



Z8F64820100ZCOG

Z8 Encore! XP® F6482 Series Development Kit

User Manual

UM026302-0916

Copyright ©2016 Zilog®, Inc. All rights reserved.
www.zilog.com



Warning: DO NOT USE THIS PRODUCT IN LIFE SUPPORT SYSTEMS.

LIFE SUPPORT POLICY

ZILOG'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF ZILOG CORPORATION.

As used herein

Life support devices or systems are devices which (a) are intended for surgical implant into the body, or (b) support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in a significant injury to the user. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system or to affect its safety or effectiveness.

Document Disclaimer

©2016 Zilog, Inc. All rights reserved. Information in this publication concerning the devices, applications, or technology described is intended to suggest possible uses and may be superseded. ZILOG, INC. DOES NOT ASSUME LIABILITY FOR OR PROVIDE A REPRESENTATION OF ACCURACY OF THE INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED IN THIS DOCUMENT. ZILOG ALSO DOES NOT ASSUME LIABILITY FOR INTELLECTUAL PROPERTY INFRINGEMENT RELATED IN ANY MANNER TO USE OF INFORMATION, DEVICES, OR TECHNOLOGY DESCRIBED HEREIN OR OTHERWISE. The information contained within this document has been verified according to the general principles of electrical and mechanical engineering.

Z8, Z8 Encore!, and Z8 Encore! XP are trademarks or registered trademarks of Zilog, Inc. All other product or service names are the property of their respective owners.

Revision History

Each instance in the Revision History table below reflects a change to this document from its previous version. For more details, click the appropriate links in the table.

Date	Revision Level	Description	Page
Sep 2016	02	Removed RS-232 to 6-pin circuit adapter in the Kit Contents	3,12
Oct 2013	01	Original issue.	n/a

Safeguards

The following precautions must be observed when working with the devices described in this document.



Caution: Always use a grounding strap to prevent damage resulting from electrostatic discharge (ESD).

Table of Contents

Revision History	iii
Safeguards	iv
The Z8 Encore! XP F6482 Series Development Kit	1
Kit Contents	3
Kit Features	3
Board Support Package	4
Supported Operating Systems	4
Download and Install the ZDSII Software and Documentation	4
Connect the F6482 Series Development Board to your PC	6
Start the Z8F6482 Demonstration Program	8
HyperTerminal Configuration	12
F6482 Series Development Board	13
Power Sources	15
Z8F6482 MCU Features	15
SBLCDA4 LCD	17
32Mbit Flash with SPI Bus	20
MIC5318 Low Voltage Drop-Out Regulator	21
RE200B Pyroelectric Sensor	22
TPA301D Mono Audio Power Amplifier	24
CVS-1508 Speaker	25
TEFT4300 PhotoTransistor	26
LM285 Adjustable Micropower Voltage Reference	27
J16 DBG	28
Jumper Settings	29
ZDSII Flash Loader Utility	30
Z8F6482 Sample Projects	30
F6482 Series Development Kit Documentation	31
Appendix A. Schematic Diagrams	32
Appendix B. Installing the USB SmartCable Driver	36
Windows 7 32/64 Systems	36
Windows Vista 32/64 Systems	37
Windows XP-32(SP3) Systems	37
Appendix C. Tera Term Configuration	39
Customer Support	40

List of Figures

Figure 1.	The F6482 Series Development Kit	2
Figure 2.	The Downloadable Software category in the Zilog Store . .	5
Figure 3.	Connecting the 6-Circuit Ribbon Cable to the USB SmartCable	6
Figure 4.	Debug Connector J16	7
Figure 5.	Power Supply Port P1 Connector	8
Figure 6.	Open Project from the ZDSII File Menu	9
Figure 7.	Select the ledblink.zdsproj Project	9
Figure 8.	Select Z8F64820100ZCOG and USB SmartCable	10
Figure 9.	Select Go from the Debug Menu	11
Figure 10.	Console Output Using Hyperterminal (Windows XP) . . .	11
Figure 11.	Console Output Using Tera Term (Windows 7)	12
Figure 12.	The F6482 Series Development Board	14
Figure 13.	F6482 Series Development Kit Block Diagram	15
Figure 14.	Seven-Segment LCD from Softbaugh	18
Figure 15.	LCD1 Pin Configuration	18
Figure 16.	LCD1 on the F6482 Series Development Board	19
Figure 17.	32MBit Flash with SPI Bus	20
Figure 18.	S25FL032A Pin Configuration	20
Figure 19.	U2 on the F6482 Series Development Board	21
Figure 20.	MIC5318 Low Voltage Drop-Out Regulator Pin Assignments	21
Figure 21.	The MIC5318 Low Voltage Drop-Out Regulator Circuit .	22
Figure 22.	The MIC5318 Low Voltage Drop-Out Regulator	22
Figure 23.	RE200B Pyroelectric Sensor Circuit	23
Figure 24.	The RE200B Pyroelectric Sensor	23
Figure 25.	TPA301D Mono Audio Power Amplifier Pin Assignments	24
Figure 26.	TPA301D Mono Audio Power Amplifier Circuit	24

Figure 27. The TPA301D Mono Audio Power Amplifier	25
Figure 28. The CVS-1508 Speaker	25
Figure 29. TEFT4300 PhotoTransistor Circuit	26
Figure 30. The TEFT4300 PhotoTransistor	26
Figure 31. LM285 Adjustable Micropower Voltage Reference	27
Figure 32. LM285 Adjustable Micropower Circuit	27
Figure 33. The LM285 Adjustable Micropower Device	28
Figure 34. The J16 DBG Circuit	28
Figure 35. The J16 DBG Device	29
Figure 36. An Example Flash Loader Screen	30
Figure 37. F6482 Series Development Board Schematic Diagram, #1 of 4	32
Figure 38. F6482 Series Development Board Schematic Diagram, #2 of 4	33
Figure 39. F6482 Series Development Board Schematic Diagram, #3 of 4	34
Figure 40. F6482 Series Development Board Schematic Diagram, #4 of 4	35

List of Tables

Table 1.	Z8F64820100ZCOG Contents	3
Table 2.	USB to TTL Serial Converter Connections	13
Table 3.	LCD1 Pin Map	19
Table 4.	Jumper Settings	29
Table 5.	Z8F6482 MCU Sample Projects	31
Table 6.	F6482 Series Development Kit Documentation	31

The Z8 Encore! XP® F6482 Series Development Kit

This document describes how to set up the F6482 Series Development Kit (Zilog part number Z8F64820100ZCOG) and use it to evaluate your Z8F6482-based designs and applications. The Kit features a development board consisting of four LEDs, three push-buttons, a buzzer/speaker, a 7.1 seven-segment LCD, a pyroelectric sensor, a phototransistor, 32Mbit SPI Flash, port pin headers, and USB and UART ports. The Board features the Z8F6482 MCU in a 80-pin LQFP package, plus a DBG connector to connect the Board to a host development PC using Zilog's USB SmartCable. To learn more about the Z8F6482 MCU, refer to the [F6482 Series Product Specification \(PS0294\)](#).

This document provides instructions for setting up and configuring Z86482 Development Board and includes schematic diagrams and a discussion of Board features and ZDSII.

The first sections of this document guide you through the following tasks:

- [Download and Install the ZDSII Software and Documentation](#) – see page 4
 - Installing the USB SmartCable Driver – see [Appendix B. Installing the USB SmartCable Driver](#) on page 36
- [Connect the F6482 Series Development Board to your PC](#) – see page 6
- [Start the Z8F6482 Demonstration Program](#) – see page 8

Further details, including memory configurations, jumper settings, and a listing of sample projects can be found in the [Z8F6482 Sample Projects](#) section on page 30.

Figure 1 shows an image of the F6482 Series Development Kit.

Z8 Encore! XP® F6482 Series Development Kit User Manual



2



Figure 1. The F6482 Series Development Kit

Kit Contents

Table 1 lists the contents of the F6482 Series Development Kit.

Table 1. Z8F64820100ZCOG Contents

Item	Description	Quantity
1	F6482 Series Development Board	1
2	USB SmartCable	1
3	6-circuit ribbon cable	1
4	A (male) to Mini-B USB cable	1
5	F6482 Series Development Kit Flyer (FL0160)	1

Kit Features

The key features of the F6482 Series Development Kit are:

- F6482 Series Development Board, which includes:
 - Z8F6482 MCU in an 80-pin LQFP package operating at 24MHz with 64KB of internal Flash memory and 3.75KB of internal RAM memory
 - 32Mbit SPI Flash
 - A USB interface that provides:
 - Power to the Board with overcurrent protection
 - Connection to the Z8F6482 MCU's USB port
 - 7.1 segment LCD module
 - Speaker: SP1
 - Pyroelectric sensor
 - Phototransistor
 - UART(s) port J20
 - Test points, headers, and prototype area
 - External source of reference voltage (2.5 V)
 - MCU current measurement test points J5 and J6
 - Power supply level adjustable with potentiometer R13
- USB SmartCable
- ZDSII software, samples, and documentation available free for download
 - Z8F6482 Board Support Package (BSP) source code and sample programs

Board Support Package

The ZDSII software download includes a Board Support Package (BSP) that provides an application programming interface (API) to configure and control select Z8F6482 MCU peripherals. This BSP API is accessible through a static library linked to customer applications and is a blend of macros and C functions that facilitate application development by abstracting direct SFR manipulation from the programmer. Macros provide near-assembly-level access to SFRs without incurring the overhead (i.e., code size and execution time) of C functions for basic operations (e.g., stopping a timer). More complex operations are implemented in C functions, thereby eliminating the customer requirement for recreating code for frequently-used operations (e.g., transmitting a block of data through the UART under DMA control). By using the BSP library, customers can develop applications that access Z8F6482 MCU peripherals with only a few function calls, effectively reducing development effort to a minimum.

The ZDSII software download also includes complete source code to all peripheral devices supported by the BSP API. Advanced programmers can cut and paste code snippets from the BSP into their own applications, or simply study the BSP source code to gain a better understanding of the Z8F6482 Series of MCUs.

To learn more about the BSP API, refer to the [F6482 Series Board Support Package Reference Manual \(RM0064\)](#).

Supported Operating Systems

The F6482 Series Development Board supports the following operating systems:

- Microsoft Windows 8 (32-bit/64-bit)
- Microsoft Windows 7 (32-bit/64-bit)
- Microsoft Windows Vista (32-bit/64-bit)
- Microsoft Windows XP

Download and Install the ZDSII Software and Documentation

Observe the following steps to install your ZDSII software and documentation.

- **Note:** If you have already installed ZDSII – Z8 Encore! <version> and have downloaded the software and documentation by following the procedure on the paper insert in your kit (FL0160), you're ready for [Appendix B. Installing the USB SmartCable Driver](#) on page 36.

1. Prior to connecting the F6482 Series Development Board to your development PC, download ZDSII for Z8 Encore! v5.2.2 (or later) from the Downloadable Software category in the Zilog Store; see Figure 2.

