RA FAMILY

Industry-Leading Arm® Cortex®-M Family,
Delivering the Ultimate Promise of Security,
Connectivity and Intelligent IoT

2025.03

INTRODUCING THE RA FAMILY

Delivering the Ultimate Promise of IoT with Software Flexibility

CONTENTS

Strong Security

- Leading-edge, integrated Renesas Security IP
- An extra layer of embedded hardware security providing tamper detection and resistance to side-channel attacks
- Integrated Arm® v8-M TrustZone®

Arm Core

- Arm Cortex®-M23 core for the most cost/power sensitive applications
- Arm Cortex-M4/M33 cores to deliver the best balance of performance and power
- Arm Cortex-M85 core with Helium™ technology for unprecedented performance

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

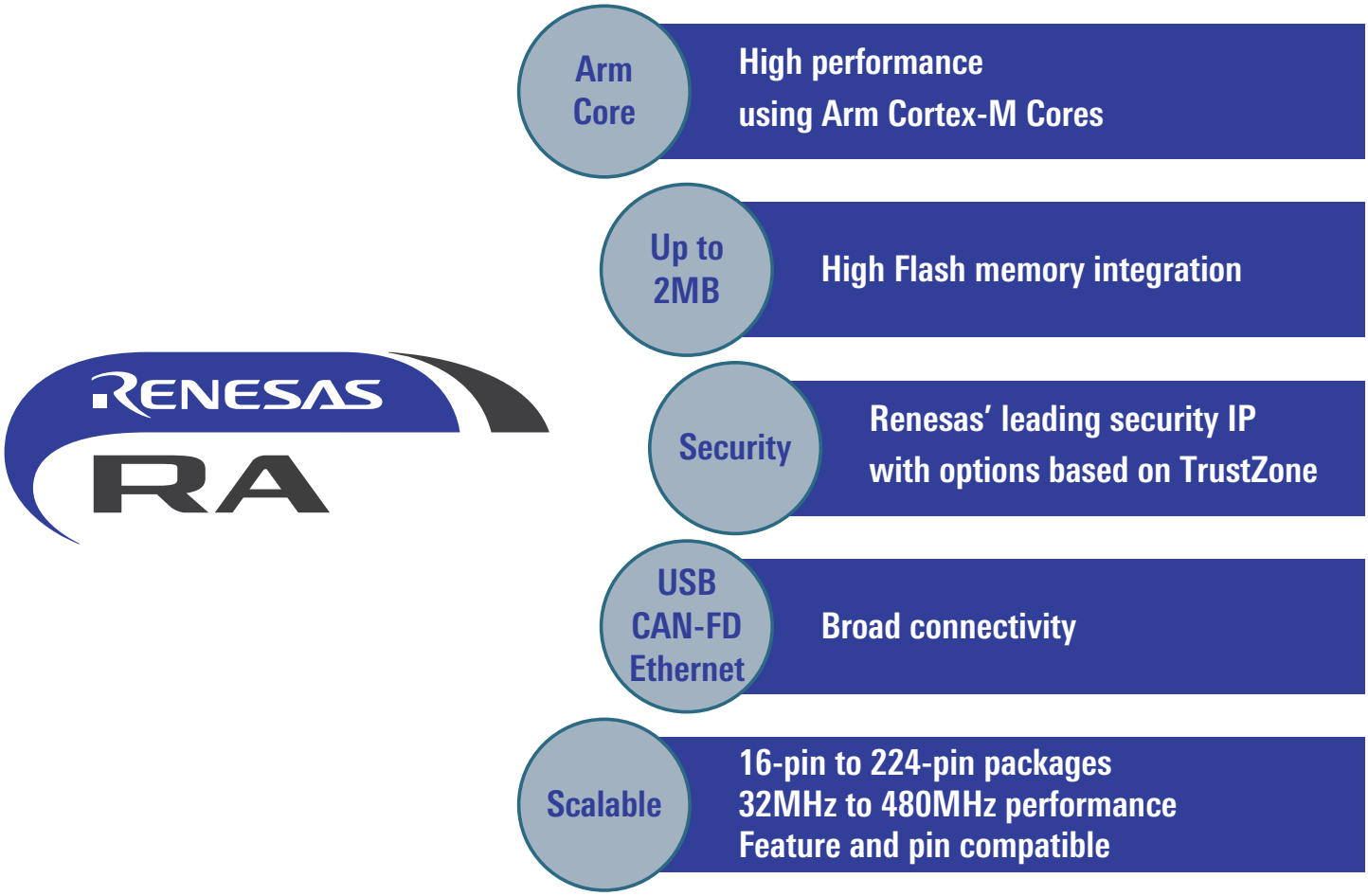
Best-in-Class Peripheral IP

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

What is the Renesas RA Family?

The flexible Renesas Advanced (RA) 32-bit MCUs are industry leading 32-bit MCUs with the Arm Cortex-M23, -M33, -M4 and -M85 processor cores and PSA Certified™ assurance. The RA Family delivers key advantages compared to competitive Arm Cortex-M MCUs by providing stronger embedded security, superior CoreMark® performance, and ultra-low power operation. PSA Certified provides customers the confidence and assurance to quickly deploy secure IoT endpoint and edge devices, and smart factory equipment for Industry 4.0.

- Renesas Advanced: Innovative market-leading products based on Arm Cortex-M cores
- Ultimate promise of IoT security by further enhancing Renesas' popular Secure Crypto Engine (SCE) IP
- Best-in-class peripheral IP provided by Renesas
- Easy development of IoT edge applications using the Flexible Software Package



RA Family Overview

The Renesas RA Family lineup can be separated into four product series. Each of these series has a unique feature set, making it ideal for various applications and market needs.

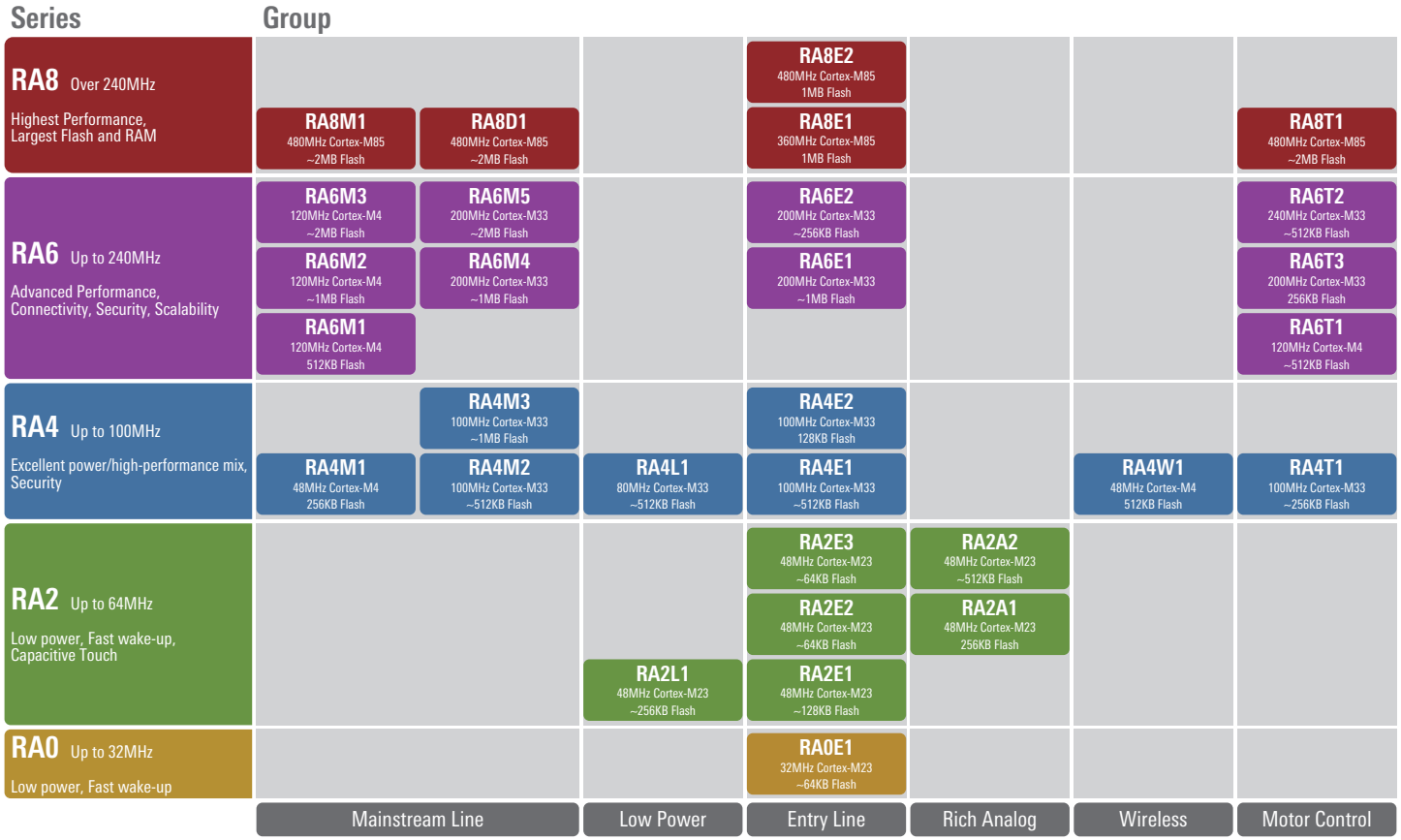
The RA8 series is the high-end product series targeting the highest performance, highest integration and advanced security. The RA8 series supports operation at CPU speeds over 240MHz with single or dual core, with the largest Flash and RAM integration to suit applications where performance really matters most.

