

32-BIT MCU FAMILY

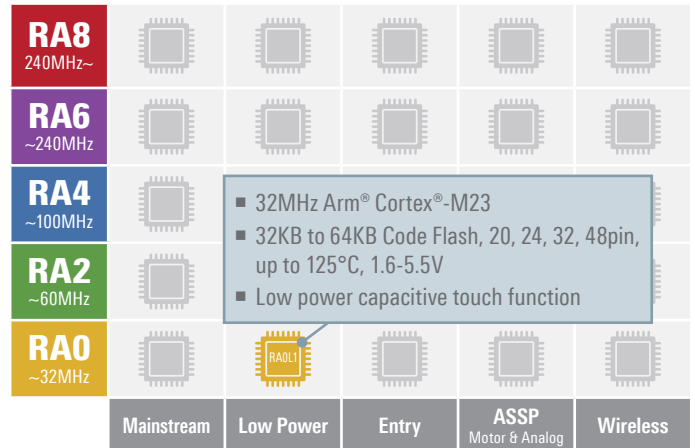
RENESAS RA0L1 GROUP

32 MHz Arm® Cortex®-M23 Ultra-Low Power Capacitive Touch Microcontroller

The RA0L1 group is the first product with capacitive touch functionality in the RA0 MCU family.

This product has implemented Arm® Cortex®-M23 core with low power and peripherals which are optimized for BOM cost reduction and simple design for the low-end MCU market. RA0L1 group supports up to 64KB code flash, 16KB SRAM memory, a wide operating voltage range of 1.6V to 5.5V, a wide operating temperature range of -40°C to 125°C.

The RA0 series is ideal for cost-sensitive applications such as low power and lower cost for consumer electronics, system control for small appliances, industrial system control and building automation.



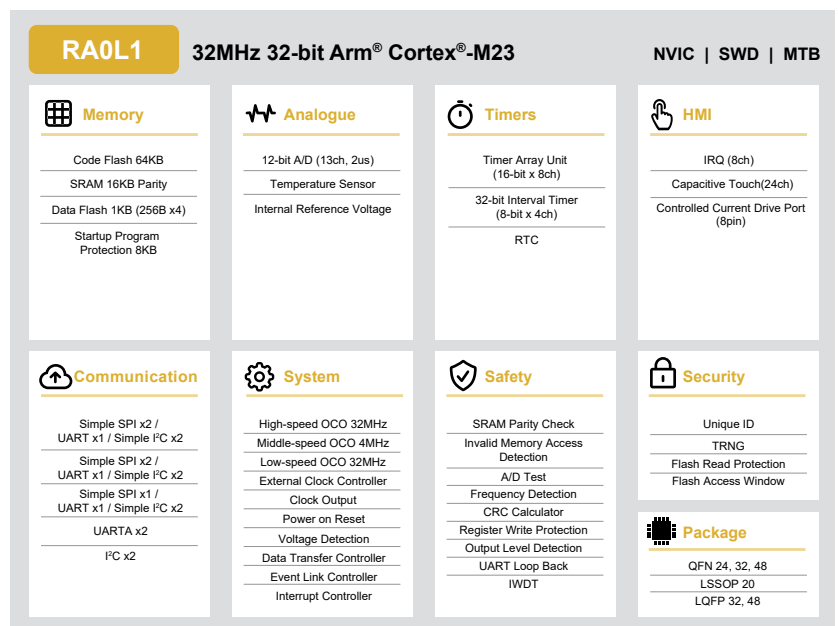
Key Features

- 32 MHz Arm Cortex-M23 core
- Up to 64KB Flash and 16KB SRAM
- 1KB data flash memory (100,000 program / erase (P/E) cycles)
- 20-pin, 24-pin, 32-pin and 48-pin package options
- Wide operation temperature range from -40 to 125°C
- Wide voltage range of 1.6V to 5.5V
- +/-1% High Accurate High speed on-chip oscillator
- Up to 24-channel capacitive touch
- Controlled current drive port
- TAU (16-bit general PWM timer) , TML32 (32-bit interval timers), RTC
- 12-bit A/D converter, Temperature sensor
- SAU (UART, Simple SPI, Simple I2C) , UART, I2C

