使用EADC捕捉DAC讯号

NuMicro® 32 位系列微控制器范例代码介绍

文件信息

代码简述	本范例代码使用EADC捕捉DAC所产生的正弦波
BSP 版本	M480 Series BSP CMSIS V3.04.000
开发平台	NuMaker-PFM-M487 Ver 3.0

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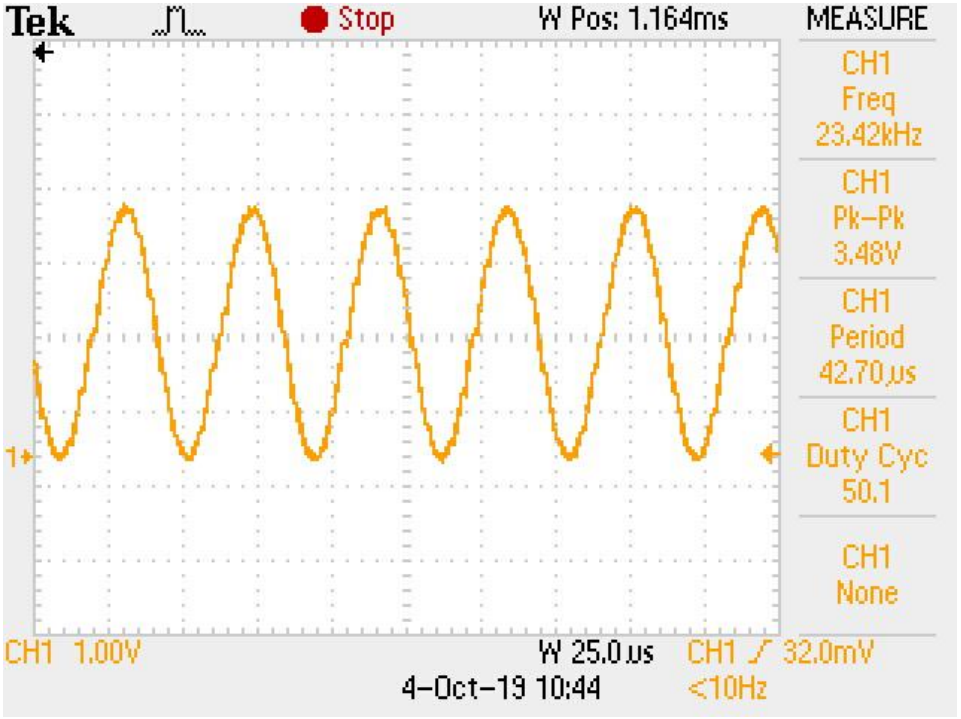
1 功能介绍

1.1 简介

范例程序中，使用软件触发的机制使DAC输出正弦波，并且等DAC输出稳定后使用软件触发让EADC读取其数值，正弦波由64个阶层组成。DAC所用脚位为PB.13，EADC所用脚位为PB.0，用户须把此两脚位连接。

1.2 执行结果

从EADC所量到讯号如下图



2 代码介绍

首先初始化DAC与EADC模块为软件触发：

```
void DAC_Init()
{
    /* Set the software trigger DAC and enable D/A converter */
    DAC_Open(DAC1, 0, DAC_SOFTWARE_TRIGGER);

    /* The DAC conversion settling time is 1us */
    DAC_SetDelayTime(DAC1, 1);

    /* Set DAC 12-bit holding data */
    DAC_WRITE_DATA(DAC1, 0, 0x400);
}
void EADC_Init()
{
    /* Set input mode as single-end and enable the A/D converter */
    EADC_Open(EADC, EADC_CTL_DIFFEN_SINGLE_END);

    /* Configure the sample module 0 for analog input channel 2 and software trigger
source.*/
    EADC_ConfigSampleModule(EADC, 0, EADC_SOFTWARE_TRIGGER, 0);

    /* Clear the A/D ADINT0 interrupt flag for safe */
    EADC_CLR_INT_FLAG(EADC, EADC_STATUS2_ADIF0_Msk);
}
```

接着在 while 循环内软件触发 DAC，并且等待 DAC 输出完成后，软件触发 EADC 开始读取数据。

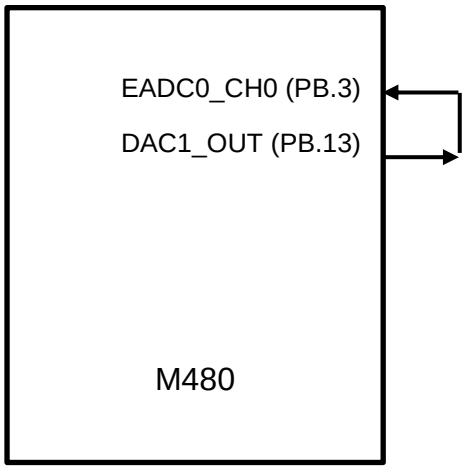
```
while(1) {
        for(index = 0; index < 64; index++) {
            /* Write data to DAC */
            DAC_WRITE_DATA(DAC1, 0, sine[index++]);
            /* Software trigger DAC to start converting */
            DAC_START_CONV(DAC1);
            /* Wait DAC convertion complete */
            while(DAC_IS_BUSY(DAC1,0));

            /* Software trigger ADC to start converting */
            EADC_START_CONV(EADC, BIT0);
```

```
            /* Wait ADC convertion complete */
            while(EADC_IS_BUSY(EADC));
            /* Get the conversion result of the sample module 0 */
            i32ConversionData = EADC_GET_CONV_DATA(EADC, 0);
        }
    }
```

3 软件与硬件环境

- 软件环境
  - BSP 版本
    - M480 Series BSP CMSIS V3.04.000
  - IDE 版本
    - Keil uVersion 5.26
- 硬件环境
  - 电路组件
    - NuMaker-PFM-M487 or other M480 Development Board
  - 示意图



4 目录信息

- EC_M480_EADCCaptureDAC_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 如何执行范例程序

1. 根据目录信息章节进入 ExampleCode 路径中的 KEIL 文件夹，双击 EADCCaptureDAC.uvproj
2. 进入编译模式接口
   a. 编译
   b. 下载代码至内存
   c. 进入 / 离开除错模式
3. 进入除错模式接口
   a. 执行代码

6 修订纪录

Date	Revision	Description
Oct. 1, 2019	1.00	1. 初始发布.

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