

Multi-channel Digital Audio Processor

PS9830B

***8Ch, 24bits, 192kHz Digital Audio Processor
For Full Digital Amplifier***

Pulsus Technologies

8Ch, 24bit, 192kHz Digital Audio Processor For Full Digital Amplifier

A. Introduction

The PS9830B is a highly integrated system-on-chip solution for multi-channel AV systems such as 5.1 channel, 6.1 channel or 7.1 channel. Through the use of a high-quality PCM to PWM modulator, the PS9830B has an 8-channel PWM out and an additional 3-channel PWM out. It also has a 8-channel sample rate converter. It features 24-bit audio digital-to-digital converters and over-sampling digital filters, a sample rate converter, an audio DSP that functions as an on-chip pre-amplifier with equalizer, volume control, bass management and automatic gain limiting functions.

The sample rate converter allows for input of up to 96kHz for 8-channel and 192kHz for 2-channel. It automatically detects the sampling frequency and converts input sample rate to internal 192kHz sample rate. This makes it easier for users to work with this chip.

The PS9830B accepts industry-standard audio data formats with 16 to 24-bit audio data. It also supports sampling rates of up to 192 kHz.

Application

- DVD Receiver (DVD player plus 7.1ch receiver)
- Hi-Fi A/V Receiver
- HDTV sets
- Set top Box
- Car A/V Systems
- DVD Add-On Cards for High-End PCs
- Digital Audio Workstations
- Other Multi-Channel Digital Audio Systems
- PC Speakers

Features

General

- Internal clock generation with X-tal
- 2 serial input ports for 8 Channels
- User can select the master/slave mode of input port
- Sub input port can be changed to serial output port
- Supports 16/18/20/24 bits Input
- Supports 13kHz~192kHz Input Sample Rate
- I²C or SPI control bus
- Built-in PLL without External Loop Filter
- 5V tolerant Inputs
- 3.3V Single power supply (regulator inside)
- 100 pin TQFP Package

Sample-rate-converter Section

- On-chip Sample rate converter
- Supports up to 96kHz sample rate for 8-channel input
- Supports up to 192kHz sample rate for 2-channel input
- Automatic sample rate detection
- User Programmable LRCK locking range

Preamplifier Section

- Big EQ (Expandable, Programmable, max 2channel 16band EQ)
- 4 Band EQ per channel (Fully Programmable, 1dB/step)
- Big EQ & 4 Band EQ are totally cooperated.
- Adjustable EQ processing position
- Two EQ coefficients sets
- Night mode support (AGL min -60dB)
- Input and Output mapping function
- On-chip digital de-emphasis filter
- Input mixing function
- Microphone mixing function
- Stereo down-mixing function and output
- Bass management function
- Four subsonic filter and LPF for subwoofer channel
- Main volume control (+18 to -70, 0.5dB/step)
- Additional trim control (+12 to -12, 0.5dB/step) per channel
- Soft volume and Soft volume update
- Four independent Automatic Gain Limiter Group (peak detection)
- Soft Mute per channel
- DC input detect Auto-mute (include Zero input)
- Clipping-free processing (30-bit data processing)

PCM-to-PWM modulator section

- Pop Noise Free
- AM Interference Rejection
- 8-channel PWM amplification output
- Selectable PWM line output on channel 7 and 8
- 2-channel PWM headphone output
- 1 channel PWM Subwoofer line output
- PWM On/Off control per channel
- 105 dB SNR (A-weighted)

B. Functional Block Diagram

