

Control an RGB Led with 3 buttons



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2. Abstract

People will always be interested in gadgets and different ways to manipulate objects more easily. Exploring the XMC2GO was an interesting experience for us to discover more things about the embedded world.

3. Introduction, project aims and objectives

In this application we wanted to implement a little system who will control an RGB LED with 3 buttons.

4. System overview

The project relies on programming development platform XMC 2GO, using a breadboard, a RGB LED and 3 buttons. We wanted to illustrate in this project the simplicity and also the power of this board . This project can show how can three different events can be treated at the same time. The basic idea is Threading .

There are three events :

- 1) when button1 is pressed , the red color is on
- 2) when button2 is pressed , the blue color is on
- 3) when button3 is pressed , the green color is on

When all buttons are pressed, RGB LED light up in 3 colors (RED, BLUE and GREEN)

5. Schematics and components

Hardware components:

- **XMC 2Go Board**

The XMC 2Go board is designed to evaluate the capabilities of the XMC1100 Microcontroller being equipped with the ARM® Cortex™M0 based XMC1100 Microcontroller from Infineon Technologies AG. In the next figures it is presented the block diagram of this board with few details about microcontroller and peripherals and board pinout.

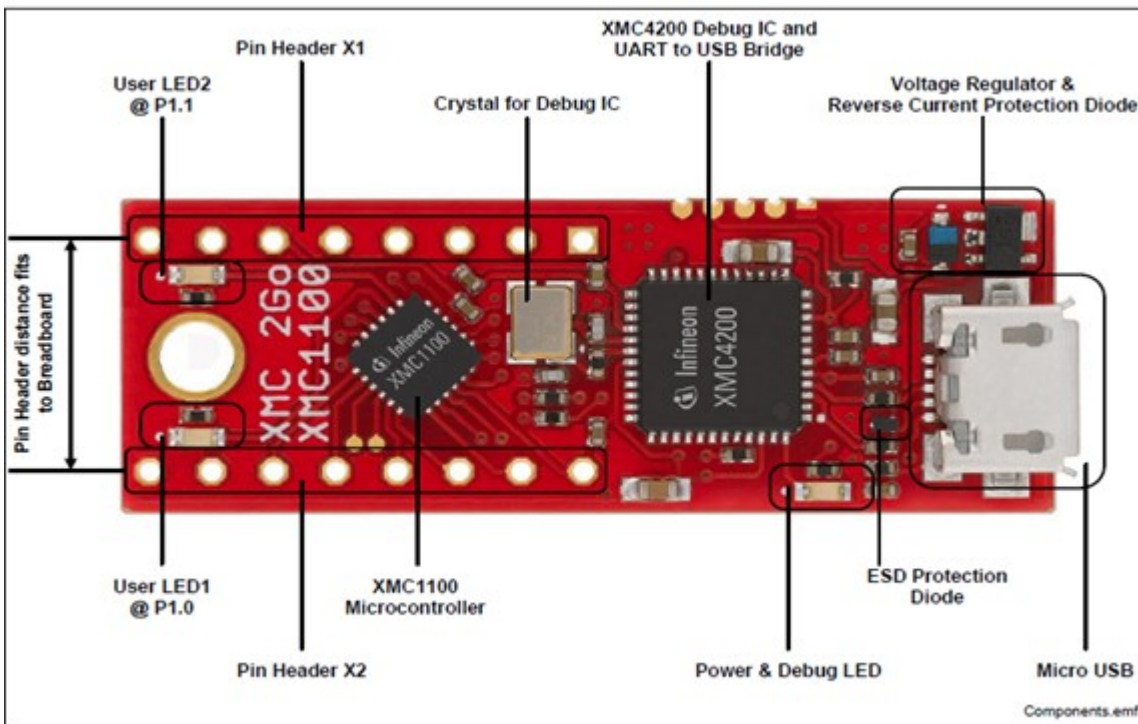
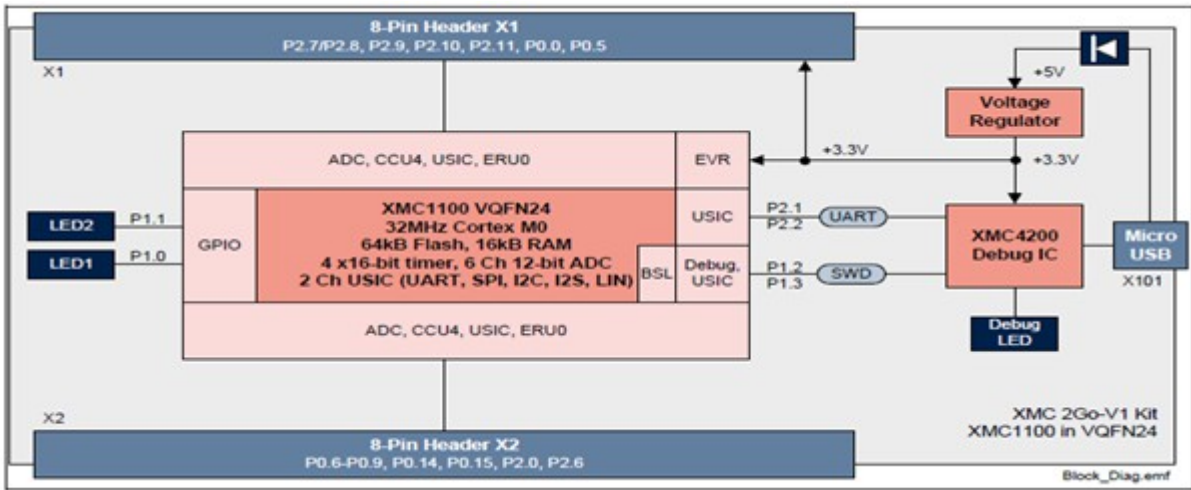
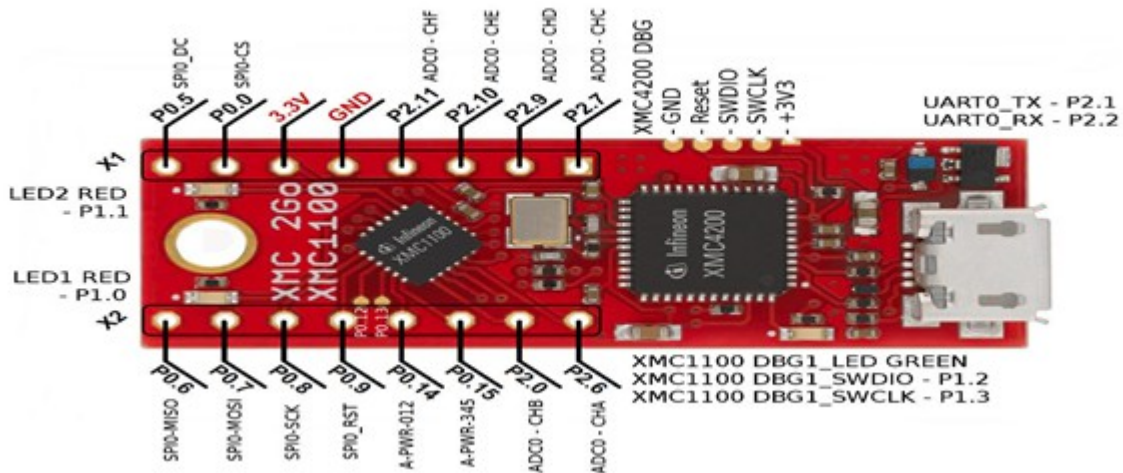


