



PIC18F26J50-EVK

User Manual

Rev.1.0 -- December 05, 2011

Revision History

Rev	Date	Description
0.9	11/25/2011	Initialization
1.0	12/05/2011	Release version



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1. Kit Overview

The PIC18F26J50-EVK is a development and demonstration kit designed to provide developers a hands-on approach to learn Flowcode 4 (Graphical Programming Languages) more easily.

The kit is based on PIC18F26J50 microcontroller, and integrates temperature sensor, capacitor touch sensor and potentiometer to help developers verify their programs designed by Flowcode 4.

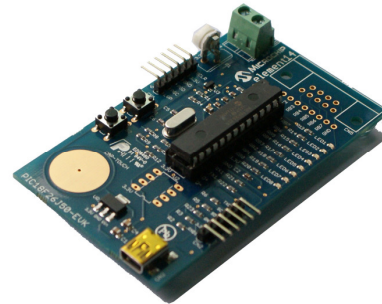


Figure 1–1 PIC18F26J50 EVK Board

1.1 Contents of Package



Figure 1–2 Kit Package

- 1 x PIC18F26J50-EVK board
- 1 x USB Cable (Mini USB type)
- 1 x CD-ROM
- 1 x One page Package list



2. Antistatic Precautions

- Please make sure that an antistatic strap is grounded and used on your wrist before taking out the kit from antistatic bag.
- Please make sure that all the four rubber feet are attached to bottom of kit when it is unpacked.
- Please always handle the kit on a non-conducting surface.

3. Pin Definition of Connectors

This section will briefly introduce the connectors used on PIC18F26J50-EVK board and the pins of these connectors in terms of definition, function and applications.

3.1 Board Layout

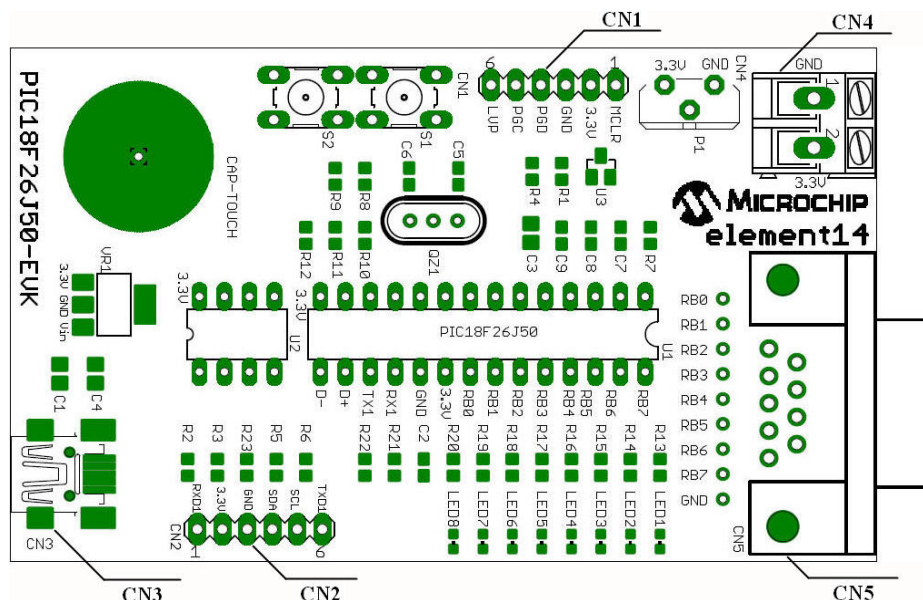


Figure 3-1 Kit Layout

As shown in the figure above, five connectors marked as **CN1**, **CN2**, **CN3**, **CN4** and **CN5** are mounted on the kit. Please refer to the following section for details.

3.2 Pin Definition

1) CN1: ICSP Connector

ICSP (In-Circuit Serial Programming) is a serial program interface of Microchip, it is used to program Microchip's PIC and dsPIC series MCU. Please see the Pin definition and description of ICSP as below:

Pin No.	Name	Description
1	MCLP	Master Clear (Reset) input
2	3.3V	3.3V Power Supply

Pin No.	Name	Description
3	GND	Ground
4	PGD	ICSP Data.
5	PGC	ICSP Clock.
6	NC	Not Use

2) CN2: PICKIT Serial Connector

Pin	Name	Description
1	RXD1	Asynchronous serial receive data input
2	3.3V	3.3V Power Supply Output
3	GND	Ground
4	SDA	I2Cdata input/output
5	SCL	I2C clock input/output
6	TXD1	EUSART1 asynchronous transmit

3) CN3: Mini USB

Pin No.	Name	Description
1	VDD	+5V Power Supply
2	D-	Differential data signal: Negative
3	D+	Differential data signal: Positive
4	NC	ID Pin, not use
5	GND	Ground

4) CN4: OUTPUT

Pin No.	Name	Description
1	GND	Ground
2	3.3V	3.3V Power Supply Output

5) CN5: E-Blocks Connectors

Unused



4. Software Installation

The related software should be installed on your PC prior to hardware connection so that the kit could be working properly.