The RA6 series offers the widest integration of communication interfaces, with integrated Ethernet and TFT display drivers. Memory densities range from 128KB Flash to 2MB Flash. The RA6 series offers up to 240MHz performance running on the Cortex-M4 or Cortex-M33 core with TrustZone. The RA6 series supports full security integration, making these devices widely desired for security applications.

The RA4 series balances the requirements for low power with the demand for connectivity. It offers up to 1MB Flash and a wide range of communication interfaces. The utilized core is the Cortex-M4 or Cortex-M33 with TrustZone and additional security IP integration. Memory densities range from 128KB Flash up to 1MB Flash. These devices provide a CPU frequency of up to 100MHz.

On the lower end is the RA2 series, where the low power requirements of an application matter most for these device definitions. To achieve the best performance, special power-down modes are provided, making these devices well suited for battery-powered applications. The RA2 series provides memory densities of up to 256KB embedded Flash and a wide single voltage supply range of 1.6V to 5.5V. These devices use the Cortex-M23 core at up to 64MHz.

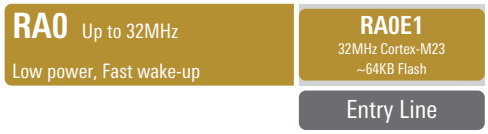
The RA0 series is the lowest power series within the RA Family, featuring up to 64KB Flash and a wide voltage supply range of 1.6V to 5.5V. The utilized core is the Cortex-M23 at up to 32MHz.



RA0 Series

The RA0 series is the RA Family's value line 32-bit MCU, offering excellent cost effectiveness and ultra-low power consumption. It delivers up to 32MHz of CPU performance using Arm Cortex-M23 core with up to 64KB of embedded flash memory and a wide supply voltage range from 1.6V to 5.5V. In addition, implements the optimized peripherals for reduced BOM cost and simplified design for the low-end MCU market. The RA0 series is ideal for cost-sensitive applications such as Low power and Lower cost for consumer electronics, System control for small appliances, Industrial system control and Building automation.

RA0 Series Product Groups



RA0 Series Benefits

- Best-in class Active/Standby power consumption for Arm Cortex-M23 microcontroller
- Reduction of system current consumption by low power process, low power system and features.
- Reduced BOM cost with on-chip peripheral functions, including high precision (1.0%) and wide operating temp range supported high-speed oscillator, 5V tolerant ports and background operation data flash supporting 1 million erase / program cycles.
- Connectivity to various modules through abundant serial functions
- Support many kinds of application by Wide voltage/temp range, and Safety features.

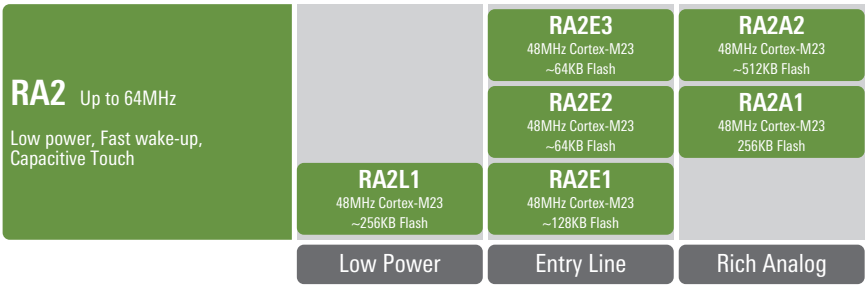
Overview of each Product Groups

- The RA0E1 group is a basic, simple MCU in the entry line of the RA0 series. It supports up to 64KB of code flash, 12KB of SRAM memory, and a wide operating voltage range of 1.6V to 5.5V.

RA2 Series

The RA2 series is the RA Family's entry-level 32-bit MCU, offering excellent cost, performance, and ultra-low power consumption. It delivers up to 64MHz of CPU performance using an Arm Cortex-M23 core with up to 256KB of embedded flash memory and a wide single voltage supply range from 1.6V to 5.5V. With cutting-edge peripherals like high accuracy analog and capacitive touch sensing, the RA2 series is ideal for system control or user interface applications such as healthcare devices, home appliances, office equipment, and measuring equipment.

RA2 Series Product Groups



RA2 Series Benefits

- The RA2 series use Arm cortrex-M23 core which most compact and efficient Cortex-M implementation based on Armv8-M architecture profile offering high code density, Thumb-2 instruction set, and hardware divide features.
- Large product lineup is from 16 up to 100 pin and Flash memory size starting from 16KB up to 512KB, including some very small package options, including QFN, LGA, BGA and smallest WLCSP
- Best-in class Active/Standby power consumption for Arm Cortex-M23 microcontroller
- On-chip analog components include a high accuracy 16-bit ADC, 24-bit sigma-delta ADC, fast response 12-bit DAC, rail-to-rail low-offset operational amplifiers, and high-speed/low-power comparators
- Reduced cost with on-chip peripheral functions, including high precision (1.0%) high-speed oscillator, temperature sensor, 5V tolerant ports and background operation data flash supporting 1 million erase/program cycles
- Enhanced capacitive touch sensing unit (CTSU) with high sensitivity and high noise immunity that realizes intuitive, high-quality HMI designs
- Various communication interfaces such as USB, CAN and I^3C, which support IoT applications

Overview of each Product Groups

- The RA2L1 group is Industry leading ultra-low power 32-bit Arm Cortex-M23 MCU. RA2L1 also features an enhanced Capacitive Touch Sensing Unit (CTSU2), a set of serial communication interfaces, highly accurate converters and timers.
- The RA2E1 group is entry level general-purpose MCU. RA2E1 provides pin and peripheral compatibility with the RA2L1 group and is ideal for battery-operated applications and other systems requiring high performance and low-energy consumption.
- The RA2E2 group offers ultra-low power operation and high speed serial communication with smallest package options of 20-pin and 24-pin QFN and 16-pin wafer-level CSP package, satisfying the needs of cost-sensitive and space-constrained applications.
- The RA2E3 group provides an optimized feature set for cost-sensitive applications by supporting pin-to pin and peripheral compatibility with RA2E1 Group. Ultra-low power consumption contributes to energy-efficient system design, required for IoT applications and battery-operated systems to achieve longer battery life.
- The RA2A1 group implements 24-bit Sigma-Delta ADC, 16-bit SAR ADC, comparators, operational amplifiers, and DACs. And RA2A1 targets low-power industrial sensor applications.
- The RA2A2 group offers a 24-bit Sigma-Delta analog-to-digital converter (SDADC), and an innovative dual-bank code flash. And bank swap function helps to update the firmware with minimal system stoppage.

RA4 Series

The RA4 series bridges the need for reasonable low power with the demand for connectivity and performance. These MCUs deliver up to 100MHz of CPU performance using an Arm Cortex-M33 core or M4 core with up to 1MB of embedded flash memory. The series offers a wide set of peripherals, including USB, CAN/CAN FD, I³C, ADC, Bluetooth Low Energy 5.0, capacitive touch, segment LCD controller, and additional security IP integration, making it suitable for IoT, industrial equipment, home appliances, office equipment, healthcare products, and meters.

RA4 Series Product Groups

RA4 Up to 100MHz Excellent power/high-performance mix, Security					
	RA4M3 100MHz Cortex-M33 ~1MB Flash		RA4E2 100MHz Cortex-M33 128KB Flash		
RA4M1 48MHz Cortex-M4 256KB Flash	RA4M2 100MHz Cortex-M33 ~512KB Flash	RA4L1 80MHz Cortex-M33 ~512KB Flash	RA4E1 100MHz Cortex-M33 ~512KB Flash	RA4W1 48MHz Cortex-M4 512KB Flash	RA4T1 100MHz Cortex-M33 ~256KB Flash
Mainstream Line		Low Power	Entry Line	Wireless	Motor Control

RA4 Series Benefits

- Secure element functionality providing better performance, unlimited secure key storage, key management, and lower BOM cost
- High-performance and low power at the same time with 81µA/MHz while running the CoreMark algorithm from flash at 100MHz
- High-integration up to 1MB code flash memory with background operation and flash block SWAP operation for flexible and memory optimized firmware updates, 8KB data flash memory, and 128KB SRAM with Parity/ECC
- Rich connectivity with Bluetooth 5.0, USB 2.0 Full-Speed, CAN/CAN FD, SDHI, QSPI, I²C, I³C, HDMI-CEC, and advanced analog
- Wide range of compact BGA packages available for applications where space is at a premium

