


F2802x Peripheral Driver Library

USER'S GUIDE



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Texas Instruments
13905 University Boulevard
Sugar Land, TX 77479
<http://www.ti.com/c2000>



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1 Introduction

The Texas Instruments® C2000Ware® Peripheral Driver Library is a set of drivers for accessing the peripherals found on the Piccolo Entryline family of C2000 microcontrollers. While they are not drivers in the pure operating system sense (that is, they do not have a common interface and do not connect into a global device driver infrastructure), they do provide a mechanism that makes it easy to use the device's peripherals.

The capabilities and organization of the drivers are governed by the following design goals:

- They are written entirely in C except where absolutely not possible.
- They demonstrate how to use the peripheral in its common mode of operation.
- They are easy to understand.
- They are reasonably efficient in terms of memory and processor usage.
- They are as self-contained as possible.
- Where possible, computations that can be performed at compile time are done there instead of at run time.

Some consequences of these design goals are:

- The drivers are not necessarily as efficient as they could be (from a code size and/or execution speed point of view). While the most efficient piece of code for operating a peripheral would be written in assembly and custom tailored to the specific requirements of the application, further size optimizations of the drivers would make them more difficult to understand.
- The drivers do not support the full capabilities of the hardware. Some of the peripherals provide complex capabilities which cannot be utilized by the drivers in this library, though the existing code can be used as a reference upon which to add support for the additional capabilities.

For many applications, the drivers can be used as is. But in some cases, the drivers will have to be enhanced or rewritten in order to meet the functionality, memory, or processing requirements of the application. If so, the existing driver can be used as a reference on how to operate the peripheral.

This device support release also contains the traditional peripheral register header files and associated software. Please see chapter 2 of this guide for more information on this software. For future development we recommend the use of this driver infrastructure instead of the traditional header files.

Source Code Overview

The following is an overview of the organization of the peripheral driver library source code.

<code>common/source/</code>	This directory contains the source code for the drivers.
<code>common/include/</code>	This directory contains the header files for the drivers. These headers define not only values used in the drivers and calls to drivers but also define the register structure of each peripheral.

`common/ccs/`

This directory contains the CCS project for the driver library. The driver library can be rebuilt if modifications are made by importing and building this project.

2 Programming Model

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2.1 Introduction

The peripheral driver library provides support for two programming models: the direct register access model and the software driver model. Each model can be used independently or combined, based on the needs of the application or the programming environment desired by the developer.

Each programming model has advantages and disadvantages. Use of the direct register access model generally results in smaller and more efficient code than using the software driver model. However, the direct register access model requires detailed knowledge of the operation of each register and bit field, as well as their interactions and any sequencing required for proper operation of the peripheral; the developer is insulated from these details by the software driver model, generally requiring less time to develop applications.

2.2 Direct Register Access Model

In the direct register access model, the peripherals are programmed by the application by writing values directly into the peripheral's registers. Every register is defined in a peripherals corresponding header file contained in `f2802x/headers/include`. These headers define the locations of each register relative to the other registers in a peripheral as well as the bit fields within each register. All of this is implemented using structures. The header files only define these structure; they do not declare them. To declare the structures a C source file must be included in each project `f2802x/headers/source/F2802x_GlobalVariableDefs.c`. This file declares each structure (and in some cases multiple instances when there are multiple instances of a peripheral) as well as declaring and associating each structure with a code section for the linker. The final piece of the puzzle is a special linker command file that associates each section defined in `F2802x_GlobalVariableDefs.c` with the physical memory of the device. There are two version of this linker command file, one for use with SYS/BIOS and one for use without, but both can be found in `f2802x/headers/cmd`. One of this linker command files as well as your normal application linker command file should be used to link your project.

Applications that wish to use the direct register access model should define the root of the `f2802x` directory to be an include path and include the file `DSP28x_Project.h` in each source file where register accesses are made.

In practice accessing peripheral registers and bitfields is extremely easy. Below are a few examples:

```
GpioCtrlRegs.GPAPUD.bit.GPIO0 = 0;
GpioCtrlRegs.GPAMUX1.bit.GPIO0 = 1;
```

2.3 Software Driver Model

In the software driver model, the API provided by the peripheral driver library is used by applications to control the peripherals. Because these drivers provide complete control of the peripherals in their normal mode of operation, it is possible to write an entire application without direct access to the hardware. This method provides for rapid development of the application without requiring detailed knowledge of how to program the peripherals.

Before a driver for a peripheral can be used that peripherals driver header file should be included and a handle to that peripheral initialized:

```
GPIO_Handle myGpio;  
myGpio = GPIO_init((void *)GPIO_BASE_ADDR, sizeof(GPIO_Obj));
```

In subsequent calls to that peripheral's driver the initialized handle as well as any parameters are passed to the function:

```
GPIO_setPullUp(myGpio, GPIO_Number_0, GPIO_PullUp_Enable);  
GPIO_setMode(myGpio, GPIO_Number_0, GPIO_0_Mode_EPWM1A);
```

As you can see from the above sample, using the driver library makes one's code substantially more readable.

In addition to including the appropriate header files for the drivers you are using, the project should also have `driverlib.lib` linked into it. A CCS project as well as the lib file can be found in `f2802x/common/ccs`. The driver library also contains some basic helper functions that many projects will use as well as the direct register access model source file `F2802x_GlobalVariableDefs.c` which allows you to use the header files without having to directly compile this source file into your project.

The drivers in the peripheral driver library are described in the remaining chapters in this document. They combine to form the software driver model.

2.4 Combining The Models

The direct register access model and software driver model can be used together in a single application, allowing the most appropriate model to be applied as needed to any particular situation within the application. For example, the software driver model can be used to configure the peripherals (because this is not performance critical) and the direct register access model can be used for operation of the peripheral (which may be more performance critical). Or, the software driver model can be used for peripherals that are not performance critical (such as a UART used for data logging) and the direct register access model for performance critical peripherals.

To use both models interchangeably in your application:

- Link `driverlib.lib` into your application
- Include `DSP28x_Project.h` in files you wish to use the direct register access model
- Add `C2000Ware_version/device_support/f2802x/` to your projects include path (Right click on project, Build Properties, Include Path)
- Include driver header files from `f2802x/common/include` in any source file that makes calls to that driver.

3 Analog to Digital Converter (ADC)

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3.1 Introduction

The Analog to Digital Converter (ADC) APIs provide a set of functions for accessing the Piccolo F2802x ADC modules.

This driver is contained in `f2802x/common/source/adc.c`, with `f2802x/common/include/adc.h` containing the API definitions for use by applications.

3.2 ADC

Data Structures

- `_ADC_Obj`

Defines

- `ADC_ADCCTL1_ADCBGPWD_BITS`
- `ADC_ADCCTL1_ADCBSY_BITS`
- `ADC_ADCCTL1_ADCBSYCHAN_BITS`
- `ADC_ADCCTL1_ADCENABLE_BITS`
- `ADC_ADCCTL1_ADCPWDN_BITS`
- `ADC_ADCCTL1_ADCREFPWD_BITS`
- `ADC_ADCCTL1_ADCREFSEL_BITS`
- `ADC_ADCCTL1_INTPULSEPOS_BITS`
- `ADC_ADCCTL1_RESET_BITS`
- `ADC_ADCCTL1_TEMPCONV_BITS`
- `ADC_ADCCTL1_VREFLOCONV_BITS`
- `ADC_ADCSAMPLEMODE_SEPARATE_FLAG`
- `ADC_ADCSAMPLEMODE_SIMULEN0_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN10_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN12_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN14_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN2_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN4_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN6_BITS`
- `ADC_ADCSAMPLEMODE_SIMULEN8_BITS`
- `ADC_ADCSOCxCTL_ACQPS_BITS`

- [ADC_ADCSOCxCTL_CHSEL_BITS](#)
- [ADC_ADCSOCxCTL_TRIGSEL_BITS](#)
- [ADC_BASE_ADDR](#)
- [ADC_dataBias](#)
- [ADC_DELAY_usec](#)
- [ADC_INTSELxNy_INTCONT_BITS](#)
- [ADC_INTSELxNy_INTE_BITS](#)
- [ADC_INTSELxNy_INTSEL_BITS](#)
- [ADC_INTSELxNy_LOG2_NUMBITS_PER_REG](#)
- [ADC_INTSELxNy_NUMBITS_PER_REG](#)

Enumerations

- [ADC_IntMode_e](#)
- [ADC_IntNumber_e](#)
- [ADC_IntPulseGenMode_e](#)
- [ADC_IntSrc_e](#)
- [ADC_ResultNumber_e](#)
- [ADC_SampleMode_e](#)
- [ADC_SocChanNumber_e](#)
- [ADC_SocNumber_e](#)
- [ADC_SocSampleWindow_e](#)
- [ADC_SocTrigSrc_e](#)
- [ADC_VoltageRefSrc_e](#)

Functions

- void [ADC_clearIntFlag](#) ([ADC_Handle](#) adcHandle, const [ADC_IntNumber_e](#) intNumber)
- void [ADC_disable](#) ([ADC_Handle](#) adcHandle)
- void [ADC_disableBandGap](#) ([ADC_Handle](#) adcHandle)
- void [ADC_disableInt](#) ([ADC_Handle](#) adcHandle, const [ADC_IntNumber_e](#) intNumber)
- void [ADC_disableRefBuffers](#) ([ADC_Handle](#) adcHandle)
- void [ADC_disableTempSensor](#) ([ADC_Handle](#) adcHandle)
- void [ADC_enable](#) ([ADC_Handle](#) adcHandle)
- void [ADC_enableBandGap](#) ([ADC_Handle](#) adcHandle)
- void [ADC_enableInt](#) ([ADC_Handle](#) adcHandle, const [ADC_IntNumber_e](#) intNumber)
- void [ADC_enableRefBuffers](#) ([ADC_Handle](#) adcHandle)
- void [ADC_enableTempSensor](#) ([ADC_Handle](#) adcHandle)
- void [ADC_forceConversion](#) ([ADC_Handle](#) adcHandle, const [ADC_SocNumber_e](#) socNumber)
- bool_t [ADC_getIntStatus](#) ([ADC_Handle](#) adcHandle, const [ADC_IntNumber_e](#) intNumber)
- [ADC_SocSampleWindow_e](#) [ADC_getSocSampleWindow](#) ([ADC_Handle](#) adcHandle, const [ADC_SocNumber_e](#) socNumber)
- int16_t [ADC_getTemperatureC](#) ([ADC_Handle](#) adcHandle, int16_t sensorSample)
- int16_t [ADC_getTemperatureK](#) ([ADC_Handle](#) adcHandle, int16_t sensorSample)
- [ADC_Handle](#) [ADC_init](#) (void *pMemory, const size_t numBytes)

- void `ADC_powerDown` (`ADC_Handle` adcHandle)
- void `ADC_powerUp` (`ADC_Handle` adcHandle)
- `uint_least16_t` `ADC_readResult` (`ADC_Handle` adcHandle, const `ADC_ResultNumber_e` resultNumber)
- void `ADC_reset` (`ADC_Handle` adcHandle)
- void `ADC_setIntMode` (`ADC_Handle` adcHandle, const `ADC_IntNumber_e` intNumber, const `ADC_IntMode_e` intMode)
- void `ADC_setIntPulseGenMode` (`ADC_Handle` adcHandle, const `ADC_IntPulseGenMode_e` pulseMode)
- void `ADC_setIntSrc` (`ADC_Handle` adcHandle, const `ADC_IntNumber_e` intNumber, const `ADC_IntSrc_e` intSrc)
- void `ADC_setSampleMode` (`ADC_Handle` adcHandle, const `ADC_SampleMode_e` sampleMode)
- void `ADC_setSocChanNumber` (`ADC_Handle` adcHandle, const `ADC_SocNumber_e` socNumber, const `ADC_SocChanNumber_e` chanNumber)
- void `ADC_setSocSampleWindow` (`ADC_Handle` adcHandle, const `ADC_SocNumber_e` socNumber, const `ADC_SocSampleWindow_e` sampleWindow)
- void `ADC_setSocTrigSrc` (`ADC_Handle` adcHandle, const `ADC_SocNumber_e` socNumber, const `ADC_SocTrigSrc_e` trigSrc)
- void `ADC_setVoltRefSrc` (`ADC_Handle` adcHandle, const `ADC_VoltageRefSrc_e` voltRef)

3.2.1 Data Structure Documentation

3.2.1.1 `_ADC_Obj_`

Definition:

```
typedef struct
{
    uint16_t ADCRESULT[16];
    uint16_t rsvd_1[26096];
    uint16_t ADCCTL1;
    uint16_t rsvd_2[3];
    uint16_t ADCINTFLG;
    uint16_t ADCINTFLGCLR;
    uint16_t ADCINTOVF;
    uint16_t ADCINTOVFCLR;
    uint16_t INTSELxNy[5];
    uint16_t rsvd_3[3];
    uint16_t SOCPRICTRL;
    uint16_t rsvd_4;
    uint16_t ADCSAMPLEMODE;
    uint16_t rsvd_5;
    uint16_t ADCINTSOCSEL1;
    uint16_t ADCINTSOCSEL2;
    uint16_t rsvd_6[2];
    uint16_t ADCSOCFLG1;
    uint16_t rsvd_7;
    uint16_t ADCSOCFRC1;
    uint16_t rsvd_8;
```

```
uint16_t ADCSOCOVF1;  
uint16_t rsvd_9;  
uint16_t ADCSOCOVFCLR1;  
uint16_t rsvd_10;  
uint16_t ADCSOCxCTL[16];  
uint16_t rsvd_11[16];  
uint16_t ADCREFTRIM;  
uint16_t ADCOFFTRIM;  
uint16_t rsvd_12[13];  
uint16_t ADCREV;  
}  
_ADC_Obj_
```

Members:

ADCRESULT ADC result registers.

rsvd_1 Reserved.

ADCCTL1 ADC Control Register 1.

rsvd_2 Reserved.

ADCINTFLG ADC Interrupt Flag Register.

ADCINTFLGCLR ADC Interrupt Flag Clear Register.

ADCINTOVF ADC Interrupt Overflow Register.

ADCINTOVFCLR ADC Interrupt Overflow Clear Register.

INTSELxNy ADC Interrupt Select x and y Register.

rsvd_3 Reserved.

SOCPRICTRL ADC Start Of Conversion Priority Control Register.

rsvd_4 Reserved.

ADCSAMPLEMODE ADC Sample Mode Register.

rsvd_5 Reserved.

ADCINTSOCSEL1 ADC Interrupt Trigger SOC Select 1 Register.

ADCINTSOCSEL2 ADC Interrupt Trigger SOC Select 2 Register.

rsvd_6 Reserved.

ADCSOCFLG1 ADC SOC Flag 1 Register.

rsvd_7 Reserved.

ADCSOCFRC1 ADC SOC Force 1 Register.

rsvd_8 Reserved.

ADCSOCOVF1 ADC SOC Overflow 1 Register.

rsvd_9 Reserved.

ADCSOCOVFCLR1 ADC SOC Overflow Clear 1 Register.

rsvd_10 Reserved.

ADCSOCxCTL ADC SOCx Control Registers.

rsvd_11 Reserved.

ADCREFTRIM ADC Reference/Gain Trim Register.

ADCOFFTRIM ADC Offset Trim Register.

rsvd_12 Reserved.

ADCREV ADC Revision Register.

Description:

Defines the analog-to-digital converter (ADC) object.

3.2.2 Define Documentation

3.2.2.1 ADC_ADCCTL1_ADCBGPWD_BITS

Definition:

```
#define ADC_ADCCTL1_ADCBGPWD_BITS
```

Description:

Defines the location of the ADCBGPWD bits in the ADCTL1 register.

3.2.2.2 ADC_ADCCTL1_ADCBSY_BITS

Definition:

```
#define ADC_ADCCTL1_ADCBSY_BITS
```

Description:

Defines the location of the ADCBSY bits in the ADCTL1 register.

3.2.2.3 ADC_ADCCTL1_ADCBSYCHAN_BITS

Definition:

```
#define ADC_ADCCTL1_ADCBSYCHAN_BITS
```

Description:

Defines the location of the ADCBSYCHAN bits in the ADCTL1 register.

3.2.2.4 ADC_ADCCTL1_ADCENABLE_BITS

Definition:

```
#define ADC_ADCCTL1_ADCENABLE_BITS
```

Description:

Defines the location of the ADCENABLE bits in the ADCTL1 register.

3.2.2.5 ADC_ADCCTL1_ADCPWDN_BITS

Definition:

```
#define ADC_ADCCTL1_ADCPWDN_BITS
```

Description:

Defines the location of the ADCPWDN bits in the ADCTL1 register.

3.2.2.6 ADC_ADCCTL1_ADCREFPWD_BITS

Definition:

```
#define ADC_ADCCTL1_ADCREFPWD_BITS
```

Description:

Defines the location of the ADCREFPWD bits in the ADCTL1 register.

3.2.2.7 ADC_ADCCTL1_ADCREFSEL_BITS

Definition:

```
#define ADC_ADCCTL1_ADCREFSEL_BITS
```

Description:

Defines the location of the ADCREFSEL bits in the ADCTL1 register.

3.2.2.8 ADC_ADCCTL1_INTPULSEPOS_BITS

Definition:

```
#define ADC_ADCCTL1_INTPULSEPOS_BITS
```

Description:

Defines the location of the INTPULSEPOS bits in the ADCTL1 register.

3.2.2.9 ADC_ADCCTL1_RESET_BITS

Definition:

```
#define ADC_ADCCTL1_RESET_BITS
```

Description:

Defines the location of the RESET bits in the ADCTL1 register.

3.2.2.10 ADC_ADCCTL1_TEMPCONV_BITS

Definition:

```
#define ADC_ADCCTL1_TEMPCONV_BITS
```

Description:

Defines the location of the TEMPCONV bits in the ADCTL1 register.

3.2.2.11 ADC_ADCCTL1_VREFLOCONV_BITS

Definition:

```
#define ADC_ADCCTL1_VREFLOCONV_BITS
```

Description:

Defines the location of the VREFLOCONV bits in the ADCTL1 register.

3.2.2.12 ADC_ADCSAMPLEMODE_SEPARATE_FLAG

Definition:

```
#define ADC_ADCSAMPLEMODE_SEPARATE_FLAG
```

Description:

Define for the channel separate flag.

3.2.2.13 ADC_ADCSAMPLEMODE_SIMULEN0_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN0_BITS
```

Description:

Defines the location of the SIMULEN0 bits in the ADCSAMPLEMODE register.

3.2.2.14 ADC_ADCSAMPLEMODE_SIMULEN10_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN10_BITS
```

Description:

Defines the location of the SIMULEN10 bits in the ADCSAMPLEMODE register.

3.2.2.15 ADC_ADCSAMPLEMODE_SIMULEN12_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN12_BITS
```

Description:

Defines the location of the SIMULEN12 bits in the ADCSAMPLEMODE register.

3.2.2.16 ADC_ADCSAMPLEMODE_SIMULEN14_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN14_BITS
```

Description:

Defines the location of the SIMULEN14 bits in the ADCSAMPLEMODE register.

3.2.2.17 ADC_ADCSAMPLEMODE_SIMULEN2_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN2_BITS
```

Description:

Defines the location of the SIMULEN2 bits in the ADCSAMPLEMODE register.

3.2.2.18 ADC_ADCSAMPLEMODE_SIMULEN4_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN4_BITS
```

Description:

Defines the location of the SIMULEN4 bits in the ADCSAMPLEMODE register.

3.2.2.19 ADC_ADCSAMPLEMODE_SIMULEN6_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN6_BITS
```

Description:

Defines the location of the SIMULEN6 bits in the ADCSAMPLEMODE register.

3.2.2.20 ADC_ADCSAMPLEMODE_SIMULEN8_BITS

Definition:

```
#define ADC_ADCSAMPLEMODE_SIMULEN8_BITS
```

Description:

Defines the location of the SIMULEN8 bits in the ADCSAMPLEMODE register.

3.2.2.21 ADC_ADCSOCxCTL_ACQPS_BITS

Definition:

```
#define ADC_ADCSOCxCTL_ACQPS_BITS
```

Description:

Defines the location of the ACQPS bits in the ADCSOCxCTL register.

3.2.2.22 ADC_ADCSOCxCTL_CHSEL_BITS

Definition:

```
#define ADC_ADCSOCxCTL_CHSEL_BITS
```

Description:

Defines the location of the CHSEL bits in the ADCSOCxCTL register.

3.2.2.23 ADC_ADCSOCxCTL_TRIGSEL_BITS

Definition:

```
#define ADC_ADCSOCxCTL_TRIGSEL_BITS
```

Description:

Defines the location of the TRIGSEL bits in the ADCSOCxCTL register.

3.2.2.24 ADC_BASE_ADDR

Definition:

```
#define ADC_BASE_ADDR
```

Description:

Defines the base address of the analog-to-digital converter (ADC) registers.

3.2.2.25 ADC_dataBias

Definition:

```
#define ADC_dataBias
```

Description:

Integer value bias corresponding to voltage 1.65V bias of input data on 3.3V, 12 bit ADC.

3.2.2.26 ADC_DELAY_usec

Definition:

```
#define ADC_DELAY_usec
```

Description:

Defines the ADC delay for part of the ADC initialization.

3.2.2.27 ADC_INTSELxNy_INTCONT_BITS

Definition:

```
#define ADC_INTSELxNy_INTCONT_BITS
```

Description:

Defines the location of the INTCONT bits in the INTSELxNy register.

3.2.2.28 ADC_INTSELxNy_INTE_BITS

Definition:

```
#define ADC_INTSELxNy_INTE_BITS
```

Description:

Defines the location of the INTE bits in the INTSELxNy register.

3.2.2.29 ADC_INTSELxNy_INTSEL_BITS

Definition:

```
#define ADC_INTSELxNy_INTSEL_BITS
```

Description:

Defines the location of the INTSEL bits in the INTSELxNy register.

3.2.2.30 ADC_INTSELxNy_LOG2_NUMBITS_PER_REG

Definition:

```
#define ADC_INTSELxNy_LOG2_NUMBITS_PER_REG
```

Description:

Defines the log2() of the number of bits per INTSELxNy register.

3.2.2.31 ADC_INTSELxNy_NUMBITS_PER_REG

Definition:

```
#define ADC_INTSELxNy_NUMBITS_PER_REG
```

Description:

Defines the number of bits per INTSELxNy register.

3.2.3 Typedef Documentation

3.2.3.1 ADC_Handle

Definition:

```
typedef struct _ADC_Obj_ *ADC_Handle
```

Description:

Defines the analog-to-digital converter (ADC) handle.

3.2.3.2 ADC_Obj

Definition:

```
typedef struct _ADC_Obj_ ADC_Obj
```

Description:

Defines the analog-to-digital converter (ADC) object.

3.2.4 Enumeration Documentation

3.2.4.1 ADC_IntMode_e

Description:

Enumeration to define the analog-to-digital converter (ADC) interrupt mode.

Enumerators:

ADC_IntMode_ClearFlag Denotes that a new interrupt will not be generated until the interrupt flag is cleared.

ADC_IntMode_EOC Denotes that a new interrupt will be generated on the next end of conversion (EOC).

3.2.4.2 ADC_IntNumber_e

Description:

Enumeration to define the analog-to-digital converter (ADC) interrupt number.

Enumerators:

- ADC_IntNumber_1** Denotes ADCINT1.
- ADC_IntNumber_2** Denotes ADCINT2.
- ADC_IntNumber_3** Denotes ADCINT3.
- ADC_IntNumber_4** Denotes ADCINT4.
- ADC_IntNumber_5** Denotes ADCINT5.
- ADC_IntNumber_6** Denotes ADCINT6.
- ADC_IntNumber_7** Denotes ADCINT7.
- ADC_IntNumber_8** Denotes ADCINT8.
- ADC_IntNumber_9** Denotes ADCINT9.

3.2.4.3 ADC_IntPulseGenMode_e

Description:

Enumeration to define the analog-to-digital converter (ADC) interrupt pulse generation mode.

Enumerators:

- ADC_IntPulseGenMode_During** Denotes that interrupt pulse generation occurs when the ADC begins conversion.
- ADC_IntPulseGenMode_Prior** Denotes that interrupt pulse generation occurs 1 cycle prior to the ADC result latching.

3.2.4.4 ADC_IntSrc_e

Description:

Enumeration to define the analog-to-digital converter (ADC) interrupt source.

Enumerators:

- ADC_IntSrc_EOC0** Denotes that interrupt source is the end of conversion for SOC0.
- ADC_IntSrc_EOC1** Denotes that interrupt source is the end of conversion for SOC1.
- ADC_IntSrc_EOC2** Denotes that interrupt source is the end of conversion for SOC2.
- ADC_IntSrc_EOC3** Denotes that interrupt source is the end of conversion for SOC3.
- ADC_IntSrc_EOC4** Denotes that interrupt source is the end of conversion for SOC4.
- ADC_IntSrc_EOC5** Denotes that interrupt source is the end of conversion for SOC5.
- ADC_IntSrc_EOC6** Denotes that interrupt source is the end of conversion for SOC6.
- ADC_IntSrc_EOC7** Denotes that interrupt source is the end of conversion for SOC7.
- ADC_IntSrc_EOC8** Denotes that interrupt source is the end of conversion for SOC8.
- ADC_IntSrc_EOC9** Denotes that interrupt source is the end of conversion for SOC9.
- ADC_IntSrc_EOC10** Denotes that interrupt source is the end of conversion for SOC10.
- ADC_IntSrc_EOC11** Denotes that interrupt source is the end of conversion for SOC11.
- ADC_IntSrc_EOC12** Denotes that interrupt source is the end of conversion for SOC12.
- ADC_IntSrc_EOC13** Denotes that interrupt source is the end of conversion for SOC13.

ADC_IntSrc_EOC14 Denotes that interrupt source is the end of conversion for SOC14.

ADC_IntSrc_EOC15 Denotes that interrupt source is the end of conversion for SOC15.

3.2.4.5 ADC_ResultNumber_e

Description:

Enumeration to define the analog-to-digital converter (ADC) result number.

Enumerators:

ADC_ResultNumber_0 Denotes ADCRESULT0.

ADC_ResultNumber_1 Denotes ADCRESULT1.

ADC_ResultNumber_2 Denotes ADCRESULT2.

ADC_ResultNumber_3 Denotes ADCRESULT3.

ADC_ResultNumber_4 Denotes ADCRESULT4.

ADC_ResultNumber_5 Denotes ADCRESULT5.

ADC_ResultNumber_6 Denotes ADCRESULT6.

ADC_ResultNumber_7 Denotes ADCRESULT7.

ADC_ResultNumber_8 Denotes ADCRESULT8.

ADC_ResultNumber_9 Denotes ADCRESULT9.

ADC_ResultNumber_10 Denotes ADCRESULT10.

ADC_ResultNumber_11 Denotes ADCRESULT11.

ADC_ResultNumber_12 Denotes ADCRESULT12.

ADC_ResultNumber_13 Denotes ADCRESULT13.

ADC_ResultNumber_14 Denotes ADCRESULT14.

ADC_ResultNumber_15 Denotes ADCRESULT15.

3.2.4.6 ADC_SampleMode_e

Description:

Enumeration to define the analog-to-digital converter (ADC) sample modes.

Enumerators:

ADC_SampleMode_SOC0_and_SOC1_Separate Denotes SOC0 and SOC1 are sampled separately.

ADC_SampleMode_SOC2_and_SOC3_Separate Denotes SOC2 and SOC3 are sampled separately.

ADC_SampleMode_SOC4_and_SOC5_Separate Denotes SOC4 and SOC5 are sampled separately.

ADC_SampleMode_SOC6_and_SOC7_Separate Denotes SOC6 and SOC7 are sampled separately.

ADC_SampleMode_SOC8_and_SOC9_Separate Denotes SOC8 and SOC9 are sampled separately.

ADC_SampleMode_SOC10_and_SOC11_Separate Denotes SOC10 and SOC11 are sampled separately.

ADC_SampleMode_SOC12_and_SOC13_Separate Denotes SOC12 and SOC13 are sampled separately.

- ADC_SampleMode_SOC14_and_SOC15_Separate** Denotes SOC14 and SOC15 are sampled separately.
- ADC_SampleMode_SOC0_and_SOC1_Together** Denotes SOC0 and SOC1 are sampled together.
- ADC_SampleMode_SOC2_and_SOC3_Together** Denotes SOC2 and SOC3 are sampled together.
- ADC_SampleMode_SOC4_and_SOC5_Together** Denotes SOC4 and SOC5 are sampled together.
- ADC_SampleMode_SOC6_and_SOC7_Together** Denotes SOC6 and SOC7 are sampled together.
- ADC_SampleMode_SOC8_and_SOC9_Together** Denotes SOC8 and SOC9 are sampled together.
- ADC_SampleMode_SOC10_and_SOC11_Together** Denotes SOC10 and SOC11 are sampled together.
- ADC_SampleMode_SOC12_and_SOC13_Together** Denotes SOC12 and SOC13 are sampled together.
- ADC_SampleMode_SOC14_and_SOC15_Together** Denotes SOC14 and SOC15 are sampled together.

3.2.4.7 ADC_SocChanNumber_e

Description:

Enumeration to define the start of conversion (SOC) channel numbers.

Enumerators:

- ADC_SocChanNumber_A0** Denotes SOC channel number A0.
- ADC_SocChanNumber_A1** Denotes SOC channel number A1.
- ADC_SocChanNumber_A2** Denotes SOC channel number A2.
- ADC_SocChanNumber_A3** Denotes SOC channel number A3.
- ADC_SocChanNumber_A4** Denotes SOC channel number A4.
- ADC_SocChanNumber_A5** Denotes SOC channel number A5.
- ADC_SocChanNumber_A6** Denotes SOC channel number A6.
- ADC_SocChanNumber_A7** Denotes SOC channel number A7.
- ADC_SocChanNumber_B0** Denotes SOC channel number B0.
- ADC_SocChanNumber_B1** Denotes SOC channel number B1.
- ADC_SocChanNumber_B2** Denotes SOC channel number B2.
- ADC_SocChanNumber_B3** Denotes SOC channel number B3.
- ADC_SocChanNumber_B4** Denotes SOC channel number B4.
- ADC_SocChanNumber_B5** Denotes SOC channel number B5.
- ADC_SocChanNumber_B6** Denotes SOC channel number B6.
- ADC_SocChanNumber_B7** Denotes SOC channel number B7.
- ADC_SocChanNumber_A0_and_B0_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A1_and_B1_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A2_and_B2_Together** Denotes SOC channel number A0 and B0 together.

- ADC_SocChanNumber_A3_and_B3_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A4_and_B4_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A5_and_B5_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A6_and_B6_Together** Denotes SOC channel number A0 and B0 together.
- ADC_SocChanNumber_A7_and_B7_Together** Denotes SOC channel number A0 and B0 together.

3.2.4.8 ADC_SocNumber_e

Description:

Enumeration to define the start of conversion (SOC) numbers.

Enumerators:

- ADC_SocNumber_0** Denotes SOC0.
- ADC_SocNumber_1** Denotes SOC1.
- ADC_SocNumber_2** Denotes SOC2.
- ADC_SocNumber_3** Denotes SOC3.
- ADC_SocNumber_4** Denotes SOC4.
- ADC_SocNumber_5** Denotes SOC5.
- ADC_SocNumber_6** Denotes SOC6.
- ADC_SocNumber_7** Denotes SOC7.
- ADC_SocNumber_8** Denotes SOC8.
- ADC_SocNumber_9** Denotes SOC9.
- ADC_SocNumber_10** Denotes SOC10.
- ADC_SocNumber_11** Denotes SOC11.
- ADC_SocNumber_12** Denotes SOC12.
- ADC_SocNumber_13** Denotes SOC13.
- ADC_SocNumber_14** Denotes SOC14.
- ADC_SocNumber_15** Denotes SOC15.

3.2.4.9 ADC_SocSampleWindow_e

Description:

Enumeration to define the start of conversion (SOC) sample delays.

Enumerators:

- ADC_SocSampleWindow_7_cycles** Denotes an SOC sample window of 7 cycles.
- ADC_SocSampleWindow_8_cycles** Denotes an SOC sample window of 8 cycles.
- ADC_SocSampleWindow_9_cycles** Denotes an SOC sample window of 9 cycles.
- ADC_SocSampleWindow_10_cycles** Denotes an SOC sample window of 10 cycles.
- ADC_SocSampleWindow_11_cycles** Denotes an SOC sample window of 11 cycles.
- ADC_SocSampleWindow_12_cycles** Denotes an SOC sample window of 12 cycles.

ADC_SocSampleWindow_13_cycles	Denotes an SOC sample window of 13 cycles.
ADC_SocSampleWindow_14_cycles	Denotes an SOC sample window of 14 cycles.
ADC_SocSampleWindow_15_cycles	Denotes an SOC sample window of 15 cycles.
ADC_SocSampleWindow_16_cycles	Denotes an SOC sample window of 16 cycles.
ADC_SocSampleWindow_23_cycles	Denotes an SOC sample window of 23 cycles.
ADC_SocSampleWindow_24_cycles	Denotes an SOC sample window of 24 cycles.
ADC_SocSampleWindow_25_cycles	Denotes an SOC sample window of 25 cycles.
ADC_SocSampleWindow_26_cycles	Denotes an SOC sample window of 26 cycles.
ADC_SocSampleWindow_27_cycles	Denotes an SOC sample window of 27 cycles.
ADC_SocSampleWindow_28_cycles	Denotes an SOC sample window of 28 cycles.
ADC_SocSampleWindow_29_cycles	Denotes an SOC sample window of 29 cycles.
ADC_SocSampleWindow_35_cycles	Denotes an SOC sample window of 35 cycles.
ADC_SocSampleWindow_36_cycles	Denotes an SOC sample window of 36 cycles.
ADC_SocSampleWindow_37_cycles	Denotes an SOC sample window of 37 cycles.
ADC_SocSampleWindow_38_cycles	Denotes an SOC sample window of 38 cycles.
ADC_SocSampleWindow_39_cycles	Denotes an SOC sample window of 39 cycles.
ADC_SocSampleWindow_40_cycles	Denotes an SOC sample window of 40 cycles.
ADC_SocSampleWindow_41_cycles	Denotes an SOC sample window of 41 cycles.
ADC_SocSampleWindow_42_cycles	Denotes an SOC sample window of 42 cycles.
ADC_SocSampleWindow_48_cycles	Denotes an SOC sample window of 48 cycles.
ADC_SocSampleWindow_49_cycles	Denotes an SOC sample window of 49 cycles.
ADC_SocSampleWindow_50_cycles	Denotes an SOC sample window of 50 cycles.
ADC_SocSampleWindow_51_cycles	Denotes an SOC sample window of 51 cycles.
ADC_SocSampleWindow_52_cycles	Denotes an SOC sample window of 52 cycles.
ADC_SocSampleWindow_53_cycles	Denotes an SOC sample window of 53 cycles.
ADC_SocSampleWindow_54_cycles	Denotes an SOC sample window of 54 cycles.
ADC_SocSampleWindow_55_cycles	Denotes an SOC sample window of 55 cycles.
ADC_SocSampleWindow_61_cycles	Denotes an SOC sample window of 61 cycles.
ADC_SocSampleWindow_62_cycles	Denotes an SOC sample window of 62 cycles.
ADC_SocSampleWindow_63_cycles	Denotes an SOC sample window of 63 cycles.
ADC_SocSampleWindow_64_cycles	Denotes an SOC sample window of 64 cycles.

3.2.4.10 ADC_SocTrigSrc_e

Description:

Enumeration to define the start of conversion (SOC) trigger source.

Enumerators:

- ADC_SocTrigSrc_Sw** Denotes a software trigger source for the SOC flag.
- ADC_SocTrigSrc_CpuTimer_0** Denotes a CPUTIMER0 trigger source for the SOC flag.
- ADC_SocTrigSrc_CpuTimer_1** Denotes a CPUTIMER1 trigger source for the SOC flag.
- ADC_SocTrigSrc_CpuTimer_2** Denotes a CPUTIMER2 trigger source for the SOC flag.
- ADC_SocTrigSrc_XINT2_XINT2SOC** Denotes a XINT2, XINT2SOC trigger source for the SOC flag.
- ADC_SocTrigSrc_EPWM1_ADCSOCA** Denotes a EPWM1, ADCSOCA trigger source for the SOC flag.

ADC_SocTrigSrc_EPWM1_ADCSOCB	Denotes a EPWM1, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM2_ADCSOCA	Denotes a EPWM2, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM2_ADCSOCB	Denotes a EPWM2, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM3_ADCSOCA	Denotes a EPWM3, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM3_ADCSOCB	Denotes a EPWM3, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM4_ADCSOCA	Denotes a EPWM4, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM4_ADCSOCB	Denotes a EPWM4, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM5_ADCSOCA	Denotes a EPWM5, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM5_ADCSOCB	Denotes a EPWM5, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM6_ADCSOCA	Denotes a EPWM6, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM6_ADCSOCB	Denotes a EPWM7, ADCSOCB trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM7_ADCSOCA	Denotes a EPWM7, ADCSOCA trigger source for the SOC flag.
ADC_SocTrigSrc_EPWM7_ADCSOCB	Denotes a EPWM7, ADCSOCB trigger source for the SOC flag.

3.2.4.11 ADC_VoltageRefSrc_e

Description:

Enumeration to define the voltage reference source.

Enumerators:

ADC_VoltageRefSrc_Int Denotes an internal voltage reference source.

ADC_VoltageRefSrc_Ext Denotes an internal voltage reference source.

3.2.5 Function Documentation

3.2.5.1 ADC_clearIntFlag

Clears the analog-to-digital converter (ADC) interrupt flag.

Prototype:

```
void
ADC_clearIntFlag(ADC_Handle adcHandle,
                 const ADC_IntNumber_e intNumber) [inline]
```


Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***intNumber*** The ADC interrupt number

3.2.5.2 void ADC_disable ([ADC_Handle](#) *adcHandle*)

Disables the analog-to-digital converter (ADC).

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle

3.2.5.3 void ADC_disableBandGap ([ADC_Handle](#) *adcHandle*)

Disables the analog-to-digital converter (ADC) band gap circuit.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle

3.2.5.4 void ADC_disableInt ([ADC_Handle](#) *adcHandle*, const [ADC_IntNumber_e](#) *intNumber*)

Disables the analog-to-digital converter (ADC) interrupt.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***intNumber*** The interrupt number

3.2.5.5 void ADC_disableRefBuffers ([ADC_Handle](#) *adcHandle*)

Disables the analog-to-digital converter (ADC) reference buffers circuit.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle

3.2.5.6 void ADC_disableTempSensor ([ADC_Handle](#) *adcHandle*)

Disables temperature sensor for conversion on A5.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle

3.2.5.7 void ADC_enable (ADC_Handle adcHandle)

Enables the analog-to-digital converter (ADC).

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.8 void ADC_enableBandGap (ADC_Handle adcHandle)

Enables the analog-to-digital converter (ADC) band gap circuit.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.9 void ADC_enableInt (ADC_Handle adcHandle, const ADC_IntNumber_e intNumber)

Enables the analog-to-digital converter (ADC) interrupt.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

← **intNumber** The interrupt number

3.2.5.10 void ADC_enableRefBuffers (ADC_Handle adcHandle)

Enables the analog-to-digital converter (ADC) reference buffers circuit.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.11 void ADC_enableTempSensor (ADC_Handle adcHandle)

Enables temperature sensor for conversion on A5.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.12 void ADC_forceConversion (ADC_Handle adcHandle, const ADC_SocNumber_e socNumber) [inline]

Reads the specified ADC result (i.e. value).

Parameters:

← **adcHandle** The ADC handle

← **socNumber** The result number for the ADCRESULT registers

Returns:

The ADC result

3.2.5.13 `bool_t ADC_getIntStatus (ADC_Handle adcHandle, const ADC_IntNumber_e intNumber) [inline]`

Reads the status for a given ADC interrupt.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle
← **intNumber** The ADC interrupt number

Returns:

Interrupt status for selected ADC interrupt

3.2.5.14 `ADC_SocSampleWindow_e ADC_getSocSampleWindow (ADC_Handle adcHandle, const ADC_SocNumber_e socNumber) [inline]`

Gets the analog-to-digital converter (ADC) start-of-conversion (SOC) sample delay value.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle
← **socNumber** The SOC number

Returns:

The ADC sample delay value

3.2.5.15 `int16_t ADC_getTemperatureC (ADC_Handle adcHandle, int16_t sensorSample) [inline]`

Converts a temperature sensor sample into a temperature in Celcius.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle
← **sensorSample** Temperature sensor sample

Returns:

Temperature in degrees Celcius

3.2.5.16 `int16_t ADC_getTemperatureK (ADC_Handle adcHandle, int16_t sensorSample) [inline]`

Converts a temperature sensor sample into a temperature in Kelvin.

Parameters:

- ← **adcHandle** The analog-to-digital converter (ADC) object handle
- ← **sensorSample** Temperature sensor sample

Returns:

Temperature in degrees Kelvin

3.2.5.17 [ADC_Handle](#) ADC_init (void * *pMemory*, const size_t *numBytes*)

Initializes the analog-to-digital converter (ADC) object handle.

Parameters:

- ← **pMemory** A pointer to the base address of the ADC registers
- ← **numBytes** The number of bytes allocated for the ADC object, bytes

Returns:

The analog-to-digital converter (ADC) object handle

3.2.5.18 void ADC_powerDown ([ADC_Handle](#) *adcHandle*)

Powers down the analog-to-digital converter (ADC).

Parameters:

- ← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.19 void ADC_powerUp ([ADC_Handle](#) *adcHandle*)

Powers up the analog-to-digital converter (ADC).

Parameters:

- ← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.20 uint_least16_t ADC_readResult ([ADC_Handle](#) *adcHandle*, const [ADC_ResultNumber_e](#) *resultNumber*) [inline]

Reads the specified ADC result (i.e. value).

Parameters:

- ← **adcHandle** The ADC handle
- ← **resultNumber** The result number for the ADCRESULT registers

Returns:

The ADC result

3.2.5.21 void ADC_reset (ADC_Handle adcHandle)

Resets the analog-to-digital converter (ADC).

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

3.2.5.22 void ADC_setIntMode (ADC_Handle adcHandle, const ADC_IntNumber_e intNumber, const ADC_IntMode_e intMode)

Sets the interrupt mode.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

← **intNumber** The interrupt number

← **intMode** The interrupt mode

3.2.5.23 void ADC_setIntPulseGenMode (ADC_Handle adcHandle, const ADC_IntPulseGenMode_e pulseMode)

Sets the interrupt pulse generation mode.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

← **pulseMode** The pulse generation mode

3.2.5.24 void ADC_setIntSrc (ADC_Handle adcHandle, const ADC_IntNumber_e intNumber, const ADC_IntSrc_e intSrc)

Sets the interrupt source.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

← **intNumber** The interrupt number

← **intSrc** The interrupt source

3.2.5.25 void ADC_setSampleMode (ADC_Handle adcHandle, const ADC_SampleMode_e sampleMode)

Sets the sample mode.

Parameters:

← **adcHandle** The analog-to-digital converter (ADC) object handle

← **sampleMode** The sample mode

3.2.5.26 void ADC_setSocChanNumber ([ADC_Handle](#) *adcHandle*, const [ADC_SocNumber_e](#) *socNumber*, const [ADC_SocChanNumber_e](#) *chanNumber*)

Sets the start-of-conversion (SOC) channel number.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***socNumber*** The SOC number
- ← ***chanNumber*** The channel number

3.2.5.27 void ADC_setSocSampleWindow ([ADC_Handle](#) *adcHandle*, const [ADC_SocNumber_e](#) *socNumber*, const [ADC_SocSampleWindow_e](#) *sampleWindow*)

Sets the start-of-conversion (SOC) sample delay.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***socNumber*** The SOC number
- ← ***sampleWindow*** The sample window

3.2.5.28 void ADC_setSocTrigSrc ([ADC_Handle](#) *adcHandle*, const [ADC_SocNumber_e](#) *socNumber*, const [ADC_SocTrigSrc_e](#) *trigSrc*)

Sets the start-of-conversion (SOC) trigger source.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***socNumber*** The SOC number
- ← ***trigSrc*** The trigger delay

3.2.5.29 void ADC_setVoltRefSrc ([ADC_Handle](#) *adcHandle*, const [ADC_VoltageRefSrc_e](#) *voltRef*)

Sets the voltage reference source.

Parameters:

- ← ***adcHandle*** The analog-to-digital converter (ADC) object handle
- ← ***voltRef*** The voltage reference source

4 Capture (CAP)

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4.1 Introduction

The Enhanced Capture (CAP) API provides a set of functions and data structs for configuring and capturing data as well as generating PWMs with the capture peripheral.

This driver is contained in `f2802x/common/source/cap.c`, with `f2802x/common/include/cap.h` containing the API definitions and data structs for use by applications.

4.2 CAP

Data Structures

- `_CAP_Obj`

Defines

- `CAP_ECCTL1_CAP1POL_BITS`
- `CAP_ECCTL1_CAP2POL_BITS`
- `CAP_ECCTL1_CAP3POL_BITS`
- `CAP_ECCTL1_CAP4POL_BITS`
- `CAP_ECCTL1_CAPLDEN_BITS`
- `CAP_ECCTL1_CTRRST1_BITS`
- `CAP_ECCTL1_CTRRST2_BITS`
- `CAP_ECCTL1_CTRRST3_BITS`
- `CAP_ECCTL1_CTRRST4_BITS`
- `CAP_ECCTL1_FREESOFT_BITS`
- `CAP_ECCTL1_PRESCALE_BITS`
- `CAP_ECCTL2_APWMPOL_BITS`
- `CAP_ECCTL2_CAPAPWM_BITS`
- `CAP_ECCTL2_CONTONESHOT_BITS`
- `CAP_ECCTL2_REARM_BITS`
- `CAP_ECCTL2_STOP_WRAP_BITS`
- `CAP_ECCTL2_SWSYNC_BITS`
- `CAP_ECCTL2_SYNCIEN_BITS`
- `CAP_ECCTL2_SYNCOSEL_BITS`
- `CAP_ECCTL2_TSCTRSTOP_BITS`
- `CAP_ECCxxx_C EVT1_BITS`

- CAP_ECCxxx_C EVT2_BITS
- CAP_ECCxxx_C EVT3_BITS
- CAP_ECCxxx_C EVT4_BITS
- CAP_ECCxxx_C TRCOMP_BITS
- CAP_ECCxxx_C TROVF_BITS
- CAP_ECCxxx_C TRPRD_BITS
- CAP_ECCxxx_INT_BITS
- CAPA_BASE_ADDR

Enumerations

- CAP_Event_e
- CAP_Int_Type_e
- CAP_Polarity_e
- CAP_Prescale_e
- CAP_Reset_e
- CAP_RunMode_e
- CAP_SyncOut_e

Functions

- void CAP_clearInt (CAP_Handle capHandle, const CAP_Int_Type_e intType)
- void CAP_disableCaptureLoad (CAP_Handle capHandle)
- void CAP_disableInt (CAP_Handle capHandle, const CAP_Int_Type_e intType)
- void CAP_disableSyncln (CAP_Handle capHandle)
- void CAP_disableTimestampCounter (CAP_Handle capHandle)
- void CAP_enableCaptureLoad (CAP_Handle capHandle)
- void CAP_enableInt (CAP_Handle capHandle, const CAP_Int_Type_e intType)
- void CAP_enableSyncln (CAP_Handle capHandle)
- void CAP_enableTimestampCounter (CAP_Handle capHandle)
- uint32_t CAP_getCap1 (CAP_Handle capHandle)
- uint32_t CAP_getCap2 (CAP_Handle capHandle)
- uint32_t CAP_getCap3 (CAP_Handle capHandle)
- uint32_t CAP_getCap4 (CAP_Handle capHandle)
- CAP_Handle CAP_init (void *pMemory, const size_t numBytes)
- void CAP_rearm (CAP_Handle capHandle)
- void CAP_setApwmCompare (CAP_Handle capHandle, const uint32_t compare)
- void CAP_setApwmPeriod (CAP_Handle capHandle, const uint32_t period)
- void CAP_setApwmShadowPeriod (CAP_Handle capHandle, const uint32_t shadowPeriod)
- void CAP_setCapContinuous (CAP_Handle capHandle)
- void CAP_setCapEvtPolarity (CAP_Handle capHandle, const CAP_Event_e event, const CAP_Polarity_e polarity)
- void CAP_setCapEvtReset (CAP_Handle capHandle, const CAP_Event_e event, const CAP_Reset_e reset)
- void CAP_setCapOneShot (CAP_Handle capHandle)

- void [CAP_setModeApwm](#) ([CAP_Handle](#) capHandle)
- void [CAP_setModeCap](#) ([CAP_Handle](#) capHandle)
- void [CAP_setStopWrap](#) ([CAP_Handle](#) capHandle, const [CAP_Stop_Wrap_e](#) stopWrap)
- void [CAP_setSyncOut](#) ([CAP_Handle](#) capHandle, const [CAP_SyncOut_e](#) syncOut)

4.2.1 Data Structure Documentation

4.2.1.1 [_CAP_Obj_](#)

Definition:

```
typedef struct
{
    uint32_t TSCTR;
    uint32_t CTRPHS;
    uint32_t CAP1;
    uint32_t CAP2;
    uint32_t CAP3;
    uint32_t CAP4;
    uint16_t Rsvd_1[8];
    uint16_t ECCTL1;
    uint16_t ECCTL2;
    uint16_t ECEINT;
    uint16_t ECEFLG;
    uint16_t ECECLR;
    uint16_t ECEFRC;
}
\_CAP\_Obj\_
```

Members:

TSCTR Time-stamp Counter.
CTRPHS Counter Phase Offset Value Register.
CAP1 Capture 1 Register.
CAP2 Capture 2 Register.
CAP3 Capture 3 Register.
CAP4 Capture 4 Register.
Rsvd_1 Reserved.
ECCTL1 Capture Control Register 1.
ECCTL2 Capture Control Register 2.
ECEINT Capture Interrupt Enable Register.
ECEFLG Capture Interrupt Flag Register.
ECECLR Capture Interrupt Clear Register.
ECEFRC Capture Interrupt Force Register.

Description:

Defines the capture (CAP) object.

4.2.2 Define Documentation

4.2.2.1 CAP_ECCTL1_CAP1POL_BITS

Definition:

```
#define CAP_ECCTL1_CAP1POL_BITS
```

Description:

Defines the location of the CAP1POL bits in the ECCTL1 register.

4.2.2.2 CAP_ECCTL1_CAP2POL_BITS

Definition:

```
#define CAP_ECCTL1_CAP2POL_BITS
```

Description:

Defines the location of the CAP2POL bits in the ECCTL1 register.

4.2.2.3 CAP_ECCTL1_CAP3POL_BITS

Definition:

```
#define CAP_ECCTL1_CAP3POL_BITS
```

Description:

Defines the location of the CAP3POL bits in the ECCTL1 register.

4.2.2.4 CAP_ECCTL1_CAP4POL_BITS

Definition:

```
#define CAP_ECCTL1_CAP4POL_BITS
```

Description:

Defines the location of the CAP4POL bits in the ECCTL1 register.

4.2.2.5 CAP_ECCTL1_CAPLDEN_BITS

Definition:

```
#define CAP_ECCTL1_CAPLDEN_BITS
```

Description:

Defines the location of the CAPLDEN bits in the ECCTL1 register.

4.2.2.6 CAP_ECCTL1_CTRRST1_BITS

Definition:

```
#define CAP_ECCTL1_CTRRST1_BITS
```

Description:

Defines the location of the CTRRST1 bits in the ECCTL1 register.

4.2.2.7 CAP_ECCTL1_CTRRST2_BITS

Definition:

```
#define CAP_ECCTL1_CTRRST2_BITS
```

Description:

Defines the location of the CTRRST2 bits in the ECCTL1 register.

4.2.2.8 CAP_ECCTL1_CTRRST3_BITS

Definition:

```
#define CAP_ECCTL1_CTRRST3_BITS
```

Description:

Defines the location of the CTRRST3 bits in the ECCTL1 register.

4.2.2.9 CAP_ECCTL1_CTRRST4_BITS

Definition:

```
#define CAP_ECCTL1_CTRRST4_BITS
```

Description:

Defines the location of the CTRRST4 bits in the ECCTL1 register.

4.2.2.10 CAP_ECCTL1_FREESOFT_BITS

Definition:

```
#define CAP_ECCTL1_FREESOFT_BITS
```

Description:

Defines the location of the FREE/SOFT bits in the ECCTL1 register.

4.2.2.11 CAP_ECCTL1_PRESCALE_BITS

Definition:

```
#define CAP_ECCTL1_PRESCALE_BITS
```

Description:

Defines the location of the PRESCALE bits in the ECCTL1 register.

4.2.2.12 CAP_ECCTL2_APWMPOL_BITS

Definition:

```
#define CAP_ECCTL2_APWMPOL_BITS
```

Description:

Defines the location of the APWMPOL bits in the ECCTL2 register.

4.2.2.13 CAP_ECCTL2_CAPAPWM_BITS

Definition:

```
#define CAP_ECCTL2_CAPAPWM_BITS
```

Description:

Defines the location of the CAP/APWM bits in the ECCTL2 register.

4.2.2.14 CAP_ECCTL2_CONTONESHOT_BITS

Definition:

```
#define CAP_ECCTL2_CONTONESHOT_BITS
```

Description:

Defines the location of the CONT/ONESHOT bits in the ECCTL2 register.

4.2.2.15 CAP_ECCTL2_REARM_BITS

Definition:

```
#define CAP_ECCTL2_REARM_BITS
```

Description:

Defines the location of the REARM bits in the ECCTL2 register.

4.2.2.16 CAP_ECCTL2_STOP_WRAP_BITS

Definition:

```
#define CAP_ECCTL2_STOP_WRAP_BITS
```

Description:

Defines the location of the STOP_WRAP bits in the ECCTL2 register.

4.2.2.17 CAP_ECCTL2_SWSYNC_BITS

Definition:

```
#define CAP_ECCTL2_SWSYNC_BITS
```

Description:

Defines the location of the SWSYNC bits in the ECCTL2 register.

4.2.2.18 CAP_ECCTL2_SYNCIEN_BITS

Definition:

```
#define CAP_ECCTL2_SYNCIEN_BITS
```

Description:

Defines the location of the SYNCI_EN bits in the ECCTL2 register.

4.2.2.19 CAP_ECCTL2_SYNCOSEL_BITS

Definition:

```
#define CAP_ECCTL2_SYNCOSEL_BITS
```

Description:

Defines the location of the SYNCO_SEL bits in the ECCTL2 register.

4.2.2.20 CAP_ECCTL2_TSCTRSTOP_BITS

Definition:

```
#define CAP_ECCTL2_TSCTRSTOP_BITS
```

Description:

Defines the location of the TSCTRSTOP bits in the ECCTL2 register.

4.2.2.21 CAP_ECCxxx_C EVT1_BITS

Definition:

```
#define CAP_ECCxxx_C EVT1_BITS
```

Description:

Defines the location of the CEVT4 bits in the ECCxxx register.

4.2.2.22 CAP_ECCxxx_C EVT2_BITS

Definition:

```
#define CAP_ECCxxx_C EVT2_BITS
```

Description:

Defines the location of the CEVT4 bits in the ECCxxx register.

4.2.2.23 CAP_ECCxxx_C EVT3_BITS

Definition:

```
#define CAP_ECCxxx_C EVT3_BITS
```

Description:

Defines the location of the CEVT4 bits in the ECCxxx register.

4.2.2.24 CAP_ECCxxx_C EVT4_BITS

Definition:

```
#define CAP_ECCxxx_C EVT4_BITS
```

Description:

Defines the location of the CEVT4 bits in the ECCxxx register.

4.2.2.25 CAP_ECCxxx_C TRCOMP_BITS

Definition:

```
#define CAP_ECCxxx_C TRCOMP_BITS
```

Description:

Defines the location of the CTR=COMP bits in the ECCxxx register.

4.2.2.26 CAP_ECCxxx_C TROVF_BITS

Definition:

```
#define CAP_ECCxxx_C TROVF_BITS
```

Description:

Defines the location of the CTROVF bits in the ECCxxx register.

4.2.2.27 CAP_ECCxxx_C TRPRD_BITS

Definition:

```
#define CAP_ECCxxx_C TRPRD_BITS
```

Description:

Defines the location of the CTR=PRD bits in the ECCxxx register.

4.2.2.28 CAP_ECCxxx_C INT_BITS

Definition:

```
#define CAP_ECCxxx_C INT_BITS
```

Description:

Defines the location of the INT bits in the ECCxxx register.

4.2.2.29 CAPA_BASE_ADDR

Definition:

```
#define CAPA_BASE_ADDR
```

Description:

Defines the base address of the capture (CAP) A registers.

4.2.3 Typedef Documentation

4.2.3.1 CAP_Handle

Definition:

```
typedef struct _CAP_Obj_ *CAP_Handle
```

Description:

Defines the capture (CAP) handle.

4.2.3.2 CAP_Obj

Definition:

```
typedef struct _CAP_Obj_ CAP_Obj
```

Description:

Defines the capture (CAP) object.

4.2.4 Enumeration Documentation

4.2.4.1 CAP_Event_e

Description:

Enumeration to define the capture (CAP) events.

Enumerators:

- CAP_Event_1** Capture Event 1.
- CAP_Event_2** Capture Event 2.
- CAP_Event_3** Capture Event 3.
- CAP_Event_4** Capture Event 4.

4.2.4.2 CAP_Int_Type_e

Description:

Enumeration to define the capture (CAP) interrupts.

Enumerators:

- CAP_Int_Type_CTR_CMP** Denotes CTR = CMP interrupt.
- CAP_Int_Type_CTR_PRD** Denotes CTR = PRD interrupt.
- CAP_Int_Type_CTR_OVF** Denotes CTROVF interrupt.
- CAP_Int_Type_C EVT4** Denotes CEVT4 interrupt.
- CAP_Int_Type_C EVT3** Denotes CEVT3 interrupt.
- CAP_Int_Type_C EVT2** Denotes CEVT2 interrupt.
- CAP_Int_Type_C EVT1** Denotes CEVT1 interrupt.
- CAP_Int_Type_Global** Denotes Capture global interrupt.
- CAP_Int_Type_All** Denotes All interrupts.

4.2.4.3 CAP_Polarity_e

Description:

Enumeration to define the capture (CAP) event polarities.

Enumerators:

CAP_Polarity_Rising Rising Edge Triggered.

CAP_Polarity_Falling Falling Edge Triggered.

4.2.4.4 CAP_Prescale_e

Description:

Enumeration to define the capture (CAP) prescaler values.

Enumerators:

CAP_Prescale_By_1 Divide by 1.
CAP_Prescale_By_2 Divide by 2.
CAP_Prescale_By_4 Divide by 4.
CAP_Prescale_By_6 Divide by 6.
CAP_Prescale_By_8 Divide by 8.
CAP_Prescale_By_10 Divide by 10.
CAP_Prescale_By_12 Divide by 12.
CAP_Prescale_By_14 Divide by 14.
CAP_Prescale_By_16 Divide by 16.
CAP_Prescale_By_18 Divide by 18.
CAP_Prescale_By_20 Divide by 20.
CAP_Prescale_By_22 Divide by 22.
CAP_Prescale_By_24 Divide by 24.
CAP_Prescale_By_26 Divide by 26.
CAP_Prescale_By_28 Divide by 28.
CAP_Prescale_By_30 Divide by 30.
CAP_Prescale_By_32 Divide by 32.
CAP_Prescale_By_34 Divide by 34.
CAP_Prescale_By_36 Divide by 36.
CAP_Prescale_By_38 Divide by 38.
CAP_Prescale_By_40 Divide by 40.
CAP_Prescale_By_42 Divide by 42.
CAP_Prescale_By_44 Divide by 44.
CAP_Prescale_By_46 Divide by 46.
CAP_Prescale_By_48 Divide by 48.
CAP_Prescale_By_50 Divide by 50.
CAP_Prescale_By_52 Divide by 52.
CAP_Prescale_By_54 Divide by 54.
CAP_Prescale_By_56 Divide by 56.
CAP_Prescale_By_58 Divide by 58.
CAP_Prescale_By_60 Divide by 60.
CAP_Prescale_By_62 Divide by 62.

4.2.4.5 CAP_Reset_e

Description:

Enumeration to define the capture (CAP) event resets.

Enumerators:

CAP_Reset_Disable Disable counter reset on capture event.

CAP_Reset_Enable Enable counter reset on capture event.

4.2.4.6 CAP_RunMode_e

Description:

Enumeration to define the pulse width modulation (PWM) run modes.

4.2.4.7 enum CAP_Stop_Wrap_e

Enumeration to define the capture (CAP) Stop/Wrap modes.

Enumerators:

CAP_Stop_Wrap_C EVT1 Stop/Wrap after Capture Event 1.

CAP_Stop_Wrap_C EVT2 Stop/Wrap after Capture Event 2.

CAP_Stop_Wrap_C EVT3 Stop/Wrap after Capture Event 3.

CAP_Stop_Wrap_C EVT4 Stop/Wrap after Capture Event 4.

4.2.4.8 CAP_SyncOut_e

Description:

Enumeration to define the Sync Out options.

Enumerators:

CAP_SyncOut_SyncIn Sync In used for Sync Out.

CAP_SyncOut_CTRPRD CTR = PRD used for Sync Out.

CAP_SyncOut_Disable Disables Sync Out.

4.2.5 Function Documentation

4.2.5.1 CAP_clearInt

Clears capture (CAP) interrupt flag.

Prototype:

```
void  
CAP_clearInt(CAP_Handle capHandle,  
             const CAP_Int_Type_e intType) [inline]
```

Parameters:

← **capHandle** The capture (CAP) object handle

← **intType** The capture interrupt to be cleared

4.2.5.2 void CAP_disableCaptureLoad (CAP_Handle capHandle)

Disables loading of CAP1-4 on capture event.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.3 void CAP_disableInt (CAP_Handle capHandle, const CAP_Int_Type_e intType)

Disables capture (CAP) interrupt source.

Parameters:

← **capHandle** The capture (CAP) object handle

← **intType** The capture interrupt type to be disabled

4.2.5.4 void CAP_disableSyncln (CAP_Handle capHandle)

Disables counter synchronization.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.5 void CAP_disableTimestampCounter (CAP_Handle capHandle)

Disables Time Stamp counter from running.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.6 void CAP_enableCaptureLoad (CAP_Handle capHandle)

Enables loading of CAP1-4 on capture event.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.7 void CAP_enableInt (CAP_Handle capHandle, const CAP_Int_Type_e intType)

Enables capture (CAP) interrupt source.

Parameters:

← **capHandle** The capture (CAP) object handle

← **intType** The capture interrupt type to be enabled

4.2.5.8 void CAP_enableSyncIn (CAP_Handle capHandle)

Enables counter synchronization.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.9 void CAP_enableTimestampCounter (CAP_Handle capHandle)

Enables Time Stamp counter to running.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.10 uint32_t CAP_getCap1 (CAP_Handle capHandle) [inline]

Gets the CAP1 register value.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.11 uint32_t CAP_getCap2 (CAP_Handle capHandle) [inline]

Gets the CAP2 register value.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.12 uint32_t CAP_getCap3 (CAP_Handle capHandle) [inline]

Gets the CAP3 register value.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.13 uint32_t CAP_getCap4 (CAP_Handle capHandle) [inline]

Gets the CAP4 register value.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.14 **CAP_Handle** CAP_init (void * *pMemory*, const size_t *numBytes*)

Initializes the capture (CAP) object handle.

Parameters:

- ← ***pMemory*** A pointer to the base address of the CAP registers
- ← ***numBytes*** The number of bytes allocated for the CAP object, bytes

Returns:

The capture (CAP) object handle

4.2.5.15 void CAP_rearm (**CAP_Handle** *capHandle*) [inline]

(Re-)Arm the capture module

Parameters:

- ← ***capHandle*** The capture (CAP) object handle

4.2.5.16 void CAP_setApwmCompare (**CAP_Handle** *capHandle*, const uint32_t *compare*) [inline]

Sets the APWM compare value.

Parameters:

- ← ***capHandle*** The capture (CAP) object handle
- ← ***compare*** The APWM compare value

4.2.5.17 void CAP_setApwmPeriod (**CAP_Handle** *capHandle*, const uint32_t *period*) [inline]

Sets the APWM period.

Parameters:

- ← ***capHandle*** The capture (CAP) object handle
- ← ***period*** The APWM period

4.2.5.18 void CAP_setApwmShadowPeriod (**CAP_Handle** *capHandle*, const uint32_t *shadowPeriod*) [inline]

Sets the APWM shadow period.

Parameters:

- ← ***capHandle*** The capture (CAP) object handle
- ← ***shadowPeriod*** The APWM shadow period

4.2.5.19 void CAP_setCapContinuous (CAP_Handle capHandle)

Sets up for continuous Capture.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.20 void CAP_setCapEvtPolarity (CAP_Handle capHandle, const CAP_Event_e event, const CAP_Polarity_e polarity)

Sets the capture event polarity.

Parameters:

← **capHandle** The capture (CAP) object handle

← **event** The event to configure

← **polarity** The polarity to configure the event for

4.2.5.21 void CAP_setCapEvtReset (CAP_Handle capHandle, const CAP_Event_e event, const CAP_Reset_e reset)

Sets the capture event counter reset configuration.

Parameters:

← **capHandle** The capture (CAP) object handle

← **event** The event to configure

← **reset** Whether the event should reset the counter or not

4.2.5.22 void CAP_setCapOneShot (CAP_Handle capHandle)

Sets up for one-shot Capture.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.23 void CAP_setModeApwm (CAP_Handle capHandle)

Sets capture peripheral up for APWM mode.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.24 void CAP_setModeCap (CAP_Handle capHandle)

Sets capture peripheral up for capture mode.

Parameters:

← **capHandle** The capture (CAP) object handle

4.2.5.25 void CAP_setStopWrap (CAP_Handle capHandle, const CAP_Stop_Wrap_e stopWrap)

Set the stop/wrap mode.

Parameters:

← **capHandle** The capture (CAP) object handle

← **stopWrap** The stop/wrap mode to set

4.2.5.26 void CAP_setSyncOut (CAP_Handle capHandle, const CAP_SyncOut_e syncOut)

Set the sync out mode.

Parameters:

← **capHandle** The capture (CAP) object handle

← **syncOut** The sync out mode to set

5 Device Clocking (CLK)

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5.1 Introduction

The CLK API provides functions to control the clocking subsystem of the device. Clock dividers and prescalers as well as peripheral clocks can all be set or enabled via this API.

This driver is contained in `f2802x/common/source/clk.c`, with `f2802x/common/include/clk.h` containing the API definitions for use by applications.

5.2 CLK

Data Structures

- `_CLK_Obj_`

Defines

- `CLK_BASE_ADDR`
- `CLK_CLKCTL_INTOSC1HALTI_BITS`
- `CLK_CLKCTL_INTOSC1OFF_BITS`
- `CLK_CLKCTL_INTOSC2HALTI_BITS`
- `CLK_CLKCTL_INTOSC2OFF_BITS`
- `CLK_CLKCTL_NMIRESETSEL_BITS`
- `CLK_CLKCTL_OSCCLKSRC2SEL_BITS`
- `CLK_CLKCTL_OSCCLKSRCSEL_BITS`
- `CLK_CLKCTL_TMR2CLKPRESCALE_BITS`
- `CLK_CLKCTL_TMR2CLKSRCSEL_BITS`
- `CLK_CLKCTL_WDCLKSRCSEL_BITS`
- `CLK_CLKCTL_WDHALTI_BITS`
- `CLK_CLKCTL_XCLKINOFF_BITS`
- `CLK_CLKCTL_XTALOSCOFF_BITS`
- `CLK_LOSPCP_LSPCLK_BITS`
- `CLK_PCLKCR0_ADCENCLK_BITS`
- `CLK_PCLKCR0_ECANAENCLK_BITS`
- `CLK_PCLKCR0_HRPWMENCLK_BITS`
- `CLK_PCLKCR0_I2CAENCLK_BITS`
- `CLK_PCLKCR0_LINAENCLK_BITS`

- [CLK_PCLKCR0_SCIAENCLK_BITS](#)
- [CLK_PCLKCR0_SPIAENCLK_BITS](#)
- [CLK_PCLKCR0_SPIBENCLK_BITS](#)
- [CLK_PCLKCR0_TBCLKSYNC_BITS](#)
- [CLK_PCLKCR1_ECAP1ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM1ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM2ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM3ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM4ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM5ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM6ENCLK_BITS](#)
- [CLK_PCLKCR1_EPWM7ENCLK_BITS](#)
- [CLK_PCLKCR1_EQEP1ENCLK_BITS](#)
- [CLK_PCLKCR3_CLA1ENCLK_BITS](#)
- [CLK_PCLKCR3_COMP1ENCLK_BITS](#)
- [CLK_PCLKCR3_COMP2ENCLK_BITS](#)
- [CLK_PCLKCR3_COMP3ENCLK_BITS](#)
- [CLK_PCLKCR3_CPUTIMER0ENCLK_BITS](#)
- [CLK_PCLKCR3_CPUTIMER1ENCLK_BITS](#)
- [CLK_PCLKCR3_CPUTIMER2ENCLK_BITS](#)
- [CLK_PCLKCR3_GPIOINENCLK_BITS](#)
- [CLK_XCLK_XCLKINSEL_BITS](#)
- [CLK_XCLK_XCLKOUTDIV_BITS](#)

Enumerations

- [CLK_ClkInSrc_e](#)
- [CLK_CompNumber_e](#)
- [CLK_CpuTimerNumber_e](#)
- [CLK_LowSpdPreScaler_e](#)
- [CLK_Osc2Src_e](#)
- [CLK_OscSrc_e](#)
- [CLK_Timer2PreScaler_e](#)
- [CLK_Timer2Src_e](#)
- [CLK_WdClkSrc_e](#)

Functions

- void [CLK_disableAdcClock](#) ([CLK_Handle](#) clkHandle)
- void [CLK_disableClaClock](#) ([CLK_Handle](#) clkHandle)
- void [CLK_disableClkIn](#) ([CLK_Handle](#) clkHandle)
- void [CLK_disableCompClock](#) ([CLK_Handle](#) clkHandle, const [CLK_CompNumber_e](#) compNumber)
- void [CLK_disableCpuTimerClock](#) ([CLK_Handle](#) clkHandle, const [CLK_CpuTimerNumber_e](#) cpuTimerNumber)

- void [CLK_disableCrystalOsc](#) (CLK_Handle clkHandle)
- void [CLK_disableEcanaClock](#) (CLK_Handle clkHandle)
- void [CLK_disableEcap1Clock](#) (CLK_Handle clkHandle)
- void [CLK_disableEqep1Clock](#) (CLK_Handle clkHandle)
- void [CLK_disableGpioInputClock](#) (CLK_Handle clkHandle)
- void [CLK_disableHrPwmClock](#) (CLK_Handle clkHandle)
- void [CLK_disableI2cClock](#) (CLK_Handle clkHandle)
- void [CLK_disableLinAClock](#) (CLK_Handle clkHandle)
- void [CLK_disableOsc1](#) (CLK_Handle clkHandle)
- void [CLK_disableOsc1HaltMode](#) (CLK_Handle clkHandle)
- void [CLK_disableOsc2](#) (CLK_Handle clkHandle)
- void [CLK_disableOsc2HaltMode](#) (CLK_Handle clkHandle)
- void [CLK_disablePwmClock](#) (CLK_Handle clkHandle, const [PWM_Number_e](#) pwmNumber)
- void [CLK_disableSciaClock](#) (CLK_Handle clkHandle)
- void [CLK_disableSpiaClock](#) (CLK_Handle clkHandle)
- void [CLK_disableSpibClock](#) (CLK_Handle clkHandle)
- void [CLK_disableTbClockSync](#) (CLK_Handle clkHandle)
- void [CLK_disableWatchDogHaltMode](#) (CLK_Handle clkHandle)
- void [CLK_enableAdcClock](#) (CLK_Handle clkHandle)
- void [CLK_enableClaClock](#) (CLK_Handle clkHandle)
- void [CLK_enableClkIn](#) (CLK_Handle clkHandle)
- void [CLK_enableCompClock](#) (CLK_Handle clkHandle, const [CLK_CompNumber_e](#) compNumber)
- void [CLK_enableCpuTimerClock](#) (CLK_Handle clkHandle, const [CLK_CpuTimerNumber_e](#) cpuTimerNumber)
- void [CLK_enableCrystalOsc](#) (CLK_Handle clkHandle)
- void [CLK_enableEcanaClock](#) (CLK_Handle clkHandle)
- void [CLK_enableEcap1Clock](#) (CLK_Handle clkHandle)
- void [CLK_enableEqep1Clock](#) (CLK_Handle clkHandle)
- void [CLK_enableGpioInputClock](#) (CLK_Handle clkHandle)
- void [CLK_enableHrPwmClock](#) (CLK_Handle clkHandle)
- void [CLK_enableI2cClock](#) (CLK_Handle clkHandle)
- void [CLK_enableLinAClock](#) (CLK_Handle clkHandle)
- void [CLK_enableOsc1](#) (CLK_Handle clkHandle)
- void [CLK_enableOsc1HaltMode](#) (CLK_Handle clkHandle)
- void [CLK_enableOsc2](#) (CLK_Handle clkHandle)
- void [CLK_enableOsc2HaltMode](#) (CLK_Handle clkHandle)
- void [CLK_enablePwmClock](#) (CLK_Handle clkHandle, const [PWM_Number_e](#) pwmNumber)
- void [CLK_enableSciaClock](#) (CLK_Handle clkHandle)
- void [CLK_enableSpiaClock](#) (CLK_Handle clkHandle)
- void [CLK_enableSpibClock](#) (CLK_Handle clkHandle)
- void [CLK_enableTbClockSync](#) (CLK_Handle clkHandle)
- void [CLK_enableWatchDogHaltMode](#) (CLK_Handle clkHandle)
- [CLK_Handle](#) [CLK_init](#) (void *pMemory, const size_t numBytes)
- void [CLK_setClkOutPreScaler](#) (CLK_Handle clkHandle, const [CLK_ClkOutPreScaler_e](#) preScaler)

- void [CLK_setLowSpdPreScaler](#) (CLK_Handle clkHandle, const CLK_LowSpdPreScaler_e preScaler)
- void [CLK_setOsc2Src](#) (CLK_Handle clkHandle, const CLK_Osc2Src_e src)
- void [CLK_setOscSrc](#) (CLK_Handle clkHandle, const CLK_OscSrc_e src)
- void [CLK_setTimer2PreScaler](#) (CLK_Handle clkHandle, const CLK_Timer2PreScaler_e preScaler)
- void [CLK_setTimer2Src](#) (CLK_Handle clkHandle, const CLK_Timer2Src_e src)
- void [CLK_setWatchDogSrc](#) (CLK_Handle clkHandle, const CLK_WdClkSrc_e src)

5.2.1 Data Structure Documentation

5.2.1.1 _CLK_Obj_

Definition:

```
typedef struct
{
    uint16_t XCLK;
    uint16_t rsvd_1;
    uint16_t CLKCTL;
    uint16_t rsvd_2[8];
    uint16_t LOSPCP;
    uint16_t PCLKCR0;
    uint16_t PCLKCR1;
    uint16_t rsvd_3[2];
    uint16_t PCLKCR3;
}
_CLK_Obj_
```

Members:

XCLK XCLKOUT/XCLKIN Control.
rsvd_1 Reserved.
CLKCTL Clock Control Register.
rsvd_2 Reserved.
LOSPCP Low-Speed Peripheral Clock Pre-Scaler Register.
PCLKCR0 Peripheral Clock Control Register 0.
PCLKCR1 Peripheral Clock Control Register 1.
rsvd_3 Reserved.
PCLKCR3 Peripheral Clock Control Register 3.

Description:

Defines the clock (CLK) object.

5.2.2 Define Documentation

5.2.2.1 CLK_BASE_ADDR

Definition:

```
#define CLK_BASE_ADDR
```

Description:

Defines the base address of the clock (CLK) registers.

5.2.2.2 CLK_CLKCTL_INTOSC1HALTI_BITS**Definition:**

```
#define CLK_CLKCTL_INTOSC1HALTI_BITS
```

Description:

Defines the location of the INTOSC1HALTI bits in the CLKCTL register.

5.2.2.3 CLK_CLKCTL_INTOSC1OFF_BITS**Definition:**

```
#define CLK_CLKCTL_INTOSC1OFF_BITS
```

Description:

Defines the location of the INTOSC1OFF bits in the CLKCTL register.

5.2.2.4 CLK_CLKCTL_INTOSC2HALTI_BITS**Definition:**

```
#define CLK_CLKCTL_INTOSC2HALTI_BITS
```

Description:

Defines the location of the INTOSC2HALTI bits in the CLKCTL register.

5.2.2.5 CLK_CLKCTL_INTOSC2OFF_BITS**Definition:**

```
#define CLK_CLKCTL_INTOSC2OFF_BITS
```

Description:

Defines the location of the INTOSC2OFF bits in the CLKCTL register.

5.2.2.6 CLK_CLKCTL_NMIRESETSEL_BITS**Definition:**

```
#define CLK_CLKCTL_NMIRESETSEL_BITS
```

Description:

Defines the location of the NMIRESETSEL bits in the CLKCTL register.

5.2.2.7 CLK_CLKCTL_OSCCLKSRC2SEL_BITS

Definition:

```
#define CLK_CLKCTL_OSCCLKSRC2SEL_BITS
```

Description:

Defines the location of the OSCCLKSRC2SEL bits in the CLKCTL register.

5.2.2.8 CLK_CLKCTL_OSCCLKSRCSEL_BITS

Definition:

```
#define CLK_CLKCTL_OSCCLKSRCSEL_BITS
```

Description:

Defines the location of the OSCCLKSRCSEL bits in the CLKCTL register.

5.2.2.9 CLK_CLKCTL_TMR2CLKPRESCALE_BITS

Definition:

```
#define CLK_CLKCTL_TMR2CLKPRESCALE_BITS
```

Description:

Defines the location of the TMR2CLKPRESCALE bits in the CLKCTL register.

5.2.2.10 CLK_CLKCTL_TMR2CLKSRCSEL_BITS

Definition:

```
#define CLK_CLKCTL_TMR2CLKSRCSEL_BITS
```

Description:

Defines the location of the TMR2CLKSRCSEL bits in the CLKCTL register.

5.2.2.11 CLK_CLKCTL_WDCLKSRCSEL_BITS

Definition:

```
#define CLK_CLKCTL_WDCLKSRCSEL_BITS
```

Description:

Defines the location of the WDCLKSRCSEL bits in the CLKCTL register.

5.2.2.12 CLK_CLKCTL_WDHALTI_BITS

Definition:

```
#define CLK_CLKCTL_WDHALTI_BITS
```

Description:

Defines the location of the WDHALTI bits in the CLKCTL register.

5.2.2.13 CLK_CLKCTL_XCLKINOFF_BITS

Definition:

```
#define CLK_CLKCTL_XCLKINOFF_BITS
```

Description:

Defines the location of the XCLKINOFF bits in the CLKCTL register.

5.2.2.14 CLK_CLKCTL_XTALOSCOFF_BITS

Definition:

```
#define CLK_CLKCTL_XTALOSCOFF_BITS
```

Description:

Defines the location of the XTALOSCOFF bits in the CLKCTL register.

5.2.2.15 CLK_LOSPCP_LSPCLK_BITS

Definition:

```
#define CLK_LOSPCP_LSPCLK_BITS
```

Description:

Defines the location of the LSPNCLK bits in the LOSPCP register.

5.2.2.16 CLK_PCLKCR0_ADCENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_ADCENCLK_BITS
```

Description:

Defines the location of the ADCENCLK bits in the PCLKCR0 register.

5.2.2.17 CLK_PCLKCR0_ECANAENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_ECANAENCLK_BITS
```

Description:

Defines the location of the ECANAENCLK bits in the PCLKCR0 register.

5.2.2.18 CLK_PCLKCR0_HRPWMENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_HRPWMENCLK_BITS
```

Description:

Defines the location of the HRPWMENCLK bits in the PCLKCR0 register.

5.2.2.19 CLK_PCLKCR0_I2CAENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_I2CAENCLK_BITS
```

Description:

Defines the location of the I2CAENCLK bits in the PCLKCR0 register.

5.2.2.20 CLK_PCLKCR0_LINAENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_LINAENCLK_BITS
```

Description:

Defines the location of the LINAENCLK bits in the PCLKCR0 register.

5.2.2.21 CLK_PCLKCR0_SCIAENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_SCIAENCLK_BITS
```

Description:

Defines the location of the SCIAENCLK bits in the PCLKCR0 register.

5.2.2.22 CLK_PCLKCR0_SPIAENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_SPIAENCLK_BITS
```

Description:

Defines the location of the SPIAENCLK bits in the PCLKCR0 register.

5.2.2.23 CLK_PCLKCR0_SPIBENCLK_BITS

Definition:

```
#define CLK_PCLKCR0_SPIBENCLK_BITS
```

Description:

Defines the location of the SPIBENCLK bits in the PCLKCR0 register.

5.2.2.24 CLK_PCLKCR0_TBCLKSYNC_BITS

Definition:

```
#define CLK_PCLKCR0_TBCLKSYNC_BITS
```

Description:

Defines the location of the TBCLKSYNC bits in the PCLKCR0 register.

5.2.2.25 CLK_PCLKCR1_ECAP1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_ECAP1ENCLK_BITS
```

Description:

Defines the location of the ECAP1ENCLK bits in the PCLKCR1 register.

5.2.2.26 CLK_PCLKCR1_EPWM1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM1ENCLK_BITS
```

Description:

Defines the location of the EPWM1ENCLK bits in the PCLKCR1 register.

5.2.2.27 CLK_PCLKCR1_EPWM2ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM2ENCLK_BITS
```

Description:

Defines the location of the EPWM2ENCLK bits in the PCLKCR1 register.

5.2.2.28 CLK_PCLKCR1_EPWM3ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM3ENCLK_BITS
```

Description:

Defines the location of the EPWM3ENCLK bits in the PCLKCR1 register.

5.2.2.29 CLK_PCLKCR1_EPWM4ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM4ENCLK_BITS
```

Description:

Defines the location of the EPWM4ENCLK bits in the PCLKCR1 register.

5.2.2.30 CLK_PCLKCR1_EPWM5ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM5ENCLK_BITS
```

Description:

Defines the location of the EPWM5ENCLK bits in the PCLKCR1 register.

5.2.2.31 CLK_PCLKCR1_EPWM6ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM6ENCLK_BITS
```

Description:

Defines the location of the EPWM6ENCLK bits in the PCLKCR1 register.

5.2.2.32 CLK_PCLKCR1_EPWM7ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EPWM7ENCLK_BITS
```

Description:

Defines the location of the EPWM7ENCLK bits in the PCLKCR1 register.

5.2.2.33 CLK_PCLKCR1_EQEP1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR1_EQEP1ENCLK_BITS
```

Description:

Defines the location of the EQEP1ENCLK bits in the PCLKCR1 register.

5.2.2.34 CLK_PCLKCR3_CLA1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_CLA1ENCLK_BITS
```

Description:

Defines the location of the CLA1ENCLK bits in the PCLKCR3 register.

5.2.2.35 CLK_PCLKCR3_COMP1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_COMP1ENCLK_BITS
```

Description:

Defines the location of the COMP1ENCLK bits in the PCLKCR3 register.

5.2.2.36 CLK_PCLKCR3_COMP2ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_COMP2ENCLK_BITS
```

Description:

Defines the location of the COMP2ENCLK bits in the PCLKCR3 register.

5.2.2.37 CLK_PCLKCR3_COMP3ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_COMP3ENCLK_BITS
```

Description:

Defines the location of the COMP3ENCLK bits in the PCLKCR3 register.

5.2.2.38 CLK_PCLKCR3_CPUTIMER0ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_CPUTIMER0ENCLK_BITS
```

Description:

Defines the location of the CPUTIMER0ENCLK bits in the PCLKCR3 register.

5.2.2.39 CLK_PCLKCR3_CPUTIMER1ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_CPUTIMER1ENCLK_BITS
```

Description:

Defines the location of the CPUTIMER1ENCLK bits in the PCLKCR3 register.

5.2.2.40 CLK_PCLKCR3_CPUTIMER2ENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_CPUTIMER2ENCLK_BITS
```

Description:

Defines the location of the CPUTIMER2ENCLK bits in the PCLKCR3 register.

5.2.2.41 CLK_PCLKCR3_GPIOINENCLK_BITS

Definition:

```
#define CLK_PCLKCR3_GPIOINENCLK_BITS
```

Description:

Defines the location of the GPIOINENCLK bits in the PCLKCR3 register.

5.2.2.42 CLK_XCLK_XCLKINSEL_BITS

Definition:

```
#define CLK_XCLK_XCLKINSEL_BITS
```

Description:

Defines the location of the XCLKINSEL bits in the XCLK register.

5.2.2.43 CLK_XCLK_XCLKOUTDIV_BITS

Definition:

```
#define CLK_XCLK_XCLKOUTDIV_BITS
```

Description:

Defines the location of the XCLKOUTDIV bits in the XCLK register.

5.2.3 Typedef Documentation

5.2.3.1 CLK_Handle

Definition:

```
typedef struct _CLK_Obj_ *CLK_Handle
```

Description:

Defines the clock (CLK) handle.

5.2.3.2 CLK_Obj

Definition:

```
typedef struct _CLK_Obj_ CLK_Obj
```

Description:

Defines the clock (CLK) object.

5.2.4 Enumeration Documentation

5.2.4.1 CLK_ClkInSrc_e

Description:

Enumeration to define the clock in source.

5.2.4.2 enum CLK_ClkOutPreScaler_e

Enumeration to define the external clock output frequency.

Enumerators:

CLK_ClkOutPreScaler_SysClkOut_by_4 Denotes XCLKOUT = SYSCLKOUT/4.

CLK_ClkOutPreScaler_SysClkOut_by_2 Denotes XCLKOUT = SYSCLKOUT/2.

CLK_ClkOutPreScaler_SysClkOut_by_1 Denotes XCLKOUT = SYSCLKOUT/1.

CLK_ClkOutPreScaler_Off Denotes XCLKOUT = Off.

5.2.4.3 CLK_CompNumber_e

Description:

Enumeration to define the comparator numbers.

Enumerators:

- CLK_CompNumber_1** Denotes comparator number 1.
- CLK_CompNumber_2** Denotes comparator number 2.
- CLK_CompNumber_3** Denotes comparator number 3.

5.2.4.4 CLK_CpuTimerNumber_e

Description:

Enumeration to define the CPU timer numbers.

Enumerators:

- CLK_CpuTimerNumber_0** Denotes CPU timer number 0.
- CLK_CpuTimerNumber_1** Denotes CPU timer number 1.
- CLK_CpuTimerNumber_2** Denotes CPU timer number 2.

5.2.4.5 CLK_LowSpdPreScaler_e

Description:

Enumeration to define the low speed clock prescaler, which sets the clock frequency.

Enumerators:

- CLK_LowSpdPreScaler_SysClkOut_by_1** Denotes Low Speed Clock = SYSCLKOUT/1.
- CLK_LowSpdPreScaler_SysClkOut_by_2** Denotes Low Speed Clock = SYSCLKOUT/2.
- CLK_LowSpdPreScaler_SysClkOut_by_4** Denotes Low Speed Clock = SYSCLKOUT/4.
- CLK_LowSpdPreScaler_SysClkOut_by_6** Denotes Low Speed Clock = SYSCLKOUT/6.
- CLK_LowSpdPreScaler_SysClkOut_by_8** Denotes Low Speed Clock = SYSCLKOUT/8.
- CLK_LowSpdPreScaler_SysClkOut_by_10** Denotes Low Speed Clock = SYSCLKOUT/10.

- CLK_LowSpdPreScaler_SysClkOut_by_12** Denotes Low Speed Clock = SYSCLKOUT/12.

- CLK_LowSpdPreScaler_SysClkOut_by_14** Denotes Low Speed Clock = SYSCLKOUT/14.

5.2.4.6 CLK_Osc2Src_e

Description:

Enumeration to define the clock oscillator 2 source.

Enumerators:

- CLK_Osc2Src_Internal** Denotes an internal oscillator 2 source.
- CLK_Osc2Src_External** Denotes an external oscillator 2 source.

5.2.4.7 CLK_OscSrc_e

Description:

Enumeration to define the clock oscillator source.

Enumerators:

CLK_OscSrc_Internal Denotes an internal oscillator source.

CLK_OscSrc_External Denotes an external oscillator source.

5.2.4.8 CLK_Timer2PreScaler_e

Description:

Enumeration to define the timer 2 prescaler, which sets the timer 2 frequency.

Enumerators:

CLK_Timer2PreScaler_by_1 Denotes a CPU timer 2 clock pre-scaler value of divide by 1.

CLK_Timer2PreScaler_by_2 Denotes a CPU timer 2 clock pre-scaler value of divide by 2.

CLK_Timer2PreScaler_by_4 Denotes a CPU timer 2 clock pre-scaler value of divide by 4.

CLK_Timer2PreScaler_by_8 Denotes a CPU timer 2 clock pre-scaler value of divide by 8.

CLK_Timer2PreScaler_by_16 Denotes a CPU timer 2 clock pre-scaler value of divide by 16.

5.2.4.9 CLK_Timer2Src_e

Description:

Enumeration to define the timer 2 source.

Enumerators:

CLK_Timer2Src_SysClk Denotes the CPU timer 2 clock source is SYSCLKOUT.

CLK_Timer2Src_ExtOsc Denotes the CPU timer 2 clock source is external oscillator.

CLK_Timer2Src_IntOsc1 Denotes the CPU timer 2 clock source is internal oscillator 1.

CLK_Timer2Src_IntOsc2 Denotes the CPU timer 2 clock source is internal oscillator 2.

5.2.4.10 CLK_WdClkSrc_e

Description:

Enumeration to define the watchdog clock source.

Enumerators:

CLK_WdClkSrc_IntOsc1 Denotes the watchdog clock source is internal oscillator 1.

CLK_WdClkSrc_ExtOscOrIntOsc2 Denotes the watchdog clock source is external oscillator or internal oscillator 2.

5.2.5 Function Documentation

5.2.5.1 CLK_disableAdcClock

Disables the ADC clock.

Prototype:

```
void  
CLK_disableAdcClock(CLK\_Handle clkHandle)
```

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.2 void CLK_disableClaClock ([CLK_Handle](#) clkHandle)

Disables the CLA clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.3 void CLK_disableClkIn ([CLK_Handle](#) clkHandle)

Disables the XCLKIN oscillator input.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.4 void CLK_disableCompClock ([CLK_Handle](#) clkHandle, const [CLK_CompNumber_e](#) compNumber)

Disables the comparator clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

← **compNumber** The comparator number

5.2.5.5 void CLK_disableCpuTimerClock ([CLK_Handle](#) clkHandle, const [CLK_CpuTimerNumber_e](#) cpuTimerNumber)

Disables the CPU timer clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

← **cpuTimerNumber** The CPU timer number

5.2.5.6 void CLK_disableCrystalOsc (CLK_Handle clkHandle)

Disables the crystal oscillator.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.7 void CLK_disableEcanaClock (CLK_Handle clkHandle)

Disables the ECANA clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.8 void CLK_disableEcap1Clock (CLK_Handle clkHandle)

Disables the ECAP1 clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.9 void CLK_disableEqep1Clock (CLK_Handle clkHandle)

Disables the EQEP1 clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.10 void CLK_disableGpioInputClock (CLK_Handle clkHandle)

Disables the GPIO input clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.11 void CLK_disableHrPwmClock (CLK_Handle clkHandle)

Disables the HRPWM clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.12 void CLK_disableI2cClock (CLK_Handle clkHandle)

Disables the I2C clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.13 void CLK_disableLinAClock (CLK_Handle clkHandle)

Disables the LIN-A clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.14 void CLK_disableOsc1 (CLK_Handle clkHandle)

Disables internal oscillator 1.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.15 void CLK_disableOsc1HaltMode (CLK_Handle clkHandle)

Disables internal oscillator 1 halt mode ignore.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.16 void CLK_disableOsc2 (CLK_Handle clkHandle)

Disables internal oscillator 2.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.17 void CLK_disableOsc2HaltMode (CLK_Handle clkHandle)

Disables internal oscillator 2 halt mode ignore.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.18 void CLK_disablePwmClock (CLK_Handle *clkHandle*, const PWM_Number_e *pwmNumber*)

Disables the pwm clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

← ***pwmNumber*** The PWM number

5.2.5.19 void CLK_disableSciaClock (CLK_Handle *clkHandle*)

Disables the SCI-A clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.20 void CLK_disableSpiaClock (CLK_Handle *clkHandle*)

Disables the SPI-A clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.21 void CLK_disableSpibClock (CLK_Handle *clkHandle*)

Disables the SPI-B clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.22 void CLK_disableTbClockSync (CLK_Handle *clkHandle*)

Disables the ePWM module time base clock sync signal.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.23 void CLK_disableWatchDogHaltMode (CLK_Handle *clkHandle*)

Disables the watchdog halt mode ignore.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.24 void CLK_enableAdcClock ([CLK_Handle](#) *clkHandle*)

Enables the ADC clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.25 void CLK_enableClaClock ([CLK_Handle](#) *clkHandle*)

Enables the CLA clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.26 void CLK_enableClkIn ([CLK_Handle](#) *clkHandle*)

Enables the XCLKIN oscillator input.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.27 void CLK_enableCompClock ([CLK_Handle](#) *clkHandle*, const [CLK_CompNumber_e](#) *compNumber*)

Enables the comparator clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

← ***compNumber*** The comparator number

5.2.5.28 void CLK_enableCpuTimerClock ([CLK_Handle](#) *clkHandle*, const [CLK_CpuTimerNumber_e](#) *cpuTimerNumber*)

Enables the CPU timer clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

← ***cpuTimerNumber*** The CPU timer number

5.2.5.29 void CLK_enableCrystalOsc ([CLK_Handle](#) *clkHandle*)

Enables the crystal oscillator.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.30 void CLK_enableEcanaClock (CLK_Handle clkHandle)

Enables the ECANA clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.31 void CLK_enableEcap1Clock (CLK_Handle clkHandle)

Enables the ECAP1 clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.32 void CLK_enableEqep1Clock (CLK_Handle clkHandle)

Enables the EQEP1 clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.33 void CLK_enableGpioInputClock (CLK_Handle clkHandle)

Enables the GPIO input clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.34 void CLK_enableHrPwmClock (CLK_Handle clkHandle)

Enables the HRPWM clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.35 void CLK_enableI2cClock (CLK_Handle clkHandle)

Enables the I2C clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.36 void CLK_enableLinAClock (CLK_Handle clkHandle)

Enables the LIN-A clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.37 void CLK_enableOsc1 (CLK_Handle clkHandle)

Enables internal oscillator 1.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.38 void CLK_enableOsc1HaltMode (CLK_Handle clkHandle)

Enables internal oscillator 1 halt mode ignore.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.39 void CLK_enableOsc2 (CLK_Handle clkHandle)

Enables internal oscillator 2.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.40 void CLK_enableOsc2HaltMode (CLK_Handle clkHandle)

Enables internal oscillator 2 halt mode ignore.

Parameters:

← **clkHandle** The clock (CLK) object handle

5.2.5.41 void CLK_enablePwmClock (CLK_Handle clkHandle, const PWM_Number_e pwmNumber)

Enables the pwm clock.

Parameters:

← **clkHandle** The clock (CLK) object handle

← **pwmNumber** The PWM number

5.2.5.42 void CLK_enableSciaClock (CLK_Handle *clkHandle*)

Enables the SCI-A clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.43 void CLK_enableSpiaClock (CLK_Handle *clkHandle*)

Enables the SPI-A clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.44 void CLK_enableSpibClock (CLK_Handle *clkHandle*)

Enables the SPI-B clock.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.45 void CLK_enableTbClockSync (CLK_Handle *clkHandle*)

Enables the ePWM module time base clock sync signal.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.46 void CLK_enableWatchDogHaltMode (CLK_Handle *clkHandle*)

Enables the watchdog halt mode ignore.

Parameters:

← ***clkHandle*** The clock (CLK) object handle

5.2.5.47 CLK_Handle CLK_init (void * *pMemory*, const size_t *numBytes*)

Initializes the clock (CLK) object handle.