4.1 Software Introduction

1) Flowcode 4

Flowcode 4 is one of the world's most advanced graphical programming languages for microcontrollers. The great advantage of Flowcode is that it allows those with little experience to create complex electronic systems in minutes.

2) HID Bootloader

HID Bootloader functions as a bridge between Flowcode 4 and hardware to allow users easily download program to their hardware (e.g. PIC18F26J50-EVK board) through USB cables.

4.2 Software Download

A free version of Flowcode 4 for PICmicros, which is suitable for the Microchip PIC18 Starter Kit for Flowcode by element14, can be downloaded from the link shown below.

http://www.matrixmultimedia.com/lc_index.php?p=26

Also the free version as well as HID Bootloader can be found in the CD-ROM attached with the kit.

4.3 System requirement

- Personal computer with USB 1.0 or 2.0
- Pentium processor or greater
- Windows XP or later with Net Framework v4.0.30319 installed
- 256MB RAM
- 100MB hard disk space

4.4 Software Installation

1) Flowcode 4

The Flowcode installation routine will guide you through the installation process



including the installation of any subsidiary programs or tools required by the software.

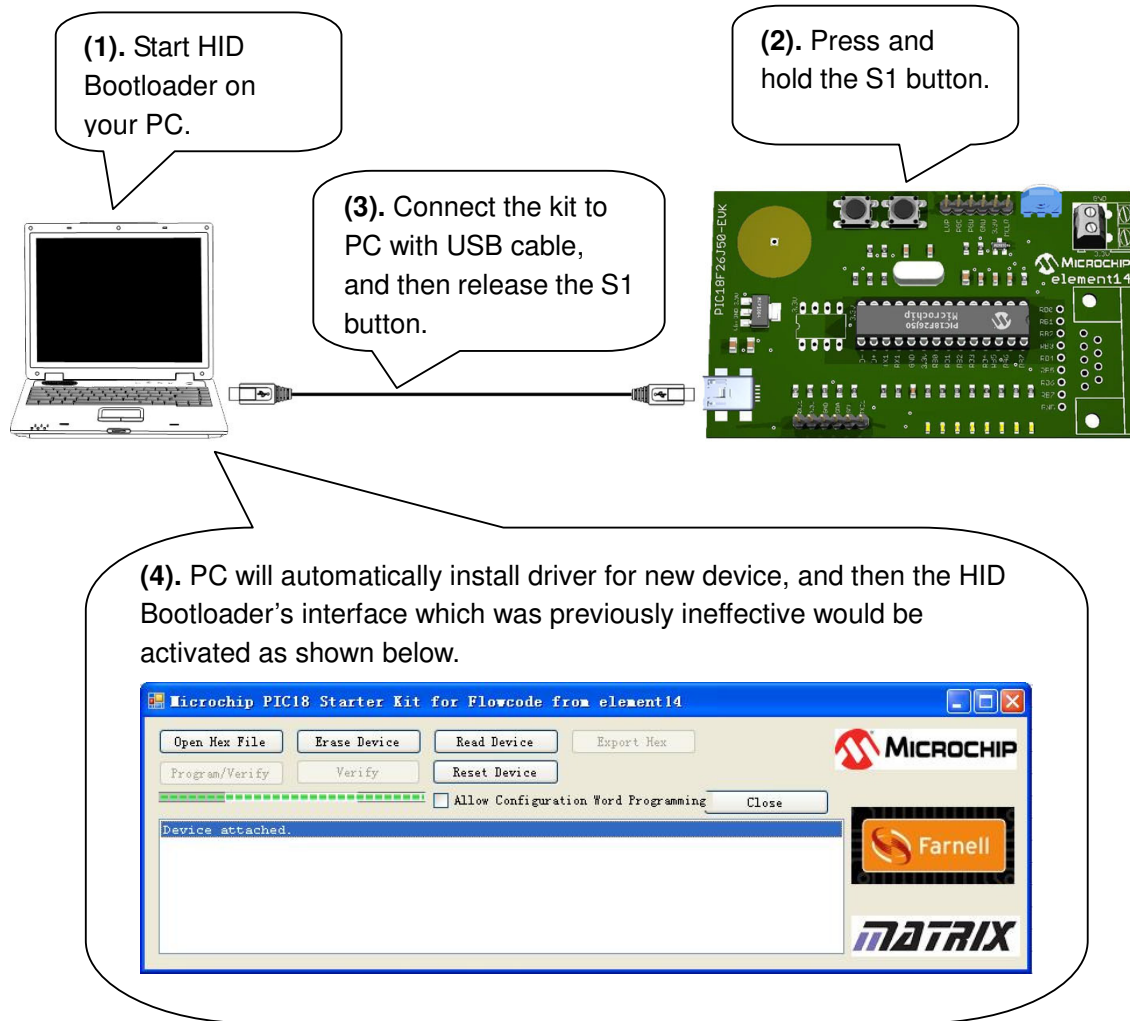
When asked to select the default programmer, you can choose either E-blocks or PICKit2. This choice is ignored when using the Microchip PIC18 Starter Kit for Flowcode by element14.

