DSP Core Delivers Highest Audio Performance, User Flexibility and Broad Codec Support

CEVA, Inc. announced the latest addition to its CEVA-TeakLite-III DSP architecture. The CEVA-TL3211 is an advanced DSP targeting the growing needs of low cost smartphones and high-definition (HD) audio features within digital televisions (DTV), set-top-boxes (STB), and Blu-ray Disc players. According to the company, the CEVA-TL3211 delivers the industry's highest levels of performance, power efficiency, user flexibility, and smallest memory footprint to address the requirements of 2G/3G modems and advanced audio processing, including fully-certified HD audio codecs from Dolby and DTS. This new core has already been adopted by a Tier-1 semiconductor vendor.

The CEVA-TL3211 DSP core is compliant and code compatible with the CEVA-TeakLite-III architecture, which was recently named the industry 'best all around audio processor' in an independent report. The CEVA-TL3211 is a 32-bit audio DSP running at 1 GHz with a silicon footprint of only 0.2 mm2 when implemented on a 40 nm process node. Specifically benefitting the DTV and STB markets, the CEVA-TL3211 runs a complete DTV use-case in less than 200 MHz, leaving ample headroom for vendors to run various post-processing functions on the same core, thereby reducing overall cost. For low cost smartphones, the CEVA-TL3211 allows an efficient integration of baseband processing along with application processing related needs like HD audio and voice enhancements such as noise cancellation and beam forming.

The CEVA-TL3211 DSP core is fully backwards compatible with earlier members of the CEVA-TeakLite family, including the CEVA-TL3210 DSP core, CEVA-Teak, CEVA-TeakLite, and CEVA-TeakLite-II DSPs, allowing licensees of these earlier DSP cores to easily reuse their existing code. The CEVA-TL3211 further reduces development time through its fully cached memory subsystem and CEVA's production-proven application optimizer and software development environment.

On top of its industry-leading performance enabling simultaneous multi-codec and multi-stream processing, the flexible CEVA-TL3211 DSP core offers:

* Full support for the latest HD audio codecs required for premium quality sound. These include the Dolby MS10 and MS11 Multistream codecs for next generation DTV and STB designs, as well as the complete DTS-HD audio codecs

* A flexible fully cached design (program and data), including L2 cache support, that allows rapid algorithm development and supports the use of real-life system DDR constraints, contributing to lower cost of the end product

* CEVA's innovative Power Scaling Unit (PSU) supporting clock and voltage scaling, reducing power consumption, lowering heat dissipation, and allowing cheaper IC packaging

* Full duplex AXI buses for lower power, higher performance and easier integration into modern SoCs

* A robust software development environment to ease software migration and facilitate C-level programming.

The CEVA-TL3211 DSP core features native 32-bit processing, including a single-cycle 32x32-bit multiplier, a 32-bit register file, 64-bit wide memory bandwidth, 72-bit accumulation for wide dynamic range, as well as efficient bit-manipulation capabilities. In addition to supporting up to three instructions running in parallel, the CEVA-TL3211 also supports single-precision and double-precision FFT instructions for efficient codec implementations. These features clearly distinguish the CEVA processor from other IP vendors, and deliver full 32-bit precision for the most efficient implementation of HD audio standards.

The CEVA-TL3211 includes an innovative memory subsystem, supporting the use of program cache memory, 2-way set associative data cache memory, configurable cache and TCM sizes, and user selectable write policy. The cached memory subsystem further supports automatic pre-fetch for increased efficiency, the use of a level 2 system cache, and non-blocking transactions. The CEVA-TL3211 memory subsystem allows CEVA to optimize HD Audio codecs utilizing smallest on-chip memory, and excellent system DDR robustness.

The CEVA-TL3211 DSP core is coupled with a set of optimized audio and voice codecs, available as part of the CEVA-HD-Audio solution. Occupying only 0.2mm2 in 40nm process node, this single-core solution is the most compact and power-efficient HD audio offering available for integration into home entertainment and consumer ICs, with lower overall cost and reduced die size compared to other audio solutions, some requiring dual processors for advanced audio use-cases such as Blu-ray Disc.

The CEVA-TL3211 DSP core and CEVA-HD-Audio solution are currently available for licensing. For more information, contact sales@ceva-dsp.com

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