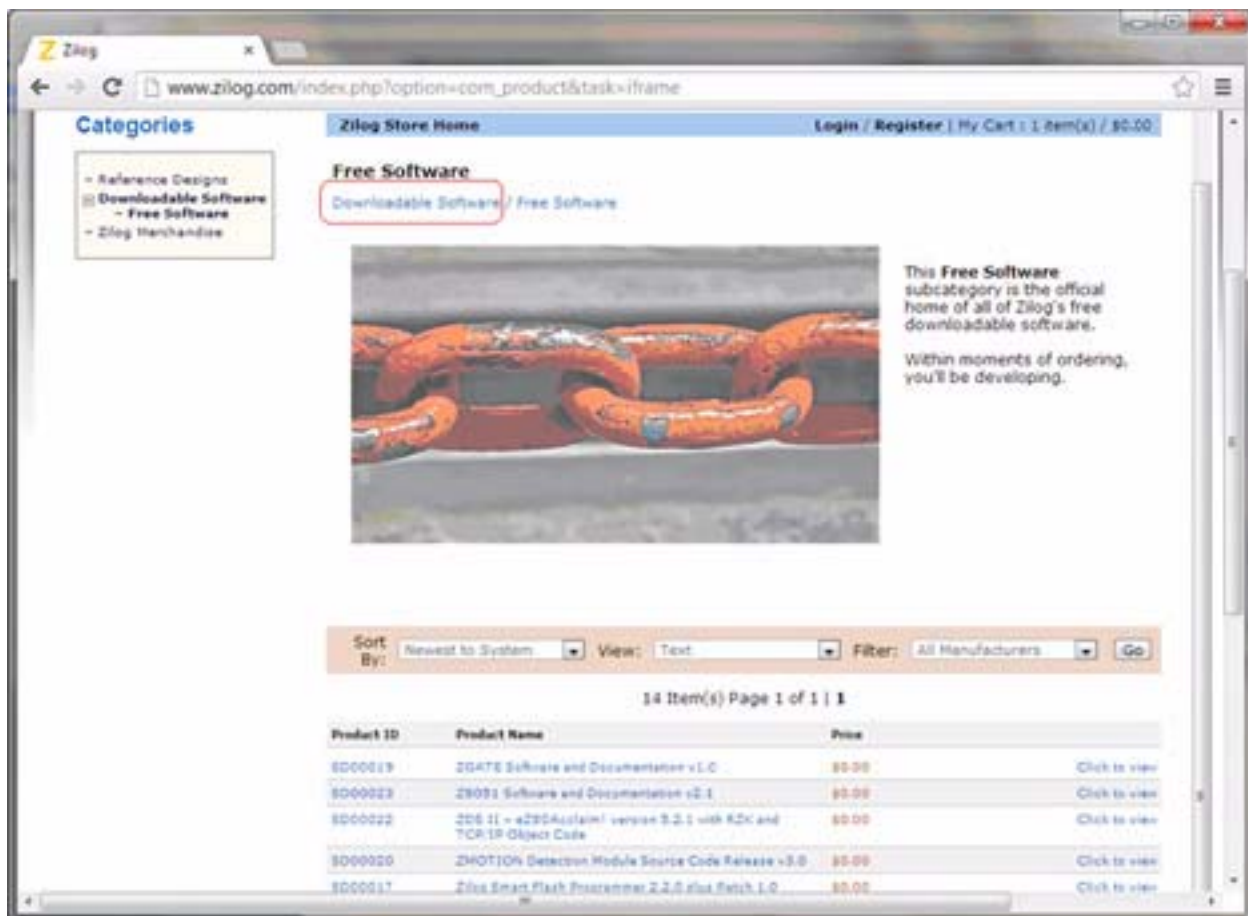


Figure 2. The Downloadable Software category in the Zilog Store

2. When your download is complete, double-click the installation file named ZDS2_Z8Encore!_<version>.exe, and follow the on-screen instructions.

Connect the F6482 Series Development Board to your PC

Observe the following procedure to connect the F6482 Series Development Board to your PC.



Caution: Disconnect or turn off the power to the F6482 Series Development Board before connecting or disconnecting the USB SmartCable.

1. Ensure that the following F6482 Series Development board default jumper settings are configured (see [Table 5](#) on page 31 for reference):

J1 IN

J2 OUT

J9 IN

J19 OUT

J21 1-2 IN

J21 5-6 IN

J23 1-2 IN

2. Connect one end of the 6-circuit ribbon cable provided in your Kit to the USB SmartCable unit, ensuring that the ribbon's male connector is aligned correctly with the female connector on the unit, as indicated by the red stripe in Figure 3.

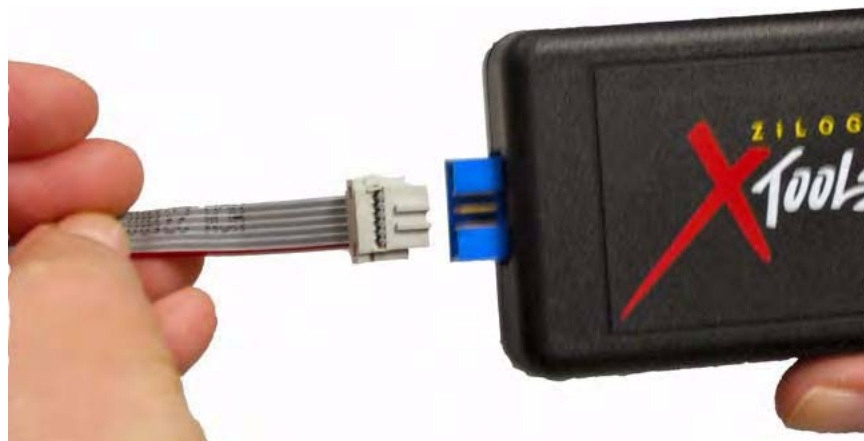


Figure 3. Connecting the 6-Circuit Ribbon Cable to the USB SmartCable

3. Connect the other end of the ribbon cable to Debug Connector J16 on the Development Board. Ensure that Pin 1 on the ribbon cable is aligned with Pin 1 on the target connector, as highlighted in Figure 4.

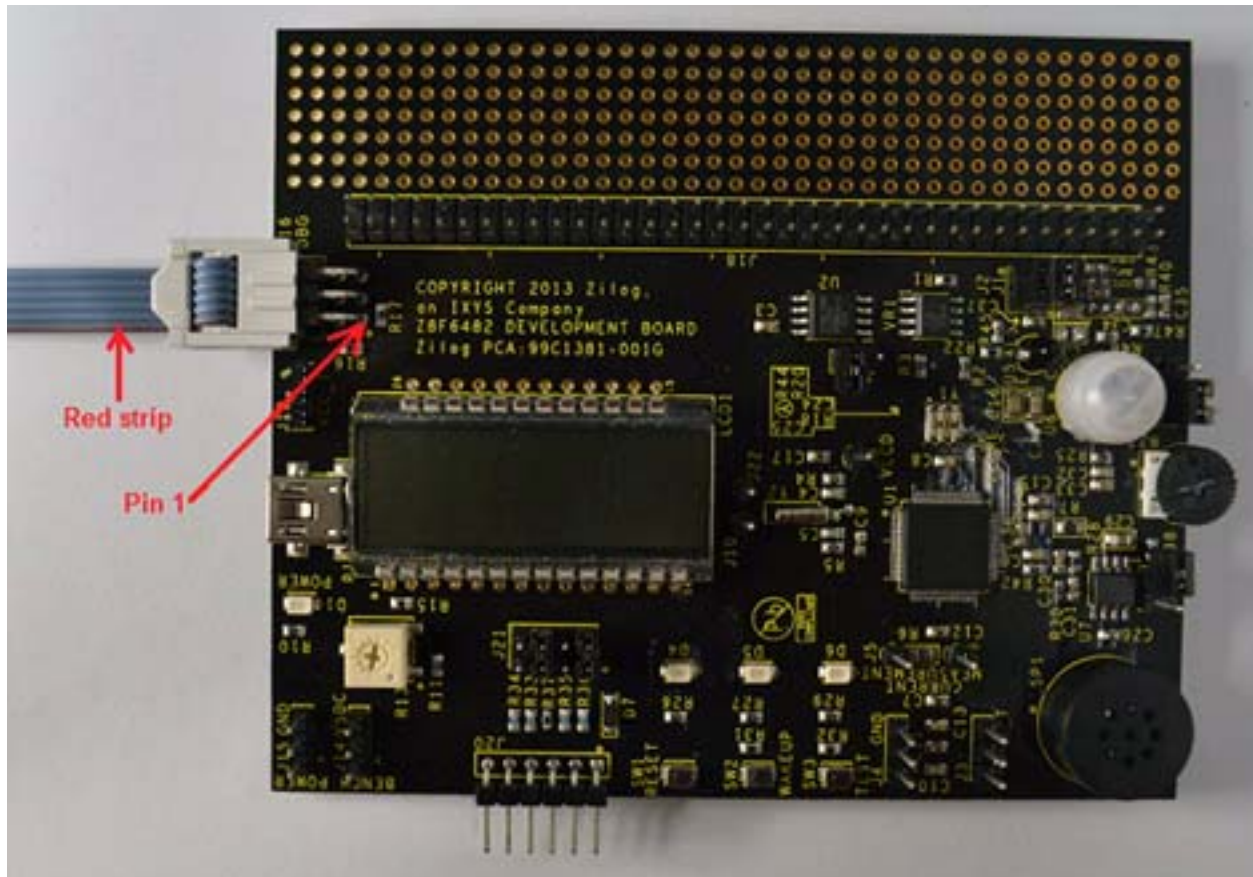


Figure 4. Debug Connector J16

4. With the USB A (male) to Mini-B cable, connect Port P1 on the F6482 Series Development Board to a USB port on the development PC to apply power to the Development Board, as highlighted in Figure 5.

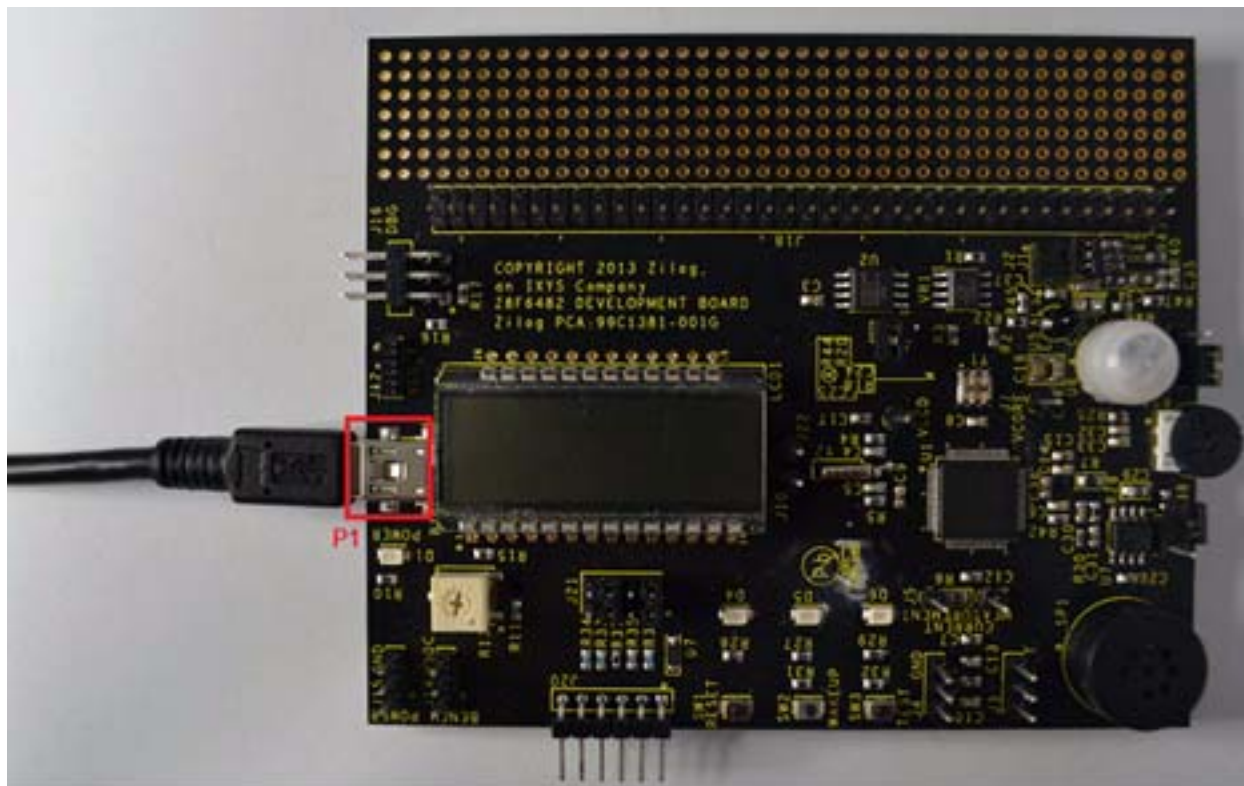


Figure 5. Power Supply Port P1 Connector

Start the Z8F6482 Demonstration Program

The F6482 Series Development Kit includes a sample program that demonstrates a blinking LED application. An optional terminal emulation program and a 3rd Party USB to TTL Serial converter (not supplied) maybe used and must be configured for 57600-8-N-1 with no flow control, as described in the [HyperTerminal Configuration](#) section on page 12. To get started with the Z8F6482 demonstration, observe the following procedure.

1. Launch ZDSII by navigating from the Windows Start menu to **Programs** → **Zilog ZDSII – Z8 Encore! <version>** → **ZDSII – Z8 Encore! <version>**.
2. From the File menu in ZDSII, select **Open Project** as shown in Figure 6, and navigate via the following filepath.

