CY3641, CY3642, and CY3643

Programming Kits Guide

Doc. No. 002-19586 Rev. *B

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Contents

Safety Information

The CY3641, CY3642, and CY3643 Programming Kits are intended for use as programming platform for hardware or software in a laboratory environment. The board is an open system design, which does not include a shielded enclosure, so the board may cause interference to other electrical or electronic devices in close proximity. In a domestic environment, this product may cause radio interference. In such cases, the user may be required to take adequate preventive measures. Also, this board should not be used near any medical equipment or RF devices.

Attaching additional wiring to this product or modifying the product operation from the factory default may affect its performance and cause interference with other apparatus in the immediate vicinity. If such interference is detected, suitable mitigating measures should be taken.

	CY3641, CY3642, and CY3643 Programming Kits contain electrostatic discharge (ESD)-sensitive devices. Electrostatic charges readily accumulate on the human body and any equipment, and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused CY3641, CY3642, and CY3643 Programming Kit boards in the protective shipping package.

General Safety Instructions

ESD Protection

ESD can damage boards and associated components. Cypress recommends that the user perform procedures only at an ESD workstation. If an ESD workstation is not available, use appropriate ESD protection by wearing an antistatic wrist strap attached to the chassis ground (any unpainted metal surface) on the board when handling parts.

Handling Boards

The CY3641, CY3642, and CY3643 Programming Kits are sensitive to ESD. Hold the board only by its edges. After removing the board from its box, place it on a grounded, static-free surface. Use a conductive foam pad if available. Do not slide the board over any surface.

Certification Disclaimer

This kit is intended for programming purposes only and is not considered by Cypress Semiconductor to be a finished end-product fit for general consumer use. It generates and can radiate radio frequency energy and has not been specifically tested for CE certification compliance. Operation of this equipment in other environments may cause interference with radio communications, in which case users at their own expense will be required to take whatever measures may be required to correct this interference.

1. Introduction

Thank you for your interest in CY3641, CY3642, and CY3643 Programming Kits. This collection of kits will be referred to as "kits" or "CY364x" henceforth, whereas when something specific to a particular kit is of interest, the specific part number will be used.

CY364x kits are designed to enable you to program the CY294xx programmable clock devices, the latest additions to the Cypress timing product portfolio. CY3641 and CY3642 kits are used to program the LCC 8-pin 7mm x 5mm (MPN CY2941x) and LCC 8-pin 5mm x 3.2mm (MPN CY2942x) devices respectively. The CY3643 kit is used to program the QFN 16-pin 3mm x 3mm (MPN CY29430) device. The CY294xx clock devices are high-performance programmable oscillators with one fractional PLL that generates any frequency up to 2.1 GHz with jitter as low as 110 fs. For more details, refer to the respective device datasheet – CY2941x/CY2942x, CY29430.

CY364x Programming Kits allow you to program the CY294xx series of clock device. These are available through the Cypress Online Store or through our distributors.

Table 1-1. Kit and IC Compatibility

Programming Kit	Programmable IC	Package (mm x mm)
CY3641	CY29411FLXI, CY29412FLXI	LCC 8-pin 7.0x5.0
CY3642	CY29421FLXI, CY29422FLXI	LCC 8-pin 5.0x3.2
CY3643	CY29430QFLXI	QFN 16-pin 3.0x3.0

1.1 CY364x Programming Kits Contents

CY364x Programming Kits include the following:

- CY364x Programming Board and an appropriate size clock IC placed inside the socket.
- USB Standard-A to Mini-B cable
- Quick Start Guide

Inspect the contents of the kit. If you find any part missing, contact your nearest Cypress sales office for assistance: www.cypress.com/support.

Figure 1-1. CY3641 Kit Contents

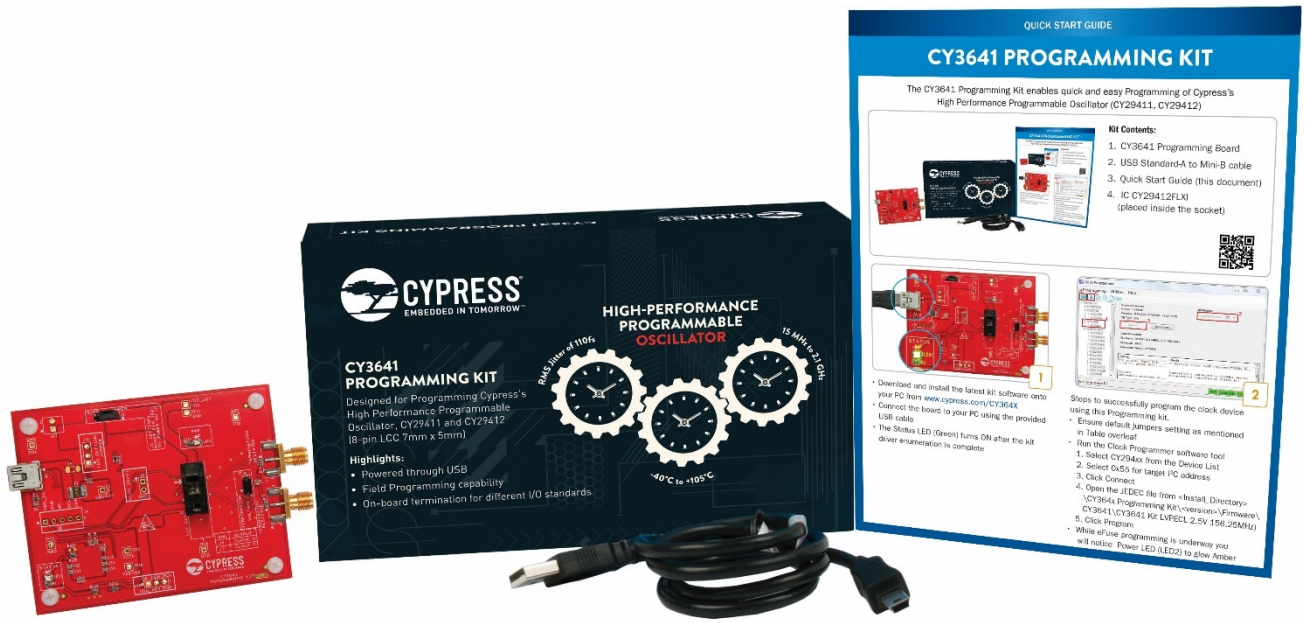


Figure 1-2. CY3642 Kit Contents

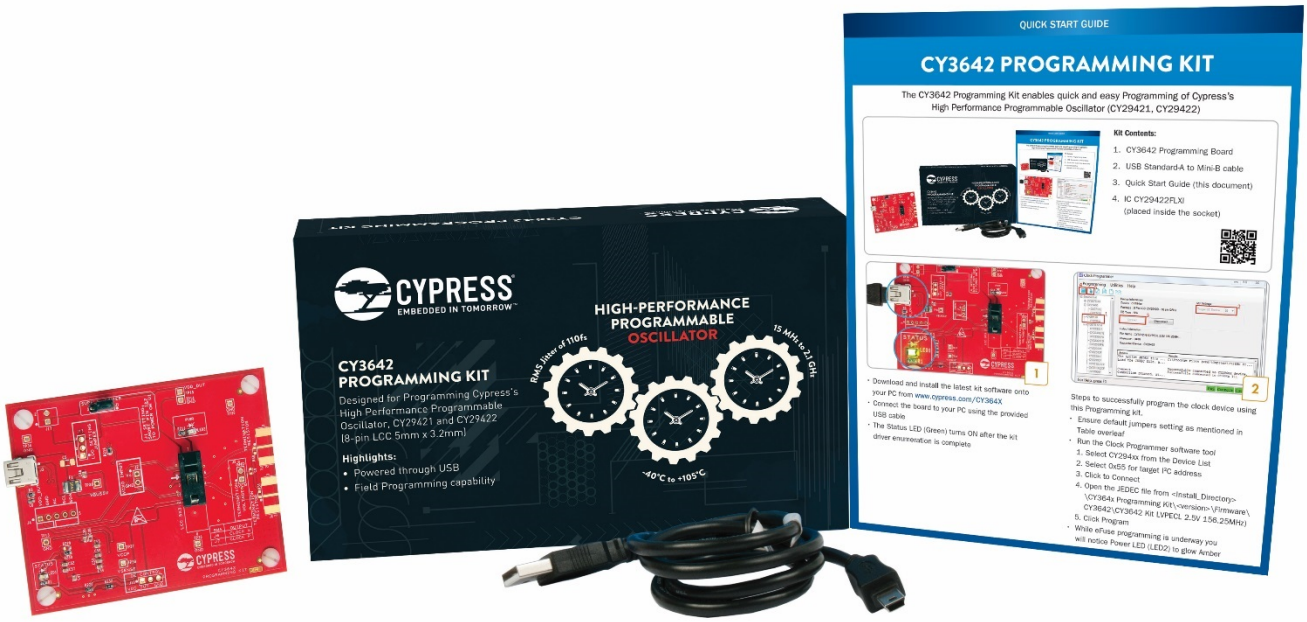


Figure 1-3. CY3643 Kit Contents

1.2 Getting Started

Refer to the CY364x Quick Start Guide inside the kit box or in the installation directory to get started quickly. The default location for kit documents is *<Install_Directory>\CY364x Programming Kit\<version>\Documentation.*

This Kit Guide is organized in following chapters:

- The Software Installation chapter describes the installation of the kit software.
- The Kit Operation chapter describes the major features of the Programming Kits.
- The Hardware chapter describes the hardware content of the CY364x Programming Kits and the hardware operation.
- The Additional Features of CY3641 chapter describes how to use CY3641 to read-out clock frequency once a device has undergone eFuse programming.
- Appendix A list steps to execute eFuse programming for a configuration file in I2C format using Cypress' Bridge Control Panel.
- Appendix B may be used to extend the functionality of the programming kits with minor modifications in hardware by mounting/unmounting a few components.
- Appendix C may be used if you want a quick review on How to generate a JEDEC Configuration file.
- Appendix D lists Schematics, Fab Drawing, and the bill of materials (BOM) for all the three kits.

1.3 Additional Learning Resources

Visit the Cypress CY364x Programming Kits web page and www.cypress.com/HPO for additional learning resources including datasheets and application notes.

1.4 Technical Support

For assistance, go to www.cypress.com/support, or contact our customer support at +1(800) 541-4736 Ext. 2 (in the USA), or +1 (408) 943-2600 Ext. 2 (International).

1.5 Document Conventions

Table 1-2. Document Conventions for Guides

Convention	Usage
Courier New	Displays file locations, user entered text, and source code: C:\ ...cd\icc\
Italics	Displays file names and reference documentation.
File > Open	Represents menu paths: File > Open > New Project
Bold	Displays commands, menu paths and icon names in procedures: Click the **File** icon and then click **Open**.
Times New Roman	Displays an equation: 2 + 2 = 4
Text in gray boxes	Describes Cautions or unique functionality of the product.

1.6 Acronyms

Table 1-3. List of Acronyms used in this Document

Acronym	Definition
BOM	Bill of Materials
BCP	Bridge Control Panel
CML	Current Mode Logic
DNP, DNM	Do Not Populate, Do Not Mount
FS	Frequency Select
HCSL	High-Speed Current Steering Logic
I^2C	Inter-Integrated Circuit
JEDEC	Joint Electron Device Engineering Council
LDO	Low-Dropout
LVCMOS	Low Voltage Complementary Metal Oxide Semiconductor
LVPECL	Low Voltage Positive Emitter Coupled Logic
LVPECL2	Low Voltage Positive Emitter Coupled Logic with zero Common-mode current
LVDS	Low Voltage Differential Signaling
OE	Output Enable
OT3	Third Overtone Crystal
SMA	Subminiature Version A
VCXO	Voltage-Controlled Crystal Oscillator
TCXO	Temperature Compensated Crystal Oscillator
OTP	One-Time Programmable

2. Software Installation

2.1 Before You Begin

All Cypress software installations require administrator privileges. Ensure that you have the required privileges on the system for successful installation. Before you install the kit software, close any other Cypress software that is currently running.

2.2 Install Software

1. Download the CY364x Programming Kit software from Cypress CY364x Programming Kits web page. The software is available in the following formats:
   - **CY364x Programming Kit Complete Setup:** This installation package contains the files related to CY364x Programming Kits. However, it does not include the Windows Installer or Microsoft .NET Framework packages. If these packages are not available on your computer, the installer directs you to download and install them from the Internet.
   - **CY364x Programming Kit Only:** This executable file installs only the CY364x Kit contents, which include example configuration files, hardware files, and user documents. This package can be used if all the software prerequisites are installed on your PC.
   - **CY364x Programming Kit ISO:** This file is a complete package, stored in a CD/DVD-ROM image format that you can use to create a CD/DVD or extract using an ISO extraction program such as WinZip or WinRAR. The file can also be mounted similar to a virtual CD/DVD using virtual drive programs such as Virtual CloneDrive and MagicISO. This file includes all the required software, utilities, drivers, hardware files, and user documents.
2. If you have downloaded the ISO file, mount it on a virtual drive. If you do not have a virtual drive to mount, extract the ISO contents using the appropriate ISO extractor (such as MagicISO or PowerISO). Double-click *cyautorun.exe* in the root directory of the extracted content or the mounted ISO if the “Autorun from CD/DVD” option is not enabled on the PC. The installation window will appear automatically.

   Note: If you are using the “Kit Complete Setup” or “Kit Only” file, then go to step 4 for installation.
3. Click **Install CY364x Kit** to start the installation as shown in Figure 2-1.

Figure 2-1. Installer Screen

4. Click **Change…** if you want to install the CY364x Kit in a location other than the default, and then click **Next** as shown in Figure 2-2.

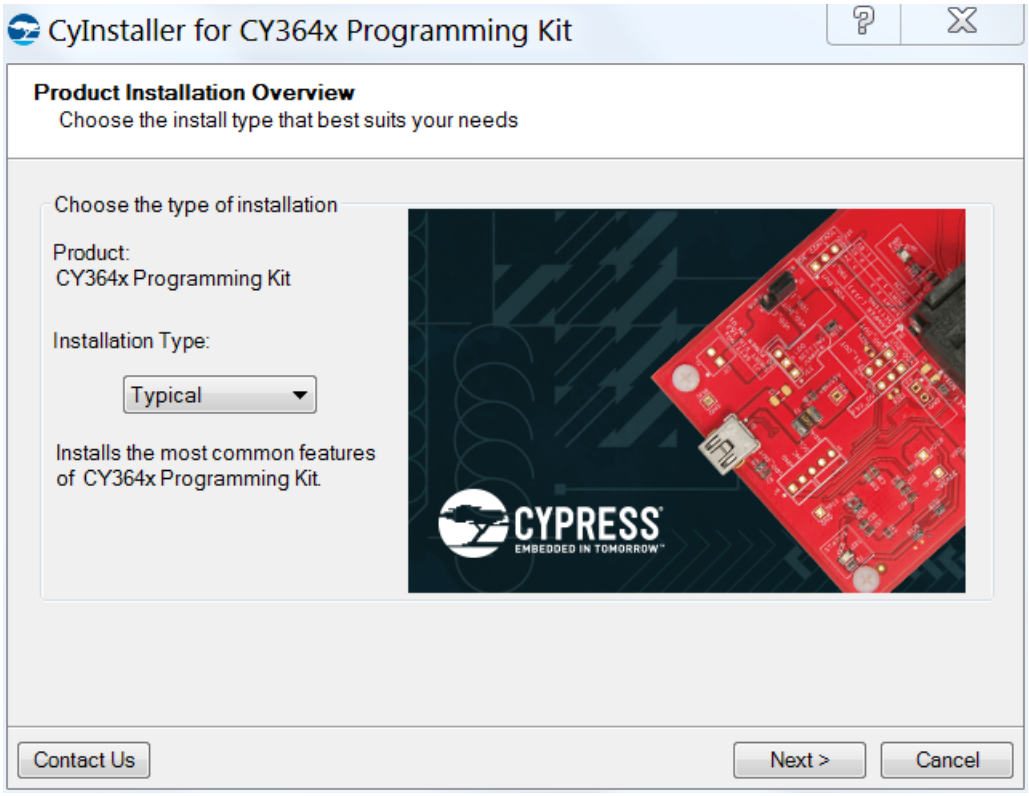
   Note: When you click **Next**, the CY364x Kit installer automatically installs the required software, if it is not present on your computer. The pre-requisite is PSoC Programmer 3.27.0 or later.

Figure 2-2. InstallShield Wizard

5. Select the **Installation Type** (see Figure 2-3). The drop-down menu contains three options: **Typical** (installs all the required features), **Custom** (lets you choose the features to be installed), and **Complete** (installs all the contents). Click **Next** after you select the Installation Type.

Note: It is recommended that you choose the **Typical** Installation Type.

Figure 2-3. Product Installation Overview



6. Read and accept the End-User License Agreement, and then click **Next**.

   When the installation begins, a list of packages appears on the Installation page. A green check mark appears next to each package after successful installation.

7. Enter your contact information or select the **Continue Without Contact Information** check box.

8. Click **Finish** to complete the CY364x Programming Kit installation.

   After the installation is complete, the kit contents are available at:

   <Install_Directory>\CY364x Programming Kit\<version>.

   Default location:

   Windows 7 (64-bit): *C:\Program Files (x86)\Cypress\CY364x Programming Kit*

   Windows 7 (32-bit): *C:\Program Files\Cypress\CY364x Programming Kit*

2.3 Install Hardware

No additional hardware installation is required for this kit.

2.4 Uninstall Software

You can uninstall the software using one of the following methods:

- Go to **Start** > **All Programs** > **Cypress** > **Cypress Update Manager** > **Cypress Update Manager**, and select the specific software package. Click the **Uninstall** button.
- Go to **Start** > **Control Panel** > **Programs and Features**, and select the specific software package. Click the **Uninstall/Change** button.

3. Kit Operation

CY364x kits are used to program Cypress' CY294xx parts, high-performance programmable oscillators. Connect the CY364x kit through USB to a PC running Cypress' Clock Programmer 1.7 application, which comes bundled with PSoC® Programmer™ 3.27 or later.

3.1 Theory of Operation

CY364x Programming kits are used to program CY294xx programmable clock devices, the latest additions to the Cypress timing product portfolio. Programming is done at a fixed voltage of 2.5 V supplied by the Low Dropout (LDO) regulator. The on-board PSoC 5LP device (U7) performs the USB-to-I^{2}C conversion. There is one power LED (LED2) driven from the on-board LDO supply and one status LED (LED1) controlled by PSoC 5LP. CY3641 comes with SMA connectors which may be used to evaluate the crystal frequency at 2.5 V. Figure 3-1, Figure 3-2, and Figure 3-3 illustrate the block diagram of the CY3641, CY3642 and CY3643 Programming Kits respectively.

