



Highly Power-Efficient 64-bit Embedded AI Microprocessor

RENESAS RZ/V2H GROUP

The RZ/V2H is an embedded AI microprocessor (MPU) with the next generation DRP-AI3 – a state-of-the-art AI accelerator – delivering high power efficiency of up to 10 TOPS/W. It can process complex real-time object recognition with power consumption comparable to a conventional embedded MPU, eliminating the need for cooling fans which is essential in conventional AI applications. In addition to the Arm® Cortex®-A55 (1.8GHz) quad-core CPU for Linux, a Cortex®-R8 (800MHz) with high real-time performance is also embedded in RZ/V2H MPU, making it possible to develop robotic devices, automated guided vehicle (AGV), and applications that need real-time recognition and AI judgment with a single chip.



Features

- Cortex®-A55 (1.8GHz) x 4 cores
- Cortex®-R8 (800MHz) x 2 cores
- Cortex®-M33 (200MHz) x 1 core
- AI Accelerator DRP-AI3
- Dynamically Reconfigurable Processor (DRP)
- Arm® Mali™-C55 ISP (option)
- 6MB on-chip SRAM
- LPDDR4/LPDDR4X Memory Interface
- Giga-bit Ethernet 2ch
- USB2.0 Interface 2ch (OTG x1ch, Host x1ch)
- USB3.2 (Gen2) Interface 2ch (Host only)
- PCIe® Interface (Gen3/4-lane) 1ch
- MIPI® CSI-2® Camera Interface 4ch
- CAN Interface (CAN-FD) 6ch
- Package
 - 19x19mm 1368-pin BGA 0.5mm pitch

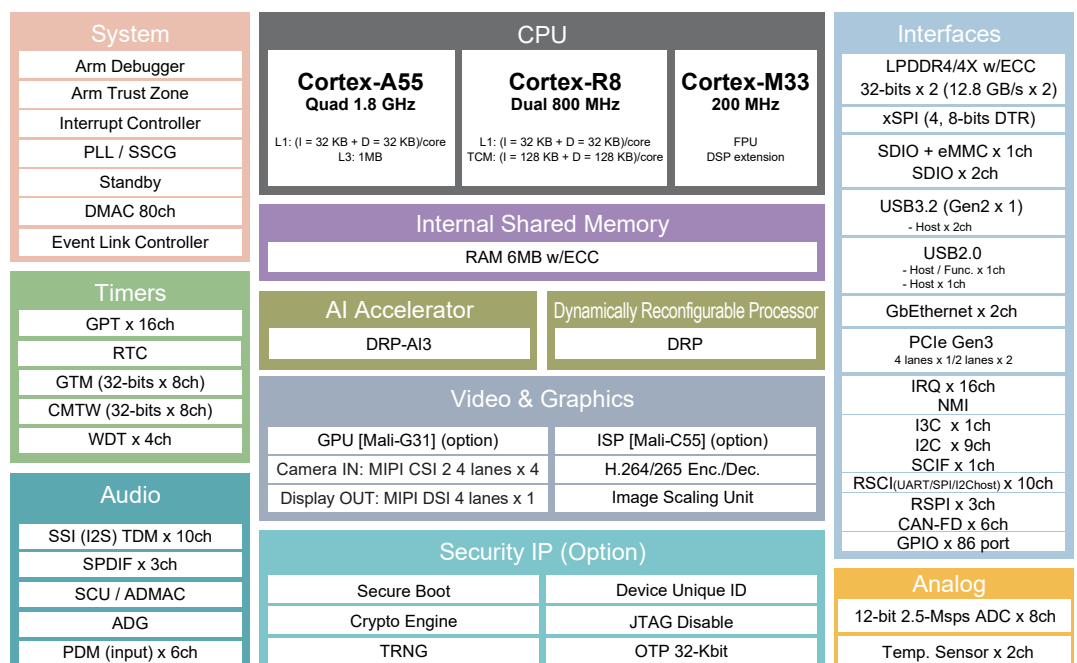
Advantages

- AI pruning technology improves AI efficiency and achieves up to 80 TOPS
- Power-efficient DRP-AI3 reduces cooling components and system costs
- High-speed real-time CPU enables advanced coordination of AI and control
- The DRP accelerates conventional image processing such as OpenCV

Applications

- Robotics (AMR/AGV)
- FA Machine Vision
- Smart Retail

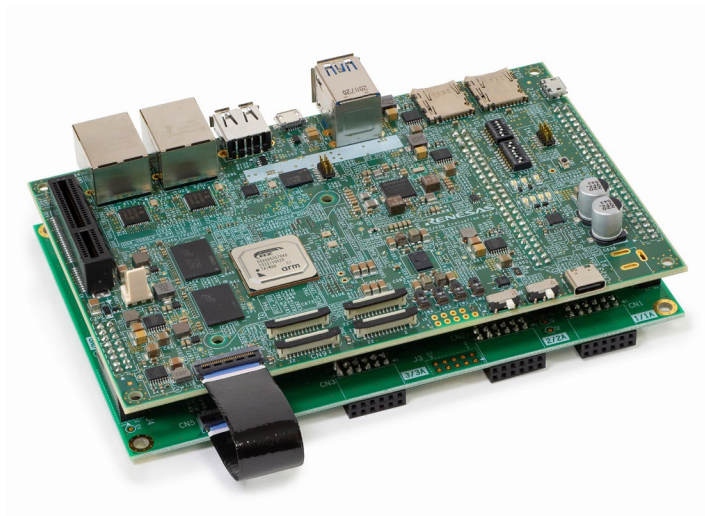
RZ/V2H Block Diagram



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Evaluation Board Kit (EVK)

The RZ/V2H Evaluation Board Kit (EVK) consists of two boards – the main board and an expansion board for HDMI output and audio evaluation.



P/N: RTK0EF0168C04000BJ

Main Board (Dimension: 153 mm x 100 mm)

- Processor: RZ/V2H
- PMIC: RAA215300
- Clock Generator: 5L35023B
- Main Memory: LPDDR4X (8GB) x 2
- xSPI Flash Memory: 64MB
- External Memory: micro SD Slot x 2
- High Speed Interface
 - Gigabit Ethernet x 2 ports
 - USB3.2 Gen2 x 2ch (Host only)
 - USB2.0 x 2ch (OTG x1ch, Host-only x1)
 - PCIe Gen3 x 1ch (4 lanes max)
 - MIPI CSI-2 Camera Interface x 4 ch
 - MIPI DSI Display Interface x 1ch

Expansion Board (Dimension: 153 mm x 100 mm)

- HDMI Tx x 1ch
- Audio Auxiliary Input x 1 ch
- Audio Microphone Input x 1 ch
- Audio Headphone Output x 1 ch
- Pmod x 4 ch

Ordering Information

Product Group	RZ/V2H			
Part Number	R9A09G057H41GBG	R9A09G057H42GBG	R9A09G057H45GBG	R9A09G057H46GBG
3G Graphics Accelerator	--	Mali™-G31	--	Mali-G31
Image Signal Processor	--			
Security	No		Yes	
Package	PBGA			
Pin Count	1368-Pin			
Package Information	19mm 0.5mm pitch			

Product Group	RZ/V2H	
Part Number	R9A09G057H44GBG	R9A09G057H48GBG
3G Graphics Accelerator	Mali-G31	
Image Signal Processor	Mali-C55	
Security	No	Yes
Package	PBGA	
Pin Count	1368-Pin	
Package Information	19mm 0.5mm pitch	

For more information, visit www.renesas.com/rzv2h



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Contact information

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