ARM Cortex™-M0
32-bit Microcontroller

NuTiny-SDK-M058S User Manual
For NuMicro M058S Series

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1 Overview

The NuTiny-SDK-M058S is a specific development tool for NuMicro M058S series by which users can develop and verify the application program easily. The NuTiny-SDK-M058S includes two portions: NuTiny-EVB-M058S (an evaluation board) and Nu-Link-Me (Debug Adaptor). With the NuTiny-SDK-M058S, users do not need additional ICE or debug equipment.

2 Introduction to NuTiny-SDK- M058S

The following figure shows the NuTiny-SDK-M058S for M058S series, in which the left portion is called NuTiny-EVB-M058S and the right portion is Debug Adaptor called Nu-Link-Me.
The NuTiny-EVB-M058S is similar to other development board. Users can use it to develop and verify applications to emulate the real behavior. In fact, the real chip M058S is mounted on the board. The NuTiny-EVB-M058S can be a real system controller to design user target system.

The Nu-Link-Me is a Debug Adaptor which connects the USB port of your PC to your target system (via Serial Wired Debug Port) and allows you to program and debug embedded programs on the target hardware. To use the Nu-Link-Me Debug adaptor with Keil or IAR, please refer to “Nuvoton NuMicro™ IAR ICE Driver User Manual” or Nuvoton NuMicro™ Keil ICE Driver User Manual” for details.

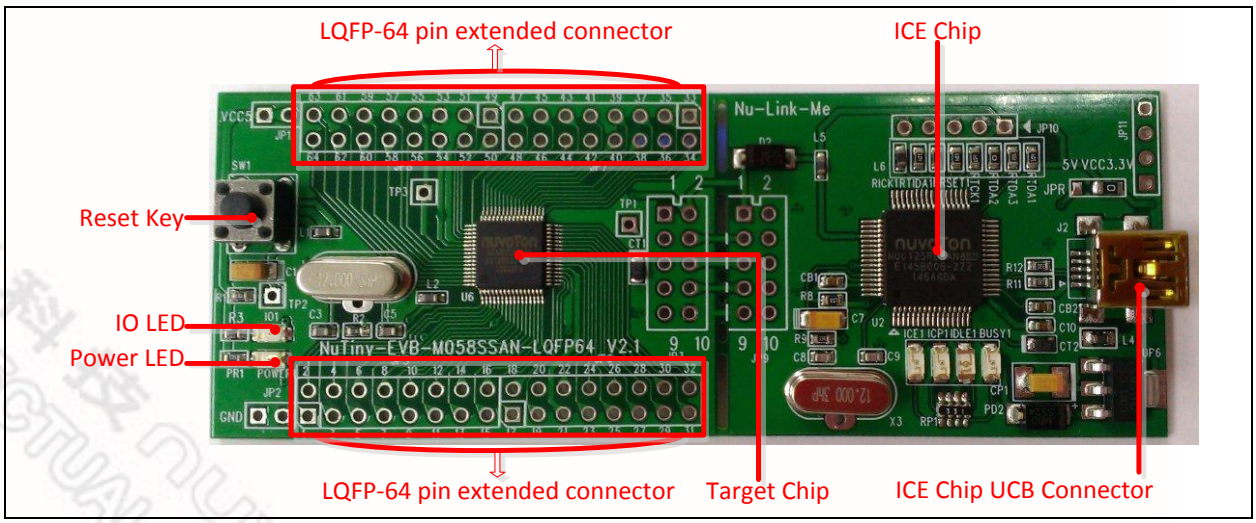


Figure 2-1 NuTiny-SDK-M058S (Green PCB Board)

2.1 NuTiny-SDK- M058S Jumper Description

2.1.1 Power Settings

- **JP1**: VCC5 Voltage connecter in NuTiny-EVB-M058S
- **J2**: USB port in Nu-Link-Me

Model	J1 USB Port	J2 USB Port	JP1 VCC5	MCU Voltage
Model 1	X	Connect to PC	DC 3.3V output	DC 3.3V
Model 2	X	X	DC 2.5 V ~ 5.5 V Input	Voltage by VCC5 input

X: Unused.

