

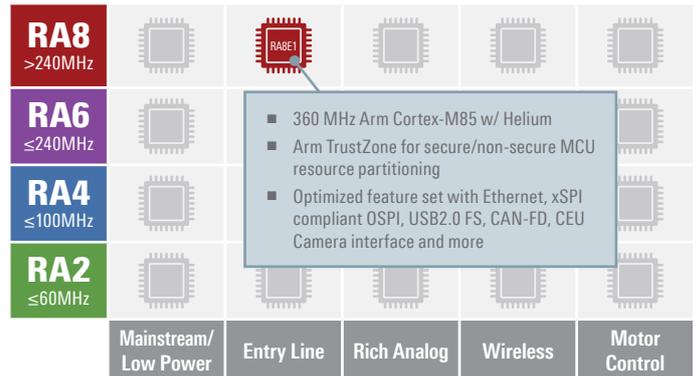


32-bit MCU Family

RENESAS RA8E1 GROUP

360 MHz Arm® Cortex®-M85® Based Entry Line Microcontroller with Helium™ and TrustZone®

The RA8E1 MCU Group are entry line 32-bit MCUs based on the Arm Cortex-M85 (CM85) core with Helium and TrustZone delivering breakthrough performance of 6.39 Coremarks/MHz, with fully deterministic, low latency, real-time operation to enable the most demanding application needs. These general purpose MCUs address diverse high-performance and compute-intensive applications in industrial and home automation, office equipment, healthcare, and consumer products. 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. They are available in 100- and 144-pin LQFP packages to serve the needs of a broad range of high-performance applications. The RA8E1 MCUs are fully supported by the Flexible Software Package (FSP) and a comprehensive set of hardware and software development tools.

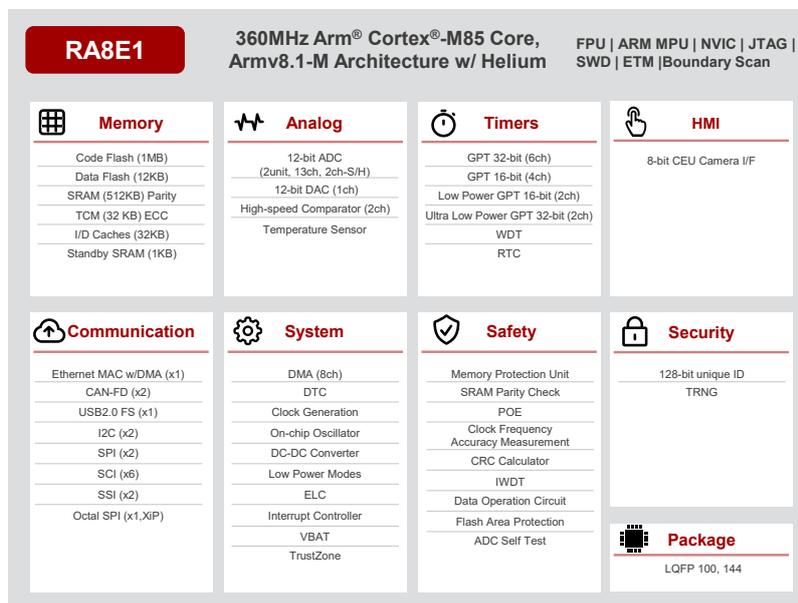


Key Features

- 360 MHz Arm Cortex-M85 with Helium MVE
- 1MB Flash memory and 544KB of SRAM including TCM
- 32KB I/D caches and 12KB Data Flash
- ARMv8-M TrustZone security
- 100-pin to 144-pin packages
- 32 / 16-bit timers, 32-bit ultra-low-power timer
- 8-bit Capture Engine Unit (CEU) camera interface
- 12-bit ADC, 12-bit DAC
- High-speed analog comparator
- Ethernet controller with DMA
- USB 2.0 Full Speed
- 2ch of CAN-FD
- Industrial automation
- Consumer products
- Smart home, Building automation
- Office automation
- Predictive maintenance, Voice AI
- Vision AI applications

Target Applications

Block Diagram

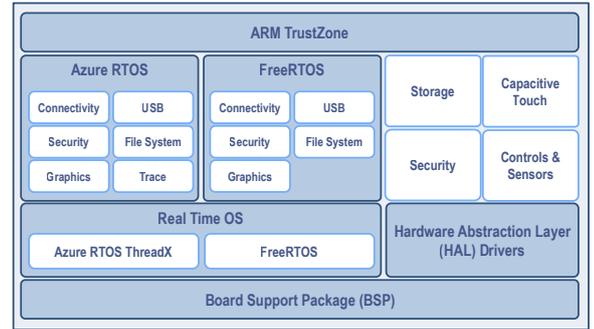


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Software Package

The Renesas Flexible Software Package (FSP) is designed to provide easy-to-use, scalable, high-quality software for embedded system designs using RA MCUs.

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

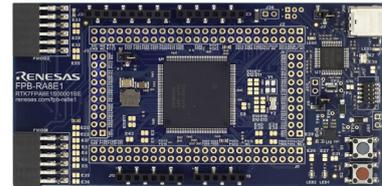
The e² studio IDE provides support with intuitive configurators and intelligent code generation to make programming and debugging easier and faster.

IDE	Renesas e ² studio	Keil MDK	IAR EWARM
Compiler	<ul style="list-style-type: none"> • GCC • LLVM • Arm Compiler* • IAR Arm Compiler* 	<ul style="list-style-type: none"> • Arm Compiler* 	<ul style="list-style-type: none"> • IAR Arm Compiler*
Debug Probe	<ul style="list-style-type: none"> • Renesas E2/E2 Lite • SEGGER J-Link 	<ul style="list-style-type: none"> • SEGGER J-Link • Keil ULINK / CMSIS-DAP (limited support) 	<ul style="list-style-type: none"> • IAR I-jet • SEGGER J-Link • Renesas E2/E2 Lite • CMSIS-DAP (limited support)
Production Programmer	<ul style="list-style-type: none"> • Renesas PG-FP6 • SEGGER J-Flash • Partner solutions 		

* Compiler must be purchased and licensed directly from third party

Evaluation Kit

- RA8E1 Fast Prototyping Board enables users to evaluate the features of RA8E1 using rich onboard features along with popular ecosystem expansion connectors
- Onboard debug using SEGGER J-Link
- Order the FPB and download documentation and files at: renesas.com/fpb-ra8e1
- Orderable part number: **RTK7FPA8E1S00001BE**



RA8E1 Fast Prototyping Board

Ordering References

Flash/RAM	Tj	R7FA8E1AFDCFP	R7FA8E1AFDCFB
1MB / 544KB	-40 to 105 °C		
Pin Count		100-pin	144-pin
Package		LQFP	LQFP
Package size (body)		14 x 14 mm	20 x 20 mm
Pitch		0.5 mm	0.5 mm

For more details, please visit: renesas.com/ra8e1

