RENESAS

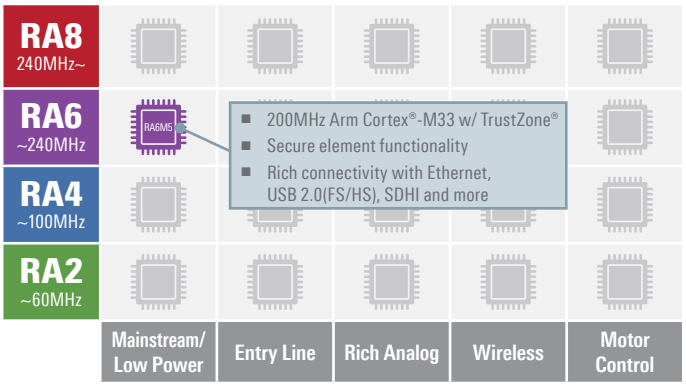
RENESAS RA

32-BIT MCU FAMILY

RENESAS RA6M5 GROUP

200MHz highest integration Arm® Cortex®-M33 with TrustZone®

The Renesas RA6M5 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 RA6M5 is suitable for IoT applications requiring Ethernet, future proof security, large embedded RAM, and low active power consumption down to 107µA/MHz running the CoreMark® algorithm from Flash.



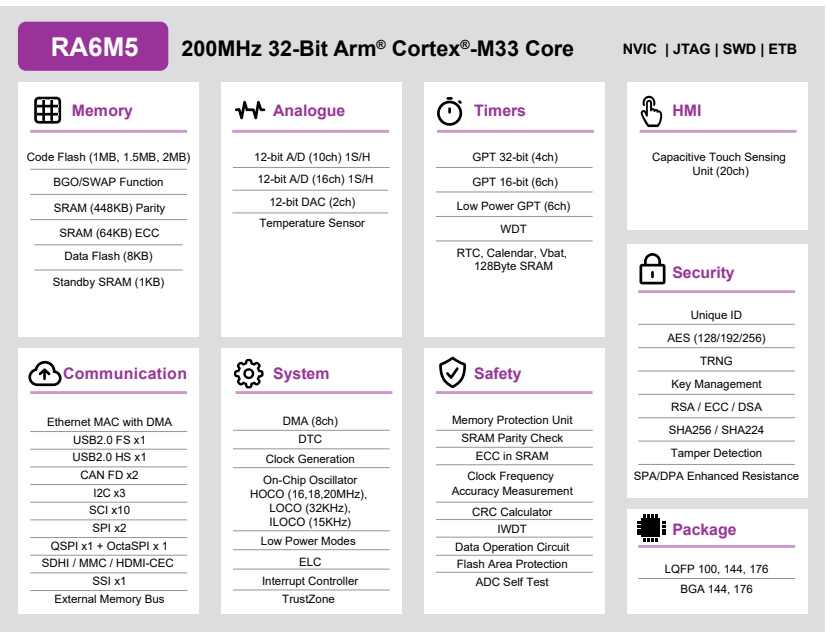
Target Applications

- 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)
- mall application w/ voice recognition (cameras, portable electronic dictionaries, smart bulbs)
- General purpose

Key Features

- 200MHz Arm® Cortex®-M33 with TrustZone®
- Secure element functionality
- 1MB - 2MB Flash memory and 448KB SRAM with Parity and 64KB SRAM with ECC
- Dual-bank-Flash with background operation, and block swap functionality
- 8KB Data Flash to store data as in EEPROM
- Scalable from 100-pin to 176-pin packages
- Ethernet controller with DMA
- Capacitive touch sensing unit
- USB 2.0 High-Speed and Full Speed
- CAN FD (CAN 2.0B option)
- QuadSPI and OctaSPI
- SCI (UART, Simple SPI, Simple I²C)
- SPI/ I²C multimaster interface
- SDHI, MMC, HDMI-CEC

Block Diagram



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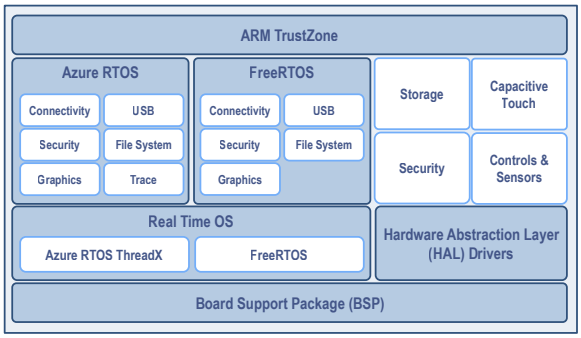
Software Package

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

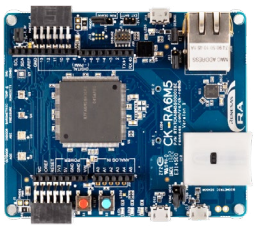
The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster.

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-RA6M5 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-ra6m5
- Orderable part number: **RTK7EKA6M5S00001BE**

- CK-RA6M5 Evaluation kit
- A simple but distinctive introduction provides a complete connectivity solution to enable users to securely connect to the cloud and explore IoT cloud services.
- Debug on-board (Segger J-Link®)
- Documentation and more information: renesas.com/ck-ra6m5
- Orderable part number: **RTK7CKA6M5S04001BE**



Ordering References

CAN FD
CAN 2.0B

Flash	2MB	R7FA6M5BH3CFP R7FA6M5AH3CFP	R7FA6M5BH3CFB R7FA6M5AH3CFB	R7FA6M5BH3CBM R7FA6M5AH3CBM	R7FA6M5BH2CBM R7FA6M5AH2CBM	R7FA6M5BH3CFC R7FA6M5AH3CFC	R7FA6M5BH2CBG R7FA6M5AH2CBG
RAM	512KB						
DataFlash	8KB						
Flash	1.5MB	R7FA6M5BG3CFB R7FA6M5AG3CFP	R7FA6M5BG3CFB R7FA6M5AG3CFB	R7FA6M5BG3CBM R7FA6M5AG3CBM	R7FA6M5BG2CBM R7FA6M5AG2CBM	R7FA6M5BG3CFC R7FA6M5AG3CFC	R7FA6M5BG2CBG R7FA6M5AG2CBG
RAM	512KB						
DataFlash	8KB						
Flash	1MB	R7FA6M5BF3CFP	R7FA6M5BF3CFB	R7FA6M5BF3CBM	R7FA6M5BF2CBM	R7FA6M5BF3CFC	R7FA6M5BF2CBG
RAM	512KB						
DataFlash	8KB						
Pin Count		100pin	144pin	144pin	144pin	176pin	176pin
Package		LQFP	LQFP	BGA	BGA	LQFP	BGA
Size (body)		14x14mm	20x20mm	7x7mm	7x7mm	24x24mm	13x13mm
Pitch		0.5mm	0.5mm	0.5mm	0.5mm	0.5mm	0.8mm
Operating Temperature		-40 to +105°C	-40 to +105°C	-40 to +105°C	-40 to +85°C	-40 to +105°C	-40 to +85°C

For more details, please visit: **renesas.com/ra6m5**

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.: R01PF0210EU0300