2.1.2 Debug Connectors

- **JP3:** Target ICE Connector in NuTiny-EVB-M058S
- **JP9:** Nuvoton ICE Connector in Nu-Link-Me

2.1.3 USB Connectors

- **J2:** Mini USB Connecter in Nu-Link-Me

2.1.4 Extended Connectors

- **JP5, JP6, JP7 and JP8:** Show all of chip pins in NuTiny-EVB-M058S

2.1.5 Buttons

- **SW1:** Reset button in NuTiny-EVB-M058S

2.1.6 Power Connectors

- **JP1:** VCC connecter in NuTiny-EVB-M058S
- **JP2:** GND connecter in NuTiny-EVB-M058S

2.2 Pin Assignment for Extended Connectors

The NuTiny-EVB- M058S provides the M058SSAN target chip on board and the extended connectors (**JP5**, **JP6**, **JP7** and **JP8**) for LQFP64-pin. The following table is the pin assignment for M058SSAN.

Pin No	Pin Name	Pin No	Pin Name
01	P1.5, MOSI_0, AIN5	33	P2.5
02	P1.6, MISO_0, AIN6	34	P2.6
03	P1.7, SPICLK0, AIN7	35	P2.7
04	/RST	36	P4.4, SCL1
05	P3.0, RXD	37	P4.5, SDA1
06	P5.0, T0EX	38	P4.6, ICE_CLK
07	P5.1, T1EX	39	P4.7, ICE_DAT
08	P5.2, SDA0	40	P6.0
09	P5.3, SCL0	41	P6.1
10	P3.1, TXD	42	P6.2
11	P3.2, /INT0, STADC, T0EX	43	P6.3
12	P3.3, /INT1, T1EX	44	P0.7, SPICLK0
13	P3.4, T0, SDA0	45	P0.6, MISO_0
14	P3.5 T1 SCL0, CKO	46	P0.5, MOSI_0
15	P4.3, PWM3	47	P0.4, SPISS0
16	P3.6, CKO	48	P4.1, PWM1, T3EX
17	P3.7	49	P0.3, RTS, RXD
18	XTAL2	50	P0.2, CTS, TXD
19	XTAL1	51	P0.1
20	VSS	52	P0.0
21	VDD	53	VSS
22	LDO_CAP	54	VDD
23	P5.4	55	P6.4
24	P5.5	56	P6.5
25	P5.6	57	P6.6
26	P5.7	58	P6.7
27	P2.0, PWM0	59	P1.0, T2, AIN0
28	P2.1, PWM1	60	P1.1, T3, AIN1
29	P2.2, PWM2	61	P1.2, AIN2
30	P2.3, PWM3	62	P1.3, AIN3
31	P2.4	63	P1.4, SPISS0, AIN4
32	P4.0, PWM0	64	P4.2, PWM2

Table 2-1 Pin Assignment for M058SSAN

2.3 NuTiny-SDK-M058S PCB Placement

The following figure shows the NuTiny-SDK- M058S PCB placement.

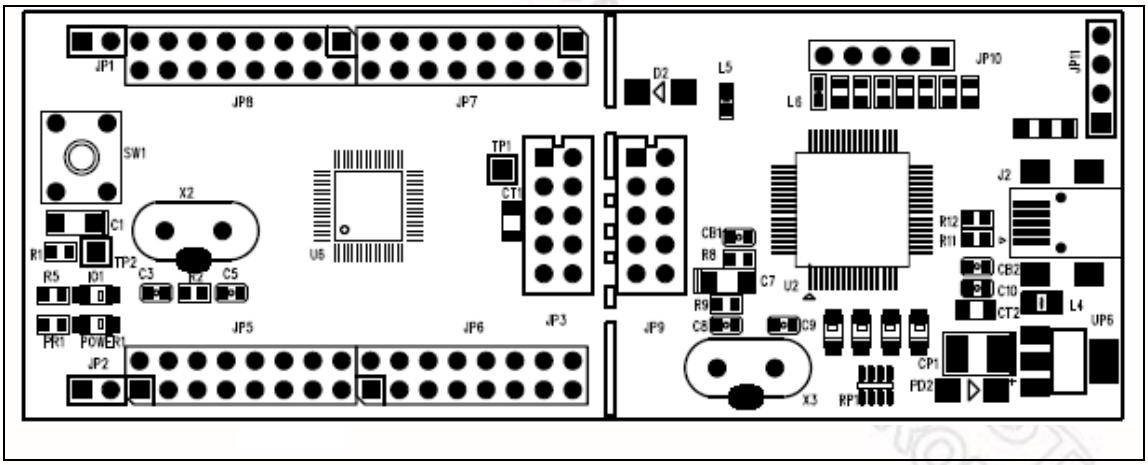


Figure 2-2 NuTiny-SDK-M058S PCB Placement

3 Starting to Use NuTiny-SDK-M058S on the Keil µVision® IDE

3.1 Downloading and Installing Keil µVision® IDE Software

Please visit the Keil company website (http://www.keil.com) to download the Keil µVision® IDE and install the RVMDK.