<ZDS Install>\samples\XP_F6482\XP_F6482_LedBlink_C

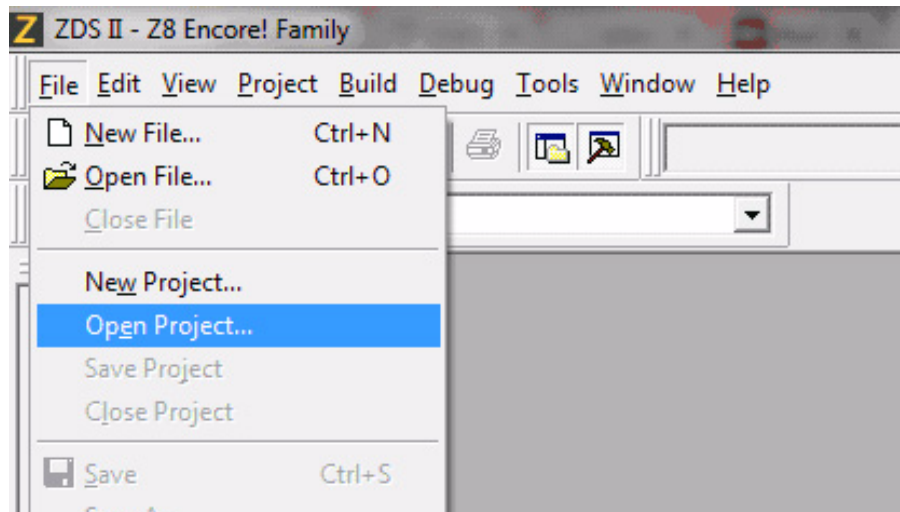


Figure 6. Open Project from the ZDSII File Menu

3. Select the `ledblink.zdsproj` project from within the `XP_F6482_ledBlink_C` folder and click **Open**, as shown in Figure 7. A list of source files will appear in the workspace panel.

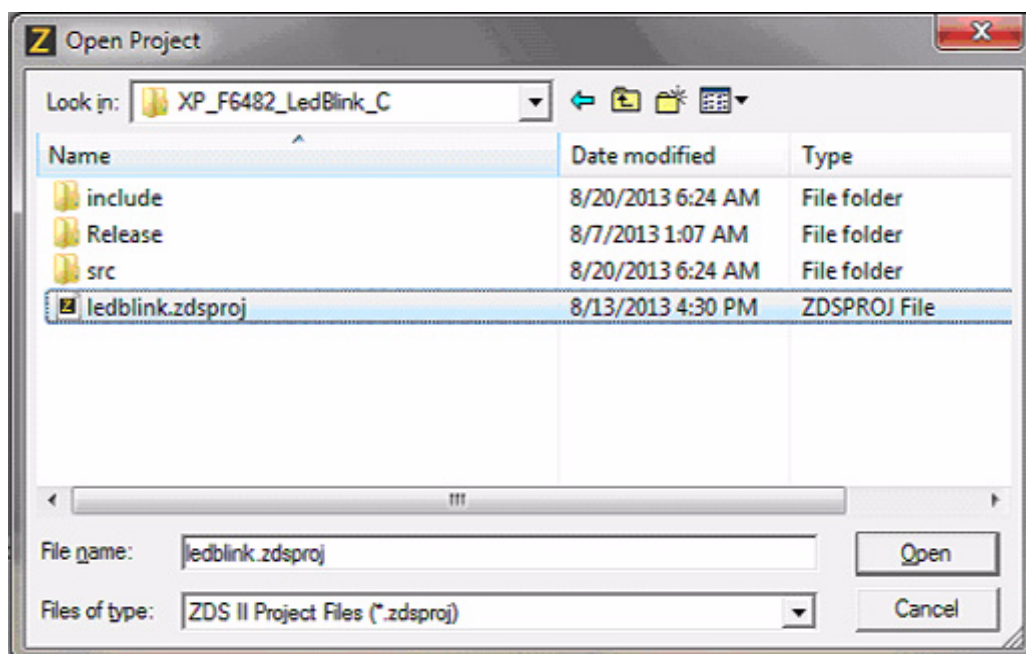


Figure 7. Select the ledblink.zdsproj Project

4. From the **Build** menu, select **Set Active Configuration** to open the Select Configuration dialog box.
5. Select **Debug**, then click **OK** to close the Select Configuration dialog box.
6. From the Project menu in ZDSII, select **Settings** to open the Project Settings dialog box. In the Project Settings dialog box, click the **Debugger** tab.
7. On the Debugger page, select **Z8F64820100ZCOG** from the Target list, then select **USB SmartCable** from the Debug Tool drop-down menu, as shown in Figure 8.

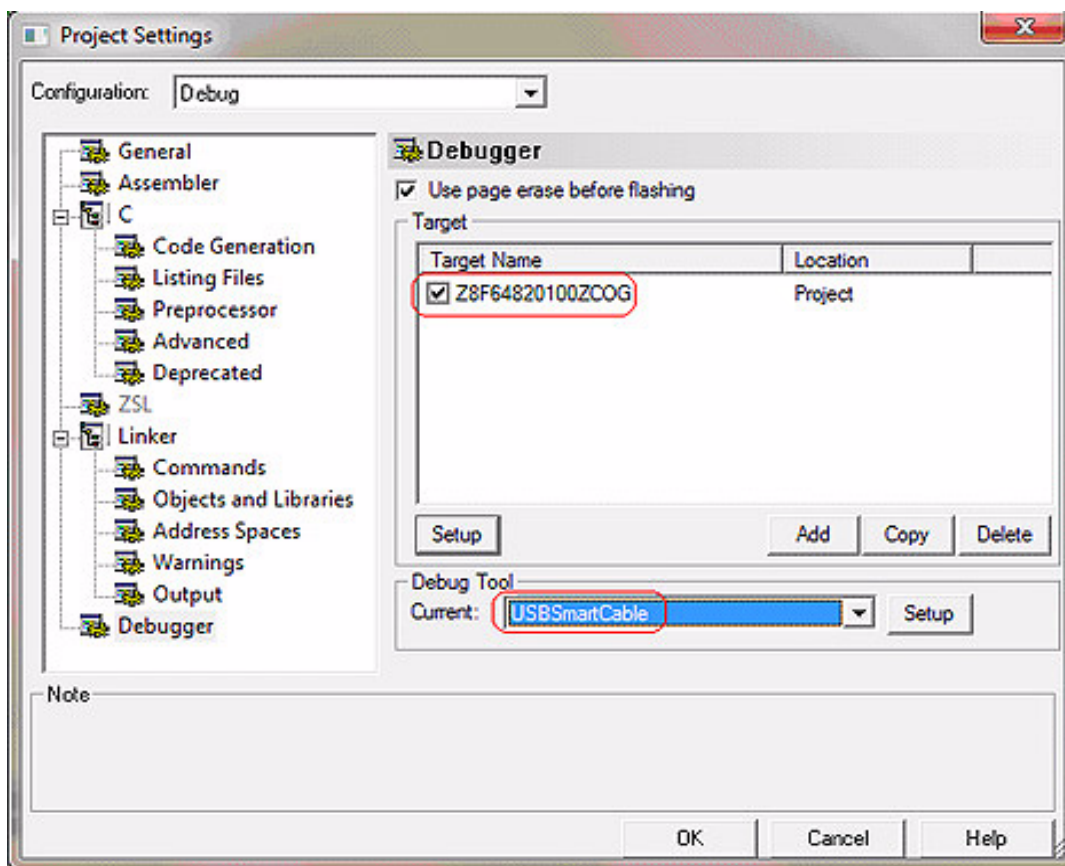


Figure 8. Select Z8F64820100ZCOG and USB SmartCable

8. Click **OK** to close the Project Settings dialog box.
9. If you are prompted to rebuild any affected files, click **Yes**. Otherwise, choose **Build** from the menu bar, then click **Rebuild All**.
10. To run the application, select **Go** from the Debug menu, as indicated in Figure 9. As a result, LEDs D4, D5, and D6 will blink in sequence.

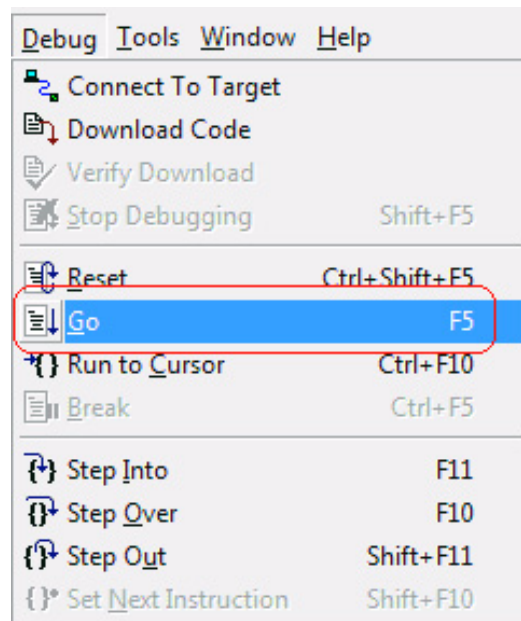


Figure 9. Select Go from the Debug Menu

11. After the application has started, console output should be visible in the terminal emulation program, as shown in Figures 10 and 11.

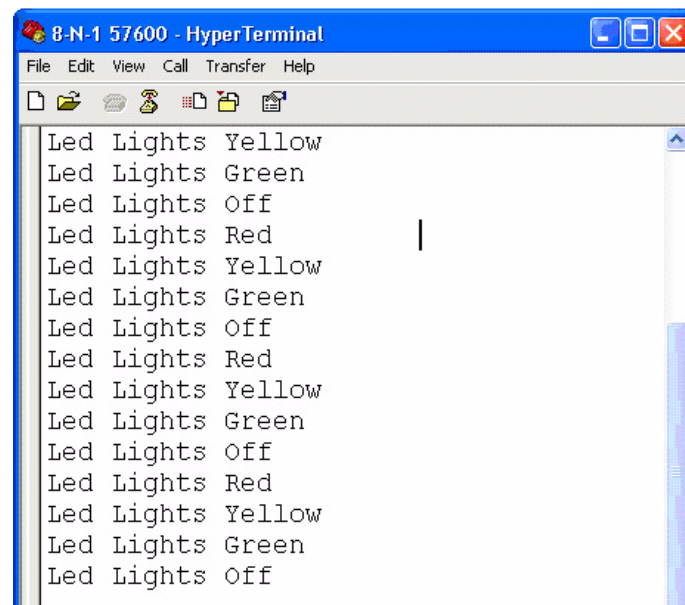


Figure 10. Console Output Using Hyperterminal (Windows XP)

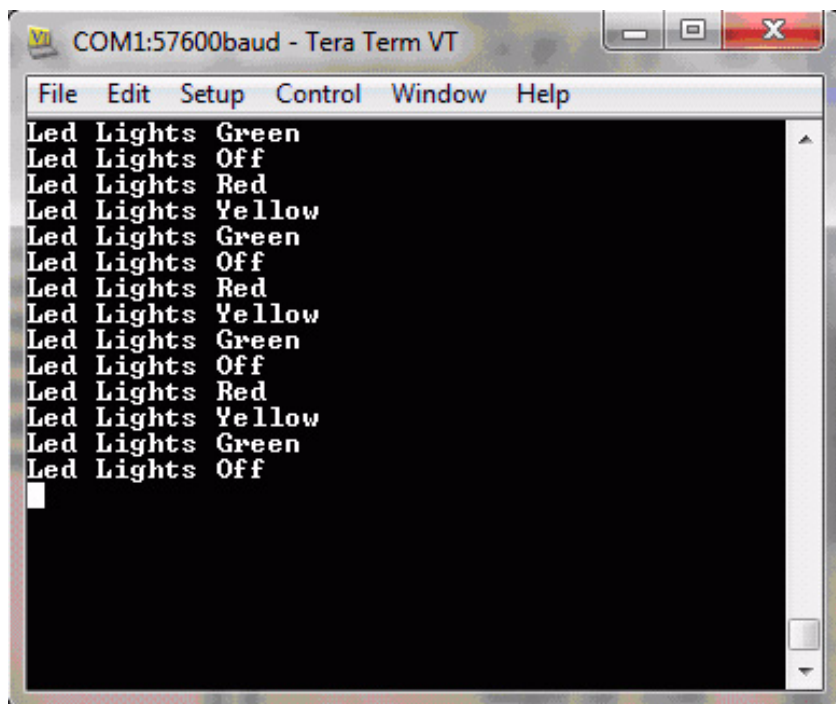


Figure 11. Console Output Using Tera Term (Windows 7)

HyperTerminal Configuration

A communications program such as HyperTerminal can be used on Windows XP systems to view messages from the F6482 Series Development Board. The following procedure examines how to configure HyperTerminal for the Z8F6482 demonstration project.