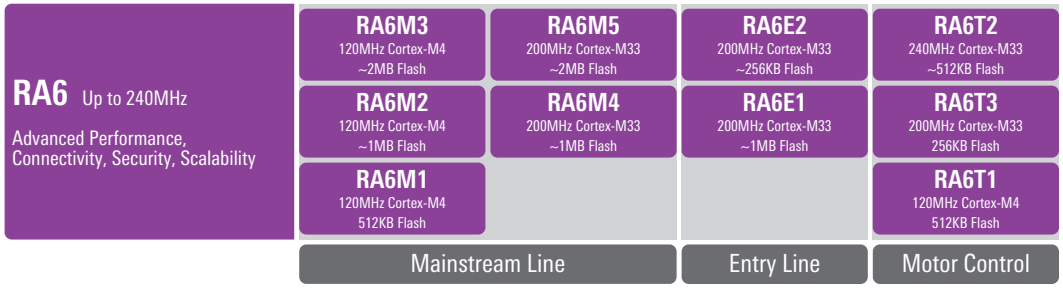
Overview of each Product Groups

- The RA4M1 group uses the high-performance 48 MHz Arm Cortex-M4 core and offers a segment LCD controller and a capacitive touch sensing unit input for applications such as user interfaces and meters where low power along with a large number of capacitive touch channels and a segment LCD controller are required.
- The RA4M2 group uses a high-performance 100 MHz Arm Cortex-M33 core with TrustZone along with an advanced secure crypto engine, offering the features of a secure element on-chip and the ability to secure your application. The RA4M2 is suitable for IoT applications requiring multiple communication channels with support for USB, CAN an d QSPI as well as multiple channels of I²C and SCI, a large embedded SRAM, and low active power consumption.
- The RA4M3 group uses the high-performance 100 MHz Arm Cortex-M33 core with TrustZone along with an advanced secure crypto engine, and support for applications that require large on-chip Flash and SRAM. The RA4M3 security engine offering the features of a secure element on-chip and Trustzone allows you to secure your application. The RA4M3 is suitable for IoT applications requiring multiple communication channels with support for USB, CAN and QSPI as well as multiple channels of I²C and SCI, and low active power consumption.
- The RA4E1 group uses the high-performance 100 MHz Arm Cortex-M33 core with TrustZone and supports large on-chip Flash and SRAM. The RA4E1 has been developed to support entry IoT applications requiring a value optimized feature set, total system cost reduction and an optimized mixture of high performance and lowest active power consumption while still offering a wide range of connectivity features.
- The RA4E2 group offers high-performance and optimized peripheral functions along with the smallest package options including space saving 36-pin BGA and 32-pin QFN packages. These satisfy the needs of both cost-sensitive and space-constrained applications.
- The RA4T1 group offers an optimized peripheral for motor control and inverter control functions with small 32-pin QFN and LQFP package options, which integrates a wide range of communication interfaces, including CAN FD, I³C, SCI, and SPI, covering all the connectivity needs of a wide range of motor control applications.
- The RA4L1 group offers an ideal balance of low power consumption and high performance based on 80MHz Arm Coretex-M33 with TrustZone, with supporting low voltage operation down to 1.6V and lower power standby current, 1.65µA, enabling the user to dynamically optimize power/performance to their application requirements. Includes segment LCD display drive and an advanced security engine, and integrate communications interfaces such as CAN FD, USB 2.0 FS, I²C/I³C, and Low Power UARTs making these devices ideal for many industrial automation, home appliances, smart home, consumer, building/home automation, and medical/healthcare applications.

RA6 Series

The RA6 series offers the widest integration of communication interfaces as well as the best performance level. These MCUs aim for up to 240MHz of CPU performance using an Arm Cortex-M4 or M33 core and a memory range from 128KB to 2MB Flash. The series offers Ethernet, USB Full Speed and High Speed, QSPI, OctaSPI, CAN/CAN FD, I³C, and TFT display driver integration. The embedded security engines are full of features you can leverage in your higher-level solutions with secure element services. The RA6 series addresses a broad range of applications for IoT endpoints such as white goods, meters, and other industrial and consumer applications.

RA6 Series Product Groups



RA6 Series Benefits

- Secure element functionality providing better performance, unlimited secure key storage, key management, and lower BOM cost
- High-performance and low-power with 80µA/MHz while running the CoreMark algorithm from flash at 200MHz
- High-integration up to 2MB code flash memory with background operation, Dual-bank, and flash block SWAP operation for extremely flexible and memory optimized firmware updates, 8KB Data flash memory, and 512KB SRAM with Parity/ECC
- Rich connectivity with Ethernet MAC controller, CAN FD, USB 2.0 High-Speed and Full-Speed, SDHI, Quad and Octa SPI, I²C, I³C, HDMI-CEC, and advanced analog with three sample and hold per ADC, PGA and high-speed comparators
- Wide range of compact BGA packages available for applications where space is at a premium

Overview of each Product Groups

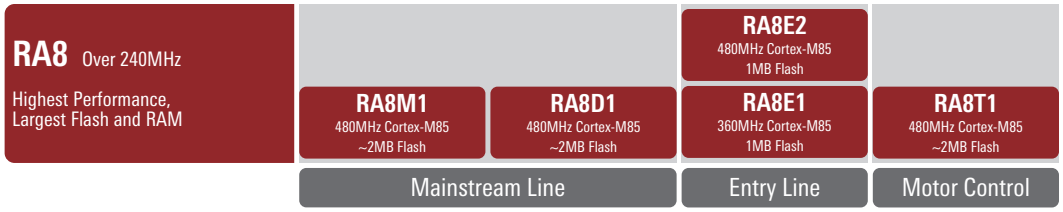
- The RA6M1 group uses a high-performance, 120MHz Arm Cortex-M4 core optimised to provide an attractive price for cost sensitive applications. The RA6M1 is suitable for IoT applications requiring security, large, embedded SRAM and low power consumption. With support for a wide range of connectivity requirements including USB, CAN, QSPI and SDHI as well as multiple channels of SCI, SPI and I²C.
- The RA6M2 group uses a high-performance, 120MHz Arm Cortex-M4 core and offers Ethernet MAC with individual DMA, to ensure high data throughput along with advanced security functions and a wide range of other connectivity features such as USB and QSPI, as well as multiple channels of CAN, SDHI, SCI, SPI and I²C. The RA6M2 is suitable for IoT applications requiring Ethernet, security, large, embedded SRAM, and low active power consumption.
- The RA6M3 group uses a high-performance, 120MHz Arm Cortex-M4 core and offers a TFT controller with 2D accelerator and JPEG decoder. Additionally, the RA6M3 MCU offers Ethernet MAC with individual DMA and USB high-speed interface to ensure high data throughput along with a wide range of other connectivity features as well as advanced security functions. The RA6M3 is suitable for IoT applications requiring TFT, Ethernet, security, large, embedded SRAM, and USB High Speed (HS).
- The RA6M4 group uses a high-performance, 200MHz Arm Cortex-M33 core with TrustZone along with an advanced secure crypto engine, offering the features of a secure element on-chip and the ability to secure your application. The RA6M4 includes an integrated Ethernet MAC with individual DMA ensures high data throughput along with a wide range of other connectivity options including USB, CAN, SDHI, QSPI and OctaSPI. The RA6M4 is suitable for IoT applications requiring Ethernet, advanced security, large embedded SRAM, and low active power consumption.
- The RA6M5 group uses a high-performance, 200MHz Arm Cortex-M33 core with TrustZone along with an advanced secure crypto engine, offering the features of a secure element on-chip and the ability to secure your application. The RA6M5 offers large on-chip memories with up to 2Mbytes of on-chip Flash and 512Kbytes of SRAM, it also includes a wide range of connectivity functionality including an integrated Ethernet MAC with individual DMA ensures high data throughput along with a wide range of other connectivity options including USB, CAN, SDHI, QSPI and OctaSPI. The RA6M5 is suitable for IoT applications requiring Ethernet, advanced security, large embedded memories and low active power consumption.

- The RA6E1 group uses a high-performance, 200MHz Arm Cortex-M33 core with TrustZone and provides the perfect, cost effective entry point into the RA Family of microcontrollers. The RA6E1 is suitable for entry IoT applications requiring streamlined feature and connectivity integration including Ethernet and large on-chip memories, and provides unprecedented performance with 790.75 CoreMark, which are 3.95 CoreMark / MHz.
- The RA6E2 group offers best-in-class performance as an entry-line microcontroller while pursuing cost optimization. Pin and peripheral compatibility with the RA4E2 group makes it ideal for applications requiring higher performance, small footprint, and lower pin counts.
- The RA6T1 group combines an Arm Cortex-M4 at 120MHz and a rich peripheral function for motor such as PWM timer, high-speed 12-bit ADC, PGA, comparator. It can also control up to two brushless DC motors with one chip.
- The RA6T2 group combines an Arm Cortex-M33 with a hardware accelerator for motor control and high-speed flash memory for high-speed real-time performance at 240MHz. It can also realize high-speed, high-response motor algorithms and improve parallel processing performance such as other communication processing.
- The RA6T3 group is the microcontroller, designed for an optimum balance of peripheral functions and cost suitable for motor/inverter control, based on the 200MHz Arm Cortex-M33 core with TrustZone. This MCU is pin and function compatible with the RA4T1 group and can be seamlessly upgraded, making it an ideal solution for motor control and inverter control applications requiring higher performance.

RA8 Series

The RA8 series are the Industry's first high performance 32-bit MCUs featuring the Arm Cortex-M85 (CM85) with a feature set optimized to address diverse general purpose as well as HMI/graphics, motor control and voice and vision AI applications in industrial, home appliance, consumer, medical and building and office automation market segments. The RA8 MCUs integrate the high-performance CM85 core with large flash and SRAM, multiple connectivity options (Ethernet, CAN-FD, I²C/I³C, SPI, Octal SPI etc.), graphics peripherals (LCD controller with parallel RGB and MIPI-DSI interfaces, 2D graphics drawing engine, 16-bit camera interface), analog features and external memory interfaces, to address the diverse needs in these market segments.

