



ARM Cortex™-M0

32-BIT MICROCONTROLLER

NuTiny-SDK-NUC123 User Manual for NuMicro™ NUC123 Series

The information described in this document is the exclusive intellectual property of Nuvoton Technology Corporation and shall not be reproduced without permission from Nuvoton.

Nuvoton is providing this document only for reference purposes of NuMicro™ microcontroller based system design. Nuvoton assumes no responsibility for errors or omissions.

All data and specifications are subject to change without notice.

For additional information or questions, please contact: Nuvoton Technology Corporation.

Table of Contents

1	Overview	3
2	Introduction to NuTiny-SDK-NUC123	3
2.1	Jumper Description	4
2.2	Pin Assignment for Extended Connectors	5
2.3	PCB Placement	6
3	Starting to Use NuTiny-SDK-NUC123 with Keil μ Vision [®] IDE	7
3.1	Downloading and Installing Keil μ Vision [®] IDE Software	7
3.2	Downloading and Installing Nuvoton Nu-Link Driver	7
3.3	Hardware Setup	7
3.4	Smpl_NuTiny-NUC123 Example Program	8
4	Starting to Use NuTiny-SDK-NUC123 with IAR Embedded Workbench	9
4.1	Downloading and Installing IAR Embedded Workbench Software	9
4.2	Downloading and Installing Nuvoton Nu-Link Driver	9
4.3	Hardware Setup	9
4.4	Smpl_NuTiny-NUC123 Example Program	10
5	NuTiny-SDK-NUC123 Schematics	11
5.1	NuTiny-EVB-NUC123 Schematic	11
5.2	Nu-Link-Me Schematic	12
6	Downloading NuMicro [™] Related Files from Nuvoton Website	13
6.1	Downloading NuMicro [™] Keil μ Vision [®] IDE Driver	13
6.2	Downloading NuMicro [™] IAR EWARM Driver	15
6.3	Downloading NuMicro [™] NUC123 Series BSP Software Library	17
7	Revision History	19

1 Overview

The NuTiny-SDK-NUC123 is a specific development tool for NuMicro™ NUC123 series. User can use NuTiny-SDK-NUC123 to develop and verify the application program easily. The NuTiny-SDK-NUC123 includes two parts: NuTiny-EVB-NUC123 and Nu-Link-Me. The NuTiny-EVB-NUC123 is the evaluation board and Nu-Link-Me is its Debug Adaptor. Therefore, user does not need other additional ICE or debug equipment.

2 Introduction to NuTiny-SDK-NUC123

The NuTiny-SDK-NUC123 uses the NUC123SD4AN0 as the target microcontroller. *Figure 2-1* shows the NuTiny-SDK-NUC123 for NUC123 series, in which the left portion is called NuTiny-EVB-NUC123 and the right portion is called Nu-Link-Me.

The NuTiny-EVB-NUC123 is similar to other development boards. User can use it to develop and verify applications to emulate the real behavior. The on-board chip covers NUC123 series features. The NuTiny-EVB-NUC123 can be a real system controller to design users' target systems.

The Nu-Link-Me is a Debug Adaptor, which connects your PC's USB port 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 IAR or Keil, please refer to the "Nuvoton NuMicro™ IAR ICE Driver User Manual" or "Nuvoton NuMicro™ Keil ICE Driver User Manual" for details. The two documents will be stored in the local hard disk when each driver is installed.

