

CY3209-ExpressEVK Quick Start Guide

Spec. # 001-22859 Rev. **

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709

Phone (USA): 800.858.1810
Phone (Intnl): 408.943.2600
http://www.cypress.com

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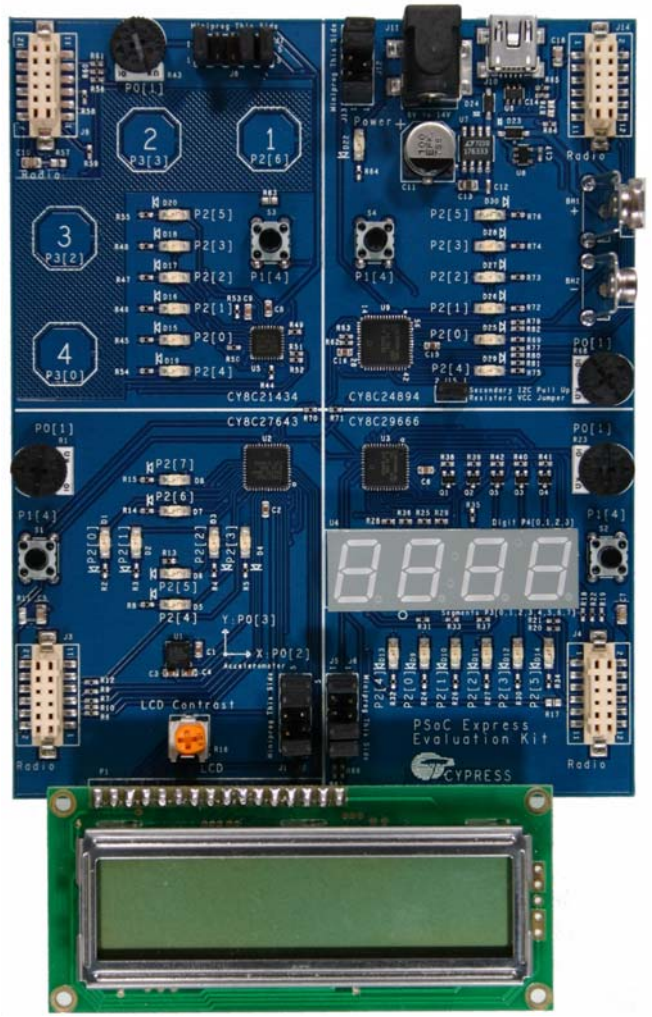
Cypress is willing to work with the customer who is concerned about the integrity of their code. Code protection is constantly evolving. We at Cypress are committed to continuously improving the code protection features of our products.

