CY3664-EXT

enCoRe™ III Development Kit User Guide

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Contents

1. Introduction

Thank you for your interest in the CY3664-EXT enCoRe™ III Development Kit.

The enCoRe III development system is based on the highly refined PSoC® Programmable System-on-Chip™ tools. For debugging encore III, customers are requested to purchase CY3215-DK. CY3215-DK has an in-circuit emulator (ICE) that works in conjunction with the actual silicon to provide an accurate and efficient development system. The PSoC Designer™ software consists of a graphical user interface, assembler, C compiler, linker, and debugger for a highly integrated code development environment. A compliant Full-Speed USB user module, along with other peripheral user modules, simplifies the learning curve and speeds development time.

Getting Started on page 7 of this document describes the installation and configuration of the CY3664-EXT enCoRe III Development Kit. Kit Operation on page 13 describes the kit operation. Hardware on page 15 describes the hardware operation. Code Examples on page 25 discusses the code examples provided along with the kit. The Appendix on page 37 provides the schematics and bill of materials (BOM) associated with the kit.

1.1 Kit Contents

The CY3664-EXT enCoRe III Development Kit provides only the enCoRe III specific items for customers who already have the base in-circuit emulator in the CY3215-DK.

The CY3664-EXT enCoRe III Development Kit contains:

- enCoRe III application board, including enCoRe III on-chip debugger (OCD) and solderless breadboard
- Jumper wire kit
- MiniProg Programmer
- Standard A to Mini-B USB cable
- 110 ~ 240-V switch mode power supply and universal power adapter
- CY7C64215-56LTXC samples (3)
- Kit CD/DVD with documents & Firmware sources

Visit http://www.cypress.com/shop for more information. Inspect the contents of the kit. If any parts are missing, contact your nearest Cypress sales office for further assistance.

1.2 Additional Learning Resources

Visit http://www.cypress.com for additional learning resources in the form of data sheets, technical reference manual, and application notes.

- MiniProg – http://www.cypress.com/?rID=37459
- PSoC Designer Training - http://www.cypress.com/?rID=40543
- enCoRe III Overview - http://www.cypress.com/?id=177

1.3 Document History

Revision	PDF Creation Date	Origin of Change	Description of Change
**	07/29/2011	CSAI	Initial version of kit guide
*A	04/09/2012	CSAI	Updated Introduction chapter on page 5 (Updated 1.1 Kit Contents, updated 1.2 Additional Learning Resources). Updated Getting Started chapter on page 7 (Updated 2.1 Kit Installation). Updated Kit Operation chapter on page 13 (Updated 3.2 Emulation). Updated Hardware chapter on page 15 (Updated 4.1 System Block Diagram). Updated Code Examples chapter on page 25 (Updated 5.1 Project1- HID_Example, updated 5.2 Project2 - BULK_Example, updated 5.3 Project3 - ISOC_Example).

1.4 Documentation Conventions

Table 1-1. 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: Read about the *sourcefile.hex* file in the *PSoC Designer User Guide*.
[**Bracketed, Bold**]	Displays keyboard commands in procedures: [**Enter**] or [**Ctrl**] [**C**]
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.

2. Getting Started

This chapter describes the installation and configuration of the CY3664-EXT enCoRe III Development Kit.

2.1 Kit Installation

To install the kit software, follow these steps:

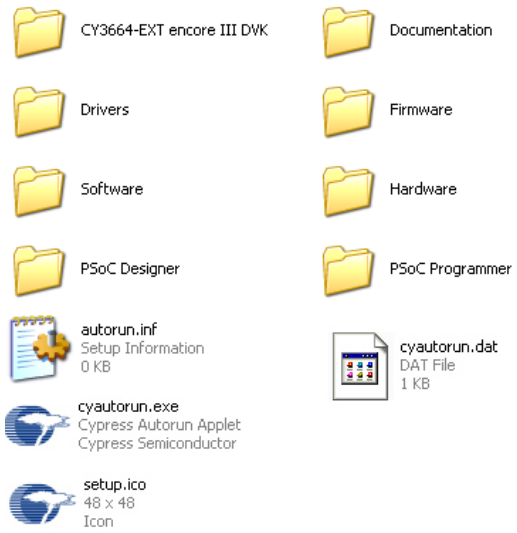
1. Insert the kit CD/DVD into the CD/DVD drive of your PC. The CD/DVD is designed to auto-run and the Kit Installer Startup screen appears.

   You can also download the latest kit installer from http://www.cypress.com/go/CY3664-EXT. Download the kit installer ISO file and create an installer CD/DVD or extract the ISO using WinRar and install the executables.
2. Click **Install CY3664-EXT enCoRe III DVK** to start the installation, as shown in Figure 2-1.

   Figure 2-1. Kit Installer Startup Screen

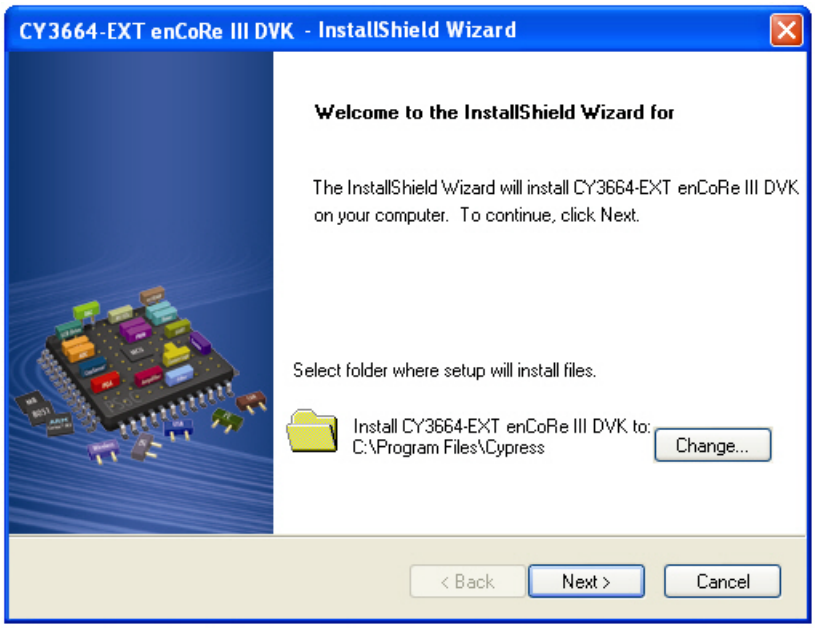
Note If auto-run does not execute, double-click the *cyautorun.exe* file on the root directory of the CD/DVD, as shown in Figure 2-2.

Figure 2-2. Root Directory of the CD/DVD



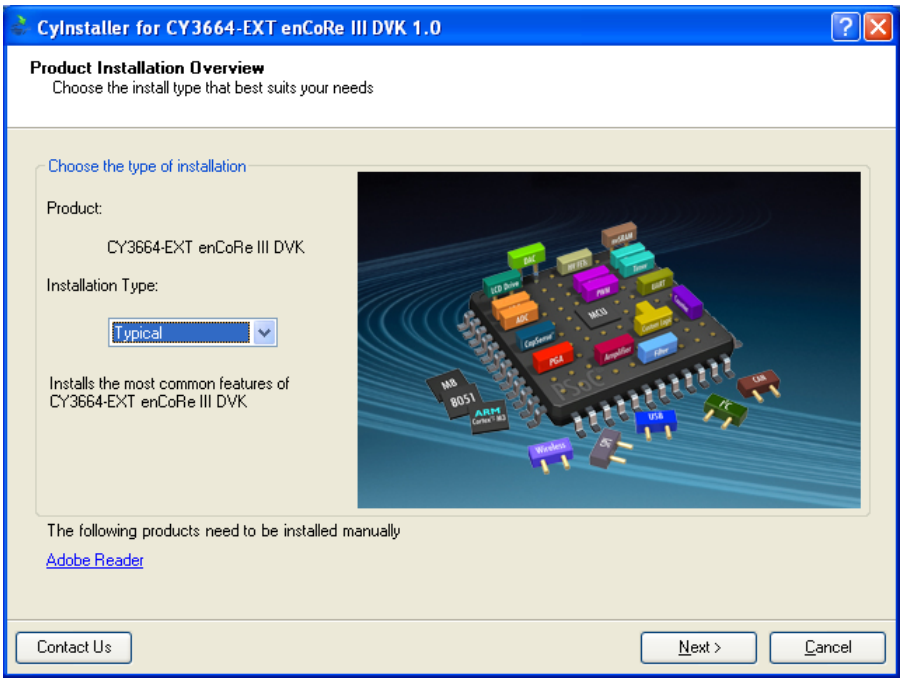
3. On the startup screen, click **Next** to start the installer.
4. The **InstallShield Wizard** screen opens with the default location for setup. You can change the location using **Change**, as shown in Figure 2-3.
5. Click **Next** to launch the kit installer.

Figure 2-3. InstallShield Wizard



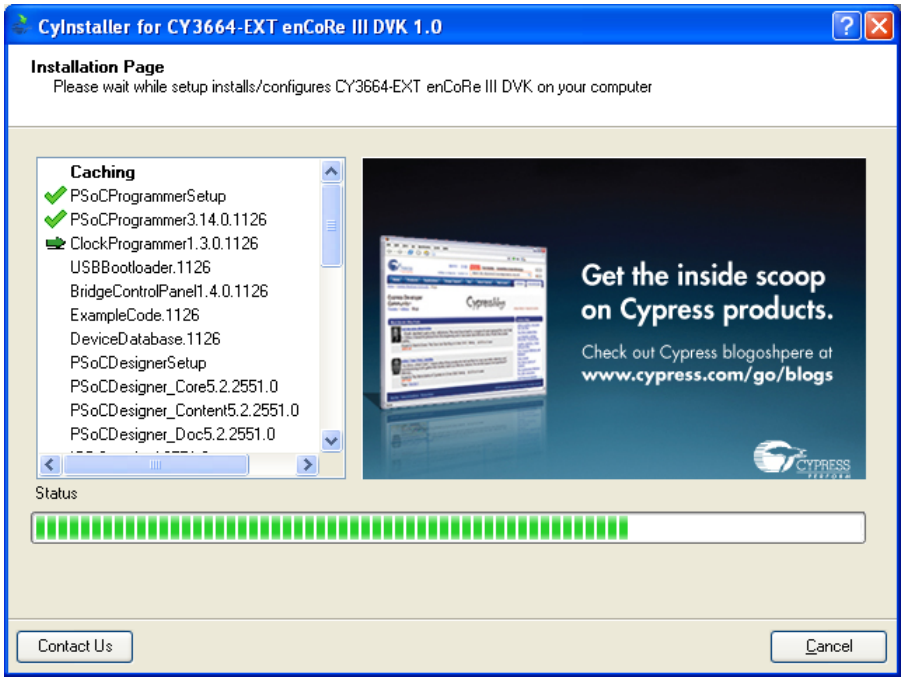
6. On the **Product Installation Overview** screen, select the installation type that best suits your requirement. The drop-down menu has three options - **Typical, Complete, and Custom**, as shown in Figure 2-4.
7. Click **Next** to start the installation.

Figure 2-4. Installation Type Options



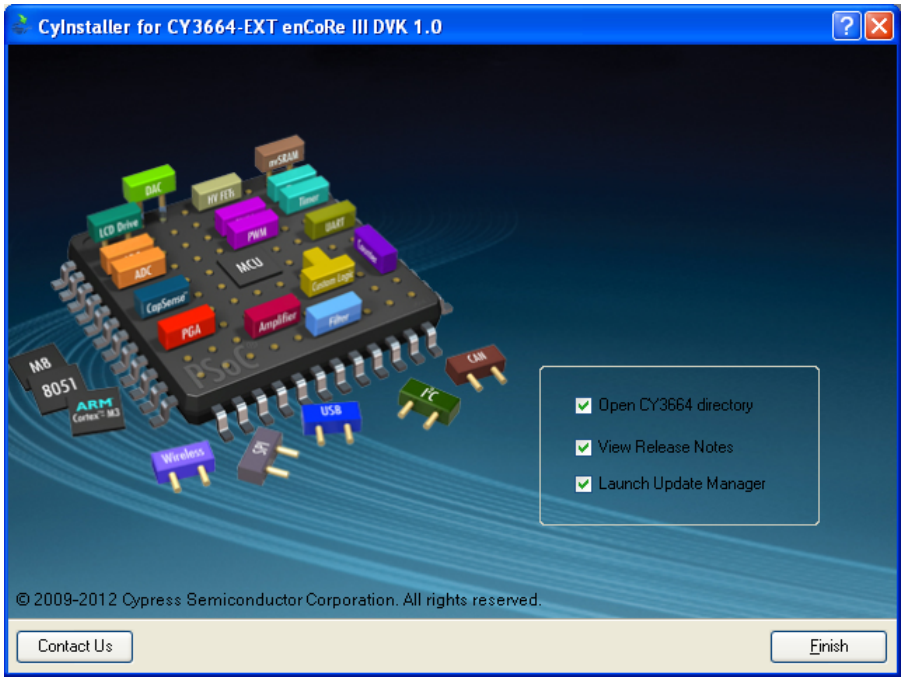
8. When the installation begins, a list of all packages appears on the Installation Page. A green check mark appears adjacent to every package that is downloaded and installed.
9. Wait until all the packages are downloaded and installed successfully.