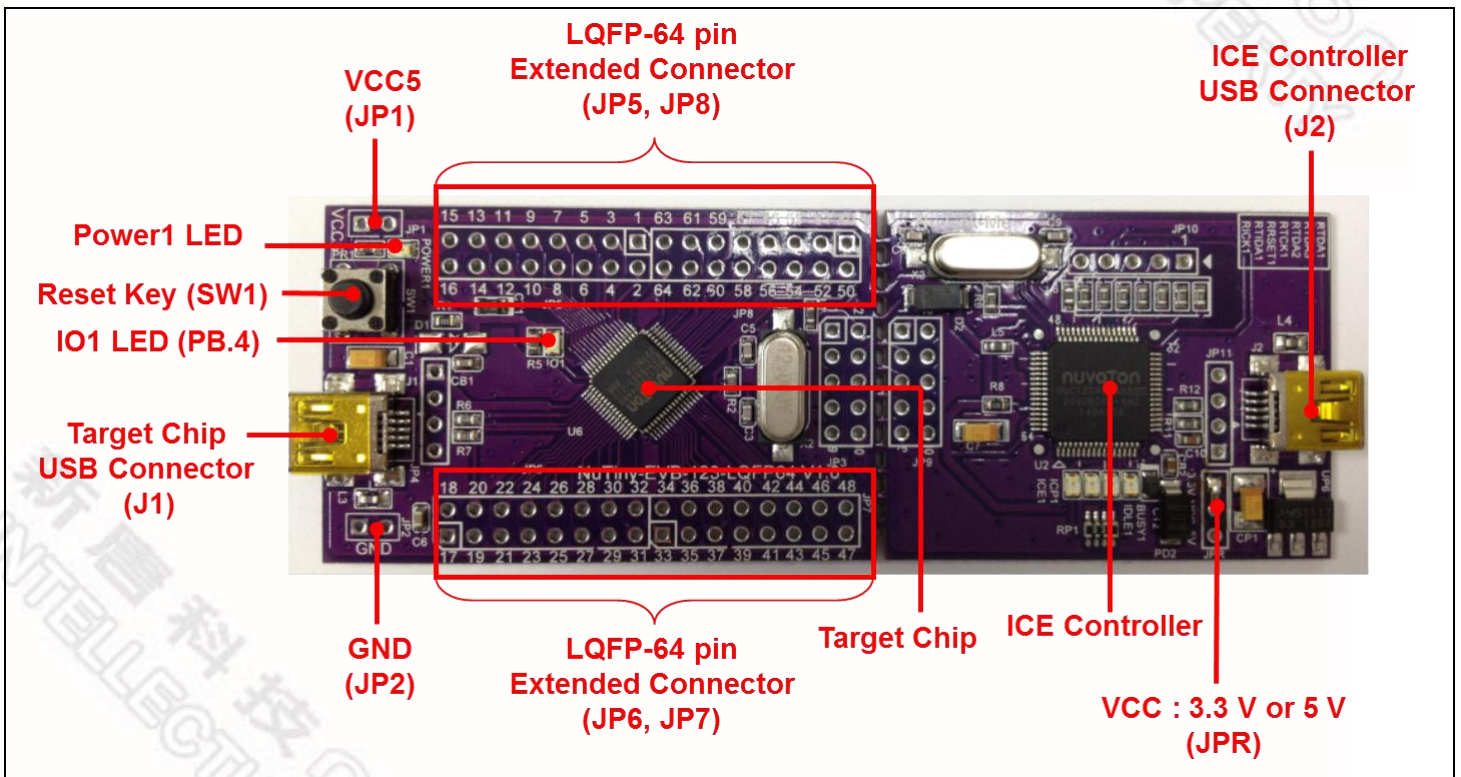


Figure 2-1 NuTiny-SDK-NUC123 (Purple PCB Board)

2.1 Jumper Description

2.1.1 Power Settings

- **J1**: USB port in NuTiny-EVB-NUC123
- **JP1**: VCC voltage connector in NuTiny-EVB-NUC123
- **J2**: USB port in Nu-Link-Me

POWER Mode	J2 USB Port	J1 USB Port	JP1 VCC	MCU Voltage
Mode 1	Connected to PC	X	DC 3.3 V or 5 V Output ^[1]	DC 3.3 V or 5 V ^[1]
Mode 2	X	Connect to PC	DC 4.8 V or 5 V Output ^[2]	DC 4.8 V or 5 V ^[2]
Mode 3	X	X	DC 2.5 V ~ 5.5 V Input	DC 2.5 V ~ 5.5 V Decided by JP1 VCC Input

X: Unused.

Note [1]: It depends on the setting (VCC via connecting to 3.3 V or 5 V) at **JPR** jumper in the Nu-Link-Me.

Note [2]: A diode device (4.8 V) must be put or both pins should be short (5 V) at **D1** in the NuTiny-EVB-NUC123.

2.1.2 Debug Connectors

- **JP3**: The connector in the target board (NuTiny-EVB-NUC123) for connecting with Nuvoton ICE adaptor (Nu-Link or Nu-Link-Me)
- **JP9**: The connector in the ICE adaptor (Nu-Link-Me) for connecting with a target board (e.g. NuTiny-EVB-NUC123)

2.1.3 USB Connectors

- **J1**: Mini USB connector in NuTiny-EVB-NUC123 for application use
- **J2**: Mini USB connector in Nu-Link-Me connected to a PC USB port

2.1.4 Extended Connectors

- **JP5, JP6, JP7** and **JP8**: Show all chip pins in NuTiny-EVB-NUC123

2.1.5 Reset Button

- **SW1**: Reset button in NuTiny-EVB-NUC123

2.1.6 Power Connectors

- **JP1**: VCC connector in NuTiny-EVB-NUC123
- **JP2**: GND connector in NuTiny-EVB-NUC123

2.2 Pin Assignment for Extended Connectors

The NuTiny-EVB-NUC123 provides the NUC123SD4AN0 target chip on board and the extended connectors (**JP5**, **JP6**, **JP7** and **JP8**) for LQFP 64-pin.