3.2 Downloading and Installing Nuvoton Nu-Link Driver

Please visit Nuvoton NuMicro™ website (http://www.nuvoton.com/NuMicro) to download the "*NuMicro™ Keil µVision® IDE Driver*" file. Please refer to *section 6.1* for the detailed download flow. After the Nu-Link driver is downloaded, please unzip the file and execute the "*Nu-Link_Driver_for_keil_RVMDK_V1.23.6103.zip*" to install the driver.

3.3 Hardware Setup

The hardware setup is shown in the following figure.

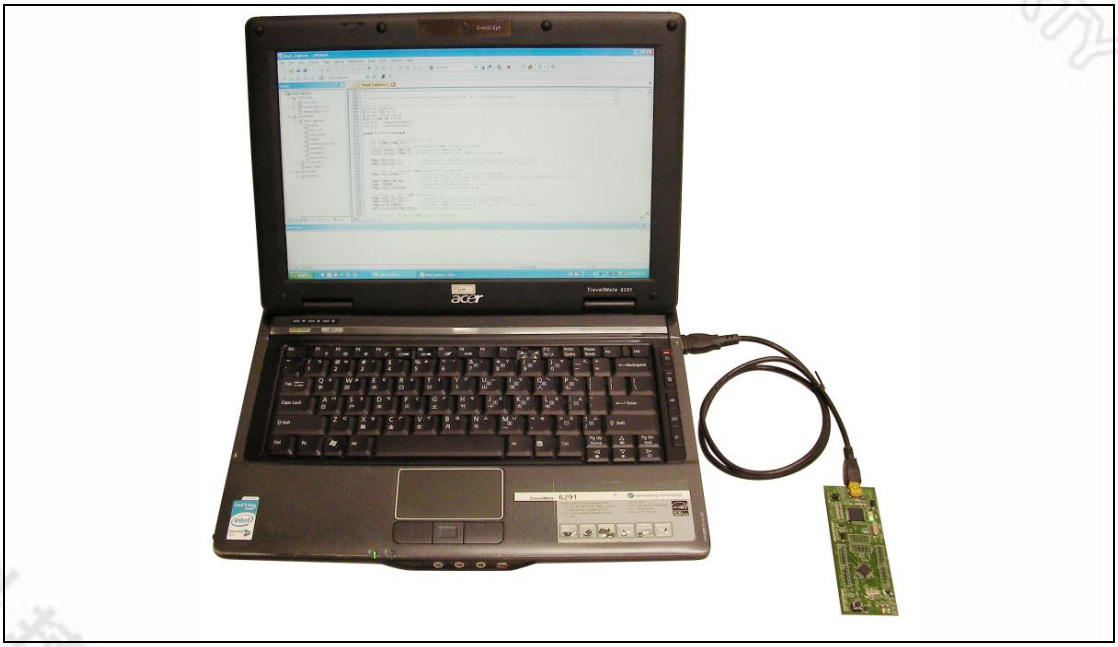


Figure 3-1 NuTiny-SDK-M058S Hardware Setup

3.4 Smpl_NuTiny-M051 Example Program

This example demonstrates how to download and debug an application on a NuTiny-SDK-M058S board.

The example file can be found in the directory list shown in the following figure.