Figure 2-5. Installation Page



10. Click **Finish** to complete the installation.

Figure 2-6. Installation Completion Page



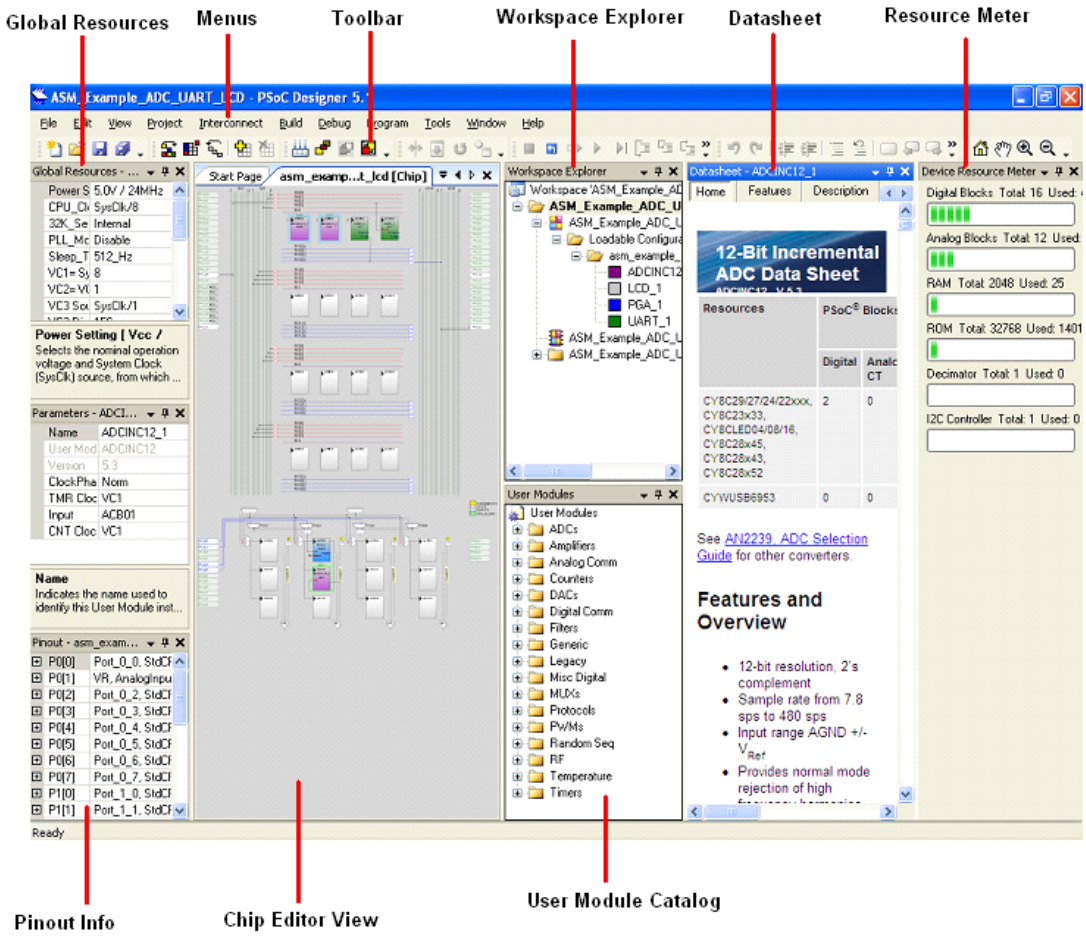
Note After software installation, verify your installation and setup.

2.2 PSoC Designer

PSoC Designer is the Integrated Design Environment (IDE) that you can use to customize your PSoC application. The latest PSoC Designer has many new features, bug fixes, and support for new PSoC devices.

1. Click **Start > All Programs > Cypress > PSoC Designer <version> > PSoC Designer <version>**.
2. Click **File > New Project**, to create new project; click **File > Open Project/Workspace** to work with an existing project.

   Figure 2-7. PSoC Designer Interconnect View



3. To experiment with the code examples, go to the Code Examples chapter on page 25.

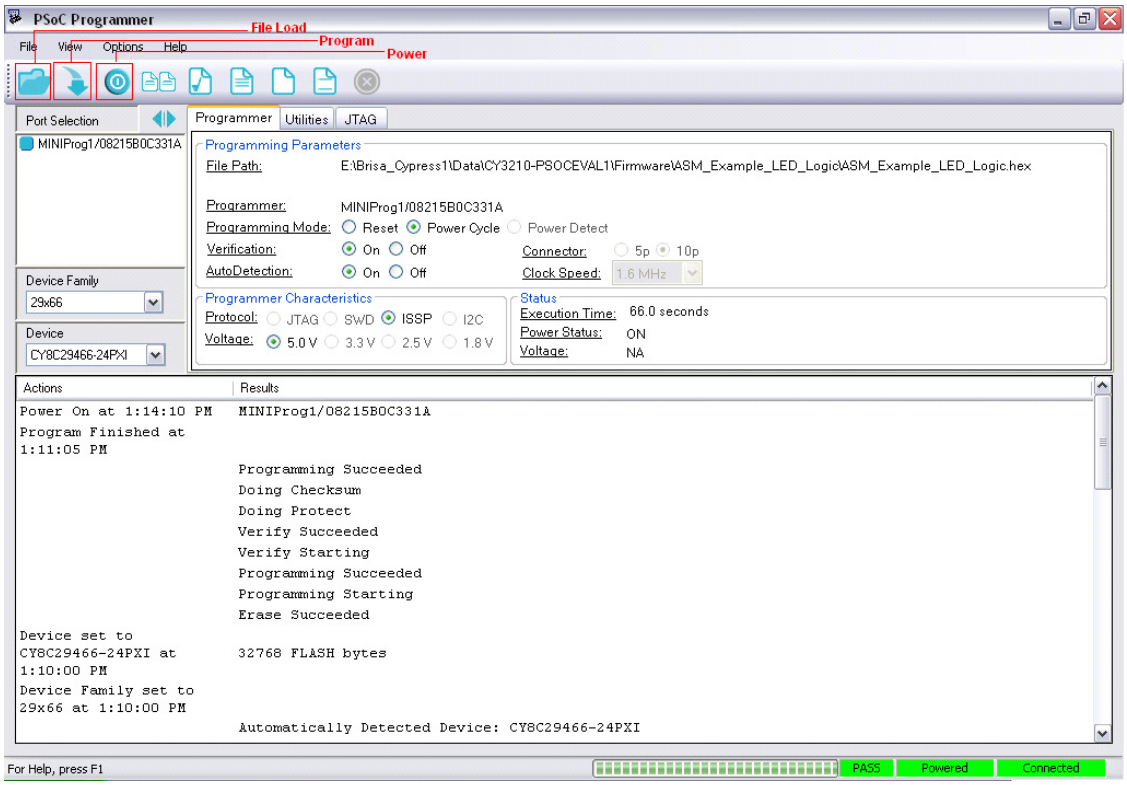
For more information about the PSoC Designer, see the PSoC Designer IDE Guide located at: `<Install_Directory>:\Cypress\PSoC Designer\<version>\Documentation`

2.3 PSoC Programmer

PSoC Programmer offers a simple GUI that connects to programming hardware and enables to program and configure PSoC devices.

1. Click **Start > All Programs > Cypress > PSoC Programmer <version> > PSoC Programmer <version>**.
2. Select the MiniProg from **Port Selection**, as shown in Figure 2-8.

Figure 2-8. PSoC Programmer Window



3. Click the **File Load** button from the menu bar; navigate and select the hex file to load.
4. Use the **Program** button to load the hex file on to the chip.
5. When programming is successful, **Programming Succeeded** appears in the Actions pane.
6. Close PSoC Programmer.

For more details on PSoC Programmer, see the user guide located at: `<Install_Directory>:\Cypress\Programmer\<version>\Documents`.

3. Kit Operation

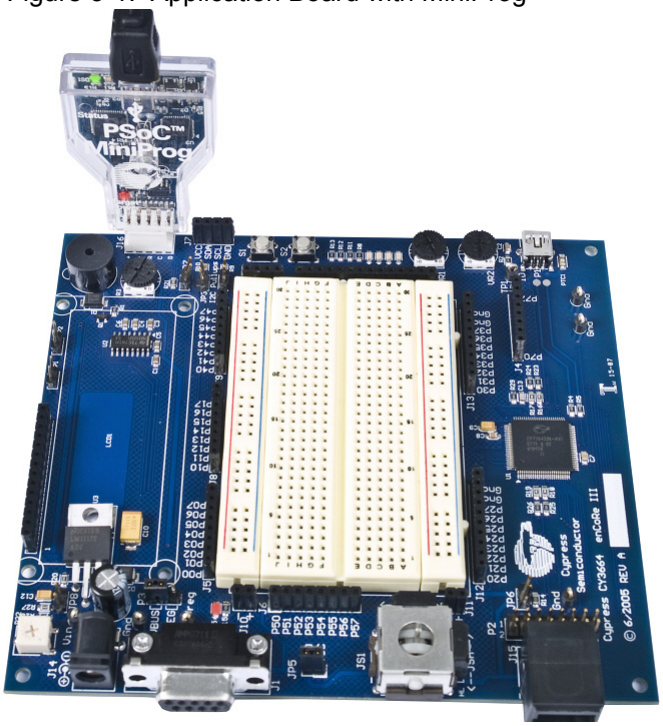
The CY3664-EXT enCoRe III Development Kit provides only the enCoRe III specific items for customers who already have the base in-circuit emulator in the CY3215-DK.

3.1 Programming the Board

The application board can be programmed using either the MiniProg or the ICE-Cube. Follow these steps to program the application with a MiniProg:

1. Launch PSoC Programmer.
2. Connect the MiniProg to the 5-pin ISSP header on the CY3664 DVK board.
3. In PSoC Programmer, click the **File Load** button to load the desired binary (hex) file.
4. Select the MiniProg port.
5. Select the **Power Cycle** programming mode.
6. Select the **64000** device family.
7. Select the **CY7C64215-56LFXC** device.
8. Click **Program** to program through programming and verification modes.
9. When **Programming Succeeded** appears in the Actions pane, remove the MiniProg from the CY3664 application board.

Figure 3-1. Application Board with MiniProg



3.2 Emulation

Emulation of the device can be done using the ICE-Cube. Customers are requested to purchase CY3215-DK. Follow these steps:

1. Launch the desired *.SOC project file from the Firmware directory.
2. Connect one end of the blue CAT 5e cable to the ICE-Cube.
3. Connect the other end of the blue CAT 5e cable to the CY3664 DVK board.
4. Select **Build > Build** or press **F7**.
5. Configure debug port setting by clicking **Project > Settings > Debugger**; select **USB** as ICE connected to port.
6. Select **Debug > Connect**.
7. Select **Debug > Download to Emulator**.
8. Select **Debug > Go** or press **F5**.

3.3 Jumper Setting

The HID_Example, BULK_Example, and ISOC_Example sample applications are bus-powered designs. In these designs, the chip gets its power from the USB bus. The alternative is a self-powered design, where the chip gets its power from the 12-V power supply provided. There are two steps to implement a bus-powered or self-powered design. The USB device descriptors must be correctly set up in the USB Setup Wizard and the jumpers must be configured correctly on the board.

For the HID_Example, BULK_Example, and ISOC_Example sample applications, jumpers need to be placed for VBUS on JP3 and JP5.

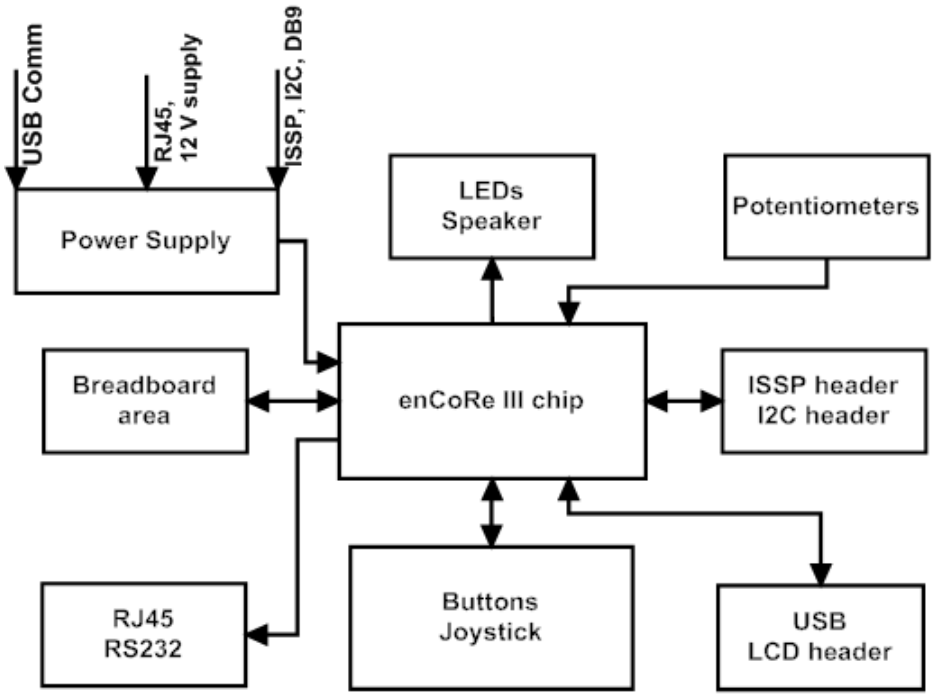
4. Hardware

4.1 System Block Diagram

The CY3664 enCoRe III application board has the following sections:

- enCoRe III chip
- USB connector
- DB9 connector
- ISSP header
- I2C header
- RS232 transceiver
- RJ45 connector
- Breadboard area
- LCD module header
- Joystick, speaker, pushbuttons, and LEDs
- Power LED
- Potentiometers