Parameters:

← ***pMemory*** A pointer to the base address of the CLK registers

← ***numBytes*** The number of bytes allocated for the CLK object, bytes

Returns:

The clock (CLK) object handle

5.2.5.48 void CLK_setClkOutPreScaler ([CLK_Handle](#) *clkHandle*, const [CLK_ClkOutPreScaler_e](#) *preScaler*)

Sets the external clock out prescaler.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***preScaler*** The prescaler value

5.2.5.49 void CLK_setLowSpdPreScaler ([CLK_Handle](#) *clkHandle*, const [CLK_LowSpdPreScaler_e](#) *preScaler*)

Sets the low speed peripheral clock prescaler.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***preScaler*** The prescaler value

5.2.5.50 void CLK_setOsc2Src ([CLK_Handle](#) *clkHandle*, const [CLK_Osc2Src_e](#) *src*)

Sets the oscillator 2 clock source.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***src*** The oscillator 2 clock source

5.2.5.51 void CLK_setOscSrc ([CLK_Handle](#) *clkHandle*, const [CLK_OscSrc_e](#) *src*)

Sets the oscillator clock source.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***src*** The oscillator clock source

5.2.5.52 void CLK_setTimer2PreScaler ([CLK_Handle](#) *clkHandle*, const [CLK_Timer2PreScaler_e](#) *preScaler*)

Sets the timer 2 clock prescaler.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***preScaler*** The prescaler value

5.2.5.53 void CLK_setTimer2Src (CLK_Handle *clkHandle*, const CLK_Timer2Src_e *src*)

Sets the timer 2 clock source.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***src*** The timer 2 clock source

5.2.5.54 void CLK_setWatchDogSrc (CLK_Handle *clkHandle*, const CLK_WdClkSrc_e *src*)

Sets the watchdog clock source.

Parameters:

- ← ***clkHandle*** The clock (CLK) object handle
- ← ***src*** The watchdog clock source

6 Comparater (COMP)

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6.1 Introduction

The Comparator (COMP) API provides the set of functions to configure the analog comparators present on this device.

This driver is contained in `f2802x/common/source/comp.c`, with `f2802x/common/include/comp.h` containing the API definitions for use by applications.

6.2 COMP

Data Structures

- `_COMP_Obj_`

Defines

- `COMP1_BASE_ADDR`
- `COMP2_BASE_ADDR`
- `COMP_COMPCTL_CMPINV_BITS`
- `COMP_COMPCTL_COMPDACE_BITS`
- `COMP_COMPCTL_COMPSOURCE_BITS`
- `COMP_COMPCTL_QUALSEL_BITS`
- `COMP_COMPCTL_SYNCSEL_BITS`
- `COMP_COMPSTS_COMPSTS_BITS`
- `COMP_DACCTL_DACSOURCE_BITS`
- `COMP_DACCTL_FREESOFT_BITS`
- `COMP_DACCTL_RAMPSOURCE_BITS`

Enumerations

- `COMP_QualSel_e`
- `COMP_RampSyncSrc_e`

Functions

- `void COMP_disable (COMP_Handle compHandle)`

- void [COMP_disableDac](#) (COMP_Handle compHandle)
- void [COMP_enable](#) (COMP_Handle compHandle)
- void [COMP_enableDac](#) (COMP_Handle compHandle)
- [COMP_Handle COMP_init](#) (void *pMemory, const size_t numBytes)
- void [COMP_setDacValue](#) (COMP_Handle compHandle, uint16_t dacValue)

6.2.1 Data Structure Documentation

6.2.1.1 _COMP_Obj_

Definition:

```
typedef struct
{
    uint16_t COMPCTL;
    uint16_t rsvd_1;
    uint16_t COMPSTS;
    uint16_t rsvd_2;
    uint16_t DACCTL;
    uint16_t rsvd_3;
    uint16_t DACVAL;
    uint16_t rsvd_4;
    uint16_t RAMPMAXREF_ACTIVE;
    uint16_t rsvd_5;
    uint16_t RAMPMAXREF_SHADOW;
    uint16_t rsvd_6;
    uint16_t RAMPDECVAL_ACTIVE;
    uint16_t rsvd_7;
    uint16_t RAMPDECVAL_SHADOW;
    uint16_t rsvd_8;
    uint16_t RAMPSTS;
}
_COMP_Obj_
```

Members:

COMPCTL COMP Control Register.

rsvd_1 Reserved.

COMPSTS COMP Status Register.

rsvd_2 Reserved.

DACCTL DAC Control Register.

rsvd_3 Reserved.

DACVAL DAC Value Register.

rsvd_4 Reserved.

RAMPMAXREF_ACTIVE Ramp Generator Maximum Reference (Active).

rsvd_5 Reserved.

RAMPMAXREF_SHADOW Ramp Generator Maximum Reference (Shadow).

rsvd_6 Reserved.

RAMPDECVAL_ACTIVE Ramp Generator Decrement Value (Active).

rsvd_7 Reserved.

RAMPDECVAL_SHADOW Ramp Generator Decrement Value (Shadow).

rsvd_8 Reserved.

RAMPSTS Ramp Generator Status.

Description:

Defines the comparator (COMP) object.

6.2.2 Define Documentation

6.2.2.1 COMP1_BASE_ADDR

Definition:

```
#define COMP1_BASE_ADDR
```

Description:

Defines the base address of the comparator (COMP) registers.

6.2.2.2 COMP2_BASE_ADDR

Definition:

```
#define COMP2_BASE_ADDR
```

Description:

Defines the base address of the comparator (COMP) registers.

6.2.2.3 COMP_COMPCTL_CMPINV_BITS

Definition:

```
#define COMP_COMPCTL_CMPINV_BITS
```

Description:

Defines the location of the CMPINV bits in the COMPCTL register.

6.2.2.4 COMP_COMPCTL_COMPDACE_BITS

Definition:

```
#define COMP_COMPCTL_COMPDACE_BITS
```

Description:

Defines the location of the COMPDACE bits in the COMPCTL register.

6.2.2.5 COMP_COMPCTL_COMPSOURCE_BITS

Definition:

```
#define COMP_COMPCTL_COMPSOURCE_BITS
```

Description:

Defines the location of the COMPSOURCE bits in the COMPCTL register.

6.2.2.6 COMP_COMPCTL_QUALSEL_BITS

Definition:

```
#define COMP_COMPCTL_QUALSEL_BITS
```

Description:

Defines the location of the QUALSEL bits in the COMPCTL register.

6.2.2.7 COMP_COMPCTL_SYNCSEL_BITS

Definition:

```
#define COMP_COMPCTL_SYNCSEL_BITS
```

Description:

Defines the location of the SYNCSEL bits in the COMPCTL register.

6.2.2.8 COMP_COMPSTS_COMPSTS_BITS

Definition:

```
#define COMP_COMPSTS_COMPSTS_BITS
```

Description:

Defines the location of the COMPSTS bits in the COMPSTS register.

6.2.2.9 COMP_DACCTL_DACSOURCE_BITS

Definition:

```
#define COMP_DACCTL_DACSOURCE_BITS
```

Description:

Defines the location of the DACSOURCE bits in the DACCTL register.

6.2.2.10 COMP_DACCTL_FREESOFT_BITS

Definition:

```
#define COMP_DACCTL_FREESOFT_BITS
```

Description:

Defines the location of the FREE:SOFT bits in the DACCTL register.

6.2.2.11 COMP_DACCTL_RAMPSOURCE_BITS

Definition:

```
#define COMP_DACCTL_RAMPSOURCE_BITS
```

Description:

Defines the location of the RAMPSOURCE bits in the DACCTL register.

6.2.3 Typedef Documentation

6.2.3.1 COMP_Handle

Definition:

```
typedef struct _COMP_Obj_ *COMP_Handle
```

Description:

Defines the comparator (COMP) handle.

6.2.3.2 COMP_Obj

Definition:

```
typedef struct _COMP_Obj_ COMP_Obj
```

Description:

Defines the comparator (COMP) object.

6.2.4 Enumeration Documentation

6.2.4.1 COMP_QualSel_e

Description:

Enumeration to define the comparator (COMP) output qualification.

Enumerators:

COMP_QualSel_Sync Synchronize comparator output.
COMP_QualSel_Qual_2 Qualify comparator output with 2 cycles.
COMP_QualSel_Qual_3 Qualify comparator output with 3 cycles.
COMP_QualSel_Qual_4 Qualify comparator output with 4 cycles.
COMP_QualSel_Qual_5 Qualify comparator output with 5 cycles.
COMP_QualSel_Qual_6 Qualify comparator output with 6 cycles.
COMP_QualSel_Qual_7 Qualify comparator output with 7 cycles.
COMP_QualSel_Qual_8 Qualify comparator output with 8 cycles.
COMP_QualSel_Qual_9 Qualify comparator output with 9 cycles.
COMP_QualSel_Qual_10 Qualify comparator output with 10 cycles.
COMP_QualSel_Qual_11 Qualify comparator output with 11 cycles.
COMP_QualSel_Qual_12 Qualify comparator output with 12 cycles.
COMP_QualSel_Qual_13 Qualify comparator output with 13 cycles.

COMP_QualSel_Qual_14 Qualify comparator output with 14 cycles.
COMP_QualSel_Qual_15 Qualify comparator output with 15 cycles.
COMP_QualSel_Qual_16 Qualify comparator output with 16 cycles.
COMP_QualSel_Qual_17 Qualify comparator output with 17 cycles.
COMP_QualSel_Qual_18 Qualify comparator output with 18 cycles.
COMP_QualSel_Qual_19 Qualify comparator output with 19 cycles.
COMP_QualSel_Qual_20 Qualify comparator output with 20 cycles.
COMP_QualSel_Qual_21 Qualify comparator output with 21 cycles.
COMP_QualSel_Qual_22 Qualify comparator output with 22 cycles.
COMP_QualSel_Qual_23 Qualify comparator output with 23 cycles.
COMP_QualSel_Qual_24 Qualify comparator output with 24 cycles.
COMP_QualSel_Qual_25 Qualify comparator output with 25 cycles.
COMP_QualSel_Qual_26 Qualify comparator output with 26 cycles.
COMP_QualSel_Qual_27 Qualify comparator output with 27 cycles.
COMP_QualSel_Qual_28 Qualify comparator output with 28 cycles.
COMP_QualSel_Qual_29 Qualify comparator output with 29 cycles.
COMP_QualSel_Qual_30 Qualify comparator output with 30 cycles.
COMP_QualSel_Qual_31 Qualify comparator output with 31 cycles.
COMP_QualSel_Qual_32 Qualify comparator output with 32 cycles.
COMP_QualSel_Qual_33 Qualify comparator output with 33 cycles.

6.2.4.2 COMP_RampSyncSrc_e

Description:

Enumeration to define the comparator (COMP) ramp generator sync source.

Enumerators:

COMP_RampSyncSrc_PWMSYNC1 PWMSync1 used as Ramp Sync.
COMP_RampSyncSrc_PWMSYNC2 PWMSync2 used as Ramp Sync.
COMP_RampSyncSrc_PWMSYNC3 PWMSync3 used as Ramp Sync.
COMP_RampSyncSrc_PWMSYNC4 PWMSync4 used as Ramp Sync.

6.2.5 Function Documentation

6.2.5.1 COMP_disable

Disables the comparator (COMP).

Prototype:

```
void  
COMP_disable(COMP\_Handle compHandle)
```

Parameters:

← **compHandle** The comparator (COMP) object handle

6.2.5.2 void COMP_disableDac (COMP_Handle compHandle)

Disables the DAC.

Parameters:

← **compHandle** The comparator (COMP) object handle

6.2.5.3 void COMP_enable (COMP_Handle compHandle)

Enables the comparator (COMP).

Parameters:

← **compHandle** The comparator (COMP) object handle

6.2.5.4 void COMP_enableDac (COMP_Handle compHandle)

Enables the DAC.

Parameters:

← **compHandle** The comparator (COMP) object handle

6.2.5.5 COMP_Handle COMP_init (void * pMemory, const size_t numBytes)

Initializes the comparator (COMP) object handle.

Parameters:

← **pMemory** A pointer to the base address of the COMP registers

← **numBytes** The number of bytes allocated for the COMP object, bytes

Returns:

The comparator (COMP) object handle

6.2.5.6 void COMP_setDacValue (COMP_Handle compHandle, uint16_t dacValue) [inline]

Sets the DAC's value.

Parameters:

← **compHandle** The comparator (COMP) object handle

← **dacValue** The DAC's value

7 Central Processing Unit (CPU)

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7.1 Introduction

The CPU API provides a set of functions for controlling the central processing unit of this device. This driver is unique in that when initialized `NULL` should be passed as the peripheral base address.

This driver is contained in `f2802x/common/source/cpu.c`, with `f2802x/common/include/cpu.h` containing the API definitions for use by applications.

7.2 CPU

Data Structures

- `_CPU_Obj_`

Defines

- `CPU_DBGIER_DLOGINT_BITS`
- `CPU_DBGIER_INT10_BITS`
- `CPU_DBGIER_INT11_BITS`
- `CPU_DBGIER_INT12_BITS`
- `CPU_DBGIER_INT13_BITS`
- `CPU_DBGIER_INT14_BITS`
- `CPU_DBGIER_INT1_BITS`
- `CPU_DBGIER_INT2_BITS`
- `CPU_DBGIER_INT3_BITS`
- `CPU_DBGIER_INT4_BITS`
- `CPU_DBGIER_INT5_BITS`
- `CPU_DBGIER_INT6_BITS`
- `CPU_DBGIER_INT7_BITS`
- `CPU_DBGIER_INT8_BITS`
- `CPU_DBGIER_INT9_BITS`
- `CPU_DBGIER_RTOSINT_BITS`
- `CPU_IER_DLOGINT_BITS`
- `CPU_IER_INT10_BITS`
- `CPU_IER_INT11_BITS`
- `CPU_IER_INT12_BITS`
- `CPU_IER_INT13_BITS`

- CPU_IER_INT14_BITS
- CPU_IER_INT1_BITS
- CPU_IER_INT2_BITS
- CPU_IER_INT3_BITS
- CPU_IER_INT4_BITS
- CPU_IER_INT5_BITS
- CPU_IER_INT6_BITS
- CPU_IER_INT7_BITS
- CPU_IER_INT8_BITS
- CPU_IER_INT9_BITS
- CPU_IER_RTOSINT_BITS
- CPU_IFR_DLOGINT_BITS
- CPU_IFR_INT10_BITS
- CPU_IFR_INT11_BITS
- CPU_IFR_INT12_BITS
- CPU_IFR_INT13_BITS
- CPU_IFR_INT14_BITS
- CPU_IFR_INT1_BITS
- CPU_IFR_INT2_BITS
- CPU_IFR_INT3_BITS
- CPU_IFR_INT4_BITS
- CPU_IFR_INT5_BITS
- CPU_IFR_INT6_BITS
- CPU_IFR_INT7_BITS
- CPU_IFR_INT8_BITS
- CPU_IFR_INT9_BITS
- CPU_IFR_RTOSINT_BITS
- CPU_ST0_C_BITS
- CPU_ST0_N_BITS
- CPU_ST0_OVCOVCU_BITS
- CPU_ST0_OVM_BITS
- CPU_ST0_PW_BITS
- CPU_ST0_SXM_BITS
- CPU_ST0_TC_BITS
- CPU_ST0_V_BITS
- CPU_ST0_Z_BITS
- CPU_ST1_AMODE_BITS
- CPU_ST1_ARP_BITS
- CPU_ST1_DBGM_BITS
- CPU_ST1_EALLOW_BITS
- CPU_ST1_IDLESTAT_BITS
- CPU_ST1_INTM_BITS
- CPU_ST1_LOOP_BITS
- CPU_ST1_MOM1MAP_BITS
- CPU_ST1_OBJMODE_BITS
- CPU_ST1_PAGE0_BITS

- CPU_ST1_SPA_BITS
- CPU_ST1_VMAP_BITS
- CPU_ST1_XF_BITS
- DINT
- DISABLE_INTERRUPTS
- DISABLE_PROTECTED_REGISTER_WRITE_MODE
- DRTM
- EALLOW
- EDIS
- EINT
- ENABLE_INTERRUPTS
- ENABLE_PROTECTED_REGISTER_WRITE_MODE
- ERTM
- ESTOP0
- IDLE

Enumerations

- CPU_ExtIntNumber_e
- CPU_IntNumber_e

Functions

- void CPU_clearIntFlags (CPU_Handle cpuHandle)
- void CPU_disableDebugInt (CPU_Handle cpuHandle)
- void CPU_disableGlobalInts (CPU_Handle cpuHandle)
- void CPU_disableInt (CPU_Handle cpuHandle, const CPU_IntNumber_e intNumber)
- void CPU_disableInts (CPU_Handle cpuHandle)
- void CPU_disableProtectedRegisterWrite (CPU_Handle cpuHandle)
- void CPU_enableDebugInt (CPU_Handle cpuHandle)
- void CPU_enableGlobalInts (CPU_Handle cpuHandle)
- void CPU_enableInt (CPU_Handle cpuHandle, const CPU_IntNumber_e intNumber)
- void CPU_enableProtectedRegisterWrite (CPU_Handle cpuHandle)
- CPU_Handle CPU_init (void *pMemory, const size_t numBytes)

Variables

- CPU_Obj cpu
- register volatile unsigned int IER
- register volatile unsigned int IFR

7.2.1 Data Structure Documentation

7.2.1.1 `_CPU_Obj_`

Definition:

```
typedef struct
{
    HASH(0x556f2cf7ele8) argsstring;
}
_CPU_Obj_
```

Members:

argsstring

Description:

Defines the central processing unit (CPU) object.

7.2.2 Define Documentation

7.2.2.1 `CPU_DBGIER_DLOGINT_BITS`

Definition:

```
#define CPU_DBGIER_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the DBGIER register.

7.2.2.2 `CPU_DBGIER_INT10_BITS`

Definition:

```
#define CPU_DBGIER_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the DBGIER register.

7.2.2.3 `CPU_DBGIER_INT11_BITS`

Definition:

```
#define CPU_DBGIER_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the DBGIER register.

7.2.2.4 `CPU_DBGIER_INT12_BITS`

Definition:

```
#define CPU_DBGIER_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the DBGIER register.

7.2.2.5 CPU_DBGIER_INT13_BITS

Definition:

```
#define CPU_DBGIER_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the DBGIER register.

7.2.2.6 CPU_DBGIER_INT14_BITS

Definition:

```
#define CPU_DBGIER_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the DBGIER register.

7.2.2.7 CPU_DBGIER_INT1_BITS

Definition:

```
#define CPU_DBGIER_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the DBGIER register.

7.2.2.8 CPU_DBGIER_INT2_BITS

Definition:

```
#define CPU_DBGIER_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the DBGIER register.

7.2.2.9 CPU_DBGIER_INT3_BITS

Definition:

```
#define CPU_DBGIER_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the DBGIER register.

7.2.2.10 CPU_DBGIER_INT4_BITS

Definition:

```
#define CPU_DBGIER_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the DBGIER register.

7.2.2.11 CPU_DBGIER_INT5_BITS

Definition:

```
#define CPU_DBGIER_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the DBGIER register.

7.2.2.12 CPU_DBGIER_INT6_BITS

Definition:

```
#define CPU_DBGIER_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the DBGIER register.

7.2.2.13 CPU_DBGIER_INT7_BITS

Definition:

```
#define CPU_DBGIER_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the DBGIER register.

7.2.2.14 CPU_DBGIER_INT8_BITS

Definition:

```
#define CPU_DBGIER_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the DBGIER register.

7.2.2.15 CPU_DBGIER_INT9_BITS

Definition:

```
#define CPU_DBGIER_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the DBGIER register.

7.2.2.16 CPU_DBGIER_RTOSINT_BITS

Definition:

```
#define CPU_DBGIER_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the DBGIER register.

7.2.2.17 CPU_IER_DLOGINT_BITS

Definition:

```
#define CPU_IER_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the IER register.

7.2.2.18 CPU_IER_INT10_BITS

Definition:

```
#define CPU_IER_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the IER register.

7.2.2.19 CPU_IER_INT11_BITS

Definition:

```
#define CPU_IER_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the IER register.

7.2.2.20 CPU_IER_INT12_BITS

Definition:

```
#define CPU_IER_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the IER register.

7.2.2.21 CPU_IER_INT13_BITS

Definition:

```
#define CPU_IER_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the IER register.

7.2.2.22 CPU_IER_INT14_BITS

Definition:

```
#define CPU_IER_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the IER register.

7.2.2.23 CPU_IER_INT1_BITS

Definition:

```
#define CPU_IER_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the IER register.

7.2.2.24 CPU_IER_INT2_BITS

Definition:

```
#define CPU_IER_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the IER register.

7.2.2.25 CPU_IER_INT3_BITS

Definition:

```
#define CPU_IER_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the IER register.

7.2.2.26 CPU_IER_INT4_BITS

Definition:

```
#define CPU_IER_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the IER register.

7.2.2.27 CPU_IER_INT5_BITS

Definition:

```
#define CPU_IER_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the IER register.

7.2.2.28 CPU_IER_INT6_BITS

Definition:

```
#define CPU_IER_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the IER register.

7.2.2.29 CPU_IER_INT7_BITS

Definition:

```
#define CPU_IER_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the IER register.

7.2.2.30 CPU_IER_INT8_BITS

Definition:

```
#define CPU_IER_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the IER register.

7.2.2.31 CPU_IER_INT9_BITS

Definition:

```
#define CPU_IER_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the IER register.

7.2.2.32 CPU_IER_RTOSINT_BITS

Definition:

```
#define CPU_IER_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the IER register.

7.2.2.33 CPU_IFR_DLOGINT_BITS

Definition:

```
#define CPU_IFR_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the IFR register.

7.2.2.34 CPU_IFR_INT10_BITS

Definition:

```
#define CPU_IFR_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the IER register.

7.2.2.35 CPU_IFR_INT11_BITS

Definition:

```
#define CPU_IFR_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the IER register.

7.2.2.36 CPU_IFR_INT12_BITS

Definition:

```
#define CPU_IFR_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the IER register.

7.2.2.37 CPU_IFR_INT13_BITS

Definition:

```
#define CPU_IFR_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the IER register.

7.2.2.38 CPU_IFR_INT14_BITS

Definition:

```
#define CPU_IFR_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the IER register.

7.2.2.39 CPU_IFR_INT1_BITS

Definition:

```
#define CPU_IFR_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the IER register.

7.2.2.40 CPU_IFR_INT2_BITS

Definition:

```
#define CPU_IFR_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the IER register.

7.2.2.41 CPU_IFR_INT3_BITS

Definition:

```
#define CPU_IFR_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the IER register.

7.2.2.42 CPU_IFR_INT4_BITS

Definition:

```
#define CPU_IFR_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the IER register.

7.2.2.43 CPU_IFR_INT5_BITS

Definition:

```
#define CPU_IFR_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the IER register.

7.2.2.44 CPU_IFR_INT6_BITS

Definition:

```
#define CPU_IFR_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the IER register.

7.2.2.45 CPU_IFR_INT7_BITS

Definition:

```
#define CPU_IFR_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the IER register.

7.2.2.46 CPU_IFR_INT8_BITS

Definition:

```
#define CPU_IFR_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the IER register.

7.2.2.47 CPU_IFR_INT9_BITS

Definition:

```
#define CPU_IFR_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the IER register.

7.2.2.48 CPU_IFR_RTOSINT_BITS

Definition:

```
#define CPU_IFR_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the IFR register.

7.2.2.49 CPU_ST0_C_BITS

Definition:

```
#define CPU_ST0_C_BITS
```

Description:

Defines the location of the C bits in the ST0 register.

7.2.2.50 CPU_ST0_N_BITS

Definition:

```
#define CPU_ST0_N_BITS
```

Description:

Defines the location of the N bits in the ST0 register.

7.2.2.51 CPU_ST0_OVCOVCU_BITS

Definition:

```
#define CPU_ST0_OVCOVCU_BITS
```

Description:

Defines the location of the OVCOVCU bits in the ST0 register.

7.2.2.52 CPU_ST0_OVM_BITS

Definition:

```
#define CPU_ST0_OVM_BITS
```

Description:

Defines the location of the OVM bits in the ST0 register.

7.2.2.53 CPU_ST0_PW_BITS

Definition:

```
#define CPU_ST0_PW_BITS
```

Description:

Defines the location of the PW bits in the ST0 register.

7.2.2.54 CPU_ST0_SXM_BITS

Definition:

```
#define CPU_ST0_SXM_BITS
```

Description:

Defines the location of the SXM bits in the ST0 register.

7.2.2.55 CPU_ST0_TC_BITS

Definition:

```
#define CPU_ST0_TC_BITS
```

Description:

Defines the location of the T bits in the ST0 register.

7.2.2.56 CPU_ST0_V_BITS

Definition:

```
#define CPU_ST0_V_BITS
```

Description:

Defines the location of the V bits in the ST0 register.

7.2.2.57 CPU_ST0_Z_BITS

Definition:

```
#define CPU_ST0_Z_BITS
```

Description:

Defines the location of the Z bits in the ST0 register.

7.2.2.58 CPU_ST1_AMODE_BITS

Definition:

```
#define CPU_ST1_AMODE_BITS
```

Description:

Defines the location of the AMODE bits in the ST1 register.

7.2.2.59 CPU_ST1_ARP_BITS

Definition:

```
#define CPU_ST1_ARP_BITS
```

Description:

Defines the location of the ARP bits in the ST1 register.

7.2.2.60 CPU_ST1_DBGM_BITS

Definition:

```
#define CPU_ST1_DBGM_BITS
```

Description:

Defines the location of the DBGM bits in the ST1 register.

7.2.2.61 CPU_ST1_EALLOW_BITS

Definition:

```
#define CPU_ST1_EALLOW_BITS
```

Description:

Defines the location of the EALLOW bits in the ST1 register.

7.2.2.62 CPU_ST1_IDLESTAT_BITS

Definition:

```
#define CPU_ST1_IDLESTAT_BITS
```

Description:

Defines the location of the IDLESTAT bits in the ST1 register.

7.2.2.63 CPU_ST1_INTM_BITS

Definition:

```
#define CPU_ST1_INTM_BITS
```

Description:

Defines the location of the INTM bits in the ST1 register.

7.2.2.64 CPU_ST1_LOOP_BITS

Definition:

```
#define CPU_ST1_LOOP_BITS
```

Description:

Defines the location of the LOOP bits in the ST1 register.

7.2.2.65 CPU_ST1_MOM1MAP_BITS

Definition:

```
#define CPU_ST1_MOM1MAP_BITS
```

Description:

Defines the location of the MOM1MAP bits in the ST1 register.

7.2.2.66 CPU_ST1_OBJMODE_BITS

Definition:

```
#define CPU_ST1_OBJMODE_BITS
```

Description:

Defines the location of the OBJMODE bits in the ST1 register.

7.2.2.67 CPU_ST1_PAGE0_BITS

Definition:

```
#define CPU_ST1_PAGE0_BITS
```

Description:

Defines the location of the PAGE0 bits in the ST1 register.

7.2.2.68 CPU_ST1_SPA_BITS

Definition:

```
#define CPU_ST1_SPA_BITS
```

Description:

Defines the location of the SPA bits in the ST1 register.

7.2.2.69 CPU_ST1_VMAP_BITS

Definition:

```
#define CPU_ST1_VMAP_BITS
```

Description:

Defines the location of the VMAP bits in the ST1 register.

7.2.2.70 CPU_ST1_XF_BITS

Definition:

```
#define CPU_ST1_XF_BITS
```

Description:

Defines the location of the XF bits in the ST1 register.

7.2.2.71 DINT

Definition:

```
#define DINT
```

Description:

Define to disable interrupts (legacy).

7.2.2.72 DISABLE_INTERRUPTS

Definition:

```
#define DISABLE_INTERRUPTS
```

Description:

Define to disable interrupts.

7.2.2.73 DISABLE_PROTECTED_REGISTER_WRITE_MODE

Definition:

```
#define DISABLE_PROTECTED_REGISTER_WRITE_MODE
```

Description:

Define to disable protected register writes.

7.2.2.74 DRTM

Definition:

```
#define DRTM
```

Description:

Define to disable debug events.

7.2.2.75 EALLOW

Definition:

```
#define EALLOW
```

Description:

Define to allow protected register writes (legacy).

7.2.2.76 EDIS

Definition:

```
#define EDIS
```

Description:

Define to disable protected register writes (legacy).

7.2.2.77 EINT

Definition:

```
#define EINT
```

Description:

Define to enable interrupts (legacy).

7.2.2.78 ENABLE_INTERRUPTS

Definition:

```
#define ENABLE_INTERRUPTS
```

Description:

Define to enable interrupts.

7.2.2.79 ENABLE_PROTECTED_REGISTER_WRITE_MODE

Definition:

```
#define ENABLE_PROTECTED_REGISTER_WRITE_MODE
```

Description:

Define to allow protected register writes.

7.2.2.80 ERTM

Definition:

```
#define ERTM
```

Description:

Define to enable debug events.

7.2.2.81 ESTOP0

Definition:

```
#define ESTOP0
```

Description:

Define for emulation stop 0.

7.2.2.82 IDLE

Definition:

```
#define IDLE
```

Description:

Define for entering IDLE mode.

7.2.3 Typedef Documentation

7.2.3.1 CPU_Handle

Definition:

```
typedef struct _CPU_Obj_ *CPU_Handle
```

Description:

Defines the central processing unit (CPU) handle.

7.2.3.2 CPU_Obj

Definition:

```
typedef struct _CPU_Obj_ CPU_Obj
```

Description:

Defines the central processing unit (CPU) object.

7.2.4 Enumeration Documentation

7.2.4.1 CPU_ExtIntNumber_e

Description:

Enumeration to define the external interrupt numbers.

Enumerators:

CPU_ExtIntNumber_1 Denotes external interrupt number 1.

CPU_ExtIntNumber_2 Denotes external interrupt number 2.

CPU_ExtIntNumber_3 Denotes external interrupt number 3.

7.2.4.2 CPU_IntNumber_e

Description:

Enumeration to define the interrupt numbers.

Enumerators:

CPU_IntNumber_1 Denotes interrupt number 1.

CPU_IntNumber_2 Denotes interrupt number 2.

CPU_IntNumber_3 Denotes interrupt number 3.

CPU_IntNumber_4 Denotes interrupt number 4.
CPU_IntNumber_5 Denotes interrupt number 5.
CPU_IntNumber_6 Denotes interrupt number 6.
CPU_IntNumber_7 Denotes interrupt number 7.
CPU_IntNumber_8 Denotes interrupt number 8.
CPU_IntNumber_9 Denotes interrupt number 9.
CPU_IntNumber_10 Denotes interrupt number 10.
CPU_IntNumber_11 Denotes interrupt number 11.
CPU_IntNumber_12 Denotes interrupt number 12.
CPU_IntNumber_13 Denotes interrupt number 13.
CPU_IntNumber_14 Denotes interrupt number 14.

7.2.5 Function Documentation

7.2.5.1 CPU_clearIntFlags

Clears all interrupt flags.

Prototype:

```
void  
CPU_clearIntFlags(CPU_Handle cpuHandle)
```

Parameters:

← ***cpuHandle*** The central processing unit (CPU) object handle

7.2.5.2 void CPU_disableDebugInt (CPU_Handle cpuHandle)

Disables the debug interrupt.

Parameters:

← ***cpuHandle*** The central processing unit (CPU) object handle

7.2.5.3 void CPU_disableGlobalInts (CPU_Handle cpuHandle)

Disables global interrupts.

Parameters:

← ***cpuHandle*** The CPU handle

7.2.5.4 void CPU_disableInt (CPU_Handle cpuHandle, const CPU_IntNumber_e intNumber)

Disables a specified interrupt number.

Parameters:

- ← ***cpuHandle*** The central processing unit (CPU) object handle
- ← ***intNumber*** The interrupt number

7.2.5.5 void CPU_disableInts (**CPU_Handle** *cpuHandle*)

Disables all interrupts.

Parameters:

- ← ***cpuHandle*** The central processing unit (CPU) object handle

7.2.5.6 void CPU_disableProtectedRegisterWrite (**CPU_Handle** *cpuHandle*)

Disables protected register writes.

Parameters:

- ← ***cpuHandle*** The central processing unit (CPU) object handle

7.2.5.7 void CPU_enableDebugInt (**CPU_Handle** *cpuHandle*)

Enables the debug interrupt.

Parameters:

- ← ***cpuHandle*** The CPU handle

7.2.5.8 void CPU_enableGlobalInts (**CPU_Handle** *cpuHandle*)

Enables global interrupts.

Parameters:

- ← ***cpuHandle*** The CPU handle

7.2.5.9 void CPU_enableInt (**CPU_Handle** *cpuHandle*, const **CPU_IntNumber_e** *intNumber*)

Enables a specified interrupt number.

Parameters:

- ← ***cpuHandle*** The central processing unit (CPU) object handle
- ← ***intNumber*** The interrupt number

7.2.5.10 void CPU_enableProtectedRegisterWrite ([CPU_Handle](#) *cpuHandle*)

Enables protected register writes.

Parameters:

← ***cpuHandle*** The central processing unit (CPU) object handle

7.2.5.11 [CPU_Handle](#) CPU_init (void * *pMemory*, const size_t *numBytes*)

Initializes the central processing unit (CPU) object handle.

Parameters:

← ***pMemory*** A pointer to the memory for the CPU object

← ***numBytes*** The number of bytes allocated for the CPU object, bytes

Returns:

The central processing unit (CPU) object handle

7.2.6 Variable Documentation

7.2.6.1 [CPU_Obj](#) *cpu*

Defines the CPU object.

7.2.6.2 cregister volatile unsigned int [IER](#)

External reference to the interrupt enable register (IER) register.

7.2.6.3 cregister volatile unsigned int [IFR](#)

External reference to the interrupt flag register (IFR) register.

8 Flash

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8.1 Introduction

The Flash API contains functions for configuring the wait states as well as run and sleep modes of flash in the device.

CAUTION: The flash function(s) should only be run from RAM. Please copy the function to RAM using the memcpy function found in the run time support library before calling any of them.

This driver is contained in `f2802x/common/source/flash.c`, with `f2802x/common/include/flash.h` containing the API definitions for use by applications.

8.2 FLASH

Data Structures

- `_FLASH_Obj_`

Defines

- `FLASH_ACTIVE_WAIT_COUNT_DEFAULT`
- `FLASH_BASE_ADDR`
- `FLASH_FACTIVEWAIT_ACTIVWAIT_BITS`
- `FLASH_FBANKWAIT_PAGEWAIT_BITS`
- `FLASH_FBANKWAIT_RANDWAIT_BITS`
- `FLASH_FOPT_ENPIPE_BITS`
- `FLASH_FOTPWAIT_OTPWAIT_BITS`
- `FLASH_FPWR_PWR_BITS`
- `FLASH_FSTATUS_3VSTAT_BITS`
- `FLASH_FSTATUS_ACTIVWAITS_BITS`
- `FLASH_FSTATUS_PWRS_BITS`
- `FLASH_FSTATUS_STDBYWAITS_BITS`
- `FLASH_FSTDBYWAIT_STDBYWAIT_BITS`
- `FLASH_STANDBY_WAIT_COUNT_DEFAULT`

Enumerations

- `FLASH_3VStatus_e`

- FLASH_CounterStatus_e
- FLASH_NumOtpWaitStates_e
- FLASH_NumPagedWaitStates_e
- FLASH_NumRandomWaitStates_e
- FLASH_PowerMode_e

Functions

- void FLASH_clear3VStatus (FLASH_Handle flashHandle)
- void FLASH_disablePipelineMode (FLASH_Handle flashHandle)
- void FLASH_enablePipelineMode (FLASH_Handle flashHandle)
- FLASH_3VStatus_e FLASH_get3VStatus (FLASH_Handle flashHandle)
- uint16_t FLASH_getActiveWaitCount (FLASH_Handle flashHandle)
- FLASH_CounterStatus_e FLASH_getActiveWaitStatus (FLASH_Handle flashHandle)
- FLASH_PowerMode_e FLASH_getPowerMode (FLASH_Handle flashHandle)
- uint16_t FLASH_getStandbyWaitCount (FLASH_Handle flashHandle)
- FLASH_CounterStatus_e FLASH_getStandbyWaitStatus (FLASH_Handle flashHandle)
- FLASH_Handle FLASH_init (void *pMemory, const size_t numBytes)
- void FLASH_setActiveWaitCount (FLASH_Handle flashHandle, const uint16_t count)
- void FLASH_setNumPagedReadWaitStates (FLASH_Handle flashHandle, const FLASH_NumPagedWaitStates_e numStates)
- void FLASH_setNumRandomReadWaitStates (FLASH_Handle flashHandle, const FLASH_NumRandomWaitStates_e numStates)
- void FLASH_setOtpWaitStates (FLASH_Handle flashHandle, const FLASH_NumOtpWaitStates_e numStates)
- void FLASH_setPowerMode (FLASH_Handle flashHandle, const FLASH_PowerMode_e mode)
- void FLASH_setStandbyWaitCount (FLASH_Handle flashHandle, const uint16_t count)
- void FLASH_setup (FLASH_Handle flashHandle)

8.2.1 Data Structure Documentation

8.2.1.1 _FLASH_Obj_

Definition:

```
typedef struct
{
    uint16_t FOPT;
    uint16_t rsvd_1;
    uint16_t FPWR;
    uint16_t FSTATUS;
    uint16_t FSTDBYWAIT;
    uint16_t FACTIVEWAIT;
    uint16_t FBANKWAIT;
    uint16_t FOTPWAIT;
}
_FLASH_Obj_
```

Members:

FOPT Flash Option Register.

rsvd_1 Reserved.

FPWR Flash Power Modes Register.

FSTATUS Status Register.

FSTDBYWAIT Flash Sleep To Standby Wait Register.

FACTIVEWAIT Flash Standby to Active Wait Register.

FBANKWAIT Flash Read Access Wait State Register.

FOTPWAIT OTP Read Access Wait State Register.

Description:

Defines the flash (FLASH) object.

8.2.2 Define Documentation

8.2.2.1 FLASH_ACTIVE_WAIT_COUNT_DEFAULT

Definition:

```
#define FLASH_ACTIVE_WAIT_COUNT_DEFAULT
```

Description:

Defines the default active wait count in units of SYSCLKOUT cycles.

8.2.2.2 FLASH_BASE_ADDR

Definition:

```
#define FLASH_BASE_ADDR
```

Description:

Defines the base address of the flash (FLASH) registers.

8.2.2.3 FLASH_FACTIVEWAIT_ACTIVEWAIT_BITS

Definition:

```
#define FLASH_FACTIVEWAIT_ACTIVEWAIT_BITS
```

Description:

Defines the location of the ACTIVEWAIT bits in the FACTIVEWAIT register.

8.2.2.4 FLASH_FBANKWAIT_PAGEWAIT_BITS

Definition:

```
#define FLASH_FBANKWAIT_PAGEWAIT_BITS
```

Description:

Defines the location of the PAGEWAIT bits in the FBANKWAIT register.

8.2.2.5 FLASH_FBANKWAIT_RANDWAIT_BITS

Definition:

```
#define FLASH_FBANKWAIT_RANDWAIT_BITS
```

Description:

Defines the location of the RANDWAIT bits in the FBANKWAIT register.

8.2.2.6 FLASH_FOPT_ENPIPE_BITS

Definition:

```
#define FLASH_FOPT_ENPIPE_BITS
```

Description:

Defines the location of the ENPIPE bits in the FOPT register.

8.2.2.7 FLASH_FOTPWAIT_OTPWAIT_BITS

Definition:

```
#define FLASH_FOTPWAIT_OTPWAIT_BITS
```

Description:

Defines the location of the OTPWAIT bits in the FOTPWAIT register.

8.2.2.8 FLASH_FPWR_PWR_BITS

Definition:

```
#define FLASH_FPWR_PWR_BITS
```

Description:

Defines the location of the PWR bits in the FPWR register.

8.2.2.9 FLASH_FSTATUS_3VSTAT_BITS

Definition:

```
#define FLASH_FSTATUS_3VSTAT_BITS
```

Description:

Defines the location of the 3VSTAT bits in the FSTATUS register.

8.2.2.10 FLASH_FSTATUS_ACTIVEWAITS_BITS

Definition:

```
#define FLASH_FSTATUS_ACTIVEWAITS_BITS
```

Description:

Defines the location of the ACTIVEWAITS bits in the FSTATUS register.

8.2.2.11 FLASH_FSTATUS_PWRS_BITS

Definition:

```
#define FLASH_FSTATUS_PWRS_BITS
```

Description:

Defines the location of the PWRS bits in the FSTATUS register.

8.2.2.12 FLASH_FSTATUS_STDBYWAITS_BITS

Definition:

```
#define FLASH_FSTATUS_STDBYWAITS_BITS
```

Description:

Defines the location of the STDBYWAITS bits in the FSTATUS register.

8.2.2.13 FLASH_FSTDBYWAIT_STDBYWAIT_BITS

Definition:

```
#define FLASH_FSTDBYWAIT_STDBYWAIT_BITS
```

Description:

Defines the location of the STDBYWAIT bits in the FSTDBYWAIT register.

8.2.2.14 FLASH_STANDBY_WAIT_COUNT_DEFAULT

Definition:

```
#define FLASH_STANDBY_WAIT_COUNT_DEFAULT
```

Description:

Defines the default standby wait count in units of SYSCLKOUT cycles.

8.2.3 Typedef Documentation

8.2.3.1 FLASH_Handle

Definition:

```
typedef struct _FLASH_Obj_ *FLASH_Handle
```

Description:

Defines the flash (FLASH) handle.

8.2.3.2 FLASH_Obj

Definition:

```
typedef struct _FLASH_Obj_ FLASH_Obj
```

Description:

Defines the flash (FLASH) object.

8.2.4 Enumeration Documentation

8.2.4.1 FLASH_3VStatus_e

Description:

Enumeration to define the 3V status.

Enumerators:

FLASH_3VStatus_InRange Denotes the 3V flash voltage is in range.

FLASH_3VStatus_OutOfRange Denotes the 3V flash voltage went out of range.

8.2.4.2 FLASH_CounterStatus_e

Description:

Enumeration to define the counter status.

Enumerators:

FLASH_CounterStatus_NotCounting Denotes the flash counter is not counting.

FLASH_CounterStatus_Counting Denotes the flash counter is counting.

8.2.4.3 FLASH_NumOtpWaitStates_e

Description:

Enumeration to define the number of one-time programmable wait states.

Enumerators:

FLASH_NumOtpWaitStates_1 Denotes the number of one-time programmable (OTP) wait states is 1.

FLASH_NumOtpWaitStates_2 Denotes the number of one-time programmable (OTP) wait states is 2.

FLASH_NumOtpWaitStates_3 Denotes the number of one-time programmable (OTP) wait states is 3.

FLASH_NumOtpWaitStates_4 Denotes the number of one-time programmable (OTP) wait states is 4.

FLASH_NumOtpWaitStates_5 Denotes the number of one-time programmable (OTP) wait states is 5.

FLASH_NumOtpWaitStates_6 Denotes the number of one-time programmable (OTP) wait states is 6.

FLASH_NumOtpWaitStates_7 Denotes the number of one-time programmable (OTP) wait states is 7.

- FLASH_NumOtpWaitStates_8** Denotes the number of one-time programmable (OTP) wait states is 8.
- FLASH_NumOtpWaitStates_9** Denotes the number of one-time programmable (OTP) wait states is 9.
- FLASH_NumOtpWaitStates_10** Denotes the number of one-time programmable (OTP) wait states is 10.
- FLASH_NumOtpWaitStates_11** Denotes the number of one-time programmable (OTP) wait states is 11.
- FLASH_NumOtpWaitStates_12** Denotes the number of one-time programmable (OTP) wait states is 12.
- FLASH_NumOtpWaitStates_13** Denotes the number of one-time programmable (OTP) wait states is 13.
- FLASH_NumOtpWaitStates_14** Denotes the number of one-time programmable (OTP) wait states is 14.
- FLASH_NumOtpWaitStates_15** Denotes the number of one-time programmable (OTP) wait states is 15.

8.2.4.4 FLASH_NumPagedWaitStates_e

Description:

Enumeration to define the number of paged wait states.

Enumerators:

- FLASH_NumPagedWaitStates_0** Denotes the number of paged read wait states is 0.
- FLASH_NumPagedWaitStates_1** Denotes the number of paged read wait states is 1.
- FLASH_NumPagedWaitStates_2** Denotes the number of paged read wait states is 2.
- FLASH_NumPagedWaitStates_3** Denotes the number of paged read wait states is 3.
- FLASH_NumPagedWaitStates_4** Denotes the number of paged read wait states is 4.
- FLASH_NumPagedWaitStates_5** Denotes the number of paged read wait states is 5.
- FLASH_NumPagedWaitStates_6** Denotes the number of paged read wait states is 6.
- FLASH_NumPagedWaitStates_7** Denotes the number of paged read wait states is 7.
- FLASH_NumPagedWaitStates_8** Denotes the number of paged read wait states is 8.
- FLASH_NumPagedWaitStates_9** Denotes the number of paged read wait states is 9.
- FLASH_NumPagedWaitStates_10** Denotes the number of paged read wait states is 10.
- FLASH_NumPagedWaitStates_11** Denotes the number of paged read wait states is 11.
- FLASH_NumPagedWaitStates_12** Denotes the number of paged read wait states is 12.
- FLASH_NumPagedWaitStates_13** Denotes the number of paged read wait states is 13.
- FLASH_NumPagedWaitStates_14** Denotes the number of paged read wait states is 14.
- FLASH_NumPagedWaitStates_15** Denotes the number of paged read wait states is 15.

8.2.4.5 FLASH_NumRandomWaitStates_e

Description:

Enumeration to define the number of random wait states.

Enumerators:

- FLASH_NumRandomWaitStates_1** Denotes the number of random read wait states is 1.

- FLASH_NumRandomWaitStates_2** Denotes the number of random read wait states is 2.
FLASH_NumRandomWaitStates_3 Denotes the number of random read wait states is 3.
FLASH_NumRandomWaitStates_4 Denotes the number of random read wait states is 4.
FLASH_NumRandomWaitStates_5 Denotes the number of random read wait states is 5.
FLASH_NumRandomWaitStates_6 Denotes the number of random read wait states is 6.
FLASH_NumRandomWaitStates_7 Denotes the number of random read wait states is 7.
FLASH_NumRandomWaitStates_8 Denotes the number of random read wait states is 8.
FLASH_NumRandomWaitStates_9 Denotes the number of random read wait states is 9.
FLASH_NumRandomWaitStates_10 Denotes the number of random read wait states is 10.
FLASH_NumRandomWaitStates_11 Denotes the number of random read wait states is 11.
FLASH_NumRandomWaitStates_12 Denotes the number of random read wait states is 12.
FLASH_NumRandomWaitStates_13 Denotes the number of random read wait states is 13.
FLASH_NumRandomWaitStates_14 Denotes the number of random read wait states is 14.
FLASH_NumRandomWaitStates_15 Denotes the number of random read wait states is 15.

8.2.4.6 FLASH_PowerMode_e

Description:

Enumeration to define the power modes.

Enumerators:

FLASH_PowerMode_PumpAndBankSleep Denotes a pump and bank sleep power mode.

FLASH_PowerMode_PumpAndBankStandby Denotes a pump and bank standby power mode.

FLASH_PowerMode_PumpAndBankActive Denotes a pump and bank active power mode.

8.2.5 Function Documentation

8.2.5.1 FLASH_clear3VStatus

Clears the 3V status.

Prototype:

```
void  
FLASH_clear3VStatus(FLASH\_Handle flashHandle)
```

Parameters:

← **flashHandle** The flash (FLASH) object handle

8.2.5.2 void FLASH_disablePipelineMode (FLASH_Handle flashHandle)

Disables the pipeline mode.

Parameters:

← **flashHandle** The flash (FLASH) object handle

8.2.5.3 void FLASH_enablePipelineMode (FLASH_Handle flashHandle)

Enables the pipeline mode.

Parameters:

← **flashHandle** The flash (FLASH) object handle

8.2.5.4 FLASH_3VStatus_e FLASH_get3VStatus (FLASH_Handle flashHandle)

Gets the 3V status.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The 3V status

8.2.5.5 uint16_t FLASH_getActiveWaitCount (FLASH_Handle flashHandle)

Gets the active wait count.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The active wait count

8.2.5.6 FLASH_CounterStatus_e FLASH_getActiveWaitStatus (FLASH_Handle flashHandle)

Gets the active wait counter status.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The active wait counter status

8.2.5.7 **FLASH_PowerMode_e** FLASH_getPowerMode (**FLASH_Handle** *flashHandle*)

Gets the power mode.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The power mode

8.2.5.8 **uint16_t** FLASH_getStandbyWaitCount (**FLASH_Handle** *flashHandle*)

Gets the standby wait count.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The standby wait count

8.2.5.9 **FLASH_CounterStatus_e** FLASH_getStandbyWaitStatus (**FLASH_Handle** *flashHandle*)

Gets the standby wait counter status.