► **Note:** The HyperTerminal application is not available in Windows Vista and Windows 7 systems. If you are using either of these operating systems, consider using/installing different communication software such as Tera Term; see [Appendix C. Tera Term Configuration](#) on page 39.

1. Connect a 3rd Party USB to TTL Serial converter to J20 on the Development Board using the connections shown in Table 2.

Table 2. USB to TTL Serial Converter Connections

Z8F6482 Board	USB to TTL Serial Converter
J20-1 VCC	5V
J20-4 RXD	TXD
J20-5 TXD	RXD
J20-6 GND	GND

2. Connect the other end to your PC.
3. In HyperTerminal, choose **File Properties**; then, if your PC has a serial interface, select the COM port assigned to your serial port. If you do not have a serial port on your PC, use a USB-to-serial adapter (not included in the kit).
4. From the Windows Control Panel, navigate via the **Device Manager** to **Ports (COM & LPT)** to determine the correct COM port assigned to your adapter. Configure this port to reflect the following settings:
 - 57600 bps
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
5. In HyperTerminal, click the **Call** button to connect to the F6482 Series Development Board. When connected, you should be able to see the demonstration program menu shown in Figure 11.

F6482 Series Development Board

The purpose of the F6482 Series Development Kit is to provide a set of hardware and software tools for applications based on the Z8F6482 microcontroller. An image of the F6482 Series Development Board is shown in Figure 12; a block diagram is shown in Figure 13.

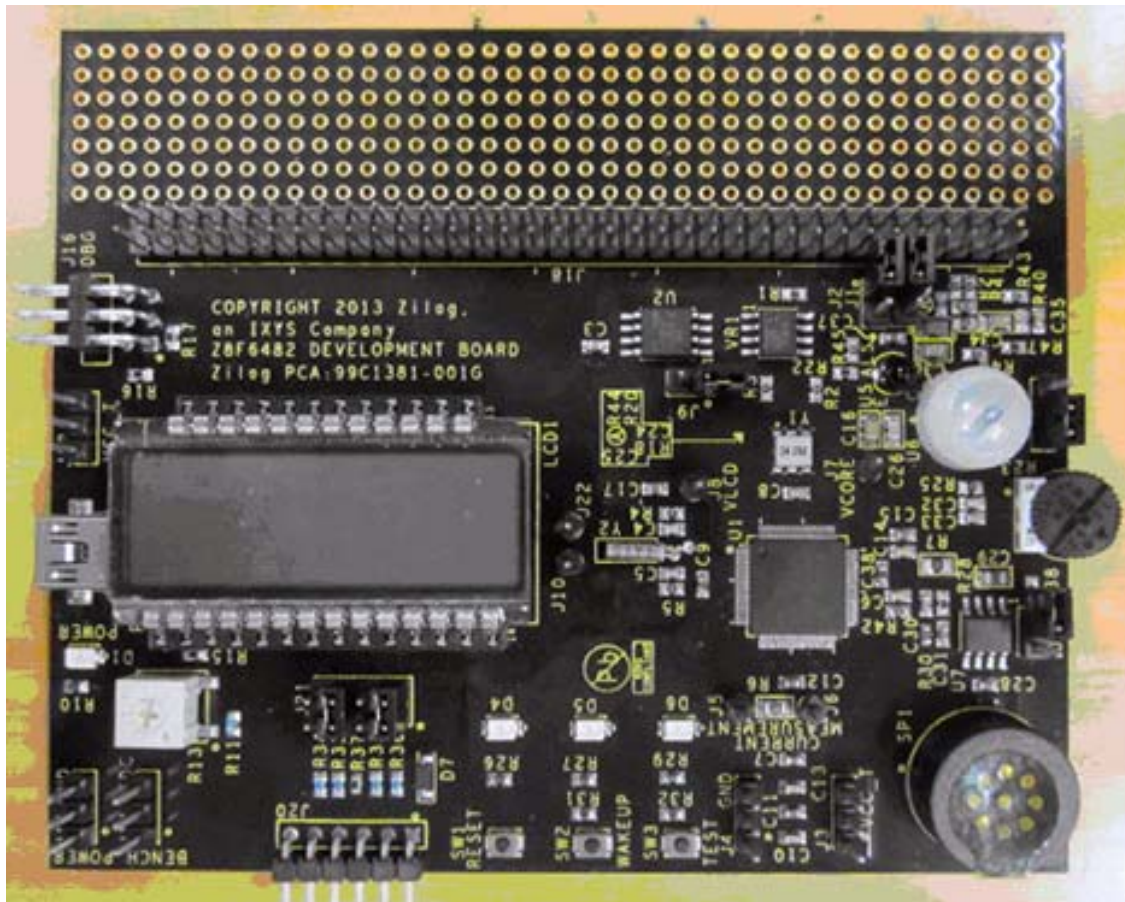


Figure 12. The F6482 Series Development Board

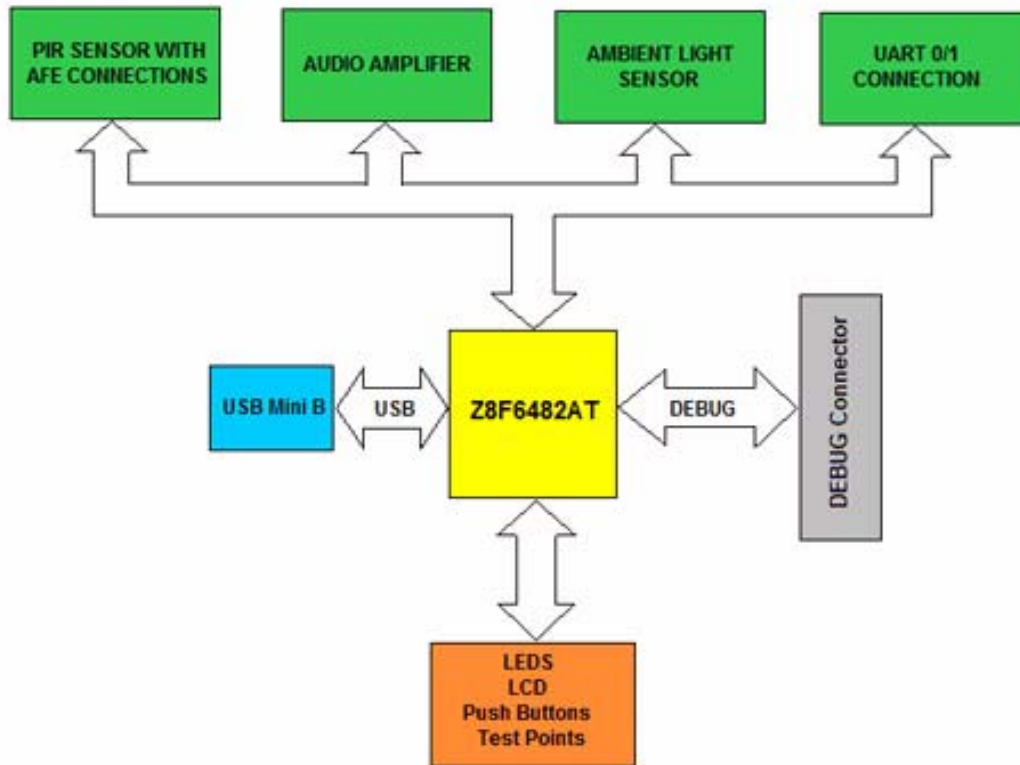


Figure 13. F6482 Series Development Kit Block Diagram

Power Sources

The Board features two power source options. It can be powered by connecting Port P1 (USB Mini-B) to the USB port of the development PC using the USB A-to-USB Mini-B cable included in the Kit. The other option is to connect an external 5VDC source with at least 300–400mA of current to J14 (5VDC) and J15 (GND).

- USB power at P1
- External power across J14 and J15

Z8F6482 MCU Features

The Z8F6482 MCU is a member of Zilog's Z8 Encore! XP Family of microcontroller products. Key features include:

- 24MHz eZ8 CPU core

- 16KB, 32KB, 60KB or 64KB Flash memory with in-circuit programming capability
- 2KB or 3.75KB internal RAM
- 128B Non-Volatile Data Storage (NVDS)
- Up to 17-channel, 12-bit Analog-to-Digital Converter (ADC) that can be configured for internal or external voltage reference and single-ended or differential inputs
- 12-bit Digital-to-Analog Converter (DAC)
- Integrated LCD driver with blinking and contrast control for up to 96 segments
- 128-bit Advanced Encryption Standard (AES) encryption/decryption hardware accelerator according to FIPS PUB 197
- Real-Time Clock (RTC) supporting both Counter and Clock modes
- On-chip temperature sensor
- Two on-chip analog comparators (32-pin and 64-pin with LCD packages contain only one)
- Two on-chip, low-power operational amplifiers (32-pin and 64-pin with LCD packages contain only one)
- 8-channel event system provides communication between peripherals for autonomous triggering
- Full-speed Universal Serial Bus (USB2.0) device supporting eight endpoints with integrated USB PHY (not available on 64-pin package with LCD)
- Two full-duplex 9-bit UART ports with the support of Local Interconnect Network (LIN) and Digital Addressable Lighting Interface (DALI) protocols (32-pin and 64-pin with LCD packages contain only one)
- RS-485 Multidrop Mode up to 250Kbit/sec (DMX support) integrated with UARTs
- Two Enhanced Serial Peripheral Interface (ESPI) controllers (32-pin and 44-pin packages contain only one)
- I²C controller which supports Master/Slave modes
- Four-channel DMA controller
- Three enhanced 16-bit timers with Capture, Compare, and PWM capability
- Two additional basic 16-bit timers with interrupts (shared as UART Baud Rate Generator)
- 16-bit multi-channel timer which supports four Capture/Compare/PWM modules (not available on 32-pin and 64-pin with LCD packages)
- Watchdog Timer (WDT)
- 26 to 67 General-Purpose Input/Output (GPIO) pins, depending upon package

- Up to 41 interrupt sources with up to 30 interrupt vectors
- On-Chip Debugger (OCD)
- Power-On Reset (POR) and Voltage Brown-Out (VBO) protection
- Built-in Low-Voltage Detection (LVD) with programmable voltage threshold
- Low Frequency Crystal Oscillator (LFXO) operating at 32.768kHz with low power consumption
- Internal clock sources and clock multiplication, including an Internal Precision Oscillator (IPO), Digitally Controlled Oscillator (DCO), Watchdog Timer Oscillator (WTO), Frequency Locked Loop (FLL) and Phase Locked Loop (PLL)
- High Frequency Crystal Oscillator (HFXO) operating in the 1–25MHz range
- Wide 1.8V–3.6V operating voltage range
- 32-, 44-, 64-, and 80-pin packages
- –40°C to +85°C (extended) operating temperature range

To learn more, refer to the [F6482 Series Product Specification \(PS0294\)](#).

SBLCDA4 LCD

The seven-segment LCD panel used at LCD1 on the F6482 Series Development Board is an SBLCDA4 device manufactured by Softbaugh. The display footprint and pin labels for this device are shown in Figure 14.

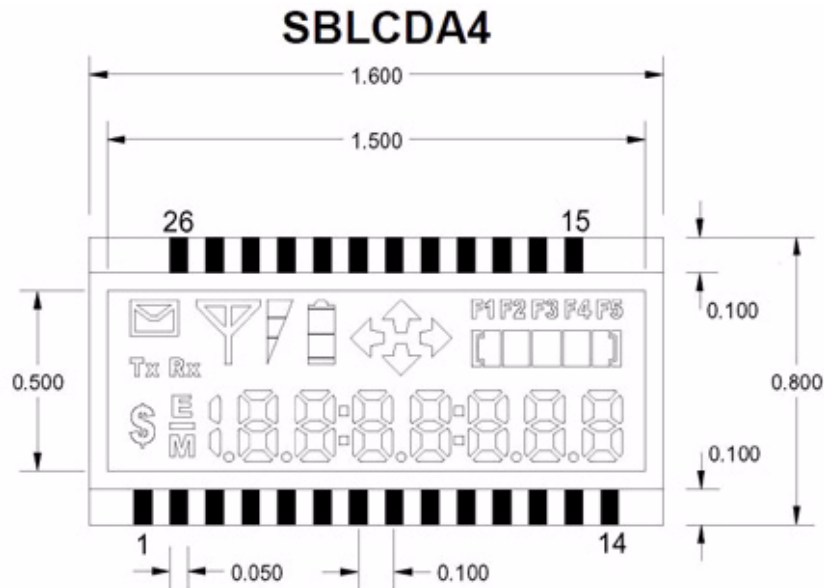


Figure 14. Seven-Segment LCD from Softbaugh

The pin configuration of LCD1, as connected to the Z8F6482 MCU's pins, is shown in Figure 15.

