

MS51 驅動 TLC2543

NuMicro[®] 8 位系列微控制器範例代碼介紹

文件資訊

代碼簡述	本範例代碼使用 MS51 讀取 TLC2543 的 A/D 轉換值
BSP 版本	MS51_Series_BSP_Keil_V1.00.002
開發平台	NuTiny-MS51FB V1.1

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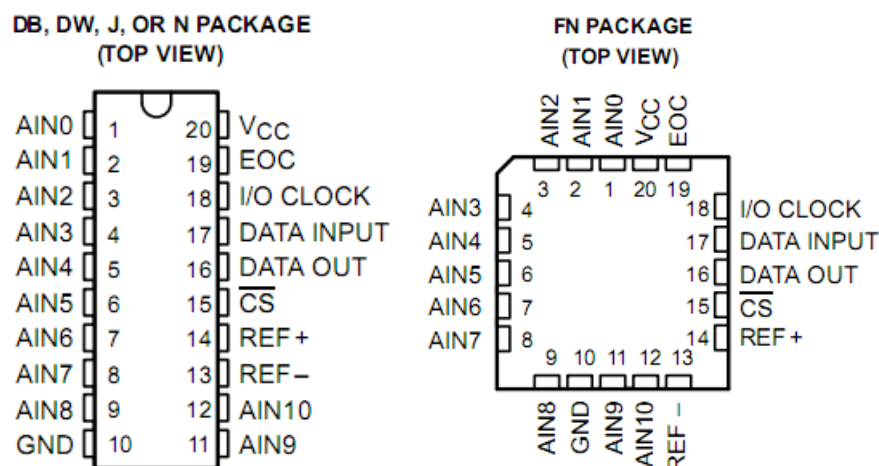
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1 功能介紹

1.1 簡介

TLC2543是帶有11通道的12位A/D轉換芯片，引腳圖如下：



本範例使用MS51系列通過GPIO口模擬TLC2543的讀寫時序獲取TLC2543的A/D轉換結果，並通過串口打印出TLC2543採樣的ADC值，TLC2543的讀寫時序如下：

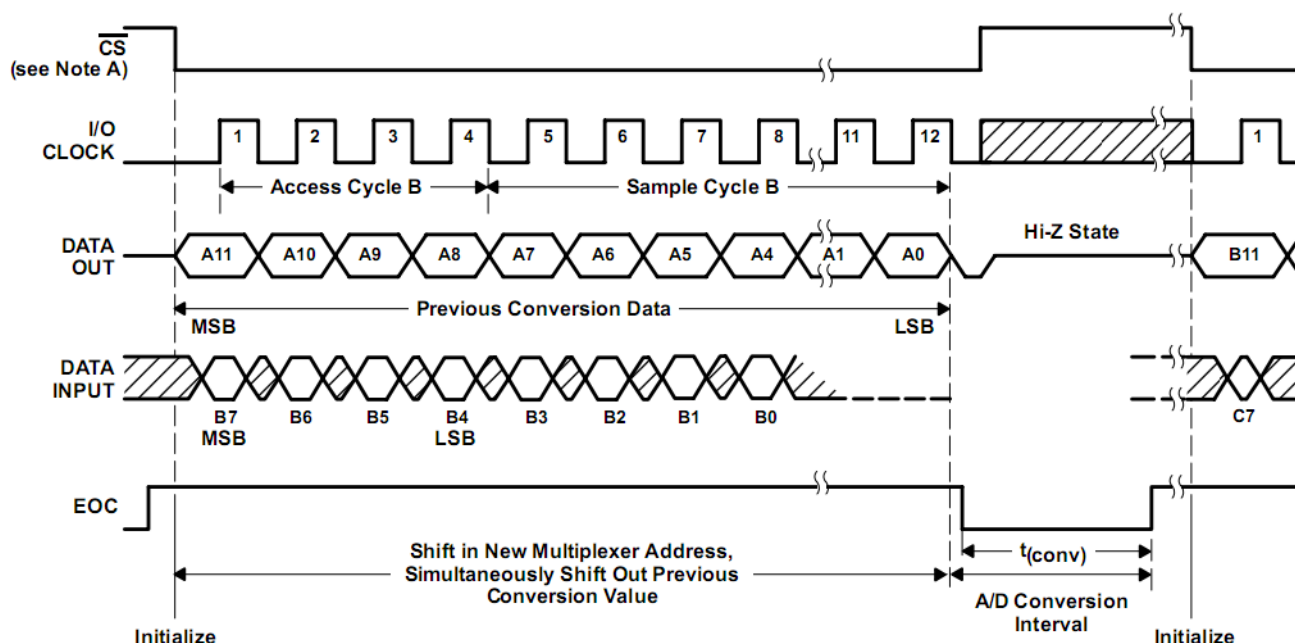


Figure 9. Timing for 12-Clock Transfer Using CS With MSB First

注：關於TLC2543的詳細信息，請參考TLC2543的數據手冊。

1.2 執行結果

執行結果，打印數據如下：

```
+-----+
|  TLC2543 Driver  |
+-----+
The ADC data is: 0x872
The ADC data is: 0x870
The ADC data is: 0x877
The ADC data is: 0x86a
The ADC data is: 0x875
The ADC data is: 0x873
The ADC data is: 0x86f
The ADC data is: 0x867
The ADC data is: 0x86a
The ADC data is: 0x870
The ADC data is: 0x875
The ADC data is: 0x86d
The ADC data is: 0x86f
```

