DA7213 Linux Device Driver Application Note

Version No.	Release Date	Overview of Changes
1.1	11/11/2013	Update document format
1.0	18/2/2013	Beta Release Version

Contents

Introduction

The purpose of this document is to give an overview of how to incorporate the device driver into the linux kernel, and a target system. It is expected that anyone reading this document should have a good understanding of the Linux kernel, and preferably some knowledge of ALSA. In addition the reader will require a working hardware platform with which they can run the Linux kernel containing the driver in question.

Interfaces

This section describes the interfaces supported by the DA7213 audio codec driver.

Control Interface

The DA7213 audio codec driver supports the I2C interface for control of the device. The 7-bit device address is 0x1A.

Audio Interface

The DA7213 audio codec driver supports the I2S interface for all digital audio data transfer.

Installation

Linux Kernel

See Release Notes for information on Kernel version, location and how to download source.

Driver should be already part of the kernel. In addition the following steps will be required to link in the codec to a specific platform:

- Add any necessary platform & machine code for codec in **sound/soc/<mach>** to 'plug' the codec into the host platform. Code exists for other devices and can be used as an example.
- Update machine code in **arch/arm/mach-<mach>** to add platform specific code for codec, such as registering I2C client data for the DA7213 codec driver.

Testing the driver

The following sections give examples of how to run basic scenarios with the DA7213 audio codec. The examples use the ALSA command line utilities to execute the use-cases.

Playback

The following is an example of how to execute playback of music through headphones:

```
$ amixer -q cset name='Headphone Volume' 41%
$ amixer -q cset name='Headphone Switch' on
$ amixer -q cset name='Mixout Left DAC Left Switch' on
$ amixer -q cset name='Mixout Right DAC Right Switch' on

$ aplay test.wav
```

Record

The following is an example of how to execute recording of sound from a microphone:

```
$ amixer -q cset name='Mic 1 Volume' 71%
$ amixer -q cset name='Mic 1 Switch' on
$ amixer -q cset name='Mic 1 Amp Source MUX' 'Differential'
$ amixer -q cset name='Mixin Left Mic 1 Switch' on
$ amixer -q cset name='Mixin Right Mic 1 Switch' on
$ amixer -q cset name='Mixin PGA Volume' 47
$ amixer -q cset name='Mixin PGA Switch' on
$ amixer -q cset name='ADC Volume' 76%
$ amixer -q cset name='ADC Switch' on

$ arecord –f cd –t wav output.wav
```

AUX to Headphones (e.g. FM Radio)

The following shows how to setup the Codec for AUX to Headphone setup which also allows for recording of AUX stream on host platform:

```
# Setup AUX path
$ amixer cset 'Aux Volume' 78%
$ amixer cset 'Aux Switch' on
$ amixer cset 'Mixin Left Aux Left Switch' on
$ amixer cset 'Mixin Right Aux Right Switch' on
$ amixer cset 'Mixin PGA Volume' 47%
$ amixer cset 'Mixin PGA Switch' on
$ amixer cset 'ADC Volume' 76%
$ amixer cset 'ADC Switch' on

# Route Input Mixers to Output Mixers
$ amixer cset 'Mixout Right Mixin Right Switch' on
$ amixer cset 'Mixout Left Mixin Left Switch' on

# Setup Headphone path
$ amixer cset name='Headphone Volume' 41%
$ amixer cset name='Headphone Switch' on
$ amixer cset name='Mixout Left DAC Left Switch' on
$ amixer cset name='Mixout Right DAC Right Switch' on
```