No	Pin Name	No	Pin Name	No	Pin Name	No	Pin Name
1	PB.14/ $\overline{INT0}$	17	VBUS	33	VSS	49	PD.0/ADC0/ SPISS20/SPISS11
2	PB.13	18	VDD33	34	PC.13/MOSI11/ PWM3/CLKO	50	PD.1/ADC1/ SPICLK2/SPISS01
3	PB.12/SPISS10/ CLKO	19	D-	35	PC.12/MISO11/ PWM2/I2SMCLK	51	PD.2/ADC2/ MISO20/MISO01
4	PA.11/SPICLK1/ MOSI20/I2C1SCL	20	D+	36	PC.11/MOSI10	52	PD.3/ADC3/ MOSI20/MOSI01
5	PA.10/MISO10/ MISO20/I2C1SDA	21	PB.0/RXD0	37	PC.10/MISO10	53	PD.4/ADC4/ MISO21
6	PD.8/MOSI10	22	PB.1/TXD0	38	VDD	54	PD.5/ADC5/ MOSI21
7	PD.9	23	PB.2/RTS0/ T2EX	39	PC.9/SPICLK1	55	PB.15/ $\overline{INT1}$ / T0EX
8	PD.10/CLKO	24	PB.3/CTS0/ T3EX	40	PC.8/SPISS10	56	PF.0/XT1_OUT
9	PD.11/ $\overline{INT1}$	25	PC.5/MOSI01/ TXD0	41	PA.15/PWM3/ I2SMCLK/CLKO	57	PF.1/XT1_IN
10	PB.4/RXD1/ SPISS20/SPISS11	26	PC.4/MISO01/ RXD0	42	VSS	58	/RESET
11	PB.5/TXD1 SPICLK2	27	PC.3/MOSI00/ I2SDO	43	PA.14/PWM2	59	VSS
12	PB.6/RTS1 MOSI20	28	PC.2/MISO00/ I2SDI	44	PA.13/PWM1	60	VDD
13	PB.7/CTS1 MISO20	29	PC.1/SPICLK0/ I2SBCLK	45	PA.12/PWM0	61	PF.2/ADC6/ I2C0SDA/PS2DAT
14	LDO	30	PC.0/SPISS00/ I2SLRCLK	46	ICE_DAT	62	PF.3/ADC7/ I2C0SCL/PS2CLK
15	VDD	31	PB.10/SPISS01/ TM2	47	ICE_CK	63	PVSS
16	VSS	32	PB.9/SPISS11/ TM1	48	AVDD	64	PB.8/TM0

Table 2-1 NUC123SD4AN0 LQFP 64-pin Assignment for Extended Connectors

3 Starting to Use NuTiny-SDK-NUC123 with Keil μ Vision[®] IDE

3.1 Downloading and Installing Keil μ Vision[®] IDE Software

Please visit the Keil company website (<http://www.keil.com>) to download the Keil μ Vision[®] 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 μ Vision[®] IDE driver” file. Please refer to 6.1 *Downloading NuMicro[™] Keil μ Vision[®] IDE Driver* for the detailed download flow. After the Nu-Link driver is downloaded, please unzip the file and execute the “Nu-Link_Keil_Driver.exe” to install the driver.

3.3 Hardware Setup

The hardware setup is shown in the following figure.



Figure 3-1 NuTiny-SDK-NUC123 Hardware Setup

3.4 Smp1_NuTiny-NUC123 Example Program

This example, as shown in the directory in *Figure 3-2*, demonstrates downloading and debugging an application on a NuTiny-SDK-NUC123 board. The example file can be downloaded from Nuvoton NuMicro™ website as described in 6.3 *Downloading NuMicro™ NUC123 Series BSP Software Library*.

