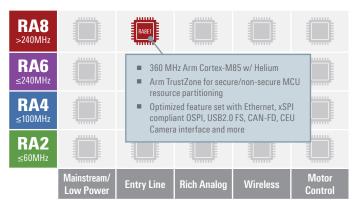




32-bit MCU Family **RENESAS RA8E1 GROUP**

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, realtime 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 highperformance 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

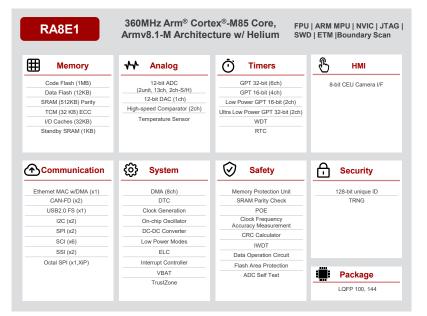
- 360 MHz Arm Cortex-M85 with Helium MVE
- 1MB Flash memory and 544KB of SRAM including TCM 12-bit ADC, 12-bit DAC
- 32KB I/D caches and 12KB Data Flash .
- ARMv8-M TrustZone security
- 100-pin to 144-pin packages .
- 32 / 16-bit timers, 32-bit ultra-low-power timer

Block Diagram

- 8-bit Capture Engine Unit (CEU) camera interface
- High-speed analog comparator
- Ethernet controller with DMA
- USB 2.0 Full Speed
- 2ch of CAN-FD

Target Applications

- Industrial automation
- Consumer products
- Smart home, Building automation
- Office automation
- Predictive maintenance, Voice AI
- Vision AI applications



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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.

ARM TrustZone							
Azure RTOS		FreeRTOS			Capacitive		
Connectivity	USB	Connectivity	USB	Storage	Touch		
Security	File System	Security	File System		Controls & Sensors		
Graphics	Trace	Graphics		Security			
	Real Ti	Hardware Abstraction Layer (HAL) Drivers					
Azure RTOS ThreadX				FreeRTOS			
Board Support Package (BSP)							

IDE	Renesas e²studio	Keil MDK	IAR EWARM		
Compiler	 GCC LLVM Arm Compiler* IAR Arm Compiler* 	 Arm Compiler* 	IAR Arm Compiler*		
Debug Probe	 Renesas E2/E2 Lite SEGGER J-Link 	 SEGGER J-Link Keil ULINK / CMSIS-DAP (limited support) 	 IAR I-jet SEGGER J-Link Renesas E2/E2 Lite CMSIS-DAP (limited support) 		
Production Programmer	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: <u>renesas.com/fpb-ra8e1</u>
- Orderable part number: RTK7FPA8E1S00001BE



RA8E1 Fast Prototyping Board

Ordering References

Flash/RAM	Tj	R7FA8E1AFDCFP	R7FA8E1AFDCFB	
1MB / 544KB	-40 to 105 °C	N/FAOEIAFDGFF		
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



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Document No.: R01PM0099EU0100

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