2) HID Bootloader

Please follow the installation guide to complete the process.

5. Hardware Setup

After the software installation is complete, please follow the illustration shown below to connect the kit to PC with the USB cable included in product package.



6. Kit Demonstration

Through the demonstration on PIC18F26J50-EVK, developers would have a general understanding of how demo program works to display the signals detected by temperature sensor, capacitive touch sensor and potentiometer through LED indicators on the kit.

6.1 Introduction to Demo Program

Demo program keeps tracking status of the sensors integrated on PIC18F26J50-EVK, and display the detected signals by driving LEDs through I/O port on the kit. Developers could switch around among temperature sensor, capacitive touch sensor and potentiometer by pressing a push-button on the kit to view the results respectively.

6.2 Downloading Demo Program

After the steps illustrated in previous section 5 Hardware Setup are complete, you could start to download demo program using HID Bootloader as shown below.

- 1) Click the button **Open Hex File** on the interface and select demo program **PIC18F26J50_EVK_Application_Program.hex** in your hard drive to start downloading.

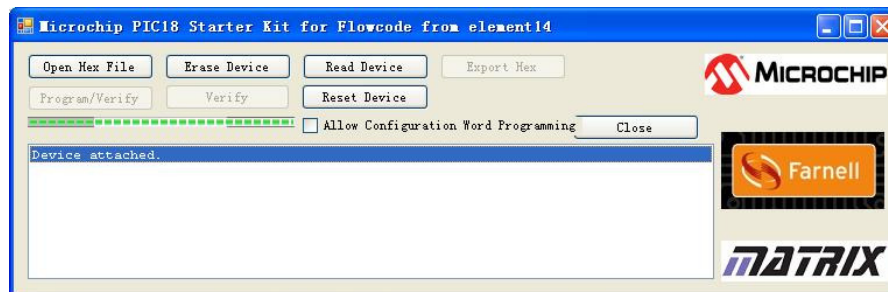


Figure 6–1 Downloading Demo Program

- 2) Click the button **Reset Device** on the interface to reboot the kit.

6.3 Running Demo Program

The reboot process is quite fast, and now the kit is ready to test the demo program by going through the following operations.

- By default the sensor U3 is activated first. The LEDs on PIC18F26J50-EVK change status when U3 detects temperature fluctuation caused by, for example, putting your figure on the sensor.



- Press the S1 button to switch to the on-board potentiometer P1 and turn it to observe the status change of LEDs.
- Press S1 again to switch to the capacitive touch sensor and touch the sensor with your fingers to observe the status change of LEDs.

7. Development on this Kit

Now let's start to make your first program with Flowcode 4 and PIC18F26J50-EVK board.

- 1) When you first load Flowcode you will be given a choice of creating a new flowchart or opening an existing chart. Click on the first option and you will be asked to choose a target device.

