凌智電子
LOCKZHINER Electronic

OpenHarmonyOS
E53模块开发-智能手势

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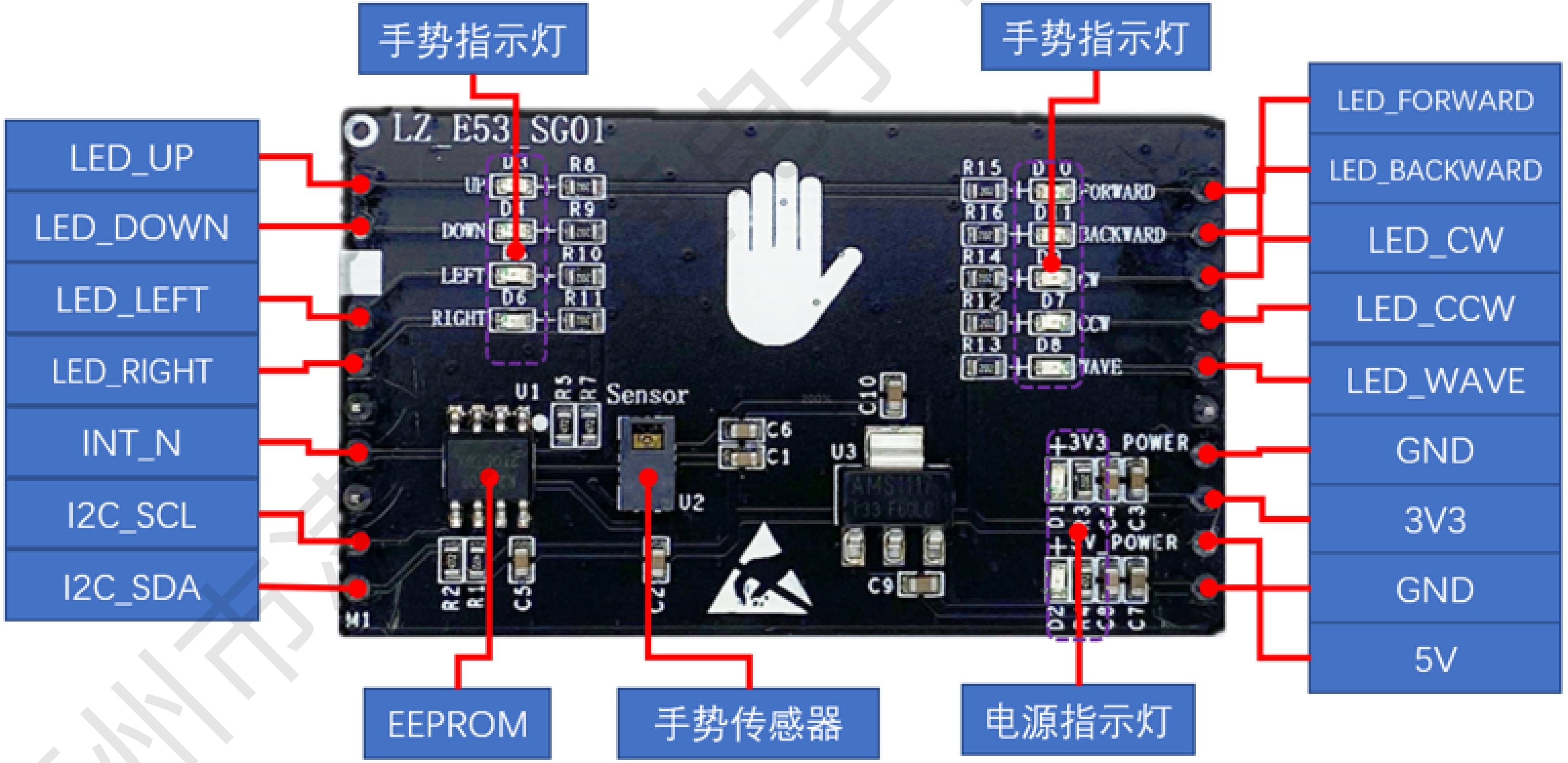
01 硬件设计