Parameters:

← **flashHandle** The flash (FLASH) object handle

Returns:

The standby wait counter status

8.2.5.10 **FLASH_Handle** FLASH_init (void * *pMemory*, const size_t *numBytes*)

Initializes the flash (FLASH) handle.

Parameters:

← **pMemory** A pointer to the base address of the FLASH registers

← **numBytes** The number of bytes allocated for the FLASH object, bytes

Returns:

The flash (FLASH) object handle

8.2.5.11 void FLASH_setActiveWaitCount (**FLASH_Handle** *flashHandle*, const uint16_t *count*)

Sets the active wait count.

Parameters:

- ← **flashHandle** The flash (FLASH) object handle
- ← **count** The active wait count

8.2.5.12 void FLASH_setNumPagedReadWaitStates (FLASH_Handle flashHandle, const FLASH_NumPagedWaitStates_e numStates)

Sets the number of paged read wait states.

Parameters:

- ← **flashHandle** The flash (FLASH) object handle
- ← **numStates** The number of paged read wait states

8.2.5.13 void FLASH_setNumRandomReadWaitStates (FLASH_Handle flashHandle, const FLASH_NumRandomWaitStates_e numStates)

Sets the number of random read wait states.

Parameters:

- ← **flashHandle** The flash (FLASH) object handle
- ← **numStates** The number of random read wait states

8.2.5.14 void FLASH_setOtpWaitStates (FLASH_Handle flashHandle, const FLASH_NumOtpWaitStates_e numStates)

Sets the number of one-time programmable (OTP) wait states.

Parameters:

- ← **flashHandle** The flash (FLASH) object handle
- ← **numStates** The number of one-time programmable (OTP) wait states

8.2.5.15 void FLASH_setPowerMode (FLASH_Handle flashHandle, const FLASH_PowerMode_e mode)

Sets the power mode.

Parameters:

- ← **flashHandle** The flash (FLASH) object handle
- ← **mode** The power mode

8.2.5.16 void FLASH_setStandbyWaitCount ([FLASH_Handle](#) *flashHandle*, const uint16_t *count*)

Sets the standby wait count.

Parameters:

- ← ***flashHandle*** The flash (FLASH) object handle
- ← ***count*** The standby wait count

8.2.5.17 void FLASH_setup ([FLASH_Handle](#) *flashHandle*)

Setup flash for optimal performance.

Parameters:

- ← ***flashHandle*** The flash (FLASH) object handle

9 General Purpose Input/Output (GPIO)

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9.1 Introduction

The GPIO API provides functions to configure and control the GPIO of this device. Pins can be set as inputs, outputs, or a peripheral function and their value set or read via this API.

This driver is contained in `f2802x/common/source/gpio.c`, with `f2802x/common/include/gpio.h` containing the API definitions for use by applications.

9.2 GPIO

Data Structures

- [_GPIO_Obj_](#)

Defines

- [GPIO_BASE_ADDR](#)
- [GPIO_GPMUX_CONFIG_BITS](#)
- [GPIO_GPMUX_NUMGPIOs_PER_REG](#)
- [GPIO_GPxCtrl_QUALPRDx_BITS](#)
- [GPIO_GPxCtrl_QUALPRDx_NUMBITS_PER_REG](#)
- [GPIO_GPxQSELx_NUMGPIOs_PER_REG](#)
- [GPIO_GPxQSELy_GPIOx_BITS](#)

Enumerations

- [GPIO_Direction_e](#)
- [GPIO_Mode_e](#)
- [GPIO_Number_e](#)
- [GPIO_Port_e](#)
- [GPIO_PullUp_e](#)
- [GPIO_Qual_e](#)

Functions

- `uint16_t` [GPIO_getData](#) ([GPIO_Handle](#) gpioHandle, const [GPIO_Number_e](#) gpioNumber)

- `uint32_t GPIO_getPortData (GPIO_Handle gpioHandle, const GPIO_Port_e gpioPort)`
- `GPIO_Handle GPIO_init (void *pMemory, const size_t numBytes)`
- `void GPIO_lpmSelect (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)`
- `void GPIO_setDirection (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Direction_e direction)`
- `void GPIO_setExtInt (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const CPU_ExtIntNumber_e intNumber)`
- `void GPIO_setHigh (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)`
- `void GPIO_setLow (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)`
- `void GPIO_setMode (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Mode_e mode)`
- `void GPIO_setPortData (GPIO_Handle gpioHandle, const GPIO_Port_e gpioPort, const uint32_t data)`
- `void GPIO_setPullUp (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_PullUp_e pullUp)`
- `void GPIO_setQualification (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Qual_e qualification)`
- `void GPIO_setQualificationPeriod (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const uint8_t period)`
- `void GPIO_toggle (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)`

9.2.1 Data Structure Documentation

9.2.1.1 _GPIO_Obj_

Definition:

```
typedef struct
{
    uint32_t GPACTRL;
    uint32_t GPAQSEL1;
    uint32_t GPAQSEL2;
    uint32_t GPAMUX1;
    uint32_t GPAMUX2;
    uint32_t GPADIR;
    uint32_t GPAPUD;
    uint16_t rsvd_1[2];
    uint32_t GPBCTRL;
    uint32_t GPBQSEL1;
    uint16_t rsvd_2[2];
    uint32_t GPBMUX1;
    uint16_t rsvd_3[2];
    uint32_t GPBDIR;
    uint32_t GPBPUD;
    uint16_t rsvd_4[24];
    uint32_t AIOMUX1;
    uint16_t rsvd_5[2];
    uint32_t AIODIR;
    uint16_t rsvd_6[4];
    uint32_t GPADAT;
```

```

uint32_t GPASET;
uint32_t GPACLEAR;
uint32_t GPATOGGLE;
uint32_t GPBDAT;
uint32_t GPBSET;
uint32_t GPBCLEAR;
uint32_t GPBTOGGLE;
uint16_t rsvd_7[8];
uint32_t AIODAT;
uint32_t AIOSET;
uint32_t AIOCLEAR;
uint32_t AIOTOGGLE;
uint16_t GPIOXINTnSEL[3];
uint16_t rsvd_8[5];
uint32_t GPIOLPMSEL;
}
__GPIO_Obj_

```

Members:

GPACTRL GPIO A Control Register.
GPAQSEL1 GPIO A Qualifier Select 1 Register.
GPAQSEL2 GPIO A Qualifier Select 2 Register.
GPAMUX1 GPIO A MUX 1 Register.
GPAMUX2 GPIO A MUX 2 Register.
GPADIR GPIO A Direction Register.
GPAPUD GPIO A Pull Up Disable Register.
rsvd_1 Reserved.
GPBCTRL GPIO B Control Register.
GPBQSEL1 GPIO B Qualifier Select 1 Register.
rsvd_2 Reserved.
GPBMUX1 GPIO B MUX 1 Register.
rsvd_3 Reserved.
GPBDIR GPIO B Direction Register.
GPBPUD GPIO B Pull Up Disable Register.
rsvd_4 Reserved.
AIOMUX1 Analog, I/O Mux 1 Register.
rsvd_5 Reserved.
AIODIR Analog, I/O Direction Register.
rsvd_6 Reserved.
GPADAT GPIO A Data Register.
GPASET GPIO A Set Register.
GPACLEAR GPIO A Clear Register.
GPATOGGLE GPIO A Toggle Register.
GPBDAT GPIO B Data Register.
GPBSET GPIO B Set Register.
GPBCLEAR GPIO B Clear Register.
GPBTOGGLE GPIO B Toggle Register.
rsvd_7 Reserved.

AIODAT Analog I/O Data Register.
AIOSET Analog I/O Data Set Register.
AIOCLEAR Analog I/O Clear Register.
AIOTOGGLE Analog I/O Toggle Register.
GPIOXINTnSEL XINT1-3 Source Select Registers.
rsvd_8 Reserved.
GPIO_LPMSEL GPIO Low Power Mode Wakeup Select Register.

Description:

Defines the General Purpose I/O (GPIO) object.

9.2.2 Define Documentation

9.2.2.1 GPIO_BASE_ADDR

Definition:

```
#define GPIO_BASE_ADDR
```

Description:

Defines the base address of the general purpose I/O (GPIO) registers.

9.2.2.2 GPIO_GPMUX_CONFIG_BITS

Definition:

```
#define GPIO_GPMUX_CONFIG_BITS
```

Description:

Defines the location of the CONFIG bits in the GPMUX register.

9.2.2.3 GPIO_GPMUX_NUMGPIOs_PER_REG

Definition:

```
#define GPIO_GPMUX_NUMGPIOs_PER_REG
```

Description:

Defines number of GPIOs covered by each GPxMUX register.

9.2.2.4 GPIO_GPxCtrl_QUALPRDx_BITS

Definition:

```
#define GPIO_GPxCtrl_QUALPRDx_BITS
```

Description:

Defines the location of the GPIOx bits in the GPxQSELy register.

9.2.2.5 GPIO_GPxCCTRL_QUALPRDx_NUMBITS_PER_REG

Definition:

```
#define GPIO_GPxCCTRL_QUALPRDx_NUMBITS_PER_REG
```

Description:

Defines number of bits per QUALPRDx field per GPxCCTRL register.

9.2.2.6 GPIO_GPxQSELx_NUMGPIOs_PER_REG

Definition:

```
#define GPIO_GPxQSELx_NUMGPIOs_PER_REG
```

Description:

Defines number of GPIOs covered by each GPxQSELy register.

9.2.2.7 GPIO_GPxQSELy_GPIOx_BITS

Definition:

```
#define GPIO_GPxQSELy_GPIOx_BITS
```

Description:

Defines the location of the GPIOx bits in the GPxQSELy register.

9.2.3 Typedef Documentation

9.2.3.1 GPIO_Handle

Definition:

```
typedef struct _GPIO_Obj_ *GPIO_Handle
```

Description:

Defines the general purpose I/O (GPIO) handle.

9.2.3.2 GPIO_Obj

Definition:

```
typedef struct _GPIO_Obj_ GPIO_Obj
```

Description:

Defines the General Purpose I/O (GPIO) object.

9.2.4 Enumeration Documentation

9.2.4.1 GPIO_Direction_e

Description:

Enumeration to define the general purpose I/O (GPIO) directions.

Enumerators:

GPIO_Direction_Input Denotes an input direction.

GPIO_Direction_Output Denotes an output direction.

9.2.4.2 GPIO_Mode_e

Description:

Enumeration to define the general purpose I/O (GPIO) modes for each pin.

Enumerators:

GPIO_0_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_0_Mode_EPWM1A Denotes a EPWM1A function.

GPIO_0_Mode_Rsvd_2 Denotes a reserved function.

GPIO_0_Mode_Rsvd_3 Denotes a reserved function.

GPIO_1_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_1_Mode_EPWM1B Denotes a EPWM1B function.

GPIO_1_Mode_Rsvd_2 Denotes a reserved function.

GPIO_1_Mode_COMP1OUT Denotes a COMP1OUT function.

GPIO_2_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_2_Mode_EPWM2A Denotes a EPWM2A function.

GPIO_2_Mode_Rsvd_2 Denotes a reserved function.

GPIO_2_Mode_Rsvd_3 Denotes a reserved function.

GPIO_3_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_3_Mode_EPWM2B Denotes a EPWM2B function.

GPIO_3_Mode_Rsvd_2 Denotes a reserved function.

GPIO_3_Mode_COMP2OUT Denotes a COMP2OUT function.

GPIO_4_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_4_Mode_EPWM3A Denotes a EPWM3A function.

GPIO_4_Mode_Rsvd_2 Denotes a reserved function.

GPIO_4_Mode_Rsvd_3 Denotes a reserved function.

GPIO_5_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_5_Mode_EPWM3B Denotes a EPWM3B function.

GPIO_5_Mode_Rsvd_2 Denotes a reserved function.

GPIO_5_Mode_ECAP1 Denotes a ECAP1 function.

GPIO_6_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_6_Mode_EPWM4A Denotes a EPWM4A function.

GPIO_6_Mode_EPWMSYNCl Denotes a EPWMSYNCl function.

GPIO_6_Mode_EPWMSYNCO Denotes a EPWMSYNCO function.

GPIO_7_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_7_Mode_EPWM4B Denotes a EPWM4B function.

GPIO_7_Mode_SCIRXDA Denotes a SCIRXDA function.

GPIO_7_Mode_Rsvd_3 Denotes a reserved function.

GPIO_12_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_12_Mode_TZ1_NOT Denotes a TZ1_NOT function.

GPIO_12_Mode_SCITXDA Denotes a SCITXDA function.

GPIO_12_Mode_Rsvd_3 Denotes a reserved function.

GPIO_16_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_16_Mode_SPISIMOA Denotes a SPISIMOA function.

GPIO_16_Mode_Rsvd_2 Denotes a reserved function.

GPIO_16_Mode_TZ2_NOT Denotes a TZ2_NOT function.

GPIO_17_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_17_Mode_SPISOMIA Denotes a SPISOMIA function.

GPIO_17_Mode_Rsvd_2 Denotes a reserved function.

GPIO_17_Mode_TZ3_NOT Denotes a TZ3_NOT function.

GPIO_18_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_18_Mode_SPICLKA Denotes a SPICLKA function.

GPIO_18_Mode_SCITXDA Denotes a SCITXDA function.

GPIO_18_Mode_XCLKOUT Denotes a XCLKOUT function.

GPIO_19_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_19_Mode_SPISTEA_NOT Denotes a SPISTEA_NOT function.

GPIO_19_Mode_SCIRXDA Denotes a SCIRXDA function.

GPIO_19_Mode_ECAP1 Denotes a ECAP1 function.

GPIO_28_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_28_Mode_SCIRXDA Denotes a SCIRXDA function.

GPIO_28_Mode_SDDA Denotes a SDDA function.

GPIO_28_Mode_TZ2_NOT Denotes a TZ2_NOT function.

GPIO_29_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_29_Mode_SCITXDA Denotes a SCITXDA function.

GPIO_29_Mode_SCLA Denotes a SCLA function.

GPIO_29_Mode_TZ3_NOT Denotes a TZ2_NOT function.

GPIO_32_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_32_Mode_SDAA Denotes a SDDA function.

GPIO_32_Mode_EPWMSYNCI Denotes a EPWMSYNCI function.

GPIO_32_Mode_ADCSOCBO_NOT Denotes a ADCSOCBO_NOT function.

GPIO_33_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_33_Mode_SCLA Denotes a SCLA function.

GPIO_33_Mode_EPWMSYNCO Denotes a EPWMSYNCO function.

GPIO_33_Mode_ADCSOCBO_NOT Denotes a ADCSOCBO_NOT function.

GPIO_34_Mode_GeneralPurpose Denotes a general purpose function.

GPIO_34_Mode_COMP2OUT Denotes a COMP2OUT function.

GPIO_34_Mode_Rsvd_2 Denotes a reserved function.

GPIO_34_Mode_Rsvd_3 Denotes a reserved function.

GPIO_35_Mode_JTAG_TDI Denotes a JTAG_TDI function.

GPIO_35_Mode_Rsvd_1 Denotes a reserved function.

GPIO_35_Mode_Rsvd_2 Denotes a reserved function.

GPIO_35_Mode_Rsvd_3 Denotes a reserved function.
GPIO_36_Mode_JTAG_TMS Denotes a JTAG_TMS function.
GPIO_36_Mode_Rsvd_1 Denotes a reserved function.
GPIO_36_Mode_Rsvd_2 Denotes a reserved function.
GPIO_36_Mode_Rsvd_3 Denotes a reserved function.
GPIO_37_Mode_JTAG_TDO Denotes a JTAG_TDO function.
GPIO_37_Mode_Rsvd_1 Denotes a reserved function.
GPIO_37_Mode_Rsvd_2 Denotes a reserved function.
GPIO_37_Mode_Rsvd_3 Denotes a reserved function.
GPIO_38_Mode_JTAG_TCK Denotes a JTAG_TCK function.
GPIO_38_Mode_Rsvd_1 Denotes a reserved function.
GPIO_38_Mode_Rsvd_2 Denotes a reserved function.
GPIO_38_Mode_Rsvd_3 Denotes a reserved function.

9.2.4.3 GPIO_Number_e

Description:

Enumeration to define the general purpose I/O (GPIO) numbers.

Enumerators:

GPIO_Number_0 Denotes GPIO number 0.
GPIO_Number_1 Denotes GPIO number 1.
GPIO_Number_2 Denotes GPIO number 2.
GPIO_Number_3 Denotes GPIO number 3.
GPIO_Number_4 Denotes GPIO number 4.
GPIO_Number_5 Denotes GPIO number 5.
GPIO_Number_6 Denotes GPIO number 6.
GPIO_Number_7 Denotes GPIO number 7.
GPIO_Rsvd_8 This GPIO not present.
GPIO_Rsvd_9 This GPIO not present.
GPIO_Rsvd_10 This GPIO not present.
GPIO_Rsvd_11 This GPIO not present.
GPIO_Number_12 Denotes GPIO number 12.
GPIO_Rsvd_13 This GPIO not present.
GPIO_Rsvd_14 This GPIO not present.
GPIO_Rsvd_15 This GPIO not present.
GPIO_Number_16 Denotes GPIO number 16.
GPIO_Number_17 Denotes GPIO number 17.
GPIO_Number_18 Denotes GPIO number 18.
GPIO_Number_19 Denotes GPIO number 19.
GPIO_Rsvd_20 This GPIO not present.
GPIO_Rsvd_21 This GPIO not present.
GPIO_Rsvd_22 This GPIO not present.
GPIO_Rsvd_23 This GPIO not present.
GPIO_Rsvd_24 This GPIO not present.

GPIO_Rsvd_25 This GPIO not present.
GPIO_Rsvd_26 This GPIO not present.
GPIO_Rsvd_27 This GPIO not present.
GPIO_Number_28 Denotes GPIO number 28.
GPIO_Number_29 Denotes GPIO number 29.
GPIO_Rsvd_30 This GPIO not present.
GPIO_Rsvd_31 This GPIO not present.
GPIO_Number_32 Denotes GPIO number 32.
GPIO_Number_33 Denotes GPIO number 33.
GPIO_Number_34 Denotes GPIO number 34.
GPIO_Number_35 Denotes GPIO number 35.
GPIO_Number_36 Denotes GPIO number 36.
GPIO_Number_37 Denotes GPIO number 37.
GPIO_Number_38 Denotes GPIO number 38.

9.2.4.4 GPIO_Port_e

Description:

Enumeration to define the general purpose I/O (GPIO) ports.

Enumerators:

GPIO_Port_A GPIO Port A.
GPIO_Port_B GPIO Port B.

9.2.4.5 GPIO_PullUp_e

Description:

Enumeration to define the general purpose I/O (GPIO) pull ups.

Enumerators:

GPIO_PullUp_Enable Denotes pull up will be enabled.
GPIO_PullUp_Disable Denotes pull up will be disabled.

9.2.4.6 GPIO_Qual_e

Description:

Enumeration to define the general purpose I/O (GPIO) qualification.

Enumerators:

GPIO_Qual_Sync Denotes input will be synchronized to SYSCLK.
GPIO_Qual_Sample_3 Denotes input is qualified with 3 samples.
GPIO_Qual_Sample_6 Denotes input is qualified with 6 samples.
GPIO_Qual_ASync Denotes input is asynchronous.

9.2.5 Function Documentation

9.2.5.1 GPIO_getData

Returns the data value present on a pin (either input or output).

Prototype:

```
uint16_t  
GPIO_getData(GPIO_Handle gpioHandle,  
              const GPIO_Number_e gpioNumber)
```

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number

Returns:

The boolean state of a pin (high/low)

9.2.5.2 uint32_t GPIO_getPortData (GPIO_Handle gpioHandle, const GPIO_Port_e gpioPort)

Returns the data value present on a GPIO port.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioPort** The GPIO port

Returns:

The data values for the specified port

9.2.5.3 GPIO_Handle GPIO_init (void * pMemory, const size_t numBytes)

Initializes the general purpose I/O (GPIO) object handle.

Parameters:

- ← **pMemory** A pointer to the base address of the GPIO registers
- ← **numBytes** The number of bytes allocated for the GPIO object, bytes

Returns:

The general purpose I/O (GPIO) object handle

9.2.5.4 void GPIO_lpmSelect (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)

Selects a gpio pin to wake up device from STANDBY and HALT LPM.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number

9.2.5.5 void GPIO_setDirection (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Direction_e direction)

Sets the general purpose I/O (GPIO) signal direction.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number
- ← **direction** The signal direction

9.2.5.6 void GPIO_setExtInt (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const CPU_ExtIntNumber_e intNumber)

Sets the general purpose I/O (GPIO) external interrupt number.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number
- ← **intNumber** The interrupt number

9.2.5.7 void GPIO_setHigh (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)

Sets the specified general purpose I/O (GPIO) signal high.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number

9.2.5.8 void GPIO_setLow (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)

Sets the specified general purpose I/O (GPIO) signal low.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number

9.2.5.9 void GPIO_setMode (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Mode_e mode)

Sets the mode for the specified general purpose I/O (GPIO) signal.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle

- ← **gpioNumber** The GPIO number
- ← **mode** The mode

9.2.5.10 void GPIO_setPortData (GPIO_Handle gpioHandle, const GPIO_Port_e gpioPort, const uint32_t data)

Sets data output on a given GPIO port.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioPort** The GPIO number
- ← **data** The data to write to the port

9.2.5.11 void GPIO_setPullUp (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_PullUp_e pullUp)

Sets the general purpose I/O (GPIO) signal pullups.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number
- ← **pullUp** The pull up enable or disable

9.2.5.12 void GPIO_setQualification (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const GPIO_Qual_e qualification)

Sets the qualification for the specified general purpose I/O (GPIO).

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number
- ← **qualification** The desired input qualification

9.2.5.13 void GPIO_setQualificationPeriod (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber, const uint8_t period)

Sets the qualification period for the specified general purpose I/O block (8 I/O's per block).

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number
- ← **period** The desired input qualification period

9.2.5.14 void GPIO_toggle (GPIO_Handle gpioHandle, const GPIO_Number_e gpioNumber)

Toggles the specified general purpose I/O (GPIO) signal.

Parameters:

- ← **gpioHandle** The general purpose I/O (GPIO) object handle
- ← **gpioNumber** The GPIO number

10 Oscillator (OSC)

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10.1 Introduction

The oscillator (OSC) API provides functions for configuring an external or internal oscillator as well as compensating the internal oscillator for temperature drift.

This driver is contained in `f2802x/common/source/osc.c`, with `f2802x/common/include/osc.h` containing the API definitions for use by applications.

10.2 OSC

Data Structures

- [_OSC_Obj_](#)

Defines

- [OSC_BASE_ADDR](#)
- [OSC_INTOSCnTRIM_COARSE_BITS](#)
- [OSC_INTOSCnTRIM_FINE_BITS](#)
- [OSC_OTP_COURSE_TRIM1](#)
- [OSC_OTP_COURSE_TRIM2](#)
- [OSC_OTP_FINE_TRIM_OFFSET1](#)
- [OSC_OTP_FINE_TRIM_OFFSET2](#)
- [OSC_OTP_FINE_TRIM_SLOPE1](#)
- [OSC_OTP_FINE_TRIM_SLOPE2](#)
- [OSC_OTP_REF_TEMP_OFFSET](#)

Enumerations

- [OSC_Number_e](#)
- [OSC_Osc2Src_e](#)
- [OSC_Src_e](#)

Functions

- `int16_t OSC_getCourseTrim1 (OSC_Handle oscHandle)`
- `int16_t OSC_getCourseTrim2 (OSC_Handle oscHandle)`
- `int16_t OSC_getFineTrimOffset1 (OSC_Handle oscHandle)`
- `int16_t OSC_getFineTrimOffset2 (OSC_Handle oscHandle)`
- `int16_t OSC_getFineTrimSlope1 (OSC_Handle oscHandle)`
- `int16_t OSC_getFineTrimSlope2 (OSC_Handle oscHandle)`
- `int16_t OSC_getRefTempOffset (OSC_Handle oscHandle)`
- `OSC_Handle OSC_init (void *pMemory, const size_t numBytes)`
- `void OSC_setCoarseTrim (OSC_Handle oscHandle, const OSC_Number_e oscNumber, const uint8_t trimValue)`
- `void OSC_setFineTrim (OSC_Handle oscHandle, const OSC_Number_e oscNumber, const uint8_t trimValue)`

10.2.1 Data Structure Documentation

10.2.1.1 _OSC_Obj_

Definition:

```
typedef struct
{
    uint16_t INTOSC1TRIM;
    uint16_t rsvd_1;
    uint16_t INTOSC2TRIM;
}
_OSC_Obj_
```

Members:

INTOSC1TRIM Internal Oscillator 1 Trim Register.
rsvd_1 Reserved.
INTOSC2TRIM Internal Oscillator 2 Trim Register.

Description:

Defines the oscillator (OSC) object.

10.2.2 Define Documentation

10.2.2.1 OSC_BASE_ADDR

Definition:

```
#define OSC_BASE_ADDR
```

Description:

Defines the base address of the oscillator (OSC) registers.

10.2.2.2 OSC_INTOSCnTRIM_COARSE_BITS

Definition:

```
#define OSC_INTOSCnTRIM_COARSE_BITS
```

Description:

Defines the location of the COARSETRIM bits in the INTOSCnTRIM register.

10.2.2.3 OSC_INTOSCnTRIM_FINE_BITS

Definition:

```
#define OSC_INTOSCnTRIM_FINE_BITS
```

Description:

Defines the location of the FINETRIM bits in the INTOSCnTRIM register.

10.2.2.4 OSC_OTP_COURSE_TRIM1

Definition:

```
#define OSC_OTP_COURSE_TRIM1
```

Description:

Defines the address of the Course Trim 1 in OTP.

10.2.2.5 OSC_OTP_COURSE_TRIM2

Definition:

```
#define OSC_OTP_COURSE_TRIM2
```

Description:

Defines the address of the Course Trim 1 in OTP.

10.2.2.6 OSC_OTP_FINE_TRIM_OFFSET1

Definition:

```
#define OSC_OTP_FINE_TRIM_OFFSET1
```

Description:

Defines the address of the Fine Trim Offset 1 in OTP.

10.2.2.7 OSC_OTP_FINE_TRIM_OFFSET2

Definition:

```
#define OSC_OTP_FINE_TRIM_OFFSET2
```

Description:

Defines the address of the Fine Trim Offset 1 in OTP.

10.2.2.8 OSC_OTP_FINE_TRIM_SLOPE1

Definition:

```
#define OSC_OTP_FINE_TRIM_SLOPE1
```

Description:

Defines the address of the Fine Trim Slope 1 in OTP.

10.2.2.9 OSC_OTP_FINE_TRIM_SLOPE2

Definition:

```
#define OSC_OTP_FINE_TRIM_SLOPE2
```

Description:

Defines the address of the Fine Trim Slope 1 in OTP.

10.2.2.10 OSC_OTP_REF_TEMP_OFFSET

Definition:

```
#define OSC_OTP_REF_TEMP_OFFSET
```

Description:

Defines the address of the Reference Temp Offset in OTP.

10.2.3 Typedef Documentation

10.2.3.1 OSC_Handle

Definition:

```
typedef struct _OSC_Obj_ *OSC_Handle
```

Description:

Defines the oscillator (OSC) handle.

10.2.3.2 OSC_Obj

Definition:

```
typedef struct _OSC_Obj_ OSC_Obj
```

Description:

Defines the oscillator (OSC) object.

10.2.4 Enumeration Documentation

10.2.4.1 OSC_Number_e

Description:

Enumeration to define the oscillator (OSC) number.

Enumerators:

OSC_Number_1 Denotes oscillator number 1.

OSC_Number_2 Denotes oscillator number 2.

10.2.4.2 OSC_Osc2Src_e

Description:

Enumeration to define the oscillator (OSC) 2 source.

Enumerators:

OSC_Osc2Src_Internal Denotes an internal oscillator source for oscillator 2.

OSC_Osc2Src_External Denotes an external oscillator source for oscillator 2.

10.2.4.3 OSC_Src_e

Description:

Enumeration to define the oscillator (OSC) source.

Enumerators:

OSC_Src_Internal Denotes an internal oscillator.

OSC_Src_External Denotes an external oscillator.

10.2.5 Function Documentation

10.2.5.1 OSC_getCourseTrim1

Gets the fine trim offset for oscillator 1.

Prototype:

```
int16_t  
OSC_getCourseTrim1(OSC_Handle oscHandle) [inline]
```

Parameters:

← ***oscHandle*** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 1

10.2.5.2 int16_t OSC_getCourseTrim2 (OSC_Handle oscHandle) [inline]

Gets the fine trim offset for oscillator 2.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 2

10.2.5.3 int16_t OSC_getFineTrimOffset1 (OSC_Handle oscHandle) [inline]

Gets the fine trim offset for oscillator 1.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 1

10.2.5.4 int16_t OSC_getFineTrimOffset2 (OSC_Handle oscHandle) [inline]

Gets the fine trim offset for oscillator 2.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 2

10.2.5.5 int16_t OSC_getFineTrimSlope1 (OSC_Handle oscHandle) [inline]

Gets the fine trim offset for oscillator 1.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 1

10.2.5.6 int16_t OSC_getFineTrimSlope2 (OSC_Handle oscHandle) [inline]

Gets the fine trim offset for oscillator 2.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The fine trim offset for oscillator 2

10.2.5.7 int16_t OSC_getRefTempOffset (OSC_Handle oscHandle) [inline]

Gets the reference temperature offset.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

Returns:

The reference temperature offset

10.2.5.8 OSC_Handle OSC_init (void * pMemory, const size_t numBytes)

Initializes the oscillator (OSC) handle.

Parameters:

← **pMemory** A pointer to the base address of the FLASH registers

← **numBytes** The number of bytes allocated for the FLASH object, bytes

Returns:

The flash (FLASH) object handle

10.2.5.9 void OSC_setCoarseTrim (OSC_Handle oscHandle, const OSC_Number_e oscNumber, const uint8_t trimValue)

Sets the coarse trim value for a specified oscillator.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

← **oscNumber** The oscillator number

← **trimValue** The coarse trim value

10.2.5.10 void OSC_setFineTrim (OSC_Handle oscHandle, const OSC_Number_e oscNumber, const uint8_t trimValue)

Sets the fine trim value for a specified oscillator.

Parameters:

← **oscHandle** The oscillator (OSC) object handle

← **oscNumber** The oscillator number

← **trimValue** The fine trim value

11 Peripheral Interrupt Expansion Module (PIE)

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11.1 Introduction

The Peripheral Interrupt Expansion controller (PIE) API provides functions for configuring and using the PIE on Piccolo devices. This API provides functions for enabling and disabling individual interrupt sources as well as acknowledging interrupts that have occurred.

This driver is contained in `f2802x/common/source/pie.c`, with `f2802x/common/include/pie.h` containing the API definitions for use by applications.

11.2 PIE

Data Structures

- `_PIE_IERIFR_t`
- `_PIE_Obj_`

Defines

- `PIE_BASE_ADDR`
- `PIE_DBGIER_DLOGINT_BITS`
- `PIE_DBGIER_INT10_BITS`
- `PIE_DBGIER_INT11_BITS`
- `PIE_DBGIER_INT12_BITS`
- `PIE_DBGIER_INT13_BITS`
- `PIE_DBGIER_INT14_BITS`
- `PIE_DBGIER_INT1_BITS`
- `PIE_DBGIER_INT2_BITS`
- `PIE_DBGIER_INT3_BITS`
- `PIE_DBGIER_INT4_BITS`
- `PIE_DBGIER_INT5_BITS`
- `PIE_DBGIER_INT6_BITS`
- `PIE_DBGIER_INT7_BITS`
- `PIE_DBGIER_INT8_BITS`
- `PIE_DBGIER_INT9_BITS`
- `PIE_DBGIER_RTOSINT_BITS`
- `PIE_IER_DLOGINT_BITS`
- `PIE_IER_INT10_BITS`

- [PIE_IER_INT11_BITS](#)
- [PIE_IER_INT12_BITS](#)
- [PIE_IER_INT13_BITS](#)
- [PIE_IER_INT14_BITS](#)
- [PIE_IER_INT1_BITS](#)
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- [PIE_IER_INT3_BITS](#)
- [PIE_IER_INT4_BITS](#)
- [PIE_IER_INT5_BITS](#)
- [PIE_IER_INT6_BITS](#)
- [PIE_IER_INT7_BITS](#)
- [PIE_IER_INT8_BITS](#)
- [PIE_IER_INT9_BITS](#)
- [PIE_IER_RTOSINT_BITS](#)
- [PIE_IERx_INTx1_BITS](#)
- [PIE_IERx_INTx2_BITS](#)
- [PIE_IERx_INTx3_BITS](#)
- [PIE_IERx_INTx4_BITS](#)
- [PIE_IERx_INTx5_BITS](#)
- [PIE_IERx_INTx6_BITS](#)
- [PIE_IERx_INTx7_BITS](#)
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- [PIE_IFR_DLOGINT_BITS](#)
- [PIE_IFR_INT10_BITS](#)
- [PIE_IFR_INT11_BITS](#)
- [PIE_IFR_INT12_BITS](#)
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- [PIE_IFR_INT1_BITS](#)
- [PIE_IFR_INT2_BITS](#)
- [PIE_IFR_INT3_BITS](#)
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- [PIE_IFR_INT5_BITS](#)
- [PIE_IFR_INT6_BITS](#)
- [PIE_IFR_INT7_BITS](#)
- [PIE_IFR_INT8_BITS](#)
- [PIE_IFR_INT9_BITS](#)
- [PIE_IFR_RTOSINT_BITS](#)
- [PIE_IFRx_INTx1_BITS](#)
- [PIE_IFRx_INTx2_BITS](#)
- [PIE_IFRx_INTx3_BITS](#)
- [PIE_IFRx_INTx4_BITS](#)
- [PIE_IFRx_INTx5_BITS](#)
- [PIE_IFRx_INTx6_BITS](#)
- [PIE_IFRx_INTx7_BITS](#)
- [PIE_IFRx_INTx8_BITS](#)

- [PIE_PIEACK_GROUP10_BITS](#)
- [PIE_PIEACK_GROUP11_BITS](#)
- [PIE_PIEACK_GROUP12_BITS](#)
- [PIE_PIEACK_GROUP1_BITS](#)
- [PIE_PIEACK_GROUP2_BITS](#)
- [PIE_PIEACK_GROUP3_BITS](#)
- [PIE_PIEACK_GROUP4_BITS](#)
- [PIE_PIEACK_GROUP5_BITS](#)
- [PIE_PIEACK_GROUP6_BITS](#)
- [PIE_PIEACK_GROUP7_BITS](#)
- [PIE_PIEACK_GROUP8_BITS](#)
- [PIE_PIEACK_GROUP9_BITS](#)
- [PIE_PIECTRL_ENPIE_BITS](#)
- [PIE_PIECTRL_PIEVECT_BITS](#)

Enumerations

- [PIE_ExtIntPolarity_e](#)
- [PIE_GroupNumber_e](#)
- [PIE_InterruptSource_e](#)
- [PIE_SubGroupNumber_e](#)
- [PIE_SystemInterrupts_e](#)

Functions

- void [PIE_clearAllFlags](#) ([PIE_Handle](#) pieHandle)
- void [PIE_clearAllInts](#) ([PIE_Handle](#) pieHandle)
- void [PIE_clearInt](#) ([PIE_Handle](#) pieHandle, const [PIE_GroupNumber_e](#) groupNumber)
- void [PIE_disable](#) ([PIE_Handle](#) pieHandle)
- void [PIE_disableAllInts](#) ([PIE_Handle](#) pieHandle)
- void [PIE_disableCaptureInt](#) ([PIE_Handle](#) pieHandle)
- void [PIE_disableInt](#) ([PIE_Handle](#) pieHandle, const [PIE_GroupNumber_e](#) group, const [PIE_InterruptSource_e](#) intSource)
- void [PIE_enable](#) ([PIE_Handle](#) pieHandle)
- void [PIE_enableAdcInt](#) ([PIE_Handle](#) pieHandle, const [ADC_IntNumber_e](#) intNumber)
- void [PIE_enableCaptureInt](#) ([PIE_Handle](#) pieHandle)
- void [PIE_enableExtInt](#) ([PIE_Handle](#) pieHandle, const [CPU_ExtIntNumber_e](#) intNumber)
- void [PIE_enableInt](#) ([PIE_Handle](#) pieHandle, const [PIE_GroupNumber_e](#) group, const [PIE_InterruptSource_e](#) intSource)
- void [PIE_enablePwmInt](#) ([PIE_Handle](#) pieHandle, const [PWM_Number_e](#) pwmNumber)
- void [PIE_enablePwmTzInt](#) ([PIE_Handle](#) pieHandle, const [PWM_Number_e](#) pwmNumber)
- void [PIE_enableTimer0Int](#) ([PIE_Handle](#) pieHandle)
- void [PIE_forceInt](#) ([PIE_Handle](#) pieHandle, const [PIE_GroupNumber_e](#) group, const [PIE_InterruptSource_e](#) intSource)

- `uint16_t` `PIE_getExtIntCount` (`PIE_Handle` pieHandle, const `CPU_ExtIntNumber_e` intNumber)
- `uint16_t` `PIE_getIntEnables` (`PIE_Handle` pieHandle, const `PIE_GroupNumber_e` group)
- `uint16_t` `PIE_getIntFlags` (`PIE_Handle` pieHandle, const `PIE_GroupNumber_e` group)
- interrupt void `PIE_illegallsr` (void)
- `PIE_Handle` `PIE_init` (void *pMemory, const `size_t` numBytes)
- void `PIE_registerPieIntHandler` (`PIE_Handle` pieHandle, const `PIE_GroupNumber_e` groupNumber, const `PIE_SubGroupNumber_e` subGroupNumber, const `intVec_t` vector)
- void `PIE_registerSystemIntHandler` (`PIE_Handle` pieHandle, const `PIE_SystemInterrupts_e` systemInt, const `intVec_t` vector)
- void `PIE_setDefaultIntVectorTable` (`PIE_Handle` pieHandle)
- void `PIE_setExtIntPolarity` (`PIE_Handle` pieHandle, const `CPU_ExtIntNumber_e` intNumber, const `PIE_ExtIntPolarity_e` polarity)
- void `PIE_unregisterPieIntHandler` (`PIE_Handle` pieHandle, const `PIE_GroupNumber_e` groupNumber, const `PIE_SubGroupNumber_e` subGroupNumber)
- void `PIE_unregisterSystemIntHandler` (`PIE_Handle` pieHandle, const `PIE_SystemInterrupts_e` systemInt)

11.2.1 Data Structure Documentation

11.2.1.1 `_PIE_IERIFR_t`

Definition:

```
typedef struct
{
    uint16_t IER;
    uint16_t IFR;
}
_PIE_IERIFR_t
```

Members:

IER the Interrupt Enable Register (IER)

IFR the Interrupt Flag Register (IFR)

Description:

Defines the `PIE_IERIFR_t` data type.

11.2.1.2 `_PIE_Obj_`

Definition:

```
typedef struct
{
    uint16_t PIELCTRL;
    uint16_t PIEACK;
    PIE_IERIFR_t PIEIER_PIEIFR[12];
    uint16_t rsvd_1[6];
    intVec_t Reset;
    intVec_t INT1;
```

```
intVec_t INT2;
intVec_t INT3;
intVec_t INT4;
intVec_t INT5;
intVec_t INT6;
intVec_t INT7;
intVec_t INT8;
intVec_t INT9;
intVec_t INT10;
intVec_t INT11;
intVec_t INT12;
intVec_t TINT1;
intVec_t TINT2;
intVec_t DATALOG;
intVec_t RTOSINT;
intVec_t EMUINT;
intVec_t NMI;
intVec_t ILLEGAL;
intVec_t USER1;
intVec_t USER2;
intVec_t USER3;
intVec_t USER4;
intVec_t USER5;
intVec_t USER6;
intVec_t USER7;
intVec_t USER8;
intVec_t USER9;
intVec_t USER10;
intVec_t USER11;
intVec_t USER12;
intVec_t rsvd1_1;
intVec_t rsvd1_2;
intVec_t rsvd1_3;
intVec_t XINT1;
intVec_t XINT2;
intVec_t ADCINT9;
intVec_t TINT0;
intVec_t WAKEINT;
intVec_t EPWM1_TZINT;
intVec_t EPWM2_TZINT;
intVec_t EPWM3_TZINT;
intVec_t EPWM4_TZINT;
intVec_t rsvd2_5;
intVec_t rsvd2_6;
intVec_t rsvd2_7;
intVec_t rsvd2_8;
intVec_t EPWM1_INT;
intVec_t EPWM2_INT;
intVec_t EPWM3_INT;
intVec_t EPWM4_INT;
intVec_t rsvd3_5;
intVec_t rsvd3_6;
```

```
intVec_t  rsvd3_7;
intVec_t  rsvd3_8;
intVec_t  ECAP1_INT;
intVec_t  rsvd4_2;
intVec_t  rsvd4_3;
intVec_t  rsvd4_4;
intVec_t  rsvd4_5;
intVec_t  rsvd4_6;
intVec_t  rsvd4_7;
intVec_t  rsvd4_8;
intVec_t  rsvd5_1;
intVec_t  rsvd5_2;
intVec_t  rsvd5_3;
intVec_t  rsvd5_4;
intVec_t  rsvd5_5;
intVec_t  rsvd5_6;
intVec_t  rsvd5_7;
intVec_t  rsvd5_8;
intVec_t  SPIRXINTA;
intVec_t  SPITXINTA;
intVec_t  rsvd6_3;
intVec_t  rsvd6_4;
intVec_t  rsvd6_5;
intVec_t  rsvd6_6;
intVec_t  rsvd6_7;
intVec_t  rsvd6_8;
intVec_t  rsvd7_1;
intVec_t  rsvd7_2;
intVec_t  rsvd7_3;
intVec_t  rsvd7_4;
intVec_t  rsvd7_5;
intVec_t  rsvd7_6;
intVec_t  rsvd7_7;
intVec_t  rsvd7_8;
intVec_t  I2CINT1A;
intVec_t  I2CINT2A;
intVec_t  rsvd8_3;
intVec_t  rsvd8_4;
intVec_t  rsvd8_5;
intVec_t  rsvd8_6;
intVec_t  rsvd8_7;
intVec_t  rsvd8_8;
intVec_t  SCIRXINTA;
intVec_t  SCITXINTA;
intVec_t  rsvd9_3;
intVec_t  rsvd9_4;
intVec_t  rsvd9_5;
intVec_t  rsvd9_6;
intVec_t  rsvd9_7;
intVec_t  rsvd9_8;
intVec_t  ADCINT1;
intVec_t  ADCINT2;
```

```
intVec_t ADCINT3;
intVec_t ADCINT4;
intVec_t ADCINT5;
intVec_t ADCINT6;
intVec_t ADCINT7;
intVec_t ADCINT8;
intVec_t rsvd11_1;
intVec_t rsvd11_2;
intVec_t rsvd11_3;
intVec_t rsvd11_4;
intVec_t rsvd11_5;
intVec_t rsvd11_6;
intVec_t rsvd11_7;
intVec_t rsvd11_8;
intVec_t XINT3;
intVec_t rsvd12_2;
intVec_t rsvd12_3;
intVec_t rsvd12_4;
intVec_t rsvd12_5;
intVec_t rsvd12_6;
intVec_t rsvd12_7;
intVec_t rsvd12_8;
uint16_t rsvd13[25200];
uint16_t XINTnCR[3];
uint16_t rsvd14[5];
uint16_t XINTnCTR[3];
}
_PIE_Obj_
```

Members:

PIECTRL PIE Control Register.

PIEACK PIE Acknowledge Register.

PIEIER_PIEIFR PIE Interrupt Enable Register and PIE Interrupt Flag Register.

rsvd_1 Reserved.

Reset Reset interrupt vector.

INT1 INT1 interrupt vector.

INT2 INT2 interrupt vector.

INT3 INT3 interrupt vector.

INT4 INT4 interrupt vector.

INT5 INT5 interrupt vector.

INT6 INT6 interrupt vector.

INT7 INT7 interrupt vector.

INT8 INT8 interrupt vector.

INT9 INT9 interrupt vector.

INT10 INT10 interrupt vector.

INT11 INT11 interrupt vector.

INT12 INT12 interrupt vector.

TINT1 INT13 interrupt vector.

TINT2 INT14 interrupt vector.

DATALOG DATALOG interrupt vector.

RTOSINT RTOSINT interrupt vector.
EMUINT EMUINT interrupt vector.
NMI NMI interrupt vector.
ILLEGAL ILLEGAL interrupt vector.
USER1 USER1 interrupt vector.
USER2 USER2 interrupt vector.
USER3 USER3 interrupt vector.
USER4 USER4 interrupt vector.
USER5 USER5 interrupt vector.
USER6 USER6 interrupt vector.
USER7 USER7 interrupt vector.
USER8 USER8 interrupt vector.
USER9 USER9 interrupt vector.
USER10 USER10 interrupt vector.
USER11 USER11 interrupt vector.
USER12 USER12 interrupt vector.
rsvd1_1 Reserved (Note: using ADCINT_1 in group 10).
rsvd1_2 Reserved (Note: using ADCINT_2 in group 10).
rsvd1_3 Reserved.
XINT1 XINT1 interrupt vector.
XINT2 XINT2 interrupt vector.
ADCINT9 ADCINT9 interrupt vector.
TINT0 TINT0 interrupt vector.
WAKEINT WAKEINT interrupt vector.
EPWM1_TZINT EPWM1_TZINT interrupt vector.
EPWM2_TZINT EPWM2_TZINT interrupt vector.
EPWM3_TZINT EPWM3_TZINT interrupt vector.
EPWM4_TZINT EPWM4_TZINT interrupt vector.
rsvd2_5 Reserved.
rsvd2_6 Reserved.
rsvd2_7 Reserved.
rsvd2_8 Reserved.
EPWM1_INT EPWM1 interrupt vector.
EPWM2_INT EPWM2 interrupt vector.
EPWM3_INT EPWM3 interrupt vector.
EPWM4_INT EPWM4 interrupt vector.
rsvd3_5 Reserved.
rsvd3_6 Reserved.
rsvd3_7 Reserved.
rsvd3_8 Reserved.
ECAP1_INT ECAP1_INT interrupt vector.
rsvd4_2 Reserved.
rsvd4_3 Reserved.
rsvd4_4 Reserved.
rsvd4_5 Reserved.
rsvd4_6 Reserved.

rsvd4_7 Reserved.
rsvd4_8 Reserved.
rsvd5_1 Reserved.
rsvd5_2 Reserved.
rsvd5_3 Reserved.
rsvd5_4 Reserved.
rsvd5_5 Reserved.
rsvd5_6 Reserved.
rsvd5_7 Reserved.
rsvd5_8 Reserved.
SPIRXINTA SPIRXINTA interrupt vector.
SPITXINTA SPITXINTA interrupt vector.
rsvd6_3 Reserved.
rsvd6_4 Reserved.
rsvd6_5 Reserved.
rsvd6_6 Reserved.
rsvd6_7 Reserved.
rsvd6_8 Reserved.
rsvd7_1 Reserved.
rsvd7_2 Reserved.
rsvd7_3 Reserved.
rsvd7_4 Reserved.
rsvd7_5 Reserved.
rsvd7_6 Reserved.
rsvd7_7 Reserved.
rsvd7_8 Reserved.
I2CINT1A I2CINT1A interrupt vector.
I2CINT2A I2CINT2A interrupt vector.
rsvd8_3 Reserved.
rsvd8_4 Reserved.
rsvd8_5 Reserved.
rsvd8_6 Reserved.
rsvd8_7 Reserved.
rsvd8_8 Reserved.
SCIRXINTA SCIRXINTA interrupt vector.
SCITXINTA SCITXINTA interrupt vector.
rsvd9_3 Reserved.
rsvd9_4 Reserved.
rsvd9_5 Reserved.
rsvd9_6 Reserved.
rsvd9_7 Reserved.
rsvd9_8 Reserved.
ADCINT1 ADCINT1 interrupt vector.
ADCINT2 ADCINT2 interrupt vector.
ADCINT3 ADCINT3 interrupt vector.
ADCINT4 ADCINT4 interrupt vector.