Figure 3-1. CY3641 Programming Kit Block Diagram

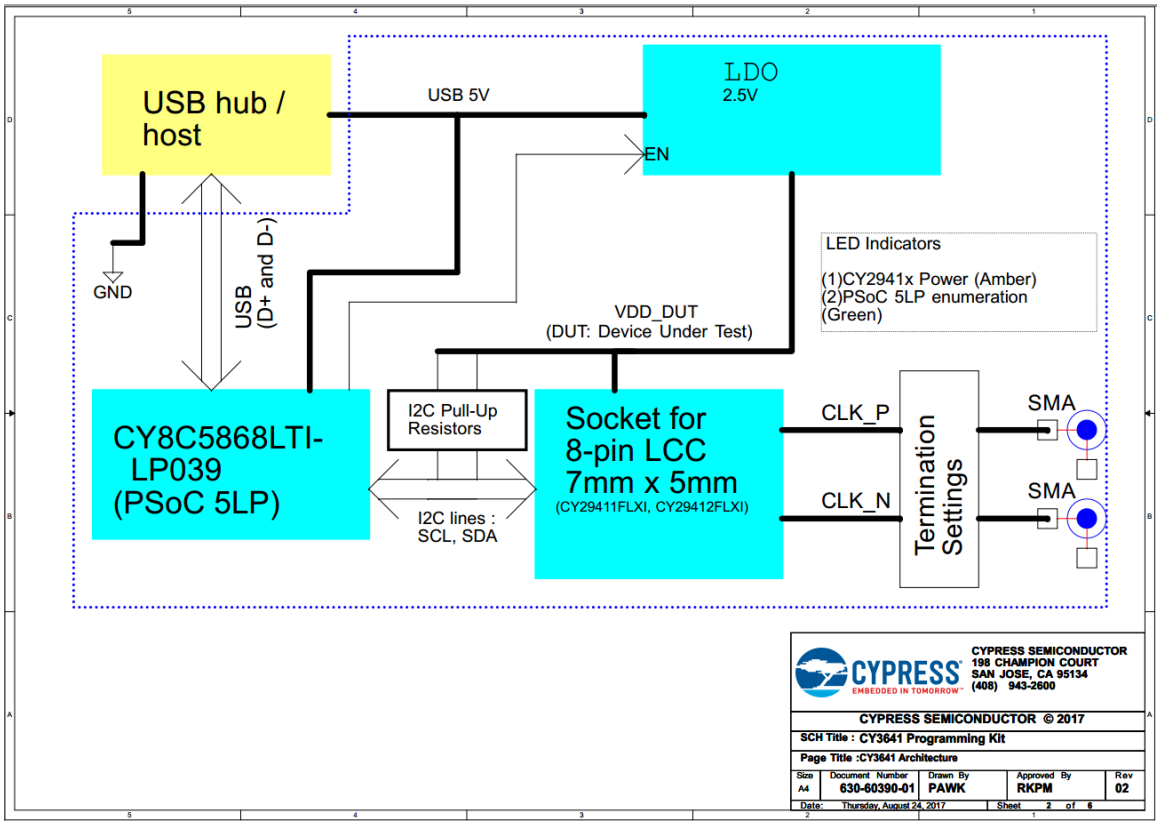


Figure 3-2. CY3642 Programming Kit Block Diagram

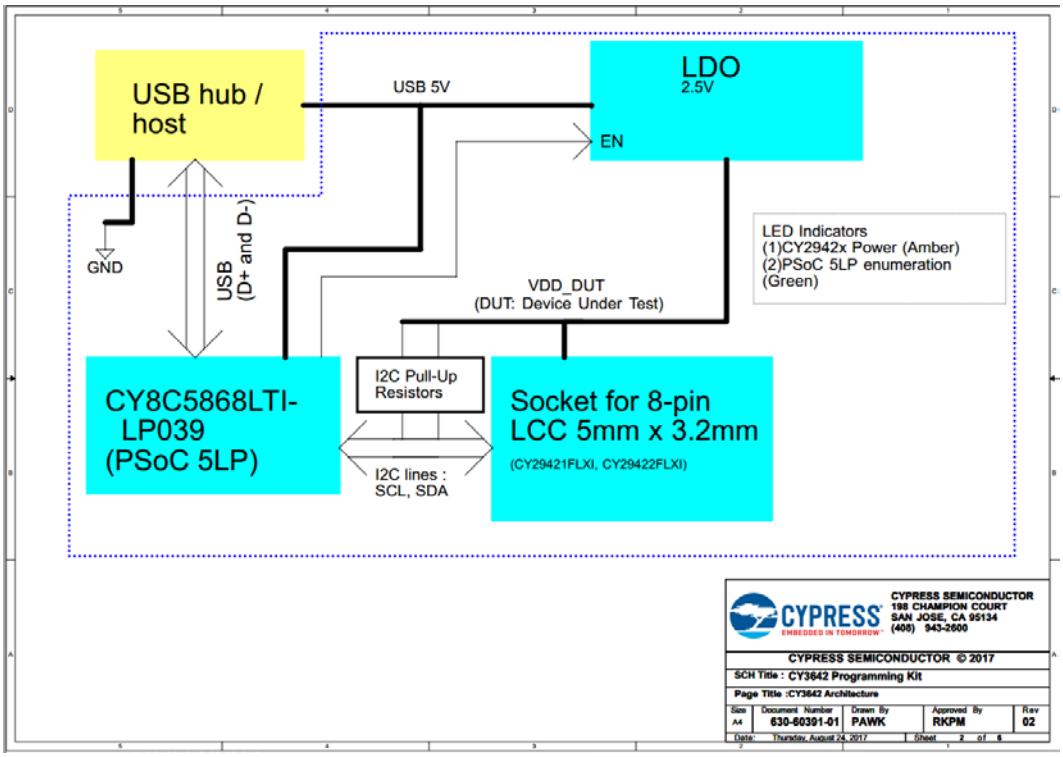
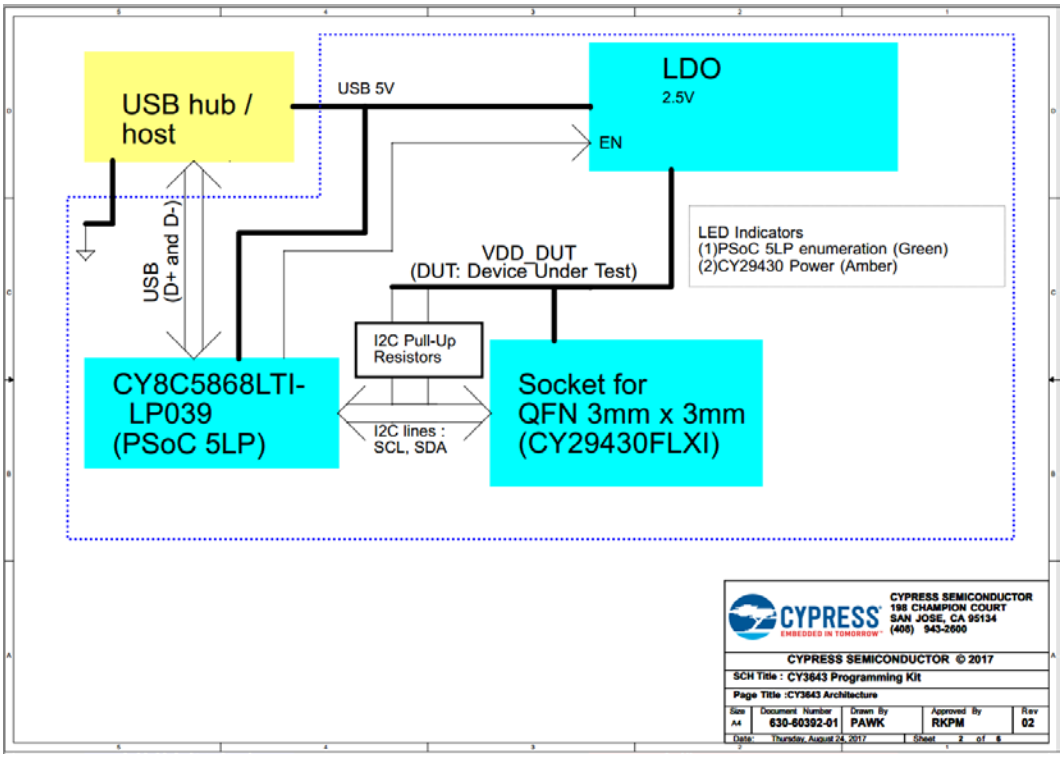


Figure 3-3. CY3643 Programming Kit Block Diagram

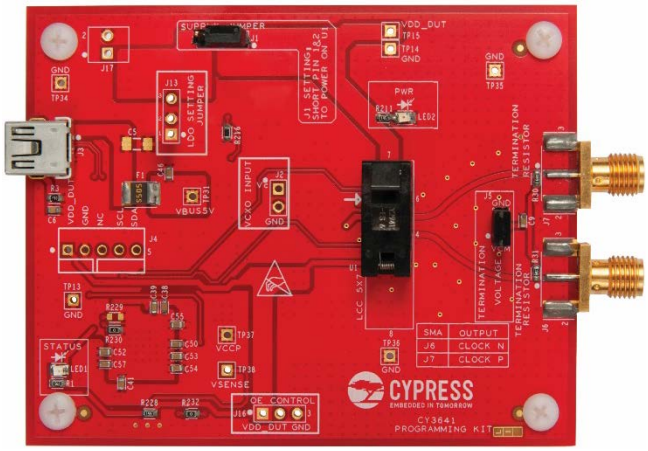


3.2 Functional Description

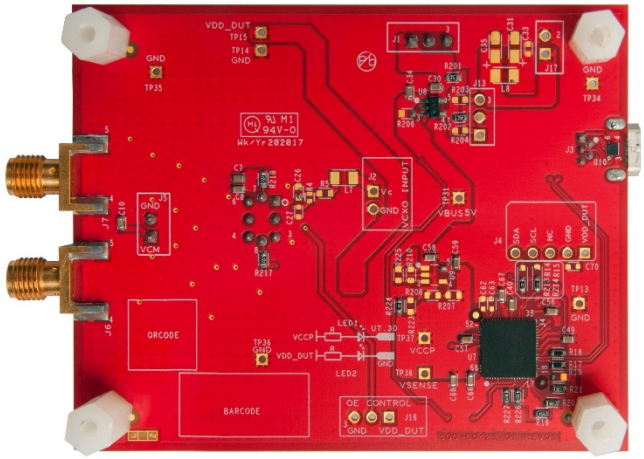
Programming a clock device permanently for a configuration, which will make the clock device boot into that configuration at power up, is called eFuse programming. The kit is designed to power up the device placed in the socket only during eFuse-programming; the power supply is shut down after programming is complete. This allows for the safe removal of the programmed device from the socket.

Figure 3-4 illustrates the top view and bottom view of the CY3641 kit, Figure 3-5 that of CY3642, and Figure 3-6 that of CY3643.

Figure 3-4. CY3641 Programming Kit (Top View, Bottom View)

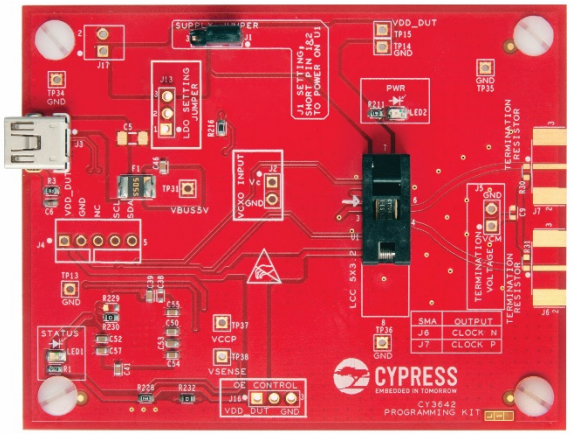


CY3641 Kit Top View

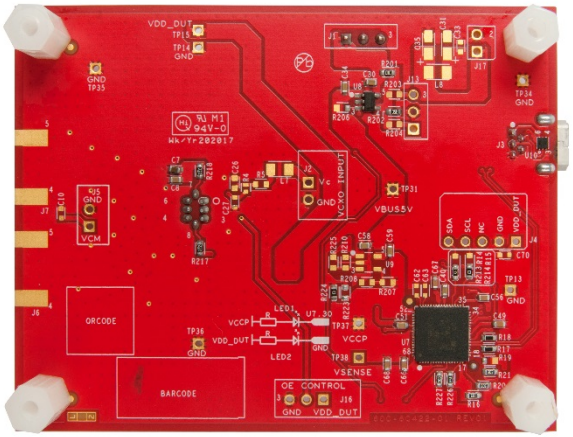


CY3641 Kit Bottom View

Figure 3-5. CY3642 Programming Kit (Top View, Bottom View)

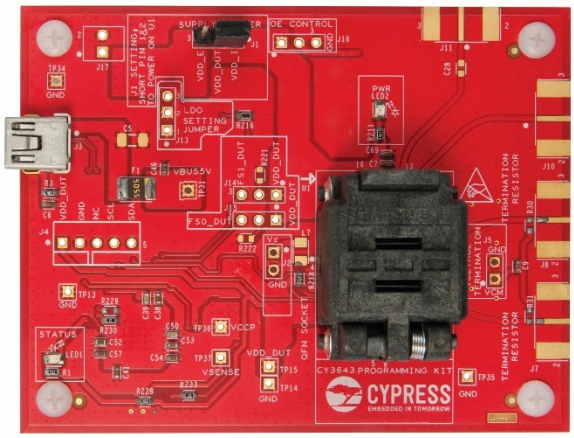


CY3642 Kit Top View

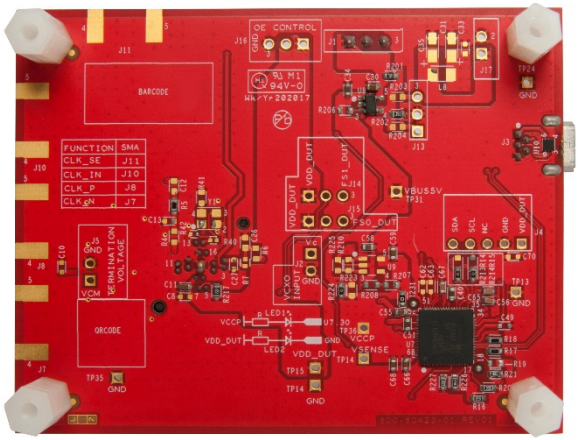


CY3642 Kit Bottom View

Figure 3-6. CY3643 Programming Kit (Top View, Bottom View)



CY3643 Kit Top View



CY3643 Kit Bottom View

3.3 CY364x Kit USB Connection

CY364x kits connect to a PC through a USB-A to Mini-B cable provided in the kit box. The kit enumerates as a USB Composite Device as part of driver software installation on Windows.

Figure 3-7. Kit Connected Through USB

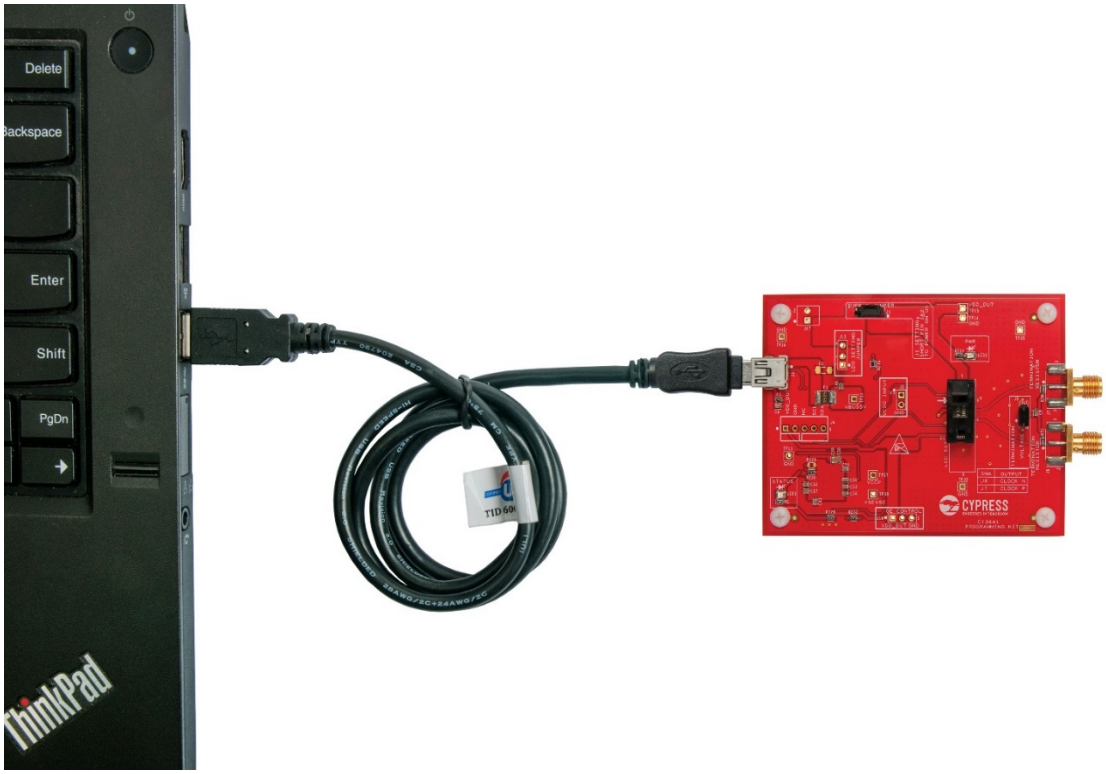


Figure 3-8. USB Driver Installation in Progress

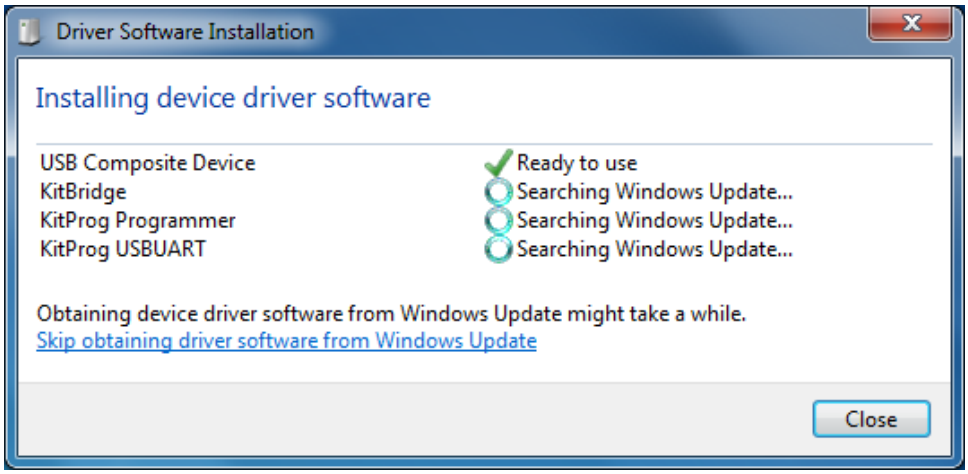
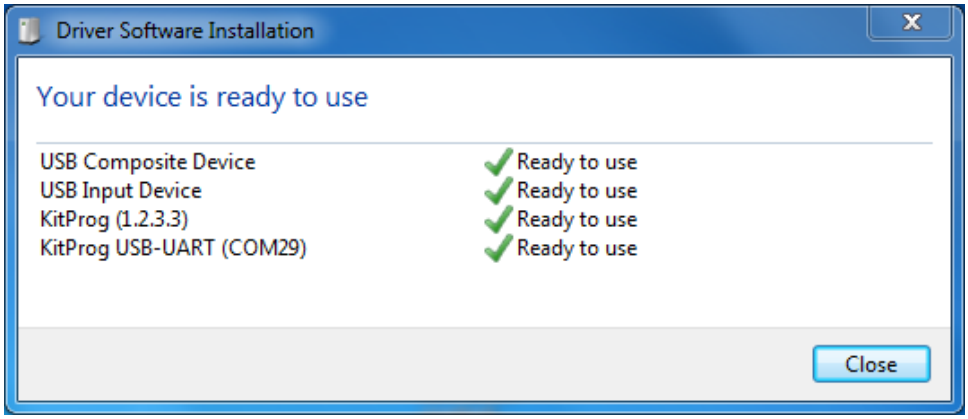


Figure 3-9. USB Driver Installation Complete



After driver enumeration is complete, the Status LED (LED1) will glow green and device is now ready to use.

3.4 eFuse Programming of the CY294xx Clock Device

CY294xx devices have an internal one-time programmable (OTP) nonvolatile memory called eFuse. The device also contains volatile memory; the contents of nonvolatile memory get copied to the volatile memory at the release of reset at power up. The output frequency depends on the configuration in the volatile memory. The configuration file used to program the clock device should be in JEDEC format. Example configuration files can be found in *<Install_Directory>\CY364x Programming Kit\<version>\Firmware*; refer to Appendix C for a brief description on how to generate a configuration file.