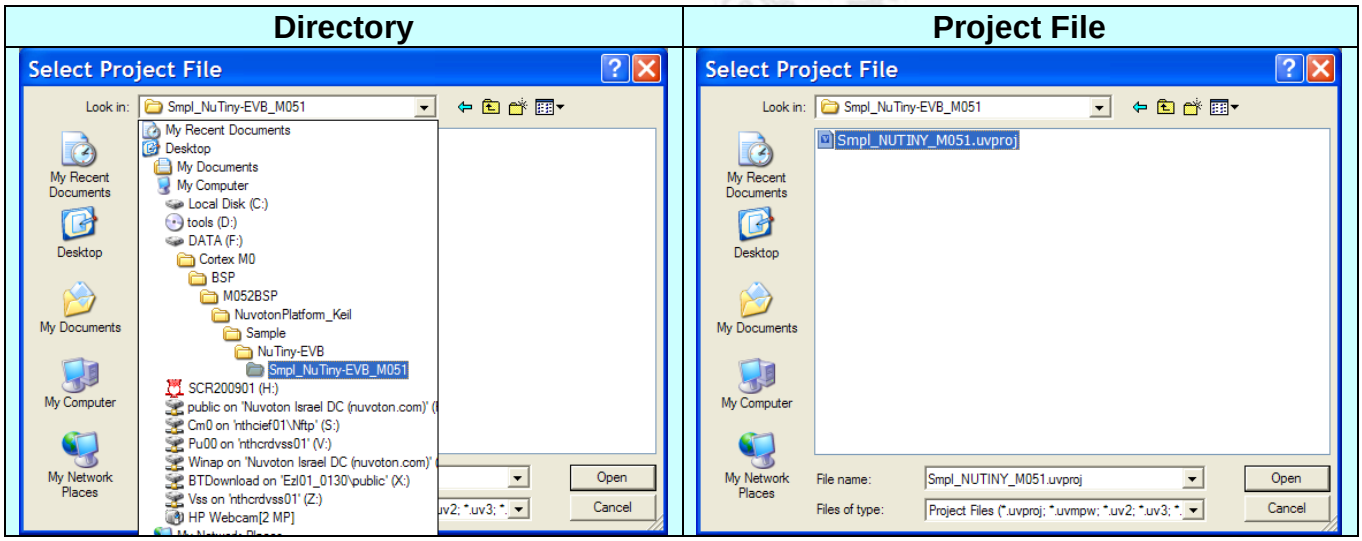


Figure 3-2 Smpl_NuTiny-M051 Example Directory

To use this example:

- **Start µVision®**
- **Project – Open**
  Open the Smpl_NuTiny-M051.uvproj project file
- **Project – Build**
  Compile and link the Smpl_NuTiny-M051 application
- **Flash – Download**
  Program the application code into on-chip Flash ROM

  The P3.6 LED on the NuTiny-EVB-M058 board will be toggled on.
- **Start Debug mode**
  When using the debugger commands, you may:
  - Review variables in the watch window
  - Single step through code
  - Reset the device
  - Run the application

4 Starting to Use NuTiny-SDK-M058S on the IAR Embedded Workbench

4.1 Downloading and Installing IAR Embedded Workbench Software

Please visit the IAR company website (http://www.iar.com) to download the IAR Embedded Workbench and install the EWARM.

4.2 Downloading and Installing Nuvoton Nu-Link Driver

Please visit the Nuvoton Company NuMicro™ website (http://www.nuvoton.com/NuMicro) to download the "*NuMicro™ IAR ICE Driver User Manual*" file. Please refer to *section 6.2* for the detail download flow. When the download had finished, please unzip the file and execute the "Nu_Link_Driver_for_IAR_RVMDK_V1.23.6103.zip" to install the driver.

4.3 Hardware Setup

The hardware setup is shown in the following figure.