Figure 4-1. System Block Diagram

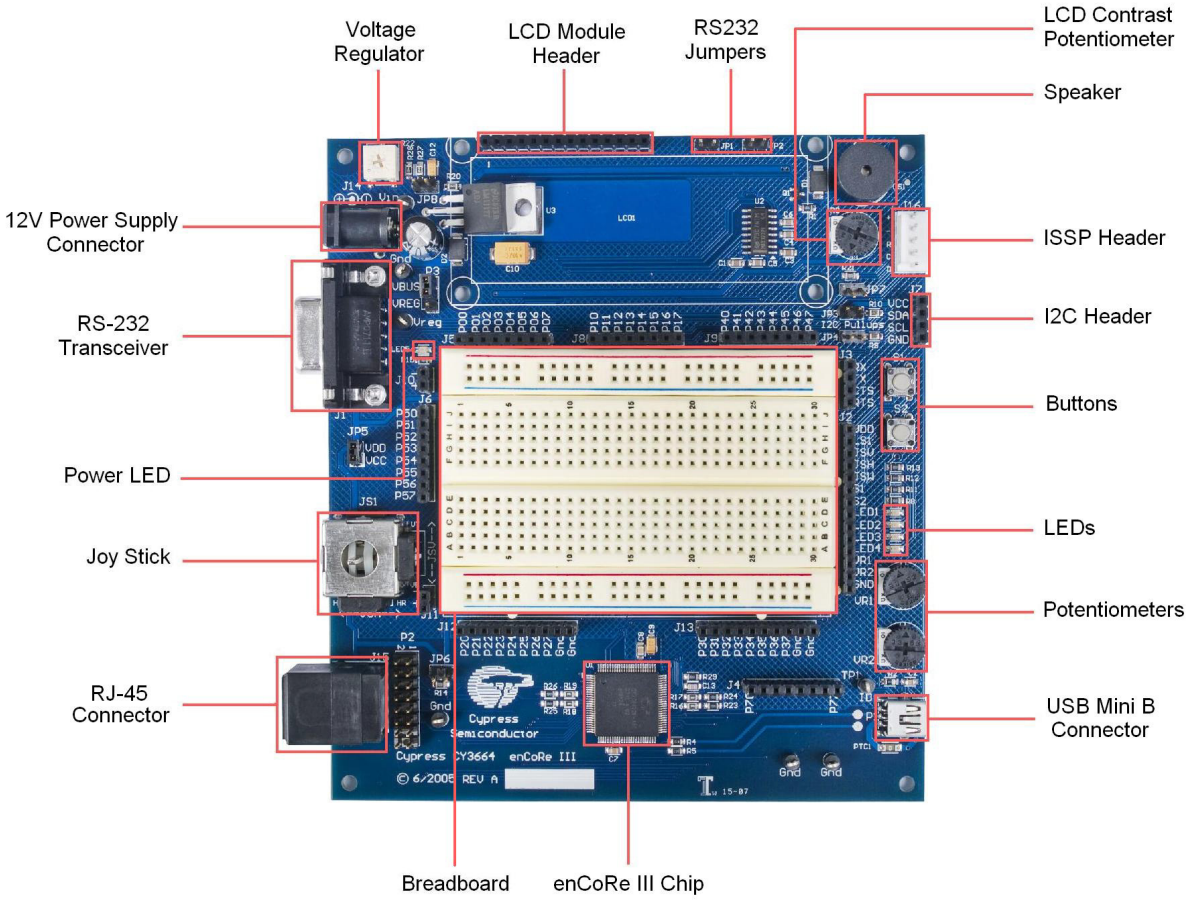


4.2 Functional Description

The CY3664-EXT enCoRe III application board includes enCoRe III chip, mini B USB connector, ISSP header, breadboard, RS232 transceiver, I2C header, potentiometers, LCD header, joystick, RJ45 connector, speaker, pushbuttons, and LEDs.

The following figure shows the functional blocks on the CY3664 enCoRe III application board.

Figure 4-2. enCoRe II Functional Blocks



4.2.1 enCoRe III Chip

The enCoRe III is based on the flexible PSoC architecture and is a full-featured, full-speed (12 Mbps) USB part. Configurable analog, digital, and interconnect circuitry enable a high level of integration in several consumer and communication applications.

This architecture enables to create customized peripheral configurations that match the requirements of each individual application. Additionally, a fast CPU, flash program memory, SRAM data memory, and configurable I/O are included in both 28-pin SSOP and 56-pin QFN packages.

Applications

- PC human interface devices
  - Mouse (opto-mechanical, optical, trackball)
  - Keyboards

- Joysticks
- Gaming
  - Game pads
  - Console keyboards
- General purpose
  - Barcode scanners
  - POS terminal
  - Consumer electronics
  - Toys
  - Remote controls
  - USB to serial

Figure 4-3. Schematic View of Chip

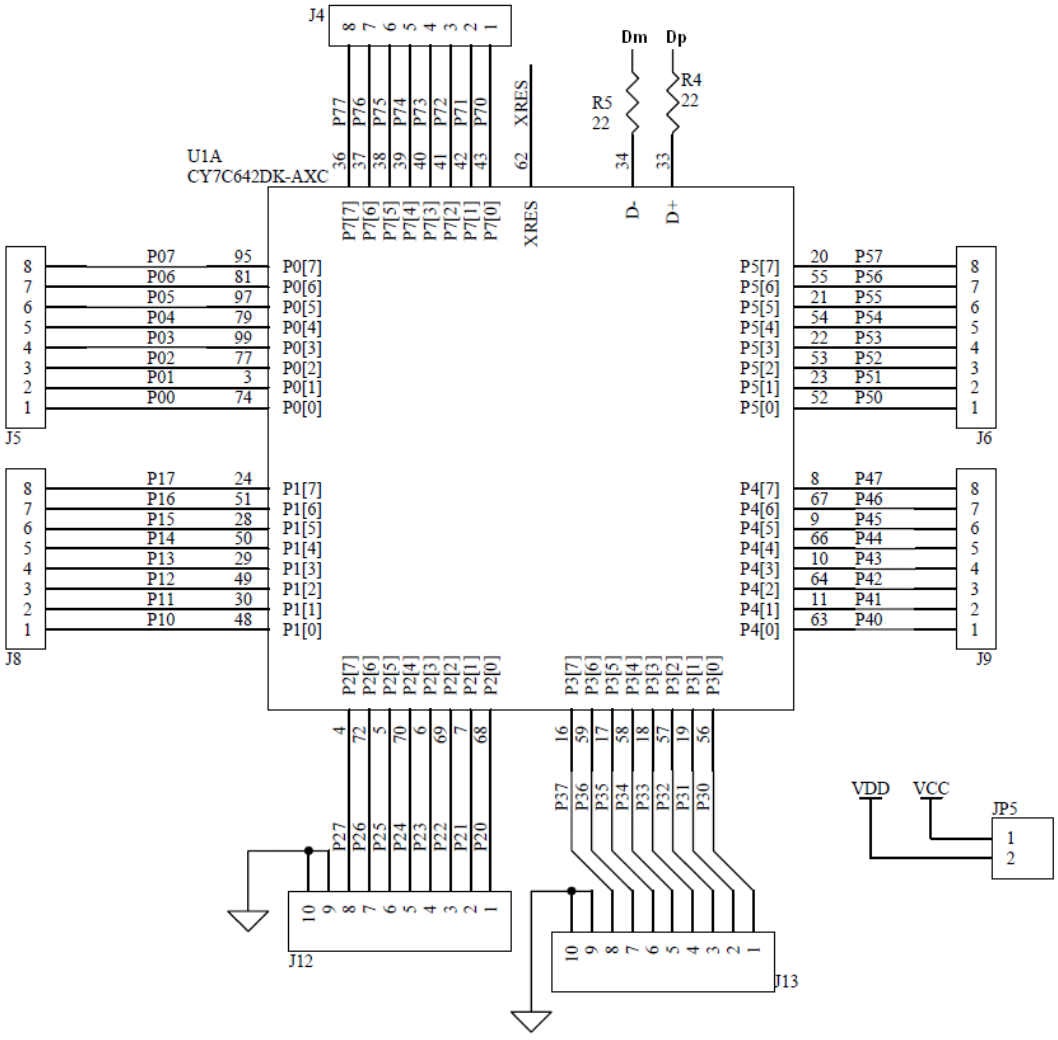


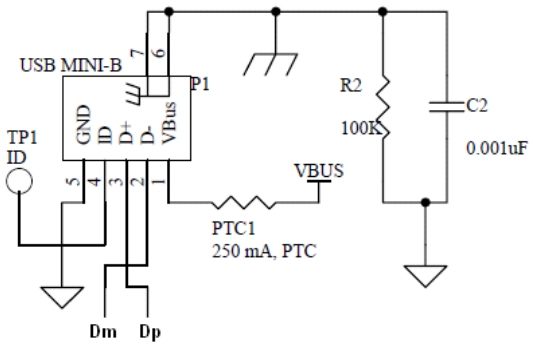
Table 4-1. Pin Details of enCoRe III

Pin	Name	Description
1	GND	Ground connection
2	P0.7	Analog column mux input
3	P0.5	Analog column mux input and column output
4	P0.3	Analog column mux input and column output
5	P0.1	Analog column mux input
6	P2.5	
7	P2.3	Direct switched capacitor block input
8	P2.1	Direct switched capacitor block input
9	P1.7	I2C SCL
10	P1.5	I2C SDA
11	P1.3	
12	P1.1	I2C SCL, ISSP-SCLK
13	GND	Ground connection
14	D+	USB D+
15	D-	USB D–
16	VDD	Supply Voltage
17	P1.0	I2C SCL, ISSP-SDATA
18	P1.2	
19	P1.4	
20	P1.6	
21	P2.0	Direct switched capacitor block input
22	P2.2	Direct switched capacitor block input
23	P2.4	External analog ground (AGND) input
24	P0.0	Analog column mux input
25	P0.2	Analog column mux input and column output
26	P0.4	Analog column mux input and column output
27	P0.6	Analog column mux input
28	VDD	Supply voltage

4.2.2 USB B Connector

The USB B connector port on the application board is used to communicate with the PC. It also supplies input voltage to power the board.

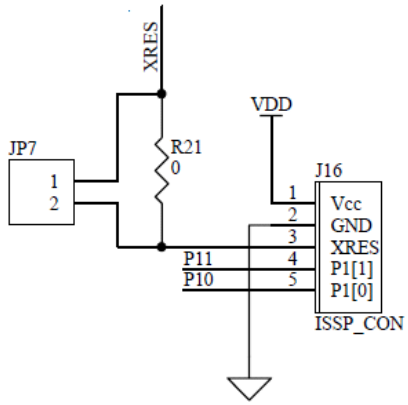
Figure 4-4. Schematic View of USB Connector



4.2.3 ISSP Header

In-system serial programmer (ISSP) is used to program the device. Programming can be done using the MiniProg programmer device or ICE-Cube.

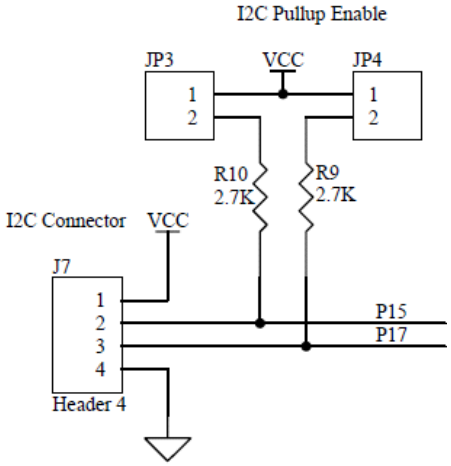
Figure 4-5. Schematic View of ISSP Connector



4.2.4 I2C Header

The I2C header on the application board is used for I2C communication between the PC and the board.

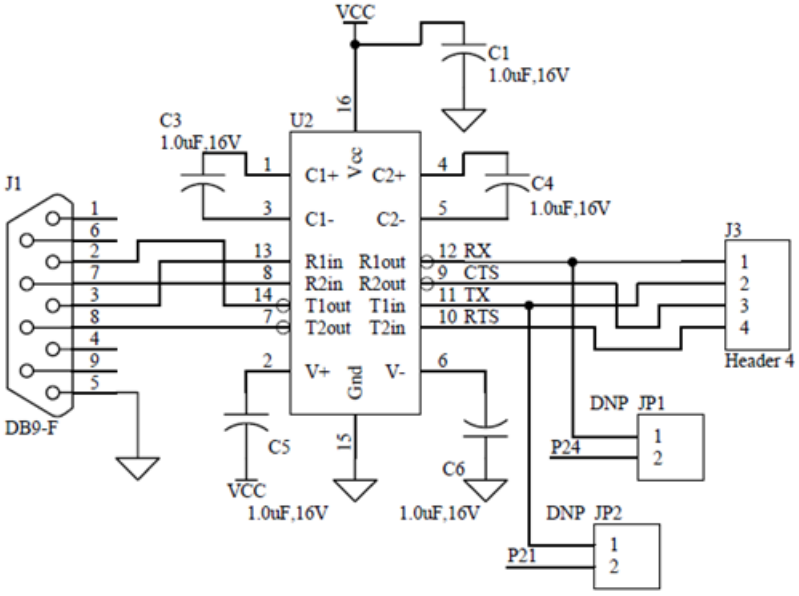
Figure 4-6. Schematic View of I2C Header



4.2.5 RS-232 Transceiver

The terminal J1 is a DB9 connector, which is connected to the RS-232 transceiver (IC U2) for serial communication between the application board and the PC.

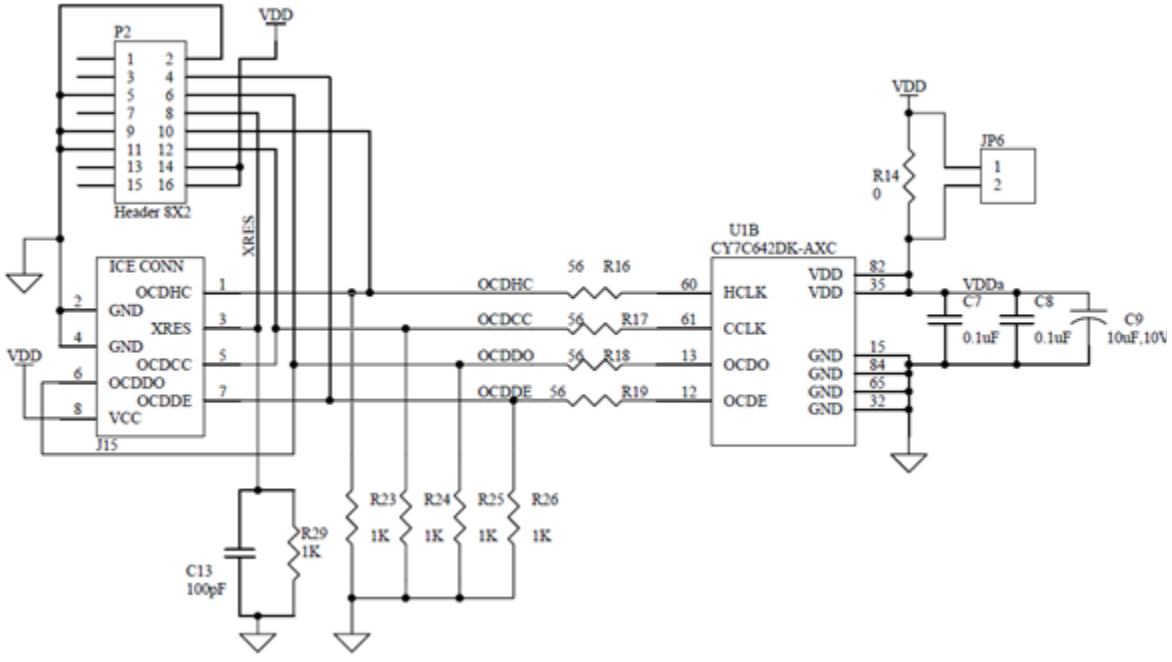
Figure 4-7. Schematic View of DB9 Connector



4.2.6 RJ45 Connector

The ICE-Cube debugger allows to debug and view the content of specific memory locations. The ICE-Cube debugger can be connected to the RJ45 connector on the board to connect to the on-chip debugger (OCD) device to enable debugging.

