers highly integrated, high-accuracy analog capabilities and therefore offers complete MCU with analog solution for signal conditioning and measurement. The RA2A1 Group supports a wide operating voltage range of 1.6V to 5.5V. It includes 16-bit SAR ADC, 24-bit Sigma Delta ADC, comparators, operational amplifiers, and DACs. The RA2A1 MCU targets cost sensitive and low power Industrial sensor applications where high resolution analog will become a cost benefit.

**Key Features**

- 48MHz Arm® Cortex®-M23
- 256kB Flash Memory and 32kB SRAM
- 8kB DataFlash to store data as in EEPROM
- Scalable from 32pin to 64pin Packages
- Capacitive Touch Sensing Unit

**Target Applications**

- Industrial Automation (Photoelectric Sensor, Fiber Sensor, Temperature Sensor)
- Process Automation (Pressure Sensor, Flow control meter, Single Phase Meter)
- Building Automation/Home Appliance (Smoke Detector)
- Healthcare (Pulse Oximeters, Body Composition Measurement)
- General Purpose
RENASAS RA2A1 GROUP

Benefits

- Integrated best-in-class programmable analog for high-accuracy sensor signal acquisition and conditioning.
- Reduce BOM cost and PCB size by eliminating several external analog components.
- Ultra-low power extends battery life for battery-operated portable and battery backup applications.

Tools and Support

<table>
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<tr>
<th>IDE</th>
<th>Renesas e-studio</th>
<th>Keil MDK</th>
<th>IAR EWARM</th>
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<tbody>
<tr>
<td>Compiler</td>
<td>GCC, Arm Compiler</td>
<td>Arm Compiler</td>
<td>IAR Arm Compiler</td>
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<td>Debugger</td>
<td>Renesas E2/E2 Lite, SEGGER J-Link</td>
<td>SEGGER J-Link, IAR I-Jet, SEGGER J-Link</td>
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<td>Programmer</td>
<td>Renesas PG-FP6, SEGGER J-Flash, Third party solutions</td>
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Evaluation Kit

- Full MCU evaluation including On-Chip debugger
  - Part name: RTK7EKA2A1S00001BU

Ordering References

<table>
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<tr>
<th>Part name</th>
<th>Flash</th>
<th>RAM</th>
<th>DataFlash</th>
<th>Operating Temperature</th>
<th>Package</th>
<th>Package Dimensions</th>
<th>Pin Pitch</th>
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<td>32kB</td>
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<td>LQFP 64pin</td>
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