

Layers Structure

**MCAL Drivers**

ADC Driver

Function Definitions

|  |  |  |
| --- | --- | --- |
| Name | ADC\_readChannel | |
| Input | uint8 | channel\_num |
| Return | uint16 | |
| Description |  | |

DIO Driver

Type Definitions

|  |  |
| --- | --- |
| Name | Dio\_LevelType |
| Type | Enum |
| Values | STD\_LOW |
| STD\_HIGH |

|  |  |
| --- | --- |
| Name | Dio\_PinDirectionType |
| Type | Enum |
| Values | DIO\_PIN\_IN |
| DIO\_PIN\_OUT |

|  |  |
| --- | --- |
| Name | Dio\_PortName |
| Type | Enum |
| Values | PORTA |
| PORTB |
| PORTC |
| PORTD |
| PORTE |
| PORTF |

|  |  |
| --- | --- |
| Name | Dio\_IntType |
| Type | Enum |
| Values | FALLING\_EDGE |
| RISING\_EDGE |
| BOTH\_EDGES |
| LOW\_LEVEL |
| HIGH\_LEVEL |

Function Definitions

|  |  |  |
| --- | --- | --- |
| Name | DIO\_Init | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Return | void | |
| Description | Connect the clock to the required port and configure it as digital I/O | |

|  |  |  |
| --- | --- | --- |
| Name | DIO\_SetPinDirection | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Dio\_PinDirectionType | pins\_direction |
| Return | void | |
| Description | Set required pins as inputs or outputs. | |

|  |  |  |
| --- | --- | --- |
| Name | DIO\_SetPinPullUp | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Return | void | |
| Description | Set internal pull up resistor of required pins | |

|  |  |  |  |
| --- | --- | --- | --- |
| Name | DIO\_SetPinPullDown | | |
| Input | Dio\_PortName | | port\_name |
| uint8 | | pins\_mask |
| Return | Void | | |
| Description | Set internal pull down resistor of required pins | | |
| Name | | DIO\_ReadPort | |
| Input | | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Return | | uint8 | pins\_level |
| Description | | Return value of the pins selected by pins\_mask in the port selected by port\_name | |

|  |  |  |
| --- | --- | --- |
| Name | DIO\_WritePort | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Dio\_LevelType | pins\_level |
| Return | void | |
| Description | Change pins selected by pins\_mask in the port selected by port\_name to the value pins\_level | |

|  |  |  |
| --- | --- | --- |
| Name | DIO\_FlipPort | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Return | void | |
| Description | Toggle value of the pins selected by pins\_mask in the port selected by port\_name | |

|  |  |  |
| --- | --- | --- |
| Name | DIO\_EnableExtInt | |
| Input | Dio\_PortName | port\_name |
| uint8 | pins\_mask |
| Dio\_IntType | int\_source |
| Return | void | |
| Description | Enable external interrupt for required pins based on interrupt source | |

PWM Driver

Type Definitions

|  |  |
| --- | --- |
| Name | PWMChannel |
| Type | Enum |
| Values | PWM0 |
| PWM1 |
| PWM2 |
| PWM3 |
| PWM4 |
| PWM5 |
| PWM6 |
| PWM7 |

|  |  |
| --- | --- |
| Name | PWMModule |
| Type | Enum |
| Values | PWMModule0 |
| PWMModule1 |

Function Definitions

|  |  |  |
| --- | --- | --- |
| Name | PWM\_Init | |
| Input | PWMModule | module |
| PWMChannel | channel |
| uint16 | period |
| uint16 | duty |
| Return | void | |
| Description |  | |

|  |  |  |
| --- | --- | --- |
| Name | PWM\_SetDuty | |
| Input | PWMModule | module |
| PWMChannel | channel |
| uint16 | duty |
| Return | void | |
| Description |  | |

UART Driver

Type Definitions

|  |  |
| --- | --- |
| Name | UARTNUM |
| Type | Enum |
| Values | uart0 |
| uart1 |
| uart2 |
| uart3 |
| uart4 |
| uart5 |
| uart6 |
| uart7 |

|  |  |
| --- | --- |
| Name | PARITY |
| Type | Enum |
| Values | OFF |
| ON |

|  |  |
| --- | --- |
| Name | INTERRUPT |
| Type | Enum |
| Values | OFF |
| ON |

Function Definitions

|  |  |  |
| --- | --- | --- |
| Name | UART\_Init | |
| Input | UARTNUM | UartNum |
| uint32 | BaudRate |
| PARITY | Parity |
| INTERRUPT | interrupt |
| Return | void | |
| Description |  | |

|  |  |  |
| --- | --- | --- |
| Name | UART\_Available | |
| Input | UARTNUM | UartNum |
| Return | uint8 | Available |
| Description | Checks whether the targeted UART selected by UartNum is Available to read from (Receiver FIFO is empty or not).  Return 1 if available 0 if not available | |

|  |  |  |
| --- | --- | --- |
| Name | UART\_Read | |
| Input | UARTNUM | UartNum |
| Return | uint8 | data |
| Description | Returns the value of the data register of the UART selected by UartNum | |

|  |  |  |
| --- | --- | --- |
| Name | UART\_Write | |
| Input | UARTNUM | UartNum |
| uint8 | data |
| Return | void | |
| Description | Checks that the targeted UART selected by UartNum has an empty transmitter FIFO then it writes the input data in the FIFO | |

|  |  |  |
| --- | --- | --- |
| Name | UART\_Print | |
| Input | UARTNUM | UartNum |
| uint8 | data |
| Return | void | |
| Description | print string using selected UART by UartNum | |

ADC Driver

Type Definitions

|  |  |
| --- | --- |
| Name | ADC\_Channel |
| Type | Enum |
| Values | AN0 |
| AN1 |
| AN2 |
| AN3 |
| AN4 |
| AN5 |
| AN6 |
| AN7 |
|  | AN8 |
|  | AN9 |
|  | AN10 |
|  | AN11 |

Function Definitions

|  |  |  |
| --- | --- | --- |
| Name | ADC\_init | |
| Input | ADC\_Channel | Channel |
|
| Return | void | |
| Description | Initialize the ADC channel | |

|  |  |  |
| --- | --- | --- |
| Name | ADC\_read | |
| Input | ADC\_Channel | Channel |
|
| Return | float | |
| Description | Returns the reading of The channel | |