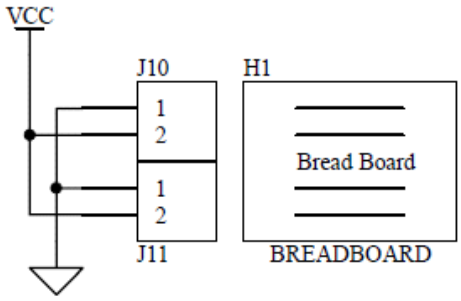
Figure 4-8. Schematic View of RJ45 Connector



4.2.7 Breadboard Area

This area on the board is available for customized prototyping.

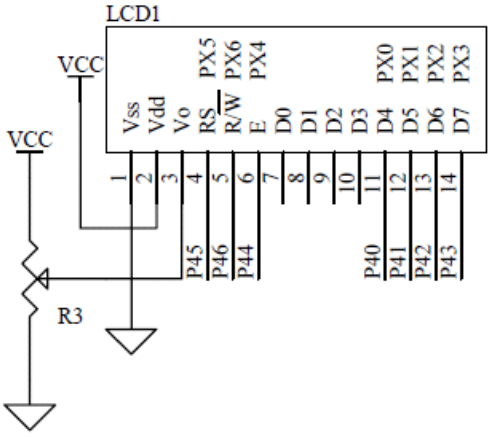
Figure 4-9. Schematic View of Prototyping Area



4.2.8 LCD Header

The LCD header is provided to connect an LCD interface for character output display. The LCD contrast is varied using the LCD contrast potentiometer R3. The regulated voltage Vo from R3 decides the contrast. D0 to D7 are the data bus line for LCD, RS is the instruction/data register select pin and R/W is Data Read/Write pin.

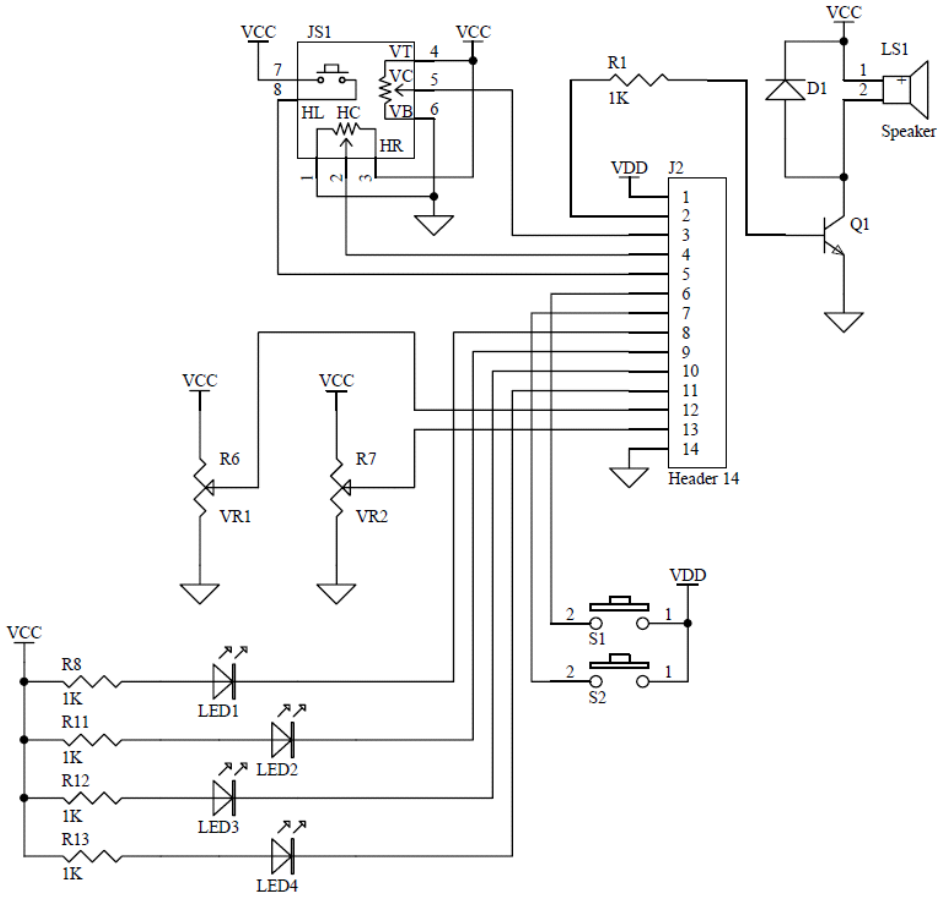
Figure 4-10. Schematic View of LCD Header



4.2.9 Joystick, Speaker, Pushbuttons, and LEDs

The application board is provided with a joystick, speaker, two pushbuttons, and four LEDs for general use.

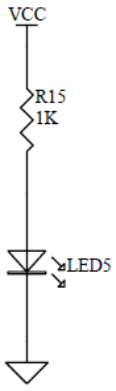
Figure 4-11. Schematic View of Pushbuttons and LEDs



4.2.10 Power LED

The LED5 is used to indicate the power status of the board.

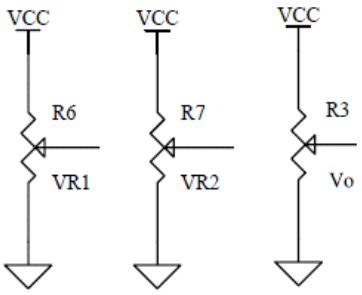
Figure 4-12. Schematic View of Power LED



4.2.11 Potentiometers

There are three potentiometers on the application board. Potentiometers R6 and R7 are used to vary input voltage to the ADC connected to the pin 12 and 13 of J2. The potentiometer R3 is used to vary LCD contrast connected to Vo pin on the LCD header.

Figure 4-13. Schematic View of Potentiometers



4.3 Power Supply System

The power supply system on this board is versatile; it takes input supply from the following sources:

- USB B port
- ISSP connector
- RS-232 port
- RJ45 connector
- I2C connector
- 12 V power supply

Figure 4-14. Power Supply System Structure

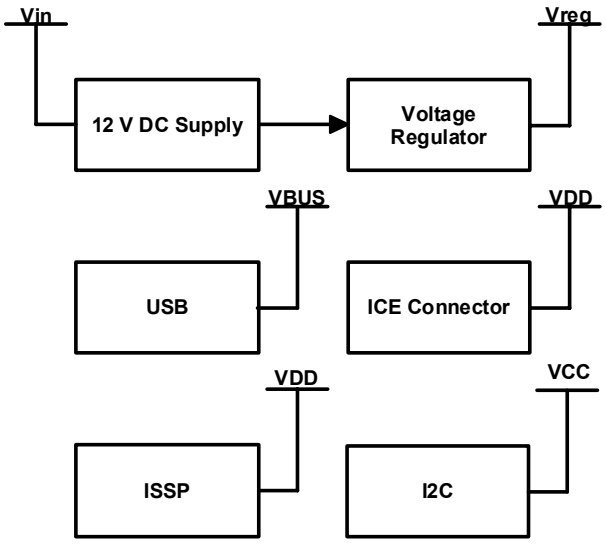
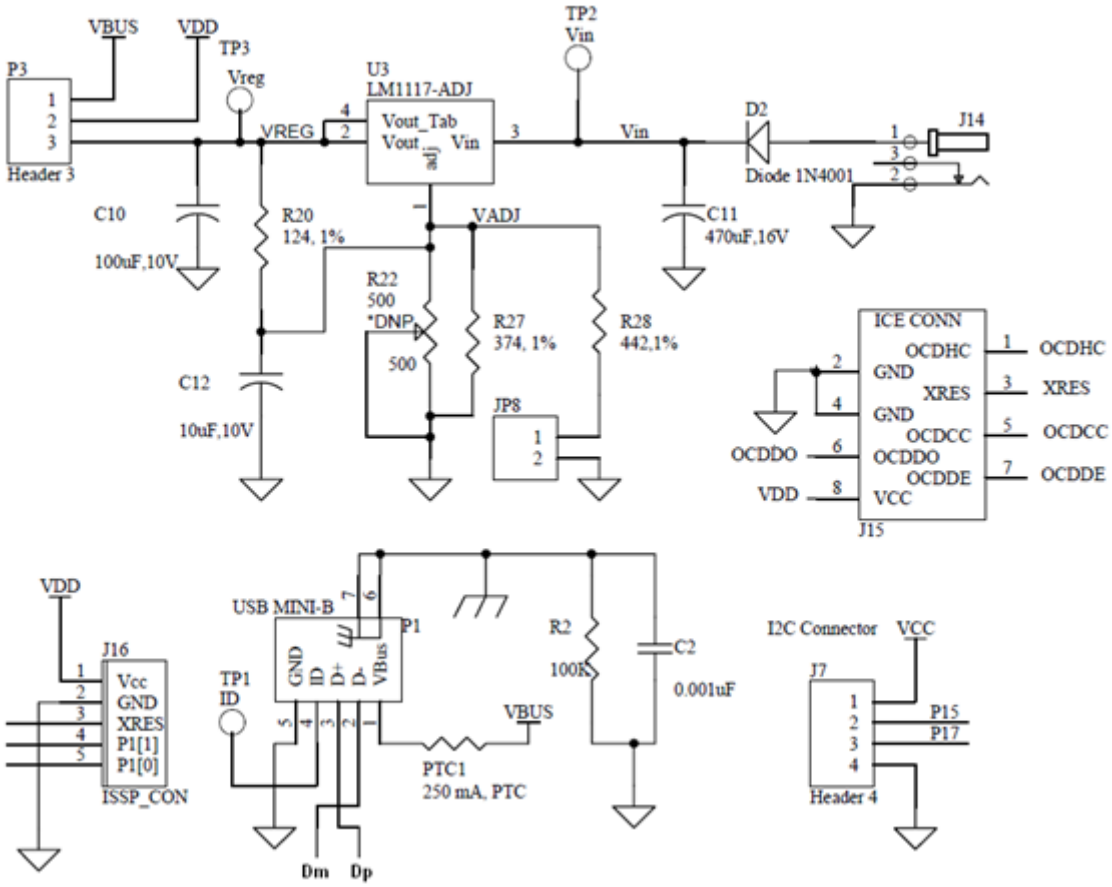


Figure 4-15. Schematic View of Power Supply System Structure



5. Code Examples

All code examples are available on the kit CD or at the following location: `<Install_Directory>\Cypress\CY3664-EXT enCoRe III DVK\<version>\Firmware\`.

5.1 Project1- HID_Example

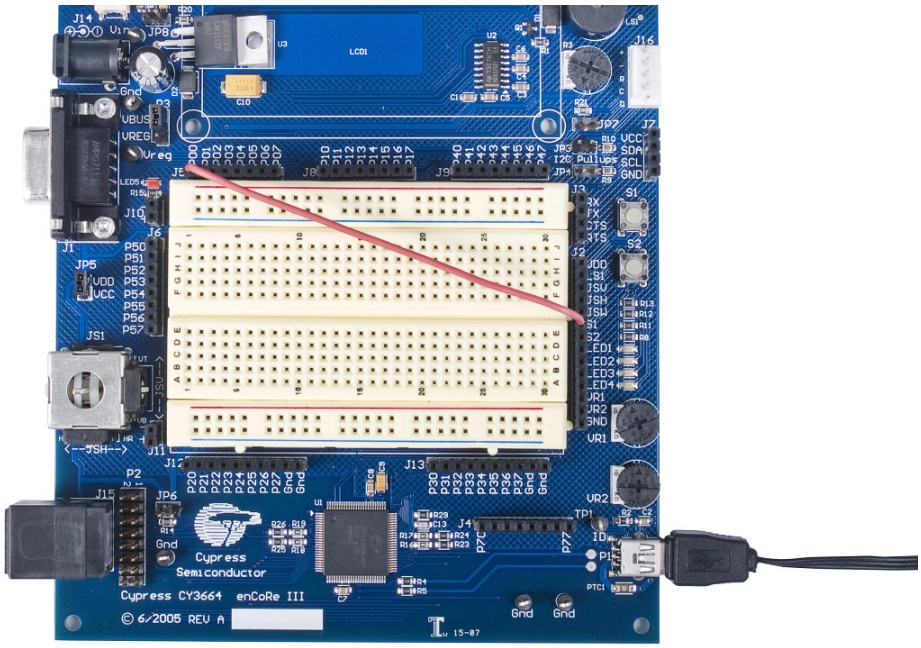
5.1.1 Project Description

The HID_Example demonstrates the basic functionality of a USB HID mouse. A complete USB HID descriptor is provided that allows enumeration on any USB host that supports a HID device.