Once a device is eFuse programmed (once the eFuses are blown) it can't be undone. It is therefore strongly recommended that the JEDEC file be tested for intended clock performance before writing the configuration parameters in the device non-volatile memory. To permanently program a clock device, Cypress Clock Programmer 1.7.0 or later is used. Clock Programmer comes bundled with PSoC Programmer, which can be downloaded from Cypress PSoC Programming Solutions page.

I. Connect the programming kit to a PC using the USB Standard-A to Mini-B cable and make the following initial jumper settings:

   1. J1: short 1 and 2.
   2. Verify that Status LED (Green, LED1) glows.

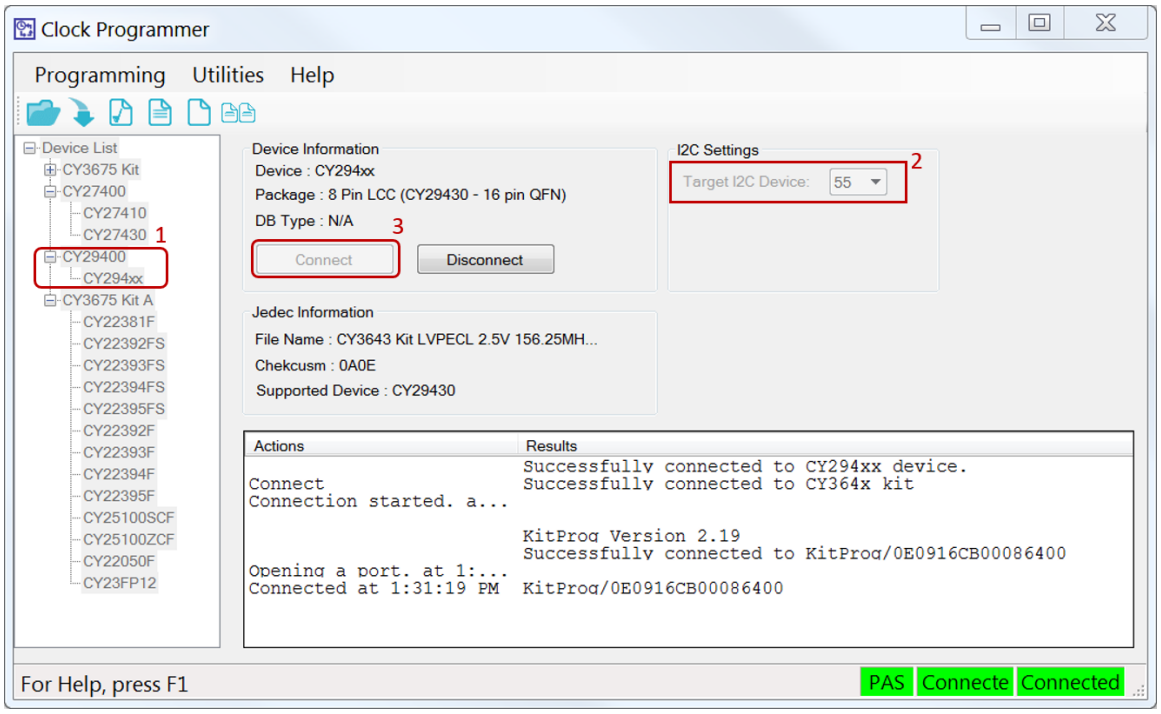
II. Launch the Clock Programmer application from **Start** > **All Programs** > **Cypress** > **Clock Programmer**.

III. Place a blank clock device inside the socket (CY364x kits come with a blank device placed inside the socket). See Figure 3-10 and follow the instructions below:

   1. Select the CY294xx clock device (device placed in the socket).

2. Select target I²C address: 0x55
3. Click **Connect**.

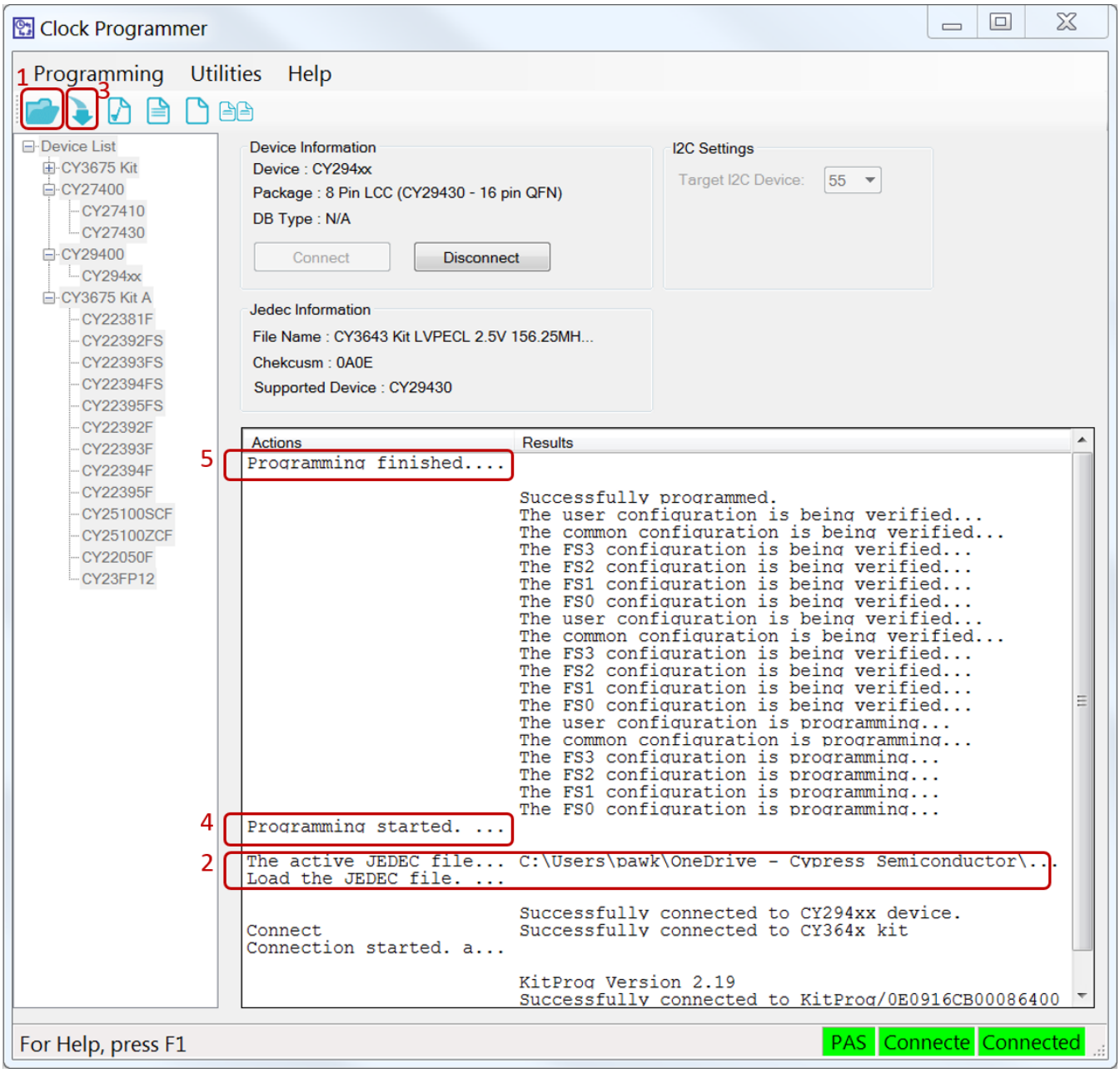
Figure 3-10. Connect to Clock Device Using Clock Programmer



IV. Open a configuration file (for example, *<Install_Directory>\CY364x Programming Kit\<version>\Firmware\CY3643\CY3643 Kit LVPECL 2.5V 156.25MHz.jed*) and execute eFuse-programming. See Figure 3-11 and follow the instructions.

1. Open the JEDEC file using **Programming** > **File Load**.
2. Verify that the JEDEC file is active.
3. Click **Program**. You will notice LED2 glow Amber while eFuse programming is underway.
4. Verify “Programming started…”
5. Verify that the “Programming finished…” message appears.

Figure 3-11. Open JEDEC and Program the Device



CAUTION	**The JEDEC file must be correct and verified for intended clock performance before proceeding with eFuse programming. Once the eFuses are blown, the content of the nonvolatile memory cannot be altered.** **The supply to the clock device must be set to 2.5 V for eFuse programming. Setting the clock supply to any other voltage during eFuse programming will cause potential damage to the device.**

4. Hardware

4.1 Board Overview

CY3641, CY3642, and CY3643 Programming Kits are used to program CY2941x, CY2942x, and CY29430 clock devices. CY364x kits have the following features:

- Powered from a USB port
- Jumper to short or isolate an external connection for termination settings (applicable only to CY3641)

Figure 4-1 illustrates the CY3641 board with a markup of the on-board components.

Figure 4-1. CY3641 Kit On-board Components

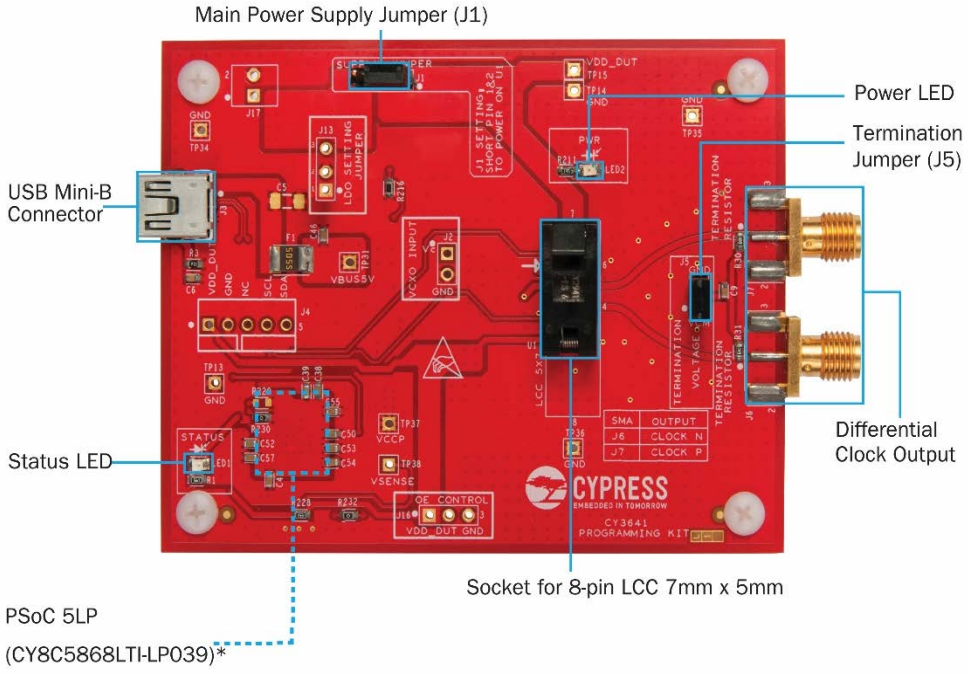


Figure 4-2 illustrates the CY3642 board with a markup of the on-board components.

Figure 4-2. CY3642 Kit On-board Components

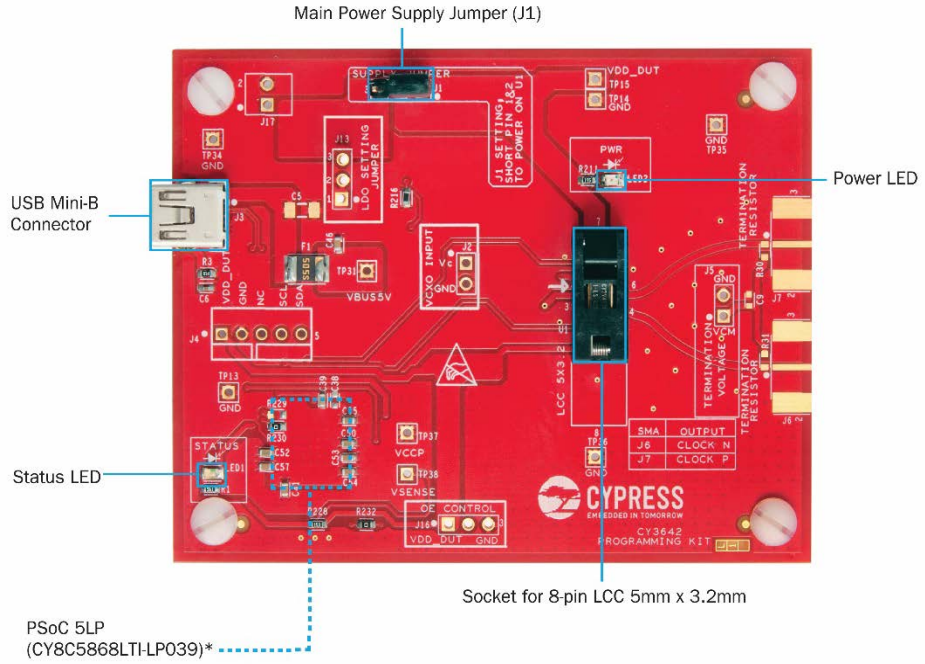


Figure 4-3 illustrates the CY3643 board with a markup of the on-board components.

Figure 4-3. CY3643 Kit On-board Components

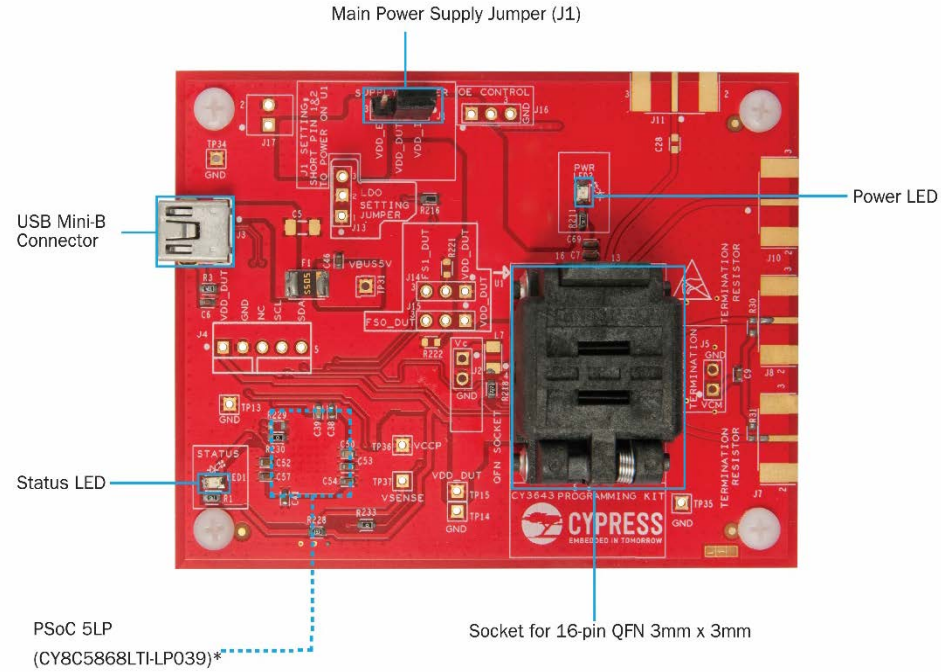


Table 4-1. CY364x Kits Onboard Components Description

Label Name	CY3641	CY3642	CY3643	Description
Main Power Supply Jumper (J1)	●	●	●	Short pin 1 and 2 of jumper J1 to power up the clock IC.
USB Mini-B Connector (J3)	●	●	●	Connect the kit to a PC using the USB Standard-A to Mini-B cable.
SMA Connectors (J6 and J7)	●	x	x	Connect SMA cables to the SMA connectors (J6 and J7) on one end and to an oscilloscope on the other end.
Termination Jumper (J5)	●	x	x	The board has an on-board jumper (J5) to connect and disconnect output termination.
Status LED (LED1)	●	●	●	This LED (LED1) turns ON after the USB enumeration is completed. This LED blinks during programming of the clock IC.
Power LED (LED2)	●	●	●	This LED (LED2) turns ON when the CY294xx device is powered.
PSoC 5LP (CY8C5868LTI-LP039)	●	●	●	On-board PSoC 5LP device that converts the USB data-stream to I^2C format to program the CY294xx device.

CAUTION	**The kit should strictly be operated from a USB supply by connecting to a PC.** **The PCB should not be powered by any external source. Application of an external power source to any of the jumper pins or test points may cause potential damage of the PCB.**

4.1.1 Power Settings

The only power option for the CY364x kit is 5 V from a USB port. The device has the same core and I/O supply voltage.

4.1.2 LED Indicators

Table 4-2. LED Indicators

LED	Label	Indicator	Description
LED1	STATUS LED	Status of Kit connection to the PC	This LED turns ON when the kit is connected to the USB port on a PC using the cable provided. If this LED does not turn ON, it indicates that the USB enumeration of the kit did not happen with the host PC. This LED blinks continuously when the device is being programmed through the PSoC 5LP device.
LED2	POWER LED	Clock Device Power	This LED glows when the supply to the socket is powered on. Ensure that a jumper shunt is populated at J1, shorting position 1-2.

Note: The hardware files can be found at <*Install_Directory*>*CY364x Programming Kit*\<*version*>*Hardware*.

5. Additional Features of CY3641

CY3641 comes with SMA connectors and termination setting that can be controlled using termination jumper J5. Once the device is eFuse programmed, you can measure its output parameters using this kit.

5.1 Power up the Clock Device

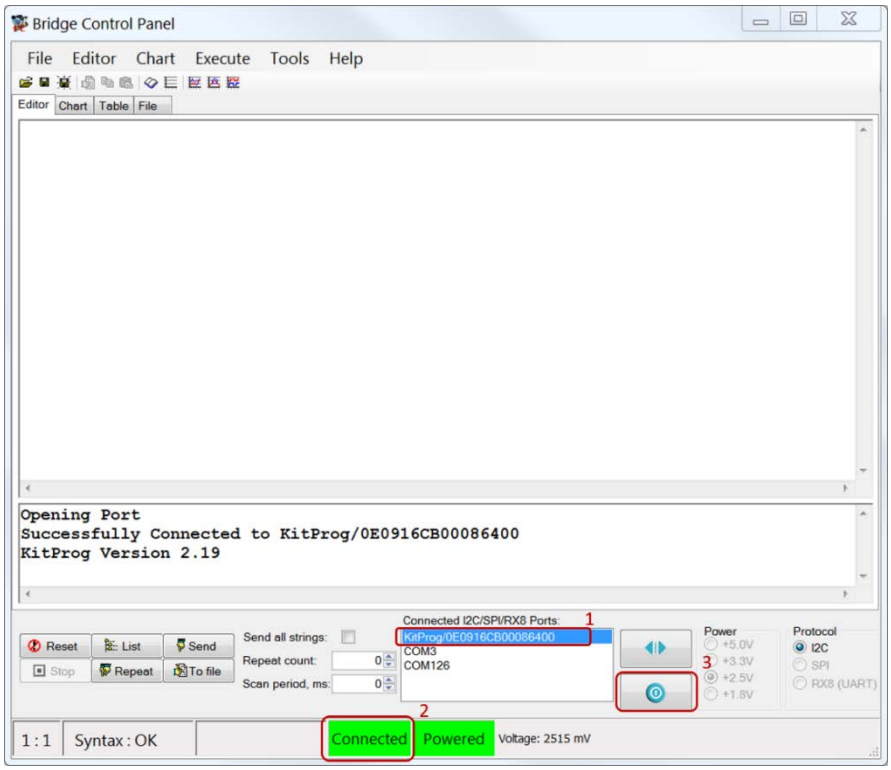
The primary functionality of the programming kits inhibits a continuous supply to the clock device. However, measurement of the clock device output parameters demands a continuous power supply. The onboard LDO that supplies power to the clock device can be controlled using the onboard controller (PSoC 5LP, U7) and Cypress' Bridge Control Panel(BCP) application which comes bundled with PSoC Programmer (version 3.27 or later). The executable can be downloaded from Cypress Programming Solutions web page. Follow the steps listed below to power up the clock device:

I. Connect the CY3641 kit to a PC with a programmed device placed inside the socket.

II. Launch the Bridge Control Panel application from **Start** > **All Programs** > **Cypress** > **Bridge Control Panel.**

III. To turn ON the power supply to the clock device:

1. Select "KitProg/xxxxxxxxxxx" under head "Connected I2C/SPI/RX8 Ports".
2. Verify that the "Connected" indicator turns 'Green' indicating that the kit is connected successfully.
3. Toggle the power button. This turns ON/OFF the power supply to the clock device.



