TC94A70FG/TC94A73MFG
Single-chip CD-MP3 Processor

Highlights

- Highly integrated solution with CD servo, RF amp, 1 Mbit SRAM, multi-bit DA converter and audio DSP with firmware library including MP3, WMA, ATRAC CD, AAC, graphic equalization, and popular surround sound formats

- Pin compatibility between monolithic TC94A70FG and system-in-package (SiP) TC94A73MFG with 16 Mbit DRAM enables a single hardware design to support standard and electronic shock protection (ESP) CD playback versions

- Macro commands simplify software programming

- Programmable RAM and pin-compatible ROM solutions enable customization and reduced time to market.
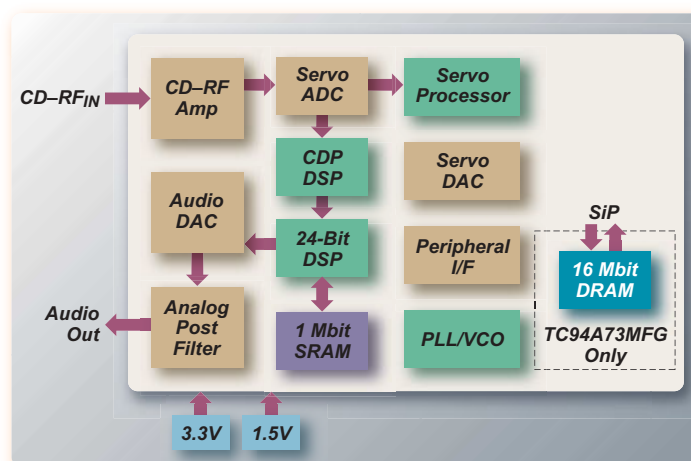
Description

TC94A70FG and TC94A73MFG are highly integrated, high-performance CD-MP3 solutions that enable playback of CD and multiple compressed audio formats from a single chip. Featuring high-quality audio output in I2S, S/PDIF or analog stereo formats, the TC94A70FG integrates an RF amplifier, CD servo, audio DSP, 1 Mbit SRAM, and a multi-bit DA converter in a CMOS monolithic IC. To the TC94A70FG feature set, the TC94A73MFG adds electronic shock protection (ESP) with DSP firmware and 16 Mbit DRAM in an SiP solution. TC94A70FG and TC94A73MFG are available in standard ROM versions or can also be customized to specific customer requirements using an extensive and growing DSP firmware library including MP3, WMA, ATRAC CD, AAC, graphic equalization and popular surround sound formats. Pin compatibility between the monolithic TC94A70FG and the SiP TC94A73MFG minimizes the

engineering investment needed to upgrade TC94A70FG CD playback designs with ESP. New product design is further aided by programmable RAM and macro commands that simplify CD mechanism playback and compressed audio tag and file management. High integration, software customization, and pin-compatible packages make TC94A70FG and TC94A73MFG ideal for compressed audio CD players where low cost, feature flexibility and time to market are key selection criteria.

Supported Product Families

- TC94A70FG-002:
  MP3, WMA9 and ATRAC CD DSP firmware
- TC94A70FG-005:
  MP3, WMA9, ATRAC CD and AAC DSP firmware
- TC94A73MFG-201:
  MP3, WMA9 and ESP DSP firmware
- TC94A73MFG-202:
  MP3, WMA9, ATRAC CD, AAC and ESP DSP firmware

Block Diagram

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Features

- CD servo and RF head amplifier
- Multi-bit DA converter with 8x over-sampling digital filter
- Audio DSP for compressed audio decoding
- Extensive DSP firmware library including MP3, WMA, ATRAC CD, AAC, graphic equalization and various surround sound formats
- 16 Mbit DRAM and DSP firmware for ESP (TC94A73MFG only)
- Capable of CD TEXT data decoding (mode 4)
- Supports CD-DA and CD-R/RW (up to 4x speed)
- Standard ROM and customized ROM versions available
- Programmable RAM for software customization
- 1 Mbit SRAM for data buffering and file management
- Low current (10 µA max) standby mode for data storage
- Digital audio interfaces: (1) I^{2}S input and (1) S/PDIF and (3) I^{2}S outputs
- 4-bit parallel (6 lines) and serial (4 lines) CPU interfaces
- Power requirements: 3.3V and 1.5V
- Lead(Pb)-free, pin-compatible LQFP100 packages

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