

# ARK1668E 声卡配置说明

## 一、ark1668e 开发板 i2s 设计说明

i2s0:MICIN/LINEIN、CS5343

i2s1:LINEOUT、ES8316(支持全双工)

i2s2:CS4334

提示：LINEOUT、ES8316、CS4334 均经过 BD37033 音效 IC 的不同通道输入(参考说明四进行通道切换)

## 二、CPU 内置/外部免驱声卡配置说明：

### 2.1、内核配置:(命令:build/build.sh XXXXXX config linux)

Device Drivers --->

<\*> Sound card support --->

<\*> Advanced Linux Sound Architecture --->

<\*> ALSA for SoC audio support --->

<\*> ASoC support for Arkmicro

< > ARKN141 I2S Device Driver

< > Soc Internal DAC for Audio out

< > Soc Internal ADC for Audio In

<\*> ARK1668E I2S Device Driver

<\*> ARK1668E Internal audio codec for Audio In/out

CODEC drivers --->

< > Everest Semi ES8316 CODEC

<\*> Everest Semi CS4334 CODEC

<\*> Everest Semi CS5343 CODEC

<\*> Support Audio BD37033 IC Driver

<\*> ASoC Simple sound card support

### 2.2、配置设备树 (linux-arkmicro\linux\arch\arm\boot\dts\ark1668e\_devb.dts)

<1>、ark1668e\_devb.dts 修改：

关闭宏：// #define I2S\_FULL\_DUPLEX\_CODECS\_SUPPORT

sound {

.....

simple-audio-card,aux-devs = <&amper>;

simple-audio-card,dai-link@0 { /\* I2S0 - adc \*/

format = "i2s";

bitclock-master = <&capture\_codec>;

frame-master = <&capture\_codec>;

capture\_cpu: cpu {

sound-dai = <&i2s\_adc>;

};

capture\_codec: codec {

```

        sound-dai = <&cs5343_codec>;//External(ADC):cs5343_codec    ;
Internal:ark_codec
    };
};
simple-audio-card,dai-link@1 {    /* I2S1 - dac */
    format = "i2s";
    bitclock-master = <&playback_codec>;
    frame-master = <&playback_codec>;
    playback_cpu: cpu {
        sound-dai = <&i2s_dac>;
    };
    playback_codec: codec {
        sound-dai = <&ark_codec>;//Internal:ark_codec
    };
};
simple-audio-card,dai-link@2 {    /* I2S2 - dac */
    format = "i2s";
    bitclock-master = <&cpu_master>;
    frame-master = <&cpu_master>;
    cpu_master: cpu {
        sound-dai = <&i2s2_dac>;
    };
    codec_master: codec {
        sound-dai = <&cs4334_codec>;//External(DAC):cs4334_codec ;
    };
};
}

```

<2>、ark1668e.dtsi 修改:

```

i2s_dac: i2s-dac@e4200000 {
    .....
    //full-duplex-mode;//需要 i2s1 全双工支持，需要打开配置
    .....
};

```

### 配置说明:

指定 codec 和 cpu 的 master/slave 关系:

i2s0:

bitclock-master = <&capture\_codec>;//ark1668e 开发板: 默认配置 codec 为 master, cpu 为 slave, 反之则改为 capture\_cpu  
frame-master = <&capture\_codec>;

i2s1:

bitclock-master = <&playback\_codec>;//ark1668e 开发板: 默认配置 codec 为 master, cpu 为 slave, 反之则改为 playback\_cpu

```

frame-master = <&playback_codec>;
i2s2:
bitclock-master = <&cpu_master>;//ark1668e 开发板：默认配置 codec 为 slave,
cpu 为 master, 反之则改为 codec_master
frame-master = <&cpu_master>;

指定 audio codec:
sound-dai = <&ark_codec>;//i2s0->External:cs5343_codec(免驱 ADC) i2s2-
>cs4334_codec(免驱 DAC,只能做 slave 模式); Internal:ark_codec(MICIN)

指定音效 IC:
simple-audio-card,aux-devs = <& >;//开发板默认配置音效 IC(BD37033),如目
标板未使用或改用其他免驱型号音效 IC 可以屏蔽或重新指定

```

### 三、外部全双工声卡配置说明：(开发版 codec:es8316(支持全双工))

#### 3.1、内核配置:(命令:build/build.sh XXXXXX config linux)

```

Device Drivers --->
<*> Sound card support --->
    <*> Advanced Linux Sound Architecture --->
        <*> ALSA for SoC audio support --->
            <*> ASoC support for Arkmicro
            < > ARKN141 I2S Device Driver
            < > Soc Internal DAC for Audio out
            < > Soc Internal ADC for Audio In
            <*> ARK1668E I2S Device Driver
                < > ARK1668E Internal audio codec for Audio In/out
            CODEC drivers --->
                <*> Everest Semi ES8316 CODEC
                < > Everest Semi CS4334 CODEC
                < > Everest Semi CS5343 CODEC
            <*> Support Audio BD37033 IC Driver
            <*> ASoC Simple sound card support

```

#### 3.2、配置设备树 (linux-arkmicro\linux\arch\arm\boot\dtb\目录: ark1668e\_devb.dts、ark1668e.dtsi)

```

<1>、ark1668e_devb.dts 修改:
打开宏: #define I2S_FULL_DUPLEX_CODEC_SUPPORT

sound {
    ....
    ....
    simple-audio-card,aux-devs = <& >;

```

```

simple-audio-card,format = "i2s";
simple-audio-card,bitclock-master = <&dailink0_cpu>;
simple-audio-card,frame-master = <&dailink0_cpu>;
dailink0_cpu:simple-audio-card,cpu {
    sound-dai = <&i2s_dac>;
};
dailink0_codec:simple-audio-card,codec {
    sound-dai = <&es8316_codec>;
};
.....
.....
}

```

<2>、ark1668e.dtsi 修改:

```

i2s_dac: i2s-dac@e4200000 {
    .....
    full-duplex-mode; //需要 i2s1 全双工支持，需要打开配置
    .....
};

```

#### 配置说明:

指定 codec 和 cpu 的 master/slave 关系:

bitclock-master = <&dailink0\_cpu>; //ark1668e 开发板: 默认配置 codec 为 slave, cpu 为 master, 反之则改为 dailink0\_codec

frame-master = <&dailink0\_cpu>;

指定音效 IC:

simple-audio-card,aux-devs = <& >; //开发板默认配置音效 IC(BD37033),如目标板未使用或改用其他型号音效 IC 可以屏蔽或重新指定

#### 四、开发板 BD37033 音源输出通道切换

查看通道控件:

```

amixer controls
amixer cget iface=MIXER,name='PA Input Select'

```

设置通道:

LINEOUT ->BD37033

切换命令: amixer cset iface=MIXER,name='PA Input Select' 1 //LINEOUT

ES8316 OUTPUT->BD37033

切换命令: amixer cset iface=MIXER,name='PA Input Select' 3 //ES8316 OUTPUT

CS4334 OUTPUT->BD37033

切换命令: amixer cset iface=MIXER,name='PA Input Select' 2 //CS4334 OUTPUT