To run the HID_Example, follow these steps:

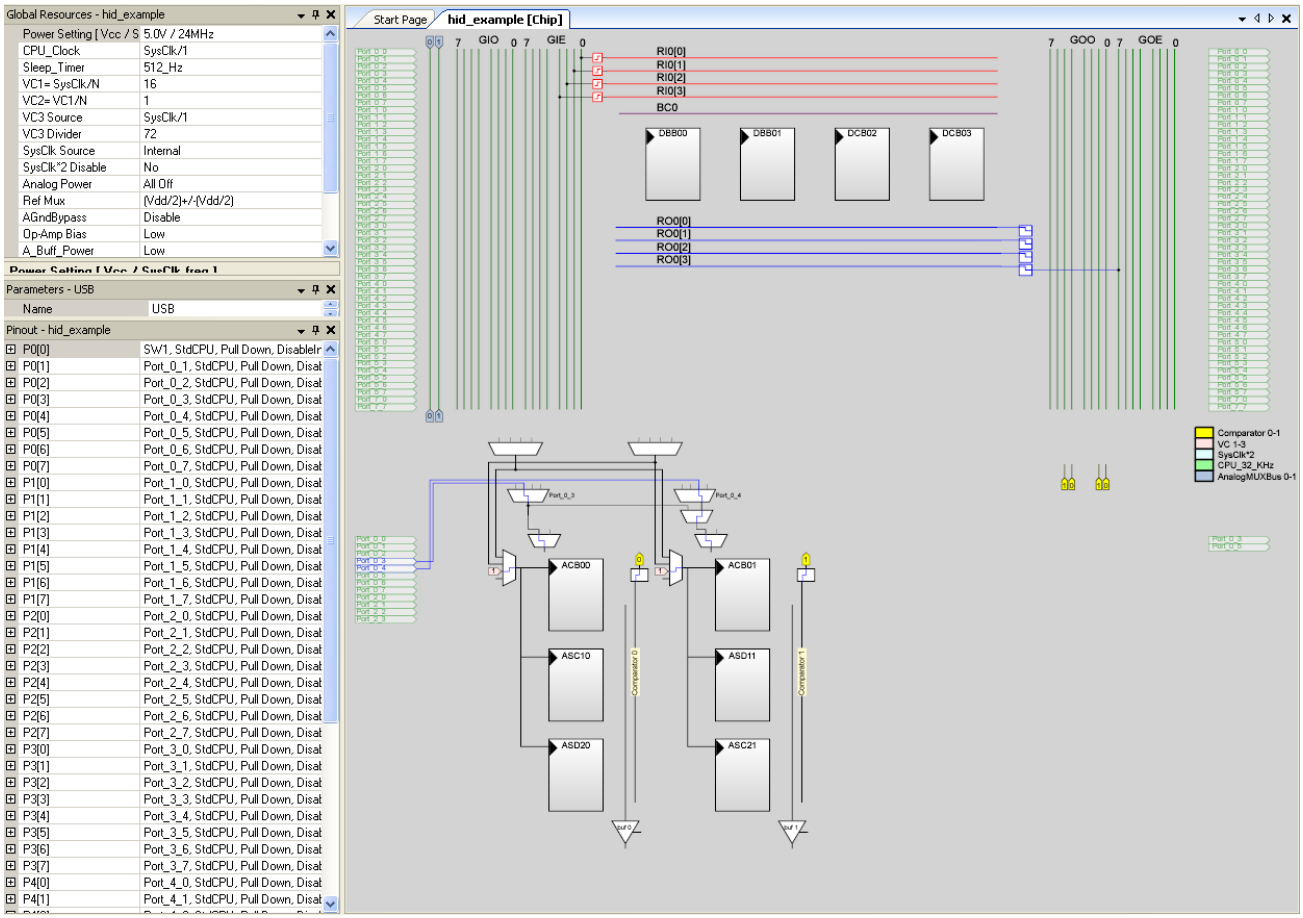
1. Open the HID_Example project in PSoC Designer. The project file is located at `Firmware\HID_Example\HID_Example.SOC`.
2. Build the project: select **Build > Build**, press **F7**, or select the **Build** icon.
3. Program the CY3664-EXT enCoRe III Development Kit board with the *HID_Example.hex* file, located at `Firmware\HID_Example\HID_Example\output\`.
4. On the CY3664 DVK board, attach a wire from P00 on J5 to S1 on J2.
5. On the PC, open a simple drawing application, such as Paint.
6. Connect the Mini-B side of the USB A - Mini B cable to the CY3664 DVK board.
7. Connect the A side of the USB A - Mini B cable to the PC.

Figure 5-1. CY3664 Application Board

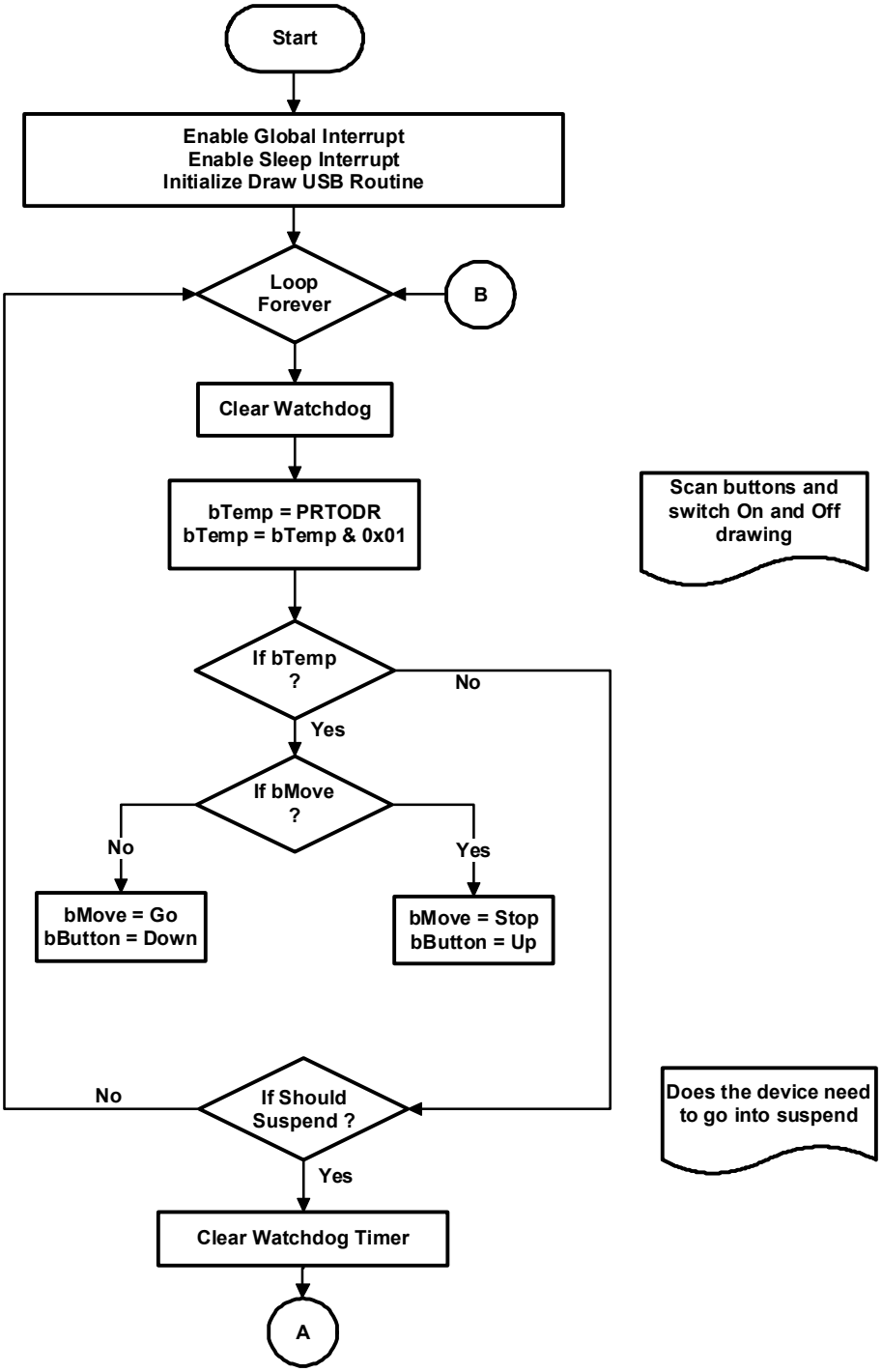


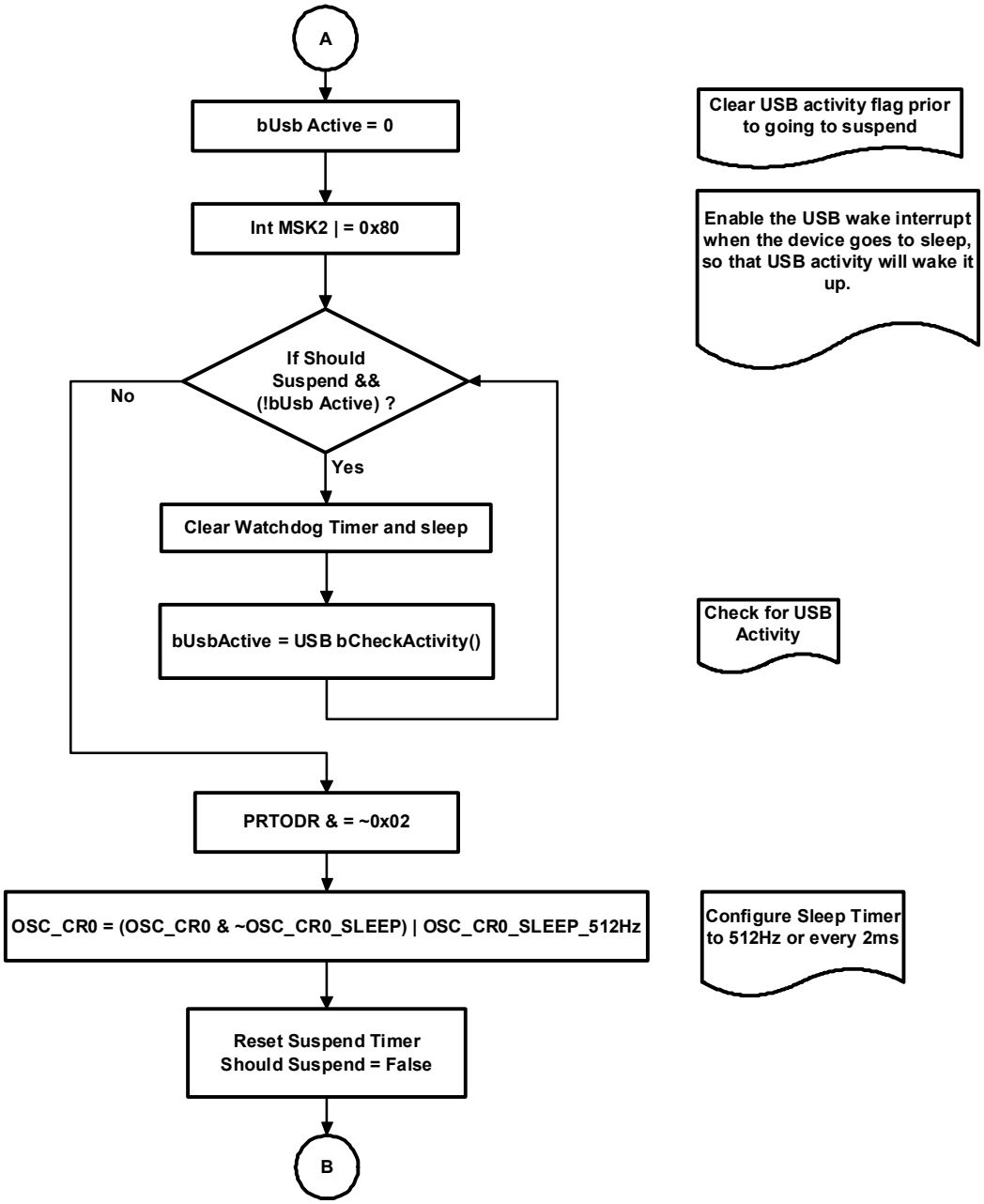
5.1.2 Device Configuration

Figure 5-2. Device Configuration for HID_Example



5.1.3 Firmware Architecture





5.1.4 Verify Output

1. The HID_Example enumerates on the PC as a bus-powered USB mouse device. It will transmit mouse down and mouse movement commands to the PC over the USB Interrupt pipe. Within a simple drawing or paint application, the word “USB” is drawn as the cable is connected to the computer. "USB" stops drawing when **S1** button is pressed. Pressing the **S1** button starts or stops the drawing.
2. When using any of the enCoRe III examples provided, a USB analyzer can be used to inspect the USB transactions.

5.2 Project2 - BULK_Example

5.2.1 Project Description

The BULK Example demonstrates the simplicity in accessing SRAM directly from the enCoRe III USB SIE. This example uses the Bulk_Ping application to send and receive data over the Bulk IN and OUT endpoints.