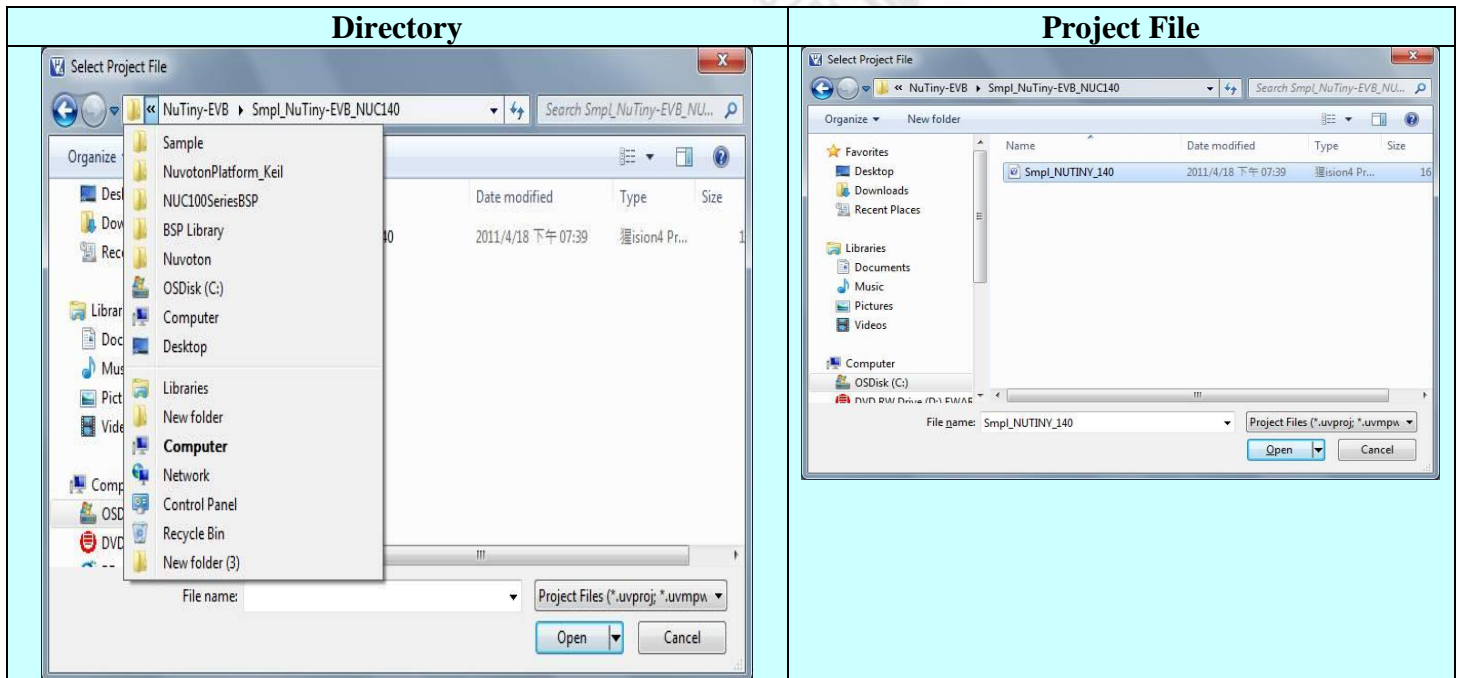


Figure 3-2 Smp1_NuTiny-NUC123 Example Directory

To use the example:
The PB.4 LED on the NuTiny-EVB-NUC123 board will be toggled On.

- **Start µVision®**
- **Project - Open**
Open the Smp1_NuTiny-NUC123.uvproj project file
- **Project - Build**
Compile and link the Smp1_NuTiny-NUC123 application
- **Flash – Download**
Program the application code into on-chip Flash ROM
- **Start debug mode**
Using the debugger commands, you may:
 - ◆ Review variables in the watch window
 - ◆ Single step through code
 - ◆ RST Reset the device
 - ◆ Run the application

4 Starting to Use NuTiny-SDK-NUC123 with IAR Embedded Workbench

4.1 Downloading and Installing IAR Embedded Workbench Software

Please connect to 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 connect to the Nuvoton Company NuMicro™ website (<http://www.nuvoton.com/NuMicro>) to download “NuMicro™ IAR ICE driver user manual” file. Please refer to Chapter 6.2 for the detail download flow. When the Nu-Link driver has been well downloaded, please unzip the file and execute the “Nu-Link_IAR_Driver.exe” to install the driver.

4.3 Hardware Setup

The hardware setup is shown in the following figure.



Figure 4-1 NuTiny- SDK-NUC123 Hardware Setup

4.4 Smpl_NuTiny-NUC123 Example Program

This example, as shown in the directory in *Figure 4-2*, demonstrates downloading and debugging an application on a NuTiny-SDK-NUC123 board. The example file can be downloaded from Nuvoton NuMicro™ website as described in 6.3 *Downloading NuMicro™ NUC123 Series BSP Software Library*.

