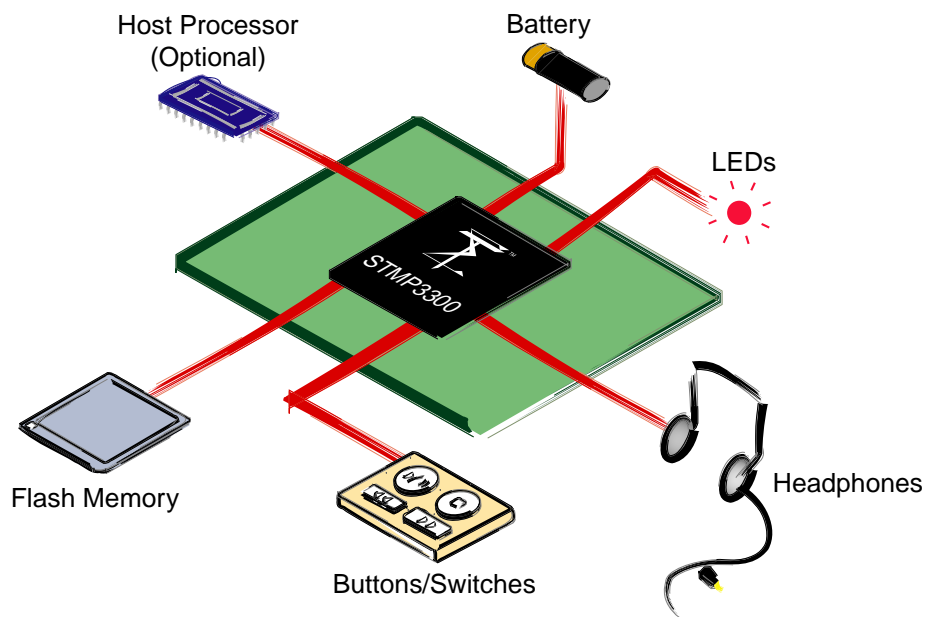*Integrated Mixed-Signal Solutions*

STMP3300
Value-Line Audio Decoder
with USB Interface

FEATURES

- ■ **MP3 decode**

- ■ **NAND Flash, SmartMedia, MMC, Secure Digital, CompactFlash, and IDE Support**

- ■ **LED-based user interface**

- ■ **Designed for up to 20 hour operation from AA battery, as well as other battery options**

- ■ **USB download interface**

- ■ **GPIO and button I/O controls**

- ■ **Volume control on playback**

- ■ **Full analog mixer configuration**

- ■ **Drive headphones directly**

- ■ **High performance 18-bit $\Sigma\Delta$ technology**

- ■ **LINE-to-LINE SNR >95 dB**

- ■ **USB download drivers**

- ■ **Interface to a host chip/processor**

- ■ **Upgradeable firmware**

- ■ **DSP maximum speed is 50 MHz**

- ■ **Supports SDMI**

- ■ **Energy saving dynamic power management**

- ■ **Bass and Treble control; configurable multiple band control**

- ■ **100-pin LQFP**

- ■ **Crystal rate is 24.576 MHz**

DESCRIPTION

SigmaTel's STMP3300 is a single-chip digital music system for dedicated audio players, PDAs and cell phones. It includes an audio decoder with a high performance DSP and a USB interface for downloading music. The STMP3300 also provides an interface to flash memory, button and switch inputs, headphones, and LEDs. The STMP3300's programmable architecture supports the MP3 digital audio standard. The end-user can download music and update software through USB. For devices like PDAs and cell phones, the STMP3300 can act as a slave chip to a host chip/processor. The STMP3300 has low power consumption to allow long battery life for multiple battery types. The DACs include a headphone driver to directly drive low impedance headphones. SigmaTel's proprietary Sigma-Delta ($\Sigma\Delta$) technology achieves a DAC SNR in excess of 95 dB. The STMP3300 is compliant with Phase 1 of the Secure Digital Music Initiative (SDMI).
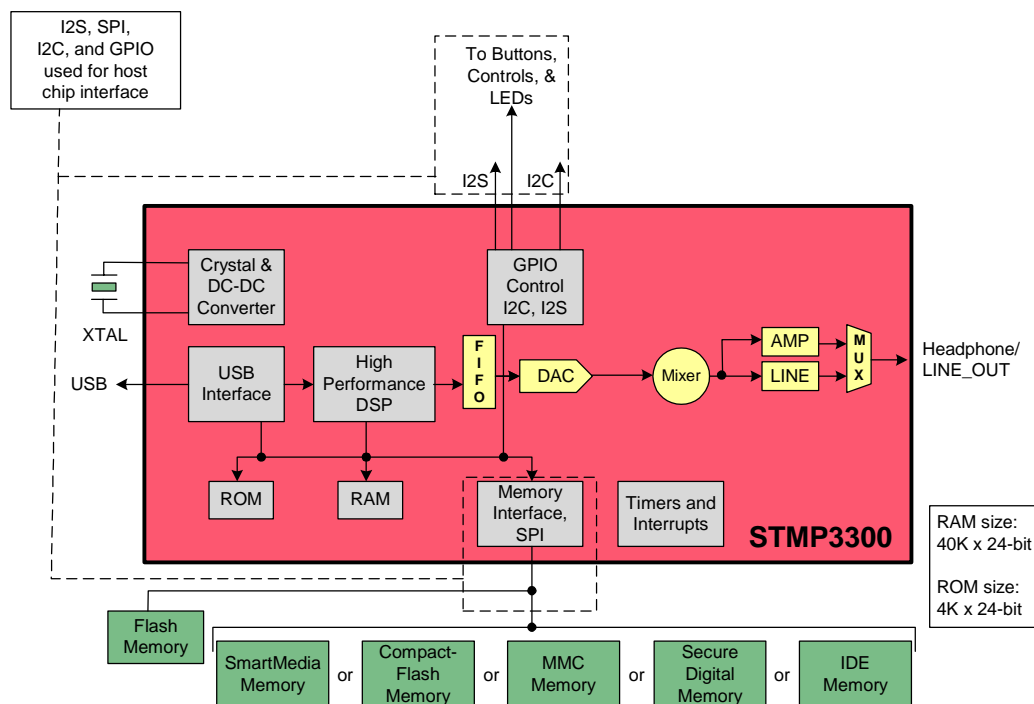

