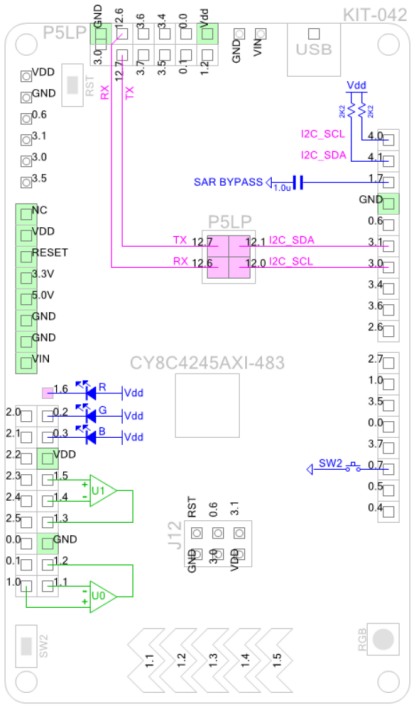
KIT-042: annotation for CY8CKIT-042 Pioneer Kit

0.2



Features

- Shows pins with direct access to PSoC hardware
- Shows on-board bypass capacitors, LEDs, switch
- Creates schematics using CY8CKIT-042 Pioneer kit
- Doesn't consume system resources
- Doesn't affect run-time performance

General description

The KIT-042 is an external annotation stub for the Cypress CY8CKIT-042 PSoC4 Pioneer Kit. It identifies terminals with direct access to PSoC4 internal hardware (OpAmps, ADC) and shows connections to the on-board parts (bypass capacitor, LEDs, switch button, USB, SWD, etc.). Component neither consumes system resources, nor affects the run-time performance of the project.

When to use KIT-042

The component was developed to assist quick identification of the on-board parts and pins on the CY8CKIT-042 PSoC4 Pioneer Kit. It is also useful for documenting basic projects built using CY8CKIT-042 Pioneer Kit and creating schematics using Creator stock of-chip components and complimentary PSoC Annotation Library(*) [1].