ADCINT5 ADCINT5 interrupt vector.
ADCINT6 ADCINT6 interrupt vector.
ADCINT7 ADCINT7 interrupt vector.
ADCINT8 ADCINT8 interrupt vector.
rsvd11_1 Reserved.
rsvd11_2 Reserved.
rsvd11_3 Reserved.
rsvd11_4 Reserved.
rsvd11_5 Reserved.
rsvd11_6 Reserved.
rsvd11_7 Reserved.
rsvd11_8 Reserved.
XINT3 XINT3 interrupt vector.
rsvd12_2 Reserved.
rsvd12_3 Reserved.
rsvd12_4 Reserved.
rsvd12_5 Reserved.
rsvd12_6 Reserved.
rsvd12_7 Reserved.
rsvd12_8 Reserved.
rsvd13 Reserved.
XINTnCR External Interrupt n Control Register.
rsvd14 Reserved.
XINTnCTR External Interrupt n Counter Register.

Description:

Defines the peripheral interrupt expansion (PIE) object.

11.2.2 Define Documentation

11.2.2.1 PIE_BASE_ADDR

Definition:

```
#define PIE_BASE_ADDR
```

Description:

Defines the base address of the peripheral interrupt expansion (PIE) registers.

11.2.2.2 PIE_DBGIER_DLOGINT_BITS

Definition:

```
#define PIE_DBGIER_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the DBGIER register.

11.2.2.3 PIE_DBGIER_INT10_BITS

Definition:

```
#define PIE_DBGIER_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the DBGIER register.

11.2.2.4 PIE_DBGIER_INT11_BITS

Definition:

```
#define PIE_DBGIER_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the DBGIER register.

11.2.2.5 PIE_DBGIER_INT12_BITS

Definition:

```
#define PIE_DBGIER_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the DBGIER register.

11.2.2.6 PIE_DBGIER_INT13_BITS

Definition:

```
#define PIE_DBGIER_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the DBGIER register.

11.2.2.7 PIE_DBGIER_INT14_BITS

Definition:

```
#define PIE_DBGIER_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the DBGIER register.

11.2.2.8 PIE_DBGIER_INT1_BITS

Definition:

```
#define PIE_DBGIER_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the DBGIER register.

11.2.2.9 PIE_DBGIER_INT2_BITS

Definition:

```
#define PIE_DBGIER_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the DBGIER register.

11.2.2.10 PIE_DBGIER_INT3_BITS

Definition:

```
#define PIE_DBGIER_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the DBGIER register.

11.2.2.11 PIE_DBGIER_INT4_BITS

Definition:

```
#define PIE_DBGIER_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the DBGIER register.

11.2.2.12 PIE_DBGIER_INT5_BITS

Definition:

```
#define PIE_DBGIER_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the DBGIER register.

11.2.2.13 PIE_DBGIER_INT6_BITS

Definition:

```
#define PIE_DBGIER_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the DBGIER register.

11.2.2.14 PIE_DBGIER_INT7_BITS

Definition:

```
#define PIE_DBGIER_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the DBGIER register.

11.2.2.15 PIE_DBGIER_INT8_BITS

Definition:

```
#define PIE_DBGIER_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the DBGIER register.

11.2.2.16 PIE_DBGIER_INT9_BITS

Definition:

```
#define PIE_DBGIER_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the DBGIER register.

11.2.2.17 PIE_DBGIER_RTOSINT_BITS

Definition:

```
#define PIE_DBGIER_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the DBGIER register.

11.2.2.18 PIE_IER_DLOGINT_BITS

Definition:

```
#define PIE_IER_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the IER register.

11.2.2.19 PIE_IER_INT10_BITS

Definition:

```
#define PIE_IER_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the IER register.

11.2.2.20 PIE_IER_INT11_BITS

Definition:

```
#define PIE_IER_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the IER register.

11.2.2.21 PIE_IER_INT12_BITS

Definition:

```
#define PIE_IER_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the IER register.

11.2.2.22 PIE_IER_INT13_BITS

Definition:

```
#define PIE_IER_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the IER register.

11.2.2.23 PIE_IER_INT14_BITS

Definition:

```
#define PIE_IER_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the IER register.

11.2.2.24 PIE_IER_INT1_BITS

Definition:

```
#define PIE_IER_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the IER register.

11.2.2.25 PIE_IER_INT2_BITS

Definition:

```
#define PIE_IER_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the IER register.

11.2.2.26 PIE_IER_INT3_BITS

Definition:

```
#define PIE_IER_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the IER register.

11.2.2.27 PIE_IER_INT4_BITS

Definition:

```
#define PIE_IER_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the IER register.

11.2.2.28 PIE_IER_INT5_BITS

Definition:

```
#define PIE_IER_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the IER register.

11.2.2.29 PIE_IER_INT6_BITS

Definition:

```
#define PIE_IER_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the IER register.

11.2.2.30 PIE_IER_INT7_BITS

Definition:

```
#define PIE_IER_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the IER register.

11.2.2.31 PIE_IER_INT8_BITS

Definition:

```
#define PIE_IER_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the IER register.

11.2.2.32 PIE_IER_INT9_BITS

Definition:

```
#define PIE_IER_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the IER register.

11.2.2.33 PIE_IER_RTOSINT_BITS

Definition:

```
#define PIE_IER_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the IER register.

11.2.2.34 PIE_IERx_INTx1_BITS

Definition:

```
#define PIE_IERx_INTx1_BITS
```

Description:

Defines the location of the INTx1 bits in the IERx register.

11.2.2.35 PIE_IERx_INTx2_BITS

Definition:

```
#define PIE_IERx_INTx2_BITS
```

Description:

Defines the location of the INTx2 bits in the IERx register.

11.2.2.36 PIE_IERx_INTx3_BITS

Definition:

```
#define PIE_IERx_INTx3_BITS
```

Description:

Defines the location of the INTx3 bits in the IERx register.

11.2.2.37 PIE_IERx_INTx4_BITS

Definition:

```
#define PIE_IERx_INTx4_BITS
```

Description:

Defines the location of the INTx4 bits in the IERx register.

11.2.2.38 PIE_IERx_INTx5_BITS

Definition:

```
#define PIE_IERx_INTx5_BITS
```

Description:

Defines the location of the INTx5 bits in the IERx register.

11.2.2.39 PIE_IERx_INTx6_BITS

Definition:

```
#define PIE_IERx_INTx6_BITS
```

Description:

Defines the location of the INTx6 bits in the IERx register.

11.2.2.40 PIE_IERx_INTx7_BITS

Definition:

```
#define PIE_IERx_INTx7_BITS
```

Description:

Defines the location of the INTx7 bits in the IERx register.

11.2.2.41 PIE_IERx_INTx8_BITS

Definition:

```
#define PIE_IERx_INTx8_BITS
```

Description:

Defines the location of the INTx8 bits in the IERx register.

11.2.2.42 PIE_IFR_DLOGINT_BITS

Definition:

```
#define PIE_IFR_DLOGINT_BITS
```

Description:

Defines the location of the DLOGINT bits in the IFR register.

11.2.2.43 PIE_IFR_INT10_BITS

Definition:

```
#define PIE_IFR_INT10_BITS
```

Description:

Defines the location of the INT10 bits in the IFR register.

11.2.2.44 PIE_IFR_INT11_BITS

Definition:

```
#define PIE_IFR_INT11_BITS
```

Description:

Defines the location of the INT11 bits in the IFR register.

11.2.2.45 PIE_IFR_INT12_BITS

Definition:

```
#define PIE_IFR_INT12_BITS
```

Description:

Defines the location of the INT12 bits in the IFR register.

11.2.2.46 PIE_IFR_INT13_BITS

Definition:

```
#define PIE_IFR_INT13_BITS
```

Description:

Defines the location of the INT13 bits in the IFR register.

11.2.2.47 PIE_IFR_INT14_BITS

Definition:

```
#define PIE_IFR_INT14_BITS
```

Description:

Defines the location of the INT14 bits in the IFR register.

11.2.2.48 PIE_IFR_INT1_BITS

Definition:

```
#define PIE_IFR_INT1_BITS
```

Description:

Defines the location of the INT1 bits in the IFR register.

11.2.2.49 PIE_IFR_INT2_BITS

Definition:

```
#define PIE_IFR_INT2_BITS
```

Description:

Defines the location of the INT2 bits in the IFR register.

11.2.2.50 PIE_IFR_INT3_BITS

Definition:

```
#define PIE_IFR_INT3_BITS
```

Description:

Defines the location of the INT3 bits in the IFR register.

11.2.2.51 PIE_IFR_INT4_BITS

Definition:

```
#define PIE_IFR_INT4_BITS
```

Description:

Defines the location of the INT4 bits in the IFR register.

11.2.2.52 PIE_IFR_INT5_BITS

Definition:

```
#define PIE_IFR_INT5_BITS
```

Description:

Defines the location of the INT5 bits in the IFR register.

11.2.2.53 PIE_IFR_INT6_BITS

Definition:

```
#define PIE_IFR_INT6_BITS
```

Description:

Defines the location of the INT6 bits in the IFR register.

11.2.2.54 PIE_IFR_INT7_BITS

Definition:

```
#define PIE_IFR_INT7_BITS
```

Description:

Defines the location of the INT7 bits in the IFR register.

11.2.2.55 PIE_IFR_INT8_BITS

Definition:

```
#define PIE_IFR_INT8_BITS
```

Description:

Defines the location of the INT8 bits in the IFR register.

11.2.2.56 PIE_IFR_INT9_BITS

Definition:

```
#define PIE_IFR_INT9_BITS
```

Description:

Defines the location of the INT9 bits in the IFR register.

11.2.2.57 PIE_IFR_RTOSINT_BITS

Definition:

```
#define PIE_IFR_RTOSINT_BITS
```

Description:

Defines the location of the RTOSINT bits in the IFR register.

11.2.2.58 PIE_IFRx_INTx1_BITS

Definition:

```
#define PIE_IFRx_INTx1_BITS
```

Description:

Defines the location of the INTx1 bits in the IFRx register.

11.2.2.59 PIE_IFRx_INTx2_BITS

Definition:

```
#define PIE_IFRx_INTx2_BITS
```

Description:

Defines the location of the INTx2 bits in the IFRx register.

11.2.2.60 PIE_IFRx_INTx3_BITS

Definition:

```
#define PIE_IFRx_INTx3_BITS
```

Description:

Defines the location of the INTx3 bits in the IFRx register.

11.2.2.61 PIE_IFRx_INTx4_BITS

Definition:

```
#define PIE_IFRx_INTx4_BITS
```

Description:

Defines the location of the INTx4 bits in the IFRx register.

11.2.2.62 PIE_IFRx_INTx5_BITS

Definition:

```
#define PIE_IFRx_INTx5_BITS
```

Description:

Defines the location of the INTx5 bits in the IFRx register.

11.2.2.63 PIE_IFRx_INTx6_BITS

Definition:

```
#define PIE_IFRx_INTx6_BITS
```

Description:

Defines the location of the INTx6 bits in the IFRx register.

11.2.2.64 PIE_IFRx_INTx7_BITS

Definition:

```
#define PIE_IFRx_INTx7_BITS
```

Description:

Defines the location of the INTx7 bits in the IFRx register.

11.2.2.65 PIE_IFRx_INTx8_BITS

Definition:

```
#define PIE_IFRx_INTx8_BITS
```

Description:

Defines the location of the INTx8 bits in the IFRx register.

11.2.2.66 PIE_PIEACK_GROUP10_BITS

Definition:

```
#define PIE_PIEACK_GROUP10_BITS
```

Description:

Defines the location of the GROUP10 bits in the PIEACK register.

11.2.2.67 PIE_PIEACK_GROUP11_BITS

Definition:

```
#define PIE_PIEACK_GROUP11_BITS
```

Description:

Defines the location of the GROUP11 bits in the PIEACK register.

11.2.2.68 PIE_PIEACK_GROUP12_BITS

Definition:

```
#define PIE_PIEACK_GROUP12_BITS
```

Description:

Defines the location of the GROUP12 bits in the PIEACK register.

11.2.2.69 PIE_PIEACK_GROUP1_BITS

Definition:

```
#define PIE_PIEACK_GROUP1_BITS
```

Description:

Defines the location of the GROUP1 bits in the PIEACK register.

11.2.2.70 PIE_PIEACK_GROUP2_BITS

Definition:

```
#define PIE_PIEACK_GROUP2_BITS
```

Description:

Defines the location of the GROUP2 bits in the PIEACK register.

11.2.2.71 PIE_PIEACK_GROUP3_BITS

Definition:

```
#define PIE_PIEACK_GROUP3_BITS
```

Description:

Defines the location of the GROUP3 bits in the PIEACK register.

11.2.2.72 PIE_PIEACK_GROUP4_BITS

Definition:

```
#define PIE_PIEACK_GROUP4_BITS
```

Description:

Defines the location of the GROUP4 bits in the PIEACK register.

11.2.2.73 PIE_PIEACK_GROUP5_BITS

Definition:

```
#define PIE_PIEACK_GROUP5_BITS
```

Description:

Defines the location of the GROUP5 bits in the PIEACK register.

11.2.2.74 PIE_PIEACK_GROUP6_BITS

Definition:

```
#define PIE_PIEACK_GROUP6_BITS
```

Description:

Defines the location of the GROUP6 bits in the PIEACK register.

11.2.2.75 PIE_PIEACK_GROUP7_BITS

Definition:

```
#define PIE_PIEACK_GROUP7_BITS
```

Description:

Defines the location of the GROUP7 bits in the PIEACK register.

11.2.2.76 PIE_PIEACK_GROUP8_BITS

Definition:

```
#define PIE_PIEACK_GROUP8_BITS
```

Description:

Defines the location of the GROUP8 bits in the PIEACK register.

11.2.2.77 PIE_PIEACK_GROUP9_BITS

Definition:

```
#define PIE_PIEACK_GROUP9_BITS
```

Description:

Defines the location of the GROUP9 bits in the PIEACK register.

11.2.2.78 PIE_PIECTRL_ENPIE_BITS

Definition:

```
#define PIE_PIECTRL_ENPIE_BITS
```

Description:

Defines the location of the ENPIE bits in the PIECTRL register.

11.2.2.79 PIE_PIECTRL_PIEVECT_BITS

Definition:

```
#define PIE_PIECTRL_PIEVECT_BITS
```

Description:

Defines the location of the PIEVECT bits in the PIECTRL register.

11.2.3 Typedef Documentation

11.2.3.1 intVec_t

Definition:

```
typedef interrupt void(*) intVec_t (void)
```

Description:

Defines the type for an interrupt vector.

11.2.3.2 PIE_Handle

Definition:

```
typedef struct _PIE_Obj_ *PIE_Handle
```

Description:

Defines the peripheral interrupt expansion (PIE) handle.

11.2.3.3 PIE_IERIFR_t

Definition:

```
typedef struct _PIE_IERIFR_t PIE_IERIFR_t
```

Description:

Defines the PIE_IERIFR_t data type.

11.2.3.4 PIE_Obj

Definition:

```
typedef struct _PIE_Obj_ PIE_Obj
```

Description:

Defines the peripheral interrupt expansion (PIE) object.

11.2.4 Enumeration Documentation

11.2.4.1 PIE_ExtIntPolarity_e

Description:

Enumeration to define the external interrupt polarity.

Enumerators:

PIE_ExtIntPolarity_FallingEdge Denotes an interrupt is generated on the falling edge.

PIE_ExtIntPolarity_RisingEdge Denotes an interrupt is generated on the rising edge.

PIE_ExtIntPolarity_RisingAndFallingEdge Denotes an interrupt is generated on the falling and rising edges.

11.2.4.2 PIE_GroupNumber_e

Description:

Enumeration to define the peripheral interrupt expansion (PIE) group numbers.

Enumerators:

PIE_GroupNumber_1 Denotes PIE group number 1.
PIE_GroupNumber_2 Denotes PIE group number 2.
PIE_GroupNumber_3 Denotes PIE group number 3.
PIE_GroupNumber_4 Denotes PIE group number 4.
PIE_GroupNumber_5 Denotes PIE group number 5.
PIE_GroupNumber_6 Denotes PIE group number 6.
PIE_GroupNumber_7 Denotes PIE group number 7.
PIE_GroupNumber_8 Denotes PIE group number 8.
PIE_GroupNumber_9 Denotes PIE group number 9.
PIE_GroupNumber_10 Denotes PIE group number 10.
PIE_GroupNumber_11 Denotes PIE group number 11.
PIE_GroupNumber_12 Denotes PIE group number 12.

11.2.4.3 `PIE_InterruptSource_e`

Description:

Enumeration to define the peripheral interrupt expansion (PIE) individual interrupt sources.

Enumerators:

PIE_InterruptSource_ADCINT_1_1 Group 1 ADC Interrupt 1.
PIE_InterruptSource_ADCINT_1_2 Group 1 ADC Interrupt 2.
PIE_InterruptSource_XINT_1 External Interrupt 1.
PIE_InterruptSource_XINT_2 External Interrupt 2.
PIE_InterruptSource_ADCINT_9 ADC Interrupt 9.
PIE_InterruptSource_TIMER_0 Timer Interrupt 0.
PIE_InterruptSource_WAKE Wake Up Interrupt.
PIE_InterruptSource_TZ1 EPWM TZ1 Interrupt.
PIE_InterruptSource_TZ2 EPWM TZ2 Interrupt.
PIE_InterruptSource_TZ3 EPWM TZ3 Interrupt.
PIE_InterruptSource_TZ4 EPWM TZ4 Interrupt.
PIE_InterruptSource_EPWM1 EPWM 1 Interrupt.
PIE_InterruptSource_EPWM2 EPWM 2 Interrupt.
PIE_InterruptSource_EPWM3 EPWM 3 Interrupt.
PIE_InterruptSource_EPWM4 EPWM 4 Interrupt.
PIE_InterruptSource_ECAP1 ECAP 1 Interrupt.
PIE_InterruptSource_SPIARX SPI A RX Interrupt.
PIE_InterruptSource_SPIATX SPI A TX Interrupt.
PIE_InterruptSource_I2CA1 I2C A Interrupt 1.
PIE_InterruptSource_I2CA2 I2C A Interrupt 2.
PIE_InterruptSource_SCIARX SCI A RX Interrupt.
PIE_InterruptSource_SCIATX SCI A TX Interrupt.
PIE_InterruptSource_ADCINT_10_1 Group 10 ADC Interrupt 1.
PIE_InterruptSource_ADCINT_10_2 Group 10 ADC Interrupt 2.
PIE_InterruptSource_ADCINT_3 ADC Interrupt 3.
PIE_InterruptSource_ADCINT_4 ADC Interrupt 4.

PIE_InterruptSource_ADCINT_5 ADC Interrupt 5.
PIE_InterruptSource_ADCINT_6 ADC Interrupt 6.
PIE_InterruptSource_ADCINT_7 ADC Interrupt 7.
PIE_InterruptSource_ADCINT_8 ADC Interrupt 8.
PIE_InterruptSource_XINT_3 External Interrupt 3.

11.2.4.4 PIE_SubGroupNumber_e

Description:

Enumeration to define the peripheral interrupt expansion (PIE) sub-group numbers.

Enumerators:

PIE_SubGroupNumber_1 Denotes PIE group number 1.
PIE_SubGroupNumber_2 Denotes PIE group number 2.
PIE_SubGroupNumber_3 Denotes PIE group number 3.
PIE_SubGroupNumber_4 Denotes PIE group number 4.
PIE_SubGroupNumber_5 Denotes PIE group number 5.
PIE_SubGroupNumber_6 Denotes PIE group number 6.
PIE_SubGroupNumber_7 Denotes PIE group number 7.
PIE_SubGroupNumber_8 Denotes PIE group number 8.

11.2.4.5 PIE_SystemInterrupts_e

Description:

Enumeration to define the system interrupts.

Enumerators:

PIE_SystemInterrupts_Reset Reset interrupt vector.
PIE_SystemInterrupts_INT1 INT1 interrupt vector.
PIE_SystemInterrupts_INT2 INT2 interrupt vector.
PIE_SystemInterrupts_INT3 INT3 interrupt vector.
PIE_SystemInterrupts_INT4 INT4 interrupt vector.
PIE_SystemInterrupts_INT5 INT5 interrupt vector.
PIE_SystemInterrupts_INT6 INT6 interrupt vector.
PIE_SystemInterrupts_INT7 INT7 interrupt vector.
PIE_SystemInterrupts_INT8 INT8 interrupt vector.
PIE_SystemInterrupts_INT9 INT9 interrupt vector.
PIE_SystemInterrupts_INT10 INT10 interrupt vector.
PIE_SystemInterrupts_INT11 INT11 interrupt vector.
PIE_SystemInterrupts_INT12 INT12 interrupt vector.
PIE_SystemInterrupts_TINT1 INT13 interrupt vector.
PIE_SystemInterrupts_TINT2 INT14 interrupt vector.
PIE_SystemInterrupts_DATALOG DATALOG interrupt vector.
PIE_SystemInterrupts_RTOSINT RTOSINT interrupt vector.
PIE_SystemInterrupts_EMUINT EMUINT interrupt vector.

PIE_SystemInterrupts_NMI NMI interrupt vector.
PIE_SystemInterrupts_ILLEGAL ILLEGAL interrupt vector.
PIE_SystemInterrupts_USER1 USER1 interrupt vector.
PIE_SystemInterrupts_USER2 USER2 interrupt vector.
PIE_SystemInterrupts_USER3 USER3 interrupt vector.
PIE_SystemInterrupts_USER4 USER4 interrupt vector.
PIE_SystemInterrupts_USER5 USER5 interrupt vector.
PIE_SystemInterrupts_USER6 USER6 interrupt vector.
PIE_SystemInterrupts_USER7 USER7 interrupt vector.
PIE_SystemInterrupts_USER8 USER8 interrupt vector.
PIE_SystemInterrupts_USER9 USER9 interrupt vector.
PIE_SystemInterrupts_USER10 USER10 interrupt vector.
PIE_SystemInterrupts_USER11 USER11 interrupt vector.
PIE_SystemInterrupts_USER12 USER12 interrupt vector.

11.2.5 Function Documentation

11.2.5.1 PIE_clearAllFlags

Clears all the interrupt flags.

Prototype:

```
void  
PIE_clearAllFlags(PIE\_Handle pieHandle)
```

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.2 void PIE_clearAllInts ([PIE_Handle](#) pieHandle)

Clears all the interrupts.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.3 void PIE_clearInt ([PIE_Handle](#) pieHandle, const [PIE_GroupNumber_e](#) groupNumber) [inline]

Clears an interrupt defined by group number.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **groupNumber** The group number

11.2.5.4 void PIE_disable (PIE_Handle pieHandle)

Disables the peripheral interrupt expansion (PIE).

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.5 void PIE_disableAllInts (PIE_Handle pieHandle)

Disables all of the interrupts.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.6 void PIE_disableCaptureInt (PIE_Handle pieHandle)

Disables the capture interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.7 void PIE_disableInt (PIE_Handle pieHandle, const PIE_GroupNumber_e group, const PIE_InterruptSource_e intSource)

Disable a specific PIE interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **group** The PIE group an interrupt belongs to

← **intSource** The specific interrupt source to disable

11.2.5.8 void PIE_enable (PIE_Handle pieHandle)

Enables the peripheral interrupt expansion (PIE).

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.9 void PIE_enableAdcInt (PIE_Handle pieHandle, const ADC_IntNumber_e intNumber)

Enables the specified ADC interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **intNumber** The interrupt number

11.2.5.10 void PIE_enableCaptureInt (PIE_Handle pieHandle)

Enables the capture interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

11.2.5.11 void PIE_enableExtInt (PIE_Handle pieHandle, const CPU_ExtIntNumber_e intNumber)

Enables the prescribed external interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) handle

← **intNumber** The interrupt number

11.2.5.12 void PIE_enableInt (PIE_Handle pieHandle, const PIE_GroupNumber_e group, const PIE_InterruptSource_e intSource)

Enable a specific PIE interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **group** The PIE group an interrupt belongs to

← **intSource** The specific interrupt source to enable

11.2.5.13 void PIE_enablePwmInt (PIE_Handle pieHandle, const PWM_Number_e pwmNumber)

Enables the PWM interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) handle

← **pwmNumber** The PWM number

11.2.5.14 void PIE_enablePwmTzInt (PIE_Handle pieHandle, const PWM_Number_e pwmNumber)

Enables the PWM Trip Zone interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) handle

← **pwmNumber** The PWM number

11.2.5.15 void PIE_enableTimer0Int (PIE_Handle pieHandle)

Enables the Cpu Timer 0 interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) handle

11.2.5.16 void PIE_forceInt (PIE_Handle pieHandle, const PIE_GroupNumber_e group, const PIE_InterruptSource_e intSource)

Force a specific PIE interrupt.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **group** The PIE group an interrupt belongs to

← **intSource** The specific interrupt source to force

11.2.5.17 uint16_t PIE_getExtIntCount (PIE_Handle pieHandle, const CPU_ExtIntNumber_e intNumber)

Gets the external interrupt count value.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) handle

← **intNumber** The external interrupt number

Returns:

The count value

11.2.5.18 uint16_t PIE_getIntEnables (PIE_Handle pieHandle, const PIE_GroupNumber_e group)

Gets PIE interrupt enable values.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **group** The PIE group the flags belong to

11.2.5.19 uint16_t PIE_getIntFlags (PIE_Handle pieHandle, const PIE_GroupNumber_e group)

Gets PIE interrupt flag values.

Parameters:

← **pieHandle** The peripheral interrupt expansion (PIE) object handle

← **group** The PIE group the flags belong to

11.2.5.20 interrupt void PIE_illegalIsr (void)

Defines an illegal interrupt service routine - if the program pointer references this function, there is an incorrect mapping in the PIE interrupt table.

11.2.5.21 **PIE_Handle** PIE_init (void * *pMemory*, const size_t *numBytes*)

Initializes the peripheral interrupt expansion (PIE) object handle.

Parameters:

- ← ***pMemory*** A pointer to the memory for the PIE object
- ← ***numBytes*** The number of bytes allocated for the PIE object, bytes

Returns:

The peripheral interrupt expansion (PIE) object handle

11.2.5.22 void PIE_registerPieIntHandler (**PIE_Handle** *pieHandle*, const **PIE_GroupNumber_e** *groupNumber*, const **PIE_SubGroupNumber_e** *subGroupNumber*, const **intVec_t** *vector*)

Registers a handler for a PIE interrupt.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) object handle
- ← ***groupNumber*** The PIE group an interrupt belongs to
- ← ***subGroupNumber*** The PIE subgroup an interrupt belongs to
- ← ***vector*** The specific interrupt handler

11.2.5.23 void PIE_registerSystemIntHandler (**PIE_Handle** *pieHandle*, const **PIE_SystemInterrupts_e** *systemInt*, const **intVec_t** *vector*)

Registers a handler for a PIE interrupt.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) object handle
- ← ***systemInt*** The system interrupt to register this handler to
- ← ***vector*** The specific interrupt handler

11.2.5.24 void PIE_setDefaultIntVectorTable (**PIE_Handle** *pieHandle*)

Initializes the vector table with illegal ISR handlers.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) object handle

11.2.5.25 void PIE_setExtIntPolarity (PIE_Handle *pieHandle*, const CPU_ExtIntNumber_e *intNumber*, const PIE_ExtIntPolarity_e *polarity*)

Sets the external interrupt polarity.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) handle
- ← ***intNumber*** The external interrupt number
- ← ***polarity*** The signal polarity

11.2.5.26 void PIE_unregisterPieIntHandler (PIE_Handle *pieHandle*, const PIE_GroupNumber_e *groupNumber*, const PIE_SubGroupNumber_e *subGroupNumber*)

Unregisters a handler for a PIE interrupt.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) object handle
- ← ***groupNumber*** The PIE group an interrupt belongs to
- ← ***subGroupNumber*** The PIE subgroup an interrupt belongs to

11.2.5.27 void PIE_unregisterSystemIntHandler (PIE_Handle *pieHandle*, const PIE_SystemInterrupts_e *systemInt*)

Unregisters a handler for a PIE interrupt.

Parameters:

- ← ***pieHandle*** The peripheral interrupt expansion (PIE) object handle
- ← ***systemInt*** The system interrupt to unregister

12 Phase Locked Loop (PLL)

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12.1 Introduction

The Phase Locked Loop (PLL) API provides functions for configuring the device's PLL as well as other miscellaneous clock functions.

This driver is contained in `f2802x/common/source/pll.c`, with `f2802x/common/include/pll.h` containing the API definitions for use by applications.

12.2 PLL

Data Structures

- [_PLL_Obj](#)

Defines

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- [PLL_PLLCR_DIV_BITS](#)
- [PLL_PLLSTS_DIVSEL_BITS](#)
- [PLL_PLLSTS_MCLKCLR_BITS](#)
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- [PLL_PLLSTS_MCLKSTS_BITS](#)
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- [PLL_ClkStatus_e](#)
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- [PLL_Multiplier_e](#)

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- void [PLL_disable](#) ([PLL_Handle](#) pllHandle)
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- void [PLL_disableNormRdy](#) ([PLL_Handle](#) pllHandle)
- void [PLL_disableOsc](#) ([PLL_Handle](#) pllHandle)
- void [PLL_enable](#) ([PLL_Handle](#) pllHandle)
- void [PLL_enableClkDetect](#) ([PLL_Handle](#) pllHandle)
- void [PLL_enableNormRdy](#) ([PLL_Handle](#) pllHandle)
- void [PLL_enableOsc](#) ([PLL_Handle](#) pllHandle)
- [PLL_ClkStatus_e](#) [PLL_getClkStatus](#) ([PLL_Handle](#) pllHandle)
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- [PLL_Multiplier_e](#) [PLL_getMultiplier](#) ([PLL_Handle](#) pllHandle)
- [PLL_Handle](#) [PLL_init](#) (void *pMemory, const size_t numBytes)
- void [PLL_resetClkDetect](#) ([PLL_Handle](#) pllHandle)
- void [PLL_setDivider](#) ([PLL_Handle](#) pllHandle, const [PLL_DivideSelect_e](#) divSelect)
- void [PLL_setLockPeriod](#) ([PLL_Handle](#) pllHandle, const uint16_t lockPeriod)
- void [PLL_setMultiplier](#) ([PLL_Handle](#) pllHandle, const [PLL_Multiplier_e](#) freq)
- void [PLL_setup](#) ([PLL_Handle](#) pllHandle, const [PLL_Multiplier_e](#) clkMult, const [PLL_DivideSelect_e](#) divSelect)

12.2.1 Data Structure Documentation

12.2.1.1 `_PLL_Obj`

Definition:

```
typedef struct
{
    uint16_t PLLSTS;
    uint16_t rsvd_1;
    uint16_t PLLLOCKPRD;
    uint16_t rsvd_2[13];
    uint16_t PLLCR;
}
_PLL_Obj
```

Members:

PLLSTS PLL Status Register.
rsvd_1 Reserved.
PLLLOCKPRD PLL Lock Period Register.
rsvd_2 Reserved.
PLLCR PLL Control Register.

Description:

Defines the phase lock loop (PLL) object.

12.2.2 Define Documentation

12.2.2.1 PLL_BASE_ADDR

Definition:

```
#define PLL_BASE_ADDR
```

Description:

Defines the base address of the phase lock loop (PLL) registers.

12.2.2.2 PLL_PLLCR_DIV_BITS

Definition:

```
#define PLL_PLLCR_DIV_BITS
```

Description:

Defines the location of the DIV bits in the PLLCR register.

12.2.2.3 PLL_PLLSTS_DIVSEL_BITS

Definition:

```
#define PLL_PLLSTS_DIVSEL_BITS
```

Description:

Defines the location of the DIVSEL bits in the PLLSTS register.

12.2.2.4 PLL_PLLSTS_MCLKCLR_BITS

Definition:

```
#define PLL_PLLSTS_MCLKCLR_BITS
```

Description:

Defines the location of the MCLKCLR bits in the PLLSTS register.

12.2.2.5 PLL_PLLSTS_MCLKOFF_BITS

Definition:

```
#define PLL_PLLSTS_MCLKOFF_BITS
```

Description:

Defines the location of the MCLKOFF bits in the PLLSTS register.

12.2.2.6 PLL_PLLSTS_MCLKSTS_BITS

Definition:

```
#define PLL_PLLSTS_MCLKSTS_BITS
```

Description:

Defines the location of the MCLKSTS bits in the PLLSTS register.

12.2.2.7 PLL_PLLSTS_NORMRDYE_BITS

Definition:

```
#define PLL_PLLSTS_NORMRDYE_BITS
```

Description:

Defines the location of the NORMRDYE bits in the PLLSTS register.

12.2.2.8 PLL_PLLSTS_OSCOFF_BITS

Definition:

```
#define PLL_PLLSTS_OSCOFF_BITS
```

Description:

Defines the location of the OSCOFF bits in the PLLSTS register.

12.2.2.9 PLL_PLLSTS_PLLLOCKS_BITS

Definition:

```
#define PLL_PLLSTS_PLLLOCKS_BITS
```

Description:

Defines the location of the PLLLOCKS bits in the PLLSTS register.

12.2.2.10 PLL_PLLSTS_PLLOFF_BITS

Definition:

```
#define PLL_PLLSTS_PLLOFF_BITS
```

Description:

Defines the location of the PLLOFF bits in the PLLSTS register.

12.2.3 Typedef Documentation

12.2.3.1 PLL_Handle

Definition:

```
typedef struct _PLL_Obj_ *PLL_Handle
```

Description:

Defines the phase lock loop (PLL) handle.

12.2.3.2 PLL_Obj

Definition:

```
typedef struct _PLL_Obj_ PLL_Obj
```

Description:

Defines the phase lock loop (PLL) object.

12.2.4 Enumeration Documentation

12.2.4.1 PLL_ClkStatus_e

Description:

Enumeration to define the phase lock loop (PLL) clock status.

Enumerators:

PLL_ClkStatus_Normal Denotes a normal clock.

PLL_ClkStatus_Missing Denotes a missing clock.

12.2.4.2 PLL_DivideSelect_e

Description:

Enumeration to define the phase lock loop (PLL) divide select.

Enumerators:

PLL_DivideSelect_ClkIn_by_4 Denotes a divide select of CLKIN/4.

PLL_DivideSelect_ClkIn_by_2 Denotes a divide select of CLKIN/2.

PLL_DivideSelect_ClkIn_by_1 Denotes a divide select of CLKIN/1.

12.2.4.3 PLL_LockStatus_e

Description:

Enumeration to define the phase lock loop (PLL) clock lock status.

Enumerators:

PLL_LockStatus_Locking Denotes that the system is locking to the clock.

PLL_LockStatus_Done Denotes that the system is locked to the clock.

12.2.4.4 PLL_Multiplier_e

Description:

Enumeration to define the phase lock loop (PLL) clock frequency.

Enumerators:

- PLL_Multiplier_1** Denotes a multiplier of 1.
- PLL_Multiplier_2** Denotes a multiplier of 2.
- PLL_Multiplier_3** Denotes a multiplier of 3.
- PLL_Multiplier_4** Denotes a multiplier of 4.
- PLL_Multiplier_5** Denotes a multiplier of 5.
- PLL_Multiplier_6** Denotes a multiplier of 6.
- PLL_Multiplier_7** Denotes a multiplier of 7.
- PLL_Multiplier_8** Denotes a multiplier of 8.
- PLL_Multiplier_9** Denotes a multiplier of 9.
- PLL_Multiplier_10** Denotes a multiplier of 10.
- PLL_Multiplier_11** Denotes a multiplier of 11.
- PLL_Multiplier_12** Denotes a multiplier of 12.

12.2.5 Function Documentation

12.2.5.1 PLL_disable

Disables the phase lock loop (PLL).

Prototype:

```
void  
PLL_disable(PLL_Handle pllHandle)
```

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.2 void PLL_disableClkDetect (PLL_Handle pllHandle)

Disables the clock detect logic.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.3 void PLL_disableNormRdy (PLL_Handle pllHandle)

Disables the NORMRDY signal.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.4 void PLL_disableOsc (PLL_Handle pllHandle)

Disables the oscillator.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.5 void PLL_enable (PLL_Handle pllHandle)

Enables the phase lock loop (PLL).

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.6 void PLL_enableClkDetect (PLL_Handle pllHandle)

Enables the clock detect logic.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.7 void PLL_enableNormRdy (PLL_Handle pllHandle)

Enables the NORMRDY signal.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.8 void PLL_enableOsc (PLL_Handle pllHandle)

Enables the oscillator.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

12.2.5.9 PLL_ClkStatus_e PLL_getClkStatus (PLL_Handle pllHandle)

Gets the phase lock loop (PLL) clock status.

Parameters:

← **pllHandle** The phase lock loop (PLL) object handle

Returns:

The clock status

12.2.5.10 [PLL_DivideSelect_e](#) PLL_getDivider ([PLL_Handle](#) *pllHandle*)

Gets the phase lock loop (PLL) divide select value.

Parameters:

← ***pllHandle*** The phase lock loop (PLL) object handle

Returns:

The divide select value

12.2.5.11 [PLL_LockStatus_e](#) PLL_getLockStatus ([PLL_Handle](#) *pllHandle*)

Gets the phase lock loop (PLL) lock status.

Parameters:

← ***pllHandle*** The phase lock loop (PLL) object handle

Returns:

The lock status

12.2.5.12 [PLL_Multiplier_e](#) PLL_getMultiplier ([PLL_Handle](#) *pllHandle*)

Gets the phase lock loop (PLL) clock frequency.

Parameters:

← ***pllHandle*** The phase lock loop (PLL) object handle

Returns:

The clock frequency

12.2.5.13 [PLL_Handle](#) PLL_init (void * *pMemory*, const size_t *numBytes*)

Initializes the phase lock loop (PLL) object handle.

Parameters:

← ***pMemory*** A pointer to the base address of the PLL registers

← ***numBytes*** The number of bytes allocated for the PLL object, bytes

Returns:

The phase lock loop (PLL) object handle

12.2.5.14 void PLL_resetClkDetect ([PLL_Handle](#) *pllHandle*)

Resets the phase lock loop (PLL) clock detect logic.

Parameters:

← ***pllHandle*** The phase lock loop (PLL) object handle

12.2.5.15 void PLL_setDivider (PLL_Handle pllHandle, const PLL_DivideSelect_e divSelect)

Sets the phase lock loop (PLL) divide select value.

Parameters:

- ← **pllHandle** The phase lock loop (PLL) object handle
- ← **divSelect** The divide select value

12.2.5.16 void PLL_setLockPeriod (PLL_Handle pllHandle, const uint16_t lockPeriod)

Sets the phase lock loop (PLL) lock time.

Parameters:

- ← **pllHandle** The phase lock loop (PLL) object handle
- ← **lockPeriod** The lock period, cycles

12.2.5.17 void PLL_setMultiplier (PLL_Handle pllHandle, const PLL_Multiplier_e freq)

Sets the phase lock loop (PLL) clock frequency.

Parameters:

- ← **pllHandle** The phase lock loop (PLL) object handle
- ← **freq** The clock frequency

12.2.5.18 void PLL_setup (PLL_Handle pllHandle, const PLL_Multiplier_e clkMult, const PLL_DivideSelect_e divSelect)

Sets the phase lock loop (PLL) divider and multiplier.

Parameters:

- ← **pllHandle** The phase lock loop (PLL) object handle
- ← **clkMult** The clock multiplier value
- ← **divSelect** The divide select value

13 Pulse Width Modulator (PWM)

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13.1 Introduction

The pulse width modulation peripheral (PWM) APIs provide functions for configuring and updating the PWM peripherals on this device.

This driver is contained in `f2802x/common/source/pwm.c`, with `f2802x/common/include/pwm.h` containing the API definitions for use by applications.

13.2 PWM

Data Structures

- `_PWM_Obj_`

Defines

- `PWM_AQCTL_CAD_BITS`
- `PWM_AQCTL_CAU_BITS`
- `PWM_AQCTL_CBD_BITS`
- `PWM_AQCTL_CBU_BITS`
- `PWM_AQCTL_PRD_BITS`
- `PWM_AQCTL_ZRO_BITS`
- `PWM_CMPCTL_LOADAMODE_BITS`
- `PWM_CMPCTL_LOADBMODE_BITS`
- `PWM_CMPCTL_SHDWAFULL_BITS`
- `PWM_CMPCTL_SHDWAMODE_BITS`
- `PWM_CMPCTL_SHDWBFULL_BITS`
- `PWM_CMPCTL_SHDWBMODE_BITS`
- `PWM_DBCTL_HALFCYCLE_BITS`
- `PWM_DBCTL_INMODE_BITS`
- `PWM_DBCTL_OUTMODE_BITS`
- `PWM_DBCTL_POLSEL_BITS`
- `PWM_DCFCTL_BLANKE_BITS`
- `PWM_DCFCTL_BLANKINV_BITS`
- `PWM_DCFCTL_PULSESEL_BITS`
- `PWM_DCFCTL_SRCSEL_BITS`
- `PWM_DCTRIPSEL_DCAHCOMPSEL_BITS`

- PWM_DCTRISEL_DCALCOMPSEL_BITS
- PWM_DCTRISEL_DCBHCOMPSEL_BITS
- PWM_DCTRISEL_DCBLCOMPSEL_BITS
- PWM_ePWM1_BASE_ADDR
- PWM_ePWM2_BASE_ADDR
- PWM_ePWM3_BASE_ADDR
- PWM_ePWM4_BASE_ADDR
- PWM_ETCLR_INT_BITS
- PWM_ETCLR_SOCA_BITS
- PWM_ETCLR_SOCB_BITS
- PWM_ETPS_INTCNT_BITS
- PWM_ETPS_INTPRD_BITS
- PWM_ETPS_SOCACNT_BITS
- PWM_ETPS_SOCAPRD_BITS
- PWM_ETPS_SOCBCNT_BITS
- PWM_ETPS_SOCBPRD_BITS
- PWM_ETSEL_INTEN_BITS
- PWM_ETSEL_INTSEL_BITS
- PWM_ETSEL_SOCAEN_BITS
- PWM_ETSEL_SOCASEL_BITS
- PWM_ETSEL_SOCBEN_BITS
- PWM_ETSEL_SOCBSEL_BITS
- PWM_HRCNFG_AUTOCONV_BITS
- PWM_HRCNFG_CTLMODE_BITS
- PWM_HRCNFG_EDGMODE_BITS
- PWM_HRCNFG_HRLOAD_BITS
- PWM_HRCNFG_SELOUTB_BITS
- PWM_HRCNFG_SWAPAB_BITS
- PWM_HRPCTL_HRPE_BITS
- PWM_HRPCTL_PWMSYNCSEL_BITS
- PWM_HRPCTL_TBPHSHRLOADE_BITS
- PWM_PCCTL_CHPDUTY_BITS
- PWM_PCCTL_CHPEN_BITS
- PWM_PCCTL_CHPFREQ_BITS
- PWM_PCCTL_OSHTWTH_BITS
- PWM_TBCTL_CLKDIV_BITS
- PWM_TBCTL_CTRMODE_BITS
- PWM_TBCTL_FREESOFT_BITS
- PWM_TBCTL_HSPCLKDIV_BITS
- PWM_TBCTL_PHSDIR_BITS
- PWM_TBCTL_PHSN_BITS
- PWM_TBCTL_PRDLT_BITS
- PWM_TBCTL_SWFSYNC_BITS
- PWM_TBCTL_SYNCSEL_BITS
- PWM_TZCLR_CBC_BITS
- PWM_TZCLR_DCAEVT1_BITS

- [PWM_TZCLR_DCAEVT2_BITS](#)
- [PWM_TZCLR_DCBEVT1_BITS](#)
- [PWM_TZCLR_DCBEVT2_BITS](#)
- [PWM_TZCLR_INT_BITS](#)
- [PWM_TZCLR_OST_BITS](#)
- [PWM_TZCTL_DCAEVT1_BITS](#)
- [PWM_TZCTL_DCAEVT2_BITS](#)
- [PWM_TZCTL_DCBEVT1_BITS](#)
- [PWM_TZCTL_DCBEVT2_BITS](#)
- [PWM_TZCTL_TZA_BITS](#)
- [PWM_TZCTL_TZB_BITS](#)
- [PWM_TZDCSEL_DCAEVT1_BITS](#)
- [PWM_TZDCSEL_DCAEVT2_BITS](#)
- [PWM_TZDCSEL_DCBEVT1_BITS](#)
- [PWM_TZDCSEL_DCBEVT2_BITS](#)
- [PWM_TZFRC_CBC_BITS](#)
- [PWM_TZFRC_DCAEVT1_BITS](#)
- [PWM_TZFRC_DCAEVT2_BITS](#)
- [PWM_TZFRC_DCBEVT1_BITS](#)
- [PWM_TZFRC_DCBEVT2_BITS](#)
- [PWM_TZFRC_OST_BITS](#)

Enumerations

- [PWM_ActionQual_e](#)
- [PWM_TripZoneFlag_e](#)
- [PWM_TripZoneSrc_e](#)

Functions

- void [PWM_clearIntFlag](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_clearOneShotTrip](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_clearSocAFlag](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_clearSocBFlag](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_clearTripZone](#) ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneFlag_e](#) tripZoneFlag)
- void [PWM_decrementDeadBandFallingEdgeDelay](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_decrementDeadBandRisingEdgeDelay](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableAutoConvert](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableChopping](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableCounterLoad](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableDeadBand](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableDeadBandHalfCycle](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableDigitalCompareBlankingWindow](#) ([PWM_Handle](#) pwmHandle)
- void [PWM_disableDigitalCompareBlankingWindowInversion](#) ([PWM_Handle](#) pwmHandle)

- void [PWM_disableHrPeriod](#) (PWM_Handle pwmHandle)
- void [PWM_disableHrPhaseSync](#) (PWM_Handle pwmHandle)
- void [PWM_disableInt](#) (PWM_Handle pwmHandle)
- void [PWM_disableSocAPulse](#) (PWM_Handle pwmHandle)
- void [PWM_disableSocBPulse](#) (PWM_Handle pwmHandle)
- void [PWM_disableTripZoneInt](#) (PWM_Handle pwmHandle, const [PWM_TripZoneFlag_e](#) interruptSource)
- void [PWM_disableTripZones](#) (PWM_Handle pwmHandle)
- void [PWM_disableTripZoneSrc](#) (PWM_Handle pwmHandle, const [PWM_TripZoneSrc_e](#) src)
- void [PWM_enableAutoConvert](#) (PWM_Handle pwmHandle)
- void [PWM_enableChopping](#) (PWM_Handle pwmHandle)
- void [PWM_enableCounterLoad](#) (PWM_Handle pwmHandle)
- void [PWM_enableDeadBandHalfCycle](#) (PWM_Handle pwmHandle)
- void [PWM_enableDigitalCompareBlankingWindow](#) (PWM_Handle pwmHandle)
- void [PWM_enableDigitalCompareBlankingWindowInversion](#) (PWM_Handle pwmHandle)
- void [PWM_enableHrPeriod](#) (PWM_Handle pwmHandle)
- void [PWM_enableHrPhaseSync](#) (PWM_Handle pwmHandle)
- void [PWM_enableInt](#) (PWM_Handle pwmHandle)
- void [PWM_enableSocAPulse](#) (PWM_Handle pwmHandle)
- void [PWM_enableSocBPulse](#) (PWM_Handle pwmHandle)
- void [PWM_enableTripZoneInt](#) (PWM_Handle pwmHandle, const [PWM_TripZoneFlag_e](#) interruptSource)
- void [PWM_enableTripZoneSrc](#) (PWM_Handle pwmHandle, const [PWM_TripZoneSrc_e](#) src)
- void [PWM_forceSync](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getCmpA](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getCmpAHr](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getCmpB](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getDeadBandFallingEdgeDelay](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getDeadBandRisingEdgeDelay](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getIntCount](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getPeriod](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getSocACount](#) (PWM_Handle pwmHandle)
- uint16_t [PWM_getSocBCount](#) (PWM_Handle pwmHandle)
- void [PWM_incrementDeadBandFallingEdgeDelay](#) (PWM_Handle pwmHandle)
- void [PWM_incrementDeadBandRisingEdgeDelay](#) (PWM_Handle pwmHandle)
- [PWM_Handle](#) [PWM_init](#) (void *pMemory, const size_t numBytes)
- void [PWM_setActionQual_CntDown_CmpA_PwmA](#) (PWM_Handle pwmHandle, const [PWM_ActionQual_e](#) actionQual)
- void [PWM_setActionQual_CntDown_CmpA_PwmB](#) (PWM_Handle pwmHandle, const [PWM_ActionQual_e](#) actionQual)
- void [PWM_setActionQual_CntDown_CmpB_PwmA](#) (PWM_Handle pwmHandle, const [PWM_ActionQual_e](#) actionQual)
- void [PWM_setActionQual_CntDown_CmpB_PwmB](#) (PWM_Handle pwmHandle, const [PWM_ActionQual_e](#) actionQual)
- void [PWM_setActionQual_CntUp_CmpA_PwmA](#) (PWM_Handle pwmHandle, const [PWM_ActionQual_e](#) actionQual)