1. Getting Started

Getting Started



Kit Contents

- Express Evaluation Board
- 5V LCD Module

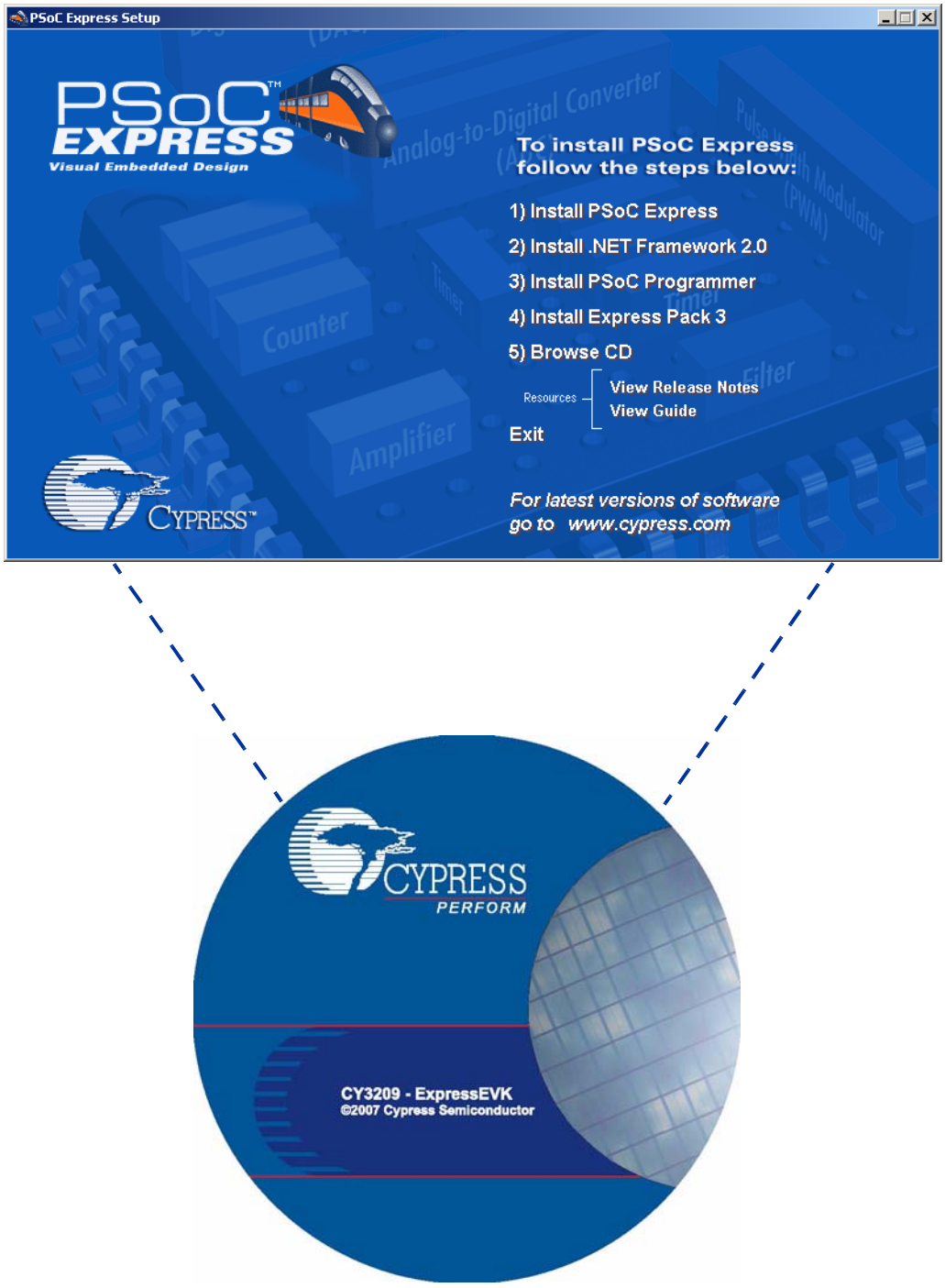
Not Pictured

- MiniProg Programming Unit
- USB Cable
- 2 Artaflex AWP24S 2.4 GHz Radios
- 9V Battery
- CY3209-ExpressEVK Kit CD

Install PSoC Development Software

1 Insert the PSoC Development Software Suite CD into your CD-ROM drive and install PSoC Express.

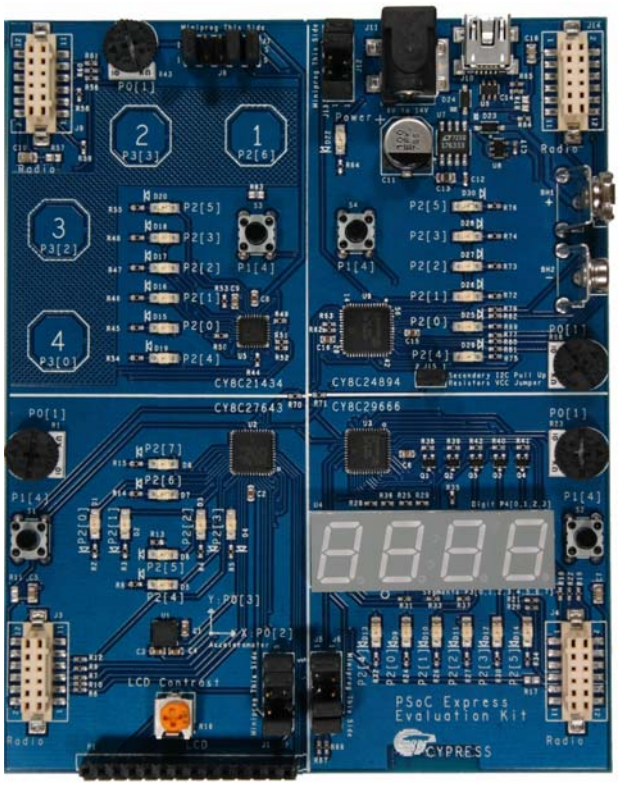
2. For all the latest service packs and information, visit www.cypress.com/psoc.