IV. Verify that LED2 (Amber Power LED) turns ON. This ensures that the clock IC is powered.

5.2 Measuring Parameters of the Programmed Clock Device

See the CY3676 Evaluation Kit user guide for details on measuring the parameters and evaluating the clock device. Do the following to measure one output standard and one voltage.

Configuration File (JEDEC) to use: eFuse the JEDEC file in the installation directory under *<Install_Directory>\CY364x Programming Kit\<version>\Firmware\CY3641\CY3641 Kit LVPECL 2.5V 156.25MHz.jed*

Configuration Parameters: Set the following parameters:

- Device: CY29412FLXI
- Output standard: LVPECL
- Voltage: 2.5 V
- Frequency output 156.25 MHz.

Termination Setting: Short Jumper J5.

Measurement Setup: Connect the SMA connectors J6 and J7 to an oscilloscope (Figure 5-1 is taken on an 8-GHz oscilloscope).

Observation: With the programmed device inside the socket, LED2 glowing and the kit properly connected to an oscilloscope through the SMA Cable, the output signal and its parameters can be measured as shown in Figure 5-1.

Figure 5-1. CY29412FLXI Differential Output of 156.25 MHz and Output Standard as LVPECL

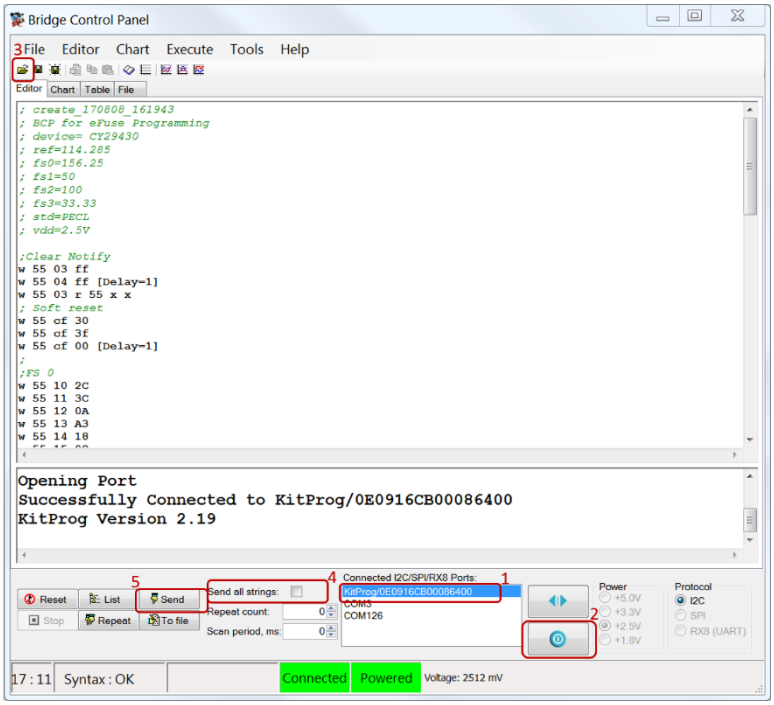
A. Using Bridge Control Panel with an I²C Configuration File

If the configuration file is in the I2C format (*iic*), it requires Cypress' Bridge Control Panel software version 1.17 or later to program the clock device. You can download it from Cypress PSoC Programming Solutions web page. To get your JEDEC file converted into I2C format contact Cypress via e-mail at clocks@cypress.com. For this section, a configuration file with all the 4 FS profiles enabled is used.

Open the Bridge Control Panel tool from the Start menu > All Programs > Cypress > Bridge Control Panel > Bridge Control Panel. Follow the instructions in order as listed below:

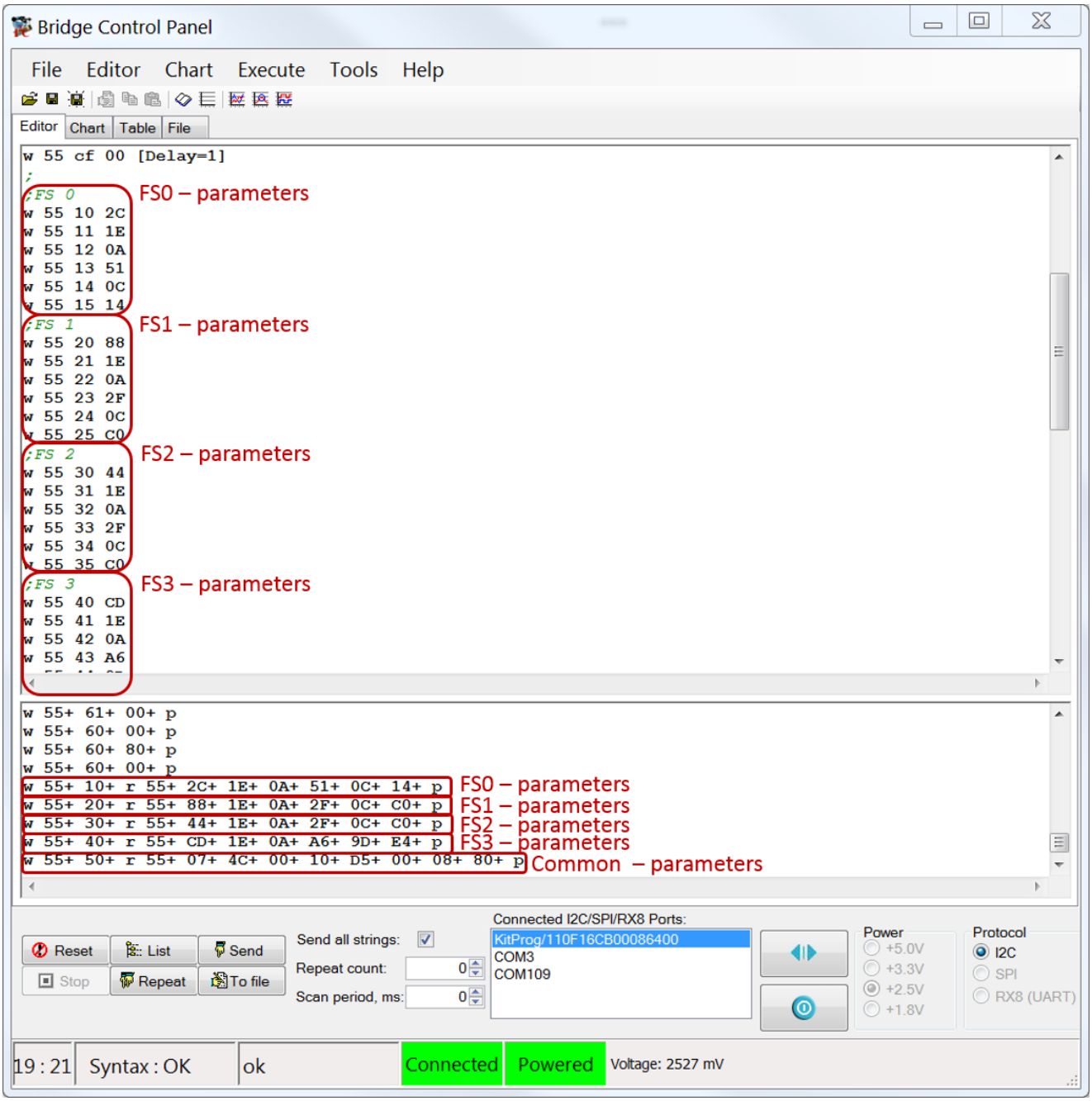
1. Select **KitProg/xxxxxxxxxxx** under **Connected I2C/SPI/RX8 Ports**. The connected indicator turns green indicating that the kit is connected successfully.
2. Use **Power Toggle.** This will power up the device placed inside the socket. The Power Indicator pannel turns green; you will also see that the Power LED (LED2) on the Kit turns ON.
3. Go to **File** > **Open File** > *<filename>.iic* (example iic files can be found at *<Install_Directory>\CY364x Programming Kit\<version>\Firmware\CY3643\CY3643 Kit LVPECL 2.5V 156.25MHz eFuse.iic)*. The sequence of commands will appear in the editor, as shown in Figure A-1.
4. Check the **Send all strings** box.
5. Click the **Send** button.

Figure A-1. eFuse Programming with I2C File Using Bridge Control Panel



You can see all the I²C transactions as they occur in the log window. The last few commands in the I²C configuration files are read commands. As shown in Figure A-2, the read data must match the **FS0-FS3 parameters** as well as the **common parameters**. If these configuration parameters match, it guarantees that eFuse programming was successful.

Figure A-2. Verify eFuse Programming by Comparing Data Read Back from Memory



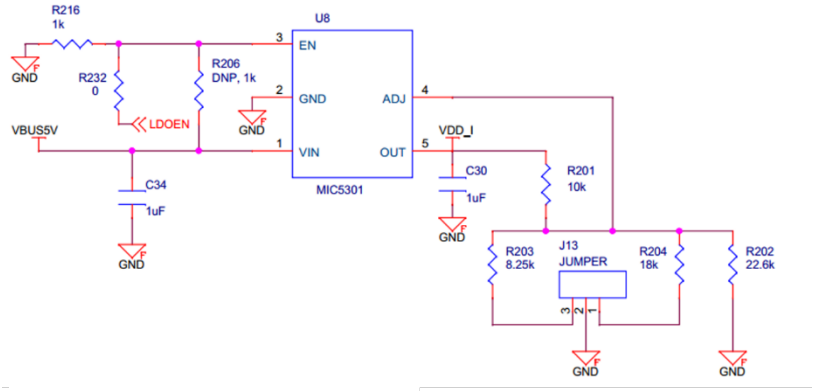
B. Possible Hardware Modification

The Kits CY364x are intended with a primary purpose of enabling users to program Cypress CY294xx clock ICs; however there are footprints made available that may be used to extend the kit functionality. Some of the options are listed in this section.

B.1 Configure the LDO for Multiple Supplies of 1.8V, 2.5V or 3.3V

This modification must only be used when evaluating an eFuse-programmed part. The kits come with a fixed voltage supply of 2.5 V. If the clock IC is eFuse-programmed for operation at 2.5 V, you can simply follow the steps mentioned in Section 5.1 to power up the eFuse-programmed clock IC. However, if the clock IC is eFuse-programmed for operation at a voltage other that 2.5 V, i.e., 1.8 V or 3.3 V, you can still use the onboard LDO with its resistor divider network populated as shown in Figure B-1.

Figure B-1. LDO Divider Network for Supply of 1.8 V, 2.5 V, or 3.3 V to Clock IC



The changes required are shown in Table B-1.

Table B-1. Modification in LDO Divider Network

Component	Default Setting	Modification
R201	10k	10k
R202	10k	22.6k
R203	DNP, 8.25k	8.25k
R204	DNP, 18k	18k
J13	DNP, Jumper	Jumper

The Jumper position settings to switch the voltage supply are shown in Table B-2.

Table B-2. Jumper (J13) Setting to Switch Clock Supply

Jumper Setting (J13)	VDD_I
Short 2 & 3	3.3V
Short 1 & 2	2.5V
Open	1.8V

B.2 Mounting SMA Connectors and Components for Termination Setting

The CY3641 kit comes with SMA connectors and termination setting in place. CY3642 and CY3643 kits, however only have footprints for SMAs and for components required for setting the termination voltage. Figure B-2 shows the schematic for CY3642, with components inside the box termination settings as DNP; you need to mount these components with their respective values. Similarly, for the CY3643 kit, Figure B-3, the box termination settings has components as DNP, which should be mounted before you can use this board to evaluate the eFuse-programmed clock IC.

Once the SMAs and components for termination setting are mounted, use the steps in Section 5.1 to power up the clock IC. For more details on how to evaluate CY2942x devices, refer to Kit guide of CY3676 Evaluation Kit. For details on how to evaluate CY29430 devices, refer to Kit Guide for Evaluation Kit CY3677.

Figure B-2. Mounting SMAs and Termination Settings Components on CY3642 board.

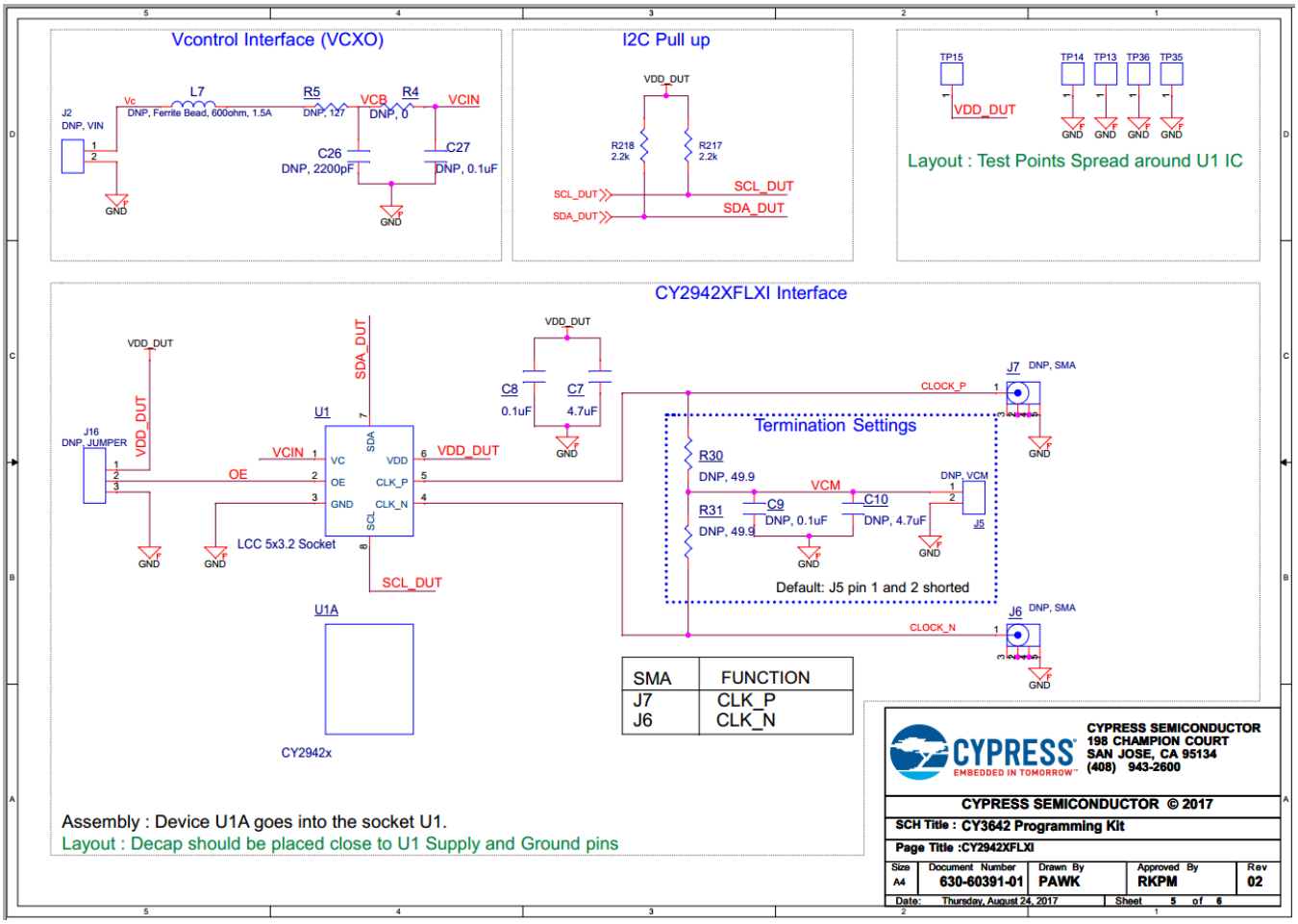
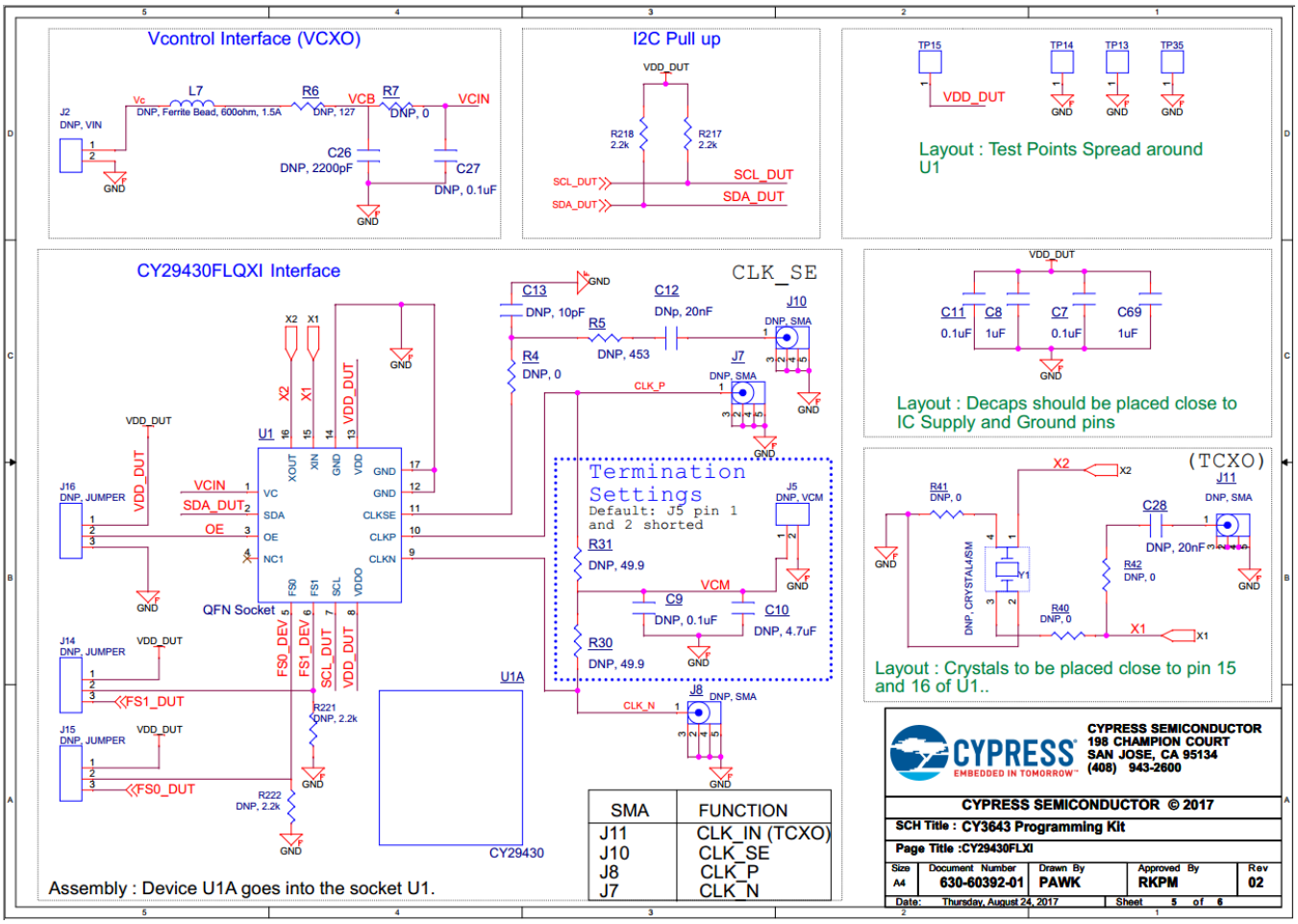


Figure B-3. Mounting SMAs and Termination Settings Components on CY3643 board.