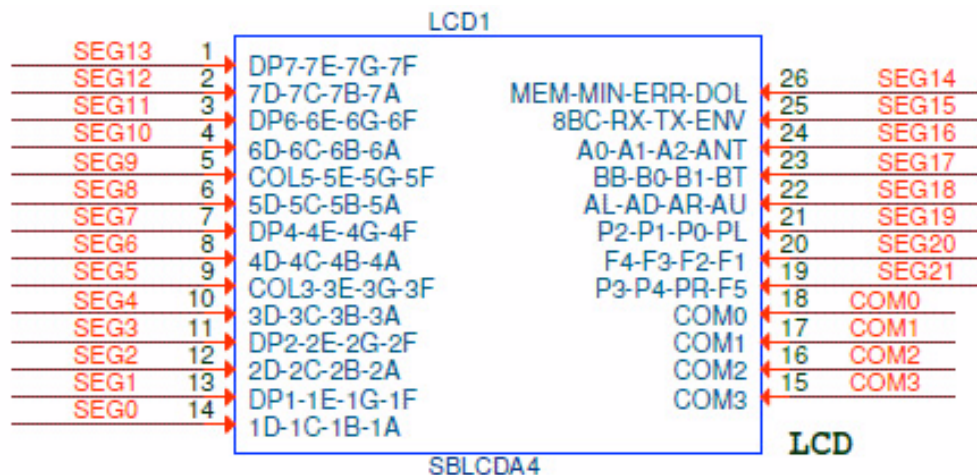


Figure 15. LCD1 Pin Configuration

Figure 16 shows an image of the SBLCDA4 LCD device mounted on the F6482 Series Development Board.

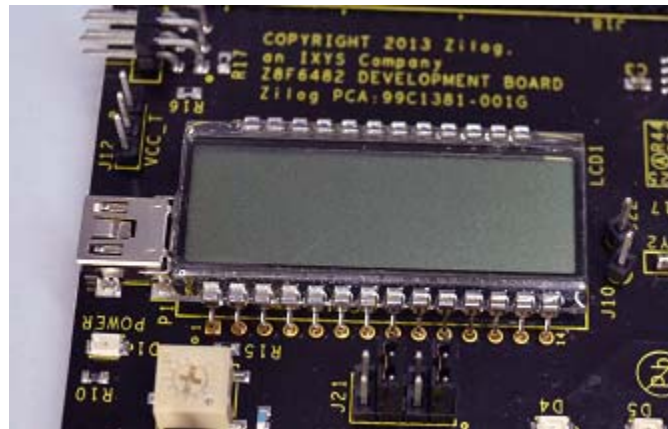


Figure 16. LCD1 on the F6482 Series Development Board

Table 3 presents a pin map of the LCD1 device.

Table 3. LCD1 Pin Map

Pin	COM3	COM2	COM1	COM0	COM3	COM2	COM1	COM0	Pin
1	DP7	7E	7G	7F	X	X	X	X	X
2	7D	7C	7B	7A	MEM	MINUS	ERR	DOL	26
3	DP6	6E	6G	6F	8BC	RX	TX	ENV	25
4	6D	6C	6B	6A	A0	A1	A2	ANT	24
5	COL5	5E	5G	5F	BB	B0	B1	BT	23
6	5D	5C	5B	5A	AL	AD	AR	AU	22
7	DP4	4E	4G	4F	P2	P1	P0	PL	21
8	4D	4C	4B	4A	F4	F3	F2	F1	20
9	COL3	3E	3G	3F	P3	P4	PR	F5	19
10	3D	3C	3B	3A				COM0	18
11	DP2	2E	2G	2F			COM1		17
12	2D	2C	2B	2A		COM2			16
13	DP1	1E	1G	1F	COM3				15
14	1D	1C	1B	1A	X	X	X	X	X

To learn more about this SBLCDA4 LCD device, visit http://www.softbaugh.com/downloads/SBLCDA4_Specification.pdf.

32Mbit Flash with SPI Bus

The Spansion S25FL032A 32Mbit device, shown in Figure 17, is a 3.0V (2.7V to 3.6V) single-power-supply Flash memory device that accepts data written to a serial input (SI) and outputs data on a serial output (SO). Upon installing the ZDSII software, refer to the following sample project folders for source code which can be used to read and program SPI Flash memory:

```
..\BSP\Samples\AES\EncryptingDataLogger
..\BSP\Samples\UART_SPI_M2M
```



Figure 17. 32MBit Flash with SPI Bus

The S25FL032A device can be found on the F6482 Series Development Board at location U2. The pin configuration of this device is shown in Figure 18; a close-up image is shown in Figure 19.

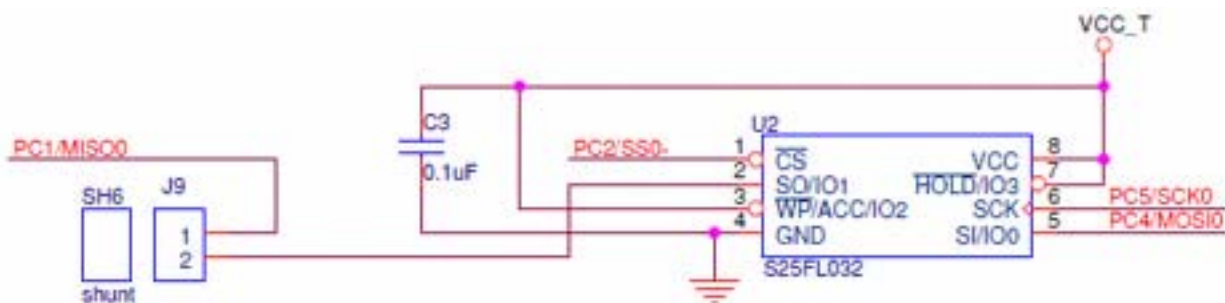


Figure 18. S25FL032A Pin Configuration



Figure 19. U2 on the F6482 Series Development Board

To learn more about this S25FL032A device, visit http://html.alldatasheet.net/html-pdf/465962/SPANSION/S25FL032P_12/3944/10/S25FL032P_12.html.

MIC5318 Low Voltage Drop-Out Regulator

The on-board regulator is the MIC5318 Low Voltage Drop-Out Regulator. This device regulates the 5V input voltage to the MCU's VCC_T, which can be adjusted from 1.8V to 3.6V using the R13 trim pot. Pin assignments, a circuit diagram, and an image of the MIC5318 device are shown in Figures 20 through 22.

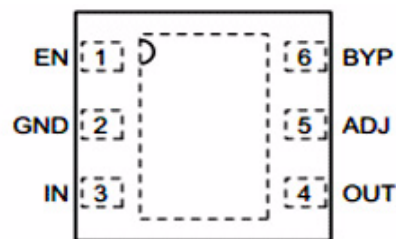


Figure 20. MIC5318 Low Voltage Drop-Out Regulator Pin Assignments

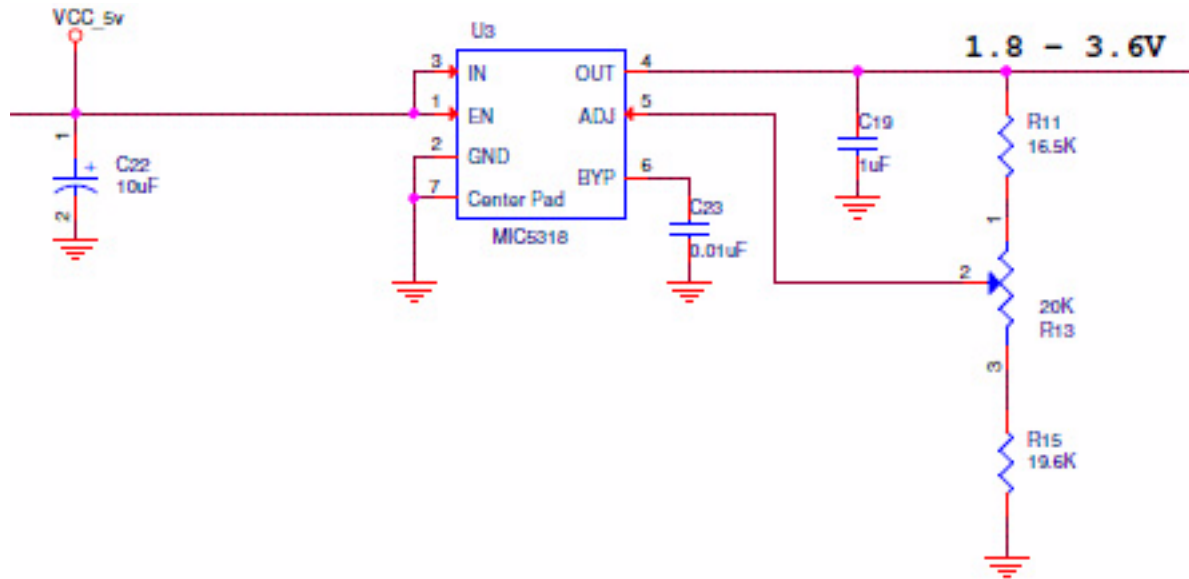


Figure 21. The MIC5318 Low Voltage Drop-Out Regulator Circuit

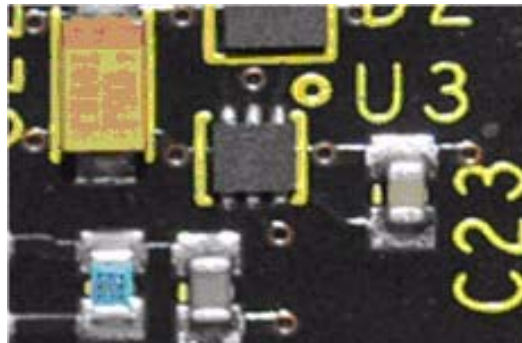


Figure 22. The MIC5318 Low Voltage Drop-Out Regulator

RE200B Pyroelectric Sensor

The RE200B pyroelectric sensor is made of a crystalline material that generates a surface electric charge when exposed to heat in the form of infrared radiation. A circuit diagram and an image of the RE200B device are shown in Figures 23 and 24.