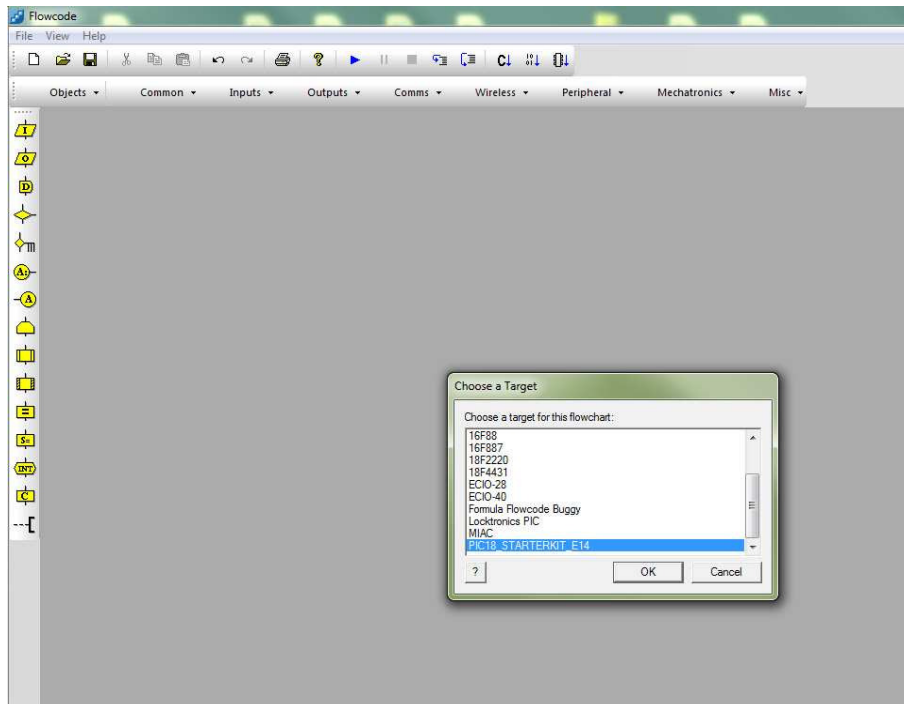


Figure 7–1 Choose a Target Device

Scroll down and select the “PIC18_STARTERKIT_E14” target.

- 2) You will see a **Begin** and **End** icon in the window marked 'Main'. This is your main program.

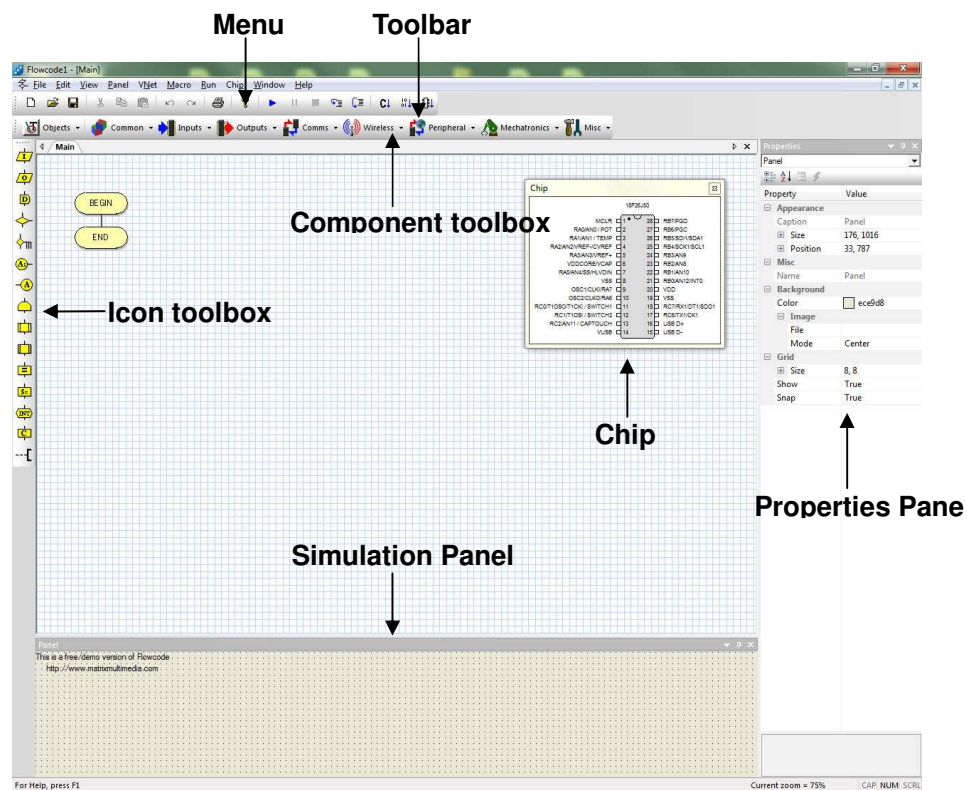


Figure 7-2 Main Program Window

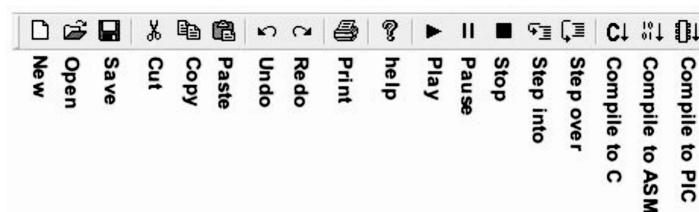


Figure 7-3 Toolbar Icons' Functions

The graphic above shows the functions of icons on the Toolbar. To find out what an icon's function is simply hold the mouse pointer over the icon and a small 'tool tip' will give you a clue.

- 3) From the Icon toolbox drag an **Output** icon onto the space between the Begin and End icons. Then double click on the icon to bring up the properties window.