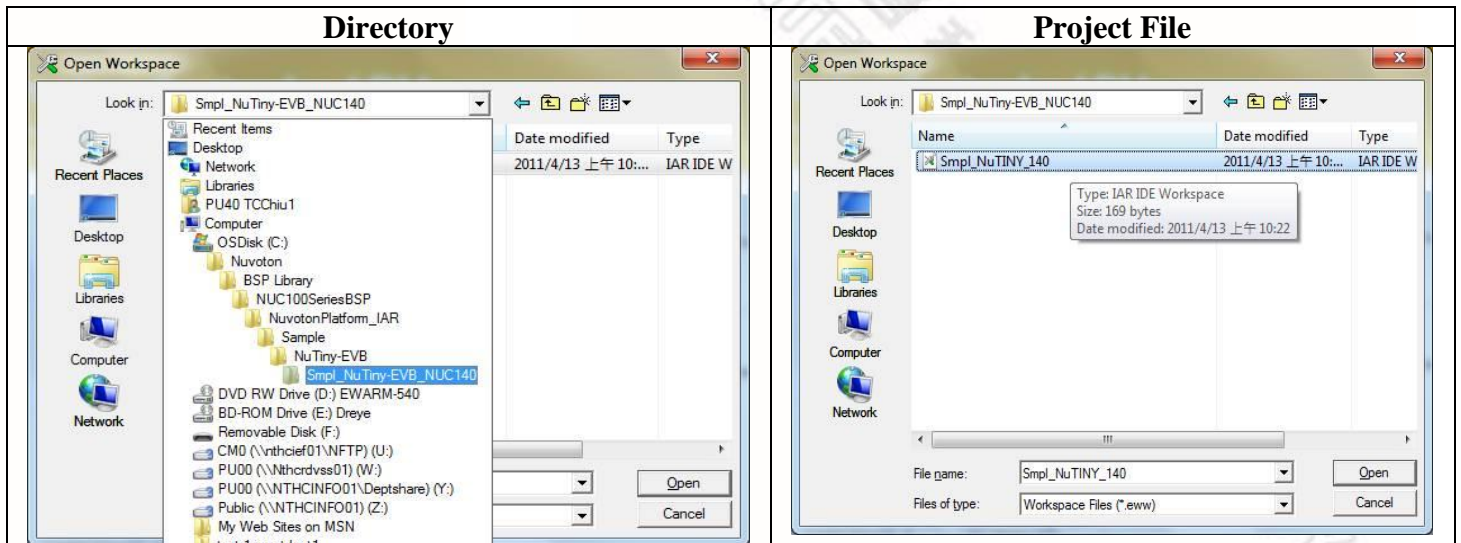


Figure 4-2 Smpl_NuTiny-NUC123 Example Directory

To use this example:

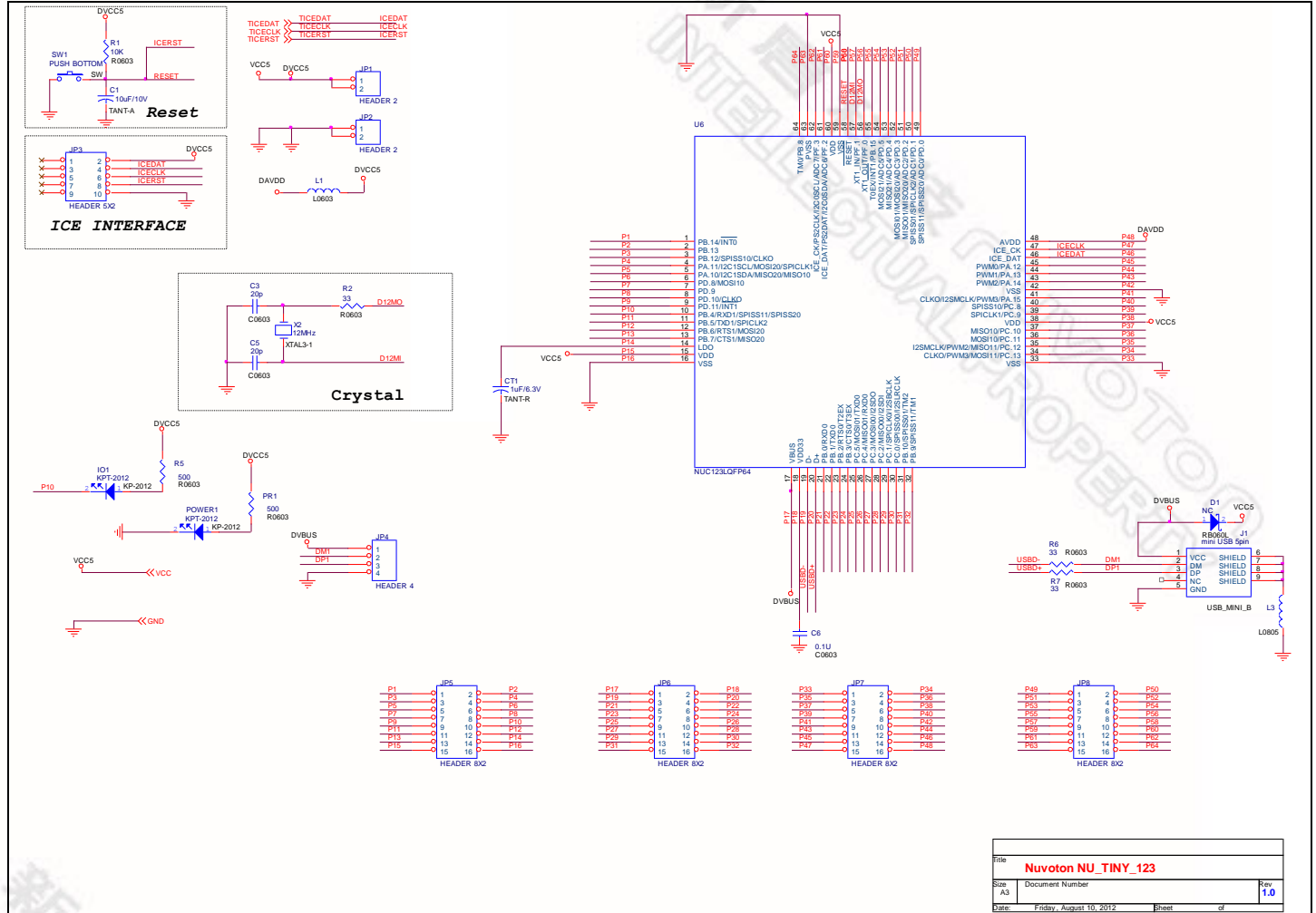
The PB.4 LED will toggle on the NuTiny-EVB-NUC123 board.

