SAF3561: Terrestrial digital radio processor

Overview

The SAF3561 is a digital radio processor that demodulates and processes digital terrestrial baseband signals, such as DAB, DAB+ and T-DMB radio, into audio signals and digital data signals.

Remark: The actual software can constrain the provided hardware features.

Major benefits of terrestrial radio processor systems with SAF3561 are:

- Ideal Coprocessor for conventional baseband radio reception ICs
- CD-sound quality without noise, interference and multipath fading for FM
- Providing new data services
- DAB, DAB+ and T-DMB including audio applications
- Voltage partitioning of I/Os
- Available in both LFBGA and HLQFP packages

System designers can add digital terrestrial radio capability in a simple and inexpensive way through the SAF3561. The SAF3561 decodes digital radio input to provide digital audio and also processes digital data. Multiple interfaces give flexibility while integrating the SAF3561 into the receiver system.

Features

DAB, DAB+ and T-DMB radio technology

- DAB, DAB+ and T-DMB baseband signal decoding and processing
- Data services and background scanning DAB, DAB+ and T-DMB support for second ensemble
- Front end to baseband interface support through both serial BB_I2S interface and/or parallel baseband bus type interface
- Secondary baseband interface for dual tuner applications either with serial BB_I2S interface or parallel baseband bus type interface
- Contact NXP Semiconductors for details on supported DAB, DAB+, T-DMB capabilities of SAF3561:
  - Metadata support for digital radio
  - Data services support for digital radio
  - Program services support for digital radio
  - Seamless blending with an FM or second DAB audio service
  - Advanced audio error concealment features`
  - Impulse noise and spur cancelation
- Support for multiple RF tuner frontends (Contact NXP Semiconductors for a list of supported RF tuner frontends)

Digital audio

- Up to 6 channel (5.1) audio support through I²S-bus serial audio interface
- Optional SRC (8 kHz to 48 kHz) for up to 6 channels of I²S-bus audio output
- I²S-bus serial audio input for auxiliary processing
- Optional SRC (8 kHz to 48 kHz) for I²S-bus input
- Optional restricted support for 96 kHz input and output sample-rate conversion
- Optional digital audio output through S/PDIF (without SRC)
- Basic audio processing for external digital audio sources
- Advanced audio processing (Contact NXP Semiconductors for a list of supported audio processing features)

Memory

- Supports SDR-SDRAM controller (up to 512 Mbit in 16-bit configuration)
- Supports serial NOR-Flash memory with various sizes depending on the actual application

Other peripheral interfaces

- Two I²C-bus interfaces
- Three Serial Peripheral Interfaces (SPI)
- One UART interface with flow control or two UART interfaces w/o flow control
- Five individual GPIO pins for applications and diagnostics
- One JTAG interface for diagnostics

Miscellaneous

- One internal clock oscillator and two internal Phase-Locked Loops (PLL)
- Can run on external crystal or reference clock from external IC
- Powerful signal and audio processing core architecture
- Qualified in accordance with AEC-Q100

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