(*) Annotation Library is a collection of the off-chip annotation components

Functional Appearance

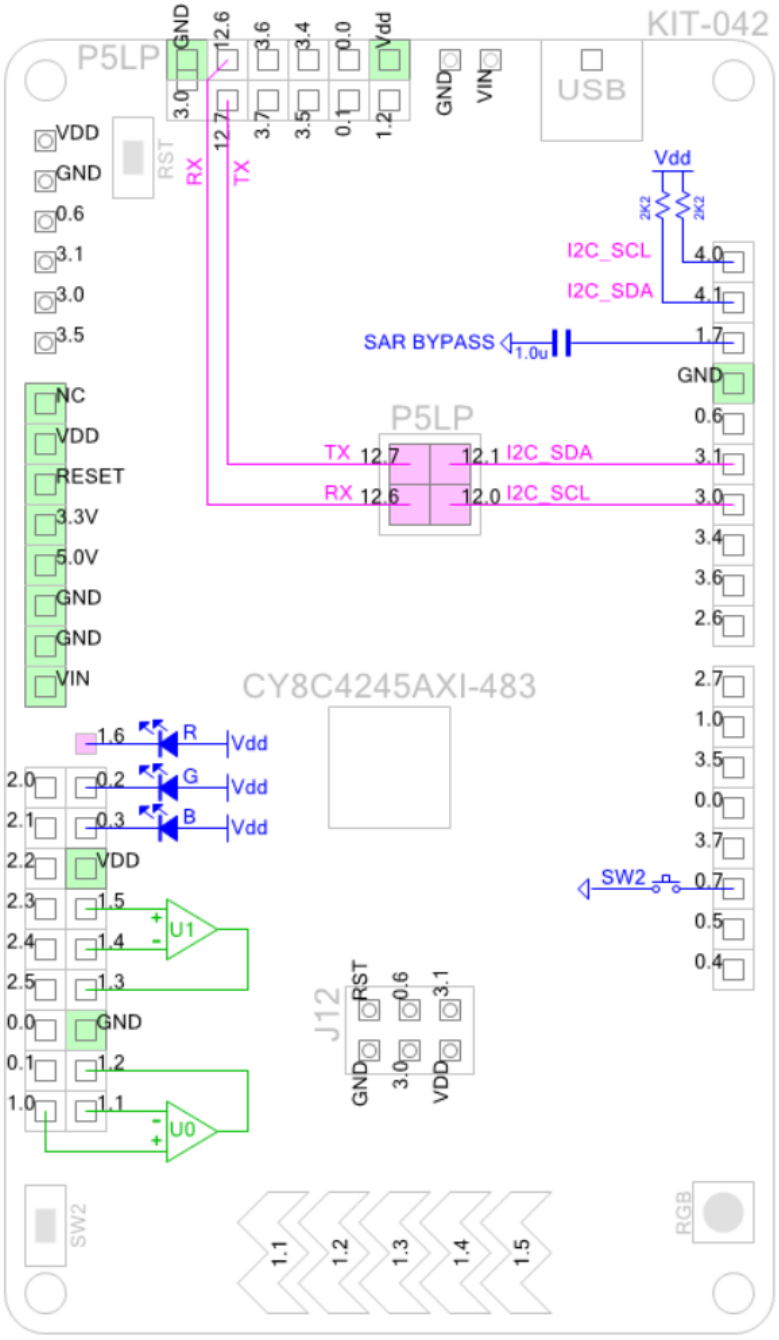


Figure 1. Component default visual appearance. Pink-colored pads represent PSoC4 buried pins, which are hardwired and not accessible externally.