- **Start IAR Embedded Workbench**
- **File-Open-Workspace**
Open the Smpl_NuTiny_NUC123.eww workspace file
- **Project - Make**
Compile and link the Smpl_NuTiny-NUC123 application
- **Project – Download and Debug**
Program the application code into on-chip Flash ROM
 - ◆ Single step through code
 - ◆ Reset the device
 - ◆ Run the application

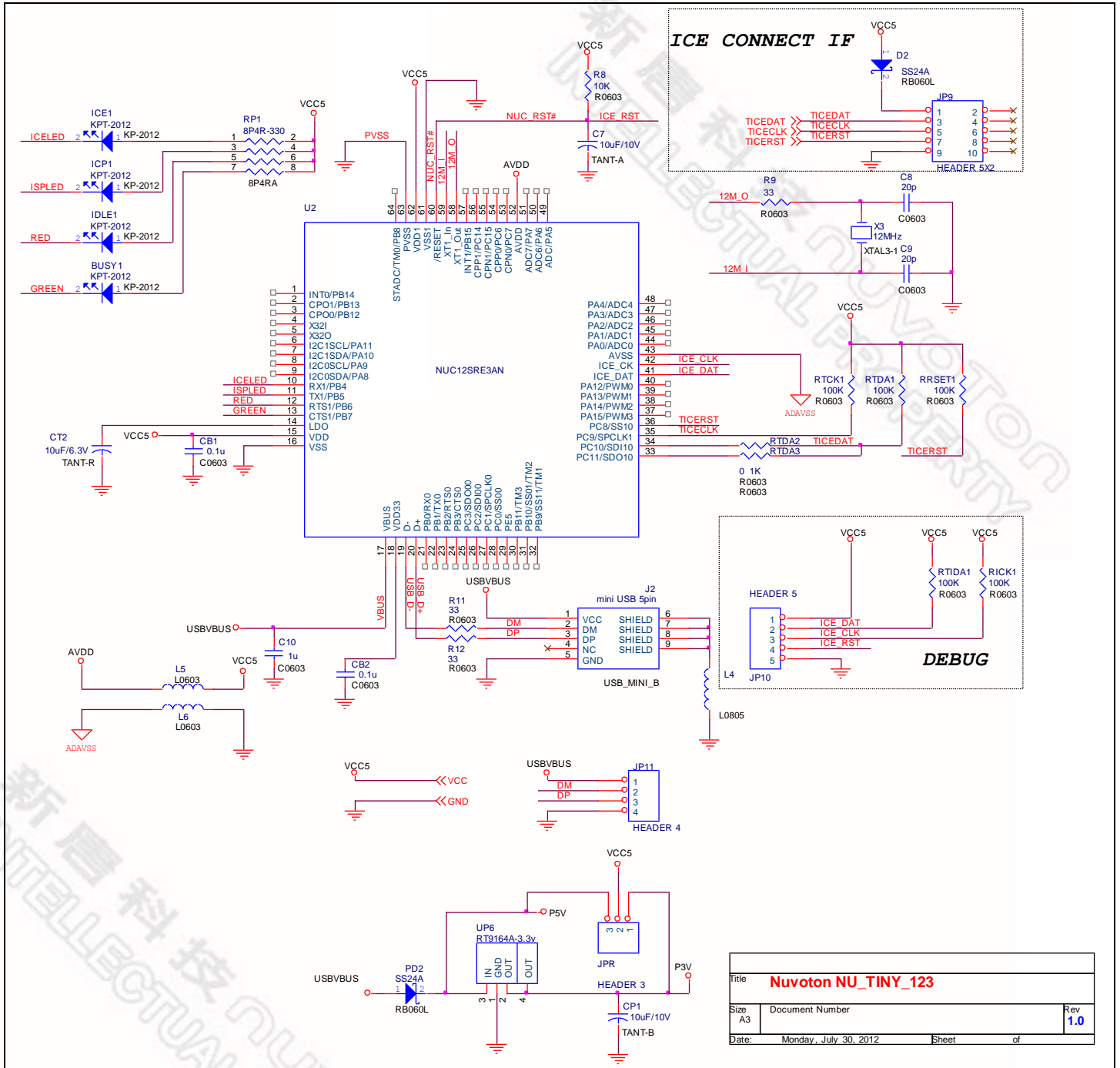


5 NuTiny-SDK-NUC123 Schematics

5.1 NuTiny-EVB-NUC123 Schematic



5.2 Nu-Link-Me Schematic



6 Downloading NuMicro™ Related Files from Nuvoton Website

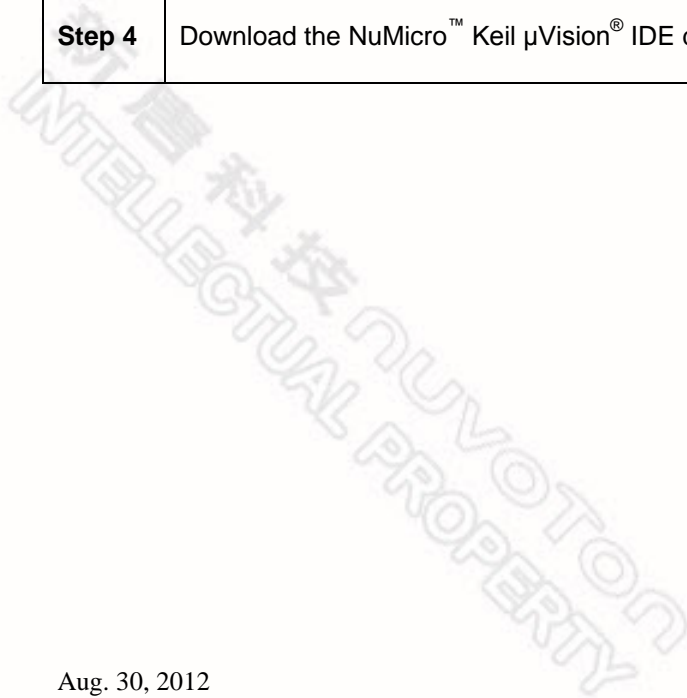
6.1 Downloading NuMicro™ Keil μVision® IDE Driver

<p>Step1</p>	<p>Visit the Nuvoton NuMicro™ website: http://www.nuvoton.com/NuMicro</p>
<p>Step2</p>	 <p>The screenshot shows the Nuvoton website interface for the NuMicro family. The 'Development Resources' section is expanded, and the 'Device Driver and Software Library' link is highlighted with a red dashed box. A yellow callout bubble with a red arrow points to this link, containing the text: 'Click here to enter Device Driver and Software Library.'</p>


新唐科技 NUVOTON
INTELLECTUAL PROPERTY

Step 3	<table border="1"> <tr> <td> M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide </td> <td> M051 series software package based on register programming coding rule for sample code & user guide. </td> <td> V1.00.001 V1.03.001 </td> </tr> <tr> <td> NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese) </td> <td> NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it. </td> <td> V1.03.002 V1.03.001 </td> </tr> </table>	M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001	NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001							
	M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001											
	NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001											