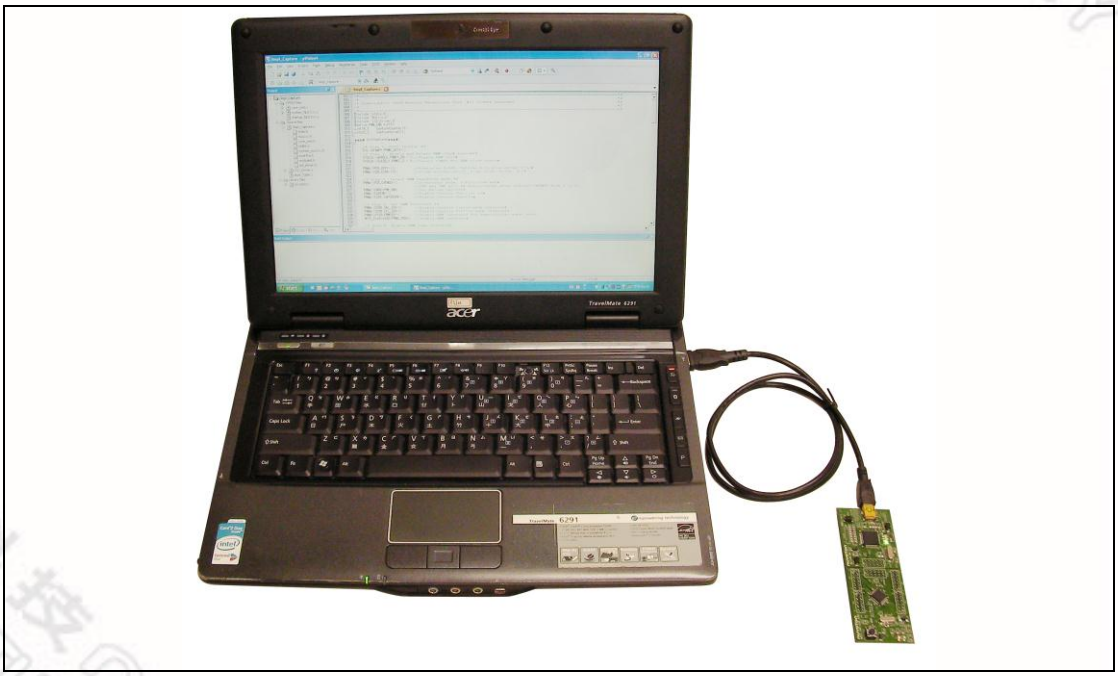


Figure 4-1 NuTiny-SDK-M058S Hardware Setup

4.4 Smpl_NuTiny-M051 Example Program

The example demonstrates how to download and debug an application on a NuTiny-SDK-M058S board.
The example can be found in the directory list shown in the following figure.
(Sample code can be downloaded from Nuvoton website).

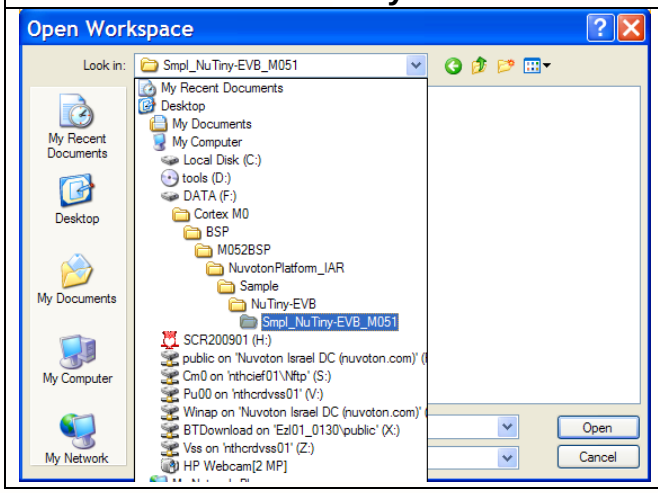
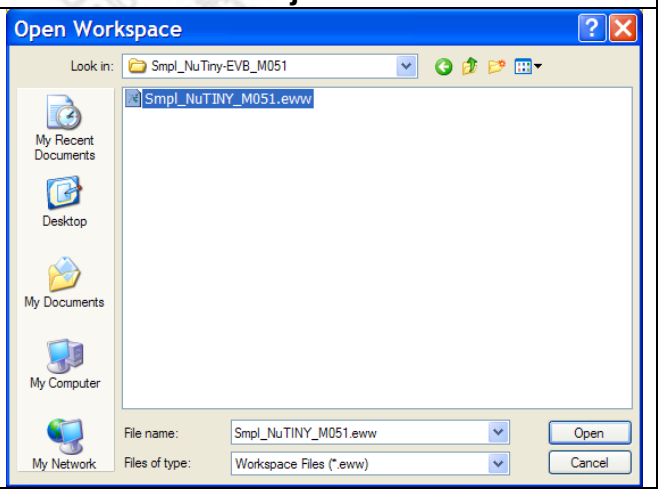
Directory	Project File
	