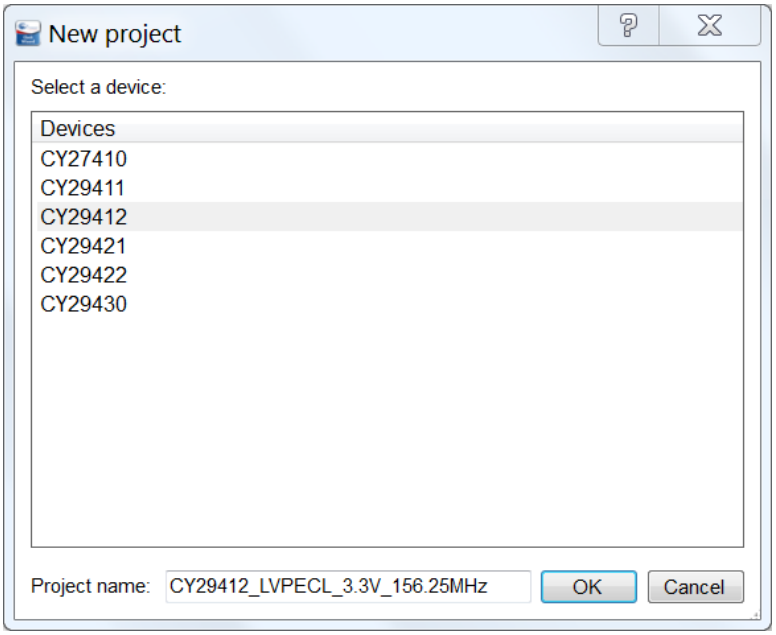


C. Generating a Device Configuration

ClockWizard 2.1 is used to generate a configuration file. The software is not included with the kit installer. Download it from Cypress ClockWizard 2.1 web page. For detailed instructions on how to generate a configuration file see the user guide for ClockWizard 2.1. The steps are also briefly discussed here for ready reference.

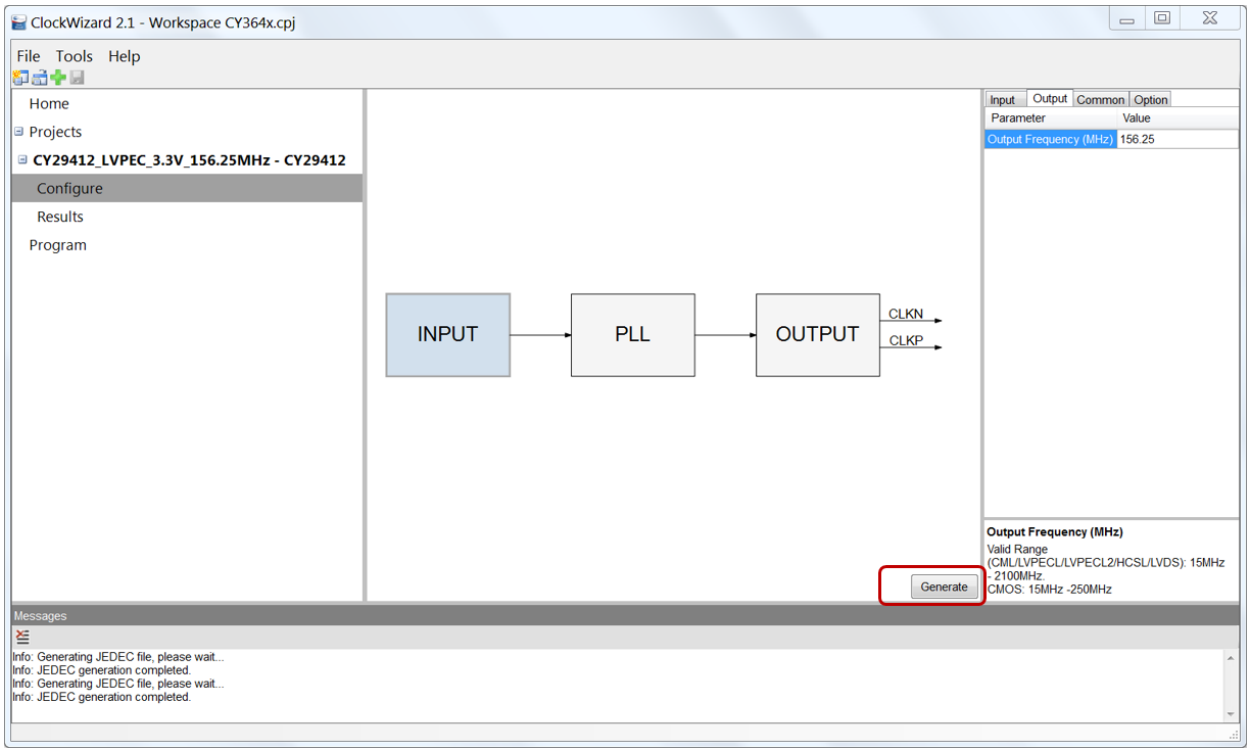
1. Launch the ClockWizard 2.1 application: Go to **Start** > **All Programs** > **Cypress** > **ClockWizard 2.1**.
2. Create a new Workspace using **File** > **New workspace,** give a name to your workspace and a directory location. An existing workspace can also be opened using **File** > **Open workspace**.
3. Projects for a configuration need to be added in a workspace. To add a project, use **File** > **New project.** A New Project pop-up will appear as shown in Figure C-1. Select a relevant device and give a name to the configuration project.

Figure C-1. Add a New Project



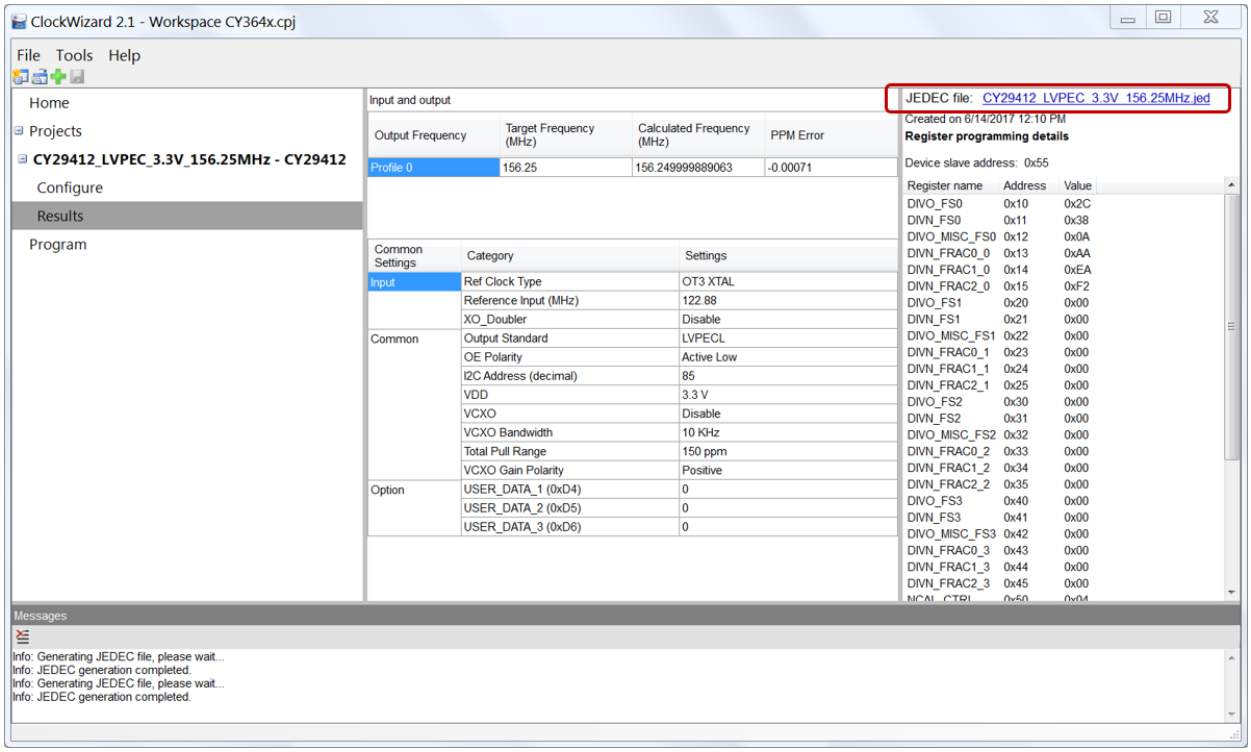
4. Figure C-2 shows a Workspace with a project for the configuration of a CY29412 device. Click the **Generate** button located at the bottom of the block-diagram section of the ClockWizard 2.1 window to generate the configuration file.

Figure C-2. Generate a Configuration File



5. The resulting JEDEC file can be seen at the top-right corner as shown in Figure C-3. You can also find the resulting JEDEC file in the Workspace folder. For more information on configuration parameters, see the user guide for ClockWizard 2.1, which can be accessed from **Help** > **User guide**.

Figure C-3. Configuration Parameters and JEDEC File



	Before proceeding through the stages of eFuse programming a clock device, it is assumed that a correct configuration file is available.
CAUTION	**A correct configuration provides the intended device performance. Instructions on how to evaluate a configuration before eFuse programming to a device can be found in the user guide of the CY3676 Evaluation Kit or CY3677 Evaluation Kit.**