	<p><u>Programmer Software Tools Package</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> ICP Programming Tool (Build 4228) V1.03.zip</td> <td>NuMicro ICP tool & user manual</td> <td>V1.03</td> </tr> <tr> <td> ISP Programming Tool.zip</td> <td>NuMicro ISP Programming Tool & user manual</td> <td>V1.40</td> </tr> <tr> <td> NuGang Programmer V5.31.zip</td> <td>NuGang Programmer software & user manual</td> <td>V5.31</td> </tr> </tbody> </table>			File name	Description	Version	ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03	ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40	NuGang Programmer V5.31.zip	NuGang Programmer software & user manual
File name	Description	Version												
ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03												
ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40												
NuGang Programmer V5.31.zip	NuGang Programmer software & user manual	V5.31												
<p><u>Nu-Link Driver</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> <tr> <td> Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> </tbody> </table> <p>Contact us: NuMicro@nuvoton.com</p> <div style="text-align: center;"> </div>			File name	Description	Version	Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03	Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03			
File name	Description	Version												
Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03												
Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03												

Step 4 Download the NuMicro™ Keil μVision® IDE driver.



6.2 Downloading NuMicro™ IAR EWARM Driver

<p>Step1</p>	<p>Visit the Nuvoton NuMicro™ website: http://www.nuvoton.com/NuMicro.</p>
<p>Step2</p>	 <p>The screenshot shows the Nuvoton website's navigation menu with options like 'About Nuvoton', 'Products & Sales', 'News & Events', 'Investor', 'Human Resources', 'Member Area', and 'Download Service'. The main content area is titled 'ARM Cortex™-M0 NuMicro® Family' and includes a product image and a description. Below this, there are four columns of links: 'Products', 'Development Resources', 'Technical Support', and 'News and Events'. A red dashed box highlights the 'Device Driver and Software Library' link under 'Development Tools' in the 'Development Resources' column. A yellow callout bubble with a red arrow points to this link, containing the text: 'Click here to enter Device Driver and Software Library.'</p>