- void `PWM_setActionQual_CntUp_CmpA_PwmB` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_CntUp_CmpB_PwmA` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_CntUp_CmpB_PwmB` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_Period_PwmA` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_Period_PwmB` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_Zero_PwmA` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setActionQual_Zero_PwmB` (`PWM_Handle` pwmHandle, const `PWM_ActionQual_e` actionQual)
- void `PWM_setChoppingClkFreq` (`PWM_Handle` pwmHandle, const `PWM_ChoppingClkFreq_e` clkFreq)
- void `PWM_setChoppingDutyCycle` (`PWM_Handle` pwmHandle, const `PWM_ChoppingDutyCycle_e` dutyCycle)
- void `PWM_setChoppingPulseWidth` (`PWM_Handle` pwmHandle, const `PWM_ChoppingPulseWidth_e` pulseWidth)
- void `PWM_setClkDiv` (`PWM_Handle` pwmHandle, const `PWM_ClkDiv_e` clkDiv)
- void `PWM_setCmpA` (`PWM_Handle` pwmHandle, const uint16_t pwmData)
- void `PWM_setCmpAhr` (`PWM_Handle` pwmHandle, const uint16_t pwmData)
- void `PWM_setCmpB` (`PWM_Handle` pwmHandle, const uint16_t pwmData)
- void `PWM_setCount` (`PWM_Handle` pwmHandle, const uint16_t count)
- void `PWM_setCounterMode` (`PWM_Handle` pwmHandle, const `PWM_CounterMode_e` counterMode)
- void `PWM_setDeadBandFallingEdgeDelay` (`PWM_Handle` pwmHandle, const uint16_t delay)
- void `PWM_setDeadBandInputMode` (`PWM_Handle` pwmHandle, const `PWM_DeadBandInputMode_e` inputMode)
- void `PWM_setDeadBandOutputMode` (`PWM_Handle` pwmHandle, const `PWM_DeadBandOutputMode_e` outputMode)
- void `PWM_setDeadBandPolarity` (`PWM_Handle` pwmHandle, const `PWM_DeadBandPolarity_e` polarity)
- void `PWM_setDeadBandRisingEdgeDelay` (`PWM_Handle` pwmHandle, const uint16_t delay)
- void `PWM_setDigitalCompareAEvent1` (`PWM_Handle` pwmHandle, const bool_t selectFilter, const bool_t disableSync, const bool_t enableSoc, const bool_t generateSync)
- void `PWM_setDigitalCompareAEvent2` (`PWM_Handle` pwmHandle, const bool_t selectFilter, const bool_t disableSync)
- void `PWM_setDigitalCompareBEvent1` (`PWM_Handle` pwmHandle, const bool_t selectFilter, const bool_t disableSync, const bool_t enableSoc, const bool_t generateSync)
- void `PWM_setDigitalCompareBEvent2` (`PWM_Handle` pwmHandle, const bool_t selectFilter, const bool_t disableSync)
- void `PWM_setDigitalCompareBlankingPulse` (`PWM_Handle` pwmHandle, const `PWM_DigitalCompare_PulseSel_e` pulseSelect)
- void `PWM_setDigitalCompareFilterOffset` (`PWM_Handle` pwmHandle, const uint16_t offset)
- void `PWM_setDigitalCompareFilterSource` (`PWM_Handle` pwmHandle, const `PWM_DigitalCompare_FilterSrc_e` input)

- void `PWM_setDigitalCompareFilterWindow` (`PWM_Handle` pwmHandle, const uint16_t window)
- void `PWM_setDigitalCompareInput` (`PWM_Handle` pwmHandle, const `PWM_DigitalCompare_Input_e` input, const `PWM_DigitalCompare_InputSel_e` inputSel)
- void `PWM_setHighSpeedClkDiv` (`PWM_Handle` pwmHandle, const `PWM_HspClkDiv_e` clkDiv)
- void `PWM_setHrControlMode` (`PWM_Handle` pwmHandle, const `PWM_HrControlMode_e` controlMode)
- void `PWM_setHrEdgeMode` (`PWM_Handle` pwmHandle, const `PWM_HrEdgeMode_e` edgeMode)
- void `PWM_setHrShadowMode` (`PWM_Handle` pwmHandle, const `PWM_HrShadowMode_e` shadowMode)
- void `PWM_setIntMode` (`PWM_Handle` pwmHandle, const `PWM_IntMode_e` intMode)
- void `PWM_setIntPeriod` (`PWM_Handle` pwmHandle, const `PWM_IntPeriod_e` intPeriod)
- void `PWM_setLoadMode_CmpA` (`PWM_Handle` pwmHandle, const `PWM_LoadMode_e` loadMode)
- void `PWM_setLoadMode_CmpB` (`PWM_Handle` pwmHandle, const `PWM_LoadMode_e` loadMode)
- void `PWM_setOneShotTrip` (`PWM_Handle` pwmHandle)
- void `PWM_setPeriod` (`PWM_Handle` pwmHandle, const uint16_t period)
- void `PWM_setPeriodHr` (`PWM_Handle` pwmHandle, const uint16_t period)
- void `PWM_setPeriodLoad` (`PWM_Handle` pwmHandle, const `PWM_PeriodLoad_e` periodLoad)
- void `PWM_setPhase` (`PWM_Handle` pwmHandle, const uint16_t phase)
- void `PWM_setPhaseDir` (`PWM_Handle` pwmHandle, const `PWM_PhaseDir_e` phaseDir)
- void `PWM_setRunMode` (`PWM_Handle` pwmHandle, const `PWM_RunMode_e` runMode)
- void `PWM_setShadowMode_CmpA` (`PWM_Handle` pwmHandle, const `PWM_ShadowMode_e` shadowMode)
- void `PWM_setShadowMode_CmpB` (`PWM_Handle` pwmHandle, const `PWM_ShadowMode_e` shadowMode)
- void `PWM_setSocAPeriod` (`PWM_Handle` pwmHandle, const `PWM_SocPeriod_e` intPeriod)
- void `PWM_setSocAPulseSrc` (`PWM_Handle` pwmHandle, const `PWM_SocPulseSrc_e` pulseSrc)
- void `PWM_setSocBPeriod` (`PWM_Handle` pwmHandle, const `PWM_SocPeriod_e` intPeriod)
- void `PWM_setSocBPulseSrc` (`PWM_Handle` pwmHandle, const `PWM_SocPulseSrc_e` pulseSrc)
- void `PWM_setSwSync` (`PWM_Handle` pwmHandle)
- void `PWM_setSyncMode` (`PWM_Handle` pwmHandle, const `PWM_SyncMode_e` syncMode)
- void `PWM_setTripZoneDCEventSelect_DCAEVT1` (`PWM_Handle` pwmHandle, const `PWM_TripZoneDCEventSel_e` tripZoneEvent)
- void `PWM_setTripZoneDCEventSelect_DCAEVT2` (`PWM_Handle` pwmHandle, const `PWM_TripZoneDCEventSel_e` tripZoneEvent)
- void `PWM_setTripZoneDCEventSelect_DCBEVT1` (`PWM_Handle` pwmHandle, const `PWM_TripZoneDCEventSel_e` tripZoneEvent)
- void `PWM_setTripZoneDCEventSelect_DCBEVT2` (`PWM_Handle` pwmHandle, const `PWM_TripZoneDCEventSel_e` tripZoneEvent)
- void `PWM_setTripZoneState_DCAEVT1` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)

- void `PWM_setTripZoneState_DCAEVT2` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)
- void `PWM_setTripZoneState_DCBEVT1` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)
- void `PWM_setTripZoneState_DCBEVT2` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)
- void `PWM_setTripZoneState_TZA` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)
- void `PWM_setTripZoneState_TZB` (`PWM_Handle` pwmHandle, const `PWM_TripZoneState_e` tripZoneState)
- void `PWM_write_CmpA` (`PWM_Handle` pwmHandle, const int16_t pwmData)
- void `PWM_write_CmpB` (`PWM_Handle` pwmHandle, const int16_t pwmData)

13.2.1 Data Structure Documentation

13.2.1.1 _PWM_Obj_

Definition:

```
typedef struct
{
    uint16_t TBCTL;
    uint16_t TBSTS;
    uint16_t TBPHSHR;
    uint16_t TBPBS;
    uint16_t TBCTR;
    uint16_t TBPRD;
    uint16_t TBPRDHR;
    uint16_t CMPCTL;
    uint16_t CMPAHR;
    uint16_t CMPA;
    uint16_t CMPB;
    uint16_t AQCTLA;
    uint16_t AQCTLB;
    uint16_t AQSFRC;
    uint16_t AQCSFRC;
    uint16_t DBCTL;
    uint16_t DBRED;
    uint16_t DBFED;
    uint16_t TZSEL;
    uint16_t TZDCSEL;
    uint16_t TZCTL;
    uint16_t TZEINT;
    uint16_t TZFLG;
    uint16_t TZCLR;
    uint16_t TZFRC;
    uint16_t ETSEL;
    uint16_t ETPS;
    uint16_t ETFLG;
    uint16_t ETCLR;
    uint16_t ETFRC;
```

```
uint16_t PCCTL;  
uint16_t rsvd_1;  
uint16_t HRCNFG;  
uint16_t HRPWR;  
uint16_t rsvd_2[4];  
uint16_t HRMSTEP;  
uint16_t rsvd_3;  
uint16_t HRPCTL;  
uint16_t rsvd_4;  
uint16_t TBPRDHRM;  
uint16_t TBPRDM;  
uint16_t CMPAHRM;  
uint16_t CMPAM;  
uint16_t rsvd_5[2];  
uint16_t DCTRIPSEL;  
uint16_t DCACTL;  
uint16_t DCBCTL;  
uint16_t DCFCTL;  
uint16_t DCCAPCTL;  
uint16_t DCFOFFSET;  
uint16_t DCFOFFSETCNT;  
uint16_t DCFWINDOW;  
uint16_t DCFWINDOWCNT;  
uint16_t DCCAP;  
}  
__PWM_Obj__
```

Members:

TBCTL Time-Base Control Register.
TBSTS Time-Base Status Register.
TBPHSHR Extension for the HRPWM Phase Register.
TBPHS Time-Base Phase Register.
TBCTR Time-Base Counter.
TBPRD Time-Base Period register set.
TBPRDHR Time-Base Period High Resolution Register.
CMPCTL Counter-Compare Control Register.
CMPAHR Extension of HRPWM Counter-Compare A Register.
CMPA Counter-Compare A Register.
CMPB Counter-Compare B Register.
AQCTLA Action-Qualifier Control Register for Output A (EPWMxA).
AQCTLB Action-Qualifier Control Register for Output B (EPWMxB).
AQSFR Action qual SW force.
AQCSFR Action qualifier continuous SW force.
DBCTL Dead-band control.
DBRED Dead-band rising edge delay.
DBFED Dead-band falling edge delay.
TZSEL Trip zone select.
TZDCSEL Trip zone digital comparator select.
TZCTL Trip zone control.
TZEINT Trip zone interrupt enable.

TZFLG Trip zone interrupt flags.
TZCLR Trip zone clear.
TZFRC Trip zone force interrupt.
ETSEL Event trigger selection.
ETPS Event trigger pre-scaler.
ETFLG Event trigger flags.
ETCLR Event trigger clear.
ETFRC Event trigger force.
PCCTL PWM chopper control.
rsvd_1 Reserved.
HRCNFG HRPWM Config Reg.
HRPWR HRPWM Power Register.
rsvd_2 Reserved.
HRMSTEP HRPWM MEP Step Register.
rsvd_3 Reserved.
HRPCTL High Resolution Period Control.
rsvd_4 Reserved.
TBPRDHrm Time base period High Resolution register mirror.
TBPRDM Time base period register mirror.
CMPAHRM Compare A High Resolution register mirror.
CMPAM Compare A register mirror.
rsvd_5 Reserved.
DCTRIPSEL Digital Compare Trip Select.
DCACTL Digital Compare A Control.
DCBCTL Digital Compare B Control.
DCFCTL Digital Compare Filter Control.
DCCAPCTL Digital Compare Capture Control.
DCFOFFSET Digital Compare Filter Offset.
DCFOFFSETCNT Digital Compare Filter Offset Counter.
DCFWINDOW Digital Compare Filter Window.
DCFWINDOWCNT Digital Compare Filter Window Counter.
DCCAP Digital Compare Filter Counter Capture.

Description:

Defines the pulse width modulation (PWM) object.

13.2.2 Define Documentation

13.2.2.1 PWM_AQCTL_CAD_BITS

Definition:

```
#define PWM_AQCTL_CAD_BITS
```

Description:

Defines the location of the CAD bits in the AQCTL register.

13.2.2.2 PWM_AQCTL_CAU_BITS

Definition:

```
#define PWM_AQCTL_CAU_BITS
```

Description:

Defines the location of the CAU bits in the AQCTL register.

13.2.2.3 PWM_AQCTL_CBD_BITS

Definition:

```
#define PWM_AQCTL_CBD_BITS
```

Description:

Defines the location of the CBD bits in the AQCTL register.

13.2.2.4 PWM_AQCTL_CBU_BITS

Definition:

```
#define PWM_AQCTL_CBU_BITS
```

Description:

Defines the location of the CBU bits in the AQCTL register.

13.2.2.5 PWM_AQCTL_PRD_BITS

Definition:

```
#define PWM_AQCTL_PRD_BITS
```

Description:

Defines the location of the PRD bits in the AQCTL register.

13.2.2.6 PWM_AQCTL_ZRO_BITS

Definition:

```
#define PWM_AQCTL_ZRO_BITS
```

Description:

Defines the location of the ZRO bits in the AQCTL register.

13.2.2.7 PWM_CMPCTL_LOADAMODE_BITS

Definition:

```
#define PWM_CMPCTL_LOADAMODE_BITS
```

Description:

Defines the location of the LOADAMODE bits in the CMPCTL register.

13.2.2.8 PWM_CMPCTL_LOADBMODE_BITS

Definition:

```
#define PWM_CMPCTL_LOADBMODE_BITS
```

Description:

Defines the location of the LOADBMODE bits in the CMPCTL register.

13.2.2.9 PWM_CMPCTL_SHDWAFULL_BITS

Definition:

```
#define PWM_CMPCTL_SHDWAFULL_BITS
```

Description:

Defines the location of the SHDWAFULL bits in the CMPCTL register.

13.2.2.10 PWM_CMPCTL_SHDWAMODE_BITS

Definition:

```
#define PWM_CMPCTL_SHDWAMODE_BITS
```

Description:

Defines the location of the SHDWAMODE bits in the CMPCTL register.

13.2.2.11 PWM_CMPCTL_SHDWBFULL_BITS

Definition:

```
#define PWM_CMPCTL_SHDWBFULL_BITS
```

Description:

Defines the location of the SHDWBFULL bits in the CMPCTL register.

13.2.2.12 PWM_CMPCTL_SHDWBMODE_BITS

Definition:

```
#define PWM_CMPCTL_SHDWBMODE_BITS
```

Description:

Defines the location of the SHDWBMODE bits in the CMPCTL register.

13.2.2.13 PWM_DBCTL_HALFCYCLE_BITS

Definition:

```
#define PWM_DBCTL_HALFCYCLE_BITS
```

Description:

Defines the location of the HALFCYCLE bits in the DBCTL register.

13.2.2.14 PWM_DBCTL_INMODE_BITS

Definition:

```
#define PWM_DBCTL_INMODE_BITS
```

Description:

Defines the location of the INMODE bits in the DBCTL register.

13.2.2.15 PWM_DBCTL_OUTMODE_BITS

Definition:

```
#define PWM_DBCTL_OUTMODE_BITS
```

Description:

Defines the location of the OUTMODE bits in the DBCTL register.

13.2.2.16 PWM_DBCTL_POLSEL_BITS

Definition:

```
#define PWM_DBCTL_POLSEL_BITS
```

Description:

Defines the location of the POLSEL bits in the DBCTL register.

13.2.2.17 PWM_DCFCTL_BLANKE_BITS

Definition:

```
#define PWM_DCFCTL_BLANKE_BITS
```

Description:

Defines the location of the BLANKE bits in the DCFCTL register.

13.2.2.18 PWM_DCFCTL_BLANKINV_BITS

Definition:

```
#define PWM_DCFCTL_BLANKINV_BITS
```

Description:

Defines the location of the BLANKINV bits in the DCFCTL register.

13.2.2.19 PWM_DCFCTL_PULSESEL_BITS

Definition:

```
#define PWM_DCFCTL_PULSESEL_BITS
```

Description:

Defines the location of the PULSESEL bits in the DCFCTL register.

13.2.2.20 PWM_DCFCTL_SRCSEL_BITS

Definition:

```
#define PWM_DCFCTL_SRCSEL_BITS
```

Description:

Defines the location of the SRCSEL bits in the DCFCTL register.

13.2.2.21 PWM_DCTRIPSEL_DCAHCOMPSEL_BITS

Definition:

```
#define PWM_DCTRIPSEL_DCAHCOMPSEL_BITS
```

Description:

Defines the location of the DCAHCOMPSEL bits in the DCTRIPSEL register.

13.2.2.22 PWM_DCTRIPSEL_DCALCOMPSEL_BITS

Definition:

```
#define PWM_DCTRIPSEL_DCALCOMPSEL_BITS
```

Description:

Defines the location of the DCALCOMPSEL bits in the DCTRIPSEL register.

13.2.2.23 PWM_DCTRIPSEL_DCBHCOMPSEL_BITS

Definition:

```
#define PWM_DCTRIPSEL_DCBHCOMPSEL_BITS
```

Description:

Defines the location of the DCBHCOMPSEL bits in the DCTRIPSEL register.

13.2.2.24 PWM_DCTRIPSEL_DCBLCOMPSEL_BITS

Definition:

```
#define PWM_DCTRIPSEL_DCBLCOMPSEL_BITS
```

Description:

Defines the location of the DCBLCOMPSEL bits in the DCTRIPSEL register.

13.2.2.25 PWM_ePWM1_BASE_ADDR

Definition:

```
#define PWM_ePWM1_BASE_ADDR
```

Description:

Defines the base address of the pulse width modulation (PWM) 1 registers.

13.2.2.26 PWM_ePWM2_BASE_ADDR

Definition:

```
#define PWM_ePWM2_BASE_ADDR
```

Description:

Defines the base address of the pulse width modulation (PWM) 2 registers.

13.2.2.27 PWM_ePWM3_BASE_ADDR

Definition:

```
#define PWM_ePWM3_BASE_ADDR
```

Description:

Defines the base address of the pulse width modulation (PWM) 3 registers.

13.2.2.28 PWM_ePWM4_BASE_ADDR

Definition:

```
#define PWM_ePWM4_BASE_ADDR
```

Description:

Defines the base address of the pulse width modulation (PWM) 4 registers.

13.2.2.29 PWM_ETCLR_INT_BITS

Definition:

```
#define PWM_ETCLR_INT_BITS
```

Description:

Defines the location of the ETCR bits in the ETCLR register.

13.2.2.30 PWM_ETCLR_SOCA_BITS

Definition:

```
#define PWM_ETCLR_SOCA_BITS
```

Description:

Defines the location of the SOCA bits in the ETCLR register.

13.2.2.31 PWM_ETCLR_SOCB_BITS

Definition:

```
#define PWM_ETCLR_SOCB_BITS
```

Description:

Defines the location of the SOCB bits in the ETCLR register.

13.2.2.32 PWM_ETPS_INTCNT_BITS

Definition:

```
#define PWM_ETPS_INTCNT_BITS
```

Description:

Defines the location of the INTCNT bits in the ETPS register.

13.2.2.33 PWM_ETPS_INTPRD_BITS

Definition:

```
#define PWM_ETPS_INTPRD_BITS
```

Description:

Defines the location of the INTPRD bits in the ETPS register.

13.2.2.34 PWM_ETPS_SOCACNT_BITS

Definition:

```
#define PWM_ETPS_SOCACNT_BITS
```

Description:

Defines the location of the SOCACNT bits in the ETPS register.

13.2.2.35 PWM_ETPS_SOCAPRD_BITS

Definition:

```
#define PWM_ETPS_SOCAPRD_BITS
```

Description:

Defines the location of the SOCAPRD bits in the ETPS register.

13.2.2.36 PWM_ETPS_SOCBCNT_BITS

Definition:

```
#define PWM_ETPS_SOCBCNT_BITS
```

Description:

Defines the location of the SOCBCNT bits in the ETPS register.

13.2.2.37 PWM_ETPS_SOCBPRD_BITS

Definition:

```
#define PWM_ETPS_SOCBPRD_BITS
```

Description:

Defines the location of the SOCBPRD bits in the ETPS register.

13.2.2.38 PWM_ETSEL_INTEN_BITS

Definition:

```
#define PWM_ETSEL_INTEN_BITS
```

Description:

Defines the location of the INTEN bits in the ETSEL register.

13.2.2.39 PWM_ETSEL_INTSEL_BITS

Definition:

```
#define PWM_ETSEL_INTSEL_BITS
```

Description:

Defines the location of the INTSEL bits in the ETSEL register.

13.2.2.40 PWM_ETSEL_SOCAEN_BITS

Definition:

```
#define PWM_ETSEL_SOCAEN_BITS
```

Description:

Defines the location of the SOCAEN bits in the ETSEL register.

13.2.2.41 PWM_ETSEL_SOCASEL_BITS

Definition:

```
#define PWM_ETSEL_SOCASEL_BITS
```

Description:

Defines the location of the SOCASEL bits in the ETSEL register.

13.2.2.42 PWM_ETSEL_SOCBEN_BITS

Definition:

```
#define PWM_ETSEL_SOCBEN_BITS
```

Description:

Defines the location of the SOCBEN bits in the ETSEL register.

13.2.2.43 PWM_ETSEL_SOCBSEL_BITS

Definition:

```
#define PWM_ETSEL_SOCBSEL_BITS
```

Description:

Defines the location of the SOCBSEL bits in the ETSEL register.

13.2.2.44 PWM_HRCNFG_AUTOCONV_BITS

Definition:

```
#define PWM_HRCNFG_AUTOCONV_BITS
```

Description:

Defines the location of the AUTOCONV bits in the HRCNFG register.

13.2.2.45 PWM_HRCNFG_CTLMODE_BITS

Definition:

```
#define PWM_HRCNFG_CTLMODE_BITS
```

Description:

Defines the location of the CTLMODE bits in the HRCNFG register.

13.2.2.46 PWM_HRCNFG_EDGMODE_BITS

Definition:

```
#define PWM_HRCNFG_EDGMODE_BITS
```

Description:

Defines the location of the EDGMODE bits in the HRCNFG register.

13.2.2.47 PWM_HRCNFG_HRLOAD_BITS

Definition:

```
#define PWM_HRCNFG_HRLOAD_BITS
```

Description:

Defines the location of the HRLOAD bits in the HRCNFG register.

13.2.2.48 PWM_HRCNFG_SELOUTB_BITS

Definition:

```
#define PWM_HRCNFG_SELOUTB_BITS
```

Description:

Defines the location of the SELOUTB bits in the HRCNFG register.

13.2.2.49 PWM_HRCNFG_SWAPAB_BITS

Definition:

```
#define PWM_HRCNFG_SWAPAB_BITS
```

Description:

Defines the location of the SWAPAB bits in the HRCNFG register.

13.2.2.50 PWM_HRPCTL_HRPE_BITS

Definition:

```
#define PWM_HRPCTL_HRPE_BITS
```

Description:

Defines the location of the HRPE bits in the HRPCTL register.

13.2.2.51 PWM_HRPCTL_PWMSYNCSEL_BITS

Definition:

```
#define PWM_HRPCTL_PWMSYNCSEL_BITS
```

Description:

Defines the location of the PWMSYNCSEL bits in the HRPCTL register.

13.2.2.52 PWM_HRPCTL_TBPHSHRLOADE_BITS

Definition:

```
#define PWM_HRPCTL_TBPHSHRLOADE_BITS
```

Description:

Defines the location of the TBPHSHRLOADE bits in the HRPCTL register.

13.2.2.53 PWM_PCCTL_CHPDUTY_BITS

Definition:

```
#define PWM_PCCTL_CHPDUTY_BITS
```

Description:

Defines the location of the CHPDUTY bits in the PCCTL register.

13.2.2.54 PWM_PCCTL_CHPEN_BITS

Definition:

```
#define PWM_PCCTL_CHPEN_BITS
```

Description:

Defines the location of the CHPEN bits in the PCCTL register.

13.2.2.55 PWM_PCCTL_CHPFREQ_BITS

Definition:

```
#define PWM_PCCTL_CHPFREQ_BITS
```

Description:

Defines the location of the CHPFREQ bits in the PCCTL register.

13.2.2.56 PWM_PCCTL_OSHTWTH_BITS

Definition:

```
#define PWM_PCCTL_OSHTWTH_BITS
```

Description:

Defines the location of the OSHTWTH bits in the PCCTL register.

13.2.2.57 PWM_TBCTL_CLKDIV_BITS

Definition:

```
#define PWM_TBCTL_CLKDIV_BITS
```

Description:

Defines the location of the CLKDIV bits in the TBCTL register.

13.2.2.58 PWM_TBCTL_CTRMODE_BITS

Definition:

```
#define PWM_TBCTL_CTRMODE_BITS
```

Description:

Defines the location of the CTRMODE bits in the TBCTL register.

13.2.2.59 PWM_TBCTL_FREESOFT_BITS

Definition:

```
#define PWM_TBCTL_FREESOFT_BITS
```

Description:

Defines the location of the FREESOFT bits in the TBCTL register.

13.2.2.60 PWM_TBCTL_HSPCLKDIV_BITS

Definition:

```
#define PWM_TBCTL_HSPCLKDIV_BITS
```

Description:

Defines the location of the HSPCLKDIV bits in the TBCTL register.

13.2.2.61 PWM_TBCTL_PHSDIR_BITS

Definition:

```
#define PWM_TBCTL_PHSDIR_BITS
```

Description:

Defines the location of the PHSDIR bits in the TBCTL register.

13.2.2.62 PWM_TBCTL_PHSEN_BITS

Definition:

```
#define PWM_TBCTL_PHSEN_BITS
```

Description:

Defines the location of the PHSEN bits in the TBCTL register.

13.2.2.63 PWM_TBCTL_PRDLD_BITS

Definition:

```
#define PWM_TBCTL_PRDLD_BITS
```

Description:

Defines the location of the PRDLD bits in the TBCTL register.

13.2.2.64 PWM_TBCTL_SWFSYNC_BITS

Definition:

```
#define PWM_TBCTL_SWFSYNC_BITS
```

Description:

Defines the location of the SWFSYNC bits in the TBCTL register.

13.2.2.65 PWM_TBCTL_SYNCOSSEL_BITS

Definition:

```
#define PWM_TBCTL_SYNCOSSEL_BITS
```

Description:

Defines the location of the SYNCOSSEL bits in the TBCTL register.

13.2.2.66 PWM_TZCLR_CBC_BITS

Definition:

```
#define PWM_TZCLR_CBC_BITS
```

Description:

Defines the location of the CBC bits in the TXCLR register.

13.2.2.67 PWM_TZCLR_DCAEVT1_BITS

Definition:

```
#define PWM_TZCLR_DCAEVT1_BITS
```

Description:

Defines the location of the DCAEVT1 bits in the TXCLR register.

13.2.2.68 PWM_TZCLR_DCAEVT2_BITS

Definition:

```
#define PWM_TZCLR_DCAEVT2_BITS
```

Description:

Defines the location of the DCAEVT2 bits in the TXCLR register.

13.2.2.69 PWM_TZCLR_DCBEVT1_BITS

Definition:

```
#define PWM_TZCLR_DCBEVT1_BITS
```

Description:

Defines the location of the DCBEVT1 bits in the TXCLR register.

13.2.2.70 PWM_TZCLR_DCBEVT2_BITS

Definition:

```
#define PWM_TZCLR_DCBEVT2_BITS
```

Description:

Defines the location of the DCBEVT2 bits in the TXCLR register.

13.2.2.71 PWM_TZCLR_INT_BITS

Definition:

```
#define PWM_TZCLR_INT_BITS
```

Description:

Defines the location of the INT bits in the TXCLR register.

13.2.2.72 PWM_TZCLR_OST_BITS

Definition:

```
#define PWM_TZCLR_OST_BITS
```

Description:

Defines the location of the OST bits in the TXCLR register.

13.2.2.73 PWM_TZCTL_DCAEVT1_BITS

Definition:

```
#define PWM_TZCTL_DCAEVT1_BITS
```

Description:

Defines the location of the DCAEVT1 bits in the TZCTL register.

13.2.2.74 PWM_TZCTL_DCAEVT2_BITS

Definition:

```
#define PWM_TZCTL_DCAEVT2_BITS
```

Description:

Defines the location of the DCAEVT2 bits in the TZCTL register.

13.2.2.75 PWM_TZCTL_DCBEVT1_BITS

Definition:

```
#define PWM_TZCTL_DCBEVT1_BITS
```

Description:

Defines the location of the DCBEVT1 bits in the TZCTL register.

13.2.2.76 PWM_TZCTL_DCBEVT2_BITS

Definition:

```
#define PWM_TZCTL_DCBEVT2_BITS
```

Description:

Defines the location of the DCBEVT2 bits in the TZCTL register.

13.2.2.77 PWM_TZCTL_TZA_BITS

Definition:

```
#define PWM_TZCTL_TZA_BITS
```

Description:

Defines the location of the TZA bits in the TZCTL register.

13.2.2.78 PWM_TZCTL_TZB_BITS

Definition:

```
#define PWM_TZCTL_TZB_BITS
```

Description:

Defines the location of the TZB bits in the TZCTL register.

13.2.2.79 PWM_TZDCSEL_DCAEVT1_BITS

Definition:

```
#define PWM_TZDCSEL_DCAEVT1_BITS
```

Description:

Defines the location of the DCAEVT1 bits in the TZDCSEL register.

13.2.2.80 PWM_TZDCSEL_DCAEVT2_BITS

Definition:

```
#define PWM_TZDCSEL_DCAEVT2_BITS
```

Description:

Defines the location of the DCAEVT2 bits in the TZDCSEL register.

13.2.2.81 PWM_TZDCSEL_DCBEVT1_BITS

Definition:

```
#define PWM_TZDCSEL_DCBEVT1_BITS
```

Description:

Defines the location of the DCBEVT1 bits in the TZDCSEL register.

13.2.2.82 PWM_TZDCSEL_DCBEVT2_BITS

Definition:

```
#define PWM_TZDCSEL_DCBEVT2_BITS
```

Description:

Defines the location of the DCBEVT2 bits in the TZDCSEL register.

13.2.2.83 PWM_TZFRC_CBC_BITS

Definition:

```
#define PWM_TZFRC_CBC_BITS
```

Description:

Defines the location of the CBC bits in the TZFRC register.

13.2.2.84 PWM_TZFRC_DCAEVT1_BITS

Definition:

```
#define PWM_TZFRC_DCAEVT1_BITS
```

Description:

Defines the location of the DCAEVT1 bits in the TZFRC register.

13.2.2.85 PWM_TZFRC_DCAEVT2_BITS

Definition:

```
#define PWM_TZFRC_DCAEVT2_BITS
```

Description:

Defines the location of the DCAEVT2 bits in the TZFRC register.

13.2.2.86 PWM_TZFRC_DCBEVT1_BITS

Definition:

```
#define PWM_TZFRC_DCBEVT1_BITS
```

Description:

Defines the location of the DCBEVT1 bits in the TZFRC register.

13.2.2.87 PWM_TZFRC_DCBEVT2_BITS

Definition:

```
#define PWM_TZFRC_DCBEVT2_BITS
```

Description:

Defines the location of the DCBEVT2 bits in the TZFRC register.

13.2.2.88 PWM_TZFRC_OST_BITS

Definition:

```
#define PWM_TZFRC_OST_BITS
```

Description:

Defines the location of the OST bits in the TZFRC register.

13.2.3 Typedef Documentation

13.2.3.1 PWM_Handle

Definition:

```
typedef struct _PWM_Obj_ *PWM_Handle
```

Description:

Defines the pulse width modulation (PWM) handle.

13.2.3.2 PWM_Obj

Definition:

```
typedef struct _PWM_Obj_ PWM_Obj
```

Description:

Defines the pulse width modulation (PWM) object.

13.2.4 Enumeration Documentation

13.2.4.1 PWM_ActionQual_e

Description:

Enumeration to define the pulse width modulation (PWM) action qualifiers.

13.2.4.2 enum PWM_ChoppingClkFreq_e

Enumeration to define the pulse width modulation (PWM) chopping clock frequencies.

13.2.4.3 enum PWM_ChoppingDutyCycle_e

Enumeration to define the pulse width modulation (PWM) chopping clock duty cycles.

13.2.4.4 enum PWM_ChoppingPulseWidth_e

Enumeration to define the pulse width modulation (PWM) chopping clock pulse widths.

13.2.4.5 enum PWM_ClkDiv_e

Enumeration to define the pulse width modulation (PWM) clock dividers.

13.2.4.6 enum PWM_CounterMode_e

Enumeration to define the pulse width modulation (PWM) counter modes.

13.2.4.7 enum PWM_DeadBandInputMode_e

Enumeration to define the pulse width modulation (PWM) deadband options.

13.2.4.8 enum PWM_DeadBandOutputMode_e

Enumeration to define the pulse width modulation (PWM) deadband output modes.

13.2.4.9 enum PWM_DeadBandPolarity_e

Enumeration to define the pulse width modulation (PWM) deadband polarity.

13.2.4.10 enum PWM_DigitalCompare_FilterSrc_e

Enumeration to define the pulse width modulation (PWM) digital compare filter sources.

13.2.4.11 enum [PWM_DigitalCompare_Input_e](#)

Enumeration to define the pulse width modulation (PWM) digital compare inputs.

13.2.4.12 enum [PWM_DigitalCompare_InputSel_e](#)

Enumeration to define the pulse width modulation (PWM) digital compare input choices.

13.2.4.13 enum [PWM_DigitalCompare_PulseSel_e](#)

Enumeration to define the pulse width modulation (PWM) digital compare blanking pulse select.

13.2.4.14 enum [PWM_HrControlMode_e](#)

Enumeration to define the pulse width modulation (PWM) high resolution control mode options.

13.2.4.15 enum [PWM_HrEdgeMode_e](#)

Enumeration to define the pulse width modulation (PWM) high resolution edge mode options.

13.2.4.16 enum [PWM_HrShadowMode_e](#)

Enumeration to define the pulse width modulation (PWM) high resolution shadow load mode options.

13.2.4.17 enum [PWM_HspClkDiv_e](#)

Enumeration to define the pulse width modulation (PWM) high speed clock divide options.

13.2.4.18 enum [PWM_IntMode_e](#)

Enumeration to define the pulse width modulation (PWM) interrupt generation modes.

13.2.4.19 enum [PWM_IntPeriod_e](#)

Enumeration to define the pulse width modulation (PWM) interrupt period options.

13.2.4.20 enum [PWM_LoadMode_e](#)

Enumeration to define the pulse width modulation (PWM) load modes.

13.2.4.21 enum [PWM_Number_e](#)

Enumeration to define the pulse width modulation (PWM) numbers.

13.2.4.22 enum [PWM_PeriodLoad_e](#)

Enumeration to define the pulse width modulation (PWM) period load options.

13.2.4.23 enum [PWM_PhaseDir_e](#)

Enumeration to define the pulse width modulation (PWM) phase direction modes.

13.2.4.24 enum [PWM_RunMode_e](#)

Enumeration to define the pulse width modulation (PWM) run modes.

13.2.4.25 enum [PWM_ShadowMode_e](#)

Enumeration to define the pulse width modulation (PWM) shadow modes.

13.2.4.26 enum [PWM_ShadowStatus_e](#)

Enumeration to define the pulse width modulation (PWM) shadow status options.

13.2.4.27 enum [PWM_SocPeriod_e](#)

Enumeration to define the pulse width modulation (PWM) start of conversion (SOC) period options.

13.2.4.28 enum [PWM_SocPulseSrc_e](#)

Enumeration to define the pulse width modulation (PWM) start of conversion (SOC) sources.

13.2.4.29 enum [PWM_SyncMode_e](#)

Enumeration to define the pulse width modulation (PWM) sync modes.

13.2.4.30 enum [PWM_TripZoneDCEventSel_e](#)

Enumeration to define the pulse width modulation (PWM) trip zone event selections.

Enumerators:

PWM_TripZoneDCEventSel_Disabled Event Disabled.

PWM_TripZoneDCEventSel_DCxHL_DCxLX Compare H = Low, Compare L = Don't Care.

PWM_TripZoneDCEventSel_DCxHH_DCxLX Compare H = High, Compare L = Don't Care.

PWM_TripZoneDCEventSel_DCxHx_DCxLL Compare H = Don't Care, Compare L = Low.

PWM_TripZoneDCEventSel_DCxHx_DCxLH Compare H = Don't Care, Compare L = High.

PWM_TripZoneDCEventSel_DCxHL_DCxLH Compare H = Low, Compare L = High.

13.2.4.31 PWM_TripZoneFlag_e

Description:

Enumeration to define the pulse width modulation (PWM) trip zone states.

Enumerators:

PWM_TripZoneFlag_Global Global Trip Zone flag.

PWM_TripZoneFlag_CBC Cycle by cycle Trip Zone flag.

PWM_TripZoneFlag_OST One Shot Trip Zone flag.

PWM_TripZoneFlag_DCAEVT1 Digital Compare A Event 1 Trip Zone flag.

PWM_TripZoneFlag_DCAEVT2 Digital Compare A Event 2 Trip Zone flag.

PWM_TripZoneFlag_DCBEVT1 Digital Compare B Event 1 Trip Zone flag.

PWM_TripZoneFlag_DCBEVT2 Digital Compare B Event 2 Trip Zone flag.

13.2.4.32 PWM_TripZoneSrc_e

Description:

Enumeration to define the pulse width modulation (PWM) trip zone sources.

13.2.4.33 enum [PWM_TripZoneState_e](#)

Enumeration to define the pulse width modulation (PWM) trip zone states.

13.2.5 Function Documentation

13.2.5.1 void PWM_clearIntFlag ([PWM_Handle](#) pwmHandle) [inline]

Clears the pulse width modulation (PWM) interrupt flag.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.2 void PWM_clearOneShotTrip ([PWM_Handle](#) pwmHandle) [inline]

Clears the pulse width modulation (PWM) one shot trip.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.3 void PWM_clearSocAFlag ([PWM_Handle](#) pwmHandle) [inline]

Clears the pulse width modulation (PWM) start of conversion (SOC) A flag.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.4 void PWM_clearSocBFlag ([PWM_Handle](#) pwmHandle) [inline]

Clears the pulse width modulation (PWM) start of conversion (SOC) B flag.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.5 void PWM_clearTripZone ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneFlag_e](#) tripZoneFlag)

Clears the trip zone (TZ) flag specified.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **tripZoneFlag** The trip zone flag to clear

13.2.5.6 void PWM_decrementDeadBandFallingEdgeDelay ([PWM_Handle](#) pwmHandle)

Decrement the dead band falling edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.7 void PWM_decrementDeadBandRisingEdgeDelay ([PWM_Handle](#) pwmHandle)

Decrement the dead band rising edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.8 void PWM_disableAutoConvert ([PWM_Handle](#) pwmHandle)

Disables auto conversion of delay line value.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.9 void PWM_disableChopping ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) chopping.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.10 void PWM_disableCounterLoad ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) counter loading from the phase register.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.11 void PWM_disableDeadBand ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) deadband.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.12 void PWM_disableDeadBandHalfCycle ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) deadband half cycle clocking.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.13 void PWM_disableDigitalCompareBlankingWindow ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) digital compare blanking window.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.14 void PWM_disableDigitalCompareBlankingWindowInversion ([PWM_Handle](#) *pwmHandle*)

Disables the pulse width modulation (PWM) digital compare blanking window inversion.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.15 void PWM_disableHrPeriod ([PWM_Handle](#) *pwmHandle*)

Disables high resolution period control.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.16 void PWM_disableHrPhaseSync ([PWM_Handle](#) *pwmHandle*)

Disables high resolution phase synchronization.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.17 void PWM_disableInt ([PWM_Handle](#) *pwmHandle*)

Disables the pulse width modulation (PWM) interrupt.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.18 void PWM_disableSocAPulse ([PWM_Handle](#) *pwmHandle*)

Disables the pulse width modulation (PWM) start of conversion (SOC) B pulse generation.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.19 void PWM_disableSocBPulse ([PWM_Handle](#) *pwmHandle*)

Disables the pulse width modulation (PWM) start of conversion (SOC) B pulse generation.

Parameters:

← ***pwmHandle*** The pulse width modulation (PWM) object handle

13.2.5.20 void PWM_disableTripZoneInt ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneFlag_e](#) interruptSource)

Disables the pulse width modulation (PWM) trip zones interrupts.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **interruptSource** The interrupt source to disable

13.2.5.21 void PWM_disableTripZones ([PWM_Handle](#) pwmHandle)

Disables the pulse width modulation (PWM) trip zones.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.22 void PWM_disableTripZoneSrc ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneSrc_e](#) src)

Disable the pulse width modulation (PWM) trip zone source.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **src** The pulse width modulation (PWM) trip zone source

13.2.5.23 void PWM_enableAutoConvert ([PWM_Handle](#) pwmHandle)

Enables auto conversion of delay line value.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.24 void PWM_enableChopping ([PWM_Handle](#) pwmHandle)

Enables the pulse width modulation (PWM) chopping.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.25 void PWM_enableCounterLoad ([PWM_Handle](#) pwmHandle)

Enables the pulse width modulation (PWM) counter loading from the phase register.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.26 void PWM_enableDeadBandHalfCycle (PWM_Handle pwmHandle)

Enables the pulse width modulation (PWM) deadband half cycle clocking.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.27 void PWM_enableDigitalCompareBlankingWindow (PWM_Handle pwmHandle)

Enables the pulse width modulation (PWM) digital compare blanking window.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.28 void PWM_enableDigitalCompareBlankingWindowInversion (PWM_Handle pwmHandle)

Enables the pulse width modulation (PWM) digital compare blanking window inversion.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.29 void PWM_enableHrPeriod (PWM_Handle pwmHandle)

Enables high resolution period control.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.30 void PWM_enableHrPhaseSync (PWM_Handle pwmHandle)

Enables high resolution phase synchronization.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.31 void PWM_enableInt (PWM_Handle pwmHandle)

Enables the pulse width modulation (PWM) interrupt.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.32 void PWM_enableSocAPulse ([PWM_Handle](#) pwmHandle)

Enables the pulse width modulation (PWM) start of conversion (SOC) A pulse generation.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.33 void PWM_enableSocBPulse ([PWM_Handle](#) pwmHandle)

Enables the pulse width modulation (PWM) start of conversion (SOC) B pulse generation.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.34 void PWM_enableTripZoneInt ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneFlag_e](#) interruptSource)

Enables the pulse width modulation (PWM) trip zones interrupts.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **interruptSource** The interrupt source to enable

13.2.5.35 void PWM_enableTripZoneSrc ([PWM_Handle](#) pwmHandle, const [PWM_TripZoneSrc_e](#) src)

Enable the pulse width modulation (PWM) trip zone source.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **src** The pulse width modulation (PWM) trip zone source

13.2.5.36 void PWM_forceSync ([PWM_Handle](#) pwmHandle) [inline]

Force Synchronization.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.37 uint16_t PWM_getCmpA ([PWM_Handle](#) pwmHandle) [inline]

Gets the pulse width modulation (PWM) data value from the Counter Compare A hardware.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The PWM compare data value

13.2.5.38 uint16_t PWM_getCmpAHr ([PWM_Handle pwmHandle](#)) [inline]

Gets the pulse width modulation (PWM) data value from the Counter Compare A Hr hardware.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The PWM compare high resolution data value

13.2.5.39 uint16_t PWM_getCmpB ([PWM_Handle pwmHandle](#)) [inline]

Gets the pulse width modulation (PWM) data value from the Counter Compare B hardware.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The PWM compare data value

13.2.5.40 uint16_t PWM_getDeadBandFallingEdgeDelay ([PWM_Handle pwmHandle](#))

Gets the pulse width modulation (PWM) deadband falling edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The delay

13.2.5.41 uint16_t PWM_getDeadBandRisingEdgeDelay ([PWM_Handle pwmHandle](#))

Gets the pulse width modulation (PWM) deadband rising edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The delay

13.2.5.42 uint16_t PWM_getIntCount ([PWM_Handle](#) pwmHandle)

Gets the pulse width modulation (PWM) interrupt event count.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The interrupt event count

13.2.5.43 uint16_t PWM_getPeriod ([PWM_Handle](#) pwmHandle) [inline]

Gets the pulse width modulation (PWM) period value.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The pwm period value

13.2.5.44 uint16_t PWM_getSocACount ([PWM_Handle](#) pwmHandle)

Gets the pulse width modulation (PWM) start of conversion (SOC) A count.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The SOC A count

13.2.5.45 uint16_t PWM_getSocBCount ([PWM_Handle](#) pwmHandle)

Gets the pulse width modulation (PWM) start of conversion (SOC) B count.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

Returns:

The SOC B count

13.2.5.46 void PWM_incrementDeadBandFallingEdgeDelay ([PWM_Handle](#) pwmHandle)

Increment the dead band falling edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.47 void PWM_incrementDeadBandRisingEdgeDelay ([PWM_Handle](#) pwmHandle)

Increment the dead band rising edge delay.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.48 [PWM_Handle](#) PWM_init (void * *pMemory*, const size_t *numBytes*)

Initializes the pulse width modulation (PWM) object handle.