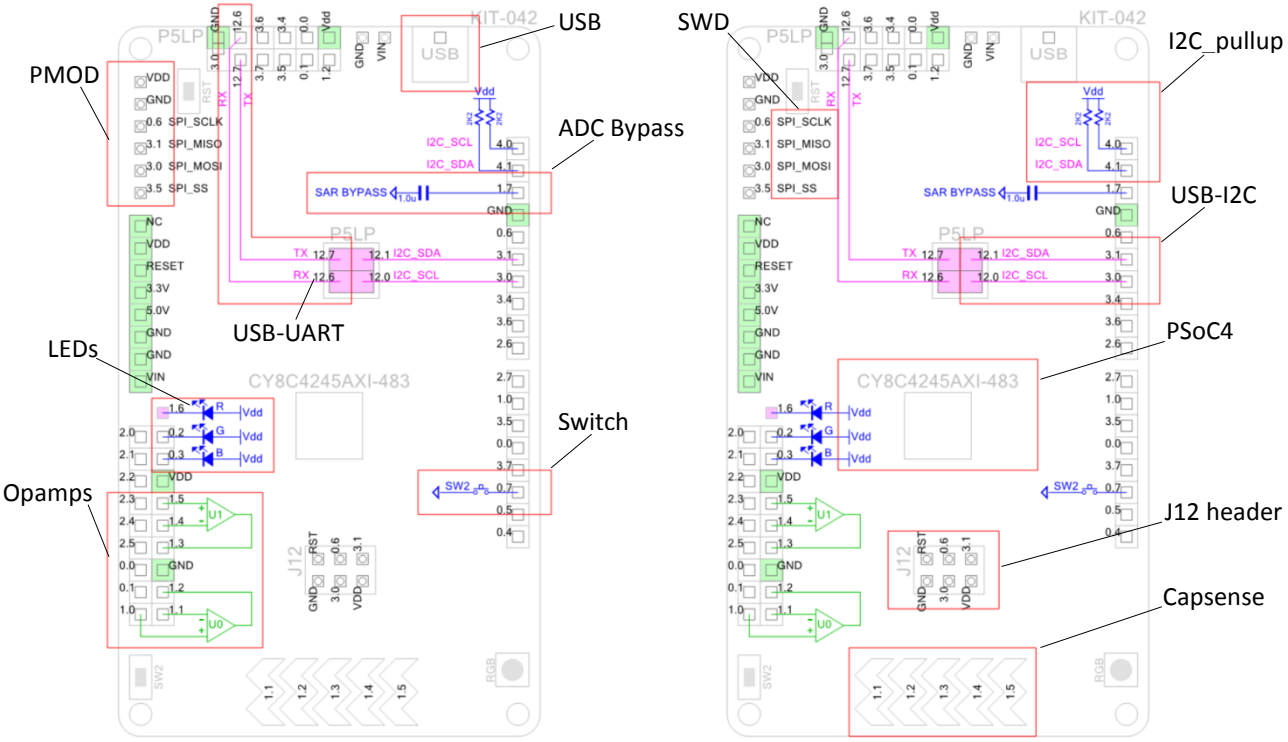
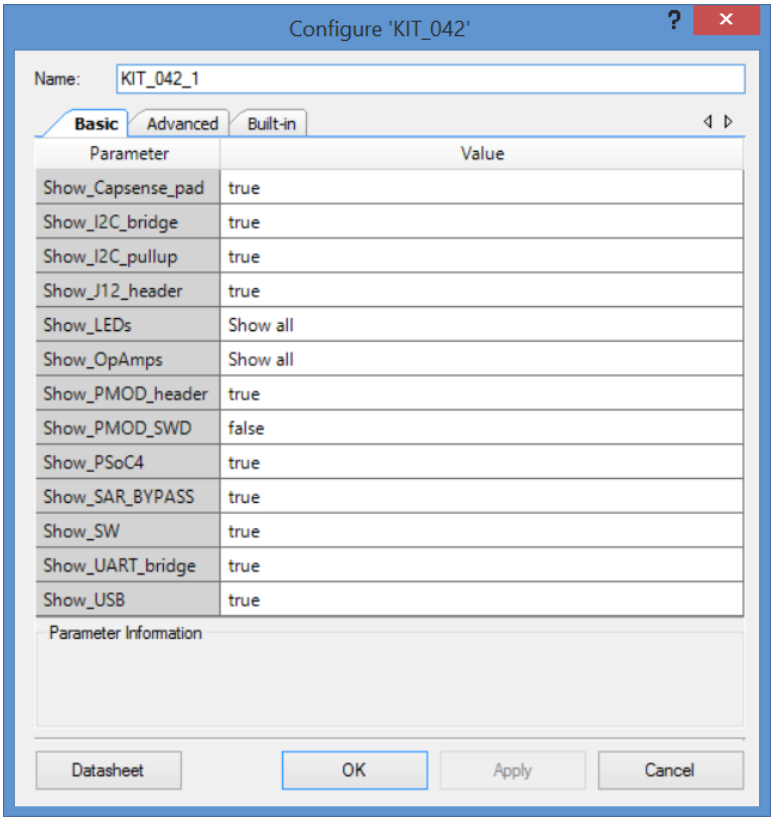


Figure 2. Component appearance with all options enabled (left-to-right, top-to-bottom): PMOD header, USB-UART bridge, mini-USB connector, SAR_ADC bypass capacitor, RGB LEDs, on-board switch button, Opamps, SWD markup, I2C pins w/pullup resistors, USB-I2C bridge, PSoC4, Arduino SPI header (J12), Capsense pad.

Parameters and Settings

The Basic dialog provides following parameters:



Show_Capsense_pad (bool)

Sets visibility of the Capsense pad. Default value is True.

Show_I2C_bridge (bool)

Sets visibility of the USB-I2C bridge. Default value is True. When enabled, it automatically displays 3-Axis digital accelerometer by Kionix® (KXTJ2-1009) and F-RAM.

Show_I2C_pullup (bool)

Sets visibility of the USB-I2C bridge. Default value is True. When enabled, it automatically displays 3-Axis digital accelerometer by Kionix® (KXTJ2-1009) and F-RAM.

Show_J12_header (bool)

Sets visibility of the J12 Arduino SPI header (2x3). Default value is True.

