Breaking the RISC-V MCUs ecosystem barriers

The ecosystem is key

Renesas is engaged in developing the RISC-V ecosystem

- Provide free of charge IDE, compiler, configuration/debug/programming tools.
- Partner with market-leading suppliers of commercial debuggers, production programmers, software, IDEs.
- Continue expanding partner and solution network (hardware platforms, software stacks etc.)

Ease the migration

Crush adoption barriers!

- World-wide availability of low-cost kits, MCU samples, application notes, training and support.
- Configuration and driver generation tool abstracts architectural details. Users focus on the application.
- Establish RISC-V as open platform for next-generation non-proprietary solutions.

Reliable sourcing

Renesas is a renowned supplier

- Renesas leads the market as innovative company, ready for the RISC-V momentum.
- Demonstrates RISC-V commercial microcontroller products with excellent quality AND support.
- Expand the portfolio, migrate 8/16-bit mature designs to 32-bit higher performance, at low-cost.

R9A02G021 — **48MHz 32-bit RV32I [MACB]** — CLIC | cJTAG

Memory	Analog	Timer	HMI
Code Flash	12-bit A/D x 10 ch	TAU 16-bit (8 ch)	KINT
128 KB	Comparator (2ch)	Interval timer 32-bit (8-bit, 4ch)	
SRAM 12 KB	Temperature Sensor	WDT	
ECC SRAM 4KB	DAC (2ch)	RTC	
DataFlash 4KB	Internal VREF		

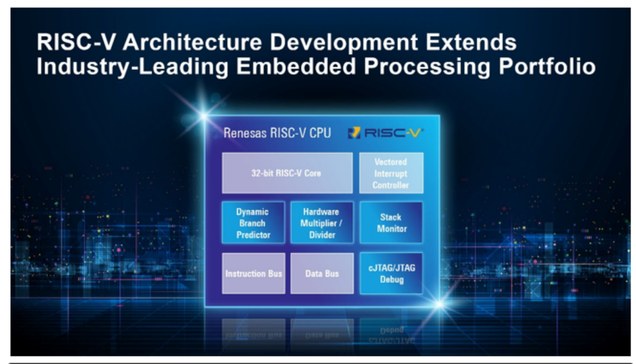
Communication	System	Safety	Protection
SAU (6 ch)	DTC	SRAM Parity Check	Unique ID
I2C x 2	Interrupt Controller	SRAM ECC	Customer ID
LP-UART x2	Clock Generation	Clock monitor	Flash read protection
REMC	On-Chip Oscillator	CRC	Flash shield protection
	HOCO / MOCO / LOCO	IWDT	
	ELC	32-Bit DOC	**Package**
	Low-power Modes	ADC self test	QFN 48,32, 24 (QFP 32,48)
	Clock output	Boot swap	WLCSP 16
	TRNG	(startup area select)	
	Current control		
	High current pins		

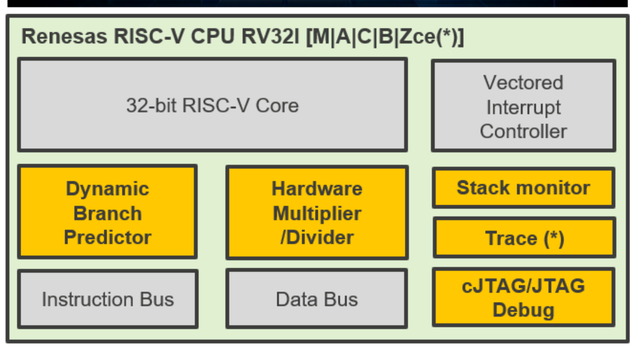
MCU

- 110-nm low power, low leakage process
- Wide operating temperature range: Ta = -40°C to 125°C
- Wide Operating Voltage: 1.6V - 5V

Highlights:

- Renesas own CPU design
- High performance core (**3.88** CM/MHz*)
- Rich set of analog and digital interfaces
- Small packages: QFN 48/32/24, WLCSP16
- Extensive safety and protection features
- Fast startup





On-Chip Debug

- Renesas E2 & E2 Lite

- SEGGER J-Link

- IAR I-Jet

IDE

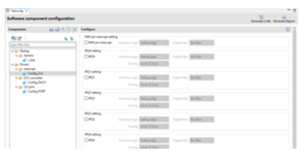
- Renesas e² studio
- SEGGER Embedded Studio
- IAR Embedded Workbench