Host Processor (Optional)

Battery

LEDs

STMP3300

Flash Memory

Buttons/Switches

Headphones

STMP3300
Value-Line Audio Decoder with USB Interface

STMP3300 DIAGRAM

ORDERING INFORMATION

Part Number	Package	Temp Range	Supply Range
STMP3300	100-pin LQFP 16mm x 16mm x 1.6mm	0 °C to +70 °C	AVdd = 2.0–2.75V, DVdd = 2.0–2.75V, IOVdd = 2.7–3.3V

KEY SPECIFICATIONS

- **MP3 decoding algorithm support**
- **Upgradeable firmware**
- **Memory support - NAND, SmartMedia, Secure Digital, MMC, CompactFlash, IDE, and NOR**
- **Power consumption:**
  - Up to 20 hours with one AA battery
  - Multiple battery options are available
  - < 200 mW during playback (including Flash, Headphone, and DSP)
- **Highest level of integration**
- **Implementation flexibility**
- **Act as host chip on a device or as a slave chip to a host processor**

5-3300-P1-1.0-0701

MEMORY SUPPORT

Maximum size of each memory device supported in hardware:
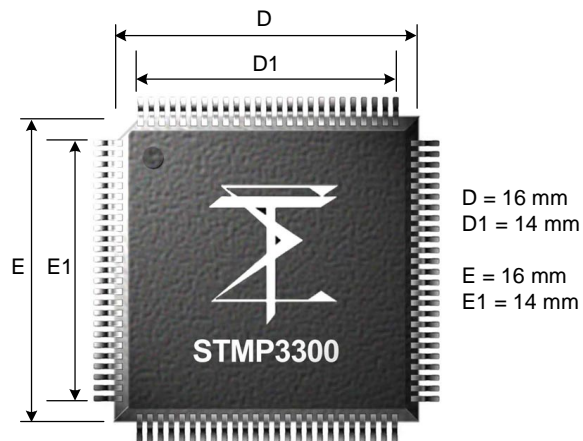
- SmartMedia or NAND Flash: 256 MB
- CompactFlash: 1 GB
- MMC, Secure Digital: 256 MB
- IDE: no maximum

STMP3300 AND SDMI 1.0 COMPLIANCE

- Playback and seek only occurs at "normal speeds"
- Save a unique ID number to on-board or external flash with a minimum length of
  - 128 bits, if randomly assigned or
  - 32 bits, if uniquely assigned by an appropriate assignment authority or licensor designated by SDMI

Note: A software upgrade will be available to upgrade to SDMI 2.0 after the specification has been finalized.

PACKAGE TYPE

D = 16 mm
D1 = 14 mm

E = 16 mm
E1 = 14 mm

SOFTWARE DETAILS

Software Included with STMP3300:

- System software distributed as source code
- MP3 Decoder distributed as object code
- USB Driver Software for the host PC

PROGRAM CODE

- Flash System is based on FAT 12 allowing up to 64 MB of NAND flash and/or SmartMedia external storage. Future versions will be based on FAT 16, FAT 32 and ISO 9660 for CDROMs.
- Amount of off-chip memory required for program code is less than 85 kbytes.

ADDITIONAL SUPPORT

Additional product and company information can be obtained by going to the SigmaTel website at:
www.sigmatel.com