Show_LEDs (bool)

Sets visibility of the onboard RGB LEDs. Default value is True.

Show_OpAmps [Show all / Hide all / Show selected]

Sets visibility of the on-chip OpAmps. Default setting is Show_all. When Hide_all option is selected, all OpAmps are hidden. When Show_selected option used, visibility of each OpAmp is controlled by the individual setting in the **Advanced** section.

Show_PMOD_header (bool)

Sets visibility of the Digilent PMOD header (1x6). Default value is True.

Show_PMOD_SWD (bool)

Sets visibility of the SWD programming pins. Default value is False.

Show_PSoC4 (bool)

Sets visibility of the PSoC4 chip and part number (CY8C4247AZI-M485). Default value is True.

Show_SAR_BYPASS (bool)

Sets visibility of the SAR_ADC bypass connector and capacitor. Default value is True.

Show_SW (bool)

Sets visibility of the onboard switch button. Default value is False.

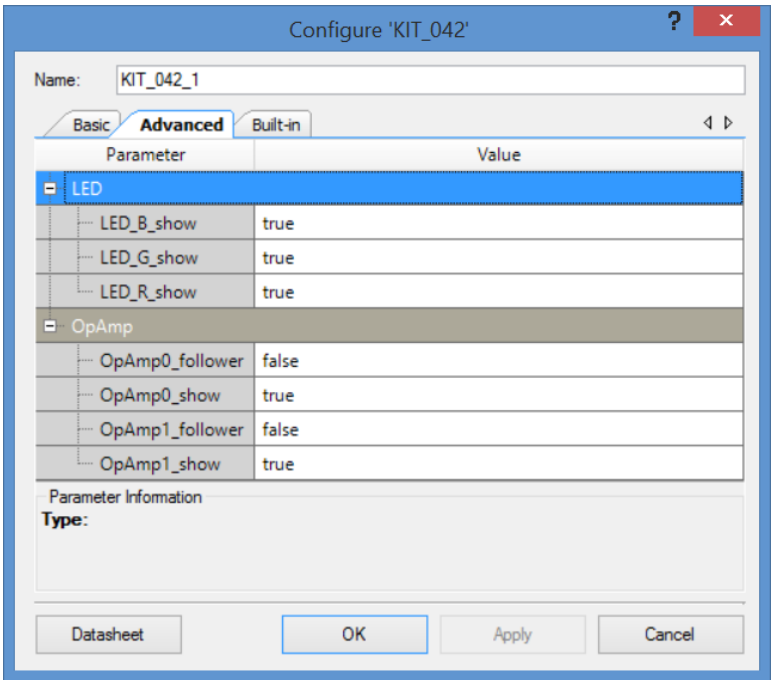
Show_UART_bridge (bool)

Sets visibility of the USB-UART bridge. Default value is True.

Show_USB (bool)

Sets visibility of the mini-USB programming and debugging connector. Default value is True.

Advanced dialog provides following parameters:



LEDs:

- **LED_X_show (bool)**

  Set visibility of the Red, Green or Blue LEDs (X=R, G, B). Default value is true. This option is active in Show_selected mode only. LEDs settings Show_all and Hide_all override this setting.

OpAmps:

- **OpAmpX_follower (bool)**

  Set OpAmp as a follower. Default is false.

- **OpAmpX_show (bool)**

  Set visibility of the on-chip OpAmp. Default value is true. This option is active in Show_selected mode only. OpAmps settings Show_all and Hide_all override this setting.

Application Programming Interface

The component does not have associated API.

Resources

The component doesn’t consume any hardware resources.

Performance

The component doesn’t affect project run-time performance.

Application examples

Typical application example of the KIT-042 component is provided in the **Appendix 1**.

Component Changes

Version	Description of changes	Reason for changes/impact
0.0	First beta release.	

References

1. PSoC Annotation Library v1.0, https://community.cypress.com/thread/48049

Appendix 1

Example of the KIT-042 used in conjunction with complimentary Annotation Library v1.0 [1].