D. Schematics, Bill of Materials, and Fab Drawing

D.1 CY3641 Schematics, Bill of Materials, and Fab Drawing

D.1.1 Schematic

Figure D-1. Block Diagram

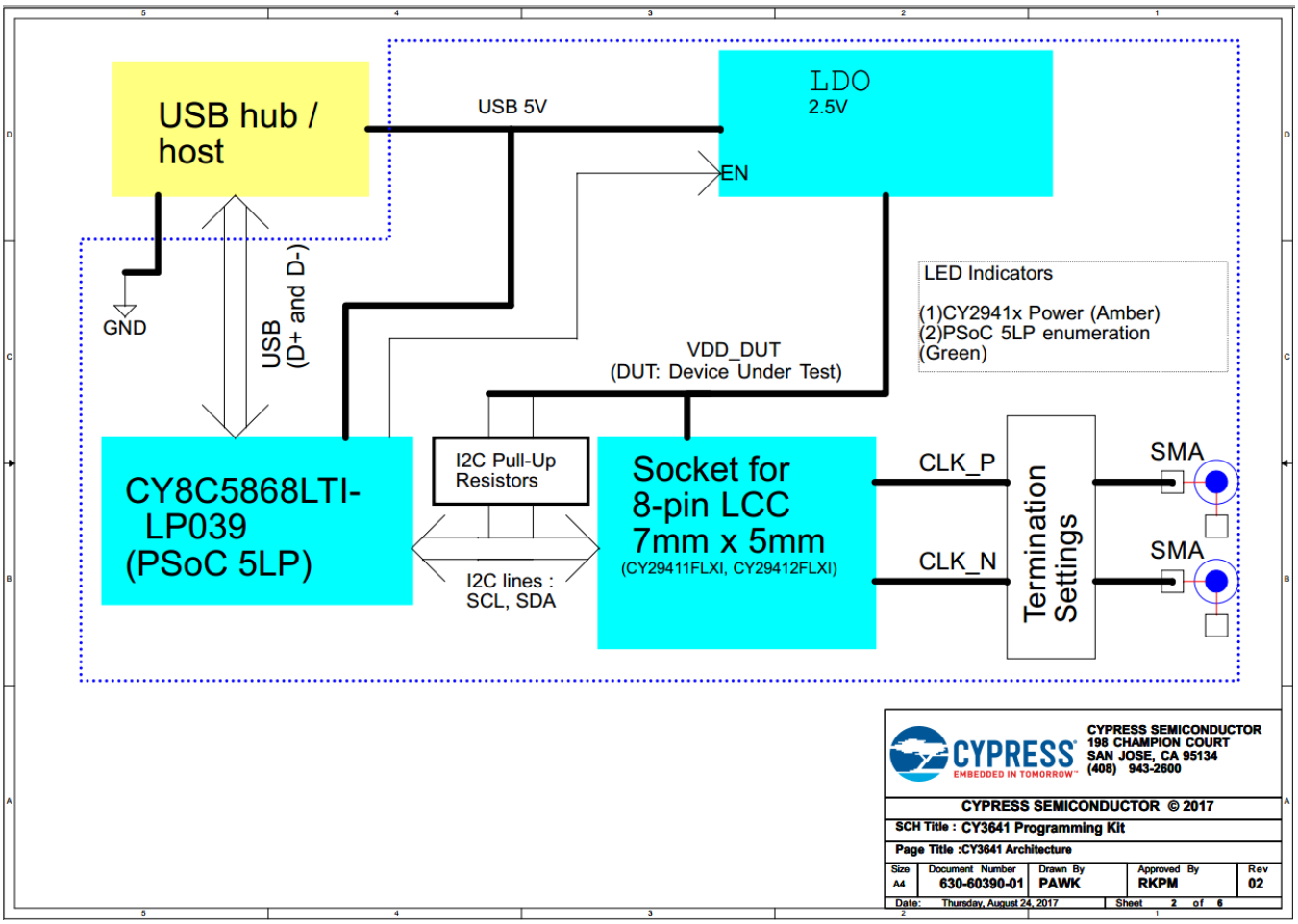


Figure D-2. Power Supply Design and LED Indicators

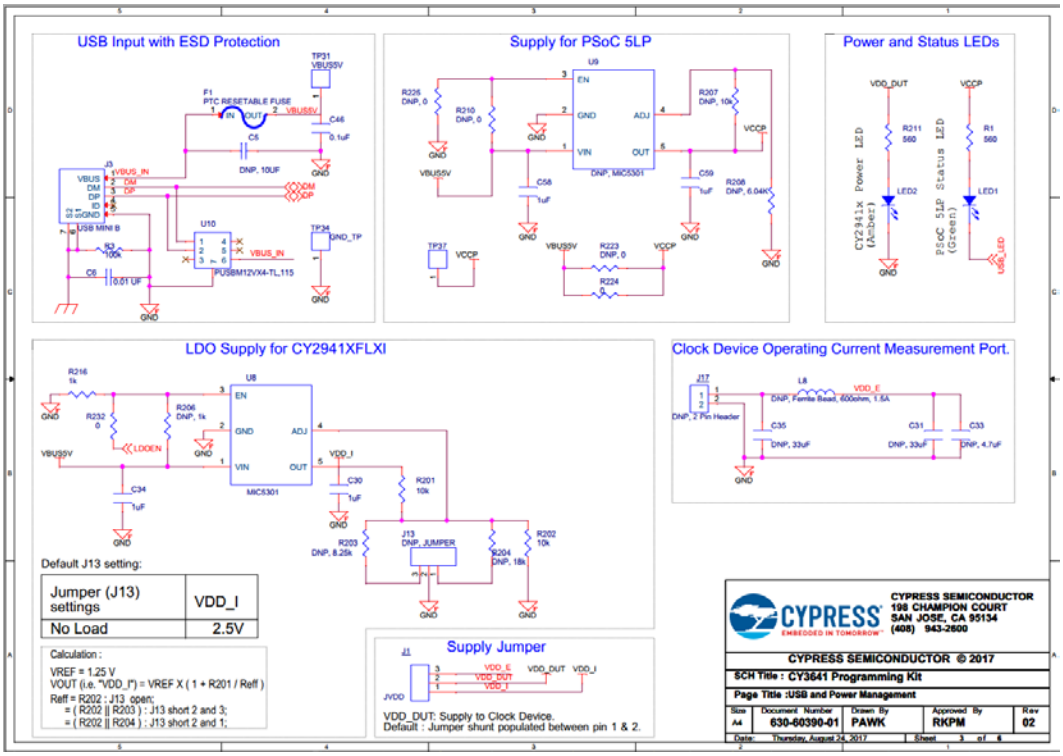


Figure D-3. Controller Schematics

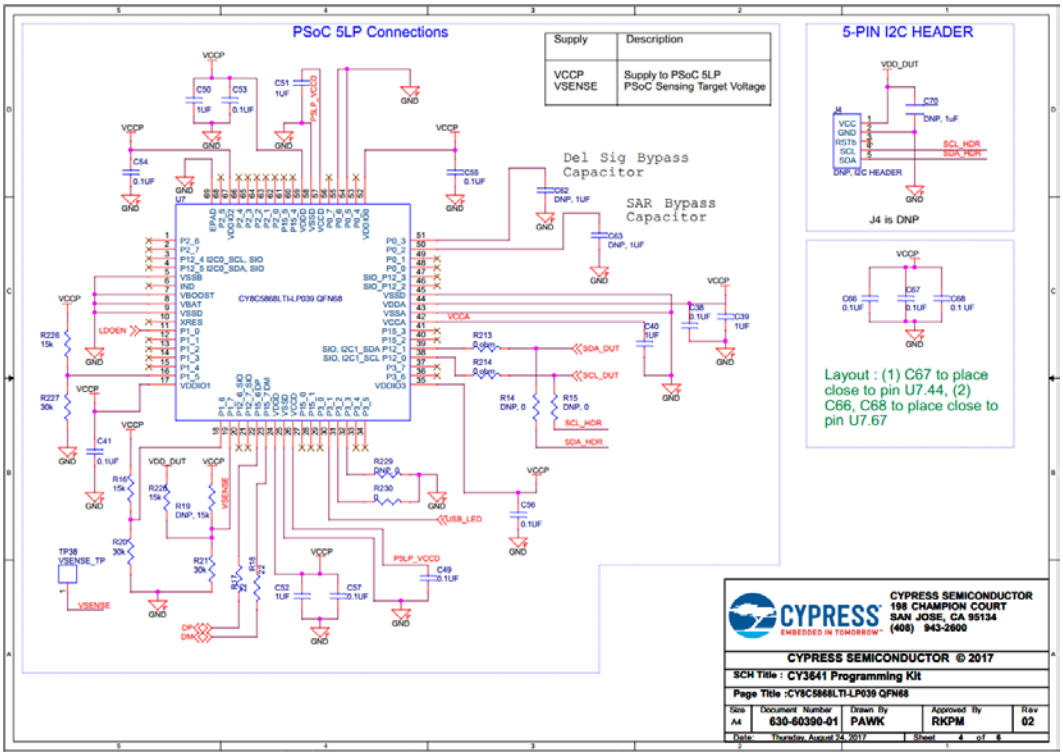
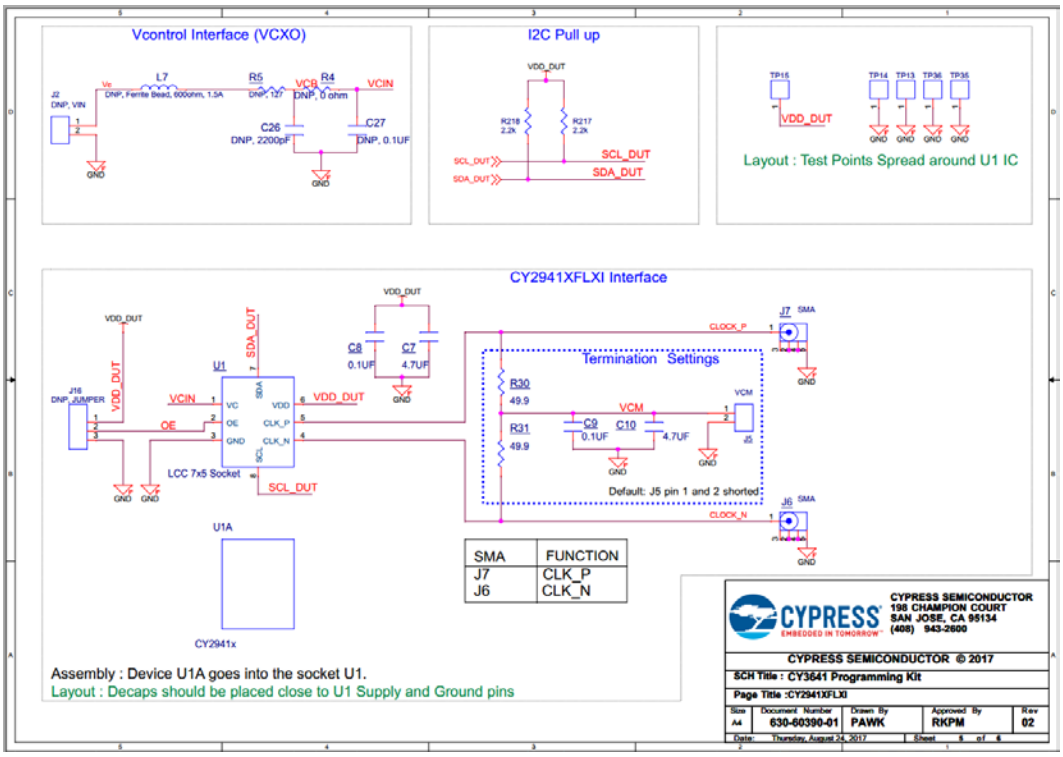
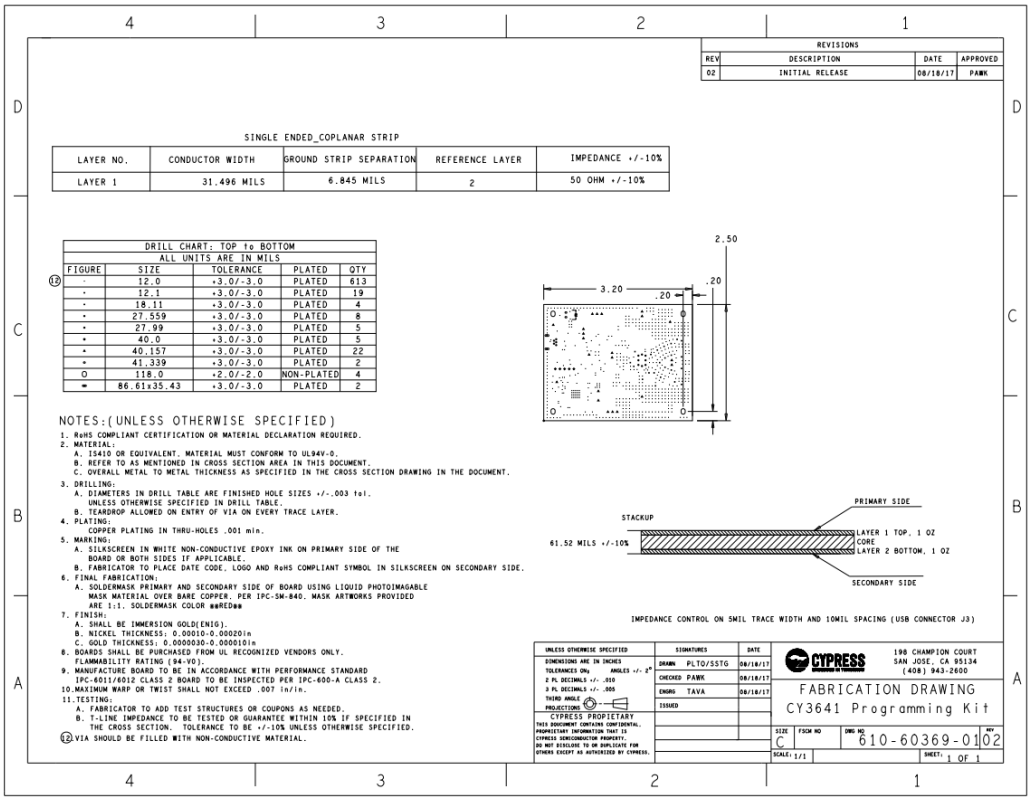


Figure D-4. Schematics for Socket Connection



D.1.2 CY3641 Fab Drawing

Figure D-5. Fabrication Drawing



D.1.3 CY3641 Bill of Materials

Item	Qty	Reference	Value	Descriptions	Manufacturer	Manufacturing Part Number
1	1	C6	0.01 UF	CAP CER 10000PF 50V 10% X7R 0603	Murata Electronics	GRM188R71H103KA01D
2	2	C7,C10	4.7Uf	CAP CER 4.7UF 6.3V X5R 0603	Murata Electronics	GRM188R60J475KE19D
3	14	C8,C9,C38,C41,C46,C49,C53,C54,C55,C56,C57,C66,C67,C68	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104
4	9	C30,C34,C39,C40,C50,C51,C52,C58,C59	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
5	1	F1	PTC RESETABLE FUSE	PTC RESETTABLE .30A 30V 1812	Bourns Inc.	MF-MSMF030-2
6	1	J1	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
7	1	J5	VCM	CONN HEADR BRKWAY .100 02POS STR	TE Connectivity AMP Connectors	9-146280-0-02
8	1	J3	USB MINI B	MINI USB RCPT R/A DIP	TE Connectivity AMP Connectors	1734510-1
9	2	J6,J7	SMA	CONN SMA JACK 50 OHM EDGE MNT	Cinch Connectivity Solutions Johnson	142-0701-801
10	1	LED1	LED Green	LED GREEN CLEAR 0805 SMD	Visual Communications Company - VCC	CMD17-21VGC/TR8
11	1	LED2	LED Amber	LED AMBER CLEAR 0805 SMD	Bivar Inc.	SM0805AC
12	2	R30,R31	49.9	RES SMD 49.9 OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3AEB49R9V
13	2	R1,R211	560	RES SMD 560 OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ561V
14	1	R3	100K	RES SMD 100K OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ104V
15	3	R16,R226,R228	15K	RES SMD 15K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1502V
16	2	R17,R18	22	RES SMD 22 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF22R0V
17	3	R20,R21,R227	30K	RES SMD 30K OHM 1% 1/10W 0603	Yageo	RC0603FR-0730KL
18	2	R201, R202	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
19	5	R213,R214,R224,R230, R232	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W 0603	Panasonic Electronic Components	ERJ-3GEY0R00V
20	1	R216	1K	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
21	2	R217,R218	2.2k	RES SMD 2.2K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF2201V
22	1	U1	CXP-A08-14-00	LCC 5.0X7.0x1.75mm	MiS Technologies Corporation	CXP-A08-14-00
23	1	U1A	CY29412FLXI	Clock generator, LCC package	Cypress	CY29412FLXI
24	1	U7	CY8C5868LTI-LP039 QFN68	CY8C5868LTI-LP039 QFN68	Cypress	CY8C5868LTI-LP039
25	1	U8	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
26	1	U10	PUSBM12VX4-TL,115	TVS DIODE 5.5VWM 12VC 6HXSON	NXP Semiconductors	PUSBM12VX4-TL,115
No load components						
27	3	C62,C63,C70	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
28	1	C5	10UF	CAP TANT 10UF 16V 10% 1206	AVX Corporation	TAJA106K016R
29	2	C31,C35	33uF	CAP TANT 33UF 6.3V 20% 1206	Rohm Semiconductor	TCA0J336M8R

Item	Qty	Reference	Value	Descriptions	Manufacturer	Manufacturing Part Number
30	1	C33	4.7uF	CAP CER 4.7UF 6.3V X5R 0603	Murata Electronics	GRM188R60J475KE19D
31	1	C26	2200pF	CAP CER 2200PF 50V NP0 0603	Murata Electronics	GRM1885C1H222JA01D
32	1	C27	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104
33	1	J17	2 Pin Header	TE_640456-2 (2-pin Header)	TE Connectivity AMP Connectors	640456-2
34	1	J4	I2C HEADER	CONN HEADER 5POS .100 VERT TIN	Molex, LLC	22-23-2051
35	1	J2	VIN	CONN HEADR BRKWAY .100 02POS STR	TE Connectivity AMP Connectors	9-146280-0-02
36	2	J13, J16	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
37	2	L7, L8	FERRITE CHIP 600 OHM 1.5A	FERRITE CHIP 600 OHM 1500MA 1206	Murata Electronics	BLM31PG601SN1L
38	6	R14,R15,R210,R225, R229, R223	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
39	1	R19	15K	RES SMD 15K OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3ARB153V
40	1	R207	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
41	1	R208	6.04K	RES SMD 6.04K OHM 1% 1/10W 0603	Yageo	RC0603FR-076K04L
42	1	R4	0	RES SMD 0.0 OHM JUMPER 1/10W (0402pkg)	Panasonic Electronic Components	ERJ-2GE0R00X
43	1	R5	127	RES SMD 127 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1270V
44	1	R206	1K	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
45	1	R203	8.25K	RES SMD 8.25K OHM 1% 1/10W 0603	Yageo	RC0603FR-078K25L
46	1	R204	18k	RES SMD 18K OHM 1% 1/10W 0603	Yageo	RC0603FR-0718KL
47	9	TP13,TP14,TP15,TP31,TP34,TP35,TP36,TP37,TP38	BLACK	TEST POINT 43 HOLE 65 PLATED BLACK	Keystone Electronics	5001
48	1	U9	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
Accessories						
49	1	ACC1	121-60414-01	ASSY, PCBA, CY3641 Programming Kit	Cypress Approved CM	-NA-
50	1	ACC2	600-60421-01	PCB, 82 mm x 64 mm, Normal Tg, ENIG finish, 2 layer, Color = RED Silk = WHITE	Cypress Approved CM	-NA-
51	1	ACC3	610-60369-01	DRW, FABRICATION DRAWING, CY3641 Programming Kit	Cypress Approved CM	-NA-
52	1	ACC4	620-60376-01	DRW, ASSEMBLY DRAWING, CY3641 Programming Kit	Cypress Approved CM	-NA-
53	1	ACC5	630-60390-01	DRW, SCHEMATIC DRAWING, CY3641 Programming Kit	Cypress Approved CM	-NA-
54	1	ACC6	899-60120-01	LBL, PCA Label, Vendor Code, Datecode, Serial Number xxx-xxxxx-xx Rev xx (YYWWVVXXXXX)	Cypress Approved CM	-NA-
55	1	ACC7	899-60219-01	LBL, CY3641 Programming Kit QR Code, 10mm X 10mm	Cypress Approved CM	-NA-
56	1	ACC8	702-60011-01 rev 01	STDOFF, HEX, STANDOFF, 4-40, NYLON, 1/2"	Keystone	-NA-

Item	Qty	Reference	Value	Descriptions	Manufacturer	Manufacturing Part Number
57	1	ACC9	700-60103-01 rev 01	HW, MACHINE SCREW BINDING SLOTTED 4-40	Keystone	-NA-
58	2	J1, J5	Install jumper across pins 1 and 2	HW, CONN, Rectangular, MINI JUMPER, 6.5mm, CLOSE TYPE, BLACK, NICKEL	Sullins Connector Solutions	STC02SYAN