资源介绍


手势指示灯
手势指示灯
LED_UP
LED_DOWN
LED_LEFT
LED_RIGHT
INT_N
I2C_SCL
I2C_SDA
LED_FORWARD
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LZ_E53_SG01
UP
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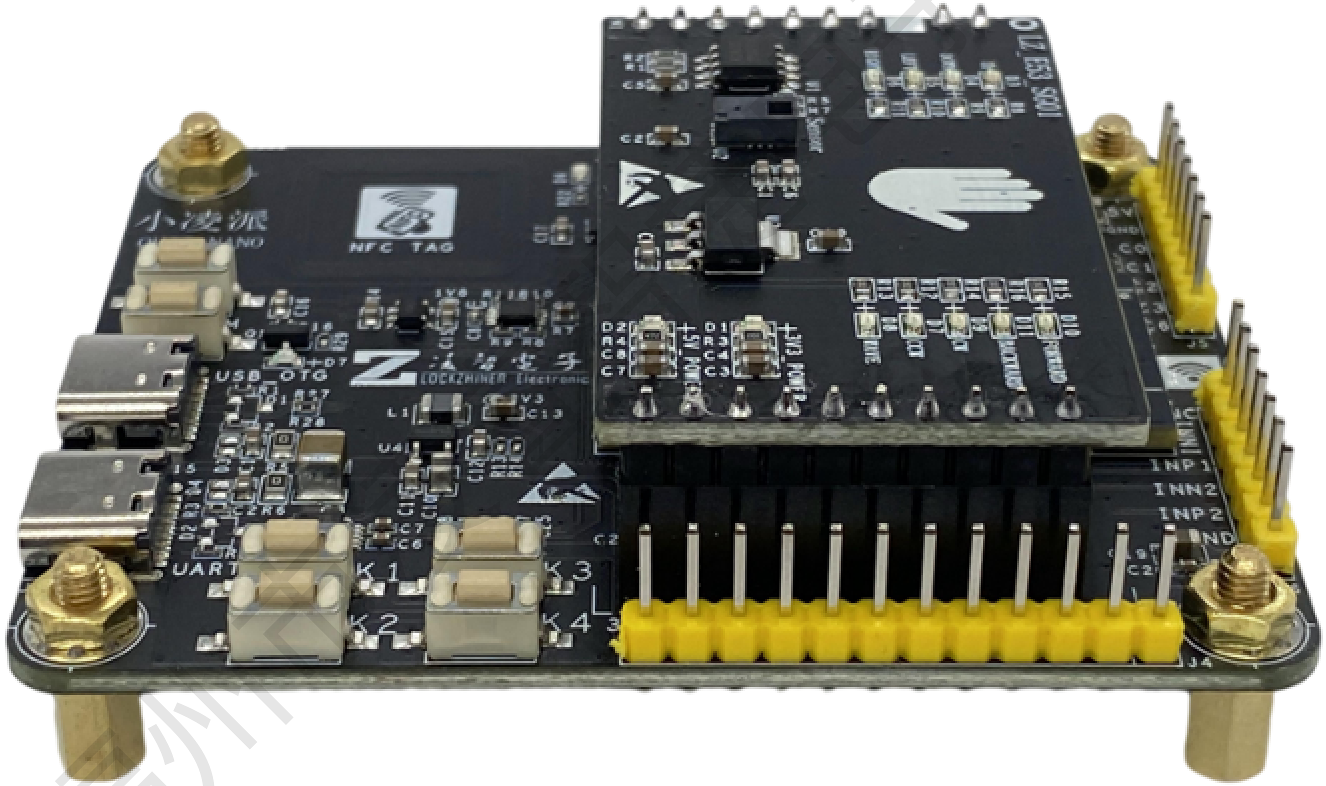
CW
CCW
WAVE
Sensor
3V3_POWER
5V_POWER
U1
U2
U3
M1

