



February 21, 2006

<http://www.tmcnet.com/usubmit/-tensilica-introduces-diamond-standard-processor-core-family-leading-/2006/02/21/1391015.htm>

Tensilica Introduces Diamond Standard Processor Core Family, Leading the Industry in Low Power and High Performance

SANTA CLARA, Calif. --(Business Wire)-- Feb. 21, 2006 -- Tensilica(R), Inc. today introduced the Diamond Standard family of processor cores, a set of six off-the-shelf synthesizable cores that range from area-efficient, low-power controllers to high-performance DSPs (Digital Signal Processors), all of which lead the industry in their respective categories both in lowest power and highest performance. The Diamond Standard processors are supported by an optimized set of Diamond Standard software tools and a wide range of industry infrastructure partners (see separate releases). They are available directly from Tensilica and through a growing list of ASIC and foundry partners (see separate releases).

This announcement provides Tensilica with the broadest range of off-the-shelf processors in the industry, with the six Diamond Standard cores plus an almost infinite number of processor configuration possibilities for those customers requiring optimized, application-specific processors with Tensilica's award-winning Xtensa(R) configurable processor family.

Tensilica is now seeing significant shipments from production volumes in SOCs (systems on chip) in cell phones, printers, and other consumer and communications devices, where its cores serve not only traditional RISC controller functions, but often are used as an alternate means of implementing high-performance, low-power compute functions previously implemented only with risky and complex RTL (Register Transfer Level) logic blocks.

The Diamond Standard Processors

The first six members of Tensilica's Diamond Standard processor family cover a wide range of system requirements and includes:

- Diamond 108Mini - an ultra-low power, cacheless RISC controller with rich interrupt architecture and minimal gate count for lowest silicon cost.
- Diamond 212GP - a flexible mid-range RISC controller with instruction/data caches and user selectable local memory sizes, providing 50% better DMIPS performance and 30% lower power than an ARM9.
- Diamond 232L - a flexible mid-range RISC CPU core with full MMU (Memory Management Unit) for Linux OS (Operating System) support.
- Diamond 570T - a high-performance 3-issue static superscalar CPU core that beats the ARM11-based systems by more than 2X in EEMBC benchmarks.
- Diamond 330HiFi - a low power 24-bit audio processor for all popular audio and speech codecs, based on the market-leading Xtensa HiFi 2 Audio Engine.
- Diamond 545CK - the highest performance licensable DSP on the market with a 3-issue VLIW (Very Long Instruction Word) processor with an 8-MAC (Multiply ACcumulator), SIMD (Single Instruction, Multiple Data) DSP.

All of these processor cores are available with Tensilica's Diamond Standard software tool set, including a high-performance optimizing C/C++ compiler, instruction set simulator, Eclipse-based graphical development environment, and complete GNU-based tool chain with assembler, debugger, profiler, and linker. An AMBA bus interface is optional for all cores.

Benchmark Proven

Tensilica has already benchmarked several of these processor cores and received top marks. The Diamond 545CK, based on the Xtensa LX used in the original benchmark, achieved the highest score recorded to date for a licensable processor core on the BDTI Benchmarks(tm) by Berkeley Design Technology, Inc. (BDTI). Its BDTIsimMark2000(tm) score of 3490 at 220 MHz is 30 percent faster than the score for the next-fastest licensable core benchmarked by BDTI, the CEVA-X1620.(a) (Note: All BDTI benchmark scores are calibrated to a common silicon process and cell library standard.) Also, the Diamond Standard 545CK is over twice as energy efficient as any other core benchmarked by BDTI to date.

EEMBC benchmark scores for the Diamond 570T far surpassed both the ARM1026EJ-S and the ARM11 class CPUs (Freescale iMX31 implementation with ARM1136J-S) in EEMBC's Consumer, Networking, Telecom, and Office Automation tests (see www.eembc.org for full details). -0- *T

Processor	ConsumerMARK 1.0	OfficeMARK 1.0	TeleMARK 1.0	Geometric Mean
ARM1136JF-S	1.47	1.19	1.06	1.24
ARM1026EJ-S	1.47	1.19	1.06	1.24
Diamond (Freescale iMX31) (certified as core) 570T	2.55	1.64	2.28	2.30

- Geometric Mean 1.0 1.24 2.30 ----- *T

The Diamond 570T core delivers 2.3X the performance of the ARM11 in less than half the silicon area. Additionally, the actual benchmark code size of the Diamond 570T is only 80% the amount of code required by the ARM1026EJ-S for the exact same EEMBC algorithms.