Figure 2 XMC 2Go Kit with XMC1100

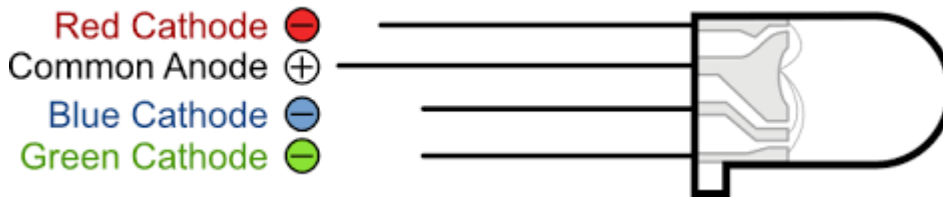
For more details about microcontroller, debugger or pinout please access Board User Manual or XMC1100 datasheet.



Here is a brief description of some components the pins that they are connected to:

P0.6 is connected to the red color
P0.7 is connected to the blue color
P0.8 is connected to the green color
P2.9 is connected to button1
P2.10 is connected to button2
P0.15 is connected to button3

- **RGB LED**



- **3 x Buttons**
- **6 x 1k Resistors**

6. Software

Tools : [Infineon DAVE 4](#)

DAVE (Infineon) Digital Application Virtual Engineer (DAVE™), a C/C++ language software development and code generation tool for microcontroller applications. DAVE is a standalone system with automatic code generation modules and is suited to develop software drivers for Infineon microcontrollers and aids the developer with automatically created C- level templates and user desired functionalities.

Latest releases of DAVE include all required parts to develop code, compile and debug on the target for free (based on the ARM gcc tool suite). Together with several low cost development boards one can get involved in microcontroller design very easy. This makes Infineon microcontroller products also more usable to small companies and to home use/ DIY projects similar to established products of Atmel (AVR, SAM) and Microchip (PIC, PIC32) to name a few.

Code:

```
while(1U)
{
    if(!DIGITAL_IO_GetInput (&buton1))
        DIGITAL_IO_SetOutputHigh (&red);
    else
        DIGITAL_IO_SetOutputLow (&red);

    if(!DIGITAL_IO_GetInput (&buton2))
        DIGITAL_IO_SetOutputHigh (&blue);
```

```
else
    DIGITAL_IO_SetOutputLow (&blue);
if(!DIGITAL_IO_GetInput (&buton3))
    DIGITAL_IO_SetOutputHigh (&green);
else
    DIGITAL_IO_SetOutputLow (&green);
}
```

7. Project results & applications





8. Reference

1) http://www.infineon.com/dgdl/Board_Users_Manual_XMC_2Go_Kit_with_XMC1100_R1.0.pdf?fileId=db3a3043444ee5dc014453d6c75078c6