02 硬件连接



03 API分析

```
unsigned int e53_gs_init();
```

该函数主要功能是E53智能手势模块初始化，包括初始化LED的GPIO，PAJ7620的i2c接口，和PAJ7620配置初始化，最后初始化采集任务。

```
unsigned int e53_gs_get_gesture_state(unsigned short *flag);
```

该函数主要功能是E53智能手势模块获取手势状态，参数flag为获取当前手势，返回值1为获取成功，0为失败。

03 API分析

```
void e53_gs_led_up_set(unsigned char is_on);
void e53_gs_led_down_set(unsigned char is_on);
void e53_gs_led_left_set(unsigned char is_on);
void e53_gs_led_right_set(unsigned char is_on);
void e53_gs_led_forward_set(unsigned char is_on);
void e53_gs_led_backward_set(unsigned char is_on);
void e53_gs_led_cw_set(unsigned char is_on);
void e53_gs_led_ccw_set(unsigned char is_on);
void e53_gs_led_wave_set(unsigned char is_on);
```

以上函数主要功能是E53智能手势模块LED显示控制，用于显示手势状态。参数is_on为1开启LED，为0关闭LED

04 实例分析

1、打开sdk下面路径的文件

vendor/lockzhiner/rk2206/samples/c6_e53_gesture_sensor/e53_gesture_sensor_example.c

2、创建任务

在e53_gs_example函数中，创建的一个线程e53_gs_process。

```
void e53_gs_example()
{
    unsigned int thread_id;
    TSK_INIT_PARAM_S task = {0};
    unsigned int ret = LOS_OK;
    task.pfnTaskEntry = (TSK_ENTRY_FUNC)e53_gs_process;
    task.uwStackSize = 2048;
    task.pcName = "e53 getsture sensor process";
    task.usTaskPrio = 24;
    ret = LOS_TaskCreate(&thread_id, &task);
    if (ret != LOS_OK)
    {
        printf("Falied to create Task_One ret:0x%x\n", ret);
        return;
    }
}
```