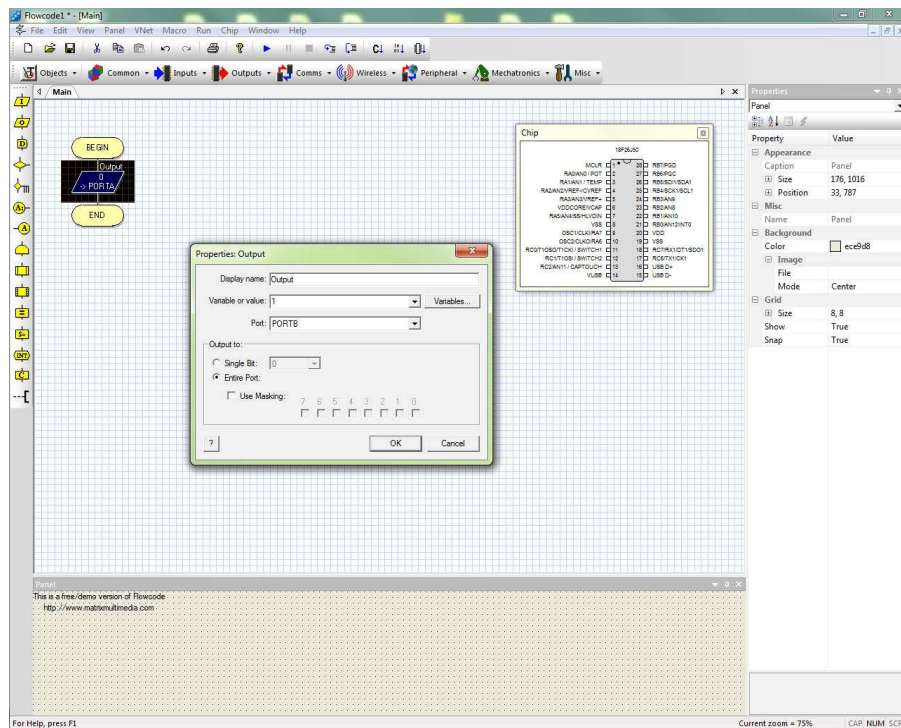


Figure 7–4 Output Properties Setting

Set the properties as shown. (Variable = 1, Port = PORTB, single bit).

- 4) Click on the **Step Into** icon (see below) or select **RUN...STEP INTO** on the menu. You can use this to step through your program.

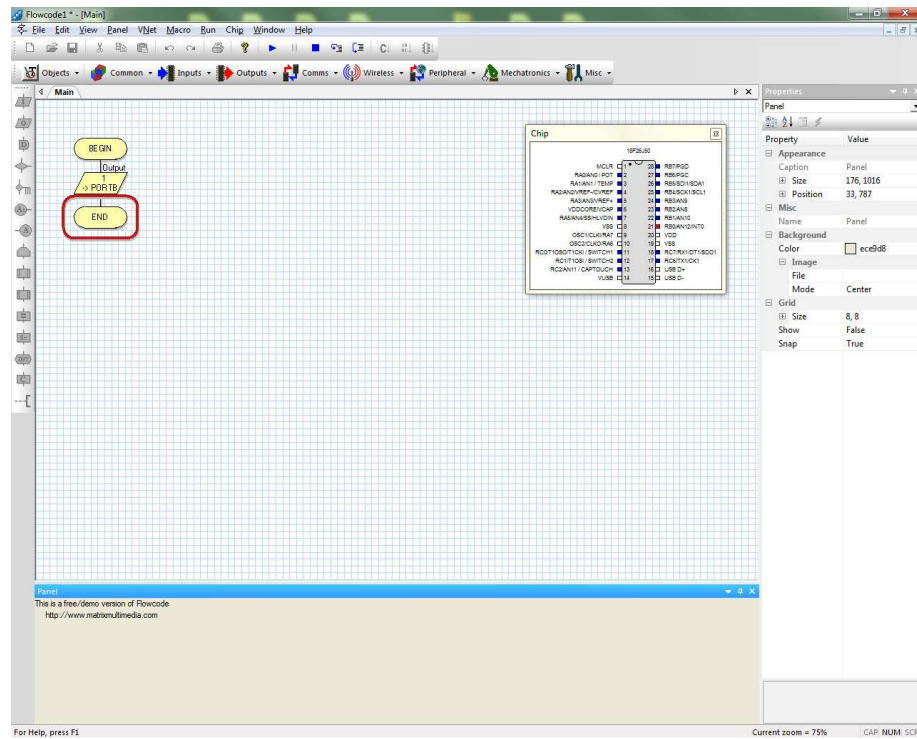


Figure 7–5 Stepping through Program

Notice B0 on the chip goes red to indicate logic 1 output.

