32-bit MCU with Arm® Cortex®-M Core

RENESAS RA FAMILY

Delivering the Ultimate Promise of IoT with Software Flexibility

The Renesas RA Family is a new 32-bit MCU family built on the Arm® Cortex®-M core architecture. Offering a wide range of performance and features, the Renesas RA Family meet the scalability, power consumption and performance needs of nearly any embedded systems end-product.

Strong Security

- Secure Crypto Engine (SCE) IP
- An extra layer of embedded hardware security providing tamper detection and resistance to side-channel attacks
- Integrated Arm® v8-M TrustZone®

Arm Core

- Based on Arm’s next-generation Cortex-M23/M33 processor cores, and Cortex-M4 core

Flexible Software Solution

- Supported by an open and flexible ecosystem concept, the Flexible Software Package (FSP)
- Can be replaced and expanded by any other RTOS or middleware

Best-in-Class Peripheral IP

- Excellent HMI capacitive touch technology
- The industry’s highest code flash memory capacity
- Wide range of connectivity solutions

Renesas RA Product Series

The four Renesas RA Family MCU series are based on 32-bit Arm® Cortex®-M cores. All four Renesas RA Series have been designed on common DNA, making these products feature- and pin-compatible. This allows easy scalability and code reuse from one device to another.
RENASAS RA FAMILY

Target Markets and Benefits

Industrial Automation
- Long product life
- Temperature up to 105°C
- Industrial quality grade
- Strongest robustness
- 24-bit $\Sigma\Delta$ ADC for sensors

Security
- Isolated crypto subsystem
- Symmetric/asymmetric hardware acceleration
- True Random Number Generator (TRNG)
- NIST-certified algorithms
- Key isolation and management

Connectivity
- Large on-chip RAM suitable for stacks
- CAN/USB/Ethernet
- Large amount on serial interfaces
- QSPI interfaces
- Integrated crypto module

Building Automation
- High Flash/RAM ratio
- Wide range of connectivity
- Rich analog features
- Small packages

Metering
- Scalable lineup
- Industrial quality grade
- Long product life
- Integrated crypto module

Whitegoods
- Temperature up to 105°C
- Scalable lineup
- Motor control solutions
- Capacitive touch interface
- LCD control

Tools and Support

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

Evaluation Kit
- Full MCU evaluation including on-chip debugger
- Individual kits for several products of each Renesas RA Series are available

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

renesas.com

© 2021 Renesas Electronics Corporation. All rights reserved.

Corporate Headquarters
TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Trademarks
Arm®, Cortex® are registered trademarks of Arm Limited. Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information
For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit: www.renesas.com/contact/