RENESAS
BIG IDEAS FOR EVERY SPACE

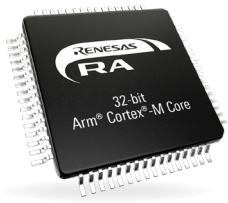
RENESAS RA

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.

High Performance

	Performance Range	Feature	Series Memory Ranges	ASSP Extensions
RA8	Over 240MHz 1.8-3.6V	Highest Performance, HMI, Connectivity, Security, Analog	Highest Memory Integration: up to 2MB Flash, 2MB SRAM	Motor/Inverter AI/ML, HMI
RA6	Up to 240MHz 2.7-3.6V	Advanced Performance, Connectivity, Security	High Memory Integration: up to 2MB Flash, 640kB SRAM	Motor/Inverter AI/ML, HMI
RA4	Up to 100MHz 1.6V-5.5V	Excellent Power, High Performance Mix Paired with Security	Medium Memory Integration: up to 1MB Flash,128kB SRAM	Motor/Inverter Sensor, Wireless
RA2	Up to 60MHz 1.6V-5.5V	Low Power	Medium memory integration: up to 256kB Flash, 32kB SRAM	Rich Analog

Power Savings

RENESAS RA FAMILY

Target Markets and Benefits

Industrial Automation

- Long product life
- Temperature up to 105°C
- Industrial quality grade
- Strongest robustness
- 24-bit ∑Δ 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

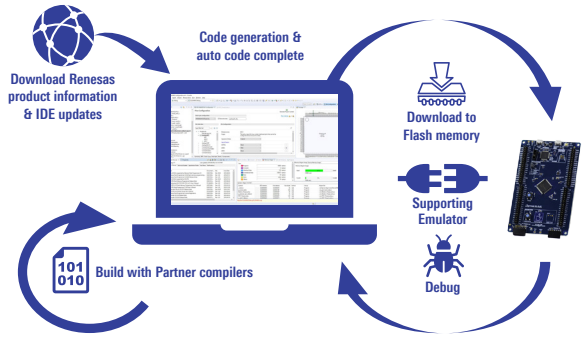
- Scalable lineup
- Industrial quality grade
- Long product life
- Integrated crypto module

Whitegoods

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

Tools and Support

IDE	Renesas e²studio	Keil MDK	IAR EWARM
Compiler	■ GCC ■ Arm Compiler	■ Arm Compiler	■ IAR Arm Compiler
Debugger	■ Renesas E2/E2 Lite ■ SEGGER J-Link	■ SEGGER J-Link	■ IAR I-Jet ■ SEGGER J-Link
Programmer	■ Renesas PG-FP6 ■ SEGGER J-Flash ■ Third party solutions		



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**

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

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/

Document No.: R01PF0182EJ0300