RA8 Series Product Groups



RA8 Series Benefits

- Unprecedented performance of 6.39 Coremarks/MHz or over 3000 Coremarks with the RA8 series MCUs running at 480MHz. These MCUs bridge the gap between MCUs and MPUs and enable compute intensive applications with the lower power and ease-of-use of an MCU.
- Advanced Security with TrustZone, leading-edge cryptographic accelerators for symmetric and asymmetric cryptography with the latest Renesas Security IP, immutable storage for first stage bootloader on-chip, secure boot and tamper and side-channel protection
- High integration enable lower BOM costs and simplified design for our customers, with large embedded flash and SRAM, rich peripheral set, graphics integration, several connectivity options, multiple external memory interfaces, and timer and analog features.
- Advanced graphics capabilities enable high resolution HMI/Graphics and Vision AI applications by combining the high performance of the CM85 core and Helium with graphics features such as graphics LCD controller with parallel RGB and MIPI-DSI interfaces, large on-chip SRAM, 2D graphics drawing engine, 16bit camera interface and 32-bit external memory interface.
- Lower overall system power consumption with multiple low power sleep and standby modes, CPU sleep modes, low speed active modes, a wide operating voltage range, Vcc/Vcc2 domain and DCDC and external power supply options.
- Comprehensive solutions that include Flexible Software Package, development tools, EKs and solutions.

Overview of each Product Groups

- The RA8M1 group based on the Arm Cortex-M85 core with TrustZone and Helium, running at up to 480MHz are high performance general-purpose MCUs optimized for a broad range of applications in industrial, metering, office automation, consumer and medical applications. The RA8M1 MCUs are suited for compute intensive applications that require the high performance of the CM85 core accelerated with Helium, advanced security and the rich peripheral set including many connectivity options (CAN-FD, USBHS/FS, Ethernet, I²C/I³C. Octal SPI, SPI etc.), external memory interfaces, analog and timing features and functional safety.
- The RA8D1 group based on the Cortex-M85 core with TrustZone and Helium, and running at up to 480MHz, are specialized MCUs for advanced HMI, high resolution graphics and Vision AI applications. These MCUs feature an LCD Controller with RGB and MIPI-DSI interface, 2D drawing engine, a 16-bit camera interface and a 32-bit SDRAM interface, very suited for high resolution graphics. In addition, these devices include advanced security, several connectivity options (CAN-FD, USBHS/FS, Ethernet, I²C/I³C. Octal SPI, SPI etc.), external memory interfaces, and analog and timing features.
- The RA8T1 group based on the Cortex-M85 core with TrustZone and Helium, running at up to 480MHz, are specialized MCUs with a feature set optimized to address diverse real-time control such as motor control, power supply and so on, in industrial automation (IA), building automation (BA) and smart home (HA) markets. These MCU are optimized for single and dual motor control applications and predictive maintenance AI use cases. For motor control, RA8T1 MCUs have 14ch PWM timers which operate at 120MHz, 2 A/D converters and 3ch sample-and-hold (on ADC unit0), 2ch analog comparators, port output enable circuit, and more. In addition, various communication features such as Ethernet MAC, CAN FD, USB FS, and I²C/I³C enable connectivity with other devices.

- The RA8E1 group features entry-line 32-bit microcontrollers (MCU) based on the Arm Cortex-M85 core with Helium and TrustZone, delivering breakthrough performance of 6.39 CoreMarks/MHz. These are general-purpose MCUs and address diverse high-performance and compute-intensive applications in industrial automation, home appliances, consumer, building/home automation, and medical/healthcare market segments. The RA8E1 MCUs integrate the high-performance CM85 core with memory, multiple external interfaces and an optimized peripheral set that addresses the needs of price-sensitive applications. RA8E1 MCUs are available in 100 and 144-pin LQFP packages, to serve the needs of a broad range of high-performance applications.
- The RA8E2 group features entry-line graphics-enabled 32-bit microcontrollers (MCUs) based on the Arm Cortex-M85 core with Helium and TrustZone, delivering breakthrough performance of over 3000 CoreMark points at 480 MHz, and graphics capabilities that drive TFT-LCD displays. These MCUs address diverse graphics applications in industrial automation, home appliances, smart home, consumer, building automation, and medical/healthcare market segments. The RA8E2 MCUs integrate the high-performance CM85 core with large memory, and an optimized peripheral set including a graphics TFT-LCD controller with parallel RGB interface, 2D drawing engine, and multiple external memory interfaces, which addresses the needs of price-sensitive graphics applications. These MCUs are available in 224-pin packages.

Target Applications and Markets

The Renesas RA Family targets various application fields. Due to its scalability, the RA Family offers parts which cover many different applications and customer needs.

The feature set of the Renesas RA Family is well suited for industrial applications due to its long product life with 105° Celsius support. Dedicated analog feature integration like ADC, PGA, and comparators, combined with powerful and flexible timers, makes the RA Family an ideal fit for motor control applications.

Features like connectivity peripherals, hardware-accelerated cryptography, and scalability make the whole RA Family a perfect fit for customers who want to design secure and connected products in areas such as building or industrial automation.

Customers with Electricity Metering applications will enjoy the scalability and long product life of the RA Family, in addition to the on-chip security engines.

The integrated Capacitive Touch interface, combined with the scalability of the RA Family, make the RA Family an ideal fit for white goods applications, enabling innovative HMI designs.

	Best Suitable Product Series	Application Examples	
Industrial Automation	RA0, RA2, RA4, RA6, RA8	▪ Robotics ▪ Door Openers ▪ AC Drive	▪ AC Servo ▪ UPS ▪ Functional Safety
Building Automation	RA0, RA2, RA4, RA6, RA8	▪ Fire Panels ▪ HVAC ▪ Boiler Control	▪ Vending Machines ▪ Motion Detection ▪ Monitoring Systems
Metering	RA2, RA4, RA6, RA8	▪ Electricity Meters ▪ Automated Meter Reading ▪ Network Cards	▪ Flow Meters ▪ Power Meters
Home Appliance	RA0, RA2, RA4, RA6, RA8	▪ HVAC ▪ Air Cleaners ▪ Coffee Machines	▪ Vacuum Cleaners ▪ Cleaning Robots ▪ White Goods
Connectivity	RA0, RA2, RA4, RA6, RA8	▪ ASi5 / IO-Link Gateways ▪ Communication Gateways ▪ Data Concentrators	▪ Wired Ethernet ▪ Fleet Tracking
Security	RA4, RA6, RA8	▪ Fire Detectors ▪ Burglar Detection ▪ Panel Control	▪ Door Openers ▪ Monitoring Systems ▪ Access Control
Motor Control	RA4, RA6, RA8	▪ Brushless DC Motors ▪ Induction Motors ▪ Stepper Motors	▪ Magetic Encoders ▪ Optical Encoders ▪ Hall Sensors
Low Power	RA0, RA2, RA4	▪ IO-Link Sensors ▪ Heat Cost Allocators ▪ Portable Audio Devices	▪ Smoke Detectors ▪ IoT Sensing Nodes ▪ Wearable Devices
HMI	RA2, RA4, RA6, RA8	▪ Voice Recognition ▪ Capacitive Touch Panels ▪ Printers	▪ Vending Machines ▪ Home Appliances ▪ Medical Equipment
Wireless	RA4	▪ Wearable Devices ▪ Healthcare ▪ Panel Control	▪ Gateway Units ▪ Door Openers ▪ Smart Home
AI/ML	RA0, RA2, RA4, RA6, RA8	▪ Anomaly Detection ▪ VCR / NLU ▪ Person ID	▪ Home Appliances ▪ Robotics ▪ HVAC

Security Solutions

In the rapidly growing area of IoT and highly-connected devices, increasing consumer awareness and government legislation is forcing embedded device manufacturers to take the topic of security seriously. Already under the constraints of needing to create cost- and energy-efficient solutions, developers nowadays are required to design and implement security with limited additional time and budget.

Let Renesas simplify your path to product security and regulatory compliance.

Integrated Hardware-based Security Features

The RA Family was designed with security in mind, with scalable hardware-based security features including:

Functions		RA8D1, RA8M1, RA8T1	RA6M4, RA6M5 RA4M2, RA4M3	RA6M1, RA6M2, RA6M3, RA6T1	RA6T2	RA4L1	RA4M1, RA4W1	RA2 Series	RA0 Series
Identity	Chip Unique ID	✓	✓	✓	✓	✓	✓	✓	✓
Isolation	Arm TrustZone	✓	✓	–	✓	✓	–	–	–
	MPU	✓	✓	✓	✓	✓	✓	✓	–
	Security Engine	RSIP-E51A	SCE9	SCE7	SCE5_B	RSIP-E11A	SCE5	–	–
Cryptography and Key Handling	AES	✓	✓	✓	✓	✓	✓	✓	–
	SHA	✓	✓	✓	–	✓	–	–	–
	RSA and ECC	✓	✓	✓	–	ECC	–	–	–
	TRNG	✓	✓	✓	✓	✓	✓	✓	✓
	Secure Key Handling	✓	✓	✓	✓	✓	✓	–	–
Code Protection and Lifecycle Management	Flash Protection	✓	✓	✓	✓	✓	✓	✓	✓
	Decryption On-The-Fly	✓	–	–	–	–	–	–	–
	Device Lifecycle Mgmt	✓	✓	–	✓	✓	–	–	–
	Debug/Program Protect	✓	✓	✓	✓	✓	✓	✓	✓
	Secure Boot (FSBL)	✓	–	–	–	–	–	–	–
Physical Protection	Passive Tamper Pins	✓	✓	✓	–	✓	✓	–	–
	SPA/DPA Resistance	✓	✓	–	–	✓	–	–	–

Software and Tools

The RA Family Flexible Software Package (FSP) contains APIs for using the powerful cryptographic features of the Renesas Security Engines (RSIP and SCE):

- PSA Certified Crypto APIs, for Arm Ecosystem alignment
- FSP Crypto APIs, for compatibility with other Renesas MCU/MPU Families

The easy-to-use Security Key Management Tool, combined with the Renesas Key Wrap Service, provides support for secure key injection and update for prototype development and over the lifetime of the product.