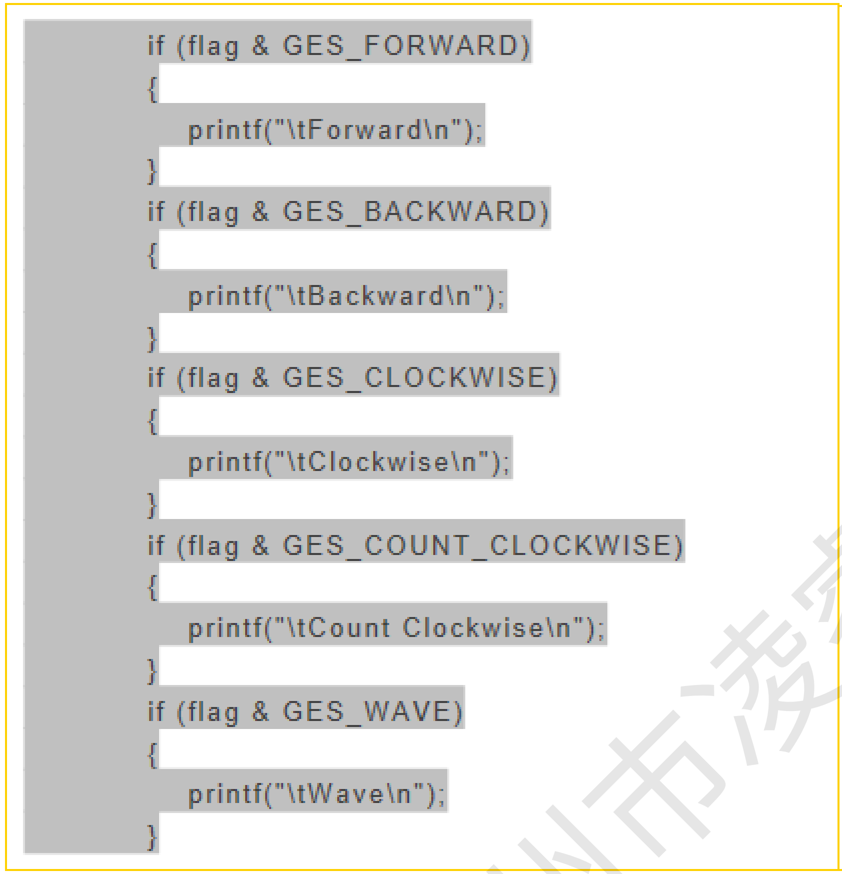
实例分析

e53_gs_process函数先调用e53_gs_init()初始化智能手势模块。然后调用 e53_gs_get_gesture_state(&flag);获取手势状态，获取失败时空闲100毫秒重复执行。获取手势状态成功则根据手势状态打印结果并控制对应的LED显示。

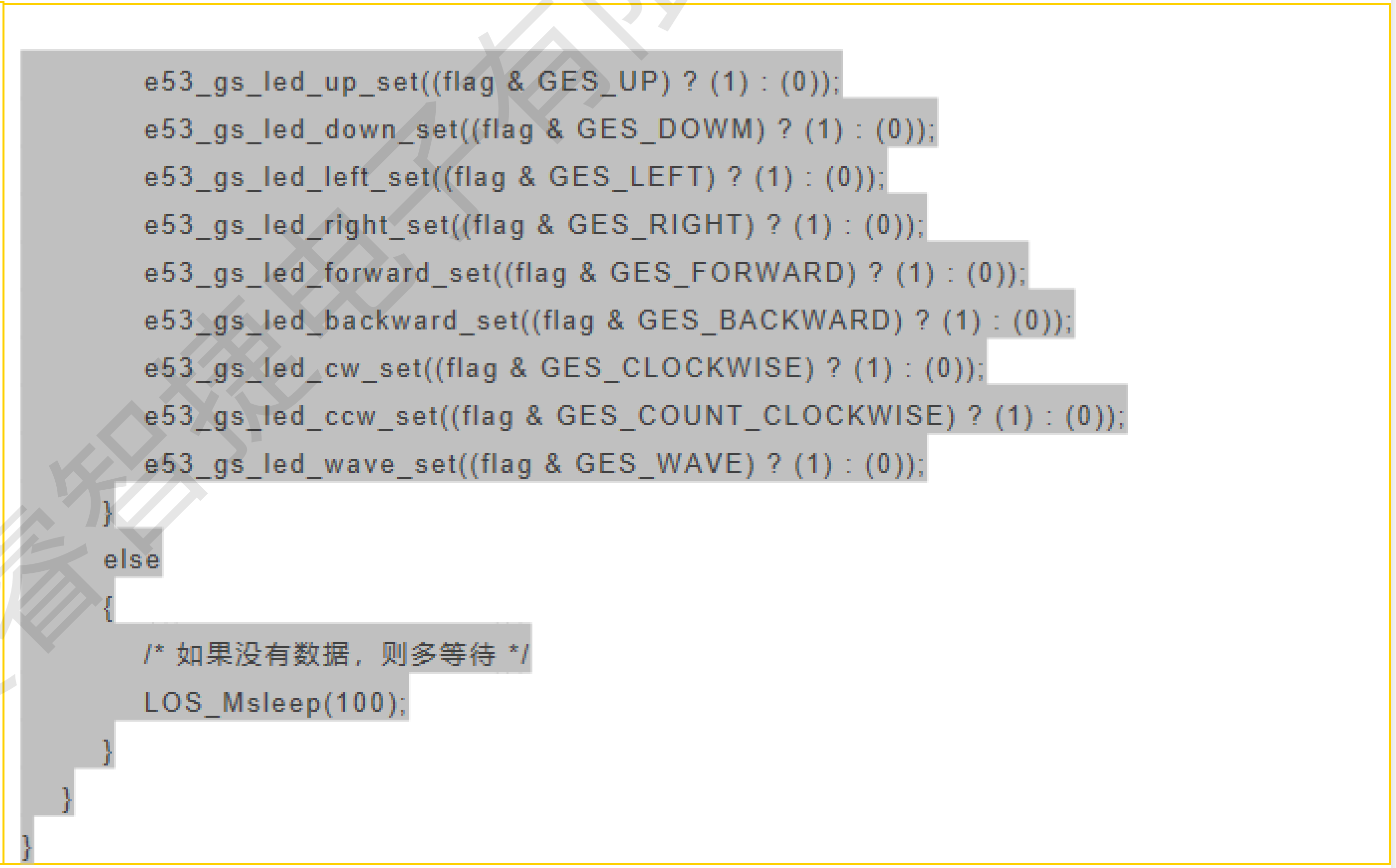
```
void e53_gs_process(void *arg)
{
    unsigned int ret = 0;
    unsigned short flag = 0;
    e53_gs_init();
    while (1)
    {
        ret = e53_gs_get_gesture_state(&flag);
        if (ret != 0)
        {
            printf("Get Gesture Statu: 0x%x\n", flag);
```

```
            if (flag & GES_UP)
            {
                printf("\tUp\n");
            }
            if (flag & GES_DOWM)
            {
                printf("\tDown\n");
            }
            if (flag & GES_LEFT)
            {
                printf("\tLeft\n");
            }
            if (flag & GES_RIGHT)
            {
                printf("\tRight\n");
            }
```