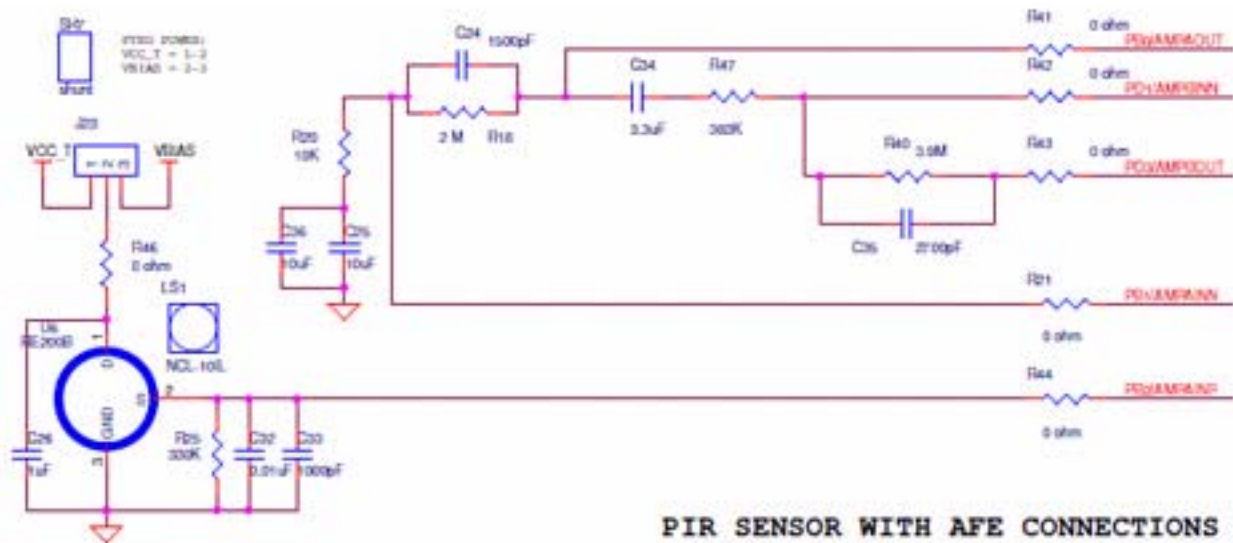


Figure 23. RE200B Pyroelectric Sensor Circuit

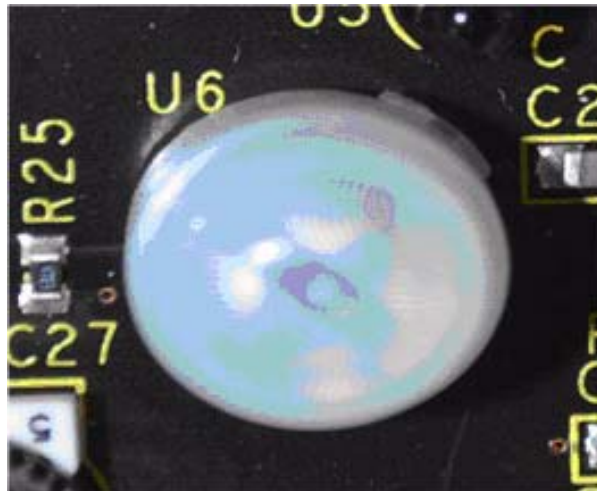


Figure 24. The RE200B Pyroelectric Sensor

To learn more about this RE200B device, visit <http://www.bucek.name/pdf/re200b.pdf>.

TPA301D Mono Audio Power Amplifier

The TPA301 is a bridge-tied load (BTL) audio power amplifier developed especially for low-voltage applications in which internal speakers are required. Pin assignments, a circuit diagram, and an image of the TPA301D device are shown in Figures 25 through 27.

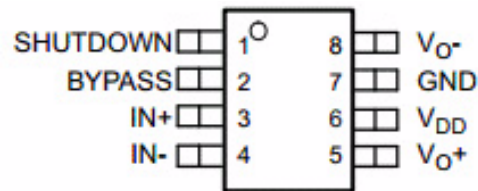


Figure 25. TPA301D Mono Audio Power Amplifier Pin Assignments

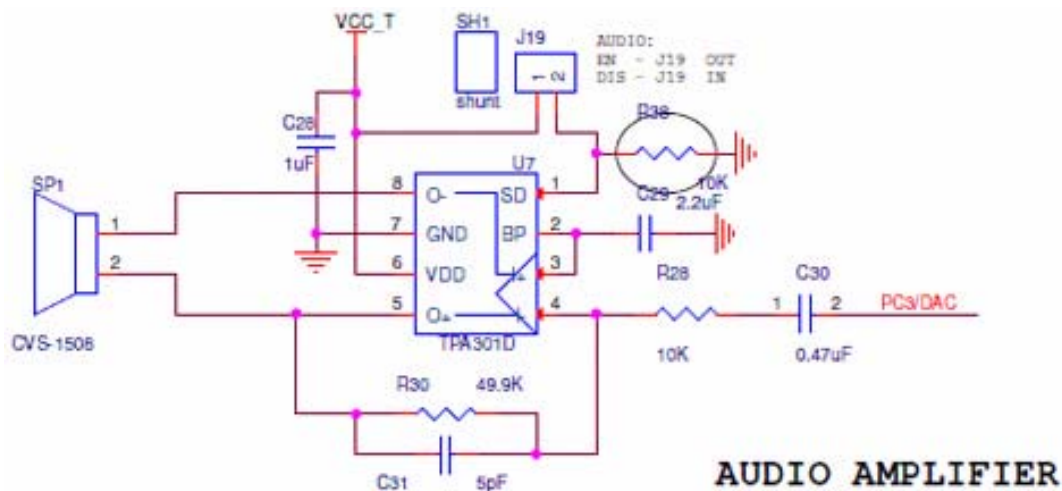


Figure 26. TPA301D Mono Audio Power Amplifier Circuit

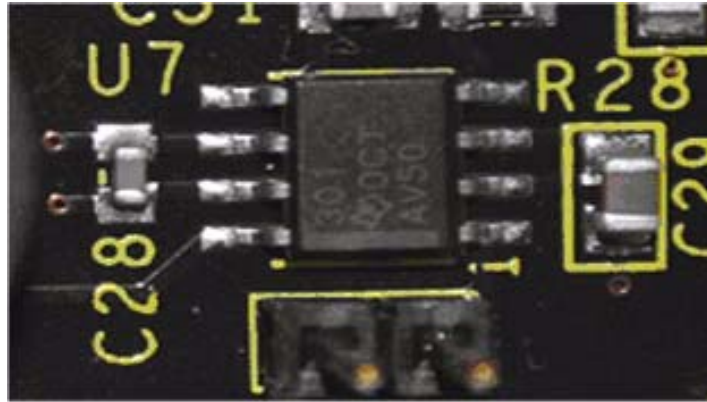


Figure 27. The TPA301D Mono Audio Power Amplifier

To learn more about this TPA301 device, visit <http://www.ti.com/lit/ds/symlink/tpa301.pdf>

CVS-1508 Speaker

The CVS-1508 low-profile speaker manufactured by CUI Inc. consists of a 0.3 W, 8 Ω neodymium magnet and mylar cone housed in a 15 mm round frame. An image of the CVS-1508 device is shown in Figure 28.

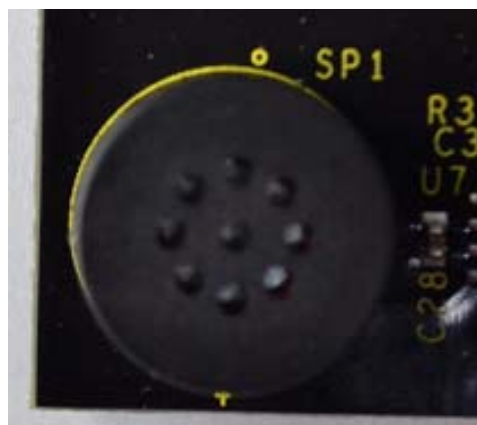


Figure 28. The CVS-1508 Speaker

To learn more about this CVS-1508 device, visit <http://www.cui.com/product/resource/cvs-1508.pdf>.

TEFT4300 PhotoTransistor

The TEFT4300 phototransistor is a silicon NPN ambient light sensor with a high radiant sensitivity and a daylight blocking filter. A circuit diagram and an image of the TEFT4300 device are shown in Figures 29 and 30.

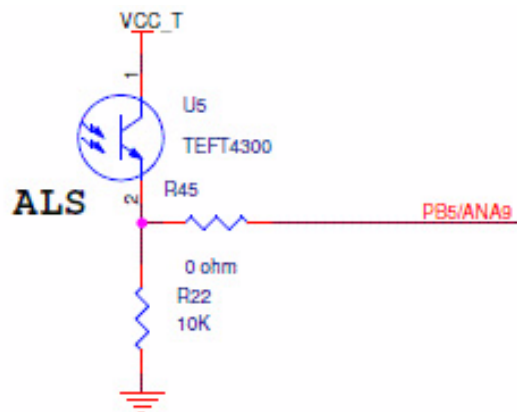


Figure 29. TEFT4300 PhotoTransistor Circuit



Figure 30. The TEFT4300 PhotoTransistor

To learn more about this TEFT4300 device, visit <http://www.vishay.com/docs/81549/teft4300.pdf>.

LM285 Adjustable Micropower Voltage Reference

The 3-terminal LM285 micropower circuit manufactured by Texas Instruments is an adjustable band-gap voltage reference diode which can be found on the F6482 Development Board at location VR1. Voltage references, a circuit diagram, and an image of the LM285 device are shown in Figures 31 through 33.

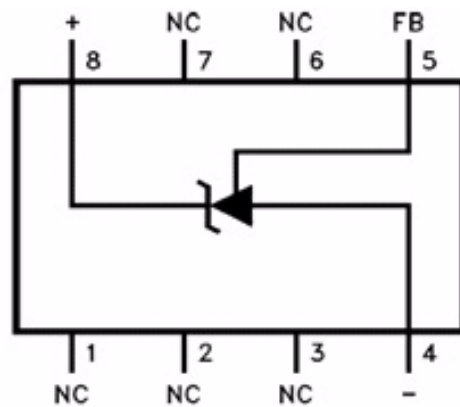


Figure 31. LM285 Adjustable Micropower Voltage Reference

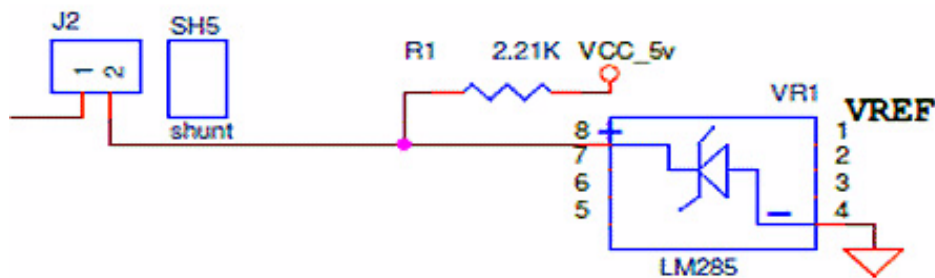


Figure 32. LM285 Adjustable Micropower Circuit

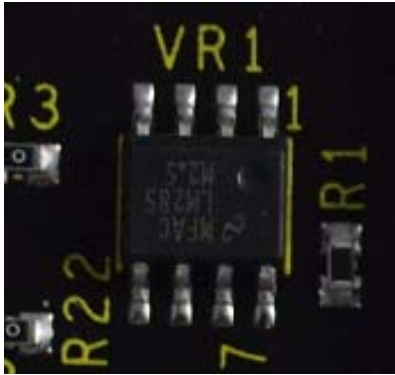


Figure 33. The LM285 Adjustable Micropower Device

J16 DBG

The J16 DBG device connects the F6482 Series Development Kit to the PC through a debug tool. A circuit diagram and an image of the J16 DBG device are shown in Figures 34 and 35.

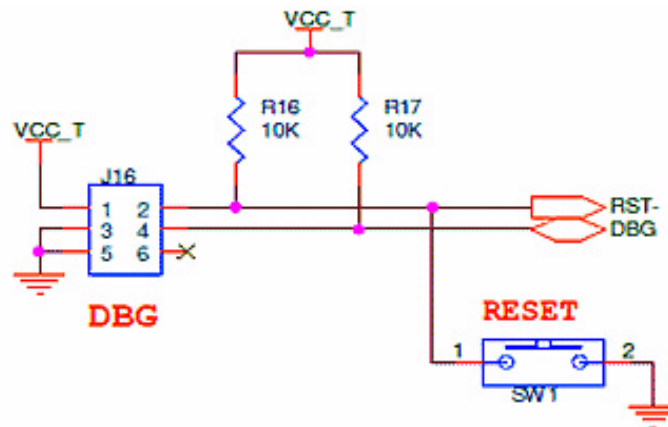


Figure 34. The J16 DBG Circuit

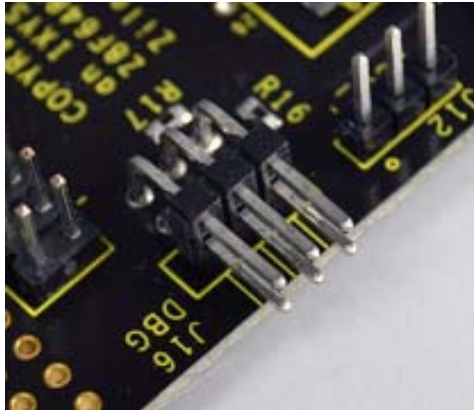


Figure 35. The J16 DBG Device

Jumper Settings

The functions of the F6482 Development Board's six jumpers are described in Table 4.

