

RISC-V Low-Power Embedded Processor IP Core Now Available from CAST

Woodcliff Lake, New Jersey — November 17, 2021 — Silicon intellectual property (IP) provider CAST, Inc. today announced a new processor IP core that uses the open-source RISC-V instruction set and offers low power consumption, small silicon area, and configurable options for optimally running many embedded applications.

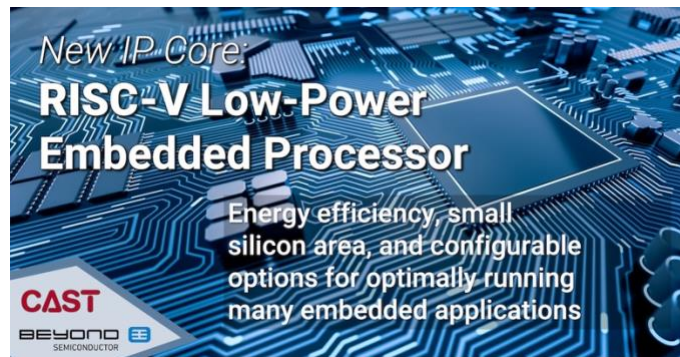
Implementing a two-stage pipeline, the new 32-bit [BA51 Low-Power Deeply Embedded RISC-V Processor](#) is compact—just 16k gates in its minimum configuration—but can still run at over 500 MHz in modern ASIC processes. Its small area combined with advanced power management features make the BA51 one of the lowest power processors

in its class. The core's extensive set of configurable options also gives designers the means to trade off functionality, performance, area, and power usage to best suit their particular requirements.

The BA51 runs the RISC-V 32-bit Base Integer (RV32I) or Base Embedded (RV32E) instruction sets. It can optionally support user and supervisor privilege modes, as well as the ISA extensions for Compressed Instructions (C), Integer Multiplication and Division instructions (M), Atomic Instructions (A), User-Level Interrupts (N), Control and Status Register (Zicsr), and Instruction-Fetch Fence (Zifencei). Support for the single-precision floating-point (F) ISA extension can also be added upon request.

Featuring an interrupt latency of just four cycles, timer and software interrupts, and a scalable number of external interrupts, the BA51 is ideal where fast interrupt response is crucial. For example, it can serve well as a calibration engine for high-speed Serializer/Deserializers or other mixed-signal modules, or as an always-on guard and housekeeper microcontroller in complex System on Chip (SoC) designs.

Sourced from [Beyond Semiconductor](#), the BA51 builds on the firm's successful BA2X embedded processor line, which has powered hundreds of customer products over 15 years. "With the BA51, we deliver our proven processor design concepts in a new IP core that also gives customers all the benefits of the RISC-V ISA and its extensive ecosystem," said Matjaz Breskvar, Beyond's chief executive officer.



The BA51 Low-Power Deeply Embedded RISC-V Processor IP core is available today from CAST for ASICs or FPGAs. Customers can license the stand-alone processor core or a bus fabric platform integrating the processor with common peripherals such as timers, clocks, and various external interfaces. Custom integration with other IP cores from CAST is also available.

“Having delivered embedded processors as reusable IP since 1999 and with hundreds of successful customers, we know better than most vendors the processor requirements of designers for their systems and expectations of users for a good IP experience,” said Jit Sur, CAST sales engineer for RISC-V. “The new BA51 embodies these qualities in RISC-V compatibility and also has the functions, power, area, and performance characteristics customers transitioning from other 32-bit processors really need.”

About CAST, Inc.

CAST develops, aggregates, sells, and supports digital IP cores for ASICs and FPGAs. The product line includes microcontrollers and processors, compression engines, interfaces for automotive and other applications, various peripheral devices, SoC security modules, and other IP cores. Learn more by visiting www.cast-inc.com, emailing info@cast-inc.com, or calling +1 201.391.8300.

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CAST, Inc., 11 Stonewall Court, Woodcliff Lake, NJ 07677 USA • phone: +1 201.391.8300
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Media Contact: Paul Lindemann, Montage Marketing, paul@montmark.com, +1 603.490.4985