Clear, full-featured Application Notes and Application Projects provide customizable demonstrations of the RA Family Security Features and Solutions. (www.renesas.com/iot-security)

Valuable Certifications

The RA Family targets compliance with meaningful certification schemes:

- PSA Certified Level 1 for holistic system security
- PSA Certified Level 3 and SESIP3 for Root of Trust protection
- NIST Cryptographic Algorithm Verification Program (CAVP) for assurance of cryptographic correctness
- NIST FIPS 140-3 Levels 2 and 3

IEC61508 Functional Safety Solution

The importance of functional safety is increasing in order to prevent hazards and risks to people, machinery, and the environment from failure or error at the manufacturing site. However, designing the system and being certified under functional safety standards such as IEC 61508 requires a great deal of effort and time, which increases cost and could delay the product release significantly compared to non-safe development.
Renesas offers a one-stop functional safety solution comprised of general-purpose 32-bit microcontrollers (MCUs) with software solution components.

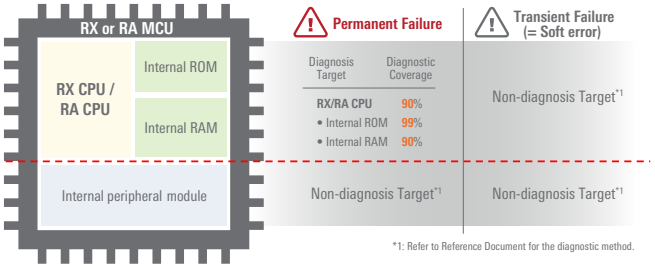
Solution Introduction

The Self-Test Software Kit provides a self-diagnostics software library for microcontroller, a complete safety manual, user guide and IEC61508 SIL3 Certificate test report certified by TÜV Rheinland Industrie Service GmbH (Germany). For safe system development, developers can use the information they require from the safety manual and make use of the self-diagnostics software library to alleviate the burden on microcontroller-level development to conform to functional safety.

Functional Safety
TÜVRheinland CERTIFIED
www.tuv.com
ID 0600000000

This Kit diagnoses the permanent failure of CPU, internal ROM, and internal RAM.

* Please refer to the reference document for permanent failure diagnosis of other modules and transient failure diagnosis.



Target Application

Safety System for:

- AC Servo & Drive
- Remote IO
- Programmable Logic Controller
- Sensor and Actuator


Industrial Robot Arm

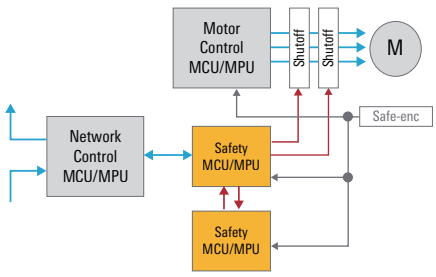

PLC


AC Drive, Inverter

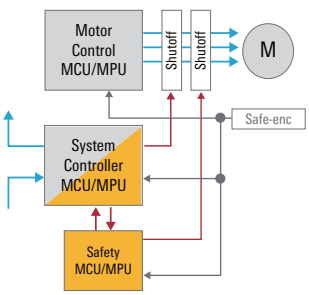

Light Curtain, Sensor

Target Safety System Example (Motor Control + Network Control + Safety)

Example 1



Example 2



IEC 60730 Safety Classes Support

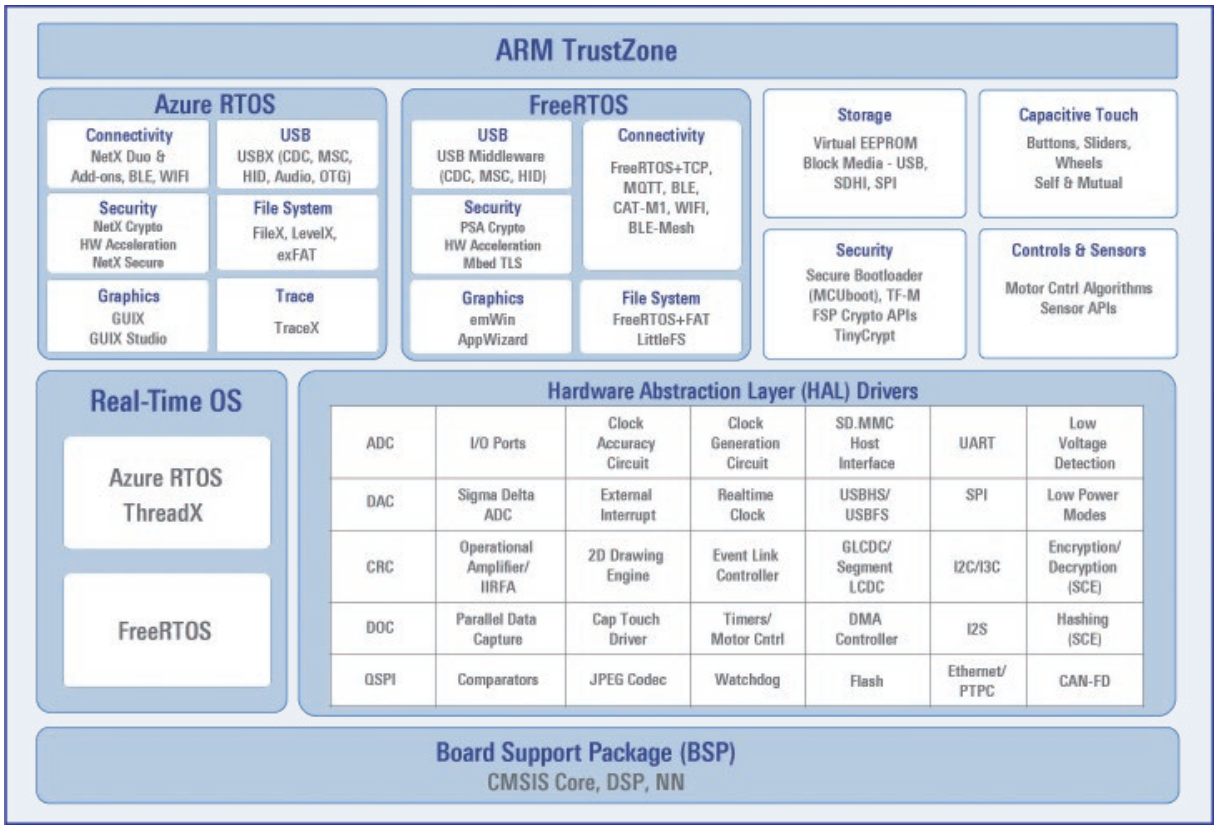
The IEC/UL 60730 is the harmonized safety standard for household appliances.
It describes requirements for automatic controls including heating and air-conditioning applications. Renesas offers for the RA Family a self-test library to fulfill Class B requirements of the IEC 60730 standard, as this is the most commonly used requirement.
The related Appendix H lists all the specific faults that must be tested and details the need to place the equipment into a safe state for any single point failure.
In response to the need of designing IEC/UL 60730 certified applications, Renesas provides an RA Family IEC 60730 Self-Test Library designed to reduce the burden on customers developing their own solutions. The package comes with the sample code and the certification done by VDE.

Flexible Software Package

The Renesas Flexible Software Package (FSP) is an enhanced software package designed to provide easy-to-use, scalable, high-quality software for embedded system designs using Renesas RA Family Microcontrollers. With the support of Arm® TrustZone® and other advanced security features, FSP provides a quick and versatile way to build secure, connected IoT devices using production-ready drivers, Azure® RTOS, FreeRTOS™, and other middleware stacks.

FSP uses an open software ecosystem and provides flexibility in using bare-metal programming, included Azure RTOS or FreeRTOS, your preferred RTOS, legacy code, and third-party ecosystem solutions.

The combination of the flexible open architecture of the FSP plus the wide choice of 3rd party solutions as part of the Arm ecosystem increases the range of choice for application development. This means that developers can choose the software model that best suits their needs while utilizing Renesas's excellent Arm-based silicon solutions as well as speed up the implementation time of complex areas like connectivity and security.



Benefits

- Provides an easy-to-use, scalable, high-quality software for embedded system designs using the Renesas RA Family of Arm microcontrollers
- Includes best-in-class HAL drivers with high performance and low memory footprint
- Middleware stacks with Azure RTOS and FreeRTOS integration are included to ease the implementation of complex modules like communication and security
- The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster
- Uses an open software ecosystem and provides flexibility in using bare-metal programming, included Azure RTOS and FreeRTOS, your preferred RTOS, legacy code, and third-party ecosystem solutions
- Integrated package with all required components for easy setup and starting development (single installer with e² studio, CMSIS packs, tool chain and SEGGER J-Link drivers)
- Complete source code available through GitHub

Development Environment

The RA family development environment offers flexibility in terms of different supported on-chip debuggers, IDEs, and compilers. Customers can use the Renesas e² studio, Keil MDK and IAR Embedded Workbench. All tools can use the RA configurators for FSP driver and middleware selection and configuration, in addition to pin mapping and clock tree configuration.

