RENESAS

RENESAS RA

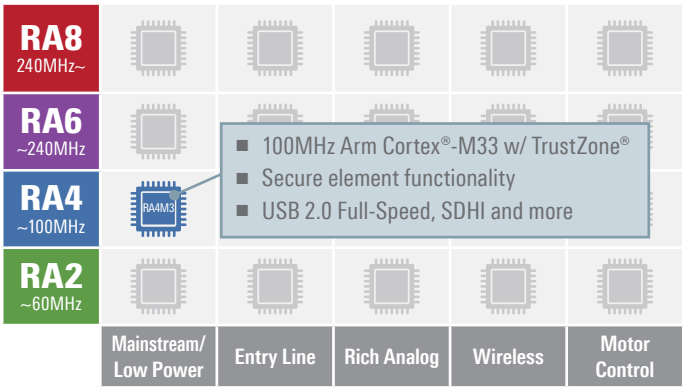
32-BIT MCU FAMILY

RENESAS RA4M3 GROUP

100 MHz High Integration Arm® Cortex®-M33 with TrustZone®

The Renesas RA4M3 group uses the high-performance Arm® Cortex®-M33 core with TrustZone®. Secure element functionality providing better performance, unlimited secure key storage, key management, and lower BOM cost, as well as rich connectivity with USB 2.0 Full-Speed, SDHI, QSPI, and advanced analog.

The RA4M3 is suitable for IoT applications requiring future proof security, large embedded RAM, and low active power consumption down to 119µA/MHz running the CoreMark® algorithm from Flash.



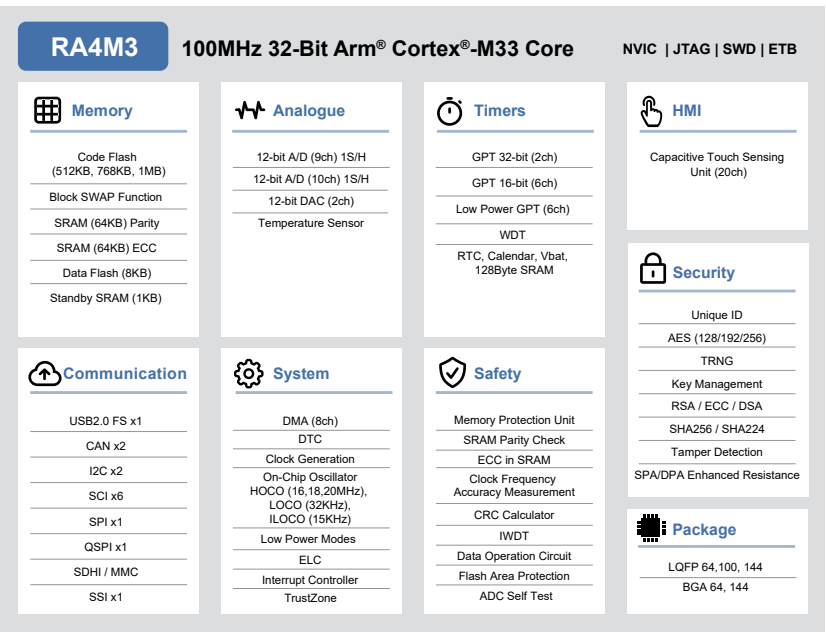
Target Applications

- Enhanced security (fire detection, burglar detection, panel control)
- Metering (electricity, automated meter reading)
- Industry (robotics, door openers, sewing machines, vending machines, UPS)
- HVAC (heating, air conditioning, boiler control)
- Small application w/ voice recognition (cameras, portable electronic devices, smart bulbs)
- General purpose

Key Features

- 100MHz Arm® Cortex®-M33 with TrustZone®
- Secure element functionality
- 512KB - 1MB Flash memory and 64KB SRAM with Parity and 64KB SRAM with ECC
- 8KB Data Flash to store data as in EEPROM
- 1KB Stand-by SRAM
- Scalable from 64-pin to 144-pin packages
- Capacitive touch sensing unit
- USB 2.0 Full Speed
- CAN 2.0B
- QuadSPI
- SCI (UART, Simple SPI, Simple I²C)
- SPI/ I²C multimaster interface
- SDHI and MMC

