Use NUC123 I2C to Drive LIS3DH

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	本范例代码使用 NUC123 I2C 控制三轴加速度传感器 LIS3DH
BSP Version	NUC123Series_BSP_CMSIS_v3.01.001
Hardware	NuTiny-EVB-123-LQFP64

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1 功能描述

使用NUC123 I2C 接口控制LIS3DH三轴加速度传感器。通过I2C读取寄存器中的值，从而可以获得传感器在三个方向上的加速度值，这些数值可以拿来做一些有趣的应用，如记录移动轨迹。

2 代码描述

首先初始化系统时钟，初始化串口用于打印数据和初始化 I2C 接口，并读取设备 ID：

```
Init_CLK();
Init_UART0_DebugPort();
Init_I2C();
printf("Device ID = %02x \n", I2C_Read_Byte(DEVICE_LIS3DH, WHO_AM_I_REG));
```

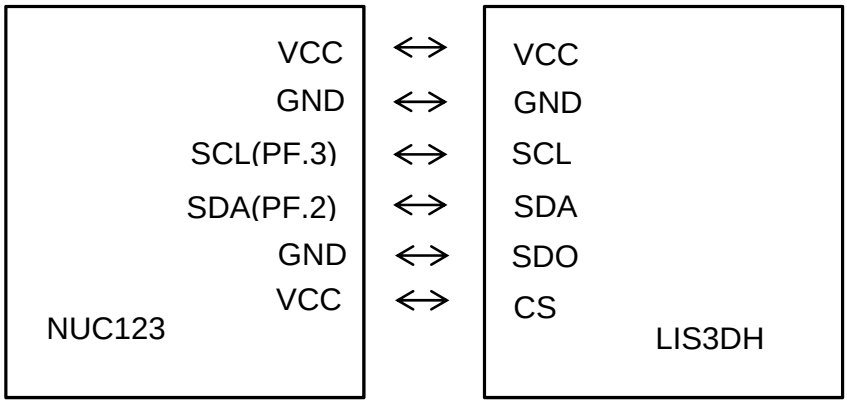
MCU获取LIS3DH的数据程序如下：

```
XL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_X_L);
XH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_X_H);
YL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Y_L);
YH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Y_H);
ZL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Z_L);
ZH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Z_H);
printf("X=%02x%02x, Y=%02x%02x, Z=%02x%02x \n", XH, XL, YH, YL, ZH, ZL);
```

3 软件和硬件环境

- **软件环境**
  - BSP 版本
    - NUC123Series_BSP_CMSIS_v3.01.001
  - IDE 版本
    - Keil uVersion 4.6
- **硬件环境**
  - 电路元件
    - NuTiny-EVB-123-LQFP64
    - LIS3DH
  - 示意图

NUC123 使用 I^2C 来控制 LIS3DH 传感器并读取三个方向上的加速度值。



4 目录信息

- EC_NUC123_3-axis_Sensor_LIS3DH_Driver_V1.00
  - Library — Sample code header and source files
    - CMSIS — Cortex® Microcontroller Software Interface Standard (CMSIS) by Arm® Corp.
    - Device — CMSIS compliant device header file
    - StdDriver — All peripheral driver header and source files
  - SampleCode
    - ExampleCode — Source file of example code

5 如何执行示例代码

1. 根据目录信息章节进入 ExampleCode 路径中的 KEIL 文件夹，双击 NUC123_3-axis_Sensor_LIS3DH_Driver.uvproj。
2. 进入编译模式界面
   a. 编译
   b. 下载代码到内存
   c. 进入/离开除错模式
3. 进入除错模式界面
   a. 执行代码

6 修订纪录

Date	Revision	Description
Sep.25, 2019	1.00	1. 初始发布.

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