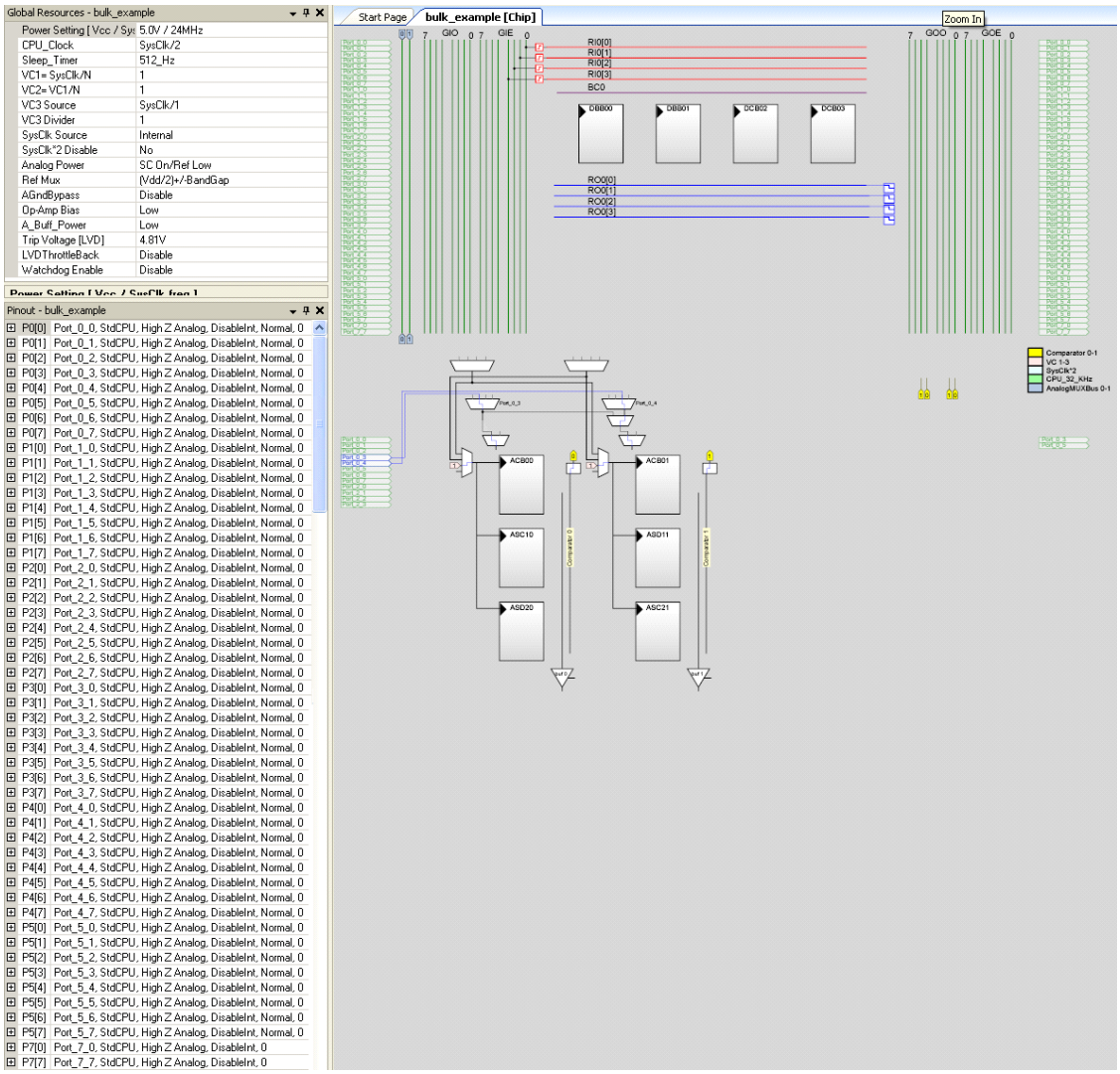
1. Open the Bulk Example project in PSoC Designer. The project file is located at Firmware\BULK_Example\BULK_Example\BULK_Example\BULK_Example.soc.
2. Build the project: select Build > Build, press F7, or select the Build icon.
3. Program the CY3664 DVK board with the Bulk_Example.hex file located at Firmware\BULK_Example\BULK_Example\output.
4. Connect the Mini-B side of the USB A to mini-B cable to the CY3664 DVK board.
5. Connect the A side of the USB A to mini-B cable to the PC.
6. After connecting USB cable to PC, Windows Hardware wizard pops up. In Win XP(32/64) OS Select **"Yes, this time only"** and click **Next**. In Windows Vista/7 machine choose **"Browse My computer for driver software"**.
7. Choose **“Install from a list or specific location”** and click **Next**. Then choose **“Dont search. I will choose the driver to install”** and click **Next**. Select **“Universal Serial BUs Controllers”** from the list of devices. In the next window select Click **“Have Disk”**.
8. To select the driver matching VID/PID in the Bulk_Example.hex select the *cyusb3664extdvk.inf* file located at <*Installed_Directory*>*Cypress**CY3664-EXT enCoRe III DVK*\<*version*>*Drivers*. In Windows Vista/7 machines browse directly after step-6 to matching Driver information file as mentioned below. User need to select the *cyusb3664extdvk.inf* and *cyusb.sys* file combination relevant to Windows OS version to which the USB cable is connected. Following are paths
   a. WinXP-32-bit:wxp\x86
   b. WinXP-64-bit:wxp\x64
   c. WinVista-32-bit:wlh-vista\x86
   d. WinVista-64-bit:wlh-vista\x64
   e. Win7-32-bit:wlh-win7\x86
   f. Win7-64-bit:wlh-win7\x64
9. Open Device Manager by typing **“devmgmt.msc”** in Windows-->Start-->Run. Expand the list of USB controllers and observe Encore III DVK enumerated and listed as **"Cypress encoreIII DVK Bulk Example (3.4.5.000)"**.
10. The *cyusb3664extdvk.inf*, *cyusb.sys* and *cyusb3664extdvk.cat* are part of signed USB driver packages for all 6 Windows OS platforms - WinXP(32/64), Win Vista(32/64)and Win-7(32/64). Any modification to the *cyusb3664extdvk.inf* file would result in Invalid driver signature.The supplied package should be used without modification only to validate the examples provided with the kit.
11. The *cyusb3664extdvk.inf* contains Bulk example VID/PID-0x04B4/0x07B3. Customers who intend to utilise the existing driver package and develop their own enCore III products should modify the Vendor ID (VID), product ID (PID) and Product Strings contained in the *cyusb3664extdvk.inf* file. Once the *cyusb3664extdvk.inf* is edited the Microsoft digital signature for the kit driver package is no longer valid.
12. To modify the .INF during product development press F8 during reboot select “Disable Driver signature enforcement”. This will enable loading of these unsigned driver package (edited *cyusb3664extdvk.inf* and *cyusb.sys*) in Windows PC.This modification will not propogate till next reboot of Windows PC. Customers can validate their modifications in the .INF temporarily using

this method. After completely validating the driver package customer needs digital signature(get catalog (.cat) files) for the driver through Microsoft WHQL program to avoid driver loading warnings. For more details about the Microsoft WHQL process refer to Application note titled - "Windows Hardware Quality Labs WHQL) Signing Procedure for Customer modified Cypress USB Driver Files".

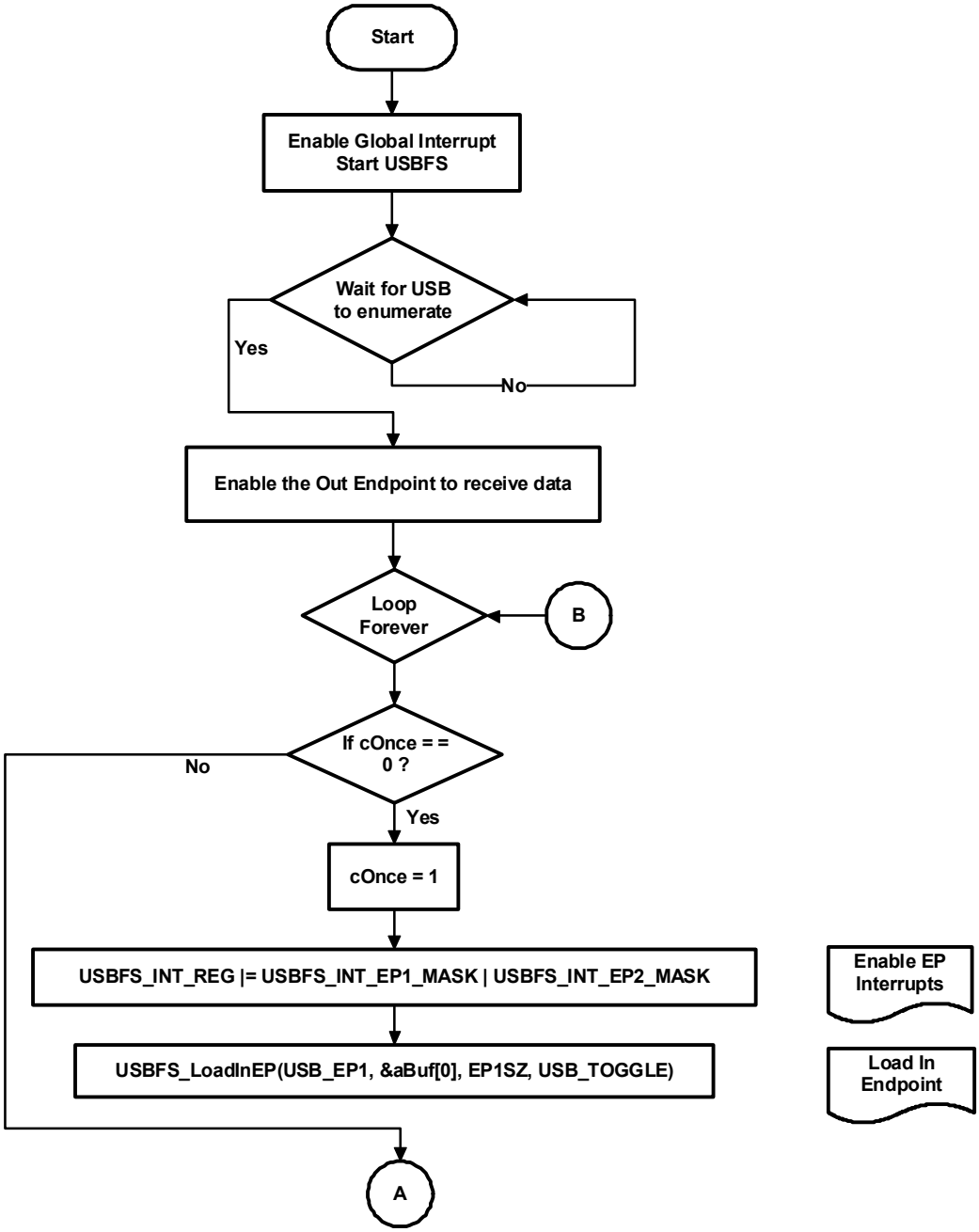
Note: If the driver matching sequence (selecting *cyusb3664extdvk.inf* and *cyusb.sys*) of anyone of examples - Bulk Example and ISOC Example is performed earlier then the remaining example's step 6–9 can be avoided as the *cyusb3664extdvk.inf* file contains VID/PID entries of both these firmware examples.

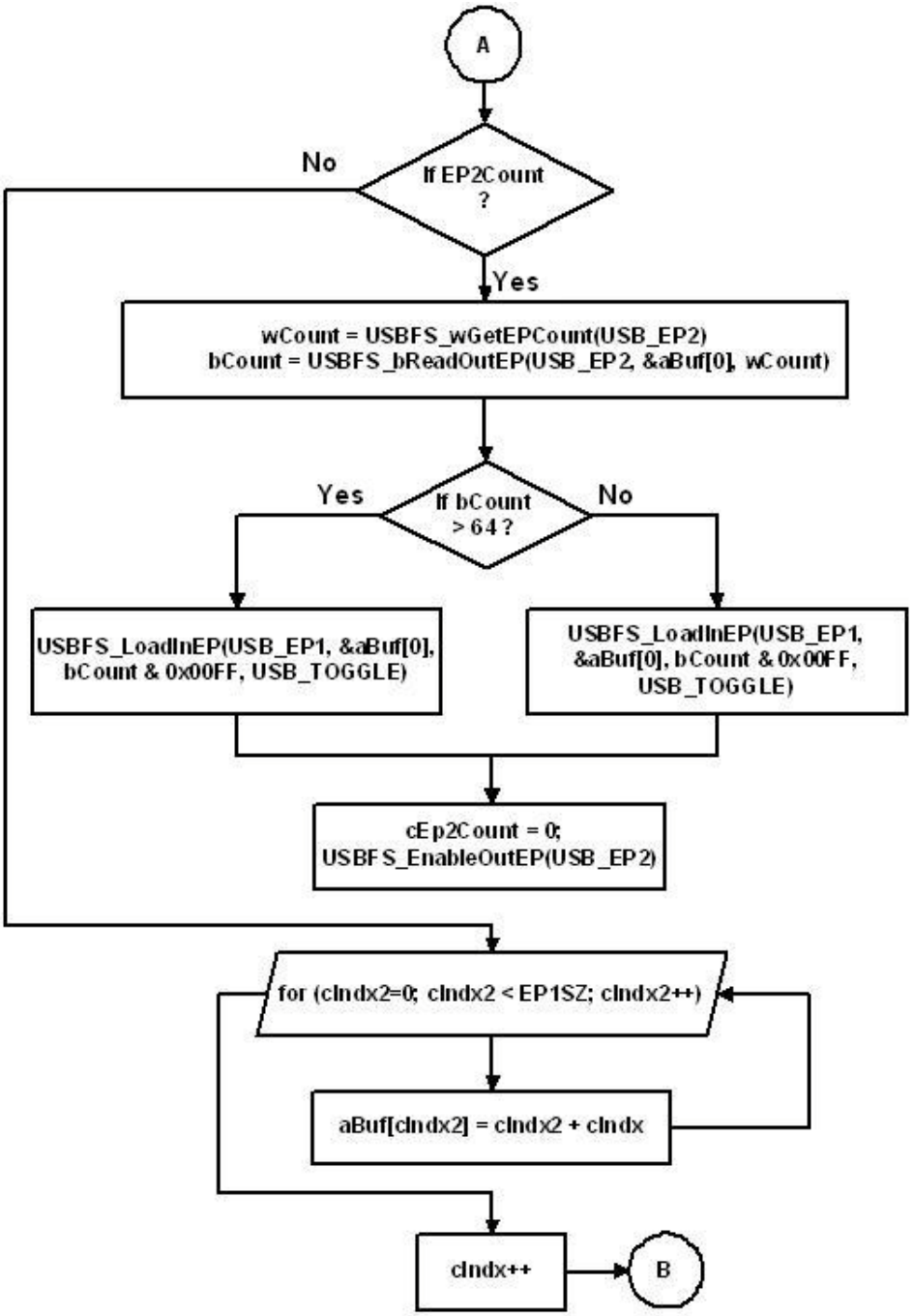
5.2.2 Device Configuration

Figure 5-3. Device Configuration for BULK_Example



5.2.3 Firmware Architecture





5.2.4 Verify Output

The BULK Example enumerates on the PC using the *cyusb.sys* driver provided with the enCoRe III DVK. Using the *Bulk_Ping_Host.exe* application, data can be transferred to and from the CY3664-EXT enCoRe III Development Kit board. Observe Bulk packets in chunks of 64 bytes sent continously for 30 iterations. This confirms the Bulk packets were sent in IN and OUT direction.