- 5) Click on **Compile to Chip** button to compile your program and download it to the board.

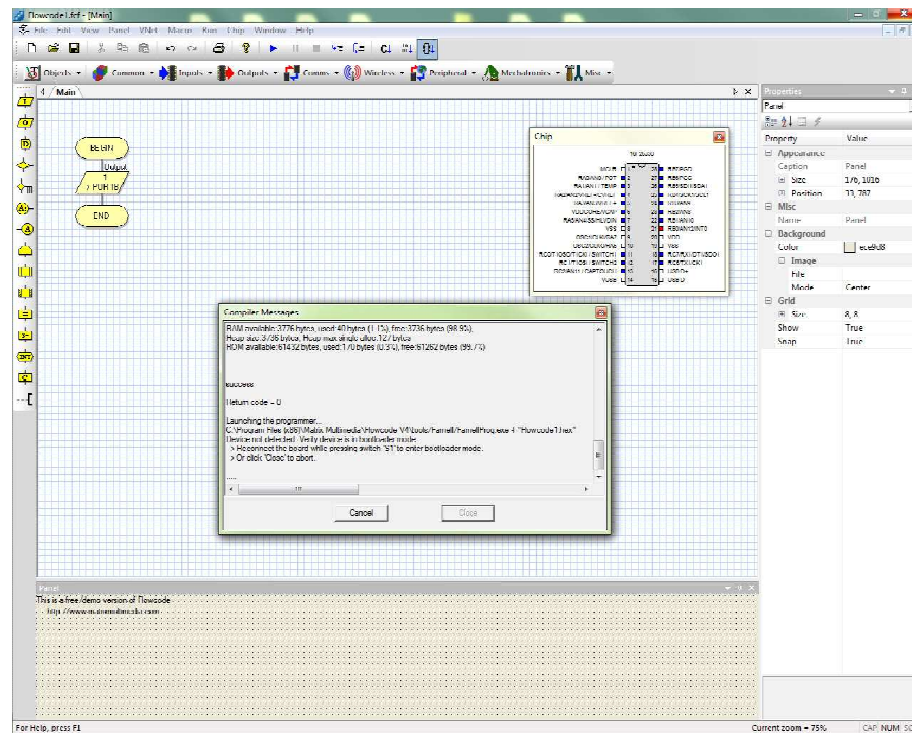


Figure 7–6 Compiling and Programming

Press and hold the S1 button while inserting the USB cable to put the board into program mode.

Once programming has completed, the LED connected to B0 will be lit.



8. Helpful Links

Helpful Links	
Matrix Multimedia	http://www.matrixmultimedia.com
	http://www.matrixmultimedia.com/flowcode.php
Microchip	http://www.microchip.com
	http://www.microchip.com/support/HotTopics.aspx
element14	http://uk.farnell.com/ http://us.element14.com/ http://sg.element14.com/ http://cn.element14.com/
	http://www.element14.com/community/docs/DOC-40330

