TAS3308: Audio System-on-Chip
Digital TV Audio Solution
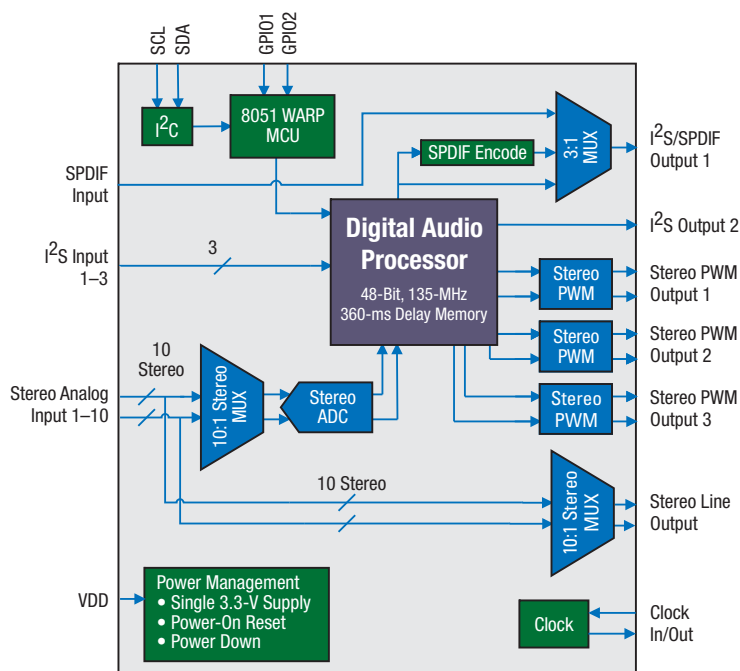
TEXAS INSTRUMENTS
PurePath Digital

The TAS3308 is a dual-core device consisting of a powerful digital audio processor (DAP) and microcontroller (MCU) integrated with high-performance audio analog-to-digital converters (ADCs) and pulse-width modulators (PWM). The TAS3308 is a highly integrated solution offering analog input, digital processing and PWM output functionality. Operating at 135 MHz, the DAP core is capable of five simultaneous operations per cycle. The MCU is an industry-standard 8051 core that optimizes the TAS3308's system performance by handling the I²C interface and controlling the more advanced audio algorithms.

The DAP's 48-bit data path enables superior high-resolution audio processing

and its unique single-cycle 76-bit (48×28) multiply-accumulate operation accelerates the processing of most audio algorithms. The TAS3308 incorporates all the functionality required to perform demanding audio applications. Ten single-ended stereo input channels MUXed to a stereo ADC provide the capability to process audio from up to ten independent sources. Also included are six differential PWM output channels, making the TAS3308 ideal for up to 5.1 speaker solutions. Three I²S inputs, two I²S outputs (one of which can be selected as SPDIF) as well as SPDIF pass-through capability ensures digital compatibility.

Key Features:

- Compatible with PurePath Studio™ graphical programming software
- 135-MHz, 48-bit processor
  - 76-bit accumulator
  - 3K Words program RAM
  - 1K Words coefficient RAM
  - 1K Words data RAM
- 10-channel stereo input MUX
- One stereo single-ended ADC
  - 100 dB DNR (typical)
- Six differential PWM outputs
  - 105 dB DNR (typical)
- Three I²S input channels
- Two I²S output channels
  - One selectable as SPDIF
- 360 ms of delay memory
- Ideal for digital TV audio systems
- Compatible with TI's PurePath Digital family of PWM input audio amplifiers

Enhanced audio faster

High-quality audio systems with lower bill-of-material costs can be implemented with the TAS3308 because of its integrated analog data converters and full suite of audio-enhancing features such as equalization, tone and volume control, loudness and dynamic range compression eliminates the need for discrete devices to support these capabilities.

Developers have full control of audio processing and can implement a range of algorithms such as matrix decoding, sound enhancement and virtualized surround sound. Because the device is supported by leading

▲ TAS3308 digital audio processor block diagram.

third-party IP developers such as Dolby, SRS QSound and others, TAS3308 designs will always have timely access to the latest innovations in audio technology.

The powerful processing supported by the TAS3308's dual-core architecture gives developers the ability to easily add post-processing and proprietary audio algorithms for differentiated features.

Software and development tools

Fully supported by PurePath Studio™, an efficient drag-and-drop graphical development environment, the TAS3308 will accelerate a new product's time to market and ease the development of differentiated features. PurePath Studio includes a code editor with contextual help facilities, a simulator for debugging code and other tools. Pre-optimized software components as well as third-party algorithms can be quickly integrated by simply dragging and dropping the software module into PurePath Studio. In addition, the TAS3308 is supported by the traditional assembly-level Integrated Development Environment (IDE). The device's MCU core is fully supported by C compilers, macro assemblers, debuggers and real-time kernels.

For more information

For more information on the TAS3308 contact your local TI field sales office or go to **www.ti.com/tas3308**.

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

European Free Call	00800-ASK-TEXAS (00800 275 83927)
International	+49 (0) 8161 80 2121
Russian Support	+7 (4) 95 98 10 701

Note: The European Free Call (Toll Free) number is not active in all countries. If you have technical difficulty calling the free call number, please use the international number above.

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	+91-80-41381665
Domestic	Toll-Free Number
Australia	1-800-999-084
China	800-820-8682
Hong Kong	800-96-5941
India	1-800-425-7888
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

The platform bar and PurePath are trademarks of Texas Instruments. All other trademarks are the property of their respective owners.

B010208

© 2008 Texas Instruments Incorporated
Printed in U.S.A. by (Printer, City, State)
♻ Printed on recycled paper

TEXAS INSTRUMENTS

SPRT439B