Overview

	Renesas e² studio	IAR Systems Embedded Workbench for Arm	Keil Microcontroller Development Kit
Compilers	- GCC - LLVM - Arm Compiler * - IAR Arm Compiler *	- IAR Arm Compiler *	- Arm Compiler *
Debugger probes	- Renesas E2/E2 Lite - SEGGER J-Link	- Renesas E2/E2 Lite - SEGGER J-Link - IAR I-Jet	- SEGGER J-Link - Keil ULINK (limited support)
Smart Configurator	Built-in - BSP - Clock - Pin - Drivers - Interrupts	Supplied as RASC - BSP - Clock - Pin - Drivers - Interrupts	Supplied as RASC - BSP - Clock - Pin - Drivers - Interrupts
Application specific configurator	- QE for Capacitive Touch - QE for BLE - QE for AFE - QE for Motor	NA	NA

*: Compiler must be purchased and licensed directly from 3rd-party.

Benefits

The eclipse-based e² studio along with a GCC or LLVM compiler and SEGGER J-Link debugger is the primary development solution for RA MCUs and Flexible Software Package (FSP). e² studio offers a complete development flow from initial project generators, graphical FSP configuration and comprehensive debugger options.

As the RA MCU family includes TrustZone-enabled devices, configuration options ensure that a development engineer can concentrate on the application rather than the underlying technology.

Renesas recognizes that Arm based MCUs benefit from a wide ecosystem, so we have worked with Keil and IAR Systems to develop the RA Smart Configurator (RASC) that inherits all the FSP configurator options from e² studio to extend the rich development options into the MDK and EWARM IDEs. To complement the powerful SEGGER J-Link probes, RA MCUs are also supported by the Renesas E2 and E2 Lite debug probes.

Production programming options are available from Renesas (RFP and PG-FP6) in addition to numerous 3rd-party solutions such as SEGGER Flasher and PEMicro Cyclone. Please contact your preferred partner to request RA production device programing support.

RA Microcontroller Kits

Effortless Innovation Made Possible

The RA microcontroller kits enable users to effortlessly evaluate the features of different RA MCU Groups & develop sophisticated IoT & embedded systems applications. The kits are based on a novel architecture that provides an unparalleled combination of standardization & flexibility. The kit design helps users shorten the learning curve & accelerate development, providing more time for differentiated innovation or taking products to market faster. Users can utilize rich on-board features along with their choice of popular ecosystem add-ons to bring their big ideas to life.

Innovation Ready

A winning combination of standardization & flexibility that enables shorter learning curve & faster time to market

Ecosystem Ready

Enhance functionality on your terms & choose from hundreds of 3rd-party add-ons from popular ecosystems

World Ready

Compliant with many international standards. Documentation available in English & Japanese

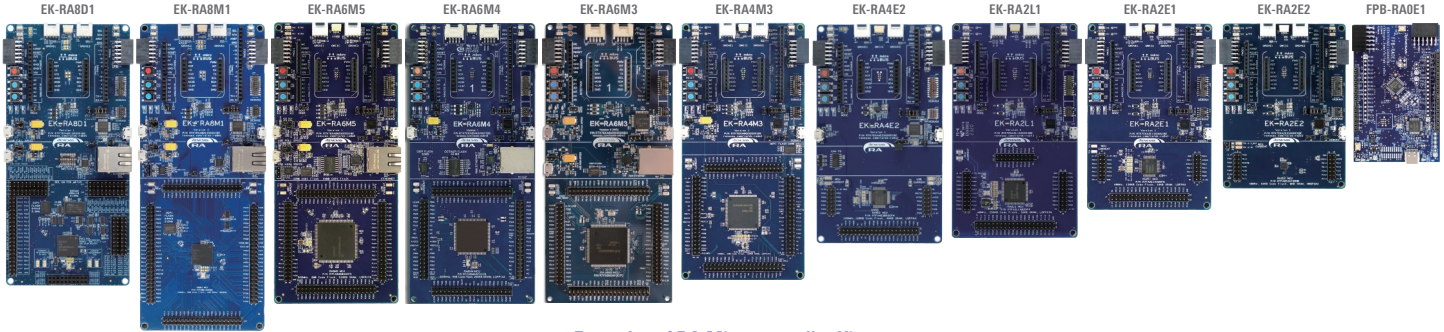
Fun Ready

Take the guesswork out of your innovation experience for an unmatched, systematic & methodical approach to start developing

Differentiation that Sets You Apart

The RA microcontroller kits portfolio consists of a variety of kits to suit many use cases such as functional evaluation, getting started reference, prototyping, proof-of-concepts, solutions demo, research & academia.

RA Kits Portfolio	RA8 MCU Series	RA6 MCU Series	RA4 MCU Series	RA2 MCU Series	RA0 MCU Series
General-purpose kits ■ Differentiated functionality ■ Remarkable ease of use ■ Broad ecosystem compatibility ■ Multiple debugging modes ■ Feature scalability & expansion across RA MCU series: RA6, RA4 & RA2	EK-RA8M1 EK-RA8D1 EK-RA8E2	EK-RA6M5 EK-RA6M4 EK-RA6M3 EK-RA6M3G EK-RA6E2	EK-RA4M3 EK-RA4M2 EK-RA4E2 EK-RA4L1	EK-RA2E2 EK-RA2E1 EK-RA2L1 EK-RA2A2	
■ Basic MCU pin access ■ Limited ecosystem compatibility ■ Basic on-board debugging ■ Design reuse across Renesas MCU families: RA, RX, RL78 & Synergy	FPB-RA8E1	EK-RA6M2 EK-RA6M1 FPB-RA6E1 FPB-RA6E2 FPB-RA6T3	EK-RA4M1 EK-RA4W1 FPB-RA4E1 FPB-RA4E2 FPB-RA4T1	EK-RA2A1 FPB-RA2E1 FPB-RA2E2 FPB-RA2E3	FPB-RA0E1
Application-specific kits ■ References for specific end-applications	MCK-RA8T1 Motor VOICE-RA8M1	CK-RA6M5 Cloud MCK-RA6T3 Motor MCK-RA6T2 Motor RSSK-RA6T1 Motor RSSK-RA6M2 Touch VOICE-RA6E1 VUI AI-RA6M3	MCK-RA4T1 Motor VOICE-RA4E1 VUI RSSK-RA4L1 Touch AI-RA4E1	RSSK-RA2L1 Touch VOICE-RA2L1 VUI	
3rd-Party/Partner kits ■ Access to partner's ecosystem & tools		M13-RA6M3-EK	RA4M1 Clicker	-	



Examples of RA Microcontroller Kits

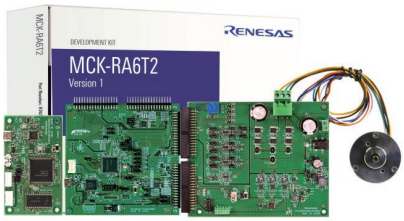
Learn more: renesas.com/ra/kits

Motor Control Solution

RA Motor Control Development Kits are development kits that enables easy evaluation of motor control using permanent magnet synchronous motors (brushless DC motors). These kits are configured to run the application note sample code that can be downloaded from the homepage. In addition, development support tools such as Renesas Motor Workbench, which can analyze and tune motors, and QE for Motor are available, so you can immediately start evaluating motor control using the RA-T series.

Features

- Include inverter board for 3-phase BLDC motor
- Supports 1-/3-shunt current sensing*
- Overcurrent detection function
- Supports Motor Control Development Support Tool Renesas Motor Workbench and QE for Motor
- High voltage motor control evaluation by separately sold High Voltage Inverter Board (MCI-HV-1)*



MCK-RA6T2 (RTK0EMA270S00020BJ)

*: For RSSK-RA6T1 feature, please refer web page.

	RA8T1	RA6T1	RA6T2	RA6T3	RA4T1
Motor control evaluation Kits	MCK-RA8T1 (RTK0EMA5K0S00020BJ)	RSSK-RA6T1 (RTK0EMA170S00020BJ)	MCK-RA6T2 (RTK0EMA270S00020BJ)	MCK-RA6T3 (RTK0EMA330S00020BJ)	MCK-RA4T1 (RTK0EMA430S00020BJ)
Included items	■ CPU board (MCB-RA8T1) ■ Inverter board (MCI-LV-1) ■ Communication board (MC-COM) ■ Permanent magnet synchronous motor ■ Accessories (cables, standoffs, etc.)	■ CPU card (MOTOR-CPU-CARD) ■ Inverter board (RTK0EM0000B10020BJ) ■ Permanent magnet synchronous motor ■ Accessories (cables, standoffs, etc.)	■ CPU board (MCB-RA6T2) ■ Inverter board (MCI-LV-1) ■ Communication board (MC-COM) ■ Permanent magnet synchronous motor ■ Accessories (cables, standoffs, etc.)	■ CPU board (MCB- RA6T3) ■ Inverter board (MCI-LV-1) ■ Permanent magnet synchronous motor ■ Accessories (cables, standoffs, etc.)	■ CPU board (MCB-RA4T1) ■ Inverter board (MCI-LV-1) ■ Permanent magnet synchronous motor ■ Accessories (cables, standoffs, etc.)

