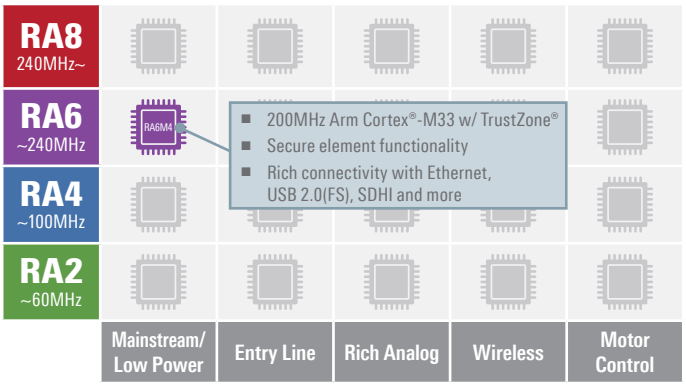
32-BIT MCU FAMILY

RENESAS RA6M4 GROUP

200MHz High Integration Arm® Cortex®-M33 with TrustZone®

The Renesas RA6M4 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 the integrated Ethernet MAC with individual DMA ensures high data throughput. The RA6M4 is suitable for IoT applications requiring Ethernet, future proof security, large embedded RAM, and low active power consumption down to 99uA/MHz running the CoreMark® algorithm from Flash.



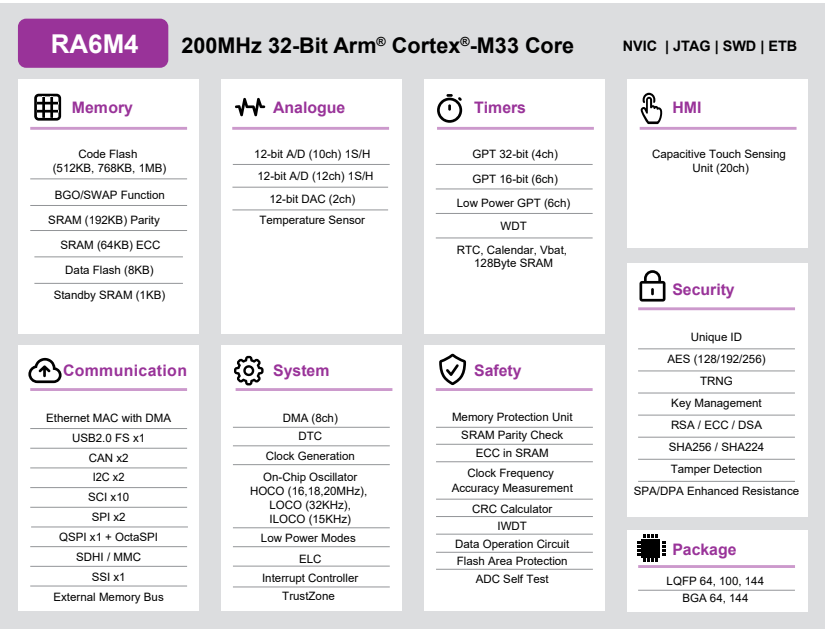
Target Applications

- Wired Ethernet 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 dictionaries, smart bulbs)
- General purpose

Key Features

- 200MHz Arm® Cortex®-M33 with TrustZone®
- Secure element functionality
- 512KB - 1MB Flash memory and 192KB SRAM with Parity and 64kB SRAM with ECC
- Dual-bank-Flash with background operation
- 8KB Data Flash to store data as in EEPROM
- Scalable from 64-pin to 144-pin packages
- Ethernet controller with DMA
- Capacitive touch sensing unit
- USB 2.0 Full Speed
- CAN 2.0B
- QuadSPI and OctaSPI
- SCI (UART, Simple SPI, Simple I²C)
- SPI/ I²C multimaster interface
- SDHI and MMC

Block Diagram



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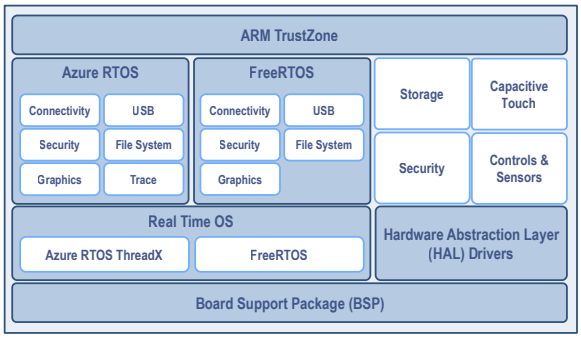
Software Package

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.



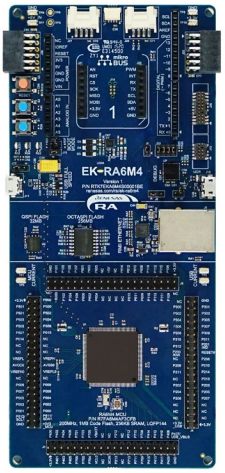
Tools and Support

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-RA6M4 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-ra6m4
- Orderable part number: **RTK7EKA6M4S00001BE**



Evaluation Kit: RTK7EKA6M4S00001BE

Ordering References

Flash	1MB	R7FA6M4AF3CFM	R7FA6M4AF3CBQ	R7FA6M4AF2CBQ	R7FA6M4AF3CFP	R7FA6M4AF3CFB	R7FA6M4AF3CBM	R7FA6M4AF2CBM
RAM	256KB							
DataFlash	8KB							
Flash	768KB	R7FA6M4AE3CFM	R7FA6M4AE3CBQ	R7FA6M4AE2CBQ	R7FA6M4AE3CFP	R7FA6M4AE3CFB	R7FA6M4AE3CBM	R7FA6M4AE2CBM
RAM	256KB							
DataFlash	8KB							
Flash	512KB	R7FA6M4AD3CFM	R7FA6M4AD3CBQ	R7FA6M4AD2CBQ	R7FA6M4AD3CFP	R7FA6M4AD3CFB	R7FA6M4AD3CBM	R7FA6M4AD2CBM
RAM	256KB							
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/ra6m4**

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