2. Explore Your Express Evaluation Board

CY3209-ExpressEVK Board

TL = Top Left **TR = Top RIght**

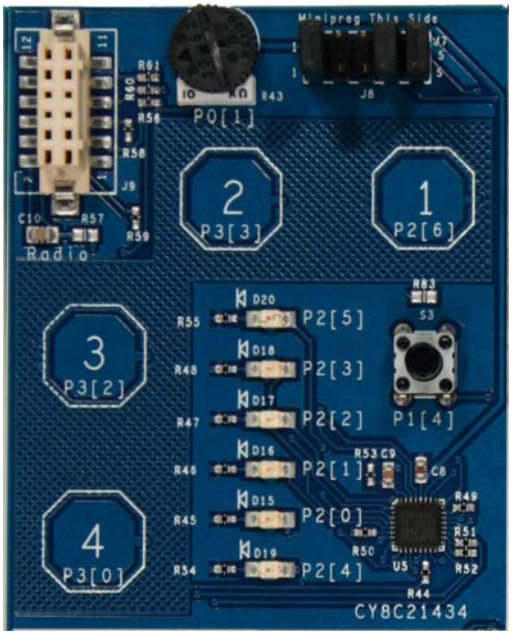


BL = Bottom Left **BR = Bottom Right**

- Jumpers connect P1[0] and P1[1] of individual PSoC devices (P1[1] on pin 4 and P1[0] on pin 5 of J1, J6, J7, and J13) to a common I2C bus (clock on pin 4 and data on pin 5 of J2, J5, J8, and J12).
- Jumpers connect the PSoC devices (pin 1 of J1, J6, J7, and J13) to a common power bus (pin 1 of J2, J5, J8, and J12).
- Remove jumpers before programming PSoC devices with the MiniProg.

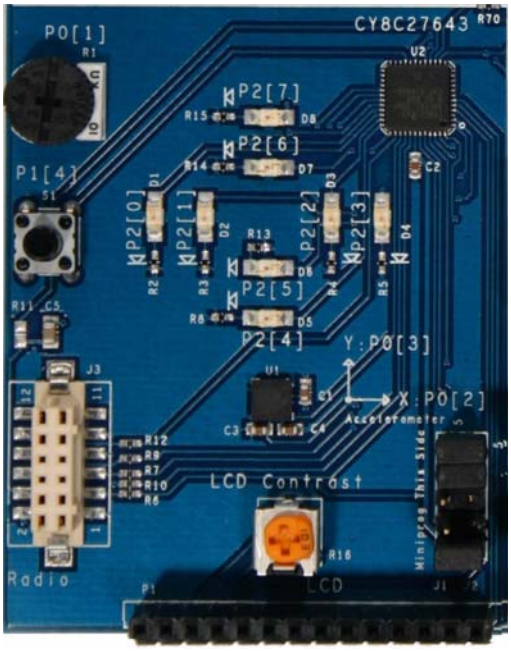
Schematics can be found on the Express Evaluation Kit CD in the folder /Documentation.

Top Left (TL) Quadrant



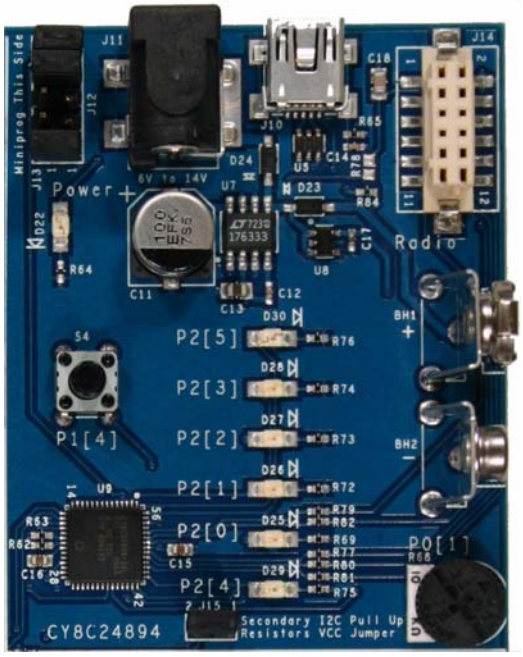
- CY8C21434-24LFX PSoC Device (U5)
- Four CapSense Buttons (octagons labeled 1 through 4)
- Potentiometer (R43)
- Four Green LEDs (D15 through D18)
- Two Red LEDs (D19 and D20)
- Pushbutton (Normally Open, Int. Pull Down, S3)
- Socket for Radio (J9)
- Programming Header (J7)

