Product Bulletin

Aureus™ TMS320DA710

High-Performance Multichannel Audio DSP with Powerful and Flexible System Software Solution

Key Benefits
- Support for true dual-zone decoding for multi-zone audio video recorders (AVRs)
- Enables better sounding virtualizers or room simulators and higher-quality room correction for commercial and automotive markets
- The Performance Audio Software solution reduces development time by allowing focus on value-added differentiating algorithms

TI's Aureus™ DSPs are ideal for applications requiring multi-channel audio decoding and post-processing as well as high-speed encoding for both commercial and automotive markets. Applications benefitting from Aureus DSPs include AV and DVD receivers, HDTVs and automotive multimedia systems.

The TMS320DA710 floating-point DSP is the highest performance device in the second generation of the Aureus family of DSPs. The DA710 DSP supports differentiating features such as true dual-zone decoding for multi-zone AVRs and conversion to PCM and post-processing of SACD content. Standard decoding and post-processing is automatically managed in a very small performance footprint leaving an abundance of headroom for customization, including implementing better sounding virtualizers or room simulators, higher-quality room correction, or simultaneous high-speed encode with multichannel decode.

Enhanced TMS320C67x+™ CPU

The CPU is based on TI's 32-/64-bit TMS320C6000™ DSP architecture and utilizes the Code Composer Studio™ development environment including the best-in-class C compiler. Key features include:
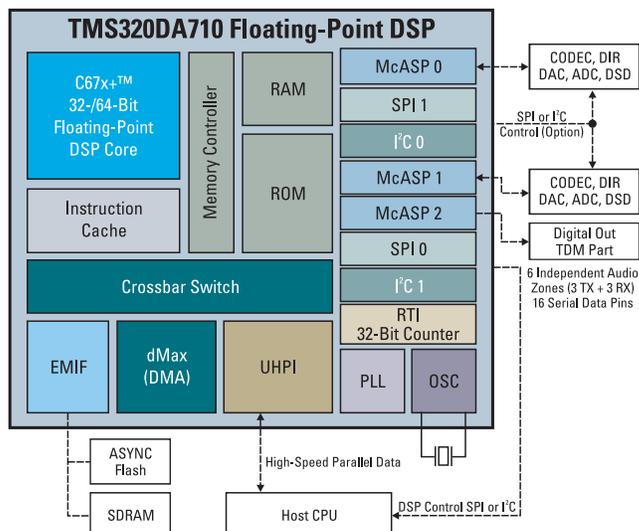- Powerful 32-/64-bit floating-point DSP core

- Software compatible with DA6xx Aureus devices
- New audio-specific enhancements

Additional features of the DA710 DSP include large on-chip ROM and RAM as well as program cache and single-cycle access to on-chip data; 32-bit EMIF supporting SDRAM, Flash, SRAM; three multichannel Audio Serial Ports (McASPs) with six clock zones and 16 stereo IIS pins that support SPDIF transmit; DMAX dual data movement accelerator optimized for audio; Universal Host Port Interface featuring a 32-bit wide data bus to the microcontroller; two SPI ports with 3-, 4-, 5-pin options and two I²C ports.

The DA710 is available in commercial or extended temperature range in a 256-terminal BGA package. Additional security features are available. Contact your local TI field sales representative for more information.

Performance Audio Software

TI provides a complete system software solution for multichannel audio decoding and post-processing for the Aureus DSPs. The Performance Audio (PA) software solution reduces development time by allowing users to focus on their value-

TMS320DA710 floating-point DSP block diagram

added differentiating algorithms and not on the base solution and integration. The PA software solution features:

- Certified implementations of industry-standard decoders and post-processing algorithms
- The TI Effects library which includes configurable modules for graphical EQ, matrix decoding and room simulators
- Performance Audio Framework (PAF), a powerful system framework that auto-detects incoming bitstreams and provides a simple I/O and control interface. The PAF was built upon TI's TMS320™ DSP Algorithm Standard, which allows developers to easily plug custom algorithms into the framework, resulting in modular solutions. The PAF features audio stream management; audio and control drivers; multiple I/O topologies: single zone, dual zone, stream split, stream merge; multiple bootload options: Flash, SPI, I²C, HPI; as well as support for Flash upgrade

Industry Standard Software

The PA software solution includes

- **Decoders**
  Dolby® Digital, Dolby Digital EX; DTS® Digital Surround, DTS-ES Discrete 6.1, DTS-ES Matrix 6.1, DTS 96/24; MPEG-2 AAC multichannel, MPEG-4 AAC stereo; Windows Media® Audio version 9, WMA9 Pro, MP3, HDCD, ATRAC3plus; DSD-to-PCM conversion
- **Encoders**
  Stereo: MP3, Windows Media Audio version 8, ATRAC3plus, MPEG-2 AAC; Multichannel: Dolby® Digital 5.1 creator
- **Audio Stream Processing**
  Dolby® Pro Logic® IIx, Dolby headphone, Dolby virtual speaker; DTS Neo:6; Double-precision (64-bit) bass management; THX Select2, THX Ultra2; TI Effects library; FIL – optimized floating-point filter library
- Third-party IP available on Aureus™ DSPs
  - Audyssey MultEQ XT™, MultEQ™, PrevEQ
  - SRS® Circle Surround II, WOW™, TruBass™
  - Waves MaxxBass®
  - Neural XM Surround

Development Tools

Code Composer Studio™ IDE with the best-in-class C compiler simplifies the development of software while hardware develpment is supported by an EVM from Momentum Data Systems.

For More Information

If you'd like additional information about TI's Aureus DSPs or the PA software solution, go to **www.ti.com/da710**.

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