Parameters:

← **pMemory** A pointer to the base address of the PWM registers

← **numBytes** The number of bytes allocated for the PWM object, bytes

Returns:

The pulse width modulation (PWM) object handle

13.2.5.49 void PWM_setActionQual_CntDown_CmpA_PwmA ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals CMPA and the counter is decrementing.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **actionQual** The action qualifier

13.2.5.50 void PWM_setActionQual_CntDown_CmpA_PwmB ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals CMPA and the counter is decrementing.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **actionQual** The action qualifier

13.2.5.51 void PWM_setActionQual_CntDown_CmpB_PwmA ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals CMPB and the counter is decrementing.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **actionQual** The action qualifier

13.2.5.52 void PWM_setActionQual_CntDown_CmpB_PwmB ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals CMPB and the counter is decrementing.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **actionQual** The action qualifier

13.2.5.53 void PWM_setActionQual_CntUp_CmpA_PwmA ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals CMPA and the counter is incrementing.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **actionQual** The action qualifier

13.2.5.54 void PWM_setActionQual_CntUp_CmpA_PwmB ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals CMPA and the counter is incrementing.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **actionQual** The action qualifier

13.2.5.55 void PWM_setActionQual_CntUp_CmpB_PwmA ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals CMPB and the counter is incrementing.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **actionQual** The action qualifier

13.2.5.56 void PWM_setActionQual_CntUp_CmpB_PwmB ([PWM_Handle](#) pwmHandle, const [PWM_ActionQual_e](#) actionQual)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals CMPB and the counter is incrementing.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***actionQual*** The action qualifier

13.2.5.57 void PWM_setActionQual_Period_PwmA (***PWM_Handle*** *pwmHandle*, const ***PWM_ActionQual_e*** *actionQual*)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals the period.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***actionQual*** The action qualifier

13.2.5.58 void PWM_setActionQual_Period_PwmB (***PWM_Handle*** *pwmHandle*, const ***PWM_ActionQual_e*** *actionQual*)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals the period.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***actionQual*** The action qualifier

13.2.5.59 void PWM_setActionQual_Zero_PwmA (***PWM_Handle*** *pwmHandle*, const ***PWM_ActionQual_e*** *actionQual*)

Sets the pulse width modulation (PWM) object action for PWM A when the counter equals the zero.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***actionQual*** The action qualifier

13.2.5.60 void PWM_setActionQual_Zero_PwmB (***PWM_Handle*** *pwmHandle*, const ***PWM_ActionQual_e*** *actionQual*)

Sets the pulse width modulation (PWM) object action for PWM B when the counter equals the zero.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***actionQual*** The action qualifier

13.2.5.61 void PWM_setChoppingClkFreq ([PWM_Handle](#) pwmHandle, const [PWM_ChoppingClkFreq_e](#) clkFreq)

Sets the pulse width modulation (PWM) chopping clock frequency.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **clkFreq** The clock frequency

13.2.5.62 void PWM_setChoppingDutyCycle ([PWM_Handle](#) pwmHandle, const [PWM_ChoppingDutyCycle_e](#) dutyCycle)

Sets the pulse width modulation (PWM) chopping clock duty cycle.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **dutyCycle** The duty cycle

13.2.5.63 void PWM_setChoppingPulseWidth ([PWM_Handle](#) pwmHandle, const [PWM_ChoppingPulseWidth_e](#) pulseWidth)

Sets the pulse width modulation (PWM) chopping clock pulse width.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **pulseWidth** The pulse width

13.2.5.64 void PWM_setClkDiv ([PWM_Handle](#) pwmHandle, const [PWM_ClkDiv_e](#) clkDiv)

Sets the pulse width modulation (PWM) clock divisor.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **clkDiv** The clock divisor

13.2.5.65 void PWM_setCmpA ([PWM_Handle](#) pwmHandle, const uint16_t pwmData)
[inline]

Writes the pulse width modulation (PWM) data value to the Counter Compare A hardware.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **pwmData** The PWM data value

13.2.5.66 void PWM_setCmpAHr ([PWM_Handle](#) *pwmHandle*, const uint16_t *pwmData*)
[inline]

Writes the pulse width modulation (PWM) data value to the Counter Compare A Hr hardware.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***pwmData*** The PWM high resolution data value

13.2.5.67 void PWM_setCmpB ([PWM_Handle](#) *pwmHandle*, const uint16_t *pwmData*)
[inline]

Writes the pulse width modulation (PWM) data value to the Counter Compare B hardware.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***pwmData*** The PWM data value

13.2.5.68 void PWM_setCount ([PWM_Handle](#) *pwmHandle*, const uint16_t *count*)

Sets the pulse width modulation (PWM) count.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***count*** The count

13.2.5.69 void PWM_setCounterMode ([PWM_Handle](#) *pwmHandle*, const
[PWM_CounterMode_e](#) *counterMode*)

Sets the pulse width modulation (PWM) counter mode.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***counterMode*** The count mode

13.2.5.70 void PWM_setDeadBandFallingEdgeDelay ([PWM_Handle](#) *pwmHandle*, const
uint16_t *delay*)

Sets the pulse width modulation (PWM) deadband falling edge delay.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***delay*** The delay

13.2.5.71 void PWM_setDeadBandInputMode ([PWM_Handle](#) pwmHandle, const [PWM_DeadBandInputMode_e](#) inputMode)

Sets the pulse width modulation (PWM) deadband input mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **inputMode** The input mode

13.2.5.72 void PWM_setDeadBandOutputMode ([PWM_Handle](#) pwmHandle, const [PWM_DeadBandOutputMode_e](#) outputMode)

Sets the pulse width modulation (PWM) deadband output mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **outputMode** The output mode

13.2.5.73 void PWM_setDeadBandPolarity ([PWM_Handle](#) pwmHandle, const [PWM_DeadBandPolarity_e](#) polarity)

Sets the pulse width modulation (PWM) deadband polarity.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **polarity** The polarity

13.2.5.74 void PWM_setDeadBandRisingEdgeDelay ([PWM_Handle](#) pwmHandle, const uint16_t delay)

Sets the pulse width modulation (PWM) deadband rising edge delay.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **delay** The delay

13.2.5.75 void PWM_setDigitalCompareAEvent1 ([PWM_Handle](#) pwmHandle, const bool_t selectFilter, const bool_t disableSync, const bool_t enableSoc, const bool_t generateSync)

Sets the pulse width modulation (PWM) digital compare A event 1 source parameters.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **selectFilter** Select filter output if true

- ← **disableSync** Asynchronous if true
- ← **enableSoc** Enable SOC generation if true
- ← **generateSync** Generate SYNC if true

13.2.5.76 void PWM_setDigitalCompareAEvent2 ([PWM_Handle](#) pwmHandle, const bool_t selectFilter, const bool_t disableSync)

Sets the pulse width modulation (PWM) digital compare A event 2 source parameters.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **selectFilter** Select filter output if true
- ← **disableSync** Asynchronous if true

13.2.5.77 void PWM_setDigitalCompareBEvent1 ([PWM_Handle](#) pwmHandle, const bool_t selectFilter, const bool_t disableSync, const bool_t enableSoc, const bool_t generateSync)

Sets the pulse width modulation (PWM) digital compare B event 1 source parameters.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **selectFilter** Select filter output if true
- ← **disableSync** Asynchronous if true
- ← **enableSoc** Enable SOC generation if true
- ← **generateSync** Generate SYNC if true

13.2.5.78 void PWM_setDigitalCompareBEvent2 ([PWM_Handle](#) pwmHandle, const bool_t selectFilter, const bool_t disableSync)

Sets the pulse width modulation (PWM) digital compare B event 2 source parameters.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **selectFilter** Select filter output if true
- ← **disableSync** Asynchronous if true

13.2.5.79 void PWM_setDigitalCompareBlankingPulse ([PWM_Handle](#) pwmHandle, const [PWM_DigitalCompare_PulseSel_e](#) pulseSelect)

Sets the pulse width modulation (PWM) digital compare blanking pulse.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **pulseSelect** The pulse selection

13.2.5.80 void PWM_setDigitalCompareFilterOffset ([PWM_Handle](#) *pwmHandle*, const uint16_t *offset*)

Sets the pulse width modulation (PWM) digital compare filter offset.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***offset*** The offset

13.2.5.81 void PWM_setDigitalCompareFilterSource ([PWM_Handle](#) *pwmHandle*, const [PWM_DigitalCompare_FilterSrc_e](#) *input*)

Sets the pulse width modulation (PWM) digital compare filter source.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***input*** The filter's source

13.2.5.82 void PWM_setDigitalCompareFilterWindow ([PWM_Handle](#) *pwmHandle*, const uint16_t *window*)

Sets the pulse width modulation (PWM) digital compare filter offset.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***window*** The window

13.2.5.83 void PWM_setDigitalCompareInput ([PWM_Handle](#) *pwmHandle*, const [PWM_DigitalCompare_Input_e](#) *input*, const [PWM_DigitalCompare_InputSel_e](#) *inputSel*)

Sets the pulse width modulation (PWM) digital compare input.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***input*** Comparator input to change
- ← ***inputSel*** Input selection for designated input

13.2.5.84 void PWM_setHighSpeedClkDiv ([PWM_Handle](#) *pwmHandle*, const [PWM_HspClkDiv_e](#) *clkDiv*)

Sets the pulse width modulation (PWM) high speed clock divisor.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***clkDiv*** The clock divisor

13.2.5.85 void PWM_setHrControlMode ([PWM_Handle](#) pwmHandle, const [PWM_HrControlMode_e](#) controlMode)

Set the High Resolution Control Mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **controlMode** The control mode HRPWM should use

13.2.5.86 void PWM_setHrEdgeMode ([PWM_Handle](#) pwmHandle, const [PWM_HrEdgeMode_e](#) edgeMode)

Set the High Resolution Edge Mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **edgeMode** The edge mode HRPWM should use

13.2.5.87 void PWM_setHrShadowMode ([PWM_Handle](#) pwmHandle, const [PWM_HrShadowMode_e](#) shadowMode)

Set the High Resolution Shadow Load Mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **shadowMode** The shadow load mode HRPWM should use

13.2.5.88 void PWM_setIntMode ([PWM_Handle](#) pwmHandle, const [PWM_IntMode_e](#) intMode)

Sets the pulse width modulation (PWM) interrupt mode.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **intMode** The interrupt mode

13.2.5.89 void PWM_setIntPeriod ([PWM_Handle](#) pwmHandle, const [PWM_IntPeriod_e](#) intPeriod)

Sets the pulse width modulation (PWM) interrupt period.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **intPeriod** The interrupt period

13.2.5.90 void PWM_setLoadMode_CmpA ([PWM_Handle](#) pwmHandle, const [PWM_LoadMode_e](#) loadMode)

Sets the pulse width modulation (PWM) load mode for CMPA.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **loadMode** The load mode

13.2.5.91 void PWM_setLoadMode_CmpB ([PWM_Handle](#) pwmHandle, const [PWM_LoadMode_e](#) loadMode)

Sets the pulse width modulation (PWM) load mode for CMPB.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **loadMode** The load mode

13.2.5.92 void PWM_setOneShotTrip ([PWM_Handle](#) pwmHandle) [inline]

Sets the pulse width modulation (PWM) one shot trip.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.93 void PWM_setPeriod ([PWM_Handle](#) pwmHandle, const uint16_t period)

Sets the pulse width modulation (PWM) period.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **period** The period

13.2.5.94 void PWM_setPeriodHr ([PWM_Handle](#) pwmHandle, const uint16_t period)

Sets the pulse width modulation (PWM) high resolution period.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **period** The period

13.2.5.95 void PWM_setPeriodLoad ([PWM_Handle](#) *pwmHandle*, const [PWM_PeriodLoad_e](#) *periodLoad*)

Sets the pulse width modulation (PWM) period load mode.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***periodLoad*** The period load mode

13.2.5.96 void PWM_setPhase ([PWM_Handle](#) *pwmHandle*, const uint16_t *phase*)

Sets the pulse width modulation (PWM) phase.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***phase*** The phase

13.2.5.97 void PWM_setPhaseDir ([PWM_Handle](#) *pwmHandle*, const [PWM_PhaseDir_e](#) *phaseDir*)

Sets the pulse width modulation (PWM) phase direction.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***phaseDir*** The phase direction

13.2.5.98 void PWM_setRunMode ([PWM_Handle](#) *pwmHandle*, const [PWM_RunMode_e](#) *runMode*)

Sets the pulse width modulation (PWM) run mode.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***runMode*** The run mode

13.2.5.99 void PWM_setShadowMode_CmpA ([PWM_Handle](#) *pwmHandle*, const [PWM_ShadowMode_e](#) *shadowMode*)

Sets the pulse width modulation (PWM) shadow mode for CMPA.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***shadowMode*** The shadow mode

13.2.5.100 `void PWM_setShadowMode_CmpB (PWM_Handle pwmHandle, const PWM_ShadowMode_e shadowMode)`

Sets the pulse width modulation (PWM) shadow mode for CMPB.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **shadowMode** The shadow mode

13.2.5.101 `void PWM_setSocAPeriod (PWM_Handle pwmHandle, const PWM_SocPeriod_e intPeriod)`

Sets the pulse width modulation (PWM) start of conversion (SOC) A interrupt period.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **intPeriod** The interrupt period

13.2.5.102 `void PWM_setSocAPulseSrc (PWM_Handle pwmHandle, const PWM_SocPulseSrc_e pulseSrc)`

Sets the pulse width modulation (PWM) start of conversion (SOC) A interrupt pulse source.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **pulseSrc** The interrupt pulse source

13.2.5.103 `void PWM_setSocBPeriod (PWM_Handle pwmHandle, const PWM_SocPeriod_e intPeriod)`

Sets the pulse width modulation (PWM) start of conversion (SOC) B interrupt period.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **intPeriod** The interrupt period

13.2.5.104 `void PWM_setSocBPulseSrc (PWM_Handle pwmHandle, const PWM_SocPulseSrc_e pulseSrc)`

Sets the pulse width modulation (PWM) start of conversion (SOC) B interrupt pulse source.

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **pulseSrc** The interrupt pulse source

13.2.5.105 void PWM_setSwSync (PWM_Handle pwmHandle)

Sets the pulse width modulation (PWM) software sync.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

13.2.5.106 void PWM_setSyncMode (PWM_Handle pwmHandle, const PWM_SyncMode_e syncMode)

Sets the pulse width modulation (PWM) sync mode.

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **syncMode** The sync mode

13.2.5.107 void PWM_setTripZoneDCEventSelect_DCAEVT1 (PWM_Handle pwmHandle, const PWM_TripZoneDCEventSel_e tripZoneEvent)

Sets the pulse width modulation (PWM) trip zone digital compare event select for Digital Compare Output A Event 1 (DCAEVT1).

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **tripZoneEvent** The trip zone digital compare event

13.2.5.108 void PWM_setTripZoneDCEventSelect_DCAEVT2 (PWM_Handle pwmHandle, const PWM_TripZoneDCEventSel_e tripZoneEvent)

Sets the pulse width modulation (PWM) trip zone digital compare event select for Digital Compare Output A Event 2 (DCAEVT2).

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **tripZoneEvent** The trip zone digital compare event

13.2.5.109 void PWM_setTripZoneDCEventSelect_DCBEVT1 (PWM_Handle pwmHandle, const PWM_TripZoneDCEventSel_e tripZoneEvent)

Sets the pulse width modulation (PWM) trip zone digital compare event select for Digital Compare Output B Event 1 (DCBEVT1).

Parameters:

← **pwmHandle** The pulse width modulation (PWM) object handle

← **tripZoneEvent** The trip zone digital compare event

13.2.5.110 `void PWM_setTripZoneDCEventSelect_DCBEVT2 (PWM_Handle pwmHandle, const PWM_TripZoneDCEventSel_e tripZoneEvent)`

Sets the pulse width modulation (PWM) trip zone digital compare event select for Digital Compare Output B Event 2 (DCBEVT2).

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **tripZoneEvent** The trip zone digital compare event

13.2.5.111 `void PWM_setTripZoneState_DCAEVT1 (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Digital Compare Output A Event 1 (DCAEVT1).

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **tripZoneState** The trip zone state

13.2.5.112 `void PWM_setTripZoneState_DCAEVT2 (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Digital Compare Output A Event 2 (DCAEVT2).

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **tripZoneState** The trip zone state

13.2.5.113 `void PWM_setTripZoneState_DCBEVT1 (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Digital Compare Output B Event 1 (DCBEVT1).

Parameters:

- ← **pwmHandle** The pulse width modulation (PWM) object handle
- ← **tripZoneState** The trip zone state

13.2.5.114 `void PWM_setTripZoneState_DCBEVT2 (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Digital Compare Output B Event 2 (DCBEVT2).

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***tripZoneState*** The trip zone state

13.2.5.115 `void PWM_setTripZoneState_TZA (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Output A (TZA).

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***tripZoneState*** The trip zone state

13.2.5.116 `void PWM_setTripZoneState_TZB (PWM_Handle pwmHandle, const PWM_TripZoneState_e tripZoneState)`

Sets the pulse width modulation (PWM) trip zone state for Output B (TZB).

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***tripZoneState*** The trip zone state

13.2.5.117 `void PWM_write_CmpA (PWM_Handle pwmHandle, const int16_t pwmData)`
[inline]

Writes the pulse width modulation (PWM) data value to the Counter Compare A hardware.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***pwmData*** The PWM data value

13.2.5.118 `void PWM_write_CmpB (PWM_Handle pwmHandle, const int16_t pwmData)`
[inline]

Writes the pulse width modulation (PWM) data value to the Counter Compare B hardware.

Parameters:

- ← ***pwmHandle*** The pulse width modulation (PWM) object handle
- ← ***pwmData*** The PWM data value

14 Power Control (PWR)

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14.1 Introduction

The power API is a set of functions for configuring low power modes as well as other power related functions such as brown out.

This driver is contained in `f2802x/common/source/pwr.c`, with `f2802x/common/include/pwr.h` containing the API definitions for use by applications.

14.2 PWR

Data Structures

- [_PWR_Obj](#)

Defines

- [PWR_BASE_ADDR](#)
- [PWR_BORCFG_BORENZ_BITS](#)
- [PWR_LPMCR0_LPM_BITS](#)
- [PWR_LPMCR0_QUALSTDBY_BITS](#)
- [PWR_LPMCR0_WDINTE_BITS](#)

Enumerations

- [PWR_LowPowerMode_e](#)
- [PWR_NumStandByClocks_e](#)

Functions

- void [PWR_disableBrownOutReset](#) ([PWR_Handle](#) pwrHandle)
- void [PWR_disableWatchDogInt](#) ([PWR_Handle](#) pwrHandle)
- void [PWR_enableBrownOutReset](#) ([PWR_Handle](#) pwrHandle)
- void [PWR_enableWatchDogInt](#) ([PWR_Handle](#) pwrHandle)
- [PWR_Handle](#) [PWR_init](#) (void *pMemory, const size_t numBytes)
- void [PWR_setLowPowerMode](#) ([PWR_Handle](#) pwrHandle, const [PWR_LowPowerMode_e](#) lowPowerMode)

```
■ void PWR_setNumStandByClocks (PWR_Handle pwrHandle, const  
PWR_NumStandByClocks_e numClkCycles)
```

14.2.1 Data Structure Documentation

14.2.1.1 _PWR_Obj_

Definition:

```
typedef struct  
{  
    uint16_t BORCFG;  
    uint16_t rsvd_1[26264];  
    uint16_t LPMCR0;  
}  
_PWR_Obj_
```

Members:

BORCFG BOR (Brown Out Reset) Configuration Register.
rsvd_1 Reserved.
LPMCR0 Low Power Mode Control Register 0.

Description:

Defines the power (PWR) object.

14.2.2 Define Documentation

14.2.2.1 PWR_BASE_ADDR

Definition:

```
#define PWR_BASE_ADDR
```

Description:

Defines the base address of the power (PWR) registers.

14.2.2.2 PWR_BORCFG_BORENZ_BITS

Definition:

```
#define PWR_BORCFG_BORENZ_BITS
```

Description:

Defines the location of the BORENZ bits in the BORCFG register.

14.2.2.3 PWR_LPMCR0_LPM_BITS

Definition:

```
#define PWR_LPMCR0_LPM_BITS
```

Description:

Defines the location of the LPM bits in the LPMCR0 register.

14.2.2.4 PWR_LPMCR0_QUALSTDBY_BITS

Definition:

```
#define PWR_LPMCR0_QUALSTDBY_BITS
```

Description:

Defines the location of the QUALSTDBY bits in the LPMCR0 register.

14.2.2.5 PWR_LPMCR0_WDINTE_BITS

Definition:

```
#define PWR_LPMCR0_WDINTE_BITS
```

Description:

Defines the location of the WDINTE bits in the LPMCR0 register.

14.2.3 Typedef Documentation

14.2.3.1 PWR_Handle

Definition:

```
typedef struct _PWR_Obj_ *PWR_Handle
```

Description:

Defines the power (PWR) handle.

14.2.3.2 PWR_Obj

Definition:

```
typedef struct _PWR_Obj_ PWR_Obj
```

Description:

Defines the power (PWR) object.

14.2.4 Enumeration Documentation

14.2.4.1 PWR_LowPowerMode_e

Description:

Enumeration to define the power (PWR) low power modes.

Enumerators:

PWR_LowPowerMode_Idle Denotes the idle mode.

PWR_LowPowerMode_Standby Denotes the standby mode.

PWR_LowPowerMode_Halt Denotes the halt mode.

14.2.4.2 PWR_NumStandByClocks_e

Description:

Enumeration to define the power (PWR) number of standby clock cycles.

Enumerators:

PWR_NumStandByClocks_2 Denotes 2 standby clock cycles.
PWR_NumStandByClocks_3 Denotes 3 standby clock cycles.
PWR_NumStandByClocks_4 Denotes 4 standby clock cycles.
PWR_NumStandByClocks_5 Denotes 5 standby clock cycles.
PWR_NumStandByClocks_6 Denotes 6 standby clock cycles.
PWR_NumStandByClocks_7 Denotes 7 standby clock cycles.
PWR_NumStandByClocks_8 Denotes 8 standby clock cycles.
PWR_NumStandByClocks_9 Denotes 9 standby clock cycles.
PWR_NumStandByClocks_10 Denotes 10 standby clock cycles.
PWR_NumStandByClocks_11 Denotes 11 standby clock cycles.
PWR_NumStandByClocks_12 Denotes 12 standby clock cycles.
PWR_NumStandByClocks_13 Denotes 13 standby clock cycles.
PWR_NumStandByClocks_14 Denotes 14 standby clock cycles.
PWR_NumStandByClocks_15 Denotes 15 standby clock cycles.
PWR_NumStandByClocks_16 Denotes 16 standby clock cycles.
PWR_NumStandByClocks_17 Denotes 17 standby clock cycles.
PWR_NumStandByClocks_18 Denotes 18 standby clock cycles.
PWR_NumStandByClocks_19 Denotes 19 standby clock cycles.
PWR_NumStandByClocks_20 Denotes 20 standby clock cycles.
PWR_NumStandByClocks_21 Denotes 21 standby clock cycles.
PWR_NumStandByClocks_22 Denotes 22 standby clock cycles.
PWR_NumStandByClocks_23 Denotes 23 standby clock cycles.
PWR_NumStandByClocks_24 Denotes 24 standby clock cycles.
PWR_NumStandByClocks_25 Denotes 25 standby clock cycles.
PWR_NumStandByClocks_26 Denotes 26 standby clock cycles.
PWR_NumStandByClocks_27 Denotes 27 standby clock cycles.
PWR_NumStandByClocks_28 Denotes 28 standby clock cycles.
PWR_NumStandByClocks_29 Denotes 29 standby clock cycles.
PWR_NumStandByClocks_30 Denotes 30 standby clock cycles.
PWR_NumStandByClocks_31 Denotes 31 standby clock cycles.
PWR_NumStandByClocks_32 Denotes 32 standby clock cycles.
PWR_NumStandByClocks_33 Denotes 33 standby clock cycles.
PWR_NumStandByClocks_34 Denotes 34 standby clock cycles.
PWR_NumStandByClocks_35 Denotes 35 standby clock cycles.
PWR_NumStandByClocks_36 Denotes 36 standby clock cycles.
PWR_NumStandByClocks_37 Denotes 37 standby clock cycles.

<i>PWR_NumStandByClocks_38</i>	Denotes 38 standby clock cycles.
<i>PWR_NumStandByClocks_39</i>	Denotes 39 standby clock cycles.
<i>PWR_NumStandByClocks_40</i>	Denotes 40 standby clock cycles.
<i>PWR_NumStandByClocks_41</i>	Denotes 41 standby clock cycles.
<i>PWR_NumStandByClocks_42</i>	Denotes 42 standby clock cycles.
<i>PWR_NumStandByClocks_43</i>	Denotes 43 standby clock cycles.
<i>PWR_NumStandByClocks_44</i>	Denotes 44 standby clock cycles.
<i>PWR_NumStandByClocks_45</i>	Denotes 45 standby clock cycles.
<i>PWR_NumStandByClocks_46</i>	Denotes 46 standby clock cycles.
<i>PWR_NumStandByClocks_47</i>	Denotes 47 standby clock cycles.
<i>PWR_NumStandByClocks_48</i>	Denotes 48 standby clock cycles.
<i>PWR_NumStandByClocks_49</i>	Denotes 49 standby clock cycles.
<i>PWR_NumStandByClocks_50</i>	Denotes 50 standby clock cycles.
<i>PWR_NumStandByClocks_51</i>	Denotes 51 standby clock cycles.
<i>PWR_NumStandByClocks_52</i>	Denotes 52 standby clock cycles.
<i>PWR_NumStandByClocks_53</i>	Denotes 53 standby clock cycles.
<i>PWR_NumStandByClocks_54</i>	Denotes 54 standby clock cycles.
<i>PWR_NumStandByClocks_55</i>	Denotes 55 standby clock cycles.
<i>PWR_NumStandByClocks_56</i>	Denotes 56 standby clock cycles.
<i>PWR_NumStandByClocks_57</i>	Denotes 57 standby clock cycles.
<i>PWR_NumStandByClocks_58</i>	Denotes 58 standby clock cycles.
<i>PWR_NumStandByClocks_59</i>	Denotes 59 standby clock cycles.
<i>PWR_NumStandByClocks_60</i>	Denotes 60 standby clock cycles.
<i>PWR_NumStandByClocks_61</i>	Denotes 61 standby clock cycles.
<i>PWR_NumStandByClocks_62</i>	Denotes 62 standby clock cycles.
<i>PWR_NumStandByClocks_63</i>	Denotes 63 standby clock cycles.
<i>PWR_NumStandByClocks_64</i>	Denotes 64 standby clock cycles.
<i>PWR_NumStandByClocks_65</i>	Denotes 65 standby clock cycles.

14.2.5 Function Documentation

14.2.5.1 PWR_disableBrownOutReset

Disables the brownout reset functions.

Prototype:

```
void  
PWR_disableBrownOutReset (PWR_Handle pwrHandle)
```

Parameters:

← ***pwrHandle*** The power (PWR) object handle

14.2.5.2 void PWR_disableWatchDogInt (PWR_Handle pwrHandle)

Disables the watchdog interrupt.

Parameters:

← **pwrHandle** The power (PWR) object handle

14.2.5.3 void PWR_enableBrownOutReset ([PWR_Handle](#) pwrHandle)

Enables the brownout reset functions.

Parameters:

← **pwrHandle** The power (PWR) object handle

14.2.5.4 void PWR_enableWatchDogInt ([PWR_Handle](#) pwrHandle)

Enables the watchdog interrupt.

Parameters:

← **pwrHandle** The power (PWR) object handle

14.2.5.5 [PWR_Handle](#) PWR_init (void * *pMemory*, const size_t *numBytes*)

Initializes the power (PWR) object handle.

Parameters:

← **pMemory** A pointer to the base address of the PWR registers

← **numBytes** The number of bytes allocated for the PWR object, bytes

Returns:

The power (PWR) object handle

14.2.5.6 void PWR_setLowPowerMode ([PWR_Handle](#) pwrHandle, const [PWR_LowPowerMode_e](#) lowPowerMode)

Sets the low power mode.

Parameters:

← **pwrHandle** The power (PWR) object handle

← **lowPowerMode** The low power mode

14.2.5.7 void PWR_setNumStandByClocks ([PWR_Handle](#) pwrHandle, const [PWR_NumStandByClocks_e](#) numClkCycles)

Sets the number of standby clock cycles.

Parameters:

← **pwrHandle** The power (PWR) object handle

← **numClkCycles** The number of standby clock cycles

15 Serial Communications Interface (SCI)

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15.1 Introduction

The Serial Communication Interface (SCI) API provides a set of functions for configuring and using the SCI peripheral(s) on this device.

This driver is contained in `f2802x/common/source/sci.c`, with `f2802x/common/include/sci.h` containing the API definitions for use by applications.

15.2 SCI

Data Structures

- [_SCI_Obj](#)

Defines

- [SCI_SCICCR_CHAR_LENGTH_BITS](#)
- [SCI_SCICCR_LB_ENA_BITS](#)
- [SCI_SCICCR_MODE_BITS](#)
- [SCI_SCICCR_PARITY_BITS](#)
- [SCI_SCICCR_PARITY_ENA_BITS](#)
- [SCI_SCICCR_STOP_BITS](#)
- [SCI_SCICTL1_RESET_BITS](#)
- [SCI_SCICTL1_RX_ERR_INT_ENA_BITS](#)
- [SCI_SCICTL1_RXENA_BITS](#)
- [SCI_SCICTL1_SLEEP_BITS](#)
- [SCI_SCICTL1_TXENA_BITS](#)
- [SCI_SCICTL1_TXWAKE_BITS](#)
- [SCI_SCICTL2_RX_INT_ENA_BITS](#)
- [SCI_SCICTL2_TX_INT_ENA_BITS](#)
- [SCI_SCICTL2_TXEMPTY_BITS](#)
- [SCI_SCICTL2_TXRDY_BITS](#)
- [SCI_SCIFFCT_ABD_BITS](#)
- [SCI_SCIFFCT_ABDCLR_BITS](#)
- [SCI_SCIFFCT_CDC_BITS](#)
- [SCI_SCIFFCT_DELAY_BITS](#)
- [SCI_SCIFFRX_FIFO_OVF_BITS](#)

- [SCI_SCIFFRX_FIFO_OVFCLR_BITS](#)
- [SCI_SCIFFRX_FIFO_RESET_BITS](#)
- [SCI_SCIFFRX_FIFO_ST_BITS](#)
- [SCI_SCIFFRX_IENA_BITS](#)
- [SCI_SCIFFRX_IL_BITS](#)
- [SCI_SCIFFRX_INT_BITS](#)
- [SCI_SCIFFRX_INTCLR_BITS](#)
- [SCI_SCIFFTX_CHAN_RESET_BITS](#)
- [SCI_SCIFFTX_FIFO_ENA_BITS](#)
- [SCI_SCIFFTX_FIFO_RESET_BITS](#)
- [SCI_SCIFFTX_FIFO_ST_BITS](#)
- [SCI_SCIFFTX_IENA_BITS](#)
- [SCI_SCIFFTX_IL_BITS](#)
- [SCI_SCIFFTX_INT_BITS](#)
- [SCI_SCIFFTX_INTCLR_BITS](#)
- [SCI_SCIRXST_BRKDT_BITS](#)
- [SCI_SCIRXST_FE_BITS](#)
- [SCI_SCIRXST_OE_BITS](#)
- [SCI_SCIRXST_PE_BITS](#)
- [SCI_SCIRXST_RXERROR_BITS](#)
- [SCI_SCIRXST_RXRDY_BITS](#)
- [SCI_SCIRXST_RXWAKE_BITS](#)
- [SCIA_BASE_ADDR](#)

Enumerations

- [SCI_BaudRate_e](#)
- [SCI_CharLength_e](#)
- [SCI_FifoLevel_e](#)
- [SCI_FifoStatus_e](#)
- [SCI_Mode_e](#)
- [SCI_NumStopBits_e](#)
- [SCI_Parity_e](#)
- [SCI_Priority_e](#)

Functions

- void [SCI_clearAutoBaudDetect](#) ([SCI_Handle](#) sciHandle)
- void [SCI_clearRxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_clearRxFifoOvf](#) ([SCI_Handle](#) sciHandle)
- void [SCI_clearTxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disable](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableAutoBaudAlign](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableFifoEnh](#) ([SCI_Handle](#) sciHandle)

- void [SCI_disableLoopBack](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableParity](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableRx](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableRxErrorInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableRxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableRxInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableSleep](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableTx](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableTxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableTxInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_disableTxWake](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enable](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableAutoBaudAlign](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableFifoEnh](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableLoopBack](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableParity](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableRx](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableRxErrorInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableRxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableRxInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableSleep](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableTx](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableTxFifoInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableTxInt](#) ([SCI_Handle](#) sciHandle)
- void [SCI_enableTxWake](#) ([SCI_Handle](#) sciHandle)
- [uint16_t](#) [SCI_getData](#) ([SCI_Handle](#) sciHandle)
- [uint16_t](#) [SCI_getDataBlocking](#) ([SCI_Handle](#) sciHandle)
- [uint16_t](#) [SCI_getDataNonBlocking](#) ([SCI_Handle](#) sciHandle, [uint16_t](#) *success)
- [SCI_FifoStatus_e](#) [SCI_getRxFifoStatus](#) ([SCI_Handle](#) sciHandle)
- [SCI_FifoStatus_e](#) [SCI_getTxFifoStatus](#) ([SCI_Handle](#) sciHandle)
- [SCI_Handle](#) [SCI_init](#) (void *pMemory, const [size_t](#) numBytes)
- [bool_t](#) [SCI_isRxDataReady](#) ([SCI_Handle](#) sciHandle)
- [bool_t](#) [SCI_isTxReady](#) ([SCI_Handle](#) sciHandle)
- void [SCI_putData](#) ([SCI_Handle](#) sciHandle, const [uint16_t](#) data)
- void [SCI_putDataBlocking](#) ([SCI_Handle](#) sciHandle, [uint16_t](#) data)
- [uint16_t](#) [SCI_putDataNonBlocking](#) ([SCI_Handle](#) sciHandle, [uint16_t](#) data)
- void [SCI_reset](#) ([SCI_Handle](#) sciHandle)
- void [SCI_resetChannels](#) ([SCI_Handle](#) sciHandle)
- void [SCI_resetRxFifo](#) ([SCI_Handle](#) sciHandle)
- void [SCI_resetTxFifo](#) ([SCI_Handle](#) sciHandle)
- void [SCI_setBaudRate](#) ([SCI_Handle](#) sciHandle, const [SCI_BaudRate_e](#) baudRate)
- void [SCI_setCharLength](#) ([SCI_Handle](#) sciHandle, const [SCI_CharLength_e](#) charLength)
- void [SCI_setMode](#) ([SCI_Handle](#) sciHandle, const [SCI_Mode_e](#) mode)
- void [SCI_setNumStopBits](#) ([SCI_Handle](#) sciHandle, const [SCI_NumStopBits_e](#) numBits)
- void [SCI_setParity](#) ([SCI_Handle](#) sciHandle, const [SCI_Parity_e](#) parity)
- void [SCI_setPriority](#) ([SCI_Handle](#) sciHandle, const [SCI_Priority_e](#) priority)

- void [SCI_setRxFifoIntLevel](#) ([SCI_Handle](#) sciHandle, const [SCI_FifoLevel_e](#) fifoLevel)
- void [SCI_setTxDelay](#) ([SCI_Handle](#) sciHandle, const uint8_t delay)
- void [SCI_setTxFifoIntLevel](#) ([SCI_Handle](#) sciHandle, const [SCI_FifoLevel_e](#) fifoLevel)

15.2.1 Data Structure Documentation

15.2.1.1 _SCI_Obj_

Definition:

```
typedef struct
{
    uint16_t SCICCR;
    uint16_t SCICTL1;
    uint16_t SCIHBAUD;
    uint16_t SCILBAUD;
    uint16_t SCICTL2;
    uint16_t SCIRXST;
    uint16_t SCIRXEMU;
    uint16_t SCIRXBUF;
    uint16_t rsvd_1;
    uint16_t SCITXBUF;
    uint16_t SCIFFTX;
    uint16_t SCIFFRX;
    uint16_t SCIFFCT;
    uint16_t rsvd_2[2];
    uint16_t SCIPRI;
}
_SCI_Obj_
```

Members:

SCICCR SCI Configuration Control Register.
SCICTL1 SCI Control Register 1.
SCIHBAUD SCI Baud Register, High Bits.
SCILBAUD SCI Baud Register, Low Bits.
SCICTL2 SCI Control Register 2.
SCIRXST SCI Receive Status Register.
SCIRXEMU SCI Receive Emulation Data Buffer Register.
SCIRXBUF SCI Receive Data Buffer Register.
rsvd_1 Reserved.
SCITXBUF SCI Transmit Data Buffer Register.
SCIFFTX SCI FIFO Transmit Register.
SCIFFRX SCI FIFO Receive Register.
SCIFFCT SCI FIFO Control Register.
rsvd_2 Reserved.
SCIPRI SCI Priority Register.

Description:

Defines the serial communications interface (SCI) object.

15.2.2 Define Documentation

15.2.2.1 SCI_SCICCR_CHAR_LENGTH_BITS

Definition:

```
#define SCI_SCICCR_CHAR_LENGTH_BITS
```

Description:

Defines the location of the SCICCHAR2-0 bits in the SCICCR register.

15.2.2.2 SCI_SCICCR_LB_ENA_BITS

Definition:

```
#define SCI_SCICCR_LB_ENA_BITS
```

Description:

Defines the location of the LOOP BACK ENA bits in the SCICCR register.

15.2.2.3 SCI_SCICCR_MODE_BITS

Definition:

```
#define SCI_SCICCR_MODE_BITS
```

Description:

Defines the location of the ADDR/IDLE MODE bits in the SCICCR register.

15.2.2.4 SCI_SCICCR_PARITY_BITS

Definition:

```
#define SCI_SCICCR_PARITY_BITS
```

Description:

Defines the location of the EVEN/ODD PARITY bits in the SCICCR register.

15.2.2.5 SCI_SCICCR_PARITY_ENA_BITS

Definition:

```
#define SCI_SCICCR_PARITY_ENA_BITS
```

Description:

Defines the location of the PARITY ENABLE bits in the SCICCR register.

15.2.2.6 SCI_SCICCR_STOP_BITS

Definition:

```
#define SCI_SCICCR_STOP_BITS
```

Description:

Defines the location of the STOP bits in the SCICCR register.

15.2.2.7 SCI_SCICTL1_RESET_BITS

Definition:

```
#define SCI_SCICTL1_RESET_BITS
```

Description:

Defines the location of the SW RESET bits in the SCICTL1 register.

15.2.2.8 SCI_SCICTL1_RX_ERR_INT_ENA_BITS

Definition:

```
#define SCI_SCICTL1_RX_ERR_INT_ENA_BITS
```

Description:

Defines the location of the RX ERR INT ENA bits in the SCICTL1 register.

15.2.2.9 SCI_SCICTL1_RXENA_BITS

Definition:

```
#define SCI_SCICTL1_RXENA_BITS
```

Description:

Defines the location of the RXENA bits in the SCICTL1 register.

15.2.2.10 SCI_SCICTL1_SLEEP_BITS

Definition:

```
#define SCI_SCICTL1_SLEEP_BITS
```

Description:

Defines the location of the SLEEP bits in the SCICTL1 register.

15.2.2.11 SCI_SCICTL1_TXENA_BITS

Definition:

```
#define SCI_SCICTL1_TXENA_BITS
```

Description:

Defines the location of the TXENA bits in the SCICTL1 register.

15.2.2.12 SCI_SCICTL1_TXWAKE_BITS

Definition:

```
#define SCI_SCICTL1_TXWAKE_BITS
```

Description:

Defines the location of the TXWAKE bits in the SCICTL1 register.

15.2.2.13 SCI_SCICTL2_RX_INT_ENA_BITS

Definition:

```
#define SCI_SCICTL2_RX_INT_ENA_BITS
```

Description:

Defines the location of the RX/BK INT ENA bits in the SCICTL2 register.

15.2.2.14 SCI_SCICTL2_TX_INT_ENA_BITS

Definition:

```
#define SCI_SCICTL2_TX_INT_ENA_BITS
```

Description:

Defines the location of the TX INT ENA bits in the SCICTL2 register.

15.2.2.15 SCI_SCICTL2_TXEMPTY_BITS

Definition:

```
#define SCI_SCICTL2_TXEMPTY_BITS
```

Description:

Defines the location of the TX EMPTY bits in the SCICTL2 register.

15.2.2.16 SCI_SCICTL2_TXRDY_BITS

Definition:

```
#define SCI_SCICTL2_TXRDY_BITS
```

Description:

Defines the location of the RX EMPTY bits in the SCICTL2 register.

15.2.2.17 SCI_SCIFFCT_ABD_BITS

Definition:

```
#define SCI_SCIFFCT_ABD_BITS
```

Description:

Defines the location of the ABD bits in the SCIFFCT register.

15.2.2.18 SCI_SCIFFCT_ABDCLR_BITS

Definition:

```
#define SCI_SCIFFCT_ABDCLR_BITS
```

Description:

Defines the location of the ABD CLR bits in the SCIFFCT register.

15.2.2.19 SCI_SCIFFCT_CDC_BITS

Definition:

```
#define SCI_SCIFFCT_CDC_BITS
```

Description:

Defines the location of the CDC bits in the SCIFFCT register.

15.2.2.20 SCI_SCIFFCT_DELAY_BITS

Definition:

```
#define SCI_SCIFFCT_DELAY_BITS
```

Description:

Defines the location of the FFTXDLY7-0 bits in the SCIFFCT register.

15.2.2.21 SCI_SCIFFRX_FIFO_OVF_BITS

Definition:

```
#define SCI_SCIFFRX_FIFO_OVF_BITS
```

Description:

Defines the location of the RXFFOVF bits in the SCIFFRX register.

15.2.2.22 SCI_SCIFFRX_FIFO_OVFCLR_BITS

Definition:

```
#define SCI_SCIFFRX_FIFO_OVFCLR_BITS
```

Description:

Defines the location of the RXFFOVF CLR bits in the SCIFFRX register.

15.2.2.23 SCI_SCIFFRX_FIFO_RESET_BITS

Definition:

```
#define SCI_SCIFFRX_FIFO_RESET_BITS
```

Description:

Defines the location of the RXFIFO Reset bits in the SCIFFRX register.

15.2.2.24 SCI_SCIFFRX_FIFO_ST_BITS

Definition:

```
#define SCI_SCIFFRX_FIFO_ST_BITS
```

Description:

Defines the location of the RXFFST4-0 bits in the SCIFFRX register.

15.2.2.25 SCI_SCIFFRX_IENA_BITS

Definition:

```
#define SCI_SCIFFRX_IENA_BITS
```

Description:

Defines the location of the RXFFIENA bits in the SCIFFRX register.

15.2.2.26 SCI_SCIFFRX_IL_BITS

Definition:

```
#define SCI_SCIFFRX_IL_BITS
```

Description:

Defines the location of the RXFFIL4-0 bits in the SCIFFRX register.

15.2.2.27 SCI_SCIFFRX_INT_BITS

Definition:

```
#define SCI_SCIFFRX_INT_BITS
```

Description:

Defines the location of the RXFFINT flag bits in the SCIFFRX register.

15.2.2.28 SCI_SCIFFRX_INTCLR_BITS

Definition:

```
#define SCI_SCIFFRX_INTCLR_BITS
```

Description:

Defines the location of the RXFFINT CLR bits in the SCIFFRX register.

15.2.2.29 SCI_SCIFFTX_CHAN_RESET_BITS

Definition:

```
#define SCI_SCIFFTX_CHAN_RESET_BITS
```

Description:

Defines the location of the SCIRST bits in the SCIFFTX register.

15.2.2.30 SCI_SCIFFTX_FIFO_ENA_BITS

Definition:

```
#define SCI_SCIFFTX_FIFO_ENA_BITS
```

Description:

Defines the location of the SCIFFENA bits in the SCIFFTX register.

15.2.2.31 SCI_SCIFFTX_FIFO_RESET_BITS

Definition:

```
#define SCI_SCIFFTX_FIFO_RESET_BITS
```

Description:

Defines the location of the TXFIFO Reset bits in the SCIFFTX register.

15.2.2.32 SCI_SCIFFTX_FIFO_ST_BITS

Definition:

```
#define SCI_SCIFFTX_FIFO_ST_BITS
```

Description:

Defines the location of the TXFFST4-0 bits in the SCIFFTX register.

15.2.2.33 SCI_SCIFFTX_IENA_BITS

Definition:

```
#define SCI_SCIFFTX_IENA_BITS
```

Description:

Defines the location of the TXFFIENA bits in the SCIFFTX register.

15.2.2.34 SCI_SCIFFTX_IL_BITS

Definition:

```
#define SCI_SCIFFTX_IL_BITS
```

Description:

Defines the location of the TXFFIL4-0 bits in the SCIFFTX register.

15.2.2.35 SCI_SCIFFTX_INT_BITS

Definition:

```
#define SCI_SCIFFTX_INT_BITS
```

Description:

Defines the location of the TXFFINT flag bits in the SCIFFTX register.

15.2.2.36 SCI_SCIFFTX_INTCLR_BITS

Definition:

```
#define SCI_SCIFFTX_INTCLR_BITS
```

Description:

Defines the location of the TXFFINT CLR bits in the SCIFFTX register.

15.2.2.37 SCI_SCIRXST_BRKDT_BITS

Definition:

```
#define SCI_SCIRXST_BRKDT_BITS
```

Description:

Defines the location of the BRKDT bits in the SCIRXST register.

15.2.2.38 SCI_SCIRXST_FE_BITS

Definition:

```
#define SCI_SCIRXST_FE_BITS
```

Description:

Defines the location of the FE bits in the SCIRXST register.

15.2.2.39 SCI_SCIRXST_OE_BITS

Definition:

```
#define SCI_SCIRXST_OE_BITS
```

Description:

Defines the location of the OE bits in the SCIRXST register.

15.2.2.40 SCI_SCIRXST_PE_BITS

Definition:

```
#define SCI_SCIRXST_PE_BITS
```

Description:

Defines the location of the PE bits in the SCIRXST register.

15.2.2.41 SCI_SCIRXST_RXERROR_BITS

Definition:

```
#define SCI_SCIRXST_RXERROR_BITS
```

Description:

Defines the location of the RX ERROR bits in the SCIRXST register.

15.2.2.42 SCI_SCIRXST_RXRDY_BITS

Definition:

```
#define SCI_SCIRXST_RXRDY_BITS
```

Description:

Defines the location of the RXRDY bits in the SCIRXST register.

15.2.2.43 SCI_SCIRXST_RXWAKE_BITS

Definition:

```
#define SCI_SCIRXST_RXWAKE_BITS
```

Description:

Defines the location of the RXWAKE bits in the SCIRXST register.

15.2.2.44 SCIA_BASE_ADDR

Definition:

```
#define SCIA_BASE_ADDR
```

Description:

Defines the base address of the serial communications interface (SCI) A registers.

15.2.3 Typedef Documentation

15.2.3.1 SCI_Handle

Definition:

```
typedef struct _SCI_Obj_ *SCI_Handle
```

Description:

Defines the serial communications interface (SCI) handle.

15.2.3.2 SCI_Obj

Definition:

```
typedef struct _SCI_Obj_ SCI_Obj
```

Description:

Defines the serial communications interface (SCI) object.

15.2.4 Enumeration Documentation

15.2.4.1 SCI_BaudRate_e

Description:

Enumeration to define the serial communications interface (SCI) baud rates. This enumeration assume a device clock of 60Mhz and a LSPCLK of 15MHz.

Enumerators:

- SCI_BaudRate_9_6_kBaud** Denotes 9.6 kBaud.
- SCI_BaudRate_19_2_kBaud** Denotes 19.2 kBaud.
- SCI_BaudRate_57_6_kBaud** Denotes 57.6 kBaud.
- SCI_BaudRate_115_2_kBaud** Denotes 115.2 kBaud.

15.2.4.2 SCI_CharLength_e

Description:

Enumeration to define the serial communications interface (SCI) character lengths.

Enumerators:

- SCI_CharLength_1_Bit** Denotes a character length of 1 bit.
- SCI_CharLength_2_Bits** Denotes a character length of 2 bits.
- SCI_CharLength_3_Bits** Denotes a character length of 3 bits.
- SCI_CharLength_4_Bits** Denotes a character length of 4 bits.
- SCI_CharLength_5_Bits** Denotes a character length of 5 bits.
- SCI_CharLength_6_Bits** Denotes a character length of 6 bits.
- SCI_CharLength_7_Bits** Denotes a character length of 7 bits.
- SCI_CharLength_8_Bits** Denotes a character length of 8 bits.

15.2.4.3 SCI_FifoLevel_e

Description:

Enumeration to define the serial communications interface (SCI) FIFO level.

Enumerators:

- SCI_FifoLevel_Empty** Denotes the fifo is empty.
- SCI_FifoLevel_1_Word** Denotes the fifo contains 1 word.
- SCI_FifoLevel_2_Words** Denotes the fifo contains 2 words.
- SCI_FifoLevel_3_Words** Denotes the fifo contains 3 words.
- SCI_FifoLevel_4_Words** Denotes the fifo contains 4 words.

15.2.4.4 SCI_FifoStatus_e

Description:

Enumeration to define the serial communications interface (SCI) FIFO status.

Enumerators:

- SCI_FifoStatus_Empty*** Denotes the fifo is empty.
- SCI_FifoStatus_1_Word*** Denotes the fifo contains 1 word.
- SCI_FifoStatus_2_Words*** Denotes the fifo contains 2 words.
- SCI_FifoStatus_3_Words*** Denotes the fifo contains 3 words.
- SCI_FifoStatus_4_Words*** Denotes the fifo contains 4 words.

15.2.4.5 SCI_Mode_e

Description:

Enumeration to define the serial communications interface (SCI) multiprocessor protocol mode.

Enumerators:

- SCI_Mode_IdleLine*** Denotes idle-line mode protocol.
- SCI_Mode_AddressBit*** Denotes address-bit mode protocol.

15.2.4.6 SCI_NumStopBits_e

Description:

Enumeration to define the serial communications interface (SCI) number of stop bits.

Enumerators:

- SCI_NumStopBits_One*** Denotes 1 stop bit.
- SCI_NumStopBits_Two*** Denotes 2 stop bits.

15.2.4.7 SCI_Parity_e

Description:

Enumeration to define the serial communications interface (SCI) parity.

Enumerators:

- SCI_Parity_Odd*** Denotes odd parity.
- SCI_Parity_Even*** Denotes even parity.

15.2.4.8 SCI_Priority_e

Description:

Enumeration to define the serial communications interface (SCI) emulation suspend priority.

Enumerators:

- SCI_Priority_Immediate*** Denotes an immediate stop.
- SCI_Priority_FreeRun*** Denotes free running.
- SCI_Priority_AfterRxRxSeq*** Denotes that a stop after the current receive/transmit sequence.

15.2.5 Function Documentation

15.2.5.1 SCI_clearAutoBaudDetect

Clears the auto baud detect mode.