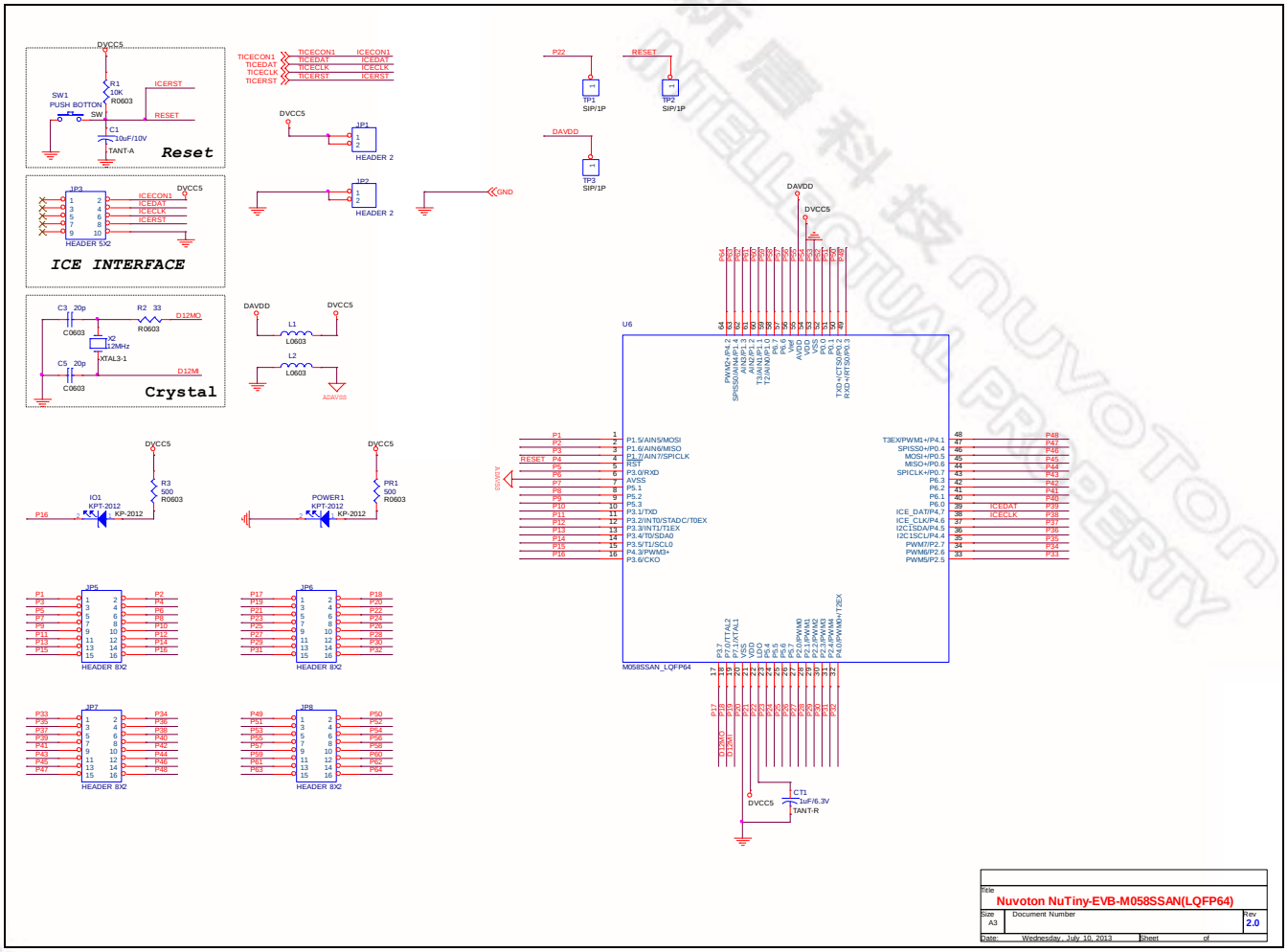
Figure 4-2 Smpl_NuTiny-M051 Example Directory