9. Schematic

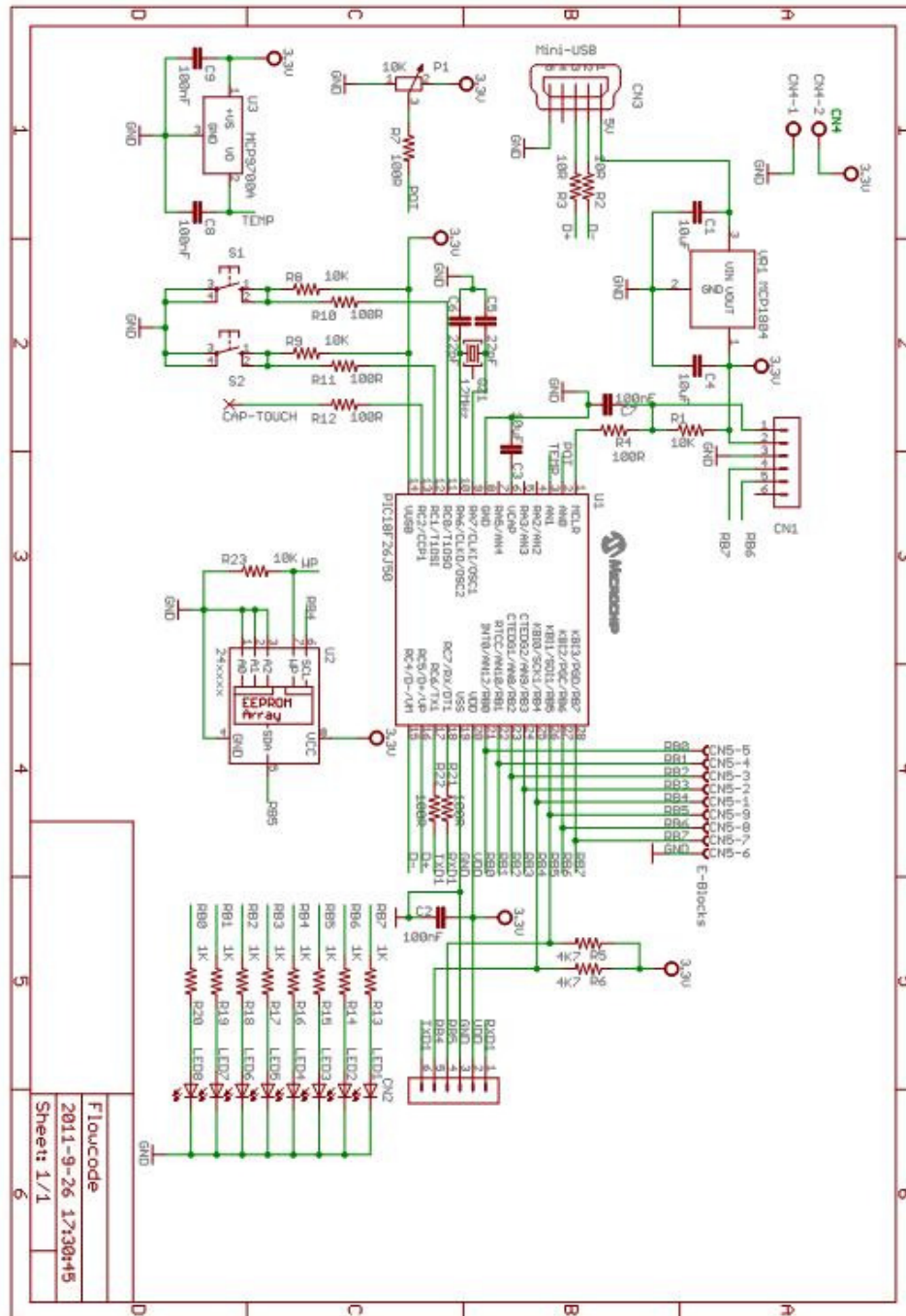


Figure 9–1 Schematic of PIC18F26J50-EVK

10. PCB Layout

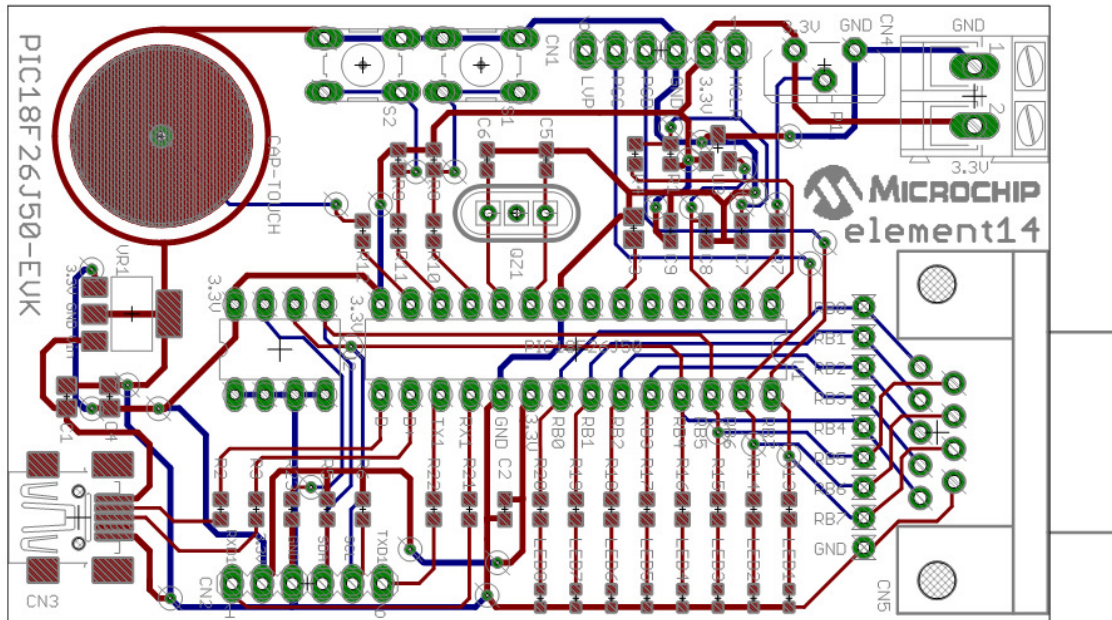


Figure 10–1 PCB Layout of PIC18F26J50-EVK

11. Bill of Materials

location	Order Code	Part No.	Description	Manufacturer
U1	1706309	PIC18F26J50-I/SP	MCU, 8BIT, 64K FLASH, NANOWATT, 28SPDIP	MICROCHIP
U2	1331271	24AA02-I/P	IC, EEPROM SERIAL 2KB, SMD, PDIP8	MICROCHIP
U3	1605577	MCP9700AT-E/TT	THERMAL SENSOR, 2.3 ~5.5V, SOT23-3	MICROCHIP
LED 1	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 2	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 3	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 4	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 5	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 6	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 7	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
LED 8	1710526	ASMT-RJ45-AQ502	LED, SMD, 0603, ORANGE	AVAGO TECHNOLOGIES
S1	1863398	3-1825910-5	SWITCH, PUSHBUTTON, SPST	TE CONNECTIVITY / AMP
S2	1863398	3-1825910-5	SWITCH, PUSHBUTTON, SPST	TE CONNECTIVITY / AMP
P1	9352651	3266W-1-103LF	TRIMMER, 12 TURN 10K	BOURNS
VR1		MCP1804T-3302I/DB SOT223	LDO 3.3V OUTPUT, CMOS 28V, SOT223-3	MICROCHIP
R13	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R14	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R15	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R16	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R17	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R18	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R19	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R20	9238484	RC0603FR-071KL	RESISTOR, 1K, 100MW, 1%	YAGEO (PHYCOMP)
R4	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R7	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R10	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R11	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R12	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R21	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R22	9238360	RC0603FR-07100RL	RESISTOR, RC22H, 0603, 100R	YAGEO (PHYCOMP)
