Product Bulletin

TAS3xxx and TAS55xx Digital Audio Processors and Third-Party Algorithms

Key Benefits

- Complete line of digital audio processors for home theater-in-a-box, flat-panel TVs, micro- and mini-component audio systems and other consumer electronics
- Easy-to-deploy preprogrammed algorithms quickly enhance sound functionality, shorten time-to-market
- 48-bit architecture provides the industry's highest precision for rich sound quality
- A variety of audio processors gives manufacturers the flexibility to meet a wide range of cost and performance targets

Texas Instruments' family of digital audio processors offers manufacturers a wide range of audio processing capabilities, including, integration with TI's PurePath™ digital amplifiers. The TAS3xxx and TAS55xx digital audio processors bring the sound quality of an expensive, high-end A/V receiver to an affordable cost level for consumers of home theater-in-a-box systems, flat panel television sets, micro- and mini-component stereos, and other consumer electronic products.

High-End Sound Quality

This family of digital audio processors offers the highest resolution for a full and rich digital sound experience. The TAS3103, TAS5504 and TAS5508 devices feature a full 48-bit audio datapath while the TAS3002 has a 32-bit architecture for true CD- and DVD-quality sound.

In addition, these digital audio processors have a configurable architecture that accommodates the rapid deployment of preconfigured audio processing functions and enhanced sound algorithms from TI and third parties. A wide variety of algorithms and functions such as loudspeaker normalization, second-order tone control, triple slope dynamic range compression, auto mute, 3D sound, virtual surround sound and various loudness curves are readily available.

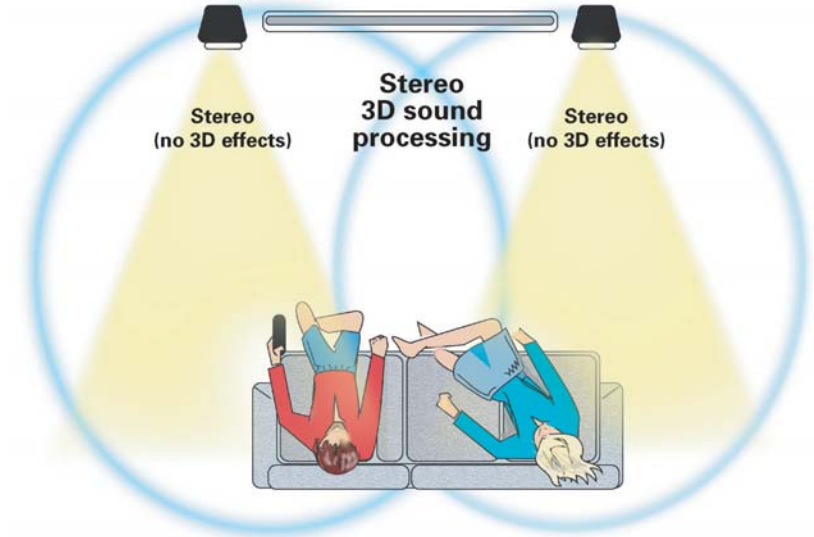

Figure 1. TI's digital audio processors and SRS® TruSurround™ allow stereo speakers to create a 5.1 sound image.

Key Features of Digital Audio Processors

DVD-Quality Processors Based on a 48-Bit Architecture

TAS3103

- Three-channel digital audio processor
- PC-based GUI for software development
- Configurable processing options including third-party algorithms
- Eight serial audio input channels and three serial audio output channels
- 8-kHz to 96-kHz sample rates
- 15 stereo/TDM data formats
- 16-, 18-, 20-, 24- and 32-bit word sizes

TAS5504

- Four-channel digital audio processor with PWM processor

- Interfaces seamlessly to audio DSPs
- Very low noise
- Wide dynamic range from 20 Hz to 20 kHz
- Extends dynamic range with power supply volume control
- Stores three coefficient sets on-device
- Intelligent AM interference avoidance

TAS5508

- Eight-channel digital audio processor with PWM processor
- Interfaces seamlessly to audio DSP and MPEG chips
- High efficiency reduces the size of power supplies and heat sinks
- Ultra-low noise
- Stores a variety of bass management algorithms
- Extends dynamic range with power supply volume control
- Intelligent AM interference avoidance

CD-Quality Processor Based on a 32-Bit Architecture

TAS3002

- Digital equalization
- Dynamic range compression/ expansion (DRCE)
- Loudness contour algorithm
- Integrated 24-bit, 100-dB stereo CODEC
- Two single-ended inputs per channel
- Six configurable general-purpose inputs for controlling volume, bass, treble and equalization

When the Market Won't Wait

The configurable architecture of TI's digital audio processors support the demands of consumer electronics (CE) manufacturers who must bring products to market very quickly. With pre-programmed sound-processing algorithms from third parties and TI, CE manufacturers are able to rapidly respond to changing demands or new preferences as they emerge in the marketplace.

For example, one major manufacturer of consumer electronics products and audio systems, recently brought a new audio product to the marketplace in the record-setting time of just three months. The system featured TI's

Selected Third-Party Audio Processing and Sound Enhancement Algorithms for the TASxxxx Audio Processors

NOTE: Not all algorithms are available on all TASxxxx audio processors. Contact TI for the availability of specific algorithms. The following list of algorithms represents a sample of those that are available on TI's TASxxxx audio processors at any one time.