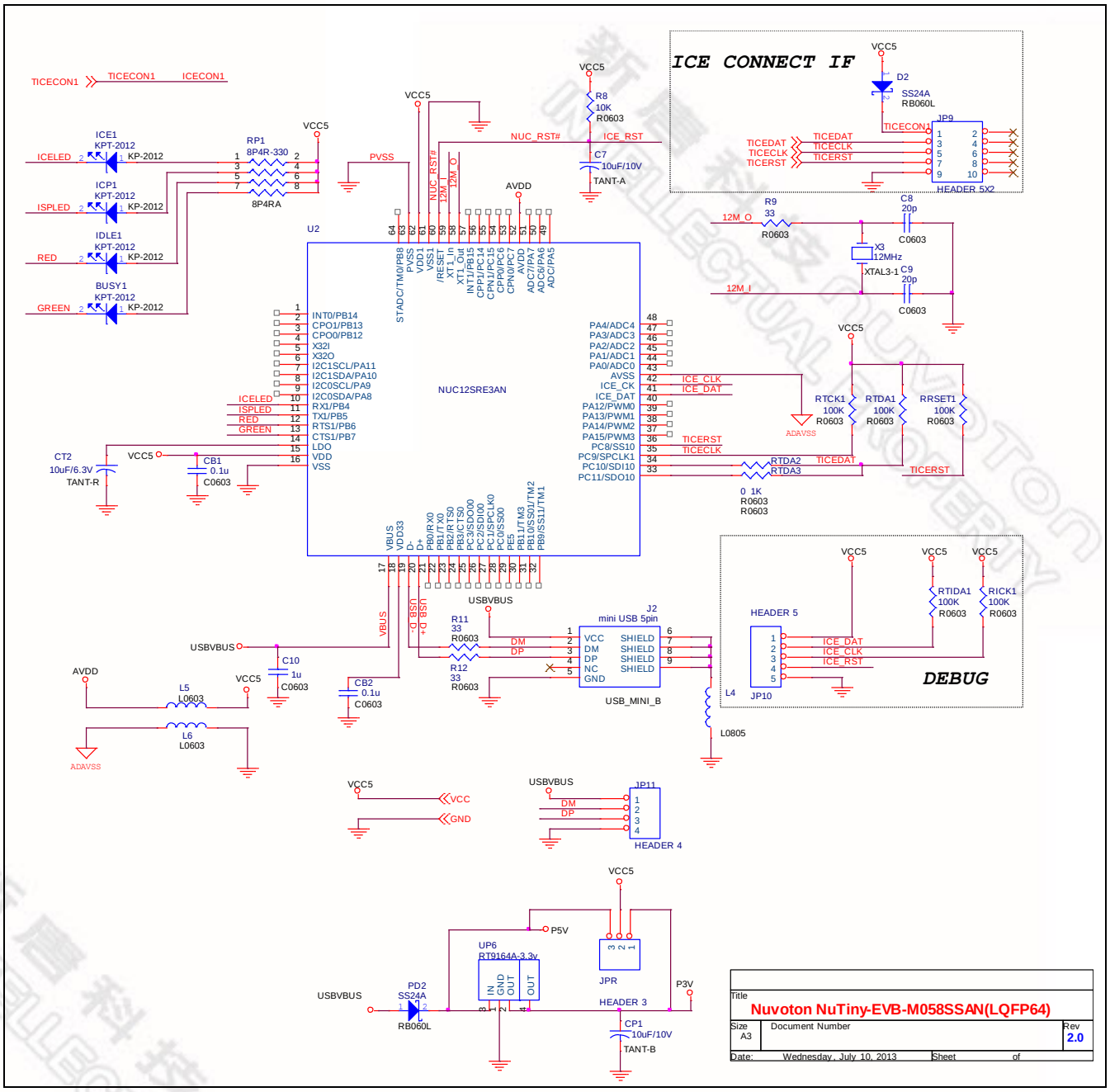
To use this example:

- **Start IAR Embedded Workbench**
- **File-Open-Workspace**
  Open the Smpl_NuTiny-M051.eww workspace file
- **Project - Make**
  Compile and link the Smpl_NuTiny-M051 application
- **Project – Download and Debug**
  Program the application code into on-chip Flash ROM
  - Single step through code
  - Reset the device
  - Run the application

The P3.6 LED on the NuTiny-EVB-M058S board will be toggled on.