5.3 Project3 - ISOC_Example

5.3.1 Project Description

The ISOC_Example demonstrates how to create an alternative interface for isochronous applications. This example uses the Streamer application to send data over the ISOC IN endpoint. To run the ISOC Example, follow these steps:

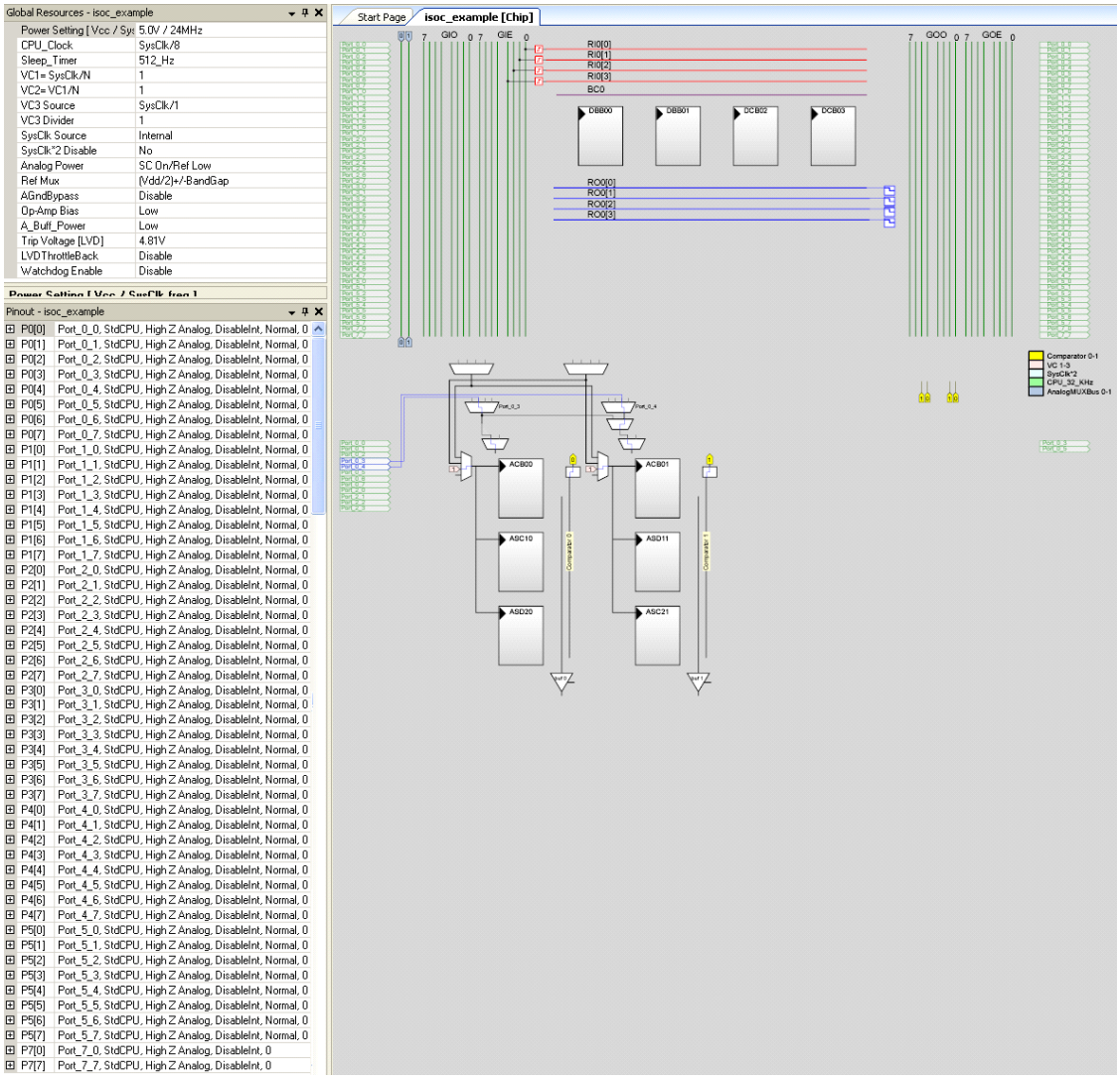
1. Open the ISOC Example project in PSoC Designer. The project file is located at Firmware\ISOC_Example\ISOC_Example\ ISOC_Example.SOC.
2. Build the project: select Build > Build, press F7, or select the Build icon.
3. Program the CY3664 DVK board with the ISOC_Example.hex file located at Firmware\ISOC_Example\ISOC_Example\ISOC_Example\output\.
4. Connect the Mini-B side of the USB A to mini-B cable to the CY3664 DVK board.
5. Connect the A side of the USB A to mini-B cable to the PC.
6. After connecting USB cable to PC , Windows Hardware wizard pops up .In Win XP(32/64) OS. Select **“Yes, this time only”** and click **Next**. In Windows Vista/7 machine choose **“Browse My computer for driver software”**.
7. Choose **"Install from a list or specific location"** and click **Next**. Then choose **“Dont search. I will choose the driver to install”** and click **Next**. Select **"Universal Serial BUs Controllers"** from the list of devices. In the next window select Click **“Have Disk”**.
8. To select the driver matching VID/PID in the ISOC_Example.hex select the *cyusb3664extdvk.inf* file located at <*Installed_Directory*>*Cypress**CY3664-EXT enCoRe III DVK*\<*version*>*Drivers*. In Windows Vista/7 machines browse directly after step-6 to matching Driver information file as mentioned below. User need to select the *cyusb3664extdvk.inf* and *cyusb.sys* file combination relevant to Windows OS version to which the USB cable is connected. Following are paths:
   a. WinXP-32-bit:wxp\x86
   b. WinXP-64-bit:wxp\x64
   c. WinVista-32-bit:wlh-vista\x86
   d. WinVista-64-bit:wlh-vista\x64
   e. Win7-32-bit:wlh-ws\x86
   f. Win7-64-bit:wlh-ws\x64
9. Open Device Manager by typing **“devmgmt.msc”** in Windows-->Start Button-->Run. Expand the list of USB controllers and observe Encore III DVK enuemrated and listed as **“Cypress encoreIII DVK ISOC Example (3.4.5.000)”**.
10. The *cyusb3664extdvk.inf*, *cyusb.sys* and *cyusb3664extdvk.cat* are part of signed USB driver packages for enCore III device for all 6 Windows OS platforms-WinXP(32/64), Win Vista(32/64) and Win-7(32/64). Any modification to the *cyusb3664extdvk.inf* file would result in Invalid driver signature. The supplied package should be used without modification only to validate the examples provided with the kit.
11. The *cyusb3664extdvk.inf* contains ISOC example VID/PID-0x04B4/0x07B4. Customers who intend to utilise the existing driver package and develop their own enCore III products should modify the Vendor ID(VID), product ID(PID) and Product Strings contained in the *cyusb3664extdvk.inf* file.Once the *cyusb3664extdvk.inf* is edited the Microsoft digital signature for the kit driver package is no longer valid.
12. To modify the .INF during product development press F8 during reboot select “Disable Driver signature enforcement”. This will enable loading of these unsigned driver package (edited *cyusb3664extdvk.inf* and *cyusb.sys*) in Windows PC.This modification will not propogate till next reboot of Windows PC. Customers can validate their modifications in the .INF temporarily using

this method. After completely validating the driver package customer needs digital signature (get catalog (.cat) files) for the driver through Microsoft WHQL program to avoid driver loading warnings. For more details about the Microsoft WHQL process refer to Application note titled - "Windows Hardware Quality Labs WHQL) Signing Procedure for Customer modified Cypress USB Driver Files".

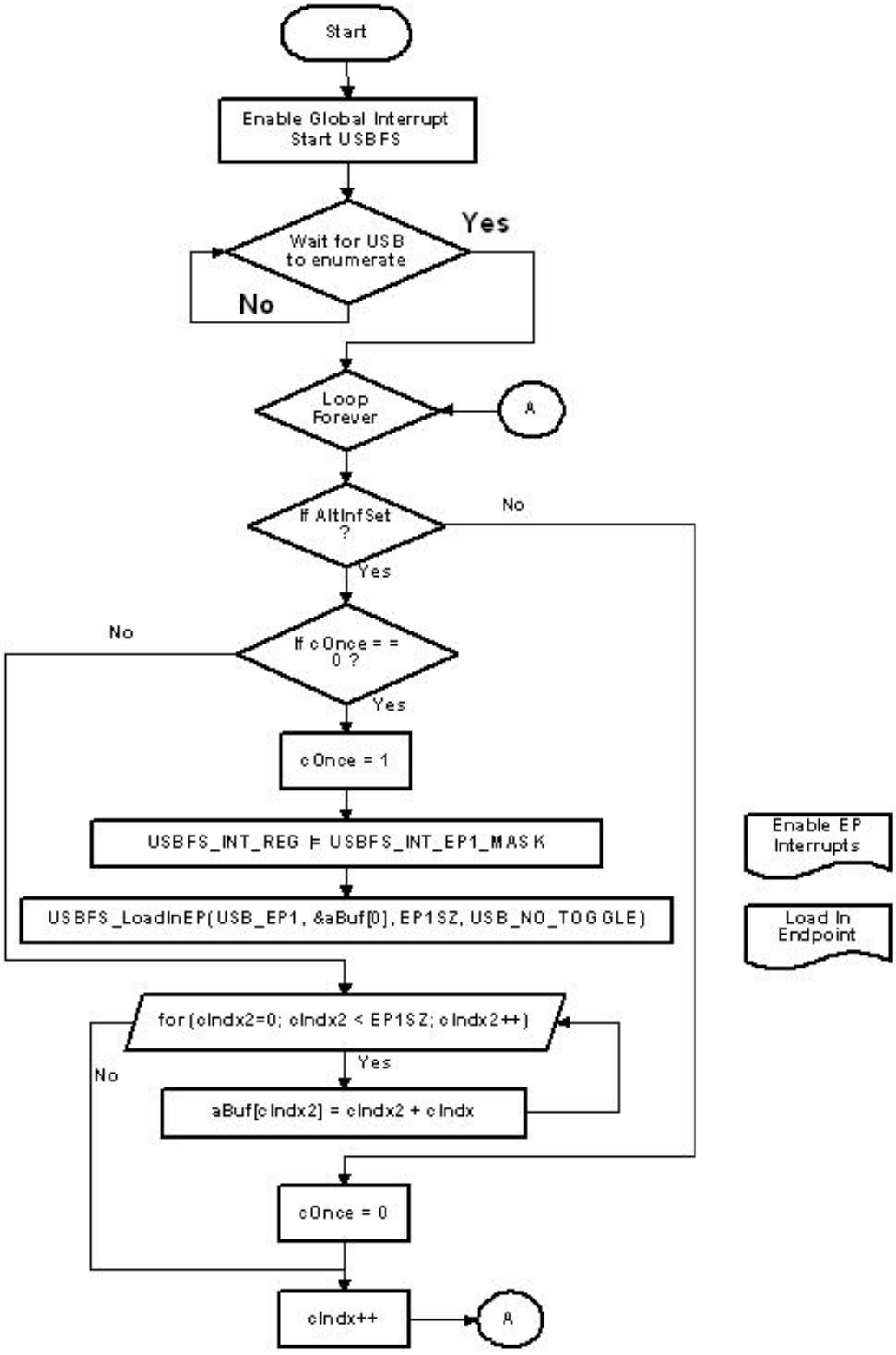
Note: If the driver matching sequence (selecting *cyusb3664extdvk.inf* and *cyusb.sys*) of anyone of examples - Bulk Example and ISOC Example is performed earlier then the remaining example's step 6–9 can be avoided as the *cyusb3664extdvk.inf* file contains VID/PID entries of both these firmware examples.

5.3.2 Device Configuration

Figure 5-4. Device Configuration for ISOC_Example



5.3.3 Firmware Architecture

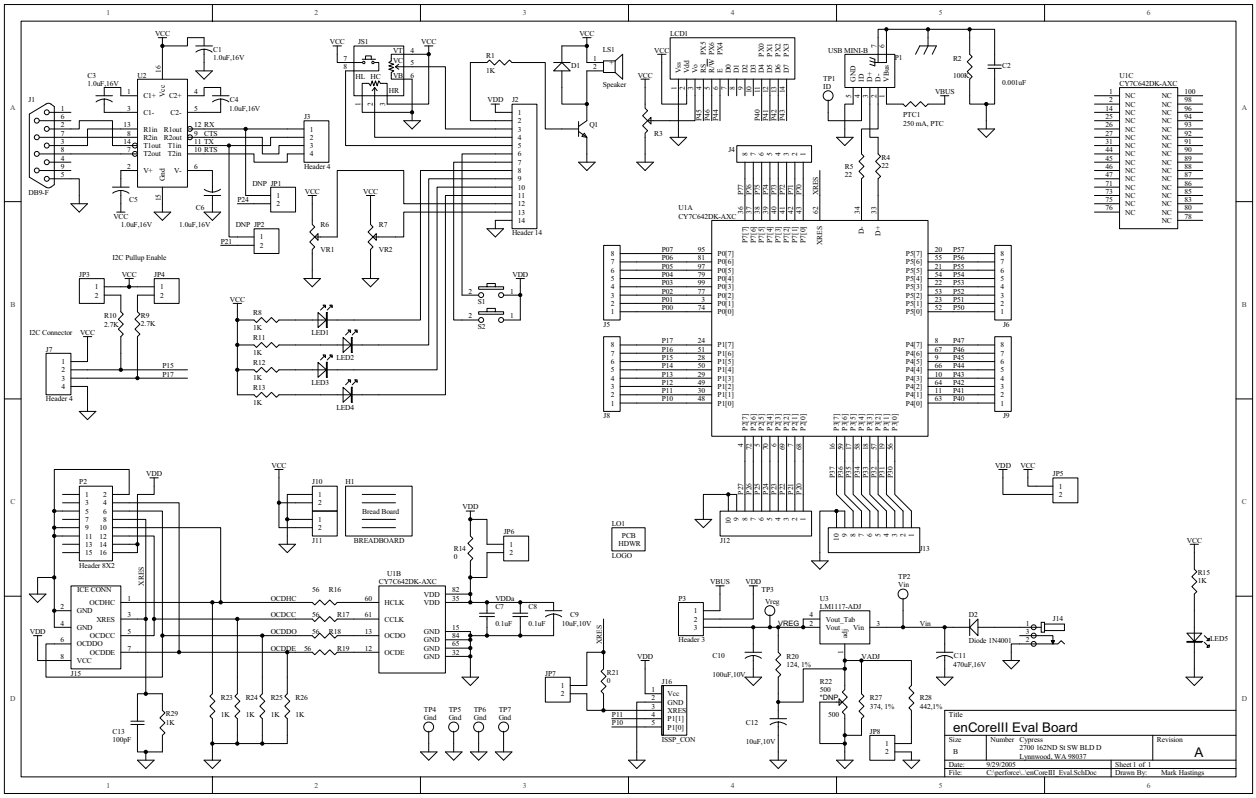


5.3.4 Verify Output

The ISOC Example enumerates on the PC using the *cyusb.sys* driver provided with the enCoRe III DVK. Launch the Streamer.exe application located at <Installed_Directory>\Cypress\ \CY3664-EXT enCoRe III DVK\<version>\software\Streamer.exe.Click on the endpoint column to select the row. Select Alt-1 Setting listed in the drop down menu. This selects the alternative interface containing the isochronous IN endpoint. Enter any sample value for parameter “Packets per Xfer” = 64,128..etc. Also enter "Xfers to Queue" = 4. Click **Start** button on the right side of endpoint available for streaming. There is only one endpoint available in this example for streaming. Observe data being continously streamed and the throughput displayed.

