

# SIGMATEL D-MAJOR™ MP3 HARD DISK DRIVE APPLICATION BRIEF

## FEATURES FOR STMP3550/3560

- Decodes MP3 and WMA and is upgradeable to other digital music formats
- Supports WMA Digital Rights Management (DRM) and other security schemes
- Encodes analog data as MP3 from FM\_In, Line\_In, or Mic
- Includes on-chip read-only unique ID for Digital Rights Management (DRM) algorithms
- Hardware supports NAND Flash, NOR Flash, SDRAM, IDE digital devices.
- Flexible, efficient on-chip DC-DC converter
- 50 hours of operation on a single AA battery
- Designed to operate from many different battery configurations, including 1xAA, 1xAAA, 2xAA, 2xAAA, Li-Ion\*
- Integrated battery charger with temperature detection using LRADC
- LED/LCD Driver
- GPIO and button I/O controls
- Voice record in ADPCM format
- Volume control on record and playback
- Full analog mixer configuration
- <0.05% THD headphone driver, including anti-pop and short-circuit protection
- High performance 18-bit  $\Sigma\Delta$  technology
- Line-In to Line-out SNR >90 dB
- Windows and Macintosh USB Mass Storage Class support
- Interface to a host chip/processor (optional)
- Upgradeable firmware
- Energy saving dynamic power management
- Bass and Treble control; configurable multiple band control
- FM tuner input and control support
- Three analog line-level inputs: Line\_In (stereo), FM\_In, and Mic
- Remote control and battery level detection using LRADC
- SDRAM interface

\* 2xAA, 2xAAA and Li-Ion configurations require 144-pin package. Li-Ion is supported with 100-pin package but several external components are required. MPEG Layer 3 audio coding technology licensed from Fraunhofer IIS and THOMSON multimedia.

WMA audio coding technology includes technology owned by Microsoft Licensing, Inc. and cannot be distributed without a license from Microsoft Licensing, Inc.. Windows Media and WMA are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.



[www.sigmatel.com](http://www.sigmatel.com)

## D-MAJOR™ AUDIO DECODER SOLUTIONS FOR HARD DISK DRIVES

SigmaTel D-Major™ audio decoder solutions are ideal for hard drive players. SigmaTel's single-chip solution offers customers integration, lower overall BOM, and low power consumption. SigmaTel integrates all the essential elements for hard drive players: USB 2.0, DC-DC converter to enable power for the entire device, battery recharge, DAC and headphone amp for music playback, ADC and MP3 encode for voice record, an interface to LED or LCD, and FM Tuner interface and control. Besides offering an integrated single-chip solution, SigmaTel also provides firmware support to operate the device in player mode and when it is connected to the PC in mass storage mode. SigmaTel enables hard drive players to use mass storage drivers included with the Windows and Macintosh operating systems.

With an integrated DC-DC converter that is controlled through firmware, SigmaTel's audio decoder solutions are optimized for lower power consumption. With the battery charger integrated, no external circuitry is required to power and charge from USB when connected to the PC.

SigmaTel audio decoders support MP3 and WMA and are field upgradeable to enable end users to update their hard drive players to support the latest audio decoders. In addition to MP3 and WMA decode, MP3 encode is supported on analog\_in, FM\_In, and mic. WMA Digital Rights Management (DRM) is also supported for copyright-protected audio content.

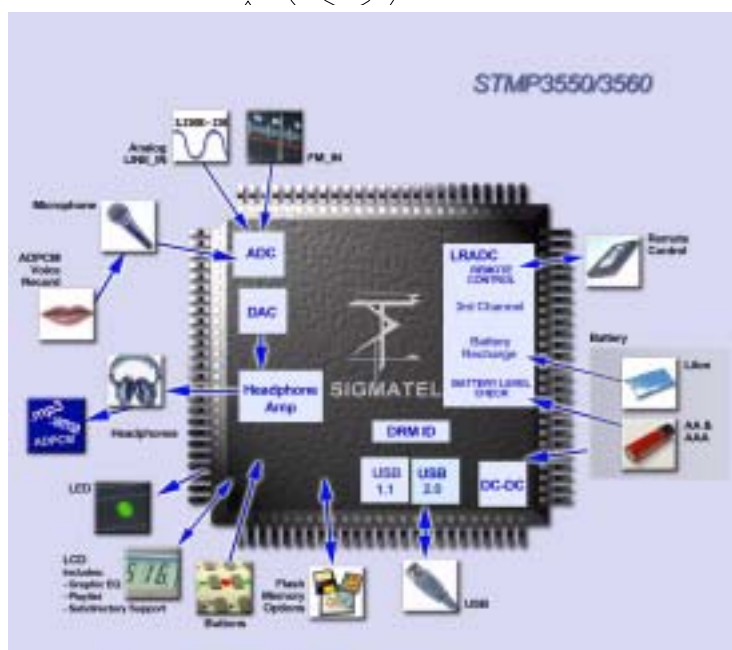
The SigmaTel D-Major™ audio decoders are ideal for hard drive players because of integration, lower overall BOM, low power consumption, and large feature set. SigmaTel offers a complete solution with a single IC and complete firmware support.



*SigmaTel, a provider of integrated circuit (IC) design, is converting the real world into a digital experience with its innovative mixed-signal solutions for the digital audio and wireless infrared markets.*

**Table 1: Product Features**

Features	STMP3550/3560
Battery Life	50
USB	2.0 high and full speed
Integrated Battery Recharge with temperature detection	✓
Supported Battery Types	1XAA, 1XAAA, Li-Ion, 2XAA, 2XAAA*
MP3 Encode	STMP3560 only
Packages	100-pin TQFP 144-pin BGA
LED/LCD	LED/LCD
Integrated RTC	✓
Remote Control using LRADC	✓
DSP Speed	75 MHz
FM_In/Line_In and FM Control	✓
Graphical EQ	✓
Subdirectory Support	✓
Playlist Support	✓
SDRAM Support	Up to 512Mbit
*2XAA, 2XAAA and Li-Ion is supported with 100-pin package. Li-Ion is supported with 100-pin package but several external components are required.	



SigmaTel, Inc. — 3815 S. Capital of TX Hwy, Ste.300 — Austin, TX 78704, USA

www.sigmatel.com — tel: (512) 381-3700 — fax: (512) 744-1700