

Lab 2 - LEDs, Square Wave, Button, Pins

1 INTRODUCTION

In this lab you will develop a PSoC Creator project to blink the LEDs on the Development Kit board, generate a square wave at one of the chip output pins, read a pushbutton, and drive the pushbutton state to a pin.

2 PROCEDURE

Use the following documents for reference:

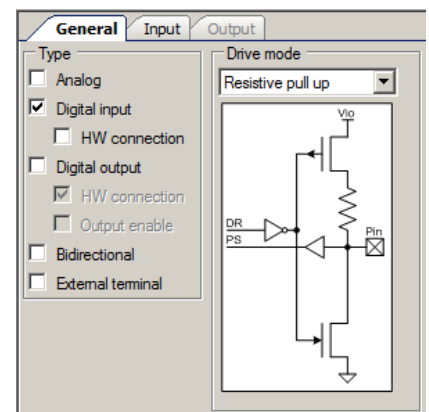
- Getting Started with PSoC® 5LP
- CY8CKIT-050 PSoC® 5LP Development Kit Guide

Part I

- Create a new PSoC Creator project.
- Add a digital output pin to the schematic. Since you will be interfacing the pin to software, you must uncheck “HW connection”.
- Fill in ‘C’ code in the infinite loop within main.c to produce a square wave on your output pin.
- Download the program to the development board.
- Demonstrate that the program runs by looking at the output pin with an oscilloscope and capture different outputs for different delays (frequencies).

Part II

- The PSoC 5LP Development kit has two LEDs, which are not connected to any MCU pins, whose anodes are brought out to connectors on the top of the board (and cathodes are wired to ground). Wire one of these LEDs to your output pin.
- Build on your first program to light the LED 60 times in one minute.
- Add a second digital output pin to your schematic, and a digital input pin. You must set your Input Pin’s Drive State to resistive pull-up (why?). Uncheck “HW connection” on all pins.
- The development kit provides two pushbuttons for user programs, labeled SW2 and SW3 on the schematic/board. Each of these is hardwired to a specific pin on the PSoC chip. Select one of these pushbuttons, and map your digital input pin to the pin wired to your pushbutton, using the <proj>.cywdr window (Design-Wide Resources).
- Wire the second output pin to the free LED.
- Add code in your infinite loop to read the state of the pushbutton, and drive the LED based on that state.
- Download the program to the development board.
- Demonstrate Part II to the instructor.



3 WRITE A REPORT

The report is to include, but not limited to the following:

- a) **Cover Sheet** with Title, Class, Names, etc.
- b) **Introduction**.
- c) Brief recap of **Procedure**. You can paste in code snippets, but use mono-spaced font and ensure that code is well formatted. Include any equations or other relevant information that helps you to explain what, why and how you did what you did.
- d) **Results**, presented in tables, figures, or other organized means, and a discussion of the results that you obtained.
- e) The report must be understandable to another engineer not working on this project.
- f) A conclusion of your results and discussion of anything you found especially interesting or not expected from your work on this project.

REPORT NOTES:

- One report per team
- You may use the IEEE paper format, if you like: (template is 2014_04_msw_usltr_format.doc). In this case the cover sheet info is embedded at the top.
- Microsoft Word, .docx file.
- Upload via GitHub (**one upload per team**).
- Also upload all code files that you wrote, or hand edited (and **only** those files!), via GitHub (**one upload per team**).