

# 32-BIT MCU RENESAS RA FAMILY

## RA4M3 GROUP SNAPSHOT

OCTOBER 2020, VERSION 1.00  
IOT PLATFORM BUSINESS DIVISION  
RENESAS ELECTRONICS CORPORATION



# RENESAS RA FAMILY OF ARM® CORTEX®-M CORES

## NEW RA4M3 GROUP

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- High-performance **100 MHz Arm® Cortex®-M33** core based on latest Armv8-M architecture

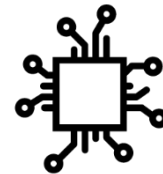
The RA Family joins the  
Renesas Heritage of  
32-Bit MCU Leadership



Secure element **functionality**  
**Arm® TrustZone®**



High-Performance  
Low-Power



High-Integration  
Rich-Connectivity

# RENESAS RA4M3 GROUP SNAPSHOT

MP Oct2020, NPI Nov2020



## 100MHZ ARM CORTEX M33 WITH TRUSTZONE, SECURITY AND MEMORY ENHANCEMENTS

### Features

- 100 MHz Arm® Cortex®-M33 with Trustzone
- 1 MB Flash Memory and 128kB SRAM (64kB w ECC)
- 8kB DataFlash to store data as in EEPROM
- 1kB Stand-by SRAM
- Scalable from 64pin to 144pin packages
- Capacitive Touch Sensing Unit
- USB2.0 Full Speed, CAN 2.0B
- SCI (UART, Simple SPI, Simple I2C)
- SPI/ I2C Multimaster interface
- SDHI /QSPI / SSI/Serial Sound Interface
- Secure Crypto Engine SCE9 and more

### Benefits

- Integrated Security Crypto Module with several cryptography accelerators, key management support, tamper detection and power analysis resistance.
- Highly power efficient with 99uA/MHz in Active Mode, 0.7mA Standby current and fast wakeup times from standby (30us)
- Large 128 kB embedded SRAM with Parity / ECC and also 1kB standby RAM for low power apps and strong safety

### Applications

- 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)
- General purpose

## Product Details

Leading performance 100 MHz Arm® Cortex®-M33 core, 1 MB code flash memory, 128 KB SRAM (64 KB parity, 64 KB ECC), Block SWAP function, Capacitive Touch Sensing Unit, USB 2.0 Full-Speed, SDHI, Quad SPI, security and safety features, and advanced analog with two 12-Bit ADC units.

The RA4M3 is built on a highly efficient 40nm process and is supported by an open and flexible ecosystem concept, called Flexible Software Package (FSP), using FreeRTOS as base, but can be replaced and expanded by any other RTOS or middleware user's need. RA4M3 is suitable for IoT application requiring strong Security, large embedded RAM with parity/ECC and low power consumption.

FLASH / RAM Size	1MB / 128kB	RA4M3	RA4M3	RA4M3
	768kB / 128kB	RA4M3	RA4M3	RA4M3
	512kB / 128kB			RA4M3
Pin Count	64pin	100pin	144pin	
Package	LQFP	LQFP	LQFP	
Size	10x10	14x14	20x20	
Pitch	0.5mm	0.5mm	0.5mm	

- 100pin and 145pin LGA as option "LGA Ready"
- 121pin BGA as option "BGA Ready"

# RA FAMILY DEVELOPMENT ENVIRONMENT

EASY TO USE AND AS FLEXIBLE AS POSSIBLE



## On-Chip Debug

- Renesas E2 & E2 Lite



- Segger J-Link



## IDE

- Renesas e<sup>2</sup>studio



- Keil MDK



- IAR Embedded Workbench



## Compiler

- GNU



- Arm Compiler V6

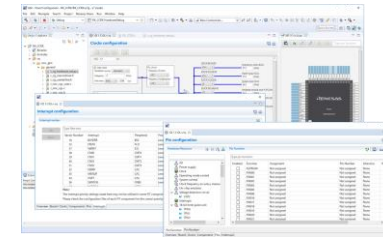


- IAR Arm Compiler

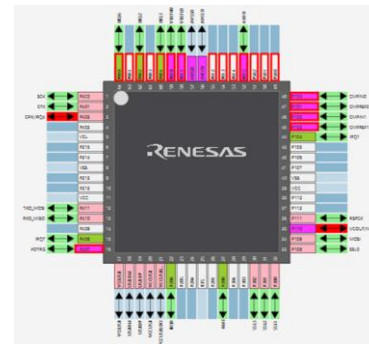


## Support Tools

- FSP driver selection and configuration



- Intelligent pin mapping



## Kits and Boards

- Evaluation Kits



<https://www.renesas.com/ra>