Capacitive Touch Sensing Solution

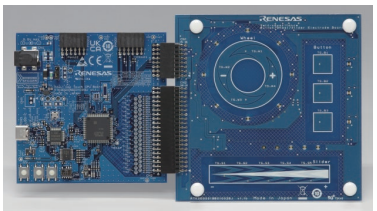
Renesas offers revolutionary design to switching devices and equipment with our capacitive touch solution that enables a user-friendly environment to support manufacturing processes and lowers hurdles in capacitive touch sensor development.

QE for Capacitive Touch is a solution toolkit that runs in the e² studio integrated development environment. It speeds up the development of integrated systems utilizing capacitive touch sensors by simplifying tasks such as configuring initial settings or tuning the sensitivity of the touch interface.

The capacitive touch evaluation system includes a CPU board and a self-capacitance evaluation board for use as a touch application board. It has everything you'll need to get started evaluating applications incorporating buttons, sliders, and wheels.

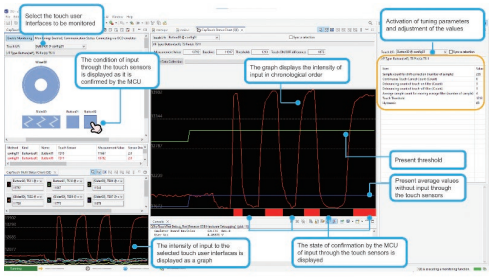
Capacitive Touch Evaluation Systems

Mounted MCU	RA4L1	RA2L1	RA6M2
Package	100-pin LQFP	100-pin LQFP	144-pin LQFP
ROM/RAM	512KB/64KB	256KB/32KB	1MB/384KB
Part No.	RTK0EG0057S01001BJ	RTK0EG0022S01001BJ	RTK0EG0021S01001BJ
Number of Touch pins	12	32	18
Included items	■ Evaluation board ■ RA4L1 Cap Touch CPU board ■ Self-capacitance electrode board (buttons, sliders, wheels) ■ First Step Guide	■ Evaluation board ■ RA2L1 Cap Touch CPU board ■ Self-capacitance electrode board (buttons, sliders, wheels) ■ First Step Guide	■ Evaluation board ■ RA6M2 Cap Touch CPU board ■ Self-capacitance electrode board (buttons, sliders, wheels) ■ First Step Guide


Capacitive Touch Evaluation System for RA4L1

QE for Capacitive Touch: Development Assistance Tool for Capacitive Touch Sensors

Monitoring and parameter adjustment functions



Graphics Solutions for Human Machine Interfaces

Graphics are an essential system component for many use cases to provide status information or feedback to humans interacting with them. From simple segment displays to feature-rich 3D dashboards, optionally with a touch interface, Renesas offers a complete portfolio ranging from entry level MCUs to high-performance MPUs suitable for a variety of displays used in industrial or commercial applications.

Below table gives an overview of the current graphics portfolio and the corresponding device and kit information.

Items	RA2A2	RA4M1	RA4W1	RA6M3	RA8E2	RA8D1
Core	Cortex-M23	Cortex-M4	Cortex-M4	Cortex-M33	Cortex-M85	Cortex-M85
Clock	48MHz	48MHz	48MHz	120MHz	480MHz	480MHz
Display Support	Segment LCD	Segment LCD	Segment LCD	Up to WVGA 800 × 480	Up to WVGA 800 × 480	Up to WXGA 1280 × 768
Evaluation Kit	EK-RA2A2	EK-RA4M1	EK-RA4W1	EK-RA6M3G		EK-RA8D1

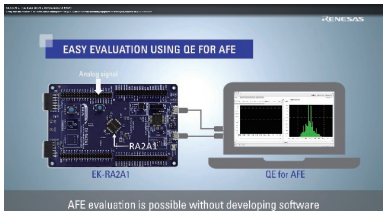
Partner Solutions

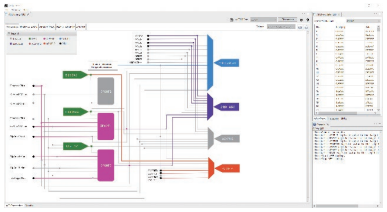
Creating an impressive graphics solution is supported across the RA family by multiple partner solutions shown below.

Partner	Description
Embedded Wizard GUI Solutions by TARA Systems	Embedded Wizard simplifies GUI development and enables customers to create high-performance graphical user interfaces, even on resource-constrained microcontrollers. We are driven by the idea to provide a comfortable workflow for embedded systems.
Qt	World's leading independent graphics toolkit and application framework for building GUI applications on embedded devices. Qt helps customers deliver smartphone-like UI/UX with its designer and developer tools, which support collaborative product development.
SEGGER	SEGGER emWin graphics library solution delivers a flexible, professional GUI platform, enabling the creation of highly efficient, high-quality.
TES Electronic Solutions	GUILIANI from TES Electronic Solutions is a powerful, yet easy-to-use modern object-orientated and customizable software to create stylish GUIs quickly, with support from quality design services.
CANDERA CGISTUDIO	CGI Studio is a powerful design tool for your embedded human machine interfaces (HMI). Candera CGI Studio enables the creation of brilliant human machine interfaces and UIs of all kinds for automotive, white goods, medical, or industrial customers.
CRANK® AMETEK	Storyboard provides an embedded GUI development framework for creating HMI applications designed to provide products with exceptional user experiences.
LVGL	Light and Versatile Graphics Library (LVGL) is the most popular free and open-source embedded graphics library to create beautiful User Interfaces (UIs) for any MCU, MPU and display type.

Analog Sensing Solution

Renesas provides QE for AFE (Analog Front End) which is development assistance tool for MCUs integrated high-precision AFE. QE for AFE allows AFE configuration setting/changing or waveform monitoring on GUI without software development, and supports easy evaluation of analog features on the MCU.





QE for AFE

The Renesas QE (Quick and Effective) tool solution goes beyond conventional development tools by providing detailed support for developing various applications.

Key features of QE for AFE

- GUI configuration of the AFE-related registers
- Functionality to display the AD conversion result (time waveform and histogram)
- Functionality to display frequency characteristics for digital filters
- The tool is available in both a stand-alone version and as an e² studio plug-in
  Target devices: RA2A1, RA2A2

Renesas Enabling Intelligence from the Cloud to the Edge and Endpoint Sustainably

Our comprehensive AI/ML developer stack transforms Vision, Voice, and Real-time Analytics applications. The extensive portfolios in sensing, connectivity, computing, and actuation, we cover all IoT layers. Our rich software, tools, solution offerings, and partner ecosystem provide the essential elements to accelerate your AIoT designs.

Why Choose Renesas?

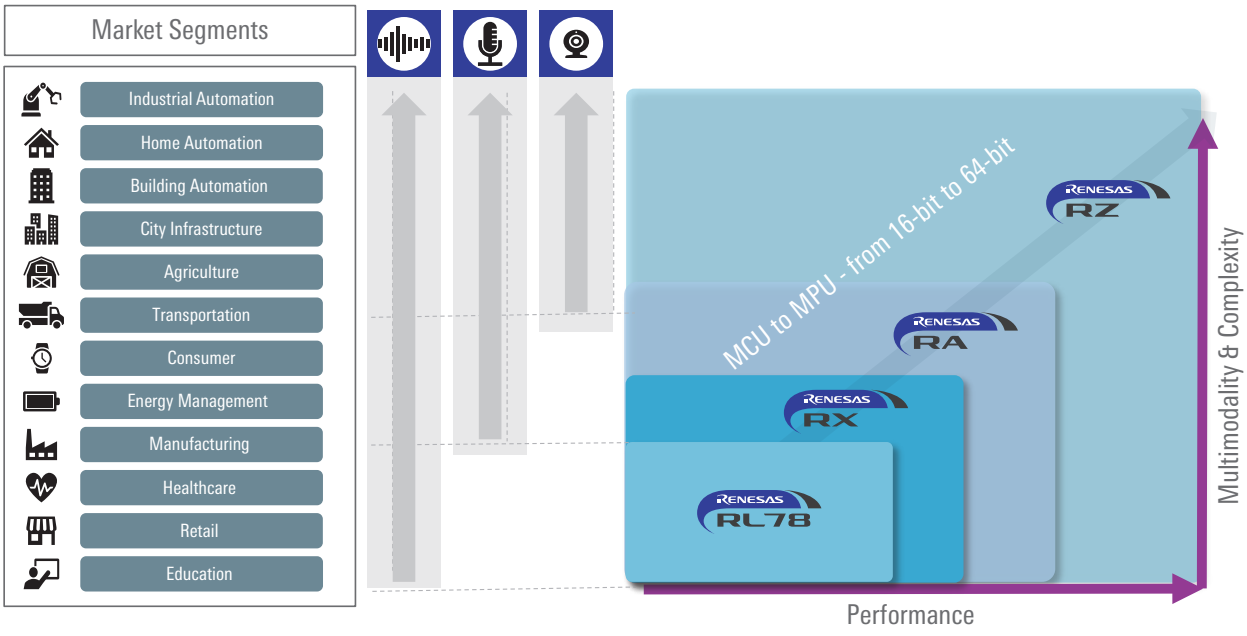
Comprehensive AI/ML developer stack for vision, voice, and real-time analytics use cases. Tools and workflows for multiple developer journeys (bring-your-own-model, transfer learning, bespoke consulting and more). Rich library of easy-to-find solutions (application examples, toolboxes, solution suites, hardware reference kits). Broad ecosystem of trusted partners offering commercial-grade building blocks.

