Low Power Comparator example project
1.2

Features:

- Calibration
- Interrupt generation
- Operation in Low Power Mode

General Description

This example project demonstrates functionality of the Low Power Comparator component.

Development kit configuration

This example project is designed to run on the CY8CKIT-042 kit from Cypress Semiconductor. A description of the kit, along with more example programs and ordering information, can be found at http://www.cypress.com/go/cy8ckit-042.

The project requires configuration settings changes to run on other kits from Cypress Semiconductor. Table 1 is the list of the supported kits. To switch from CY8CKIT-042 to any other kit, change the project's device with the help of Device Selector called from the project's context menu.

Table 1. Development Kits vs Parts

Development Kit	Device
CY8CKIT-042	CY8C4245AXI-483
CY8CKIT-042-BLE	CY8C4247LQI-BL483
CY8CKIT-044	CY8C4247AZI-M485
CY8CKIT-046	CY8C4248BZI-L489
CY8CKIT-041	CY8C4045AZI-S413 / CY8C4146AZI-S433
CY8CKIT-048	CY8C4A45LQI-483

The pin assignments for the supported kits are in Table 2.

Table 2. Pin Assignment

Pin Name	Development Kit					
	CY8CKIT-042	CY8CKIT-042 BLE	CY8CKIT-044	CY8CKIT-046	CY8CKIT-041	CY8CKIT-048
LED	P0[2]	P3[6]	P2[6]	P5[3]	P2[6]	P2[6]
Vminus	P0[1]	P0[1]	P0[1]	P0[1]	P0[3]	P1[1]
Vplus	P0[0]	P0[0]	P0[0]	P0[0]	P0[2]	P1[0]

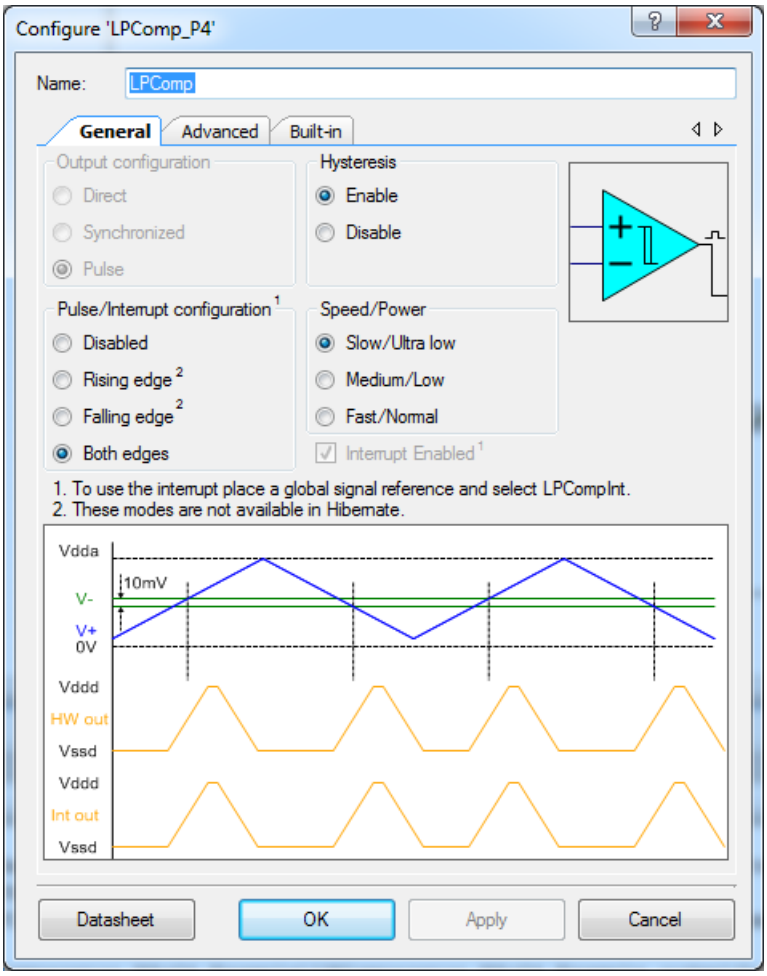
The following steps should be performed to observe the project's operation:

1. Connect a voltage divider (a couple of external resistors) to Vminus pin.
2. Connect the Vplus pin to the VDD.
3. Build the project and program the hex file on to the target device.
4. Power cycle the device.
5. Manually change the connection of the Vplus pin to the GND or VDD and vise-versa and observe the LED behavior.

Project configuration

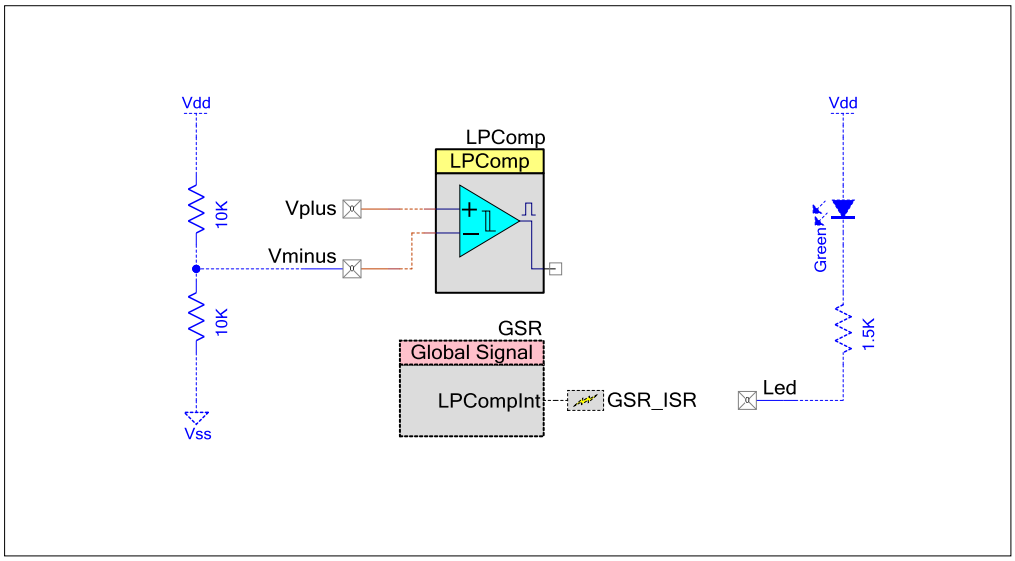
The example project consists of digital output pins, analog pins, and LPComp Components. The Led pin is used for software control of the respective LED. The LPComp component configuration is shown in Figure 1.

Figure 1. LPComp Component Configuration



The top design schematic is shown in Figure 2.

Figure 2. Top Design Schematic



Project description

At the beginning the Comparator component calibration happens. Custom calibration of the input offset is performed to minimize the error for a specific set of conditions: a comparator reference voltage, supply voltage, and operating temperature. A reference voltage in the range at which the comparator will be used must be applied to the Vminus input of the comparator. This can be done using an external resistive divider for example.

The Vplus pin manually connects to the VDD or GND and vice versa. Depending on the result, the LED turns on or off.

Expected results

When the voltage connected to the Vplus pin is greater than Vminus, the Green LED turns on; otherwise the Green LED turns off.