CAST NEWS

New 80251 Microcontroller IP Core Available from CAST is the World's Fastest 8051-Compatible

Embedded World — Nuremburg, Germany — February 23, 2015 — A new 16-bit 80251 microcontroller IP core shipping now from CAST, Inc. runs 69.7 times faster than the original 8051 chip, making it the highest performance MCS®51 instruction set compatible IP core currently available.

The new S80251XC3 Super-Fast, Configurable 80251 Microcontroller Core is a 16-bit MCU that executes the MCS-51 and MCS-251 instruction sets and offers a broad, user-configurable set of features and integrated peripherals.

The microcontroller's advanced architecture enables it to run at an average of one clock per machine cycle, and it requires just one machine cycle per instruction. Dhrystone 2.1 benchmark tests show it to run 0.65 DMIPS/MHz or 69.7 times faster than the original 8051 at the same frequency. Representative 40nm LP ASIC implementations can run with clock frequencies in excess of 300MHz, offering an effective speed up of more than 1,500 times over early 8051 chips.

Royalty-free, cost-effective, and conservative in its use of power and silicon area, the new core is an excellent choice as a sensor or peripheral subsystem controller in mobile, Internet of Things (IoT), and industrial systems, or as a main embedded processor in mixed-signal ICs for a variety of applications. Built on fourth-generation 8051 code, CAST customers have used previous generation 16-bit 80251s for applications such as high color depth and high resolution display controllers, battery and power management ICs or as peripheral controllers in complex SoCs.

"Designers of today's high-demand products are finding our 8051 family provides plenty of horsepower for many requirements, with distinct benefits in energy, area, cost, and ease of integration and programming," said Nikos Zervas, chief executive officer for CAST. "This new 80251 extends those advantages to more complex applications, and its robust feature set, power-saving features, and class-beating performance make it a very smart choice for many systems."

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Sourced from 8051 experts Silesia Devices, the new S80251XC3 Microcontroller Core uses a Harvard architecture with separate instruction and data buses, branch prediction, branch target caches, and stacking/unstacking speed-up features, and is even able to execute some instructions in parallel. Its small silicon footprint results in minimal power leakage, and its higher performance compared with other 8- or 16-bit MCUs enables operation at lower clock frequencies, reducing energy usage. Designers can further adjust power consumption to match the computing workload via dynamic frequency scaling and independent control of the CPU and peripherals clocks.

Preconfigured or fully configurable versions of the core are available. These draw from a rich set of peripherals and options, including timers and counters, buses and interfaces, and performance-boosting functions such as an advanced instruction execution architecture. Customers can also choose other IP cores in the CAST product line—such as data compression or encryption—for pre-integration with the S80251XC3.

Software development for the S80251XC3 is facilitated through a JTAG or single-wire interface and inexpensive debug pod that work seamlessly with the ARM® Keil® C251 integrated development environment. The Talos Series Evaluation Kit provides a complete, ready-to-run reference design board for easy in-house evaluation prior to licensing or a rapid development start after.

System designers seeking to learn more about the competitive advantages of the new S80251XC3 should stop by CAST's booth at Embedded World (stand 2-501) or contact CAST Sales (email info@cast-inc.com, call +1 201-391-8300), or talk with their local CAST representative.

Learn More

Visit www.silesia-devices.com to learn more about Silesia Devices, the MCU design experts from whom CAST sources the S80251XC3.

CAST, Inc. is a twenty-year-old developer, integrator, and provider of IP cores for ASICs and FPGAs. The company offers some of the best available choices for low-power, high-value IP, including 8051s and BA2x 32-bit Processors; video, image, and data compression; security, interfaces and other functions needed for complete system on chip designs. To learn more about CAST and its product line visit www.cast-inc.com or follow @castcores on Twitter.

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CAST, Inc., 11 Stonewall Court, Woodcliff Lake, NJ 07677 • tel: +1 201.391.8300
Media Contacts:
Nikos Zervas, CAST, Inc., +1 201.894.5511, n.zervas@cast-inc.com
Paul Lindemann, Montage Marketing, +1 603.490.4985, paul@montmark.com, @plindemann
Maciej Pyka, Silesia Devices Sp. z o.o., +48 604.987 849, maciej.pyka@silesia-devices.com