Compiler

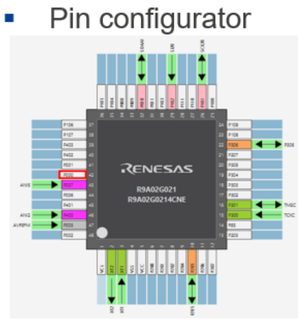
- LLVM llvm-gcc-renesas.com
- SEGGER RISC-V compiler
- IAR RISC-V Compiler

Support Tools

- Smart Configurator



- Pin configurator



- Standalone versions for IAR and SEGGER IDE

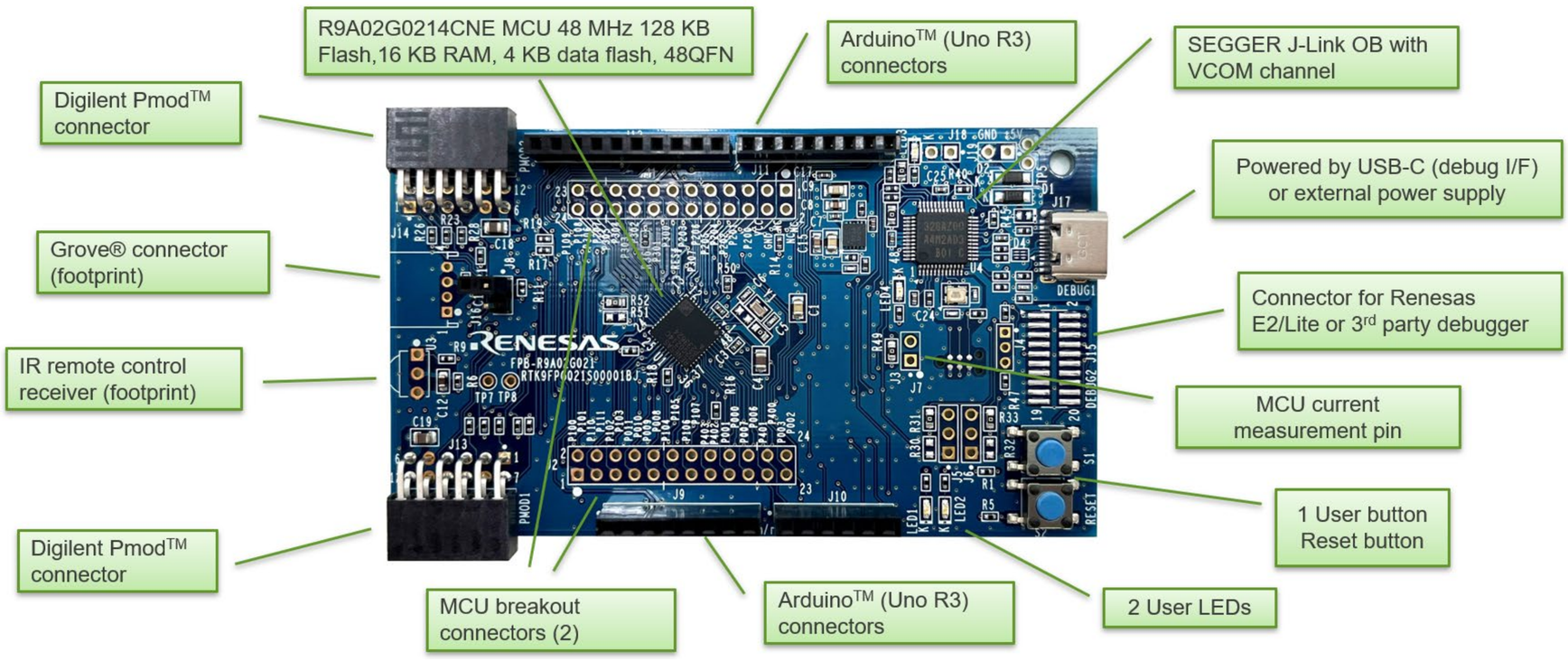
Kits and Boards

- Evaluation Kits

FPB-R9A02G021 with Jlink-OB

Smart Configurator

e²studio



FPB

www.renesas.com/risc-v