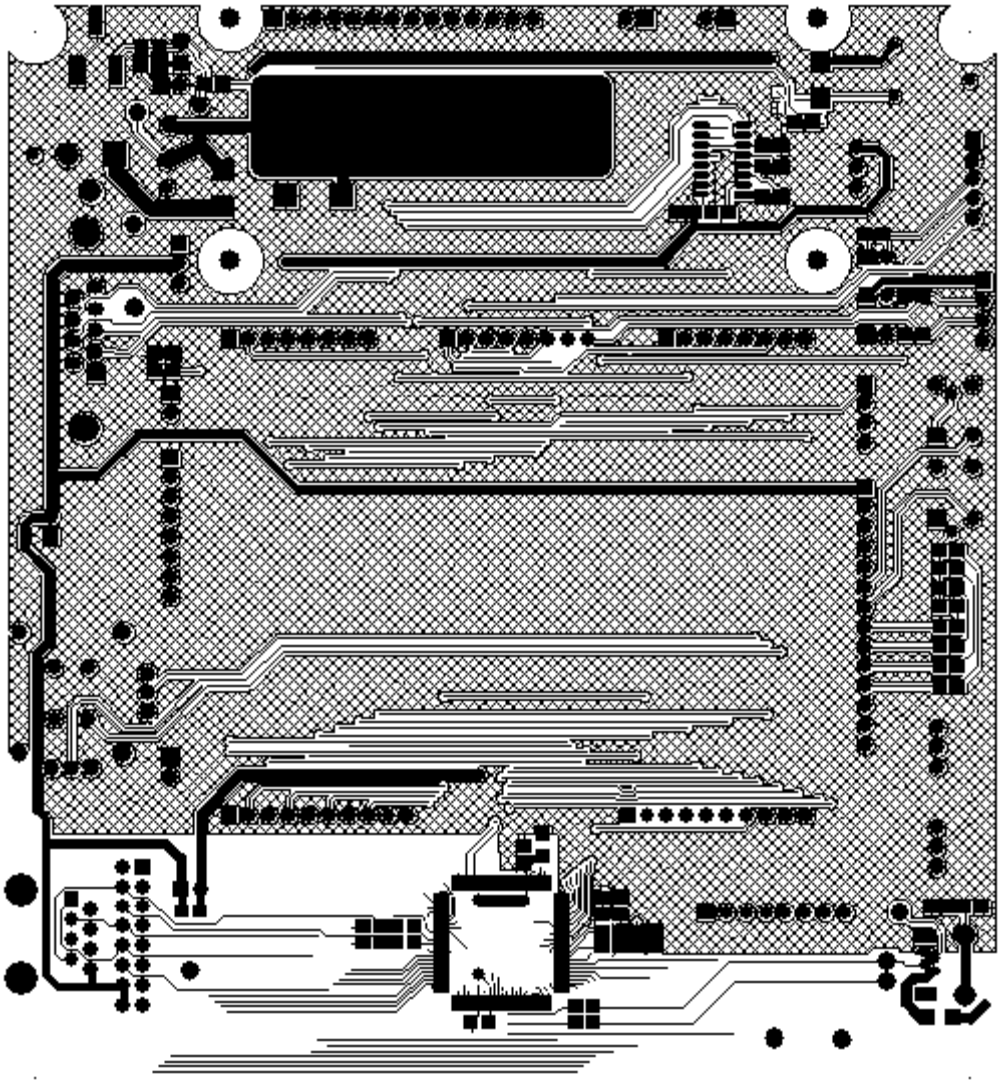
A. Appendix

A.1 Schematic

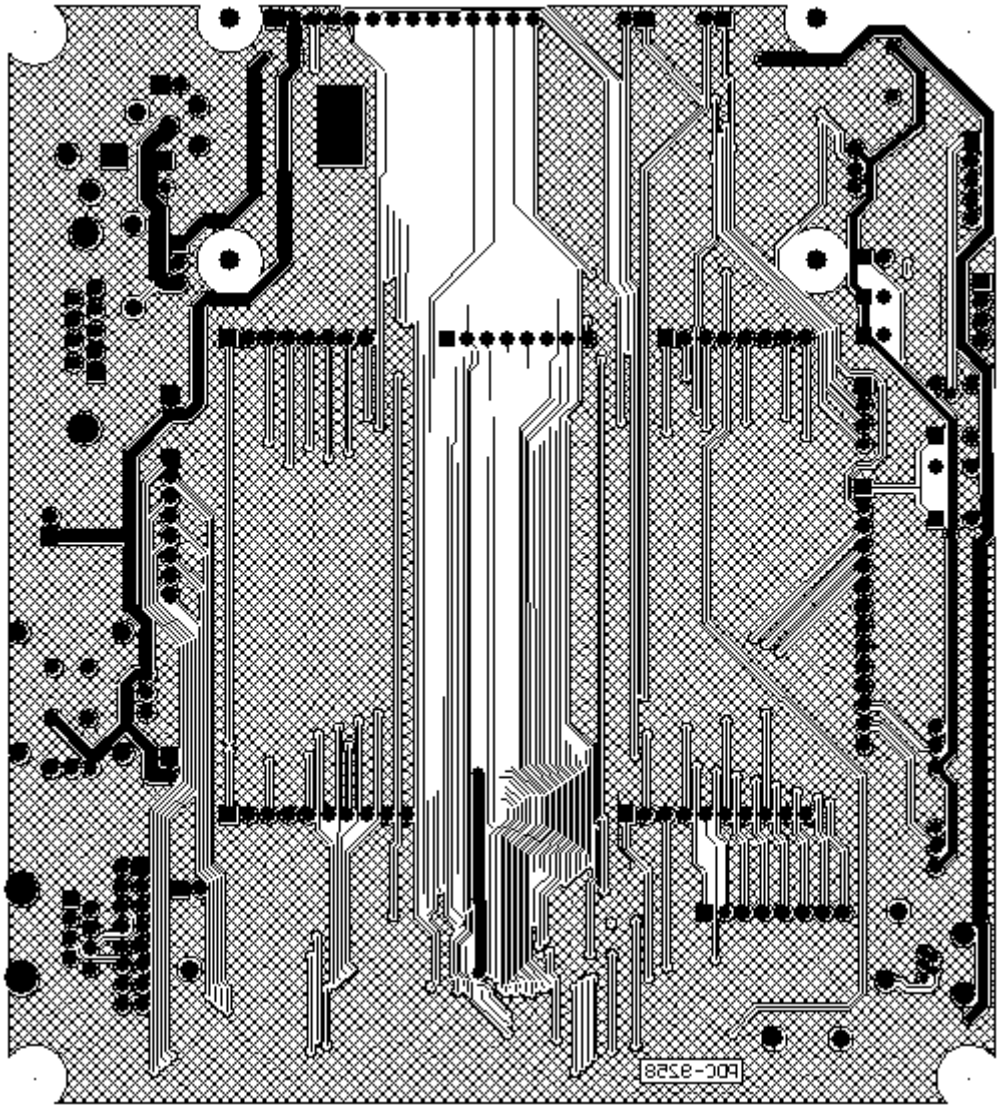


A.2 Board Layout

A.2.1 PDC-9258 Top



A.2.2 PDC-9258 Bottom



A.3 Bill of Materials

No.	Qty.	Description	Designator	Footprint	Manufacturer	Mfr. Part No.
1	5	Capacitor	C1, C3, C4, C5, C6	CC2012-0805	Panasonic	ECJ-2VF1C105Z
2	1	Capacitor	C2	CC2012-0805	Kemet	C0805C102K1RACTU
3	2	Capacitor	C7, C8	CC2012-0805	Panasonic	ECJ-2VF1H104Z
4	2	Capacitor	C9, C12	EIA3216-18	Panasonic	ECS-T0JY106R
5	1	Capacitor	C10	EIA7343-31	EPCOS Inc	B45197A2107K409
6	1	Capacitor	C11	RB3.5X8	Nichicon	UVZ1C471MPD
7	1	Capacitor	C13	CC2012-0805	Kemet	C0805C101K5GACTU
8	2	1 Amp General Purpose Rectifier	D1, D2	SMB Diode	Diodes Inc	S1AB-13
9	1	3M solderless breadboard super strip	H1	BBoard3.25x2.125	na	na
10	1	Female DB-9	J1	DB9F	AMP/Tyco Elec	747844-2
11	1	Header, 14-Pin	J2	HDR1X14	3M/ESD	929850-01-36-10
12	2	Header, 4-Pin	J3, J7	HDR1X4	3M/ESD	929850-01-36-10
13	5	8-Pin Header, Female	J4, J5, J6, J8, J9	HDR8X1	3M/ESD	929850-01-36-10
14	2	Header, 2-Pin, Female	J10, J11	HDR2x1	3M/ESD	929850-01-36-10
15	2	Header, 10-Pin	J12, J13	HDR1X10	3M/ESD	929850-01-36-10
16	1	Power connector	J14	PWRCON	CUI Inc	PJ-102A
17	1	ICE Connection	J15	RJ45	Amp/Tyco	558341-1
18	1	ISSP Conn	J16	ISPCON	Molex/Waldom	22-23-2051
19	8	Header, 2-Pin, Male	JP1, JP2, JP3, JP4, JP5, JP6, JP7, JP8	HDR2x1	Sullins	PZC36SAAN
20	1	Mini Joystick	JS1	CTS_MiniStick_252	CTS Corp	252A103B60NB
21	1	Standard 14 pin LCD interface	LCD1	LCDMODULE-T14	3M/ESD	929850-01-36-10
22	5	Red LED	LED1, LED2, LED3, LED4, LED5	LED0805	Lumex	SML-LXT0805IW-TR
23	1	Silkscreen Cypress Logo	LO1	CYLOGO		na
24	1	Loudspeaker	LS1	CEM-1206S	CUI INc	CEM-1206S
25	1	USB type B connector	P1	USB_MINI-B_TMP	Moles/Waldom	WM5974-ND
26	1	Header, 8-Pin, Dual row	P2	HDR2X8REV	Sullins	PZC36DAAN
27	1	Header, 3-Pin	P3	HDR1X3	Sullins	PZC36SAAN
28	1	250 mA PTC	PTC1	1206	Littlefuse Inc	1206L025YRT
29	1	NPN General Purpose Amplifier	Q1	SOT23-3	Zetex Inc	FMMT491ATA
30	11	Resistor, SMT	R1, R8, R11, R12, R13, R15, R23, R24, R25, R26, R29	R2012-0805	Panasonic	ERJ-6GEYJ102V
31	1	Resistor, SMT	R2	R2012-0805	Panasonic	ERJ-6GEYJ104V
32	3	Potentiometer	R3, R6, R7	POT-3352T	Bourns Inc	3352T-1-103
33	2	Resistor, SMT	R4, R5	R2012-0805	Panasonic	ERJ-6GEYJ220V

No.	Qty.	Description	Designator	Footprint	Manufacturer	Mfr. Part No.
34	2	Resistor, SMT	R9, R10	R2012-0805	Panasonic	ERJ-6GEYJ272V
35	2	Resistor, SMT	R14, R21	R2012-0805	Panasonic	ERJ-6GEY0R00V
36	4	Resistor, SMT	R16, R17, R18, R19	R2012-0805	Panasonic	ERJ-6GEYJ560V
37	1	Resistor, SMT	R20	R2012-0805	Panasonic	ERJ-6ENF1240V
38	1	Potentiometer	R22	POT3361P	Bourns Inc	3361P-1-501G
39	1	Resistor, SMT	R27	R2012-0805	Panasonic	ERJ-6ENF3740V
40	1	Resistor, SMT	R28	R2012-0805	Panasonic	ERJ-6ENF4420V
41	2	Swtich, SPST	S1, S2	SW_SPST6.5/4.5	Omron	B3F-1022
42	7	Simple Test point	TP1, TP2, TP3, TP4, TP5, TP6, TP7	TP64	Keystone, Panasonic	5006
43	1	Radon OCD Part	U1	100TQFP	Cypress	CY7C642DK-AXC
44	1	RS-232 tranceiver (1.0uF Caps) 3.0 - 5.0 Vcc	U2	SO-16	TI	MAX3232IDR
45	1	Voltage Regulator	U3	TO-220	National Semiconductor	LM1117T-ADJ