SRS® Labs, Inc.	SRS 3D®	Natural 3D stereo sound for two-speaker systems.
	Wow™	Audio enhancement suite containing SRS 3D stereo and TruBass™ psychoacoustic bass enhancement technology.
	TruBass	Patented bass enhancement technology which provides up to an octave of lower bass frequency perception from speakers or headphones.
	TruSurround™	Creates a virtual surround sound experience from up to 5.1 multichannel, surround encoded, or stereo source material played over any stereo-speaker or headphone playback system.
	TruSurround XT™	Creates a virtual surround sound experience from up to 6.1 multichannel, surround encoded, stereo or mono source material played over any stereo-speaker or headphone playback system. Includes additional audio enhancements of dialog clarity and TruBass bass enhancement technology.
	Dialog Clarity	Provides improved comprehension of actor's dialog in DVD movies and other video programming.
	Focus™	Elevates sound image; compensates for poorly placed speakers by elevating the sound image to the optimal location.
QSound® Labs, Inc.	QSurround®	Creates "virtual speakers" and reproduces spatially correct, multi-channel output on two-channel equipment. Enhances sound reproduction on five- and six-channel systems.
	QMSS™	Creates multi-channel audio from any stereo source by automatically "steering" acoustic images to multiple speakers.
	Qxpander™	Enhances stereo sound for either headphones or speakers.
BBE® Sound, Inc.	BBE™	A core technology for all products from BBE Sound Inc., BBE enhances music to its "live presence" and renders dialog with crisp definition.

TAS5508 digital audio processor/PWM processor in an innovative bundling with third-party sound enhancement algorithms from SRS® Labs, Inc. The licensing bundle was put together to streamline the typical development cycle and shorten the system's time-to-market. TI's digital audio support personnel worked closely with SRS Labs to meet the project's three-month timeframe.

"We're accustomed to fast turnaround times in the consumer electronics space," said Joanna Skrdlant, director of emerging markets and platform development of SRS® Labs, "but this particular project with TI was exceptionally fast. The project demonstrated the value of preprogrammed, TruSurround XT™ virtual surround sound functionality and a compatible hardware architecture capable of outstanding sound quality. In the end, all of the pieces fell into place and the parties involved benefited from the project."

TI has earned a reputation for the extensive resources that support manufacturers' custom design projects. The company has implemented a focused design and support model comprised of engineering, production, manufacturing and sales personnel. Many OEMs like Panasonic, JVC, Kenwood, Harman/Kardon, Jamo, LG Electronics, Pioneer, RCA, Koss, Samsung and others have taken advantage of TI's extensive support for its portfolio of digital audio technology to deliver their products to a consumer electronics marketplace that changes everyday.

Comprehensive Digital Audio Components

TI offers a complete suite of digital audio technology which gives manufacturers the freedom to design a broad range of systems that meet a variety of cost and performance targets. Many functions previously unrealizable or available only through analog components are now performed in the digital domain with a new level of ease and flexibility.

TI's audio components offer manufacturers the widest dynamic range and exceptional sound fidelity along with highest degree of integration to simplify system design. TI's comprehensive portfolio of audio technology includes digital audio processors developed specifically for audio signal processing functions as well as its industry-leading line of DSPs for decoding specific algorithms and the audio industry's most extensive selection of digital audio amplifiers.

For more information about TI's digital audio processors or TI PurePath™ Technology, go to **www.ti.com/homeaudio**.

TI Worldwide Technical Support

Internet

TI Semiconductor Product Information Center Home Page
support.ti.com

TI Semiconductor KnowledgeBase Home Page
support.ti.com/sc/knowledgebase

Product Information Centers

Americas

Phone	+1(972) 644-5580
Fax	+1(972) 927-6377
Internet/Email	support.ti.com/sc/pic/americas.htm

Europe, Middle East, and Africa

Phone	
Belgium (English)	+32 (0) 27 45 54 32
Finland (English)	+358 (0) 9 25173948
France	+33 (0) 1 30 70 11 64
Germany	+49 (0) 8161 80 33 11
Israel (English)	1800 949 0107
Italy	800 79 11 37
Netherlands (English)	+31 (0) 546 87 95 45
Russia	+7 (0) 95 363 4824
Spain	+34 902 35 40 28
Sweden (English)	+46 (0) 8587 555 22
United Kingdom	+44 (0) 1604 66 33 99
Fax	+(49) (0) 8161 80 2045
Internet	support.ti.com/sc/pic/euro.htm

Japan

Fax	International	+81-3-3344-5317
	Domestic	0120-81-0036
Internet/Email	International	support.ti.com/sc/pic/japan.htm
	Domestic	www.tij.co.jp/pic

Asia

Phone	
International	+886-2-23786800
Domestic	Toll-Free Number
Australia	1-800-999-084
China	800-820-8682
Hong Kong	800-96-5941
Indonesia	001-803-8861-1006
Korea	080-551-2804
Malaysia	1-800-80-3973
New Zealand	0800-446-934
Philippines	1-800-765-7404
Singapore	800-886-1028
Taiwan	0800-006800
Thailand	001-800-886-0010
Fax	886-2-2378-6808
Email	tiasia@ti.com ti-china@ti.com
Internet	support.ti.com/sc/pic/asia.htm

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