D.2 CY3642 Schematics, Bill of Materials, and Fab Drawing

D.2.1 Schematic

Figure D-6. Block Diagram

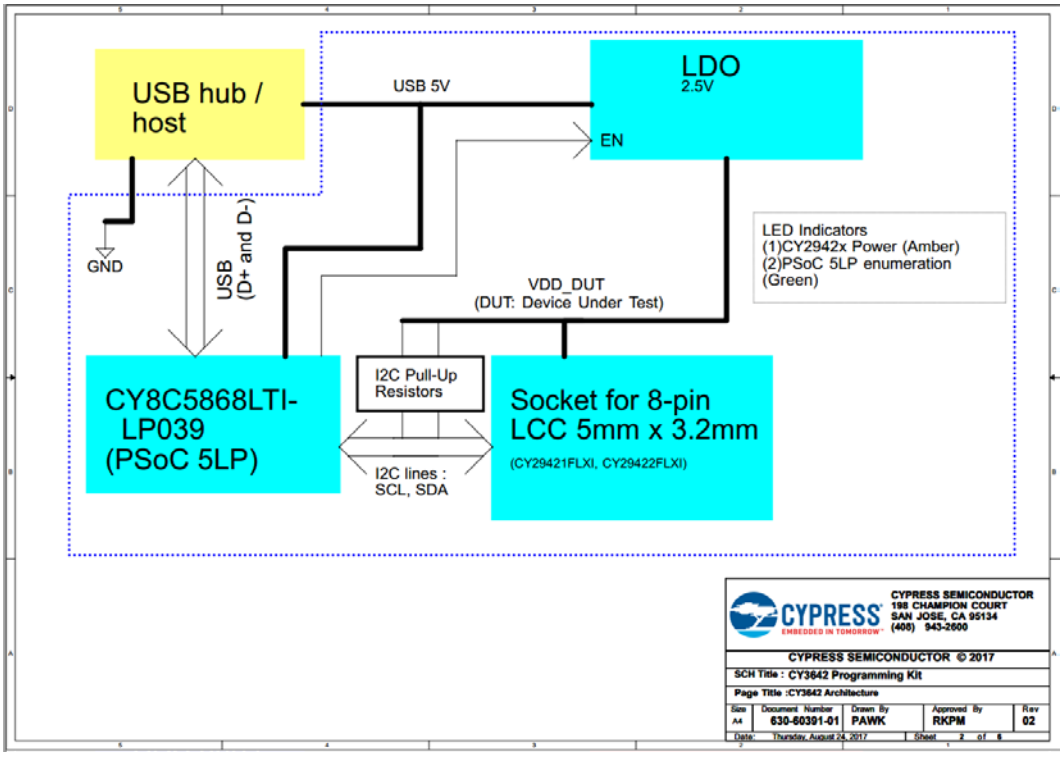


Figure D-7. Power Supply Design and LED Indicators

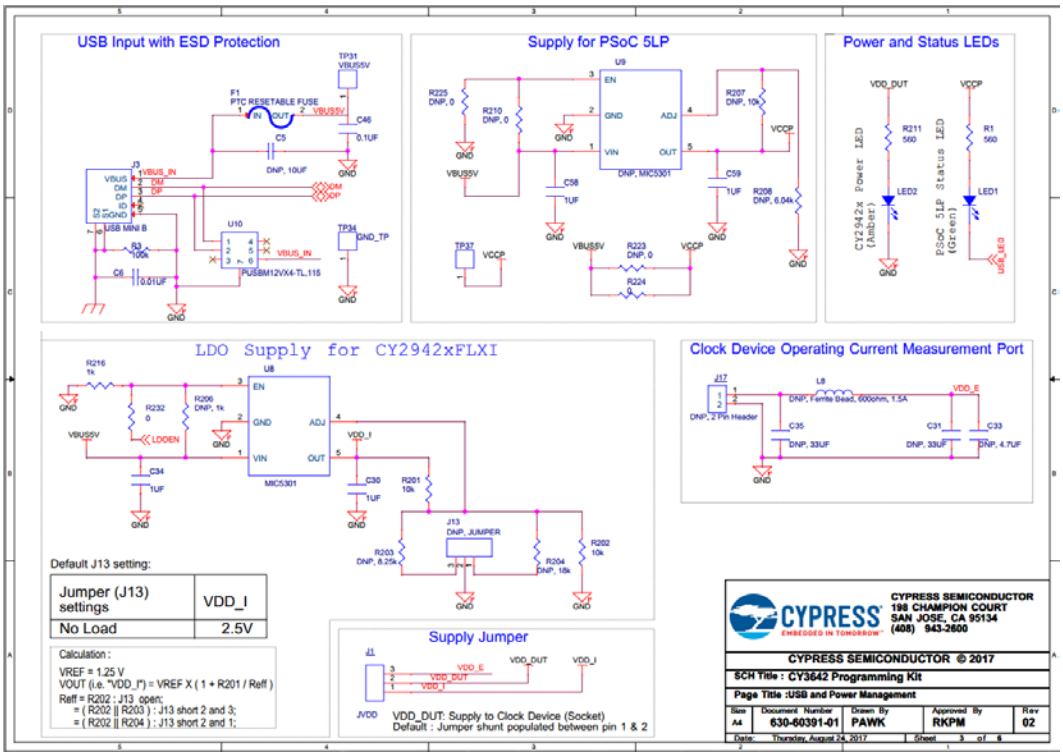


Figure D-8. Controller Schematics

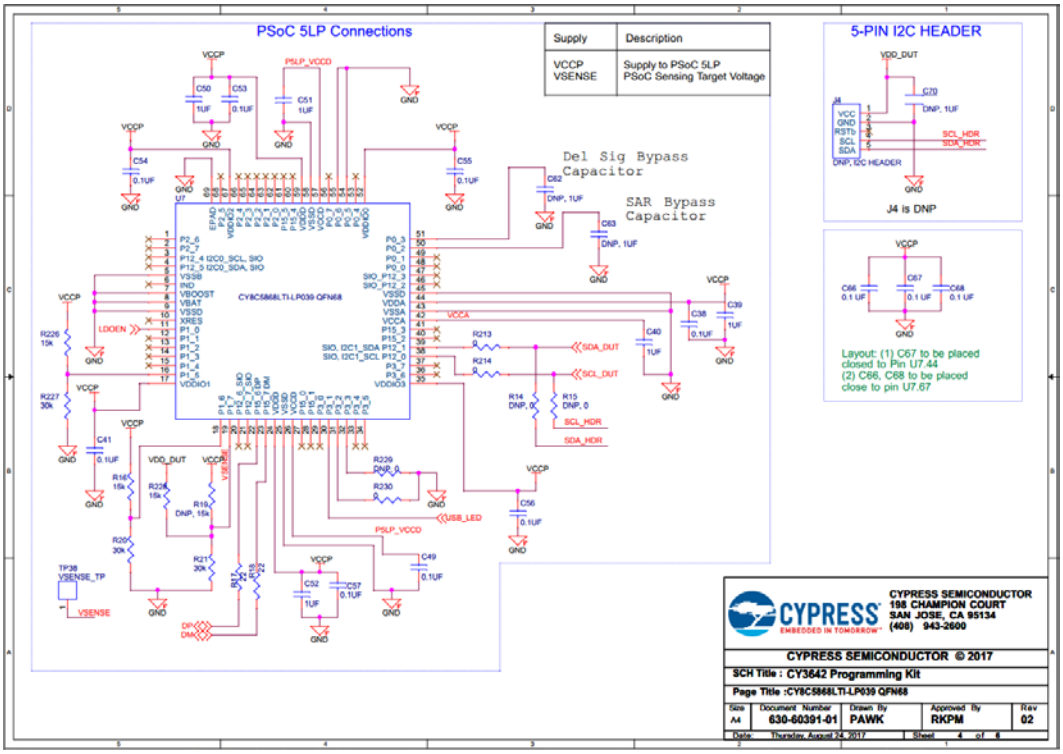
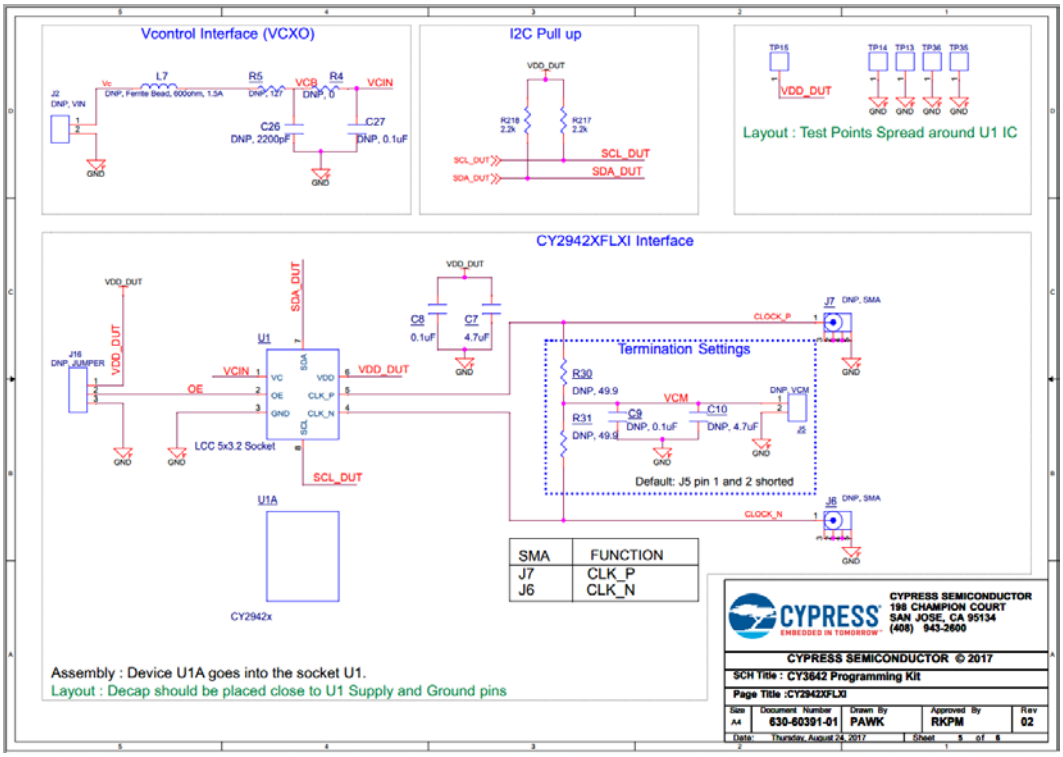
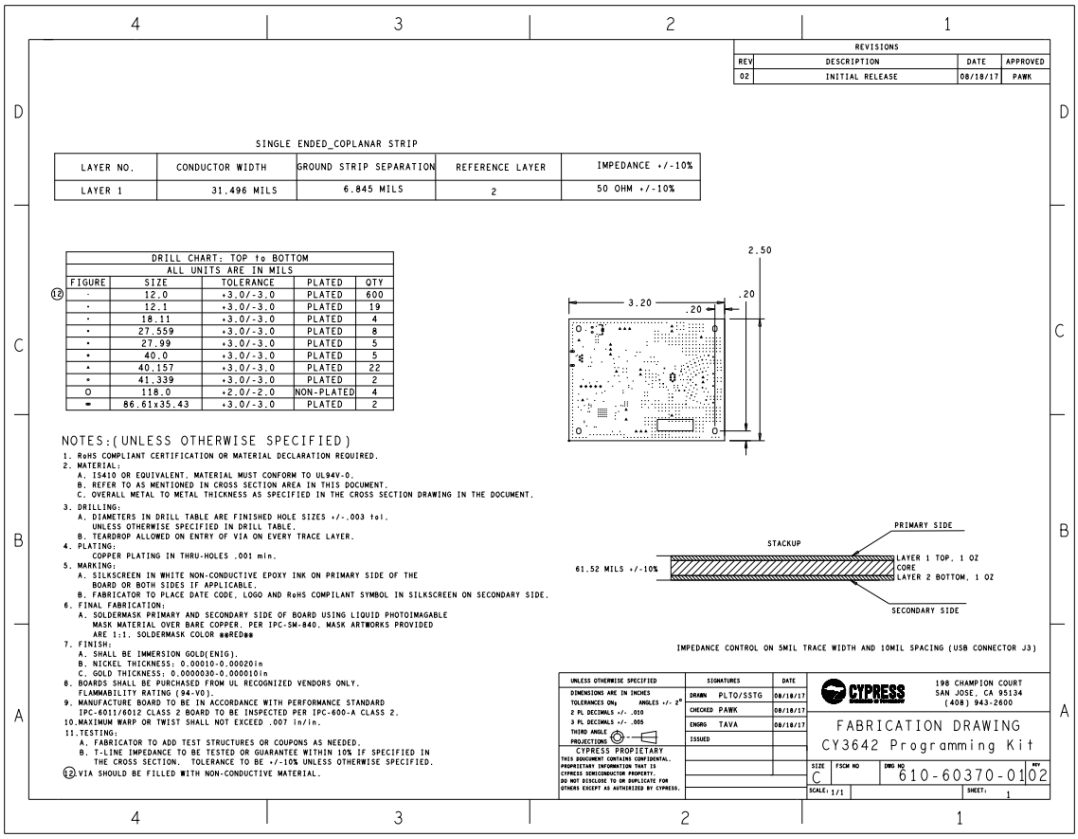


Figure D-9. Schematics for Socket Connection



D.2.2 Fab Drawing

Figure D-10. Fabrication Drawing



D.2.3 Bill of Materials

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
1	1	C6	0.01 UF	CAP CER 10000PF 50V 10% X7R 0603	Murata Electronics	GRM188R71H103KA01D
2	1	C7	4.7uF	CAP CER 4.7UF 6.3V X5R 0603	Murata Electronics	GRM188R60J475KE19D
3	13	C8,C38,C41,C46,C49,C53,C54,C55,C56,C57,C66,C67,C68	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104
4	9	C30,C34,C39,C40,C50,C51,C52,C58,C59	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
5	1	F1	PTC RESETABLE FUSE	PTC RESETTABLE .30A 30V 1812	Bourns Inc.	MF-MSMF030-2
6	1	J1	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
7	1	J3	USB MINI B	MINI USB RCPT R/A DIP	TE Connectivity AMP Connectors	1734510-1
8	1	LED1	LED Green	LED GREEN CLEAR 0805 SMD	Visual Communications Company - VCC	CMD17-21VGC/TR8
9	1	LED2	LED Amber	LED AMBER CLEAR 0805 SMD	Bivar Inc.	SM0805AC
10	2	R1,R211	560	RES SMD 560 OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ561V
11	1	R3	100K	RES SMD 100K OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ104V
12	3	R16,R226,R228	15K	RES SMD 15K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1502V
13	2	R17,R18	22	RES SMD 22 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF22R0V
14	3	R20,R21,R227	30K	RES SMD 30K OHM 1% 1/10W 0603	Yageo	RC0603FR-0730KL
15	1	R201, R202	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
16	5	R213,R214,R224,R230, R232	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
17	1	R216	1K	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
18	2	R217,R218	2.2k	RES SMD 2.2K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF2201V
19	1	U1	CXP-C08-13-00	LCC 3.2X5.0X1.45mm	MiS Technologies Corporation	CXP-C08-13-00
20	1	U1A	CY29422FLXI	Clock generator, LCC package	Cypress	CY29422FLXI
21	1	U7	CY8C5868LTI-LP039 QFN68	CY8C5868LTI-LP039 QFN68	Cypress	CY8C5868LTI-LP039
22	1	U8	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
23	1	U10	PUSBM12VX4-TL,115	TVS DIODE 5.5VWM 12VC 6HXSON	NXP Semiconductors	PUSBM12VX4-TL,115
No load components						
24	3	C62,C63,C70	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
25	1	C5	10UF	CAP TANT 10UF 16V 10% 1206	AVX Corporation	TAJA106K016R
26	2	C31,C35	33uF	CAP TANT 33UF 6.3V 20% 1206	Rohm Semiconductor	TCA0J336M8R
27	2	C10, C33	4.7uF	CAP CER 4.7UF 6.3V X5R 0603	Murata Electronics	GRM188R60J475KE19D
28	1	C26	2200pF	CAP CER 2200PF 50V NP0 0603	Murata Electronics	GRM1885C1H222JA01D
29	2	C9, C27	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
30	1	J17	2 Pin Header	TE_640456-2 (2-pin Header)	TE Connectivity AMP Connectors	640456-2
31	1	J2	VIN	CONN HEADR BRKWAY .100 02POS STR	TE Connectivity AMP Connectors	9-146280-0-02
32	1	J16	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
33	1	J4	I2C HEADER	CONN HEADER 5POS .100 VERT TIN	Molex, LLC	22-23-2051
34	1	J5	VCM	CONN HEADR BRKWAY .100 02POS STR	TE Connectivity AMP Connectors	9-146280-0-02
35	2	J6,J7	SMA	CONN SMA JACK 50 OHM EDGE MNT	Cinch Connectivity Solutions Johnson	142-0701-801
36	1	J13	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
37	2	L7, L8	FERRITE CHIP 600 OHM 1.5A	FERRITE CHIP 600 OHM 1500MA 1206	Murata Electronics	BLM31PG601SN1L
38	1	R4	0	RES SMD 0.0 OHM JUMPER 1/10W (0402pkg)	Panasonic Electronic Components	ERJ-2GE0R00X
39	1	R5	127	RES SMD 127 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1270V
40	6	R14,R15,R210,R225, R229, R223	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
41	1	R19	15K	RES SMD 15K OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3ARB153V
42	1	R207	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
43	1	R208	6.04K	RES SMD 6.04K OHM 1% 1/10W 0603	Yageo	RC0603FR-076K04L
44	1	R206	1K	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
45	2	R30,R31	49.9	RES SMD 49.9 OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3AEB49R9V
46	1	R203	8.25K	RES SMD 8.25K OHM 1% 1/10W 0603	Yageo	RC0603FR-078K25L
47	1	R204	18k	RES SMD 18K OHM 1% 1/10W 0603	Yageo	RC0603FR-0718KL
48	9	TP13,TP14,TP15,TP31,TP34,TP35,TP36,TP37,TP38	BLACK	TEST POINT 43 HOLE 65 PLATED BLACK	Keystone Electronics	5001
49	1	U9	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
Accessories						
50	1	ACC1	121-60415-01	ASSY, PCBA, CY3642 Programming Kit	Cypress Approved CM	-NA-
51	1	ACC2	600-60422-01	PCB, 82 mm x 64 mm, Normal Tg, ENIG finish, 2 layer, Color = RED, Silk = WHITE	Cypress Approved CM	-NA-
52	1	ACC3	610-60370-01	DRW, FABRICATION DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
53	1	ACC4	620-60377-01	DRW, ASSEMBLY DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
54	1	ACC5	630-60391-01	DRW, SCHEMATIC DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
55	1	ACC7	899-60120-01	LBL, PCA Label, Vendor Code, Datecode, Serial Number xxx-xxxxx-xx Rev xx (YYWWVVXXXXX)	Cypress Approved CM	-NA-
56	1	ACC6	899-60219-01	LBL, CY3642 Programming Kit QR Code, 10mm X 10mm	Cypress Approved CM	-NA-
57	1	ACC8	702-60011-01 rev 01	STDOFF, HEX, STANDOFF, 4-40, NYLON, 1/2"	Keystone	-NA-

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
58	1	ACC9	700-60103-01 rev 01	HW, MACHINE SCREW BINDING SLOTTED 4-40	Keystone	-NA-
59	1	J1	700-60080-01 rev 01	HW, CONN, Rectangular, MINI JUMPER, 6.5mm, CLOSE TYPE, BLACK, NICKEL	Sullins Connector Solutions	STC02SYAN

