The driver of MLX90614

Example Code Introduction for 32-bit NuMicro®Family

Information

Application	This sample code is the driver of MLX90614 based on NANO100 series.
BSP Version	Nano100B_Series_BSP_CMSIS_v3.03.000
Hardware	NuTiny-EVB-Nano130-LQFP128 V1.0

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1 Function Description

1.1 Introduction

This sample code is the driver of MLX90614 based on NANO100 series. NANO100 series controls MLX90614 and reads temperature value by I2C interface.

1.2 Demo Result

```
Core Clock = 42000000 Hz

+------------------------------------------------------+
|   Nano100 Series I2C Sample Code with MLX90614       |
+------------------------------------------------------+
Temperature = 28 °C

Temperature = 28 °C

Temperature = 28 °C

Temperature = 28 °C
```

2 Code Description

Initialize I2C0.

```
void I2C0_Init(void)
{
    /* Set GPA8,9 multi-function pins for I2C0 SDA and SCL */
    SYS->PA_H_MFP |= (SYS_PA_H_MFP_PA8_MFP_I2C0_SDA | SYS_PA_H_MFP_PA9_MFP_I2C0_SCL);

    /* Reset I2C0 */
    SYS_ResetModule(I2C0_RST);

    /* Enable I2C0 clock */
    CLK_EnableModuleClock(I2C0_MODULE);

    I2C_Open(I2C0, 100000);

    /* Enable I2C0 interrupt */
    I2C_EnableInt(I2C0);

    NVIC_EnableIRQ(I2C0_IRQn);
}
```

Read temperature value.

```
if(I2C0_Read(MLX90614_ADDR, 0x07, 2, au8Data) == 1)
{
    u16Temp = (au8Data[1] << 8) + au8Data[0];
    u16Temp = u16Temp / 50 - 273;

    printf("Temperature = %d °C\n\n", u16Temp);
}
```

3 Software and Hardware Environment

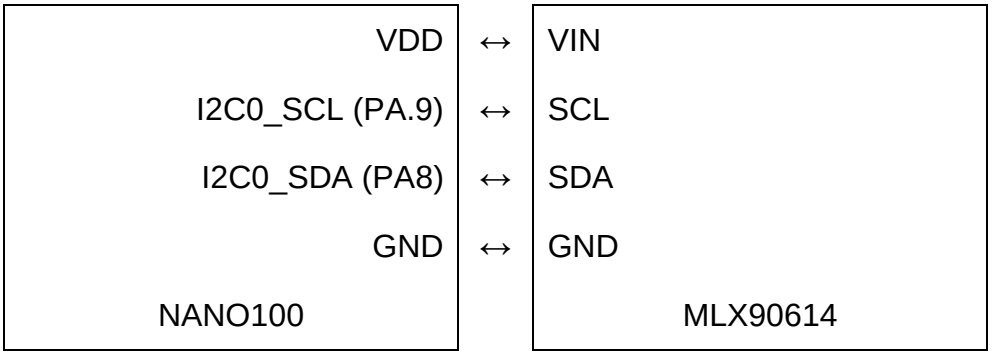
Software Environment

- BSP version
  - Nano100B_Series_BSP_CMSIS_v3.03.000
- IDE version
  - Keil uVersion4.74

Hardware Environment

- Circuit components
  - NuTiny-EVB-Nano130-LQFP128 V1.0
  - MLX90614
- Diagram

NANO100 series controls MLX90614 by I2C interface, and reads 3-axis accelerometer data.



4 Directory Information

- EC_NANO100_I2C_MLX90614_V1.00
  - Library — Sample code header and source files
    - CMSIS — Cortex®Microcontroller Software Interface Standard (CMSIS) V4.5.0 definitions 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 How to Execute Example Code

1. Browsing into sample code folder by Directory Information(section 4) and double click I2C_MLX90614.uvproj.
2. Enter Keil compile mode
   a. Build
   b. Download
   c. Start/Stop debug session
3. Enter debug mode
   a. Run

6 Revision History

Date	Revision	Description
Oct.10, 2019	1.00	1. Initially issued.

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