2 代碼介紹

通過 GPIO 模擬 TLC2543 的讀寫時序，讀取其 A/D 轉換值：

```
/**
 * @brief Read the conversion data of TLC2543.
 *
 * @param[in] u8Channel define the conversion channel, from 0~11.
 *
 * @return The conversion data. It is the previous conversion data.
 */
uint16_t TLC2543_Read(uint8_t u8Channel)
{
    uint16_t u16DataOut = 0;
    uint16_t u16DataIn = 0;
    uint8_t i = 0;

    u16DataOut = ((uint16_t)u8Channel) << 12;

    TLC2543_CS = 0;

    for(i = 0; i < 12; i++)
    {
        TLC2543_CLK = 0;
        TLC2543_DIN = (bit)(u16DataOut & 0x8000);
        u16DataOut <<= 1;
        TLC2543_Delay();
        TLC2543_CLK = 1;
        u16DataIn <<= 1;
        if(TLC2543_DOUT == 1)
        {
            u16DataIn |= 0x01;
        }
        TLC2543_Delay();
    }

    TLC2543_CLK = 0;
    TLC2543_Delay();
    TLC2543_CS = 1;
    TLC2543_Delay();
}
```

```
while(TLC2543_EOC == 0);  
  
return u16DataIn;  
}
```

3 軟體與硬體環境

● 軟體環境

■ BSP 版本

◆ MS51_Series_BSP_Keil_V1.00.002

■ IDE 版本

◆ Keil uVersion 4.72

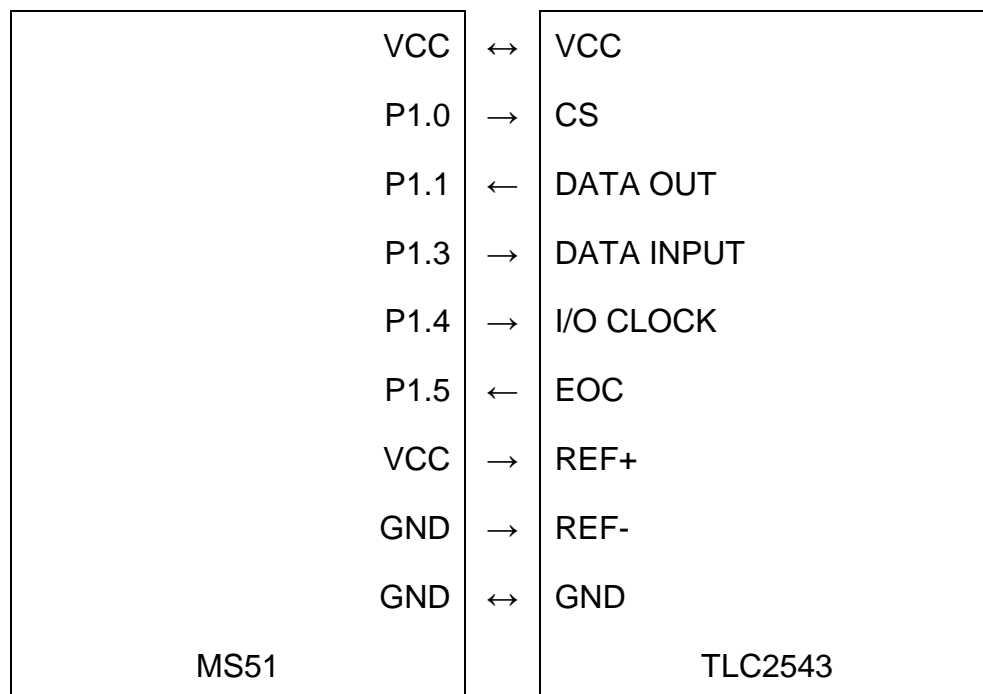
● 硬體環境

■ 電路元件

◆ NuTiny-MS51FB V1.1







◆ TLC2543

■ 示意圖



4 目錄資訊

EC_MS51_TLC2543_V1.00

 Library	Sample code header and source files
 Device	MCU header files
 Startup	MCU Startup file
 StdDriver	All peripheral driver header and source files
 SampleCode	
 ExampleCode	Source file of example code

5 如何執行範例程式

1. 根據目錄資訊章節進入 ExampleCode 路徑中的 KEIL 資料夾，雙擊 TLC2543.uvproj。
2. 進入編譯模式介面
 - a. 編譯
 - b. 下載代碼至記憶體
 - c. 進入 / 離開除錯模式
3. 進入除錯模式介面
 - a. 執行代碼

6 修訂紀錄

Date	Revision	Description
Sep.25, 2019	1.00	1. 初始發布.

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