D.3 CY3643 Schematics, Bill of Materials, and Fab Drawing

D.3.1 Schematic

Figure D-11. Block Diagram

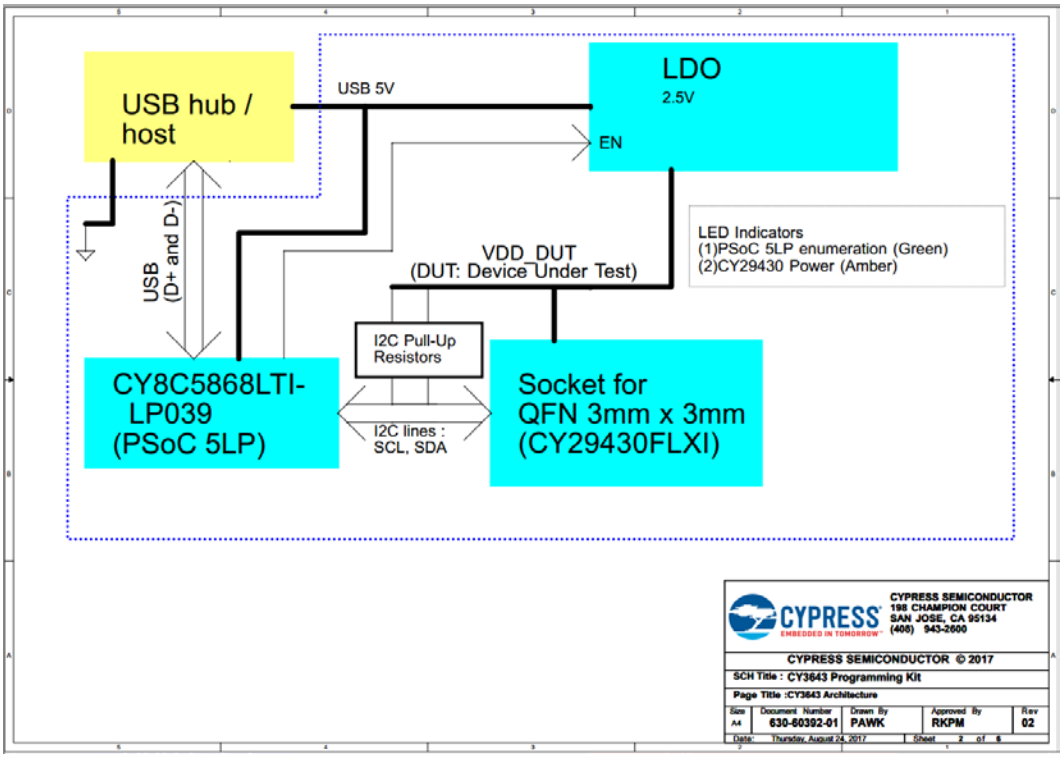


Figure D-12. Power Supply Design and LED Indicators

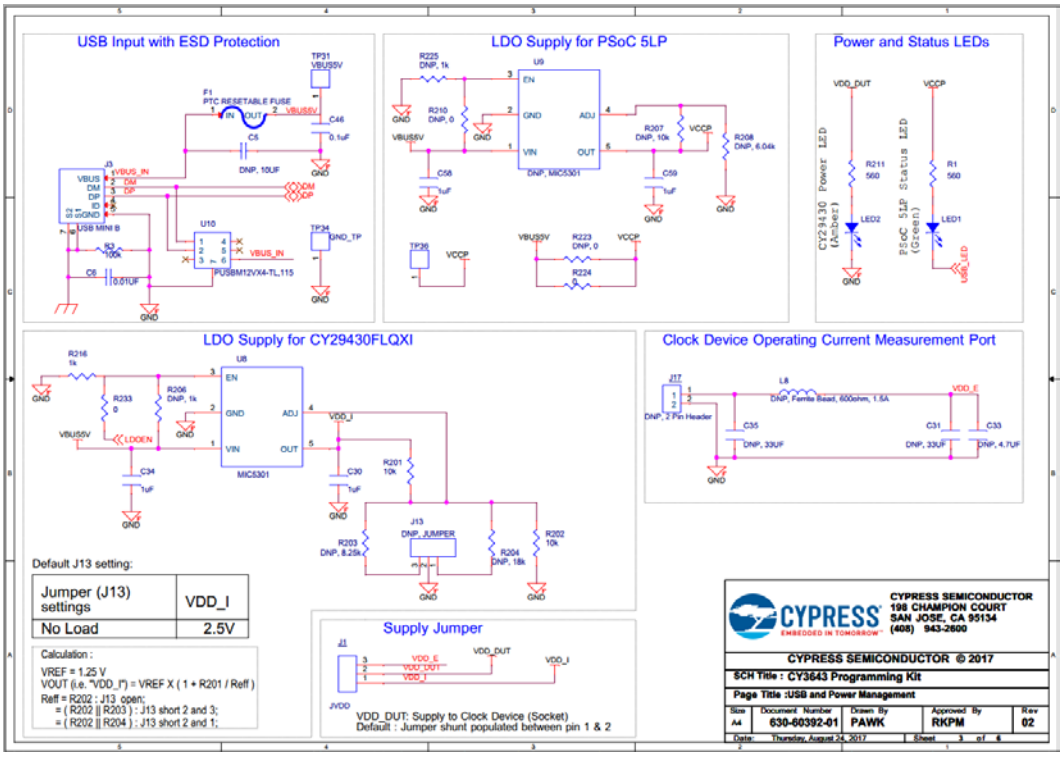


Figure D-13. Controller Schematics

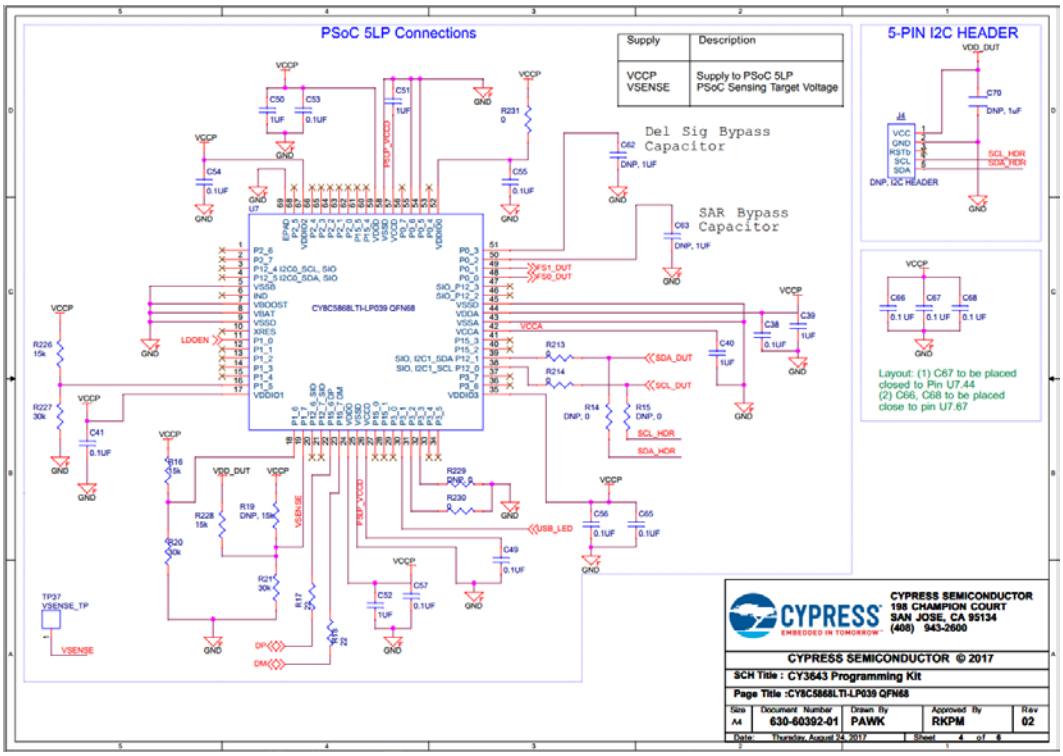
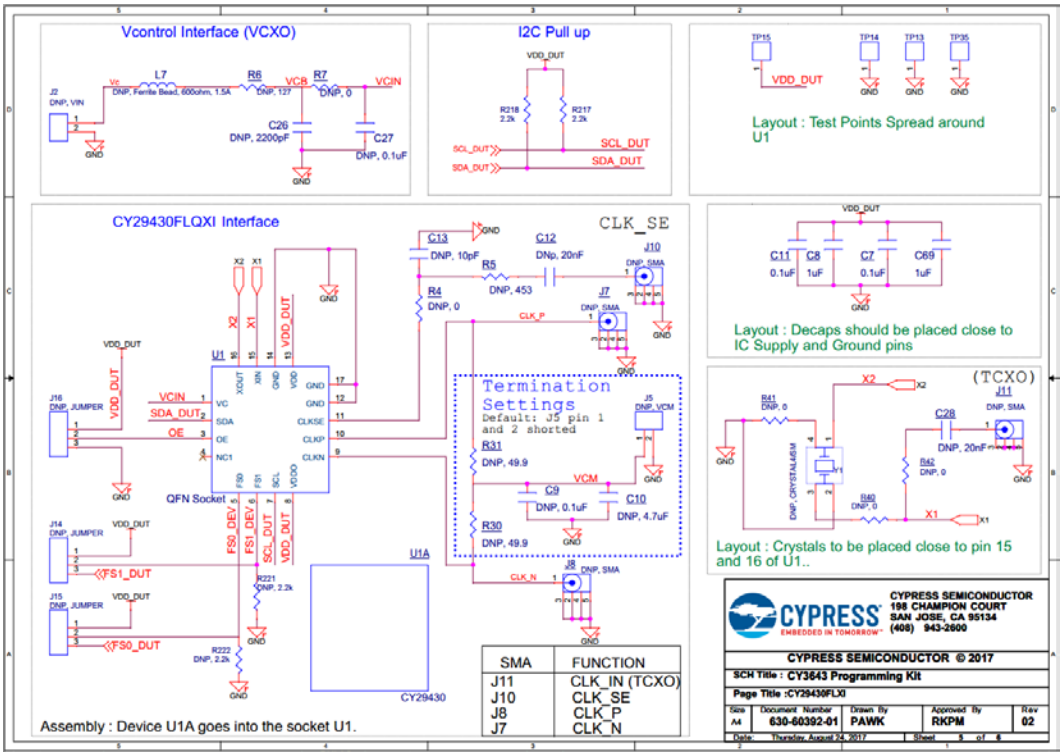
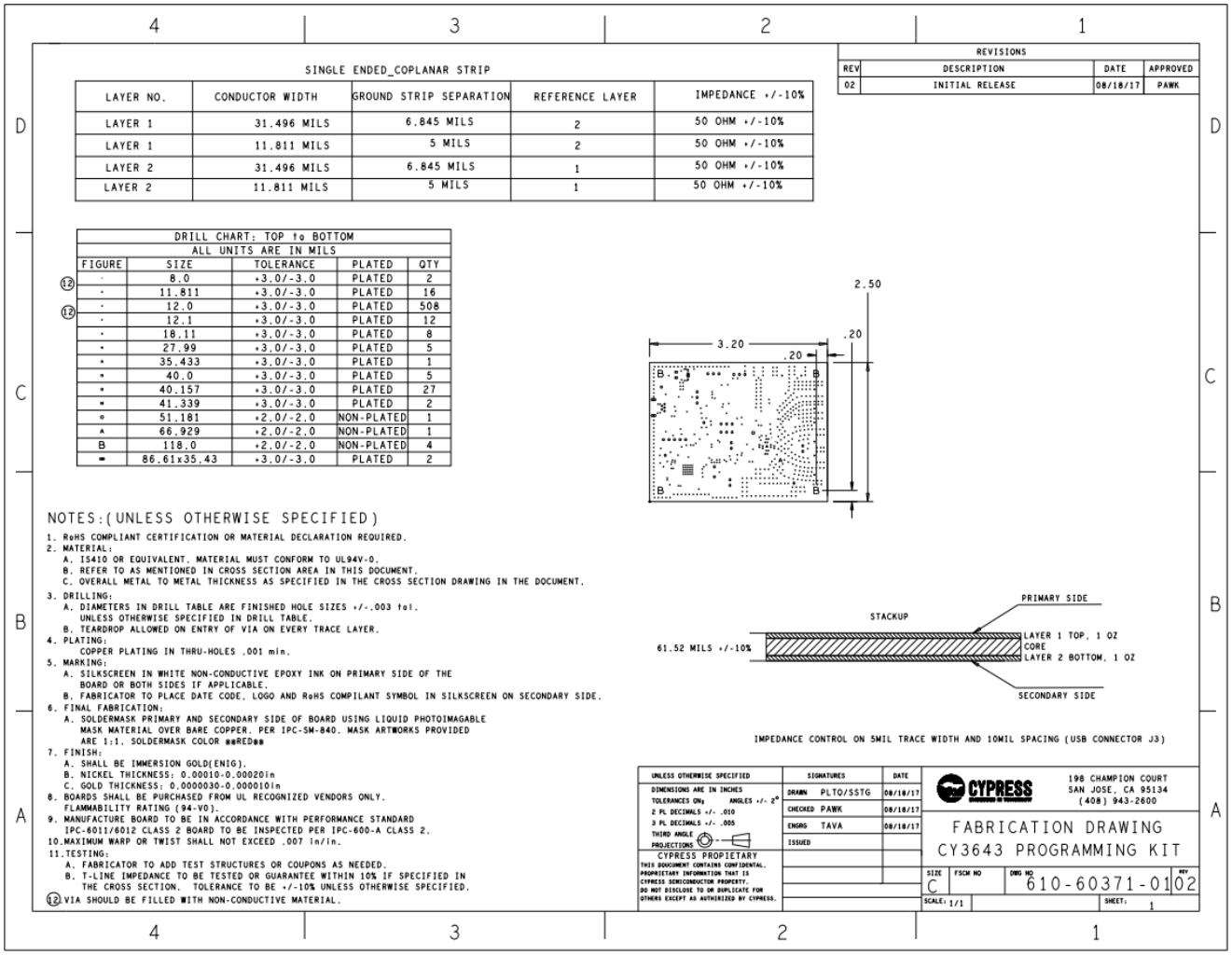


Figure D-14. Schematics for Socket Connection



D.3.2 Fab Drawing

Figure D-15. Fabrication Drawing



SINGLE ENDED_COPLANAR STRIP

LAYER NO.	CONDUCTOR WIDTH	GROUND STRIP SEPARATION	REFERENCE LAYER	IMPEDANCE +/-10%
LAYER 1	31.496 MILS	6.845 MILS	2	50 OHM +/-10%
LAYER 1	11.811 MILS	5 MILS	2	50 OHM +/-10%
LAYER 2	31.496 MILS	6.845 MILS	1	50 OHM +/-10%
LAYER 2	11.811 MILS	5 MILS	1	50 OHM +/-10%

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
02	INITIAL RELEASE	08/18/17	PAWK

DRILL CHART: TOP to BOTTOM
ALL UNITS ARE IN MILS

FIGURE	SIZE	TOLERANCE	PLATED	QTY
(12)	8.0	+3.0/-3.0	PLATED	2
·	11.811	+3.0/-3.0	PLATED	16
(12)	12.0	+3.0/-3.0	PLATED	508
·	12.1	+3.0/-3.0	PLATED	12
·	18.11	+3.0/-3.0	PLATED	8
·	27.99	+3.0/-3.0	PLATED	5
·	35.433	+3.0/-3.0	PLATED	1
·	40.0	+3.0/-3.0	PLATED	5
·	40.157	+3.0/-3.0	PLATED	27
■	41.339	+3.0/-3.0	PLATED	2
○	51.181	+2.0/-2.0	NON-PLATED	1
A	66.929	+2.0/-2.0	NON-PLATED	1
B	118.0	+2.0/-2.0	NON-PLATED	4
▬	86.61x35.43	+3.0/-3.0	PLATED	2

NOTES:(UNLESS OTHERWISE SPECIFIED)

1. RoHS COMPLIANT CERTIFICATION OR MATERIAL DECLARATION REQUIRED.
2. MATERIAL:
   A. IS410 OR EQUIVALENT. MATERIAL MUST CONFORM TO UL94V-0.
   B. REFER TO AS MENTIONED IN CROSS SECTION AREA IN THIS DOCUMENT.
   C. OVERALL METAL TO METAL THICKNESS AS SPECIFIED IN THE CROSS SECTION DRAWING IN THE DOCUMENT.
3. DRILLING:
   A. DIAMETERS IN DRILL TABLE ARE FINISHED HOLE SIZES +/-.003 tol.
      UNLESS OTHERWISE SPECIFIED IN DRILL TABLE.
   B. TEARDROP ALLOWED ON ENTRY OF VIA ON EVERY TRACE LAYER.
4. PLATING:
      COPPER PLATING IN THRU-HOLES .001 min.
5. MARKING:
   A. SILKSCREEN IN WHITE NON-CONDUCTIVE EPOXY INK ON PRIMARY SIDE OF THE
      BOARD OR BOTH SIDES IF APPLICABLE.
   B. FABRICATOR TO PLACE DATE CODE, LOGO AND RoHS COMPILANT SYMBOL IN SILKSCREEN ON SECONDARY SIDE.
6. FINAL FABRICATION:
   A. SOLDERMASK PRIMARY AND SECONDARY SIDE OF BOARD USING LIQUID PHOTOIMAGABLE
      MASK MATERIAL OVER BARE COPPER. PER IPC-SM-840. MASK ARTWORKS PROVIDED
      ARE 1:1. SOLDERMASK COLOR **RED**
7. FINISH:
   A. SHALL BE IMMERSION GOLD(ENIG).
   B. NICKEL THICKNESS: 0.00010-0.00020in
   C. GOLD THICKNESS: 0.0000030-0.0000010in
8. BOARDS SHALL BE PURCHASED FROM UL RECOGNIZED VENDORS ONLY.
   FLAMMABILITY RATING (94-V0).
9. MANUFACTURE BOARD TO BE IN ACCORDANCE WITH PERFORMANCE STANDARD
   IPC-6011/6012 CLASS 2 BOARD TO BE INSPECTED PER IPC-600-A CLASS 2.
10. MAXIMUM WARP OR TWIST SHALL NOT EXCEED .007 in/in.
11. TESTING:
   A. FABRICATOR TO ADD TEST STRUCTURES OR COUPONS AS NEEDED.
   B. T-LINE IMPEDANCE TO BE TESTED OR GUARANTEE WITHIN 10% IF SPECIFIED IN
      THE CROSS SECTION. TOLERANCE TO BE +/-10% UNLESS OTHERWISE SPECIFIED.
(12) VIA SHOULD BE FILLED WITH NON-CONDUCTIVE MATERIAL.

IMPEDANCE CONTROL ON 5MIL TRACE WIDTH AND 10MIL SPACING (USB CONNECTOR J3)

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON: ANGLES +/- 2°
2 PL DECIMALS +/- .010
3 PL DECIMALS +/- .005
THIRD ANGLE PROJECTIONS

SIGNATURES		DATE
DRAWN	PLTO/SSTG	08/18/17
CHECKED	PAWK	08/18/17
ENGRG	TAVA	08/18/17
ISSUED		

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CYPRESS
198 CHAMPION COURT
SAN JOSE, CA 95134
(408) 943-2600

FABRICATION DRAWING
CY3643 PROGRAMMING KIT

SIZE: C | FSCM NO | DWG NO: 610-60371-01 | REV: 02
SCALE: 1/1 | SHEET: 1

D.3.3 Bill of Materials

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
1	1	C6	0.01 UF	CAP CER 10000PF 50V 10% X7R 0603	Murata Electronics	GRM188R71H103KA01D
2	15	C7,C11,C38,C41,C46,C49,C53,C54,C55,C56,C57,C65,C66,C67,C68	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104
3	11	C8,C30,C34,C39,C40,C50,C51,C52,C58,C59,C69	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
4	1	F1	PTC RESETABLE FUSE	PTC RESETTABLE .30A 30V 1812	Bourns Inc.	MF-MSMF030-2
5	1	J3	USB MINI B	MINI USB RCPT R/A DIP	TE Connectivity AMP Connectors	1734510-1
6	1	J1	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
7	1	LED1	LED Green	LED GREEN CLEAR 0805 SMD	Visual Communications Company - VCC	CMD17-21VGC/TR8
8	1	LED2	LED Amber	LED AMBER CLEAR 0805 SMD	Bivar Inc.	SM0805AC

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
9	2	R1,R211	560	RES SMD 560 OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ561V
10	1	R3	100K	RES SMD 100K OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ104V
11	3	R16,R226,R228	15K	RES SMD 15K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1502V
12	2	R17,R18	22	RES SMD 22 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF22R0V
13	3	R20,R21,R227	30K	RES SMD 30K OHM 1% 1/10W 0603	Yageo	RC0603FR-0730KL
14	1	R201, R202	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
15	6	R213, R214, R224, R230, R231, R233	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
16	1	R216	1K	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
17	2	R217,R218	2.2k	RES SMD 2.2K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF2201V
18	1	U1	16QN50AH23030	QFN socket 16 contacts, 0.5 mm pitch, 3.0x3.0 mm body, Thin Device	PLASTRONICS SOCKET COMPANY	16QN50AH23030
19	1	U1A	CY29430FLQXI	Clock generator, QFN package	Cypress	CY29430FLQXI
20	1	U7	CY8C5868LTI-LP039 QFN68	CY8C5868LTI-LP039 QFN68	Cypress	CY8C5868LTI-LP039
21	1	U8	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
22	1	U10	PUSBM12VX4-TL,115	TVS DIODE 5.5VWM 12VC 6HXSON	NXP Semiconductors	PUSBM12VX4-TL,115
No load components						
23	1	C5	10UF	CAP TANT 10UF 16V 10% 1206	AVX Corporation	TAJA106K016R
24	2	C31,C35	33uF	CAP TANT 33UF 6.3V 20% 1206	Rohm Semiconductor	TCA0J336M8R
25	3	C62,C63,C70	1UF	CAP CER 1UF 25V 10% X5R 0603	Taiyo Yuden	TMK107BJ105KA-T
26	2	C10, C33	4.7uF	CAP CER 4.7UF 6.3V X5R 0603	Murata Electronics	GRM188R60J475KE19D
27	1	C13	10pF	CAP CER 10PF 50V C0G 0603	TDK Corporation	C1608C0G1H100C080AA
28	1	C26	2200pF	CAP CER 2200PF 50V NP0 0603	Murata Electronics	GRM1885C1H222JA01D
29	2	C9, C27	0.1uF	CAP CER 0.1UF 50V Y5V 0603	Yageo	CC0603ZRY5V9BB104
30	2	C12, C28	20nF	CAP CER 0.02UF 50V X7R 0603	Samsung Electro-Mechanics America, Inc.	CL10B203KB8NNNC
31	1	J4	I2C HEADER	CONN HEADER 5POS .100 VERT TIN	Molex, LLC	22-23-2051
32	1	J17	2 Pin Header	TE_640456-2 (2-pin Header)	TE Connectivity AMP Connectors	640456-2
33	2	J2, J5	VIN	CONN HEADR BRKWAY .100 02POS STR	TE Connectivity AMP Connectors	9-146280-0-02
34	4	J13, J14,J15,J16	JUMPER	CONN HEADR BRKWAY .100 03POS STR	TE Connectivity AMP Connectors	9-146280-0-03
35	4	J7,J8,J10,J11	SMA	CONN SMA JACK 50 OHM EDGE MNT	Cinch Connectivity Solutions Johnson	142-0701-801
36	2	L7, L8	FERRITE CHIP 600 OHM 1.5A	FERRITE CHIP 600 OHM 1500MA 1206	Murata Electronics	BLM31PG601SN1L
37	9	R4,R14,R15,R40,R41,R42,R210,R223, R229	0 ohm	`RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
38	1	R5	453	RES SMD 453 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF4530V

Item	Qty	Reference	Value	Description	Manufacturer	Manufacturing Part Number
39	1	R6	127	RES SMD 127 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1270V
40	1	R7	0 ohm	RES SMD 0.0 OHM JUMPER 1/10W (0402pkg)	Panasonic Electronic Components	ERJ-2GE0R00X
41	1	R19	15K	RES SMD 15K OHM 5% 1/10W 0603	Panasonic Electronic Components	ERJ-3GEYJ153V
42	2	R30,R31	49.9	RES SMD 49.9 OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3AEB49R9V
43	1	R203	8.25K	RES SMD 8.25K OHM 1% 1/10W 0603	Yageo	RC0603FR-078K25L
44	1	R204	18k	RES SMD 18K OHM 1% 1/10W 0603	Yageo	RC0603FR-0718KL
45	3	R206,R216,R225	1k	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1001V
46	1	R207	10k	RES SMD 10K OHM 1% 1/10W 0603	Yageo	RC0603FR-0710KL
47	1	R208	6.04K	RES SMD 6.04K OHM 1% 1/10W 0603	Yageo	RC0603FR-076K04L
48	2	R221,R222	2.2K	RES SMD 2.2K OHM 5% 1/10W 0603	Yageo	RC0603JR-072K2L
49	7	TP13,TP14,TP15,TP31,TP34,TP35,TP36	BLACK	TEST POINT 43 HOLE 65 PLATED BLACK	Keystone Electronics	5001
50	1	U9	MIC5301	IC REG LDO ADJ 0.15A TSOT23-5	Microchip Technology	MIC5301YD5-TR
51	1	Y1	CRYSTAL4/SM	CRYSTAL 114.2850MHZ 18PF SMD	NDK	NX3225SA-114.285MHZ-EXS00A-CS06528
Accessories						
52	1	ACC1	121-60416-01	ASSY, PCBA, CY3642 Programming Kit	Cypress Approved CM	-NA-
53	1	ACC2	600-60423-01	PCB, 82 mm x 64 mm, Normal Tg, ENIG finish, 2 layer, Color = RED, Silk = WHITE	Cypress Approved CM	-NA-
54	1	ACC3	610-60371-01	DRW, FABRICATION DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
55	1	ACC4	620-60378-01	DRW, ASSEMBLY DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
56	1	ACC5	630-60392-01	DRW, SCHEMATIC DRAWING, CY3642 Programming Kit	Cypress Approved CM	-NA-
57	1	ACC6	899-60120-01	LBL, PCA Label, Vendor Code, Datecode, Serial Number xxx-xxxxx-xx Rev 03 (YYWWVVXXXXX)	Cypress Approved CM	-NA-
58	1	ACC7	899-60220-01	LBL, CY3643 Programming Kit QR Code, 10mm X 10mm	Cypress Approved CM	-NA-
59	1	ACC8	702-60011-01 rev 01	STDOFF, HEX, STANDOFF, 4-40, NYLON, 1/2"	Cypress Approved CM	-NA-
60	1	ACC9	700-60103-01 rev 01	HW, MACHINE SCREW BINDING SLOTTED 4-40	Cypress Approved CM	-NA-
61	1	J1	700-60080-01 rev 01	HW, CONN, Rectangular, MINI JUMPER, 6.5mm, CLOSE TYPE, BLACK, NICKEL	Sullins Connector Solutions	STC02SYAN

Revision History

Document Title: CY3641, CY3642, and CY3643 Programming Kits Guide Document Number: 002-19586			
Revision	**Issue Date**	**Origin of Change**	**Description of Change**
**	07/13/2017	PAWK	Initial version of the kit guide.
*A	09/08/2017	PAWK	Updated Document Title to read as "CY3641, CY3642, and CY3643 Programming Kits Guide".
*B	09/13/2017	PAWK	Added Cypress clock IC CY294xx to Section 1.1 Added example configuration files that would programme the clock ICs for VDD of 2.5V to Section 2 Updated Section 3 to indicate that PSoC programmer 3.27 and Clock Programmer 1.17 support CY364x kits Updated Section 4, Figure 4-1, 4-2 and 4-3 to conform to latest hardware Added Appendix B, Possible Hardware Modification Updated Appendix C, Schematics