IMG RTXM-2200 CPU

GROWN-UP RISC-V

Introducing IMG RTXM-2200 for embedded and real-time applications

Imagination has been delivering market-leading complex IP to its customers for over 20 years. With decades of experience in CPU, Imagination is the most established IP providing vendor in the RISC-V space and IMG RTXM-2200 is its first licensable RISC-V CPU core.

What is IMG RTXM-2200?

IMG RTXM-2200 is the first core from the Catapult product line based on the RISC-V ISA and using Imagination's home grown micro-architecture. It is a highly scalable mid-range real-time, deterministic, 32-bit embedded CPU, that is feature-rich and flexible in design for mainstream devices.

Featuring an in-order, dual-issue design with an 11-stage pipeline, it uses an AMBA bus architecture for SoC system compatibility. It implements fully ratified RISC-V extensions for software compatibility and offers memory protection and tightly-coupled memories for real-time determinism.

> It's great to see an established IP provider such as Imagination jumping onto and giving even more momentum to the RISC-V bandwagon. With an initial emphasis on real-time embedded applications, the configurable IMG RTXM-2200 CPU, the company's first commercial RISC-V core in the previously announced Catapult family, should appeal to SoC design teams working in IoT and other embedded markets.
>
> **Steve Leibson – Principal Analyst, TIRIAS Research**

Flexible/Configurable

The Catapult-architecture-based core can be configured with L1 cache sizes up to 128KB, I/D TCM sizes up to 128KB and with PMA regions. Optional features include a single-point floating-point (F) and BFloat16 for machine learning tasks and a Bit Manipulation(B) extension is implemented to help with code density. There is an optional interrupt module, debug module, breakpoint triggers and trace.

Why choose IMG RTXM-2200?

The core is built to the highest industry standard of quality and is backed by a rich portfolio of over 850 fundamental CPU patents to provide the right levels of protection for our partners. It also leverages from over 20 yrs of experience in developing world class portfolio of other complementary IPs like GPU, NNA and EPP.

It is designed to work "out of the box", with a full tools package available that will work across multiple platforms. The Catapult Studio Integrated Development Environment (IDE) is a modern, cutting-edge IDE based on Visual Studio providing a familiar environment to accelerate development for developers and designers. The IDE is available for running on Windows, Ubuntu, CentOS and MacOS, offers full Linux support (including reference bootloaders, kernel and filesystem) and is compatible with gem5 software, unlocking simulation environments for enhanced power and energy-efficiency testing.

The RTXM-2200 core comes with comprehensive SDK support and software support for Linux and FreeRTOS, so can be easily integrated into existing and new SoC designs.

It is fully compatible with industry-standard tools including, GCC and LLVM compilers and a GDB debugger.

> ❚❚ RISC-V International is excited to witness Imagination maintaining its momentum by launching its first licensable 32-bit embedded real-time processor, since the announcement of its entry into the RISC-V CPU IP market. This underlines the expansion of the RISC-V architecture as developers take advantage of this flexible technology to address multiple market requirements. We are pleased to see Imagination's commitment to drive ecosystem growth with the delivery of its SDK and the support of open-source operating systems. ❚❚
> **Calista Redmond, CEO, RISC-V International**

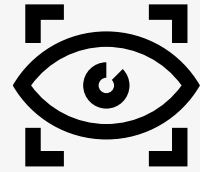Imagination

What markets will benefit from IMG RTXM-2200?

It's the ideal solution as a helper core in complex SoCs or for devices in embedded systems for many markets. It can be also used in various applications shown below:
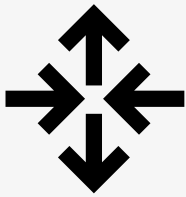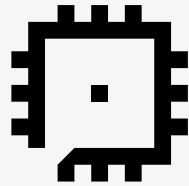
Base stations

Storage controllers

AI cameras

Packet management

SoC helper cores

Smart metering

❚❚ As automakers look to take advantage of the potential innovation and time to market advantages of RISC-V, they need an IP partner with proven ability to deliver in the automotive market, meeting the stringent power and safety requirements of the vertical. With the launch of IMG RTXM-2200, Imagination lays the foundation for future automotive RISC-V CPUs for this market, rounding out its portfolio of GPU and AI acceleration IP. This positions Imagination well to underpin the heterogeneous compute that will prove essential to meeting the connected infotainment and autonomous vehicle ambitions of the automotive industry going forward. ❚❚

James Hodgson – Principal Analyst, ABI Research.

For more information, visit us at
imaginationtech.com/cpu/img-rtxm-2200

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