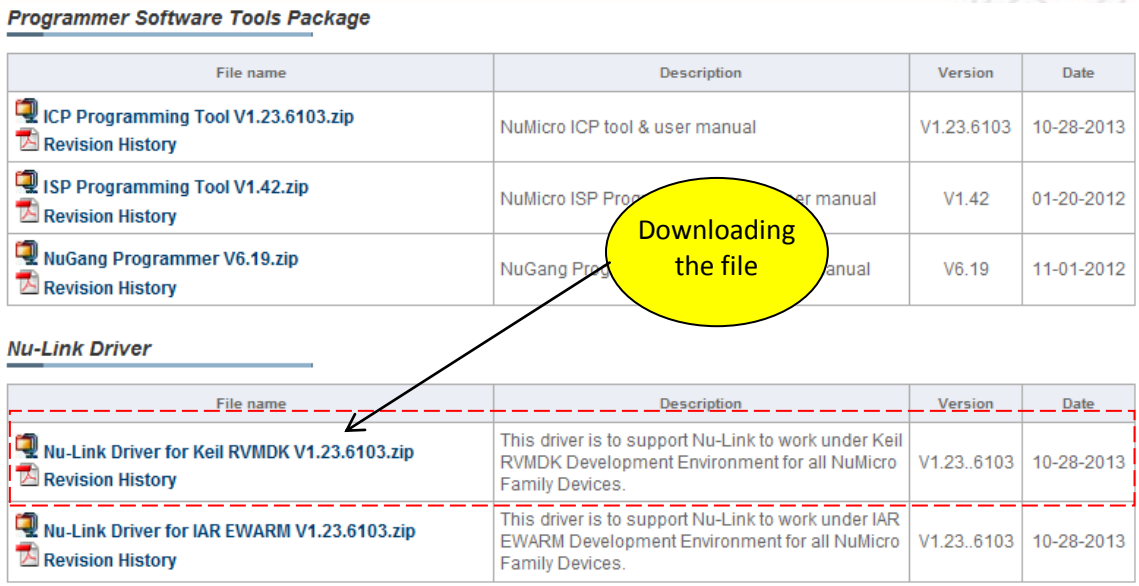
5 NuTiny-EVB-M058S Schematics



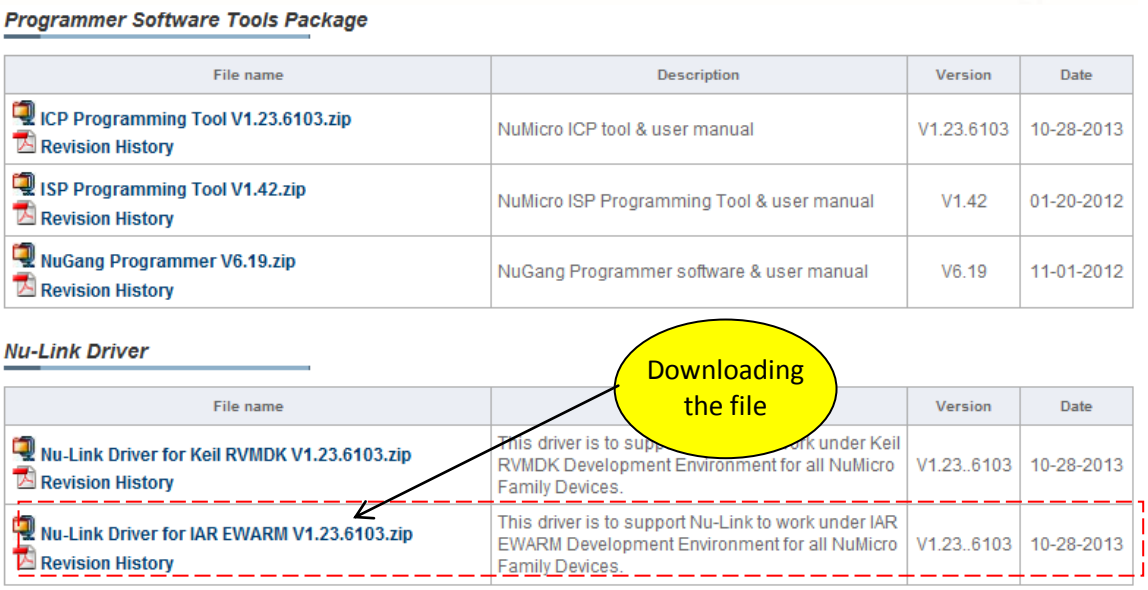

ICE CONNECT IF
DEBUG
NUC12SRE3AN
U2
USB_MINI_B
Nuvoton NuTiny-EVB-M058SSAN(LQFP64)
Size A3
Document Number
Rev 2.0
Date: Wednesday, July 10, 2013
Sheet of

6 Downloading NuMicro™ Related Files from Nuvoton Website

6.1 Downloading NuMicro™ Keil µVision® IDE Driver

Step1	Visit the Nuvoton NuMicro™ Website: **http://www.nuvoton.com/NuMicro**
Step2	
Step3	
Step4	Download the NuMicro Keil uVision® IDE driver.

6.2 Downloading NuMicro™ IAR EWARM Driver

Step1	Visit the Nuvoton NuMicro™ Website: **http://www.nuvoton.com/NuMicro**
Step2	
Step 3	
Step 4	Download the NuMicro™ IAR Embedded Workbench® driver.

6.3 Downloading NuMicro™ M051 series BSP Software Library

Step1	Visit the Nuvoton NuMicro™ Website: **http://www.nuvoton.com/NuMicro**
Step2	
Step3	Download the NuMicro M051™ series software library.

7 Revision History

Revision	Date	Description
1.00	Oct.31, 2013	Initial release

Important Notice

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