Bottom Left (BL) Quadrant



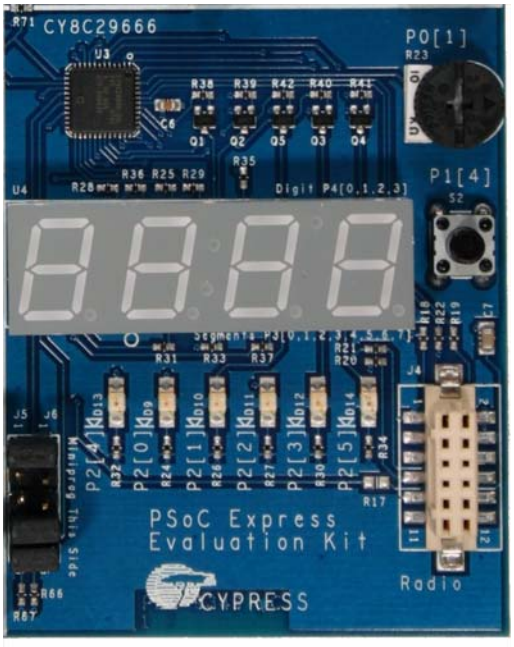
- CY8C27643-24LFXI PSoC Device (U2)
- ADI ADXL322 Dual-Axis Accelerometer (U1)
- Potentiometer (R1)
- Four Green LEDs (D1 through D4)
- Four Red LEDs (D5 through D8)
- Pushbutton (Normally Open, Int. Pull Down, S1)
- Socket for LP Radio (J3)
- Programming Header (J1)
- Receptacle for LCD (P1)

Top Right (TR) Quadrant



- CY8C24894-24LFXI PSoC Device (U9)
- USB Mini B Connector (J10)
- Potentiometer (R68)
- Four Green LEDs (D25 through D28)
- Two Red LEDs (D29 and D30)
- Pushbutton (Normally Open, Int. Pull Down, S4)
- Socket for Radio (J14)
- 6-14V Power Input Jack (J11)
- 9V Battery Clip (BH1 and BH2)
- Programming Header (J13)

Bottom Right (BR) Quadrant



- CY8C29666-24LFXI PSoC Device (U3)
- 4-Digit 7-Segment LED Display (Common Cathode, U4)
- Potentiometer (R23)
- Four Green LEDs (D9 through D12)
- Two Red LEDs (D13 and D14)
- Pushbutton (Normally Open, Int. Pull Down, S2)
- Socket for Radio (J4)
- Programming Header (J6)

3. CY3209-ExpressEVK Example Projects

PSoC Express

Chapter 1: Introduction

1 Open the CY3209-ExpressEVK Kit Guide on the CD's `/Documentation` folder.

2. Read Chapter 1 of the Kit Guide to learn the following subjects:
   a. How to add drivers and valuators to a PSoC Express Design.
   b. How to install your MiniProg programmer.
   c. How to program the demonstration board.
   d. Conventions used in the CY3209-ExpressEVK Kit Guide.

Explore the Hands-on Example Projects

Select other projects to build from the following chapters in the Kit Guide

Chapter 2: First Example

This example implements a pushbutton used to control a decaying LED.

Chapter 3: I2C Master/Slave Lab

This lab creates two projects: an I2C slave and an I2C master. The I2C master device reads a voltage value from the slave and displays the value on a four digit LED display. The master also writes a control value to the slave device to set an LED to Off, On, or Blinking, depending on the voltage level read from the slave.

Chapter 4: USB-UART Lab

This project uses the USB-UART driver to demonstrate the ability to monitor and control a PSoC device with a PC using a virtual COM port on a USB hardware connection. The project has a voltage input and an LED that supports three states: Off, On, and Blinking. The LED state is controlled by an Interface Valuator.