Table 4. Jumper Settings

Jumper Name	Description	State	Function	Factory Setting
J1	VREF–	IN	GND is a source for VREF–	IN
		OUT	External source could be connected, or PB3 can be used as a GPIO.	
J2	VREF+	IN	On-board source, 2.5V, is VREF+.	OUT
		OUT	Pin PB4 can be used as a GPIO, or the internal source of VREF can be output here.	
J9	SPI Flash Select	IN	On-board SPI Flash can be used.	IN
		OUT	PC1 can be used as a GPIO.	
J19	Audio Disable	IN	On-board audio amplifier and speaker are disabled.	OUT
		OUT	On-board audio amplifier and speaker are enabled.	
J21	UART Configuration	1–2, 5–6	UART0 enabled.	IN
		3–4, 7–8	UART1 enabled.	
J23	PIR Sensor Power Source	1–2	VCC_T	IN
		2–3	VBIAS	

ZDSII Flash Loader Utility

A Flash Loader utility can be accessed from the Tools menu in Zilog Developer Studio. With the Flash Loader, you can program the Z8F6482 MCU directly using the hex code generated from the ZDSII IDE; Figure 36 presents an example.

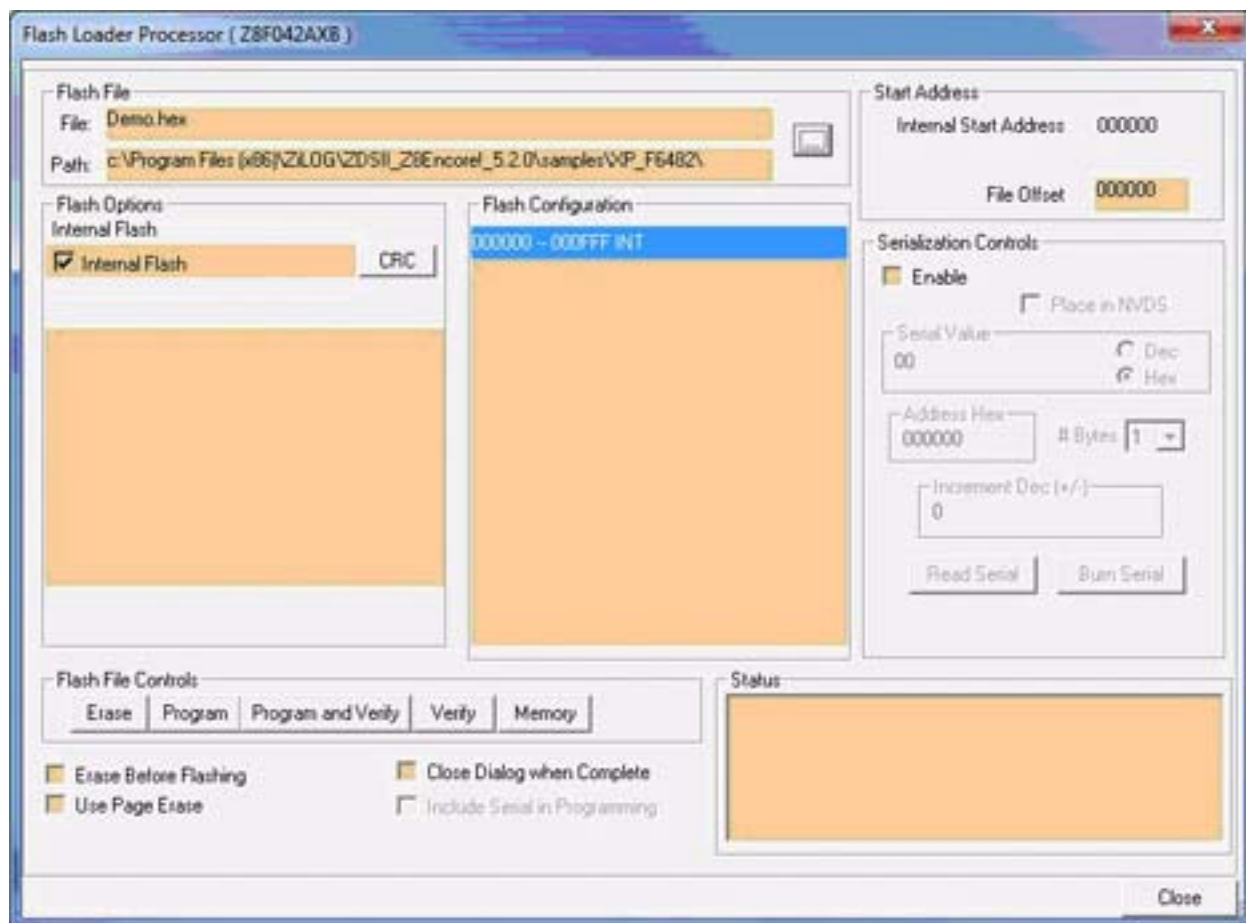


Figure 36. An Example Flash Loader Screen

Z8F6482 Sample Projects

A number of sample projects are included with the ZDSII – Z8 Encore! v5.2.2 software, which can be downloaded for free from the [Zilog Store](#). These sample projects will be accessible upon installation of ZDSII – Z8 Encore! v5.2.2; their locations are listed in Table 4.

Table 5. Z8F6482 MCU Sample Projects

Description	Installed Location
ledblink	\samples\XP_F6482\XP_F6482_LedBlink_C \samples\XP_F6482\XP_F6482_LedBlink_asm
Buzzer	\samples\XP_F6482\XP_F6482_Buzzer
Demo	\samples\XP_F6482\XP_F6482_Demo
LCD	\samples\XP_F6482\XP_F6482_LCD
LightSensing	\samples\XP_F6482\XP_F6482_LightSensing
Motion	\samples\XP_F6482\XP_F6482_Motion
SMR_Demo	\samples\XP_F6482\XP_F6482_SMR_Demo

F6482 Series Development Kit Documentation

The following documents are each associated to the F6482 Series of MCUs, and are available free for download from the Zilog website.

Table 6. F6482 Series Development Kit Documentation

Description	Document ID	Installed Location
F6482 Series Product Specification	PS0294	Documentation\Chip_Documentation
F6482 Series Product Brief	PB0246	Documentation\Chip_Documentation
eZ8 CPU User Manual	UM0128	Documentation\Chip_Documentation
Z8 Encore! XP F6482 Series API Programmer's Reference Manual	RM0064	Documentation\Technical_Articles
Z8 Encore! Design for Debug	TN0036	Documentation\Technical_Articles
F6482 Series Development Kit User Manual	UM0263	Documentation\Tools_Documentation
Ethernet SmartCable User Manual	UM0207	Documentation\Tools_Documentation
Opto-Isolated USB SmartCable User Manual	UM0195	Documentation\Tools_Documentation
USB SmartCable User Manual	UM0181	Documentation\Tools_Documentation

Appendix A. Schematic Diagrams

Figures 37 through 40 present schematic diagrams of the F6482 Series Development Board.

