Highly Power-Efficient Embedded AI MPUs for Vision AI

RENESAS RZ/V SERIES

The Renesas RZ/V series of microprocessors (MPUs) for vision AI incorporate Renesas’ exclusive DRP-AI AI accelerator delivering excellent AI inference performance and low power consumption.

The RZ/V series consists of three products. The RZ/V2L with 3D graphics engine and highly versatile peripheral functions is suitable for a wide range of applications. The RZ/V2M features a high-performance image signal processor (ISP) with 4K/30fps support. To enable existing systems to easily implement AI function, the RZ/V2MA is embedded with high-speed interfaces such as PCIe and USB3.1. Also, the embedded OpenCV accelerator can increase the speed of existing image processing algorithm in addition to AI.

Features

■ The DRP-AI, AI inference hardware, utilizes dynamically reconfigurable technology exclusive to Renesas to deliver design flexibility, fast AI processing, and very high power efficiency.
■ Combination of hardware (DRP-AI) and software (DRP-AI translator) results in high power efficiency.
■ DRP-AI translator provides the capability to expand to more complex AI models without requiring hardware change.
■ Deliver excellent inference performance and power efficiency, irrespective of complexity and size of the AI model (right figure).

Applications

■ Security cameras
■ POS systems
■ Intercom systems
■ Smart cameras
■ Robot vacuum cleaners
■ Smart appliances
■ AI gateway
■ Entrance/Exit management system
■ Infrastructure monitoring
■ Retail
■ Logistic

Advantages

■ No heat sink or cooling fan is needed, enabling reduced product size & BOM costs.
■ RZ/V2L enables building of a vision AI system using an inexpensive camera module without an external ISP.
■ RZ/V2M provides “Tuned ISP” for growing list of sensors to use highest quality images without needing labor intensive ISP parameter tuning.
■ High-speed interfaces (PCIe, Gb Ether, USB3.1) enable adding on AI functions in existing system.
■ RZ/V2MA provides OpenCV Accelerator (DRP) to accelerate image processing other than AI.
**RENASAS RZ/V SERIES**

**Block Diagram**

**RZ/V2L Block Diagram**

**RZ/V2M Block Diagram**

**RZ/V2MA Block Diagram**

**Evaluation Board Kit (EVK)**

**RZ/V2L Evaluation Board Kit (EVK)**

**RZ/V2M Evaluation Board Kit (EVK)**

**RZ/V2MA Reference Board (Evaluation Kit)**

**Ordering Information**

<table>
<thead>
<tr>
<th>Product Group</th>
<th>RZ/V2L</th>
<th>RZ/V2M</th>
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**Note:** Refer to the hardware manual of the MPU for usage conditions of each function.

- Learn more about the RZ/V series: [renesas.com/rzv](https://www.renesas.com/rzv)
- Learn more about the RZ/V2L Evaluation Kit: [https://www.renesas.com/rzv2l-evaluation-kit](https://www.renesas.com/rzv2l-evaluation-kit)