

## PSoC Creator 101: CY8CKIT-049 Prototyping Kit Proximity Project

My name is Alan Hawse; I'm Executive Vice President of Software at Cypress Semiconductor. In this lesson I'm going to demonstrate using the PSoC Proximity Detection feature on the 049 Prototyping Kit.

To make the proximity work you will need a proximity sensor loop. For this example, take a piece of wire and bend it into a loop. The loop should be about 5 cm in diameter. Recall, in an earlier video, I soldered a header onto my kit; you will be able to plug your wire into one of the ports on the header to attach it to the PSoC. It is also possible to plug the wire into the bare hole of the board. You could also solder the wire into the hole to make a more permanent, stable connection. But it's not necessary if you've got the header soldered on your board.

To implement this application, start by creating a new application. Then add and configure the bootloadable component as discussed in the 049 Bootloadable lesson. The next thing you will do is add a CapSense component. In the component customizer add a proximity widget. Then, in the DWR assign the sensor pin to port 1, pin 4 and assign CMOD to port 4, pin 2. Next, add a pin to drive the LED. Double-click the pin to turn off the hardware connection as this pin will be driven only by the firmware. Then in the DWR assign the LED to the 049 LED pin; which is port 1, pin 6.

Now write your firmware. First enable the global interrupts, then start the CapSense component, then call the API that initializes the baselines. This function will automatically compensate for the parasitic capacitance of your header and of your proximity wire. In the main loop, if the CapSense isn't busy, read the status of the proximity sensor and then write that status directly to the pin. If the widget is active, it will turn on the LED and if it is off it will turn off the LED. With this example you will be able to detect your hand when it gets within a few centimeters of the wire. In a properly designed printed circuit board you can get as much as 30 cm of proximity detection.

Now build the project and bootloaded into your kit. You will be able to turn on and off the LED by moving your hand near the wire. It's just that simple.

As always if you have questions about PSoC Creator or PSoC in general you're welcome to email me, [alan\\_hawse@cypress.com](mailto:alan_hawse@cypress.com) and I will make sure your questions are answered.