Prototype:

```
void  
SCI_clearAutoBaudDetect(SCI_Handle sciHandle)
```

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.2 void SCI_clearRxFifoInt (SCI_Handle sciHandle)

Clears the Rx FIFO interrupt flag.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.3 void SCI_clearRxFifoOvf (SCI_Handle sciHandle)

Clears the Rx FIFO overflow flag.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.4 void SCI_clearTxFifoInt (SCI_Handle sciHandle)

Clears the Tx FIFO interrupt flag.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.5 void SCI_disable (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.6 void SCI_disableAutoBaudAlign ([SCI_Handle](#) sciHandle)

Disable the serial communications interface (SCI) auto baud alignment.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.7 void SCI_disableFifoEnh ([SCI_Handle](#) sciHandle)

Disables the serial communications interface (SCI) FIFO enhancements.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.8 void SCI_disableLoopBack ([SCI_Handle](#) sciHandle)

Disables the serial peripheral interface (SCI) loop back mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.9 void SCI_disableParity ([SCI_Handle](#) sciHandle)

Disable the parity.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.10 void SCI_disableRx ([SCI_Handle](#) sciHandle)

Disables the serial communications interface (SCI) master/slave receive mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.11 void SCI_disableRxErrorInt ([SCI_Handle](#) sciHandle)

Disables the serial communications interface (SCI) receive error interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.12 void SCI_disableRxFifoInt (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) receive FIFO interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.13 void SCI_disableRxInt (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) receive interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.14 void SCI_disableSleep (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) sleep mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.15 void SCI_disableTx (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) master/slave transmit mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.16 void SCI_disableTxFifoInt (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) transmit FIFO interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.17 void SCI_disableTxInt (SCI_Handle sciHandle)

Disables the serial communications interface (SCI) transmit interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.18 void SCI_disableTxWake ([SCI_Handle](#) *sciHandle*)

Disables the serial communications interface (SCI) wakeup method.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.19 void SCI_enable ([SCI_Handle](#) *sciHandle*)

Enables the serial communications interface (SCI).

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.20 void SCI_enableAutoBaudAlign ([SCI_Handle](#) *sciHandle*)

Enable the serial communications interface (SCI) auto baud alignment.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.21 void SCI_enableFifoEnh ([SCI_Handle](#) *sciHandle*)

Enables the serial communications interface (SCI) FIFO enhancements.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.22 void SCI_enableLoopBack ([SCI_Handle](#) *sciHandle*)

Enables the serial peripheral interface (SCI) loop back mode.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.23 void SCI_enableParity ([SCI_Handle](#) *sciHandle*)

Enables the serial peripheral interface (SCI) parity.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.24 void SCI_enableRx (SCI_Handle sciHandle)

Enables the serial peripheral interface (SCI) receiver.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.25 void SCI_enableRxErrorInt (SCI_Handle sciHandle)

Enables the serial communications interface (SCI) receive error interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.26 void SCI_enableRxFifoInt (SCI_Handle sciHandle)

Enables the serial communications interface (SCI) receive FIFO interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.27 void SCI_enableRxInt (SCI_Handle sciHandle)

Enables the serial communications interface (SCI) receive interrupt.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.28 void SCI_enableSleep (SCI_Handle sciHandle)

Enables the serial communications interface (SCI) sleep mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.29 void SCI_enableTx (SCI_Handle sciHandle)

Enables the serial communications interface (SCI) master/slave transmit mode.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.30 void SCI_enableTxFifoInt ([SCI_Handle](#) *sciHandle*)

Enables the serial communications interface (SCI) transmit FIFO interrupt.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.31 void SCI_enableTxInt ([SCI_Handle](#) *sciHandle*)

Enables the serial communications interface (SCI) transmit interrupt.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.32 void SCI_enableTxWake ([SCI_Handle](#) *sciHandle*)

Enables the serial communications interface (SCI) wakeup method.

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

15.2.5.33 uint16_t SCI_getData ([SCI_Handle](#) *sciHandle*) [inline]

Reads data from the serial communications interface (SCI).

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

Returns:

The received data value

15.2.5.34 uint16_t SCI_getDataBlocking ([SCI_Handle](#) *sciHandle*)

Gets data from the serial communications interface (Blocking).

Parameters:

← ***sciHandle*** The serial communications interface (SCI) object handle

Returns:

Data from the serial peripheral

15.2.5.35 `uint16_t SCI_getDataNonBlocking (SCI_Handle sciHandle, uint16_t * success)`

Read data from the serial communications interface(Non-Blocking).

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- **success** Pointer to a variable which will house whether the read was successful or not (true on success)

Returns:

Data if successful, or NULL if no characters

15.2.5.36 `SCI_FifoStatus_e SCI_getRxFifoStatus (SCI_Handle sciHandle)`

Gets the serial communications interface (SCI) receive FIFO status.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle

Returns:

The receive FIFO status

15.2.5.37 `SCI_FifoStatus_e SCI_getTxFifoStatus (SCI_Handle sciHandle)`

Gets the serial communications interface (SCI) transmit FIFO status.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle

Returns:

The transmit FIFO status

15.2.5.38 `SCI_Handle SCI_init (void * pMemory, const size_t numBytes)`

Initializes the serial communications interface (SCI) object handle.

Parameters:

- ← **pMemory** A pointer to the base address of the SCI registers
- ← **numBytes** The number of bytes allocated for the SCI object, bytes

Returns:

The serial communications interface (SCI) object handle

15.2.5.39 bool_t SCI_isRxDataReady (SCI_Handle sciHandle) [inline]

Determines if the serial communications interface (SCI) has receive data ready.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

Returns:

The receive data status

15.2.5.40 bool_t SCI_isTxReady (SCI_Handle sciHandle) [inline]

Determines if the serial communications interface (SCI) is ready to transmit.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

Returns:

The transmit status

15.2.5.41 void SCI_putData (SCI_Handle sciHandle, const uint16_t data) [inline]

Writes data to the serial communications interface (SCI).

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

← **data** The data value

15.2.5.42 void SCI_putDataBlocking (SCI_Handle sciHandle, uint16_t data)

Writes data to the serial communications interface (Blocking).

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

← **data** The data value

15.2.5.43 uint16_t SCI_putDataNonBlocking (SCI_Handle sciHandle, uint16_t data)

Writes data to the serial communications interface (Non-Blocking).

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

← **data** The data value

Returns:

True on successful write, false if no space is available in the transmit buffer

15.2.5.44 void SCI_reset (SCI_Handle sciHandle)

Resets the serial communications interface (SCI).

Parameters:

← **sciHandle** The serial communication interface (SCI) object handle

15.2.5.45 void SCI_resetChannels (SCI_Handle sciHandle)

Resets the serial communications interface (SCI) transmit and receive channels.

Parameters:

← **sciHandle** The serial communication interface (SCI) object handle

15.2.5.46 void SCI_resetRxFifo (SCI_Handle sciHandle)

Resets the serial communications interface (SCI) receive FIFO.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.47 void SCI_resetTxFifo (SCI_Handle sciHandle)

Resets the serial communications interface (SCI) transmit FIFO.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

15.2.5.48 void SCI_setBaudRate (SCI_Handle sciHandle, const SCI_BaudRate_e baudRate)

Sets the serial communications interface (SCI) baud rate.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

← **baudRate** The baud rate

15.2.5.49 void SCI_setCharLength (SCI_Handle sciHandle, const SCI_CharLength_e charLength)

Sets the serial communications interface (SCI) character length.

Parameters:

← **sciHandle** The serial communications interface (SCI) object handle

← **charLength** The character length

15.2.5.50 void SCI_setMode (SCI_Handle sciHandle, const SCI_Mode_e mode)

Sets the serial communications interface (SCI) multiprocessor mode.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- ← **mode** The multiprocessor mode

15.2.5.51 void SCI_setNumStopBits (SCI_Handle sciHandle, const SCI_NumStopBits_e numBits)

Sets the serial communications interface (SCI) number of stop bits.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- ← **numBits** The number of bits

15.2.5.52 void SCI_setParity (SCI_Handle sciHandle, const SCI_Parity_e parity)

Sets the serial communications interface (SCI) parity.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- ← **parity** The parity

15.2.5.53 void SCI_setPriority (SCI_Handle sciHandle, const SCI_Priority_e priority)

Sets the serial communications interface (SCI) priority.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- ← **priority** The priority

15.2.5.54 void SCI_setRxFifoIntLevel (SCI_Handle sciHandle, const SCI_FifoLevel_e fifoLevel)

Sets the serial communications interface (SCI) receive FIFO level for generating an interrupt.

Parameters:

- ← **sciHandle** The serial communications interface (SCI) object handle
- ← **fifoLevel** The FIFO level

15.2.5.55 void SCI_setTxDelay ([SCI_Handle](#) *sciHandle*, const uint8_t *delay*)

Sets the serial communications interface (SCI) transmit delay.

Parameters:

- ← ***sciHandle*** The serial communications interface (SCI) object handle
- ← ***delay*** The transmit delay

15.2.5.56 void SCI_setTxFifoIntLevel ([SCI_Handle](#) *sciHandle*, const [SCI_FifoLevel_e](#) *fifoLevel*)

Sets the serial communications interface (SCI) transmit FIFO level for generating an interrupt.

Parameters:

- ← ***sciHandle*** The serial communications interface (SCI) object handle
- ← ***fifoLevel*** The FIFO level

16 Serial Peripheral Interface (SPI)

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16.1 Introduction

The Serial Peripheral Interface (SPI) API provides a set of functions for configuring and using the device's SPI peripheral(s).

This driver is contained in `f2802x/common/source/spi.c`, with `f2802x/common/include/spi.h` containing the API definitions for use by applications.

16.2 SPI

Defines

- `SPI_SPICCR_CHAR_LENGTH_BITS`
- `SPI_SPICCR_CLKPOL_BITS`
- `SPI_SPICCR_RESET_BITS`
- `SPI_SPICCR_SPILBK_BITS`
- `SPI_SPICTL_CLK_PHASE_BITS`
- `SPI_SPICTL_INT_ENA_BITS`
- `SPI_SPICTL_MODE_BITS`
- `SPI_SPICTL_OVRRUN_INT_ENA_BITS`
- `SPI_SPICTL_TALK_BITS`
- `SPI_SPIFFRX_FIFO_OVF_BITS`
- `SPI_SPIFFRX_FIFO_OVFCLR_BITS`
- `SPI_SPIFFRX_FIFO_RESET_BITS`
- `SPI_SPIFFRX_FIFO_ST_BITS`
- `SPI_SPIFFRX_IENA_BITS`
- `SPI_SPIFFRX_IL_BITS`
- `SPI_SPIFFRX_INT_BITS`
- `SPI_SPIFFRX_INTCLR_BITS`
- `SPI_SPIFFTX_CHAN_RESET_BITS`
- `SPI_SPIFFTX_FIFO_ENA_BITS`
- `SPI_SPIFFTX_FIFO_RESET_BITS`
- `SPI_SPIFFTX_FIFO_ST_BITS`
- `SPI_SPIFFTX_IENA_BITS`
- `SPI_SPIFFTX_IL_BITS`
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- `SPIA_BASE_ADDR`

Enumerations

- [SPI_BaudRate_e](#)
- [SPI_CharLength_e](#)
- [SPI_ClkPhase_e](#)
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- void [SPI_disableTx](#) ([SPI_Handle](#) spiHandle)
- void [SPI_disableTxFifo](#) ([SPI_Handle](#) spiHandle)
- void [SPI_disableTxFifoEnh](#) ([SPI_Handle](#) spiHandle)
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- void [SPI_enable](#) ([SPI_Handle](#) spiHandle)
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- void [SPI_enableTxFifoInt](#) ([SPI_Handle](#) spiHandle)
- [SPI_FifoStatus_e](#) [SPI_getRxFifoStatus](#) ([SPI_Handle](#) spiHandle)
- [SPI_FifoStatus_e](#) [SPI_getTxFifoStatus](#) ([SPI_Handle](#) spiHandle)
- [SPI_Handle](#) [SPI_init](#) (void *pMemory, const size_t numBytes)
- uint16_t [SPI_read](#) ([SPI_Handle](#) spiHandle)
- void [SPI_reset](#) ([SPI_Handle](#) spiHandle)

- void [SPI_resetChannels](#) ([SPI_Handle](#) spiHandle)
- void [SPI_resetRxFifo](#) ([SPI_Handle](#) spiHandle)
- void [SPI_resetTxFifo](#) ([SPI_Handle](#) spiHandle)
- void [SPI_setBaudRate](#) ([SPI_Handle](#) spiHandle, const [SPI_BaudRate_e](#) baudRate)
- void [SPI_setCharLength](#) ([SPI_Handle](#) spiHandle, const [SPI_CharLength_e](#) length)
- void [SPI_setClkPhase](#) ([SPI_Handle](#) spiHandle, const [SPI_ClkPhase_e](#) clkPhase)
- void [SPI_setClkPolarity](#) ([SPI_Handle](#) spiHandle, const [SPI_ClkPolarity_e](#) polarity)
- void [SPI_setMode](#) ([SPI_Handle](#) spiHandle, const [SPI_Mode_e](#) mode)
- void [SPI_setPriority](#) ([SPI_Handle](#) spiHandle, const [SPI_Priority_e](#) priority)
- void [SPI_setRxFifoIntLevel](#) ([SPI_Handle](#) spiHandle, const [SPI_FifoLevel_e](#) fifoLevel)
- void [SPI_setStelInv](#) ([SPI_Handle](#) spiHandle, const [SPI_StelInv_e](#) stelInv)
- void [SPI_setTriWire](#) ([SPI_Handle](#) spiHandle, const [SPI_TriWire_e](#) triWire)
- void [SPI_setTxDelay](#) ([SPI_Handle](#) spiHandle, const uint8_t delay)
- void [SPI_setTxFifoIntLevel](#) ([SPI_Handle](#) spiHandle, const [SPI_FifoLevel_e](#) fifoLevel)
- void [SPI_write](#) ([SPI_Handle](#) spiHandle, const uint16_t data)
- void [SPI_write8](#) ([SPI_Handle](#) spiHandle, const uint16_t data)

16.2.1 Define Documentation

16.2.1.1 SPI_SPICCR_CHAR_LENGTH_BITS

Definition:

```
#define SPI_SPICCR_CHAR_LENGTH_BITS
```

Description:

Defines the location of the SPICCHAR3-0 bits in the SPICCR register.

16.2.1.2 SPI_SPICCR_CLKPOL_BITS

Definition:

```
#define SPI_SPICCR_CLKPOL_BITS
```

Description:

Defines the location of the CLOCK POLARITY bits in the SPICCR register.

16.2.1.3 SPI_SPICCR_RESET_BITS

Definition:

```
#define SPI_SPICCR_RESET_BITS
```

Description:

Defines the location of the SPI SW Reset bits in the SPICCR register.

16.2.1.4 SPI_SPICCR_SPILBK_BITS

Definition:

```
#define SPI_SPICCR_SPILBK_BITS
```

Description:

Defines the location of the SPILBK bits in the SPICCR register.

16.2.1.5 SPI_SPICTL_CLK_PHASE_BITS

Definition:

```
#define SPI_SPICTL_CLK_PHASE_BITS
```

Description:

Defines the location of the CLOCK PHASE bits in the SPICTL register.

16.2.1.6 SPI_SPICTL_INT_ENA_BITS

Definition:

```
#define SPI_SPICTL_INT_ENA_BITS
```

Description:

Defines the location of the SPI INT ENA bits in the SPICTL register.

16.2.1.7 SPI_SPICTL_MODE_BITS

Definition:

```
#define SPI_SPICTL_MODE_BITS
```

Description:

Defines the location of the MASTER/SLAVE bits in the SPICTL register.

16.2.1.8 SPI_SPICTL_OVRRUN_INT_ENA_BITS

Definition:

```
#define SPI_SPICTL_OVRRUN_INT_ENA_BITS
```

Description:

Defines the location of the OVERRUN INT ENA bits in the SPICTL register.

16.2.1.9 SPI_SPICTL_TALK_BITS

Definition:

```
#define SPI_SPICTL_TALK_BITS
```

Description:

Defines the location of the TALK bits in the SPICTL register.

16.2.1.10 SPI_SPIFFRX_FIFO_OVF_BITS

Definition:

```
#define SPI_SPIFFRX_FIFO_OVF_BITS
```

Description:

Defines the location of the RXFFOVF bits in the SPIFFRX register.

16.2.1.11 SPI_SPIFFRX_FIFO_OVFCLR_BITS

Definition:

```
#define SPI_SPIFFRX_FIFO_OVFCLR_BITS
```

Description:

Defines the location of the RXFFOVF CLR bits in the SPIFFRX register.

16.2.1.12 SPI_SPIFFRX_FIFO_RESET_BITS

Definition:

```
#define SPI_SPIFFRX_FIFO_RESET_BITS
```

Description:

Defines the location of the RXFIFO Reset bits in the SPIFFRX register.

16.2.1.13 SPI_SPIFFRX_FIFO_ST_BITS

Definition:

```
#define SPI_SPIFFRX_FIFO_ST_BITS
```

Description:

Defines the location of the RXFFST4-0 bits in the SPIFFRX register.

16.2.1.14 SPI_SPIFFRX_IENA_BITS

Definition:

```
#define SPI_SPIFFRX_IENA_BITS
```

Description:

Defines the location of the RXFFIENA bits in the SPIFFRX register.

16.2.1.15 SPI_SPIFFRX_IL_BITS

Definition:

```
#define SPI_SPIFFRX_IL_BITS
```

Description:

Defines the location of the RXFFIL4-0 bits in the SPIFFRX register.

16.2.1.16 SPI_SPIFFRX_INT_BITS

Definition:

```
#define SPI_SPIFFRX_INT_BITS
```

Description:

Defines the location of the RXFFINT CLR bits in the SPIFFRX register.

16.2.1.17 SPI_SPIFFRX_INTCLR_BITS

Definition:

```
#define SPI_SPIFFRX_INTCLR_BITS
```

Description:

Defines the location of the RXFFINT CLR bits in the SPIFFRX register.

16.2.1.18 SPI_SPIFFTX_CHAN_RESET_BITS

Definition:

```
#define SPI_SPIFFTX_CHAN_RESET_BITS
```

Description:

Defines the location of the SPIRST bits in the SPIFFTX register.

16.2.1.19 SPI_SPIFFTX_FIFO_ENA_BITS

Definition:

```
#define SPI_SPIFFTX_FIFO_ENA_BITS
```

Description:

Defines the location of the SPIFFENA bits in the SPIFFTX register.

16.2.1.20 SPI_SPIFFTX_FIFO_RESET_BITS

Definition:

```
#define SPI_SPIFFTX_FIFO_RESET_BITS
```

Description:

Defines the location of the TXFIFO Reset bits in the SPIFFTX register.

16.2.1.21 SPI_SPIFFTX_FIFO_ST_BITS

Definition:

```
#define SPI_SPIFFTX_FIFO_ST_BITS
```

Description:

Defines the location of the TXFFST4-0 bits in the SPIFFTX register.

16.2.1.22 SPI_SPIFFTX_IENA_BITS

Definition:

```
#define SPI_SPIFFTX_IENA_BITS
```

Description:

Defines the location of the TXFFIENA bits in the SPIFFTX register.

16.2.1.23 SPI_SPIFFTX_IL_BITS

Definition:

```
#define SPI_SPIFFTX_IL_BITS
```

Description:

Defines the location of the TXFFIL4-0 bits in the SPIFFTX register.

16.2.1.24 SPI_SPIFFTX_INT_BITS

Definition:

```
#define SPI_SPIFFTX_INT_BITS
```

Description:

Defines the location of the TXFFINT bits in the SPIFFTX register.

16.2.1.25 SPI_SPIFFTX_INTCLR_BITS

Definition:

```
#define SPI_SPIFFTX_INTCLR_BITS
```

Description:

Defines the location of the TXFFINT CLR bits in the SPIFFTX register.

16.2.1.26 SPIA_BASE_ADDR

Definition:

```
#define SPIA_BASE_ADDR
```

Description:

Defines the base address of the serial peripheral interface (SPI) A registers.

16.2.2 Typedef Documentation

16.2.2.1 SPI_Handle

Definition:

```
typedef struct _SPI_Obj_ *SPI_Handle
```

Description:

Defines the serial peripheral interface (SPI) handle.

16.2.3 Enumeration Documentation

16.2.3.1 SPI_BaudRate_e

Description:

Enumeration to define the serial peripheral interface (SPI) baud rates. These assume a LSCLK of 12.5MHz.

Enumerators:

SPI_BaudRate_500_KBaud Denotes 500 KBaud.

SPI_BaudRate_1_MBaud Denotes 1 MBaud.

16.2.3.2 SPI_CharLength_e

Description:

Enumeration to define the serial peripheral interface (SPI) character lengths.

Enumerators:

SPI_CharLength_1_Bit Denotes a character length of 1 bit.

SPI_CharLength_2_Bits Denotes a character length of 2 bits.

SPI_CharLength_3_Bits Denotes a character length of 3 bits.

SPI_CharLength_4_Bits Denotes a character length of 4 bits.

SPI_CharLength_5_Bits Denotes a character length of 5 bits.

SPI_CharLength_6_Bits Denotes a character length of 6 bits.

SPI_CharLength_7_Bits Denotes a character length of 7 bits.

SPI_CharLength_8_Bits Denotes a character length of 8 bits.

SPI_CharLength_9_Bits Denotes a character length of 9 bits.

SPI_CharLength_10_Bits Denotes a character length of 10 bits

SPI_CharLength_11_Bits Denotes a character length of 11 bits

SPI_CharLength_12_Bits Denotes a character length of 12 bits

SPI_CharLength_13_Bits Denotes a character length of 13 bits

SPI_CharLength_14_Bits Denotes a character length of 14 bits

SPI_CharLength_15_Bits Denotes a character length of 15 bits

SPI_CharLength_16_Bits Denotes a character length of 16 bits

16.2.3.3 SPI_ClkPhase_e

Description:

Enumeration to define the serial peripheral interface (SPI) clock phase.

Enumerators:

SPI_ClkPhase_Normal Denotes a normal clock scheme.

SPI_ClkPhase_Delayed Denotes that the SPICLK signal is delayed by one half-cycle

16.2.3.4 SPI_ClkPolarity_e

Description:

Enumeration to define the serial peripheral interface (SPI) clock polarity for the input and output data.

Enumerators:

SPI_ClkPolarity_OutputRisingEdge_InputFallingEdge Denotes

SPI_ClkPolarity_OutputFallingEdge_InputRisingEdge that the tx data is output on the rising edge, the rx data is latched on the falling edge Denotes

16.2.3.5 SPI_FifoLevel_e

Description:

Enumeration to define the serial peripheral interface (SPI) FIFO level.

Enumerators:

SPI_FifoLevel_Empty Denotes the fifo is empty.

SPI_FifoLevel_1_Word Denotes the fifo contains 1 word.

SPI_FifoLevel_2_Words Denotes the fifo contains 2 words.

SPI_FifoLevel_3_Words Denotes the fifo contains 3 words.

SPI_FifoLevel_4_Words Denotes the fifo contains 4 words.

16.2.3.6 SPI_FifoStatus_e

Description:

Enumeration to define the serial peripheral interface (SPI) FIFO status.

Enumerators:

SPI_FifoStatus_Empty Denotes the fifo is empty.

SPI_FifoStatus_1_Word Denotes the fifo contains 1 word.

SPI_FifoStatus_2_Words Denotes the fifo contains 2 words.

SPI_FifoStatus_3_Words Denotes the fifo contains 3 words.

SPI_FifoStatus_4_Words Denotes the fifo contains 4 words.

16.2.3.7 SPI_Mode_e

Description:

Enumeration to define the serial peripheral interface (SPI) network mode control.

Enumerators:

SPI_Mode_Slave Denotes slave mode.

SPI_Mode_Master Denotes master mode.

16.2.3.8 SPI_Priority_e

Description:

Enumerators:

SPI_Priority_Immediate Stops immediately after EMU halt.

SPI_Priority_FreeRun Doesn't stop after EMU halt.

SPI_Priority_AfterRxRxSeq Stops after EMU halt and next rx/rx sequence

16.2.3.9 SPI_StelInv_e

Description:

Enumerators:

SPI_StelInv_ActiveLow Denotes active low STE pin.

SPI_StelInv_ActiveHigh Denotes active high STE pin.

16.2.3.10 SPI_TriWire_e

Description:

Enumerators:

SPI_TriWire_NormalFourWire Denotes 4 wire SPI mode.

SPI_TriWire_ThreeWire Denotes 3 wire SPI mode.

16.2.4 Function Documentation

16.2.4.1 SPI_clearRxFifoInt

Clears the Rx FIFO interrupt flag.

Prototype:

```
void  
SPI_clearRxFifoInt(SPI_Handle spiHandle)
```

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.2 void SPI_clearRxFifoOvf (SPI_Handle spiHandle)

Clears the Rx FIFO overflow flag.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.3 void SPI_clearTxFifoInt (SPI_Handle spiHandle)

Clears the Tx FIFO interrupt flag.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.4 void SPI_disable (SPI_Handle spiHandle)

Disables the serial peripheral interface (SPI).

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.5 void SPI_disableChannels (SPI_Handle spiHandle)

Disables the serial peripheral interface (SPI) transmit and receive channels.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.6 void SPI_disableInt (SPI_Handle spiHandle)

Disables the serial peripheral interface (SPI) interrupt.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.7 void SPI_disableLoopBack (SPI_Handle spiHandle)

Disables the serial peripheral interface (SPI) loop back mode.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.8 void SPI_disableOverRunInt (SPI_Handle spiHandle)

Disables the serial peripheral interface (SPI) over-run interrupt.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.9 void SPI_disableRxFifo ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) receive FIFO.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.10 void SPI_disableRxFifoInt ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) receive FIFO interrupt.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.11 void SPI_disableTx ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) master/slave transmit mode.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.12 void SPI_disableTxFifo ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) transmit FIFO.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.13 void SPI_disableTxFifoEnh ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) transmit FIFO enhancements.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.14 void SPI_disableTxFifoInt ([SPI_Handle](#) *spiHandle*)

Disables the serial peripheral interface (SPI) transmit FIFO interrupt.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.15 void SPI_enable (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI).

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.16 void SPI_enableChannels (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI) transmit and receive channels.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.17 void SPI_enableFifoEnh (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI) transmit FIFO enhancements.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.18 void SPI_enableInt (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI) interrupt.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.19 void SPI_enableLoopBack (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI) loop back mode.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.20 void SPI_enableOverRunInt (SPI_Handle spiHandle)

Enables the serial peripheral interface (SPI) over-run interrupt.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.21 void SPI_enableRxFifo ([SPI_Handle](#) *spiHandle*)

Enables the serial peripheral interface (SPI) receive FIFO.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.22 void SPI_enableRxFifoInt ([SPI_Handle](#) *spiHandle*)

Enables the serial peripheral interface (SPI) receive FIFO interrupt.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.23 void SPI_enableTx ([SPI_Handle](#) *spiHandle*)

Enables the serial peripheral interface (SPI) master/slave transmit mode.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.24 void SPI_enableTxFifo ([SPI_Handle](#) *spiHandle*)

Enables the serial peripheral interface (SPI) transmit FIFO.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.25 void SPI_enableTxFifoInt ([SPI_Handle](#) *spiHandle*)

Enables the serial peripheral interface (SPI) transmit FIFO interrupt.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

16.2.4.26 [SPI_FifoStatus_e](#) SPI_getRxFifoStatus ([SPI_Handle](#) *spiHandle*)

Gets the serial peripheral interface (SPI) receive FIFO status.

Parameters:

← ***spiHandle*** The serial peripheral interface (SPI) object handle

Returns:

The receive FIFO status

16.2.4.27 SPI_FifoStatus_e SPI_getTxFifoStatus (SPI_Handle spiHandle)

Gets the serial peripheral interface (SPI) transmit FIFO status.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

Returns:

The transmit FIFO status

16.2.4.28 SPI_Handle SPI_init (void * pMemory, const size_t numBytes)

Initializes the serial peripheral interface (SPI) object handle.

Parameters:

← **pMemory** A pointer to the base address of the SPI registers

← **numBytes** The number of bytes allocated for the SPI object, bytes

Returns:

The serial peripheral interface (SPI) object handle

16.2.4.29 uint16_t SPI_read (SPI_Handle spiHandle) [inline]

Reads data from the serial peripheral interface (SPI).

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

Returns:

The received data value

16.2.4.30 void SPI_reset (SPI_Handle spiHandle)

Resets the serial peripheral interface (SPI).

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.31 void SPI_resetChannels (SPI_Handle spiHandle)

Resets the serial peripheral interface (SPI) transmit and receive channels.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.32 void SPI_resetRxFifo ([SPI_Handle spiHandle](#))

Resets the serial peripheral interface (SPI) receive FIFO.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.33 void SPI_resetTxFifo ([SPI_Handle spiHandle](#))

Resets the serial peripheral interface (SPI) transmit FIFO.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

16.2.4.34 void SPI_setBaudRate ([SPI_Handle spiHandle](#), const [SPI_BaudRate_e baudRate](#))

Sets the serial peripheral interface (SPI) baud rate.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

← **baudRate** The baud rate

16.2.4.35 void SPI_setCharLength ([SPI_Handle spiHandle](#), const [SPI_CharLength_e length](#))

Sets the serial peripheral interface (SPI) character length.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

← **length** The character length

16.2.4.36 void SPI_setClkPhase ([SPI_Handle spiHandle](#), const [SPI_ClkPhase_e clkPhase](#))

Sets the serial peripheral interface (SPI) clock phase.

Parameters:

← **spiHandle** The serial peripheral interface (SPI) object handle

← **clkPhase** The clock phase

16.2.4.37 void SPI_setClkPolarity ([SPI_Handle](#) *spiHandle*, const [SPI_ClkPolarity_e](#) *polarity*)

Sets the serial peripheral interface (SPI) clock polarity.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***polarity*** The clock polarity

16.2.4.38 void SPI_setMode ([SPI_Handle](#) *spiHandle*, const [SPI_Mode_e](#) *mode*)

Sets the serial peripheral interface (SPI) network mode.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***mode*** The network mode

16.2.4.39 void SPI_setPriority ([SPI_Handle](#) *spiHandle*, const [SPI_Priority_e](#) *priority*)

Sets the priority of the SPI port vis-a-vis the EMU.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***priority*** The priority of the SPI port vis-a-vis the EMU

16.2.4.40 void SPI_setRxFifoIntLevel ([SPI_Handle](#) *spiHandle*, const [SPI_FifoLevel_e](#) *fifoLevel*)

Sets the serial peripheral interface (SPI) receive FIFO level for generating an interrupt.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***fifoLevel*** The FIFO level

16.2.4.41 void SPI_setStelInv ([SPI_Handle](#) *spiHandle*, const [SPI_StelInv_e](#) *stelInv*)

Controls pin inversion of STE pin.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***stelInv*** Polarity of STE pin

16.2.4.42 void SPI_setTriWire ([SPI_Handle](#) *spiHandle*, const [SPI_TriWire_e](#) *triwire*)

Sets SPI port operating mode.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***triwire*** 3 or 4 wire mode

16.2.4.43 void SPI_setTxDelay ([SPI_Handle](#) *spiHandle*, const uint8_t *delay*)

Sets the serial peripheral interface (SPI) transmit delay.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***delay*** The delay value

16.2.4.44 void SPI_setTxFifoIntLevel ([SPI_Handle](#) *spiHandle*, const [SPI_FifoLevel_e](#) *fifoLevel*)

Sets the serial peripheral interface (SPI) transmit FIFO level for generating an interrupt.

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***fifoLevel*** The FIFO level

16.2.4.45 void SPI_write ([SPI_Handle](#) *spiHandle*, const uint16_t *data*) [[inline](#)]

Writes data to the serial peripheral interface (SPI).

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***data*** The data value

16.2.4.46 void SPI_write8 ([SPI_Handle](#) *spiHandle*, const uint16_t *data*) [[inline](#)]

Writes a byte of data to the serial peripheral interface (SPI).

Parameters:

- ← ***spiHandle*** The serial peripheral interface (SPI) object handle
- ← ***data*** The data value

17 Timer

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17.1 Introduction

The timer API provides a set of functions for configuring, starting, stopping, and reading the CPU timers.

This driver is contained in `f2802x/common/source/timer.c`, with `f2802x/common/include/timer.h` containing the API definitions for use by applications.

17.2 TIMER

Data Structures

- `_TIMER_Obj_`

Defines

- `TIMER0_BASE_ADDR`
- `TIMER1_BASE_ADDR`
- `TIMER2_BASE_ADDR`
- `TIMER_TCR_FREESOFT_BITS`
- `TIMER_TCR_TIE_BITS`
- `TIMER_TCR_TIF_BITS`
- `TIMER_TCR_TRB_BITS`
- `TIMER_TCR_TSS_BITS`

Enumerations

- `TIMER_EmulationMode_e`
- `TIMER_Status_e`

Functions

- void `TIMER_clearFlag` (`TIMER_Handle` timerHandle)
- void `TIMER_disableInt` (`TIMER_Handle` timerHandle)
- void `TIMER_enableInt` (`TIMER_Handle` timerHandle)
- `uint32_t` `TIMER_getCount` (`TIMER_Handle` timerHandle)

- `TIMER_Status_e` `TIMER_getStatus` (`TIMER_Handle` timerHandle)
- `TIMER_Handle` `TIMER_init` (`void *pMemory`, `const size_t numBytes`)
- `void` `TIMER_reload` (`TIMER_Handle` timerHandle)
- `void` `TIMER_setDecimationFactor` (`TIMER_Handle` timerHandle, `const uint16_t decFactor`)
- `void` `TIMER_setEmulationMode` (`TIMER_Handle` timerHandle, `const TIMER_EmulationMode_e mode`)
- `void` `TIMER_setPeriod` (`TIMER_Handle` timerHandle, `const uint32_t period`)
- `void` `TIMER_setPreScaler` (`TIMER_Handle` timerHandle, `const uint16_t preScaler`)
- `void` `TIMER_start` (`TIMER_Handle` timerHandle)
- `void` `TIMER_stop` (`TIMER_Handle` timerHandle)

17.2.1 Data Structure Documentation

17.2.1.1 `_TIMER_Obj_`

Definition:

```
typedef struct
{
    uint32_t TIM;
    uint32_t PRD;
    uint32_t TCR;
    uint32_t TPR;
}
_TIMER_Obj_
```

Members:

TIM Timer Counter Register.
PRD Period Register.
TCR Timer Control Register.
TPR Timer Prescaler Register.

Description:

Defines the timer (TIMER) object.

17.2.2 Define Documentation

17.2.2.1 `TIMER0_BASE_ADDR`

Definition:

```
#define TIMER0_BASE_ADDR
```

Description:

Defines the base address of the timer (TIMER) 0 registers.

17.2.2.2 TIMER1_BASE_ADDR

Definition:

```
#define TIMER1_BASE_ADDR
```

Description:

Defines the base address of the timer (TIMER) 1 registers.

17.2.2.3 TIMER2_BASE_ADDR

Definition:

```
#define TIMER2_BASE_ADDR
```

Description:

Defines the base address of the timer (TIMER) 2 registers.

17.2.2.4 TIMER_TCR_FREESOFT_BITS

Definition:

```
#define TIMER_TCR_FREESOFT_BITS
```

Description:

Defines the location of the FREESOFT bits in the TCR register.

17.2.2.5 TIMER_TCR_TIE_BITS

Definition:

```
#define TIMER_TCR_TIE_BITS
```

Description:

Defines the location of the TIE bits in the TCR register.

17.2.2.6 TIMER_TCR_TIF_BITS

Definition:

```
#define TIMER_TCR_TIF_BITS
```

Description:

Defines the location of the TIF bits in the TCR register.

17.2.2.7 TIMER_TCR_TRB_BITS

Definition:

```
#define TIMER_TCR_TRB_BITS
```

Description:

Defines the location of the TRB bits in the TCR register.

17.2.2.8 TIMER_TCR_TSS_BITS

Definition:

```
#define TIMER_TCR_TSS_BITS
```

Description:

Defines the location of the TSS bits in the TCR register.

17.2.3 Typedef Documentation

17.2.3.1 TIMER_Handle

Definition:

```
typedef struct _TIMER_Obj_ *TIMER_Handle
```

Description:

Defines the timer (TIMER) handle.

17.2.3.2 TIMER_Obj

Definition:

```
typedef struct _TIMER_Obj_ TIMER_Obj
```

Description:

Defines the timer (TIMER) object.

17.2.4 Enumeration Documentation

17.2.4.1 TIMER_EmulationMode_e

Description:

Enumeration to define the timer (TIMER) emulation mode.

Enumerators:

TIMER_EmulationMode_StopAfterNextDecrement Denotes that the timer will stop after the next decrement.

TIMER_EmulationMode_StopAtZero Denotes that the timer will stop when it reaches zero.

TIMER_EmulationMode_RunFree Denotes that the timer will run free.

17.2.4.2 TIMER_Status_e

Description:

Enumeration to define the timer (TIMER) status.

Enumerators:

TIMER_Status_CntIsNotZero Denotes that the counter is non-zero.

TIMER_Status_CntIsZero Denotes that the counter is zero.

17.2.5 Function Documentation

17.2.5.1 `TIMER_clearFlag`

Clears the timer (TIMER) flag.

Prototype:

```
void  
TIMER_clearFlag(TIMER_Handle timerHandle)
```

Parameters:

← ***timerHandle*** The timer (TIMER) object handle

17.2.5.2 `void TIMER_disableInt (TIMER_Handle timerHandle)`

Disables the timer (TIMER) interrupt.

Parameters:

← ***timerHandle*** The timer (TIMER) object handle

17.2.5.3 `void TIMER_enableInt (TIMER_Handle timerHandle)`

Enables the timer (TIMER) interrupt.

Parameters:

← ***timerHandle*** The timer (TIMER) object handle

17.2.5.4 `uint32_t TIMER_getCount (TIMER_Handle timerHandle) [inline]`

Gets the timer (TIMER) count.

Parameters:

← ***timerHandle*** The timer (TIMER) object handle

Returns:

The timer (TIMER) count

17.2.5.5 `TIMER_Status_e TIMER_getStatus (TIMER_Handle timerHandle)`

Gets the timer (TIMER) status.

Parameters:

← ***timerHandle*** The timer (TIMER) object handle

Returns:

The timer (TIMER) status

17.2.5.6 `TIMER_Handle` `TIMER_init` (`void * pMemory`, `const size_t numBytes`)

Initializes the timer (TIMER) object handle.

Parameters:

- ← ***pMemory*** A pointer to the base address of the TIMER registers
- ← ***numBytes*** The number of bytes allocated for the TIMER object, bytes

Returns:

The timer (CLK) object handle

17.2.5.7 `void` `TIMER_reload` (`TIMER_Handle timerHandle`)

Reloads the timer (TIMER) value.

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle

17.2.5.8 `void` `TIMER_setDecimationFactor` (`TIMER_Handle timerHandle`, `const uint16_t decFactor`)

Sets the timer (TIMER) decimation factor.

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle
- ← ***decFactor*** The timer decimation factor

17.2.5.9 `void` `TIMER_setEmulationMode` (`TIMER_Handle timerHandle`, `const TIMER_EmulationMode_e mode`)

Sets the timer (TIMER) emulation mode.

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle
- ← ***mode*** The emulation mode

17.2.5.10 `void` `TIMER_setPeriod` (`TIMER_Handle timerHandle`, `const uint32_t period`)

Sets the timer (TIMER) period.

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle
- ← ***period*** The period

17.2.5.11 void `TIMER_setPreScaler` ([TIMER_Handle](#) *timerHandle*, const uint16_t *preScaler*)

Sets the timer (TIMER) prescaler.

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle
- ← ***preScaler*** The preScaler value

17.2.5.12 void `TIMER_start` ([TIMER_Handle](#) *timerHandle*)

Starts the timer (TIMER).

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle

17.2.5.13 void `TIMER_stop` ([TIMER_Handle](#) *timerHandle*)

Stops the timer (TIMER).

Parameters:

- ← ***timerHandle*** The timer (TIMER) object handle

18 Watchdog Timer

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18.1 Introduction

The Watchdog Timer API provides a set of functions for using the watchdog module.

This driver is contained in `f2802x/common/source/watchdog.c`, with `f2802x/common/include/watchdog.h` containing the API definitions for use by applications.

18.2 WDOG

Data Structures

- [_WDOG_Obj_](#)

Defines

- [WDOG_BASE_ADDR](#)
- [WDOG_SCSR_WDENINT_BITS](#)
- [WDOG_SCSR_WDINTS_BITS](#)
- [WDOG_SCSR_WDOVERRIDE_BITS](#)
- [WDOG_WDCNTR_BITS](#)
- [WDOG_WDCR_WDCHK_BITS](#)
- [WDOG_WDCR_WDDIS_BITS](#)
- [WDOG_WDCR_WDFLAG_BITS](#)
- [WDOG_WDCR_WDPS_BITS](#)
- [WDOG_WDCR_WRITE_ENABLE](#)
- [WDOG_WDKEY_BITS](#)

Enumerations

- [WDOG_IntStatus_e](#)
- [WDOG_PreScaler_e](#)

Functions

- void [WDOG_clearCounter](#) ([WDOG_Handle](#) wdogHandle)
- void [WDOG_disable](#) ([WDOG_Handle](#) wdogHandle)

- void [WDOG_disableInt](#) ([WDOG_Handle](#) wdogHandle)
- void [WDOG_enable](#) ([WDOG_Handle](#) wdogHandle)
- void [WDOG_enableInt](#) ([WDOG_Handle](#) wdogHandle)
- void [WDOG_enableOverRide](#) ([WDOG_Handle](#) wdogHandle)
- [WDOG_IntStatus_e](#) [WDOG_getIntStatus](#) ([WDOG_Handle](#) wdogHandle)
- [WDOG_Handle](#) [WDOG_init](#) (void *pMemory, const size_t numBytes)
- void [WDOG_setCount](#) ([WDOG_Handle](#) wdogHandle, const uint8_t count)
- void [WDOG_setPreScaler](#) ([WDOG_Handle](#) wdogHandle, const [WDOG_PreScaler_e](#) preScaler)

18.2.1 Data Structure Documentation

18.2.1.1 [_WDOG_Obj_](#)

Definition:

```
typedef struct
{
    uint16_t  SCSR;
    uint16_t  WDCNTR;
    uint16_t  rsvd_1;
    uint16_t  WDKEY;
    uint16_t  rsvd_2[3];
    uint16_t  WDCR;
}
_WDOG_Obj_
```

Members:

SCSR System Control Status Register.

WDCNTR Watchdog Counter Register.

rsvd_1 Reserved.

WDKEY Watchdog Reset Key Register.

rsvd_2 Reserved.

WDCR Watchdog Control Register.

Description:

Defines the watchdog (WDOG) object.

18.2.2 Define Documentation

18.2.2.1 [WDOG_BASE_ADDR](#)

Definition:

```
#define WDOG_BASE_ADDR
```

Description:

Defines the base address of the watchdog (WDOG) registers.

18.2.2.2 WDOG_SCSR_WDENINT_BITS

Definition:

```
#define WDOG_SCSR_WDENINT_BITS
```

Description:

Defines the location of the WDENINT bits in the SCSR register.

18.2.2.3 WDOG_SCSR_WDINTS_BITS

Definition:

```
#define WDOG_SCSR_WDINTS_BITS
```

Description:

Defines the location of the WDINTS bits in the SCSR register.

18.2.2.4 WDOG_SCSR_WDOVERRIDE_BITS

Definition:

```
#define WDOG_SCSR_WDOVERRIDE_BITS
```

Description:

Defines the location of the WDOVERRIDE bits in the SCSR register.

18.2.2.5 WDOG_WDCNTR_BITS

Definition:

```
#define WDOG_WDCNTR_BITS
```

Description:

Defines the location of the WDCNTR bits in the WDCNTR register.

18.2.2.6 WDOG_WDCR_WDCHK_BITS

Definition:

```
#define WDOG_WDCR_WDCHK_BITS
```

Description:

Defines the location of the WDCHK bits in the WDCR register.

18.2.2.7 WDOG_WDCR_WDDIS_BITS

Definition:

```
#define WDOG_WDCR_WDDIS_BITS
```

Description:

Defines the location of the WDDIS bits in the WDCR register.

18.2.2.8 WDOG_WDCR_WDFLAG_BITS

Definition:

```
#define WDOG_WDCR_WDFLAG_BITS
```

Description:

Defines the location of the WDFLAG bits in the WDCR register.

18.2.2.9 WDOG_WDCR_WDPS_BITS

Definition:

```
#define WDOG_WDCR_WDPS_BITS
```

Description:

Defines the location of the WDPS bits in the WDCR register.

18.2.2.10 WDOG_WDCR_WRITE_ENABLE

Definition:

```
#define WDOG_WDCR_WRITE_ENABLE
```

Description:

Defines the watchdog write enable mode.

18.2.2.11 WDOG_WDKEY_BITS

Definition:

```
#define WDOG_WDKEY_BITS
```

Description:

Defines the location of the WDKEY bits in the WDKEY register.

18.2.3 Typedef Documentation

18.2.3.1 WDOG_Handle

Definition:

```
typedef struct _WDOG_Obj_ *WDOG_Handle
```

Description:

Defines the watchdog (WDOG) handle.

18.2.3.2 WDOG_Obj

Definition:

```
typedef struct _WDOG_Obj_ WDOG_Obj
```

Description:

Defines the watchdog (WDOG) object.

18.2.4 Enumeration Documentation

18.2.4.1 WDOG_IntStatus_e

Description:

Enumeration to define the watchdog (WDOG) interrupt status.

Enumerators:

WDOG_IntStatus_Active Denotes an active interrupt status.

WDOG_IntStatus_InActive Denotes an in-active interrupt status.

18.2.4.2 WDOG_PreScaler_e

Description:

Enumeration to define the watchdog (WDOG) timer clock prescaler, which sets the clock frequency.

Enumerators:

WDOG_PreScaler_OscClk_by_512_by_1 Denotes WDCLK = OSCCLK/512/1.

WDOG_PreScaler_OscClk_by_512_by_2 Denotes WDCLK = OSCCLK/512/2.

WDOG_PreScaler_OscClk_by_512_by_4 Denotes WDCLK = OSCCLK/512/4.

WDOG_PreScaler_OscClk_by_512_by_8 Denotes WDCLK = OSCCLK/512/8.

WDOG_PreScaler_OscClk_by_512_by_16 Denotes WDCLK = OSCCLK/512/16.

WDOG_PreScaler_OscClk_by_512_by_32 Denotes WDCLK = OSCCLK/512/32.

WDOG_PreScaler_OscClk_by_512_by_64 Denotes WDCLK = OSCCLK/512/64.

18.2.5 Function Documentation

18.2.5.1 WDOG_clearCounter

Clears the watchdog (WDOG) counter.

Prototype:

```
void  
WDOG_clearCounter(WDOG_Handle wdogHandle)
```

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.2 void WDOG_disable (WDOG_Handle wdogHandle)

Disables the watchdog (WDOG) timer.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.3 void WDOG_disableInt (WDOG_Handle wdogHandle)

Disables the watchdog (WDOG) timer interrupt.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.4 void WDOG_enable (WDOG_Handle wdogHandle)

Enables the watchdog (WDOG) timer.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.5 void WDOG_enableInt (WDOG_Handle wdogHandle)

Enables the watchdog (WDOG) timer interrupt.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.6 void WDOG_enableOverRide (WDOG_Handle wdogHandle)

Enables the watchdog (WDOG) timer override.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

18.2.5.7 WDOG_IntStatus_e WDOG_getIntStatus (WDOG_Handle wdogHandle)

Gets the watchdog (WDOG) interrupt status.

Parameters:

← **wdogHandle** The watchdog (WDOG) timer object handle

Returns:

The interrupt status

18.2.5.8 [WDOG_Handle](#) WDOG_init (void * *pMemory*, const size_t *numBytes*)

Initializes the watchdog (WDOG) object handle.

Parameters:

- ← ***pMemory*** A pointer to the base address of the WDOG registers
- ← ***numBytes*** The number of bytes allocated for the WDOG object, bytes

Returns:

The watchdog (WDOG) object handle

18.2.5.9 void WDOG_setCount ([WDOG_Handle](#) *wdogHandle*, const uint8_t *count*)

Sets the watchdog (WDOG) counter.

Parameters:

- ← ***wdogHandle*** The watchdog (WDOG) timer object handle
- ← ***count*** The count

18.2.5.10 void WDOG_setPreScaler ([WDOG_Handle](#) *wdogHandle*, const [WDOG_PreScaler_e](#) *preScaler*)

Sets the watchdog (WDOG) timer clock prescaler.

Parameters:

- ← ***wdogHandle*** The watchdog (WDOG) timer object handle
- ← ***preScaler*** The prescaler

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