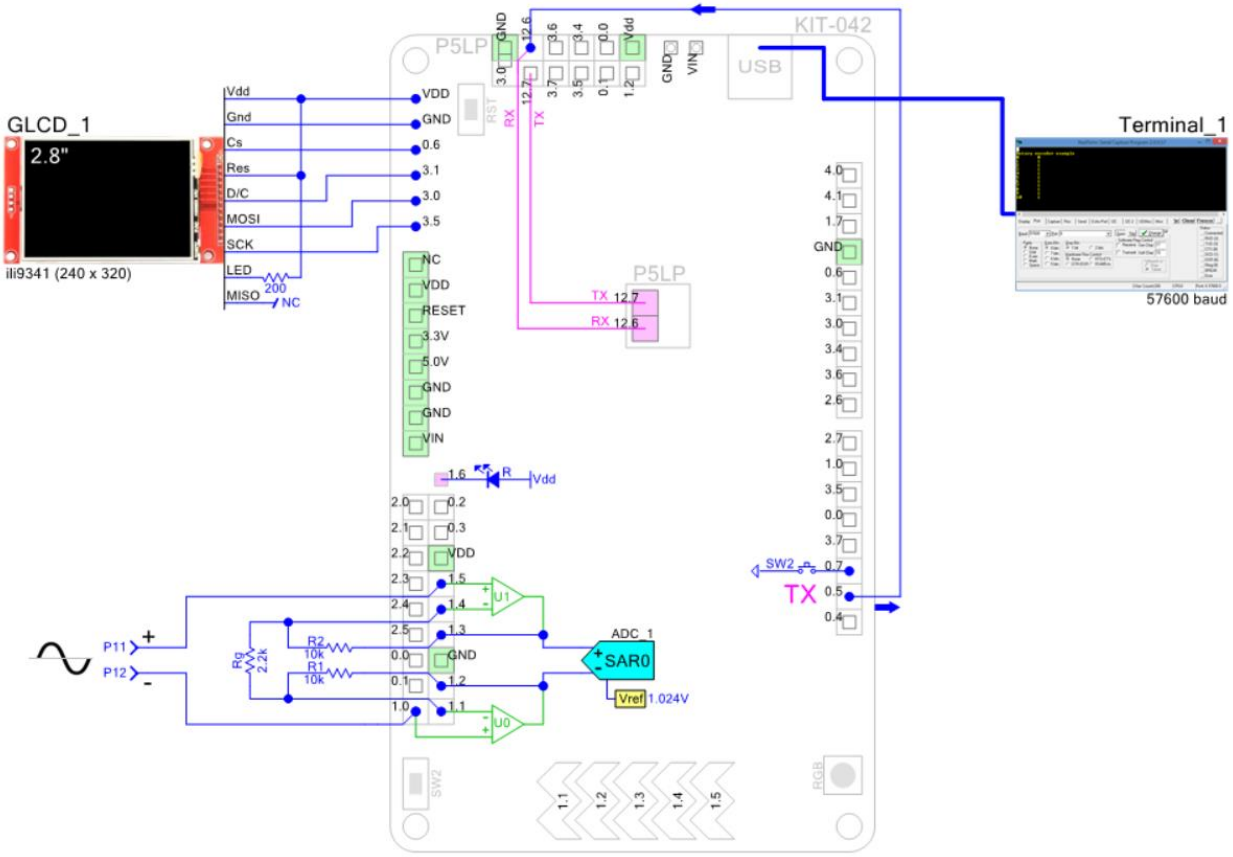


Figure 3. Annotation example of the PSoC4 demo project "ADC with differential preamplifier" using KIT-042 component. The GLCD_9341 is connected to the PMOD terminal of CY8CKIT-042 and PC-based text Terminal connected through USB-UART bridge. The diagram utilizes PSoC Annotation Library [1] components (SAR_ADC, Vref, Resistor, GLCD_9341, Terminal, Resistor, wire Break) and KIT-042 annotation stub.