Target Applications

- Small appliance (Kettle, Oven, Electric toothbrush, Shaver, Hair dryer)
- Industrial system (Control panel, Capacitive Sensor)
- Consumer electronics (Remote controller)
- Building automation (Smart lock)

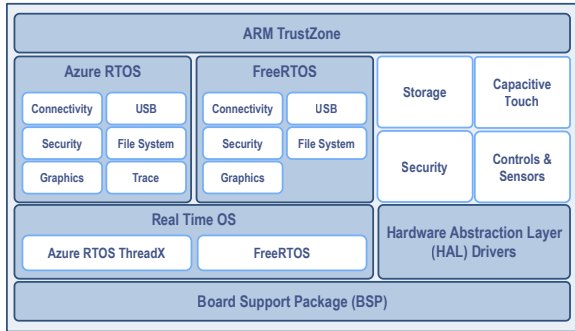
Block Diagram



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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 e²studio 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	<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** 	<ul style="list-style-type: none"> ■ IAR I-jet ■ SEGGER J-Link ■ Renesas E2/E2 Lite ■ CMSIS-DAP**
Production Programmer	<ul style="list-style-type: none"> ■ Renesas PG-FP6 	<ul style="list-style-type: none"> ■ SEGGER J-Flash 	<ul style="list-style-type: none"> ■ Partner solutions

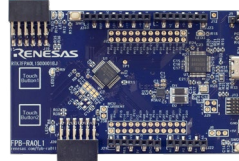
* Compiler must be purchased and licensed directly from third party
 ** limited support

Evaluation Kit

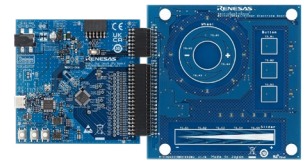
- Fast Prototyping Board for RA0L1 is an evaluation board specialized for prototype development for a variety of applications
- RA0L1 Capacitive Touch Evaluation System makes it easy to evaluate touch solutions enabled by the MCU
- On-board debugging using SEGGER J-Link®
- Order the kit and download documentation, design package, development tools, and software at: renesas.com/ra0l1#design_development

- Orderable part number:

RTK7FPA0L1C00001BJ
(FPB-RA0L1)



RTK0EG0065S01001BJ
(RSSK-RA0L1)



Ordering References

Flash/RAM	Ta						
64KB/16KB	-40 to 125 °C	R7FA0L1074CSC	R7FA0L1074CNK	R7FA0L1074CNH	R7FA0L1074CFJ	R7FA0L1074CNE	R7FA0L1074CFL
64KB/16KB	-40 to 105 °C	R7FA0L1073CSC	R7FA0L1073CNK	R7FA0L1073CNH	R7FA0L1073CFJ	R7FA0L1073CNE	R7FA0L1073CFL
32KB/16KB	-40 to 125 °C	R7FA0L1054CSC	R7FA0L1054CNK	R7FA0L1054CNH	R7FA0L1054CFJ	R7FA0L1054CNE	R7FA0L1054CFL
32KB/16KB	-40 to 105 °C	R7FA0L1053CSC	R7FA0L1053CNK	R7FA0L1053CNH	R7FA0L1053CFJ	R7FA0L1053CNE	R7FA0L1053CFL
Pin Count		20-pin	24-pin	32-pin	32-pin	48-pin	48-pin
Package		LSSOP	HWQFN	HWQFN	LQFP	HWQFN	LFQFP
Package size (body)		4.4 x 6.5 mm	4 x 4 mm	5 x 5 mm	7 x 7 mm	7 x 7 mm	7 x 7 mm
Pitch		0.65 mm	0.5 mm	0.5 mm	0.8 mm	0.5 mm	0.5 mm

For more details, please visit: renesas.com/ra0l1



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