Product Bulletin

Aureus™ High-Performance Audio DSPs

Complete Hardware and Software Solutions for Multi-Channel Audio Decoding Systems

Key Benefits

- Develop for various consumer price points with scalable hardware and software solution
- Fast time-to-market with differentiated solution through easy customization of the comprehensive baseline software solution
- Powerful 32-/64-bit floating-point DSP core and device architecture optimized for audio provides headroom for customization

In a marketplace like the multi-channel audio segment where fast time-to-market with differentiated capabilities is so important, the Aureus TMS320DA7x DSP family of audio processors bundles the hardware and software needed to target every consumer segment. From multi-zone AV receivers, multi-speaker automotive and home theater systems to cost-effective AV receivers, PC multimedia speakers, set-top boxes and integrated HDTVs, the Aureus DA7x family's solid foundation of a powerful processing core is complemented by software for rapidly differentiating products for divergent market segments.

The 32-/64-bit floating-point Aureus DSPs are based on TI's widely accepted TMS320C6000™ DSP architecture. For the performance audio marketplace, the Aureus family surrounds this powerful DSP core with software for streamlining the customization process and bringing differentiated products to market quickly.

Comprehensive Software

The DA7x family has been equipped with the comprehensive Performance Audio (PA) software suite. The Performance Audio Framework is built on TI's DSP/BIOS™ operating system and enables a variety of powerful capabilities, such as auto-detecting incoming bitstreams, managing audio streams and providing a simple I/O and control interface. TI has assembled a wide selection of certified decoders, audio stream processing modules and other software IP. Custom audio stream processing algorithms can be easily plugged into the framework, resulting in a modular software architecture that can be quickly customized (see Figure 1).

TI's Performance Audio Software Suite	
Module	**Description**
Performance Audio Framework (PAF)	Powerful system framework built on DSP/BIOS kernel that auto-detects incoming bitstreams, manages audio streams and provides I/O control. Supports true dual-zone multichannel decoding.
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.
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 Room Simulator, TI Matrix processor, TI EQ Custom processing modules easily plug in here.
Third-Party IP	Audyssey MultEQ XT™, MultEQ™, PrevEQ, SRS® Circle Surround II, WOW™, TruBass™, Waves MaxxBass®, Neural XM Surround and others.
Development Tools	
TI's Code Composer Studio™ IDE	An integrated development environment (IDE) with an industry-leading C compiler.

Figure 1. Comprehensive software solutions for the DA7x Performance Audio Processors

Powerful DSPs

The TMS320C67x+™ DSP core upon which the Aureus DA7x family is built provides a powerful processing platform for the demands of performance audio applications. With features specifically intended for this market segment, such as large on-chip ROM, RAM and cache memory, a DMA engine (dMAX) optimized for audio applications, an external memory interface (EMIF) and three multichannel audio serial ports (McASP), developers have the on-chip resources they need for efficient product development and fast, feature-rich differentiation (see Figure 2).

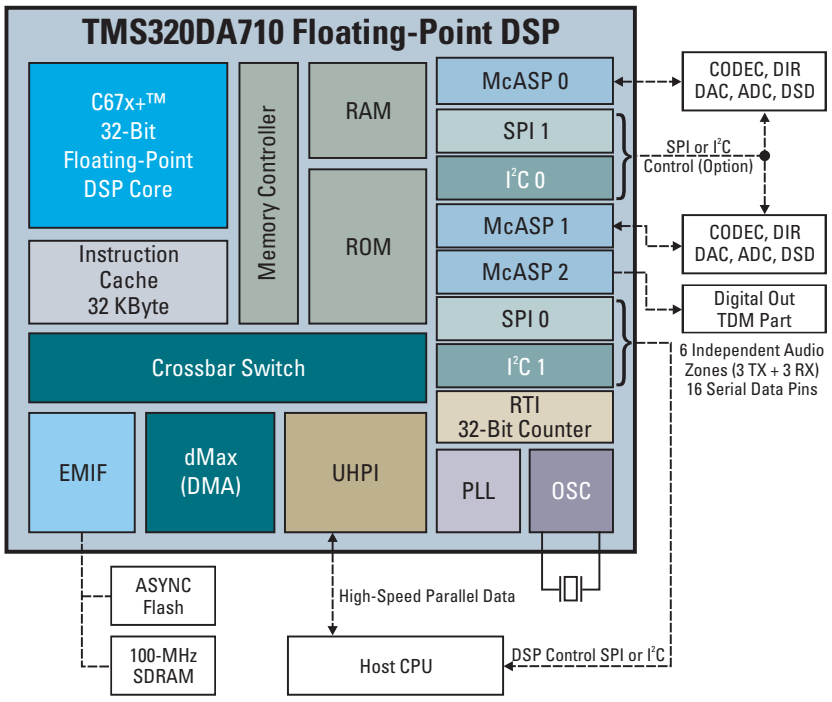
Figure 2. TMS320DA7x DSP family comparison table

Feature	TMS320DA710 DSP	TMS320DA708 DSP	TMS320DA707 DSP	TMS320DA705 DSP
Overview	Highest performance Greatest headroom for differentiation	Highest performance Greatest headroom for differentiation in smaller package	Cost-effective performance Headroom for some differentiation	Most cost effective No external SDRAM required Fixed functionality
Target end equipments	Flagship AV/DVD receiver Automotive multimedia systems HD-DVD/BD players	Highly differentiated AV/DVD receiver Automotive multimedia systems HD-DVD/BD players	Differentiated AV/DVD receiver HTIB Set-top box Mini-component PC multimedia speakers	Cost-effective AV/DVD receiver HTIB Set-top box HDTV Mini-component
CPU	C67x+™: 32-/64-bit floating point	C67x+™: 32-/64-bit floating point	C67x+: 32-/64-bit floating point	C67x+: 32-/64-bit floating point
Commercial and automotive grade	Y	Y	Y	Y
Independent clock zones	6	5	5	5
Stereo IIS data pins (configurable as input or output)	16	16	16	16
S/PDIF transmitter	Y	Y	Y	Y
SPI	2 with 3-, 4-, 5-pin options	2 with 3-, 4-, 5-pin options	2 with 3-, 4-, 5-pin options	2 with 3-, 4-, 5-pin options
I^2C	2	2	2	2
dMAX	1	1	1	1
EMIF supporting SDRAM, SRAM, Flash and NAND	32-bit	16-bit	16-bit	–
UHPI: high-speed data bus to host controller	1 32-bit	–	–	–
Package	256 BGA	144 TQFP	144 TQFP	144 TQFP
		Pinout and Package Compatible		
	Software Compatible			

For More Information

For additional information on the Aureus TMS320DA7x family of performance audio processors, please visit **www.ti.com/performanceaudio**

TMS320DA710 Audio Processor



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