R1	9238603	RC0603FR-0710KL	RESISTOR, 10K, 100MW, 1%	YAGEO (PHYCOMP)
R8	9238603	RC0603FR-0710KL	RESISTOR, 10K, 100MW, 1%	YAGEO (PHYCOMP)
R9	9238603	RC0603FR-0710KL	RESISTOR, 10K, 100MW, 1%	YAGEO (PHYCOMP)
R23	9238603	RC0603FR-0710KL	RESISTOR, 10K, 100MW, 1%	YAGEO (PHYCOMP)
R2	9238247	RC0603FR-0710RL	RESISTOR, RC22H 0603 10R	YAGEO (PHYCOMP)
R3	9238247	RC0603FR-0710RL	RESISTOR, RC22H 0603 10R	YAGEO (PHYCOMP)
R5	9238565	RC0603FR-074K7L	RESISTOR, RC22H, 0603, 4K7, 1%	YAGEO (PHYCOMP)
R6	9238565	RC0603FR-074K7L	RESISTOR, RC22H, 0603, 4K7, 1%	YAGEO (PHYCOMP)
C1	1657936	08056C106KAT2A	CAPACITOR, 10 UF, 6.3V, 0805, X7R	AVX
C3	1657936	08056C106KAT2A	CAPACITOR, 10 UF, 6.3V, 0805, X7R	AVX
C4	1657936	08056C106KAT2A	CAPACITOR, 10 UF, 6.3V, 0805, X7R	AVX
C5	498543	06035A220JAT2A	CAPACITOR, 0603, 22PF, 50V	AVX
C6	498543	06035A220JAT2A	CAPACITOR, 0603, 22PF, 50V	AVX
C2	317287	06033G104ZAT2A	CAPACITOR, 0603, 100NF, 25V, Y5V	AVX
C7	317287	06033G104ZAT2A	CAPACITOR, 0603, 100NF, 25V, Y5V	AVX
C8	317287	06033G104ZAT2A	CAPACITOR, 0603, 100NF, 25V, Y5V	AVX
C9	317287	06033G104ZAT2A	CAPACITOR, 0603, 100NF, 25V, Y5V	AVX
CN1	1593430	MC34751	HEADER, 1 ROW, R/ANGLE, 6WAY	MULTICOMP
CN2	1593430	MC34751	HEADER, 1 ROW, R/ANGLE, 6WAY	MULTICOMP
CN4	1624224	EBV-02-D	TERMINAL BLOCK, EUROSTYLE, 2POS 24-12AWG	MULTICOMP
CN3	1696539	MC32598	SOCKET, MINI USB, PCB, TYPE AB, SMT	MULTICOMP
CN5	1099294	8LCM009S-304B-XX	SOCKET, D, PCB, R/A, 9WAY	MULTICOMP
Qz1	1667001	HC49S-12-30-50-70-30-ATF	CRYSTAL, HC-49/S, 12.0MHZ	MULTICOMP

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Technical Support (Available to account customers only)	Live Chat	Live Technical Chat
	Tel	08447 11 11 22 (8am-6pm, Monday-Friday)
	Fax	08447 11 11 23
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