Chapter 5: CapSense Lab

This project creates four capacitance sensing buttons that individually control four LEDs.

Chapter 6: LCD Lab

This project displays a voltage input as a numeric value and as a bar graph on an LCD display.

Chapter 7: Cypress WirelessUSB™ Master/Slave Lab 1

This lab creates two projects: a WirelessUSB slave and a WirelessUSB master. The WirelessUSB master device reads a voltage value from the slave and displays the value on a four digit LED display. The master also writes a control value to the slave device to set an LED to Off, On, or Blinking depending on the voltage level read from the slave.

Chapter 8: Cypress WirelessUSB™ Master/Slave Lab 2

This lab implements a wireless tilt sensor. The lab creates two projects: a WirelessUSB slave and a WirelessUSB master. The slave device transmits information from a dual axis accelerometer to the master device. The master device uses this information to display the XY tilt on the 8 LEDs in the bottom left quadrant of the master demonstration board. The LED pattern is also transmitted back to the slave device for display on the slave demonstration board.

Note: This lab requires two CY3209-ExpressEVK kits.

4. Design Support and Resources

PSoC Development Software Online

All PSoC development software tools are available for download online. For PSoC Express, visit www.cypress.com/psocexpress. For PSoC Designer visit www.cypress.com/psocdesigner. For PSoC Programmer visit www.cypress.com/psocprogrammer.

PSoC Data Sheets and Application Notes

For all PSoC device data sheets and detailed application notes, many with complete starter projects, visit www.cypress.com/designresources. In the Products column, select “PSoC Mixed-Signal Controllers” and in the Resource Type column, select either “Application Notes” or “Datasheets.”

PSoC Device Selector Guide

In the PSoC Application Notes section, search for AN2209, The Device Selection Guide for PSoC. It is a useful tool for determining exactly which PSoC device you should use for a specific design project.

PSoC Development Tools Selector Guide

In the PSoC Application Notes section, search for AN2402, The PSoC Development Tools Selector Guide. This is a complete catalog and description of all the development tools that support PSoC devices and when to use them in your design cycle—from concept to production.

PSoC On-Demand Training

Visit www.cypress.com/psoctraining to engage in on-demand self-paced PSoC product and development software training. Learn to design PSoC like the pros, at the introductory, intermediate, and advanced knowledge levels!

PSoC On-Site Training

Email training@cypress.com to enquire about PSoC in-person training seminars at a location near you. Learn design basics, tips, and tricks from the pros to become a PSoC design expert!

Online Technical Support

For knowledge base articles, customer forums, and online application support, visit www.cypress.com/support.

Additional CapSense Resources

A wealth of information about PSoC Express and CapSense is available on the Cypress.com web site, and more is frequently added. The following list is just a sample of what is available.

CapSense DataSheets

- *CY8C20434 Mixed Signal Array*
- *CY8C20334 Mixed Signal Array*
- *CY8C20234 Mixed Signal Array*

CapSense Application Notes

- *AN2292, Layout Guidelines for PSoC™ CapSense*
- *AN2318, EMC Design Considerations for PSoC CapSense Applications*
- *AN2355, Calibrating CapSense with the CSR User Module*
- *AN2360, Power and Sleep Considerations*
- *AN2393, Migrating from CSR to CSA*
- *AN2394, CapSense Best Practices*
- *AN2397, CapSense Data Viewing Tool*
- *AN2398, Waterproof Capacitive Sensing*
- *AN2403, Signal-to-Noise Ratio Requirement for CapSense Applications*
- *AN2408, Migrating from CSR to CSD*
- *AN14459, CapSense Device and Method Selection Guide*

CapSense Technical Articles

- *TA1186, Designer's Guide to Rapid Prototyping of Capacitive Sensors on any Surface*
- *TA1179, Controls & Sensors Touch Sensors Spread Out*
- *TA1193, The Art of Capacitive Touch Sensing*
- *WP0004, White Paper: Cypress's CapSense Successive Approximation Algorithm*

CapSense Developer Kits

- *DK10068, CapSense Successive Approximation (CSA)*
- *DK10069, CapSense Sigma-Delta (CSD)*
- *DK10064, CapSense Proximity Detection Demonstration*
- *DK10059, CapSense Demo Board*