Step 3	<table border="1"> <tr> <td> M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide </td> <td>M051 series software package based on register programming coding rule for sample code & user guide.</td> <td>V1.00.001 V1.03.001</td> </tr> <tr> <td> NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese) </td> <td>NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.</td> <td>V1.03.002 V1.03.001</td> </tr> </table>	M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001	NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001																
	M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001																				
NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001																					
<p><u>Programmer Software Tools Package</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> ICP Programming Tool (Build 4228) V1.03.zip</td> <td>NuMicro ICP tool & user manual</td> <td>V1.03</td> </tr> <tr> <td> ISP Programming Tool.zip</td> <td>NuMicro ISP Programming Tool & user manual</td> <td>V1.40</td> </tr> <tr> <td> NuGang Programmer V5.31.zip</td> <td>NuGang Programmer software & user manual</td> <td>V5.31</td> </tr> </tbody> </table> <p><u>Nu-Link Driver</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> <tr> <td> Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> </tbody> </table> <p>Contact us: NuMicro@nuvoton.com</p> <div style="text-align: center;"> <p>Click here to download the file.</p> </div>			File name	Description	Version	ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03	ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40	NuGang Programmer V5.31.zip	NuGang Programmer software & user manual	V5.31	File name	Description	Version	Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03	Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03
File name	Description	Version																					
ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03																					
ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40																					
NuGang Programmer V5.31.zip	NuGang Programmer software & user manual	V5.31																					
File name	Description	Version																					
Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03																					
Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03																					
Step 4	Download the NuMicro™ IAR Embedded Workbench® driver.																						

6.3 Downloading NuMicro™ NUC123 Series BSP Software Library

<p>Step1</p>	<p>Visit the Nuvoton NuMicro™ website: http://www.nuvoton.com/NuMicro.</p>
<p>Step2</p>	<p>The screenshot shows the Nuvoton website for the ARM Cortex-M0 NuMicro Family. The page includes a navigation menu, a search bar, and a main content area with four columns: Products, Development Resources, Technical Support, and News and Events. The 'Development Resources' column contains a list of links, with 'Development Tools' highlighted by a red dashed box. Under 'Development Tools', 'Device Driver and Software Library' is also highlighted by a red dashed box. A red arrow points from a yellow callout bubble to this link. Below the main content area is a 'NuMicro® Family' banner with a progress bar for 'M051 Base Line'.</p>

Step 3																								
	<table border="1"> <tr> <td> M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide </td> <td>M051 series software package based on register programming coding rule for sample code & user guide.</td> <td>V1.00.001 V1.03.001</td> </tr> <tr> <td> NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese) </td> <td>NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.</td> <td>V1.03.002 V1.03.001</td> </tr> </table>	M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001	NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001																	
M051 Series BSP_RegCtrlPrg_v1.00.001.zip NUC100 Series Driver Reference Guide	M051 series software package based on register programming coding rule for sample code & user guide.	V1.00.001 V1.03.001																						
NUC100 Series BSP_CMSIS_v1.03.002.zip NUC100 Series Driver Reference Guide (Simplified Chinese)	NUC100 series software package based on CMSIS version 1.3. It supports both IAR and Keil development environment with drivers and samples codes. Examples source code for NuTiny-100/120 and Learning Board are included. For detailed, please download it and unzip it.	V1.03.002 V1.03.001																						
<p><u>Programmer Software Tools Package</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> ICP Programming Tool (Build 4228) V1.03.zip</td> <td>NuMicro ICP tool & user manual</td> <td>V1.03</td> </tr> <tr> <td> ISP Programming Tool.zip</td> <td>NuMicro ISP Programming Tool & user manual</td> <td>V1.40</td> </tr> <tr> <td> NuGang Programmer V5.31.zip</td> <td>NuGang Programmer software & user manual</td> <td>V5.31</td> </tr> </tbody> </table> <p><u>Nu-Link Driver</u></p> <table border="1"> <thead> <tr> <th>File name</th> <th>Description</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td> Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> <tr> <td> Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip</td> <td>This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.</td> <td>V1.03</td> </tr> </tbody> </table> <p>Contact us: NuMicro@nuvoton.com</p>				File name	Description	Version	ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03	ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40	NuGang Programmer V5.31.zip	NuGang Programmer software & user manual	V5.31	File name	Description	Version	Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03	Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03
File name	Description	Version																						
ICP Programming Tool (Build 4228) V1.03.zip	NuMicro ICP tool & user manual	V1.03																						
ISP Programming Tool.zip	NuMicro ISP Programming Tool & user manual	V1.40																						
NuGang Programmer V5.31.zip	NuGang Programmer software & user manual	V5.31																						
File name	Description	Version																						
Nu-Link Driver for Keil RVMDK(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by Keil RVMDK Development Environment and support all NuMicro Family Devices selectable.	V1.03																						
Nu-Link Driver for IAR EWARM(Build 4228) V1.03.zip	This driver is to support Nu-Link recognized by IAR EWARM Development Environment and support all NuMicro Family Devices selectable.	V1.03																						
Step 4	Download the NuMicro™ NUC123 series software library.																							

7 Revision History

Revision	Date	Description
1.0	Aug. 16, 2012	Preliminary version

Important Notice

Nuvoton products are not designed, intended, authorized or warranted for use as components in systems or equipment intended for surgical implantation, atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, or for other applications intended to support or sustain life. Further more, Nuvoton products are not intended for applications wherein failure of Nuvoton products could result or lead to a situation wherein personal injury, death or severe property or environmental damage could occur.

Nuvoton customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Nuvoton for any damages resulting from such improper use or sales.

Please note that all data and specifications are subject to change without notice. All the trademarks of products and companies mentioned in this datasheet belong to their respective owners.