RISC-V 32-BIT MCU

RENESAS R9A02G021 GROUP

32-Bit General Purpose MCUs Based on Renesas RISC-V CPU Core

The R9A02G021 ultra-low power 48 MHz MCU series incorporates the energy-efficient, innovative Renesas RISC-V 32-bit core that is particularly well-suited for cost-sensitive and low-power applications. It features 128 KB code flash memory, 4 KB data flash, 16 KB SRAM with ECC support, multiple timers and serial connectivity interfaces, a number of IOs with output current control and rich analog functionality to support a range of general purpose applications. The devices support 125°C temperature operation and are available in 16-pin WLCSP, as well as 24-, 32- and 48-pin QFN package options. Renesas provides a license-free, complete development ecosystem including e²Studio IDE, code generator, compiler toolchain, flashing tools and application notes to assist in developing and deploying this new technology in end systems. Additional commercial environments such as IAR Embedded Workbench and SEGGER Embedded Studio are available for these MCUs.

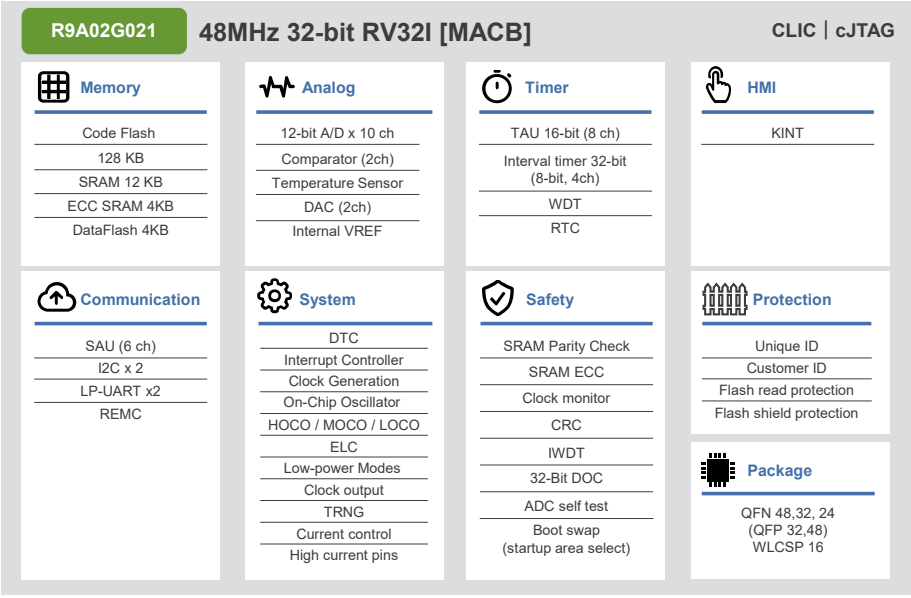
Target Applications

- Consumer electronics
- Home appliances and accessories
- Industrial sensors and modules, bus-powered sensors
- Health and fitness trackers
- Remote controls
- Battery-powered applications

Key Features

- State-of-the-art 32-bit RISC-V CPU core with high computing power at 48 MHz operation
- Future-proof memory roadmap up to 512/64/16 KB flash/ram/data flash
- Rich analog and digital peripheral mix
- WLCSP and QFN package options
- Low voltage and low power operation, low active current
- Easy-to-use with simple configuration and optimized software generation for small memory footprint

Block Diagram



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Tools and Support

The e² studio IDE integrates an intuitive Smart Configurator tool that provides device setup and intelligent code generation to make programming and debugging easier and faster. Renesas RISC-V MCUs are also supported by both IAR Embedded Workbench and SEGGER Embedded Studio in conjunction with a standalone version of Smart Configurator.

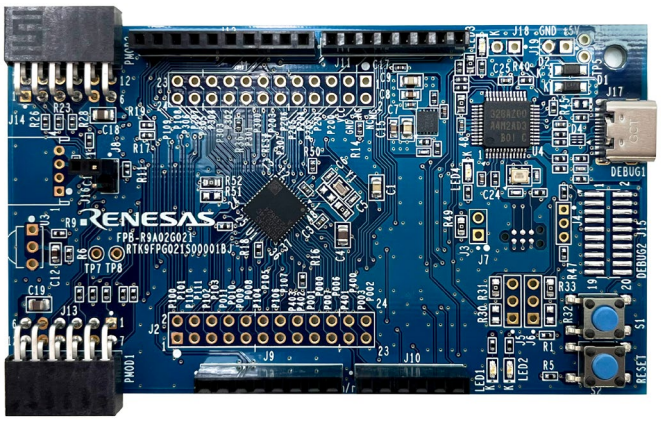
IDE	Renesas e² studio	IAR Embedded Workbench for RISC-V	SEGGER Embedded Studio for RISC-V
Compiler	• LLVM	• IAR RISC-V Compiler	• SEGGER RISC-V compiler
Debug Probe	• Renesas E2/E2 Lite • SEGGER J-Link	• IAR I-Jet • SEGGER J-Link gdb-server	• SEGGER J-Link
Production Programmer	• Renesas PG-FP6 • SEGGER J-Flash • Partner solutions		

Evaluation Kit

FPB-R9A02G021 Fast Prototyping Board

The R9A02G021 Fast Prototyping Board provides an easy entry point for evaluation, prototyping and development with the R9A02G021 RISC-V MCU. As the board incorporates an emulator circuit, developers can use it for designing their applications without further investments in tools. This board includes through-holes for pin headers allowing access to all MCU signal pins for easy prototyping with a breadboard.

Orderable part number: **RTK9FPG021S00001BJ**



Ordering References

Flash	128KB	R9A02G0214CNE	R9A02G0214CNH	R9A02G0214CNK	R9A02G0214CBY
RAM	16KB				
DataFlash	4KB				
Pin Count		48-pin	32-pin	24-pin	16-pin
Package		QFN	QFN	QFN	WLCSP
Size (body)		7x7mm	5x5mm	4x4mm	1.99x1.99mm
Pitch		0.5mm	0.5mm	0.5mm	0.4mm
Operating Temperature		-40 to +125°C	-40 to +125°C	-40 to +125°C	-40 to +125°C

For more details, please visit: renesas.com/r9a02g021

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