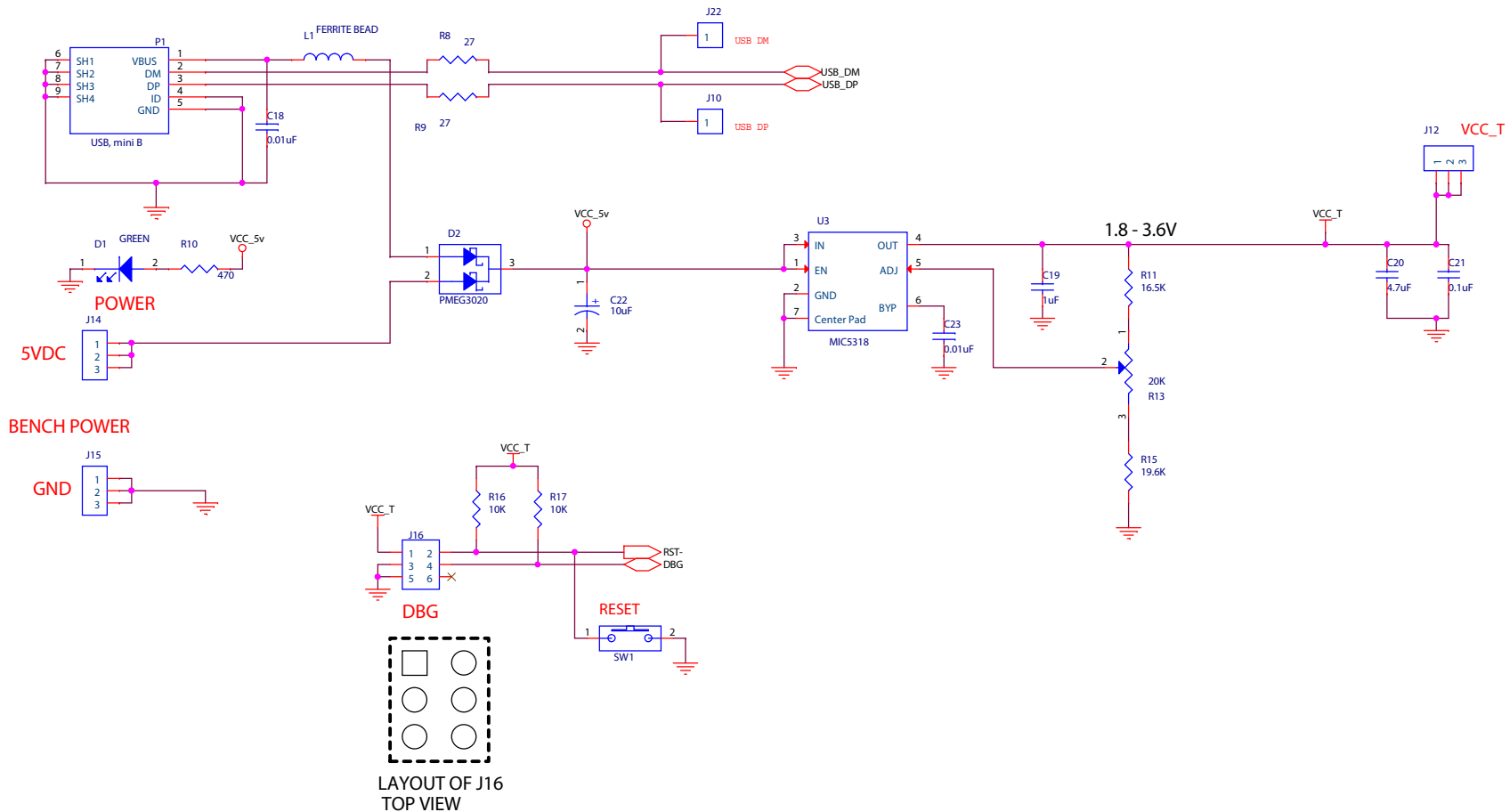


Figure 37. F6482 Series Development Board Schematic Diagram, #1 of 4

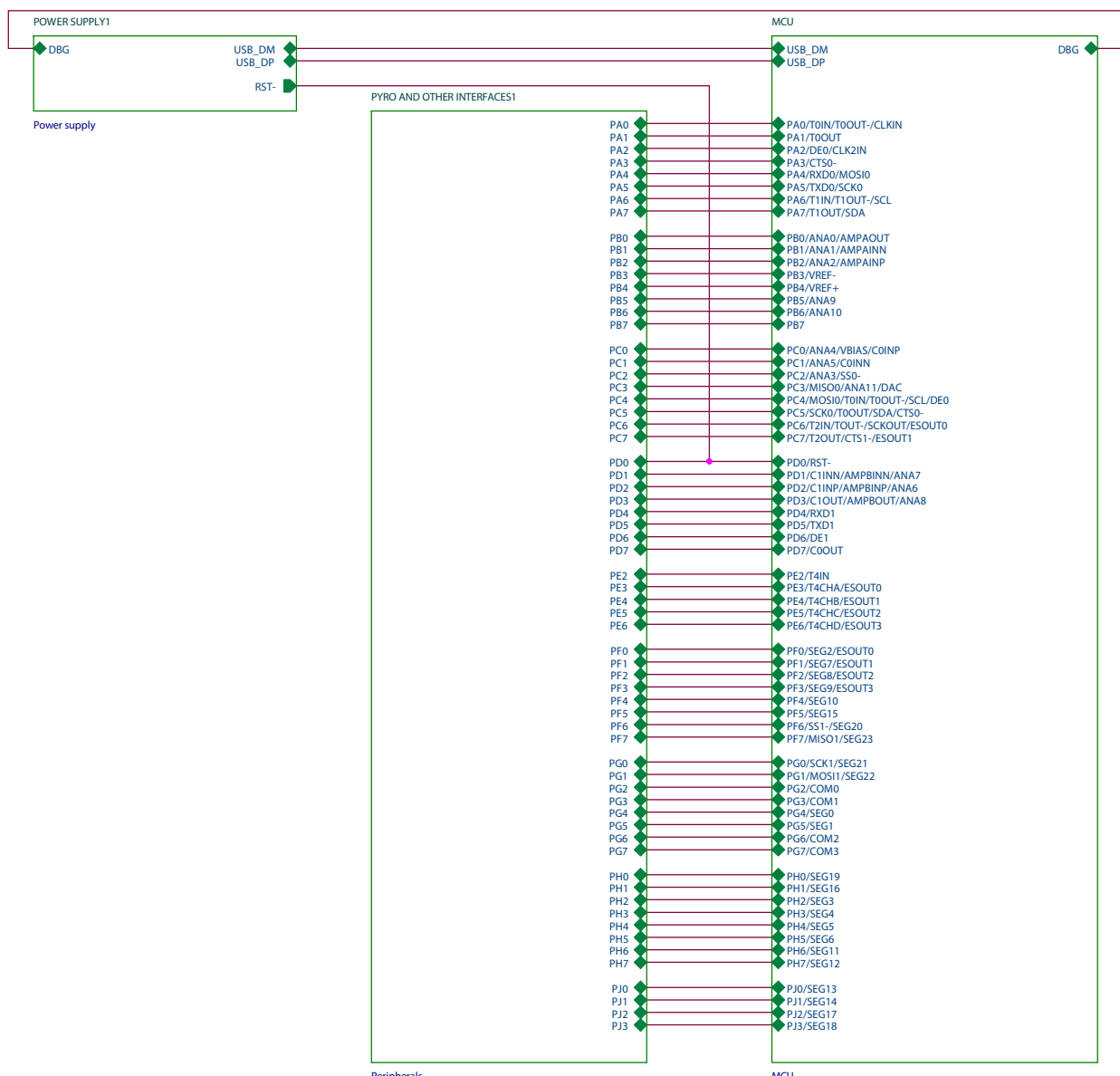
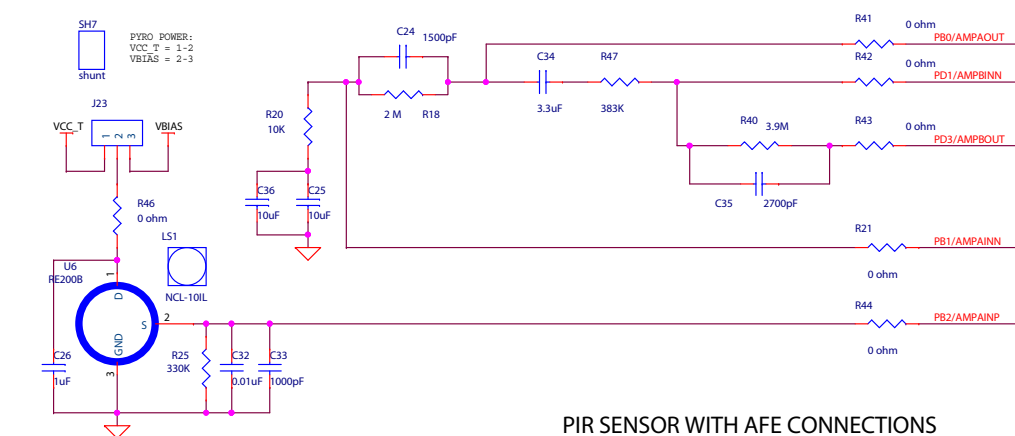


Figure 38. F6482 Series Development Board Schematic Diagram, #2 of 4



UM026302-0916



PIR SENSOR WITH AFE CONNECTIONS

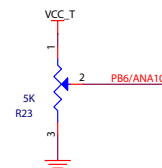
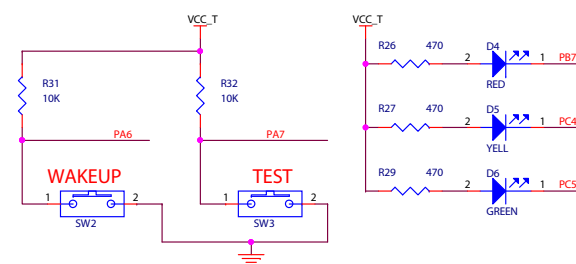
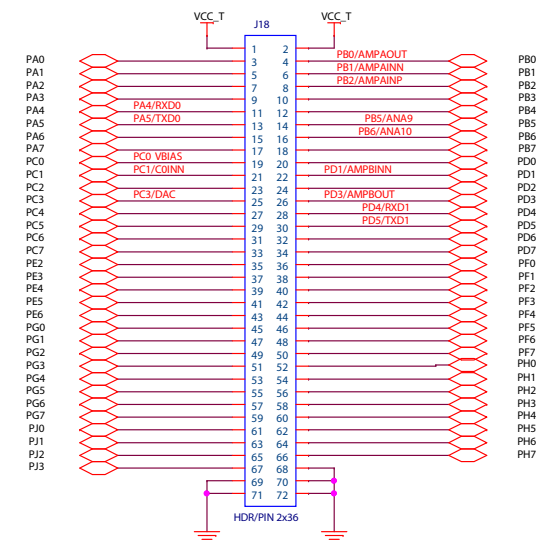
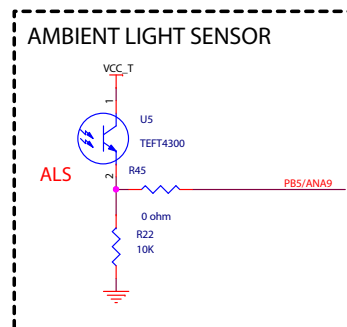
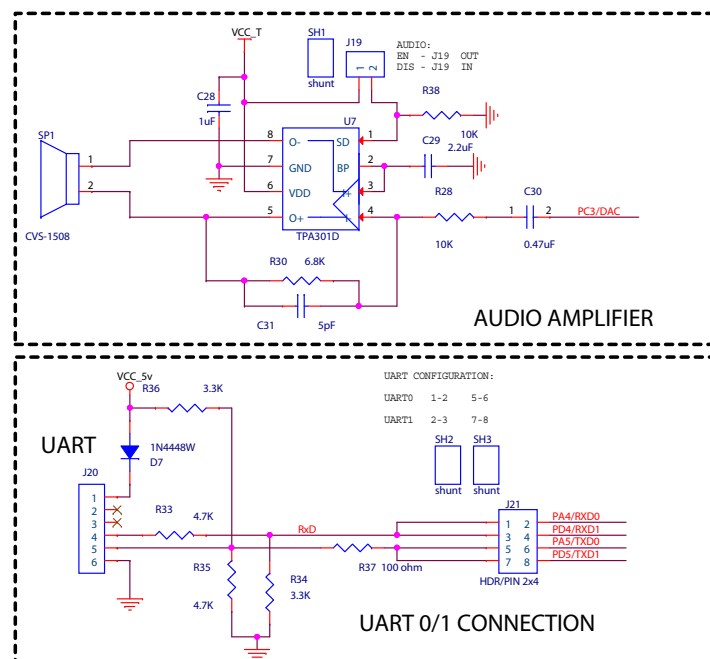


Figure 40. F6482 Series Development Board Schematic Diagram, #4 of 4

Appendix B. Installing the USB SmartCable Driver

The USB SmartCable can be installed on PCs that run on Windows 7 (32- and 64-bit), Windows Vista (32- and 64-bit) and Windows XP operating systems. The procedures in this section will guide you through the USB SmartCable installation process.

Windows 7 32/64 Systems

Observe the following steps to install the USB SmartCable on a Windows 7 system.

1. Connect the USB SmartCable to a USB port on your development PC. When the PC detects the new hardware, it will display the Installing device driver software dialog.
2. Windows automatically searches for the driver; this process can take a few moments. Because there is no option to terminate this search process, wait for the search to complete. If the driver was previously installed, Windows will automatically install the USB SmartCable driver. If this is the case, skip ahead to [Step 9](#). If Windows cannot find the driver, close the search dialog and proceed to the next step.
3. In the **Search programs and files** field in the Windows Start menu, enter Device Manager. The Device Manager will appear in a list of search results.
4. From this list of results, click **Device Manager** to open the Device Manager dialog, which presents a list of devices that operate on your PC. Find and toggle **Other devices** to view a sublist of additional devices, and right-click your mouse on **USB SmartCable**.
5. In the submenu that appears, click **Update Driver Software...**
6. In the Update Driver Software – USB SmartCable dialog that appears, click the **Browse my computer for driver software** option.
7. Click the **Browse...** button to browse to one of the following driver directories, depending on the configuration of your PC.

On 32-bit Windows 7 systems, navigate to:

<ZDSII Installation Directory>\device drivers\USB\x32
<ZDSII Installation CD>\device drivers\USB\x32

On 64-bit Windows 7 systems, navigate to:

<ZDSII Installation Directory>\device drivers\USB\x64
<ZDSII Installation CD>\device drivers\USB\x64

8. Click **Next** to install the driver. On 32-bit Windows systems, a security dialog will appear; select **Install this driver software anyway**.
9. After the Wizard finishes the installation, click **Close**.

Windows Vista 32/64 Systems

Observe the following steps to install the USB SmartCable on a Windows Vista system.

1. Connect the USB SmartCable to a USB port on the development PC.
2. After the PC detects the new hardware, it will display the Found New Hardware Wizard dialog box. Click **Locate and install driver software (recommended)**.
3. Depending on your development PC's User Account Control settings, Windows may ask for permission to continue the installation. Click **Continue**.
4. When the *Insert the Disc* dialog appears, select **I don't have the disc. Show me other options**. Click the **Next** button to display the *Windows couldn't find driver* dialog.
5. Select **Browse my computer for driver software (advanced)** to display the Browse For Driver dialog, which prompts you to key in or browse for the location of the driver's .inf file. Depending on the type of computer you use (32-bit or 64-bit), use the **Browse...** button to navigate to one of the following paths, then click the **Next** button.

On 32-bit Vista systems, navigate to:

<ZDSII Installation>\device drivers\USB\x32
<ZDSII Installation CD>\device drivers\USB\x32

On 64-bit Vista systems, navigate to:

<ZDSII Installation>\device drivers\USB\x64
<ZDSII Installation CD>\device drivers\USB\x64

6. When the Windows Security dialog prompts you whether to install or not to install, click **Install this driver software anyway** and wait until the installation is completed (Windows may prompt you more than once).
7. When the software has been installed successfully, click **Close**.

Windows XP-32(SP3) Systems

Observe the following steps to install the USB SmartCable on a Windows XP system.

1. Connect the USB SmartCable to a USB port on the development PC. When the PC detects the new hardware, it will display the Found New Hardware Wizard dialog.

2. In the Wizard, select **Install from a list or specific location (Advanced)**, then click **Next**.

► **Note:** If the Windows Hardware Installation dialog appears, click **Continue Anyway**.

3. In the **Please choose your search and installations** dialog, select **Search for the best driver in these locations and include this location in search**.
4. Use the **Browse...** button to navigate to one of the following paths:
 <ZDSII Installation>\device drivers\USB\x32
 <ZDSII Installation CD>\Device Drivers\USB\x32
5. Click **Next** to locate the appropriate driver.
6. Click **Next** a second time, then click **Finish** to complete the installation.

Appendix C. Tera Term Configuration

If you are using Tera Term as your console program, observe the following procedure to properly configure it.

1. Please refer to page 12 section Hyper Terminal Configuration on how to connect a USB to TTL serial converter between the development board and your host PC.
2. In Tera Term, and if your PC has a serial interface, navigate via the **Setup** menu to **Serial port...** to select the COM port assigned to your serial port. If you do not have a serial port on your PC, use a USB-to-serial adapter (not included in the kit).
3. Use the Ports (COM & LPT) listing in the Device Manager to determine the correct COM port assigned to your adapter. Configure this port to reflect the following settings:
 - 57600 bps
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
4. Click the **OK** button to connect to the F6482 Development Board. Upon connection, you should be able to see the demonstration program menu shown in [Figure 11](#) on page 12.

Customer Support

To share comments, get your technical questions answered, or report issues you may be experiencing with our products, please visit Zilog's Technical Support page at <http://support.zilog.com>.

To learn more about this product, find additional documentation, or to discover other facts about Zilog product offerings, please visit the [Zilog Knowledge Base](#) or consider participating in the [Zilog Forum](#).

This publication is subject to replacement by a later edition. To determine whether a later edition exists, please visit the Zilog website at <http://www.zilog.com>.