SPI 21MHz Clock Data Transmission

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	Demonstrates SPI data transmission for a 21MHz clock.
BSP Version	Nano100B Series BSP CMSIS V3.03.000
Hardware	NuTiny-EVB-Nano130-LQPF128

1 Function Description

1.1 Introduction

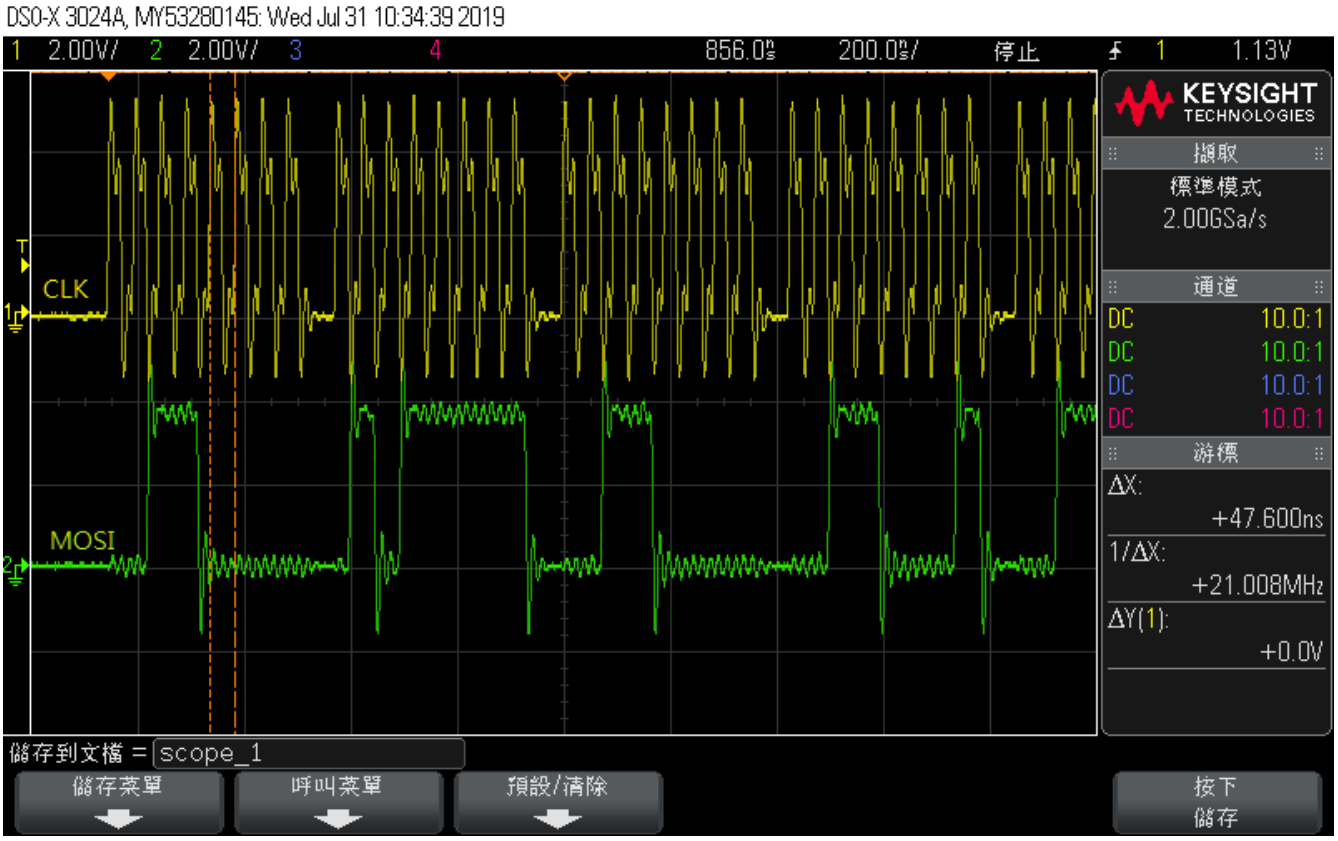
Demonstrates SPI data transmission for a 21MHz clock.

1.2 Principle

Set HCLK to be a 42MHz PLL.

Then set the SPI clock to HCLK/2 and the SPI will generate a 21MHz clock.

1.3 Demo Result



2 Code Description

Set HCLK to be a 42MHz PLL：

```
    CLK->PWRCTL  |=  CLK_PWRCTL_HIRC_EN; // Enable HIRC
    CLK->CLKDIV0 = 1; // Set HCLK Divider
    CLK->PLLCTL = CLK_PLLCTL_PLL_SRC_HIRC | PLL_IN_DIV8 + PLL_MULTY(Multiply);
    while((CLK->CLKSTATUS & CLK_CLKSTATUS_PLL_STB) == 0);
    CLK->CLKSEL0 = CLK_CLKSEL0_HCLK_S_PLL; // HCLK clock source select PLL
```

Configuration SPI and set SPI clock：

```
    SPI0->CTL = (1 << 12) // Suspend Interval 1 SPI_CLK
              | SPI_CTL_FIFOM_Msk // Enable FIFO mode
              | (0x8ul << SPI_CTL_TX_BIT_LEN_Pos) // Set transmit bit length
              | SPI_CTL_TX_NEG_Msk; // Transmit at Negative Edge
    SPI0->SSR = SPI_SSR_AUTOSS_Msk | (0x1ul << SPI_SSR_SSR_Pos); // Automatic Slave
Selection
    SPI0->CLKDIV = Div-1;
```

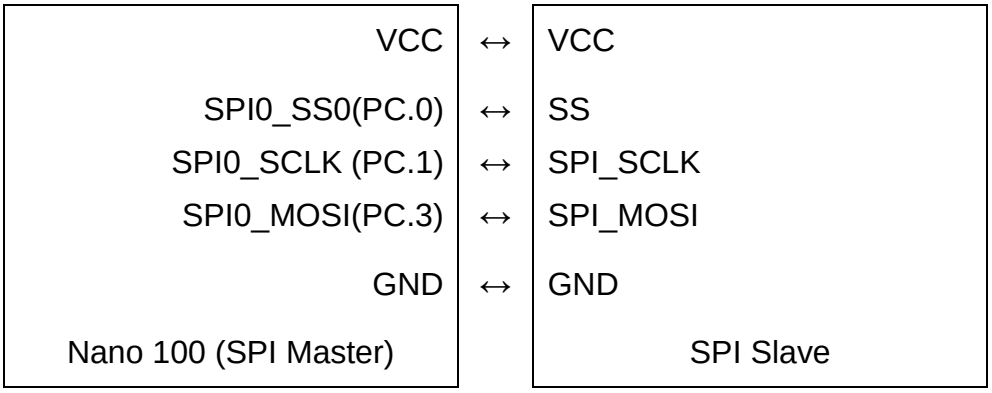
3 Software and Hardware Environment

Software Environment

- BSP version
  - Nano100B Series BSP CMSIS V3.03.000
- IDE version
  - Keil uVersion 5.26

Hardware Environment

- Circuit components
  - NuTiny-EVB-Nano130-LQPF128
- Diagram



4 Directory Information

- EC_Nano100_SPI_Data_Transmission_With_21MHz_Clock_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 How to Execute Example Code

1. Browsing into sample code folder by Directory Information (section 4) and double click Nano100_SPI_Data_Transmission_With_21MHz_Clock.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
Apr. 24, 2019	1.00	1. Initially issued.

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