Block Diagram



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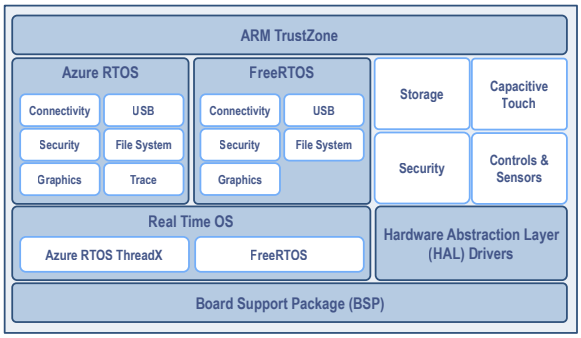
Software Package

The Renesas Flexible Software Package (FSP) is designed to provide easy-to-use, scalable, high-quality software for embedded system designs using the Renesas RA family. The FSP is based on an open software ecosystem of production-ready drivers, supporting Azure® RTOS, FreeRTOS™ or bare-metal programming. It also includes a selection of other middleware stacks, providing great flexibility for migrating code from older systems or developing new applications from scratch.



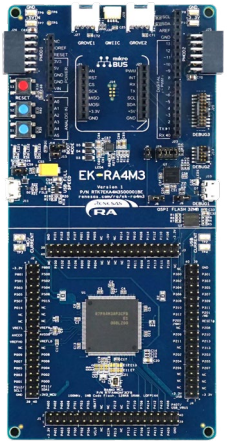
Tools and Support

The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster.

IDE	Renesas e²studio	Keil MDK	IAR EWARM
Compiler	• GCC • Arm Compiler • IAR Arm Compiler	• Arm Compiler	• IAR Arm Compiler
Debug Probe	• Renesas E2/E2 Lite • SEGGER J-Link	• SEGGER J-Link • Keil ULINK (limited support)	• IAR I-Jet (limited support) • SEGGER J-Link
Production Programmer	• Renesas PG-FP6 • SEGGER J-Flash • Partner solutions		

Evaluation Kit

- EK-RA4M3 Evaluation kit
- EK enables users to evaluate the features of the chosen MCU Group by utilize rich on-board features along with popular ecosystem expansion connectors.
- Debug on-board (Segger J-Link®)
- Documentation and more information: renesas.com/ek-ra4m3
- Orderable part number: **RTK7EKA4M3S00001BE**



Evaluation Kit: RTK7EKA4M3S00001BE

Ordering References

Flash	1MB							
RAM	128KB	R7FA4M3AF3CFM	R7FA4M3AF3CBQ	R7FA4M3AF2CBQ	R7FA4M3AF3CFP	R7FA4M3AF3CFB	R7FA4M3AF3CBM	R7FA4M3AF2CBM
DataFlash	8KB							
Flash	768KB							
RAM	128KB	R7FA4M3AE3CFM	R7FA4M3AE3CBQ	R7FA4M3AE2CBQ	R7FA4M3AE3CFP	R7FA4M3AE3CFB	R7FA4M3AE3CBM	R7FA4M3AE2CBM
DataFlash	8KB							
Flash	512KB							
RAM	128KB		R7FA4M3AD3CBQ	R7FA4M3AD2CBQ		R7FA4M3AD3CFB	R7FA4M3AD3CBM	R7FA4M3AD2CBM
DataFlash	8KB							
Pin Count		64pin	64pin	64pin	100pin	144pin	144pin	144pin
Package		LQFP	BGA	BGA	LQFP	LQFP	BGA	BGA
Size (body)		10x10mm	6x6mm	6x6mm	14x14mm	20x20mm	7x7mm	7x7mm
Pitch		0.5mm	0.65mm	0.65mm	0.5mm	0.5mm	0.5mm	0.5mm
Operating Temperature		-40 to +105°C	-40 to +105°C	-40 to +85°C	-40 to +105°C	-40 to +105°C	-40 to +105°C	-40 to +85°C

For more details, please visit: **renesas.com/ra4m3**

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