SIDE NOTE: Why Decentralize Intelligence?

Traditionally, the IoT has been built on a cloud-centric intelligence architecture. To truly scale and enable intelligence at all levels of the network, a decentralized intelligence architecture is needed. This means running cloud-independent inference engines on power-efficient or tiny computers within the edge and endpoints.

Comprehensive AIoT Developer Stack

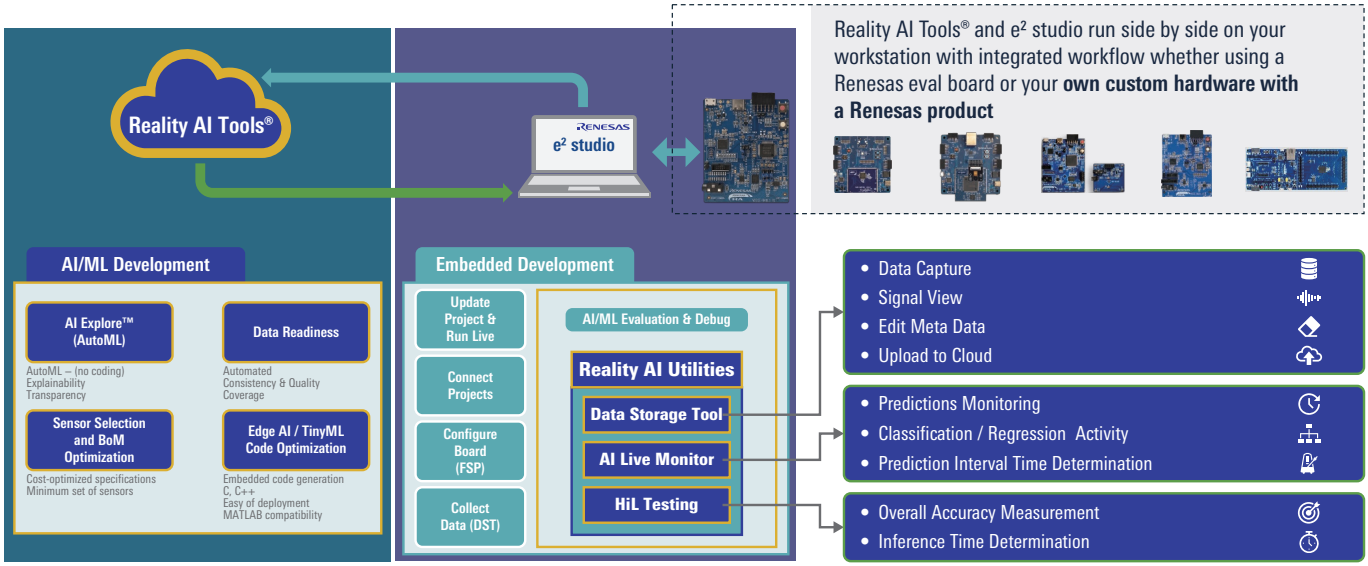
Software Partner Ecosystem	**RA Ready** RA Arm® Cortex® M - MCUs	**RX Ready** RX 32-bit Performance Efficiency MCUs	**RL78 Ready** RL78 Low Power 8 & 16-bit MCUs	**RZ Ready** RZ 32 & 64-bit MPUs
AI/ML Application Zoo	**Solution Suites**	**Toolboxes**	**Application Examples**	**Reference Designs**
AI/ML Tools & SDKs	**Real-Time Analytics** Reality AI Tools® Reality AI Toolboxes	**Vision** RZ/V AI SDK e-AI Development Environment	**Voice** Cyberon Dspotter Cyberon Cspotter	
Embedded Software / SDKs	**Packages** Flexible Software Package (MCU) Firmware Integration Technology (MCU) Software Integration System (MCU) CIP Linux (MPU)	**Tools** e² studio		
Hardware Portfolio	**AI at The Edge** MPU Timing Power Memory Inteface RF	**AI at The Core** Timing Power Memory Inteface	**AI at The Endpoint** MCU / MPU Power Connectivity AMS & CMIC Sensors	



Application Zoo

Real-life application examples supported across the wide range of Renesas MCU/MPU and reference/demonstration kits. Pretrained models for vision, voice and realtime analytics.

Reality AI Tools



Reference Kits & Develpoment Boards

Technology

RTA, Vision, Audio	Voice	Motor Control	Cloud	HMI
AIK-RA8D1	VK-RA8M1	MCK-RA8T1	CK-RA6M5	CAP-TOUCH RX671
AIK-RA6M3	Voice-RA6E1	MCK-RA6T2	CK-RX65N	
AIK-RA4E1	Voice-RA4E1	MCK-RX26T		
	Voice-RA2L1	RSSK-RX72T		
		RSSK-RX66T		
		RSSK-RX23T		
		RSSK-RX13T		

Product

Evaluation

EK-RA8M1	FPB-RL78
EK-RA8D1	
FPB-RA0	

Cloud Solutions

Cloud connectivity is growing to be an indispensable part of IoT to manage the zettabytes of data produced by tiny, ubiquitous IoT devices. Cloud makes its presence felt in a myriad of IoT use cases like OTA updates on devices, remote monitoring, fleet tracking, industrial automation, and predictive maintenance.

Renesas offers end-to-end cloud connectivity solutions to enable users to quickly and easily evaluate cloud connectivity and services offered by cloud service providers. Hardware acceleration coupled with Renesas Secure Crypto Engine make Renesas RA MCUs ideal choice for fast and secure cloud connectivity.

IoT Needs

- ✓ Remote Monitoring
- ✓ OTA (Over the Air), FW update
- ✓ Security
- ✓ AI/ML on Cloud services
- ✓ RTOS for IoT devices
- ✓ Network (Wired or Wireless)

Enhancing Product Value Proposition

Data collection
Remote control
Remote monitoring

Health monitoring
Health management

Cost Optimization

Connected cities
Smart agriculture

Process optimization
Inventory tracking

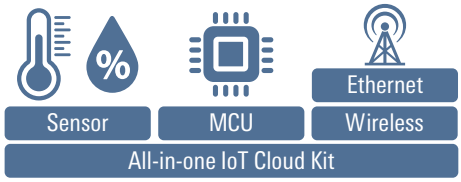
Secure Alerts & Updates

Anomaly and fault detection
Predictive maintenance

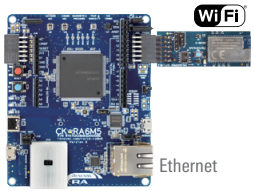
Software and security updates

A Comprehensive Software Suite

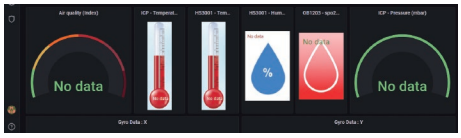
AWS Certified Evaluation Kits



CK-RA6M5



Secure and Easy-to-Use Software Solutions



- Telemetry updates to cloud
- Firmware Updates Over-The-Air
- AWS FreeRTOS
- Secure Crypto Engine and Hardware Acceleration

Software Tools for Expedited Development

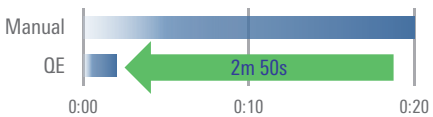
Quick and Effective tool solution

QE for OTA

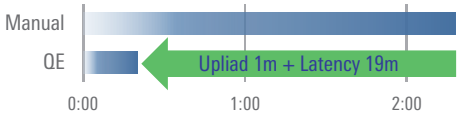
Renesas IDE e² studio

- Smart Configurator
- RTOS Support
- FSP Software Package
- Development Support Tool QE for OTA

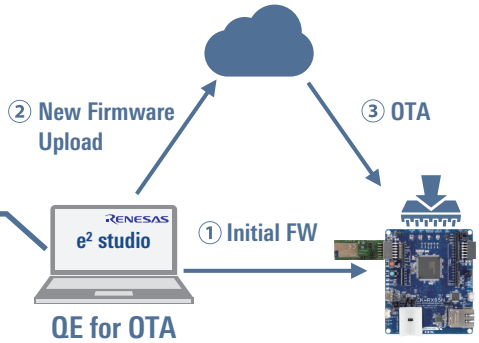
OTA Update for 1 Device



OTA Update for 10 Devices



- AWS Device Registration
- Initial and New FW Setup
- Key Generation
- OTA Execution
- Debug



RA Family Ecosystem Partners

Renesas is enabling a comprehensive partner ecosystem to deliver an array of software and hardware building blocks that will work out-of-the-box with Renesas RA Family MCUs. The Renesas RA ecosystem will help accelerate the development of IoT applications, including core technologies such as security, safety, connectivity, and HMI among others.

Expansive Third Party Solutions Portfolio

- 200+ partners, 300+ solutions and growing
- Coverage across all key IoT technologies
- Robust GTM and strong digital drumbeat

Commercial Grade Building Block Solutions

- Commercial grade software
- Work out-of-box with Renesas products
- Bundling options for select solutions

Problem Solving at Heart

- Address specific design problems
- Address specific skill-set gaps
- Customer-centric approach

Partner Overview

The partner overview shown might not be complete since the partner network is extending almost daily. For best reference and latest data, we recommend checking our webpage at: www.renesas.com/ra-partners

Renesas Electronics Corporation TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan

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