New Products Expand Tensilica's Customer Base

Tensilica will expand its customer base with the Diamond Standard processors in two ways. First, because the Diamond Standard processors will be distributed by leading ASIC and foundry providers, Tensilica will be able to reach more potential customers. Second, the customer base should expand because Tensilica offers a better combination of lower price, higher performance and lower power compared to other competing processor cores. The Diamond Standard processors complement Tensilica's existing Xtensa configurable processor product family. Because Diamond Standard cores are based on Tensilica's Xtensa configurable-processor technology, designers using Diamond Standard cores can easily extend the performance of their future designs using Tensilica's Xtensa processor offerings.

"We couldn't have launched this product line several years ago when Tensilica was new and our processor architecture relatively unproven," stated Chris Rowen, Tensilica's president and CEO. "But now we have over 80 blue-chip customers in many diverse markets, and mainstream designers are asking their ASIC suppliers for Tensilica's processors. The Diamond Standard processors are ideal for this new ASIC and foundry distribution channel. Based on our experience in hundreds of designs, we feel we have predefined these cores to match major market segments."

"Tensilica has made some impressive strides lately," added Tony Massimini, Chief of Technology, Semico Research. "The company's recent design wins portend strong potential growth. Semico foresees healthy growth for embedded cores over the next several years due to consumer and communications markets. Tensilica has been focusing on these high growth markets. Semico believes that embedded cores will grow due to the added functionality offered by configurable cores. Tensilica is one of the companies driving this trend."

Based on Proven Xtensa Architecture

Tensilica's new Diamond Standard processor family is based on its proven Xtensa configurable and extensible processor architecture, used in over 250 chip designs by over 80 customers. Tensilica's engineers used the same Xtensa processor generator technology as its Xtensa processor customers use to create these optimized standard configurations. Tensilica's automated processor generator technology completely verified the configurations and produced the matching software tool chain.

By using the proven Xtensa architecture, customers can be reassured that, if they like one of these Diamond Standard processors but would prefer a more tailored processor solution for their application, they can switch to using Xtensa configurable processors and maintain full software compatibility.

ASIC Partner Support Demanded by Customers

Many ASIC customers prefer the simplicity of purchasing from their ASIC or foundry silicon provider a processor core as part of the NRE (Non-Recurring Engineering) expense of their SOC design. Now that Tensilica's Xtensa processor has met with broad success, customers are requesting Tensilica's processors from their ASIC suppliers. That's why these partners were interested in Tensilica's Diamond Standard family. Tensilica has signed up NEC Electronics, Global Unichip and SMIC as its initial ASIC and foundry partners, and the company expects to sign up several other ASIC partners this year. This should significantly expand Tensilica's reach into the mainstream ASIC design community.

A Comprehensive Infrastructure of Tools and Peripheral Support

As detailed in accompanying press releases today, Tensilica is providing a proven infrastructure for its Diamond Standard processor core family. This infrastructure includes software development tools directly from Tensilica (see separate release) as well as:

- Operating system support for Linux from Monta Vista, the Nucleus Plus OS from the Accelerated Technology division of Mentor Graphics, and micro-iTRON from Sophia Systems
- Co-verification support for Mentor's Seamless product
- ICE (in-circuit emulation) from Sophia Systems and Yokogawa Digital Computer
- JTAG probe and Debugging support from Macraigor Systems, Sophia Systems and FS2
- EDA tool support from Synopsys, Cadence and Magma
- The industry's broadest line-up of application packages for audio support of the Diamond Standard 330HiFi.

Pricing and Availability

Tensilica's new Diamond Standard family of processors is available now. Pricing for the Diamond 108Mini starts at \$75,000 for a single-use license with 5 cents per core royalty.

About Tensilica

Tensilica offers the broadest line of processor cores on the market today, with the six new members of the Diamond Standard processor family plus an infinite number of Xtensa configurable processor possibilities for customers requiring optimized, application-specific solutions. Tensilica's low-power, benchmark-proven processors have been designed into high-volume products at industry leaders in

the digital consumer, networking and telecommunications markets. Tensilica also provides industry leading automated tool support for its processor families. For more information, visit www.tensilica.com.

(a) The BDTIsimMark2000(TM) provides a summary measure of DSP speed. For more information and scores see www.BDTI.com. Scores (C) 2006 BDTI.

Editors' Notes:

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