实例分析



```
        if (flag & GES_FORWARD)
        {
            printf("\tForward\n");
        }
        if (flag & GES_BACKWARD)
        {
            printf("\tBackward\n");
        }
        if (flag & GES_CLOCKWISE)
        {
            printf("\tClockwise\n");
        }
        if (flag & GES_COUNT_CLOCKWISE)
        {
            printf("\tCount Clockwise\n");
        }
        if (flag & GES_WAVE)
        {
            printf("\tWave\n");
        }
```



```
            e53_gs_led_up_set((flag & GES_UP) ? (1) : (0));
            e53_gs_led_down_set((flag & GES_DOWM) ? (1) : (0));
            e53_gs_led_left_set((flag & GES_LEFT) ? (1) : (0));
            e53_gs_led_right_set((flag & GES_RIGHT) ? (1) : (0));
            e53_gs_led_forward_set((flag & GES_FORWARD) ? (1) : (0));
            e53_gs_led_backward_set((flag & GES_BACKWARD) ? (1) : (0));
            e53_gs_led_cw_set((flag & GES_CLOCKWISE) ? (1) : (0));
            e53_gs_led_ccw_set((flag & GES_COUNT_CLOCKWISE) ? (1) : (0));
            e53_gs_led_wave_set((flag & GES_WAVE) ? (1) : (0));
        }
        else
        {
            /* 如果没有数据，则多等待 */
            LOS_Msleep(100);
        }
    }
}
```

实例分析

3、修改编译脚本

修改 vendor/lockzhiner/rk2206/sample 路径下 BUILD.gn 文件，指定 e53_gs_example 参与编译。

```
"./e53_gesture_sensor:e53_gs_example",
```

修改 device/lockzhiner/rk2206/sdk_liteos 路径下 Makefile 文件，添加 -le53_gs_example 参与编译。

```
hardware_LIBS = -lhal_iothardware -lhardware -le53_gs_example
```

4、编译固件

```
hb set -root .
hb set
hb build -f
```

实例分析

5、烧写固件

6、通过串口查看结果

运行结果

```
Get Gesture Statu: 0x1
  Down
Get Gesture Statu: 0x5
  Down
  Left
......
```

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谢谢聆听

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