

Modiotek MAP™ Product Family

32-ploy, 64-poly & 64-poly+MP3 Audio Processor

Introduction

MAP™ series audio processors products are dedicated to cellular phone application. In the past years, Modiotek has been well recognized as a high-quality 32/64 polyphony sound generator solution provider in cellular phone application. To meet fast-changing mobile phone audio features and provide more unique audio solutions promptly to the system makers, Modiotek has developed MAP™ (Mobile Audio Platform) core technology concept dedicated to Mobile applications, A177 & A178 audio processors are based on this technology concept.

A177/A178 are very suitable for music phones. They are capable of performing MP3/AAC decoder algorithm with very low power consumption; 8-band Graphic EQ is built-in for music mode setting, like Pop, Jazz, classic, Rock, ..., and so on. A177/A178 are able to analyze frequency characteristics of MP3 contents and provide the information in register-base so the system could use it for LCD graphic display, LED on/off, and vibration in synchronization with music rhythm & beat.

A177/A178 have built-in 64-polyphony MIDI engine based on split-wavetable synthesis technology, the wavetable ROM of this MIDI engine is doubled to ensure high-quality audio expression just like real instrumental timbres. Most of other MIDI synthesizers used in cell phones, based on either FM-synthesis technology or with small wavetable ROM, actually sounds artificially and electrically like toys do.

In addition, A177/A178 have integrated digital & analog peripherals. In the analog portion of both chips there are two auxiliary input ports; one is for analog signals from FM radio module, and the other is for the speech signals from a baseband processor to achieve hands-free speakerphone feature. Both chips also have Audio ADC and a microphone input port for speech recording. In the digital portion of both chips there is an IIS interface for audio data streaming. A178 has integrated USB1.1, NAND Flash and SD/MMC card interface to reduce system loading of digital audio files transmission and storage.

Also, A177/A178 have patented technologies of Rich Audio™. Based on this technology, a lot of speech/audio processing gimmicks, like background sound mixer™, answering machine, language-learning, ..., and so on, will be easily carried out in the system implementation.

Key Features

- Wavetable sound synthesizer based on high-quality wavetable ROM.
- Provides Audio Engine which is capable of MP3, AAC decoder and AMR CODEC.
- Built-in a 8-band graphic equalizer.
- Built-in hardware sequencer to reduce host CPU workload.
- Built-in ADPCM decoder supports 8/16/32 kHz sampling mode.
- Built-in 4 MIDI ports. Support simultaneous play of 4 MIDI data.
- Support Mass Storage Device Pen drive feature
- RoHS compliant (lead-free) products available.

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Performance

- Low Power Consumption
- Audio Engine operation current: 35mA(typ.)
- Continuously playback MP3 over 12hrs

Rich AudioTM

- Provides PSA (Playback Speed Adjustment) feature
- Provides Background Sound MixerTM.
- Provides Polyrhythm GeneratorTM.

HE Speech EngineTM.

- Provides Digital Answer Machine feature.
- Provides Digital Voice Recorder feature.

Interface & Peripherals

- Provides USB1.1, NAND flash and SD/MMC card interface.
- Built-in speaker & headphone driver.
- Built-in 16-bit resolution audio CODEC.
- Built-in four sets of PWM control logics for 1 vibrator and 3 color LEDs.
- Built-in audio IIS interface for playing the audio source with DAC and power amplifier.
- Provides two auxiliary signal (or sound) inputs and a differential voice input.
- Provides software controlled switches for flexible playback to headphone and speaker with various sources.

Applications

GSM/CDMA/PHS Cellular Phones, PDA, Electronic Dictionary (ED), Educational Learning Aids(ELA), Toys..., and so on.

Product list

Polyphonic	Codename	Part No.	VDD	Package	Remark
32-ploy	S32A	MS32AZ	3V	32-pin QFN	Yamaha MA-3 pin compatible
	S32I	MS32IZ	1.8V	48-pin QFN	With I2S interface
64-ploy+MP3	A177	MA177X	1.8V	100-pin CSP	With USB/Card interface
	A178	MA178X	1.8V	100-pin CSP	With USB/NAND Flash/Card interfa