

Using the **S5U13781R01C100** Shield Graphics Library with Atmel Studio

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1 Introduction

This document explains how to use the S5U13781R01C100 Shield Graphics Library with Atmel Studio. The S5U13781R01C100 Shield Graphics Library is a software library designed to simplify the process of displaying graphics and text to a panel connected to a S5U13781R01C100 Shield. The Graphics Library is intended for use with the Arduino Sketch IDE, but some users may wish to use the extra functionality of the Atmel Studio IDE (based on Visual Studio).

The S5U13781R01C100 Shield is designed to be used with the Arduino Due microcontroller board. For details on the Arduino Due, refer to the Arduino website at www.arduino.cc/. For further details on the S1D13781, or the S5U13781R01C100 Shield, visit the vdc.epson.com.

Please visit our Youtube channel, EEAVDC Productions, where we offer videos which demonstrate the installation and use of our products.

We appreciate your comments on our documentation. Please contact us via email at vdc-documentation@ea.epson.com.

2 Requirements

The S5U13781R01C100 Shield Graphics Library is designed to simplify the process of displaying graphics and text to a panel connected to a S5U13781R01C100 Shield TFT board that is connected to an Arduino Due Controller board.

This document assumes that the following hardware and software is already installed or connected to the development system. For more information on the installation and configuration of these components, refer to the *S5U13781R01C100 Shield Graphics Library Users Guide*, document number X94A-B-001-xx, available at vdc.epson.com.

- S5U13781R01C100 Shield TFT board
- Arduino Due Controller board
- LCD panel (default configuration is 480x272 @ 24bpp)
- Arduino Sketch IDE software v1.6.2 or greater
- S5U13781R01C100 Graphics Library package
- Micro USB cable (to power the Due and optionally use the Serial Monitor)

Please check the Website at vdc.epson.com for the latest revision of the Graphics Library before beginning any development.

To use the S5U13781R01C100 Shield Graphics Library with Atmel Studio, the following software is also required:

- Atmel Studio v6.2 (or greater)
- Arduino IDE for Atmel Studio plugin by Visual Micro

Atmel Studio is available from Atmel's website at www.atmel.com. Arduino IDE for Atmel Studio is available from Visual Micro's website at www.visualmicro.com, or search for "Arduino IDE for Atmel Studio" in the Atmel Gallery at gallery.atmel.com.

3 Software Installation

3.1 Installing Atmel Studio

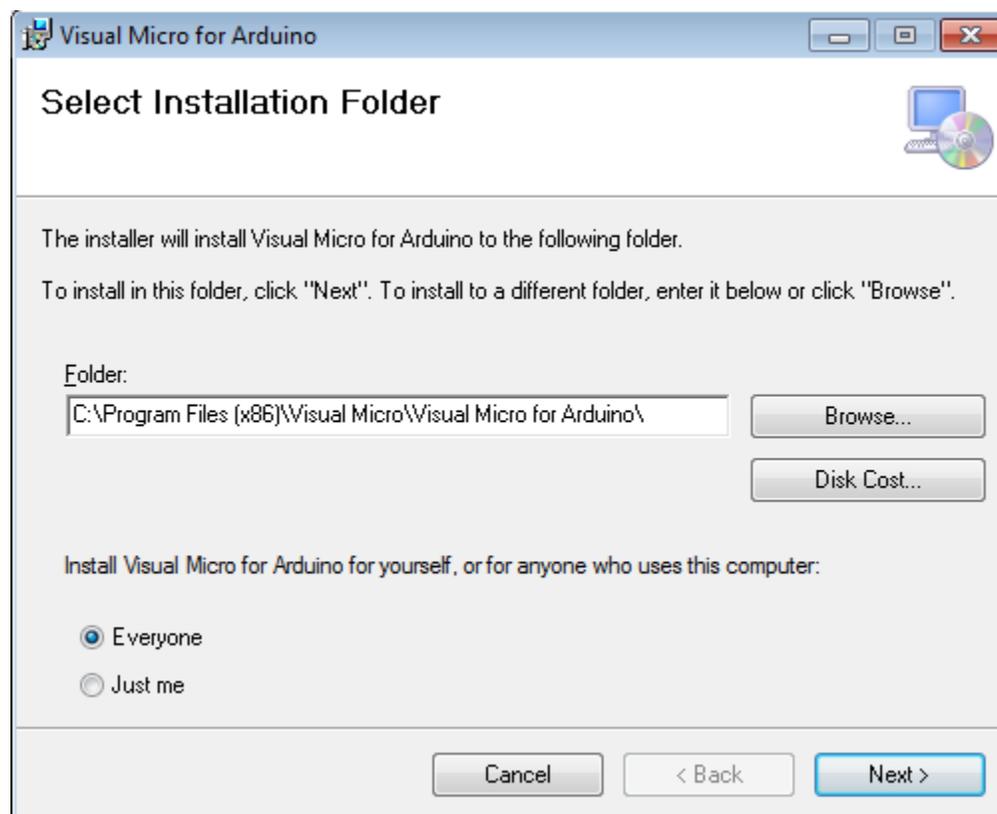
Atmel Studio is an IDE based on Visual Studio and is designed as a development platform for Atmel's line of products. It is available for download at www.atmel.com. For further information on installing Atmel Studio, refer to the information available on their website.

3.2 Installing Arduino IDE for Atmel Studio

Once Atmel Studio is installed, the "Arduino IDE for Atmel Studio" plugin can be installed. Arduino IDE for Atmel Studio provides an environment that allows Arduino Sketch IDE compatible applications and libraries to be built, run, and debugged from within Atmel Studio.

Arduino IDE for Atmel Studio is available from Visual Micro's website at www.visualmicro.com, or search for "Arduino IDE for Atmel Studio" in the Atmel Gallery at gallery.atmel.com. Once downloaded, you should have a windows install file such as **ArduinoForAtmelStudio.msi**. To install:

1. Run the ArduinoForAtmelStudio.msi and select the default folder for installation as shown in the following image.

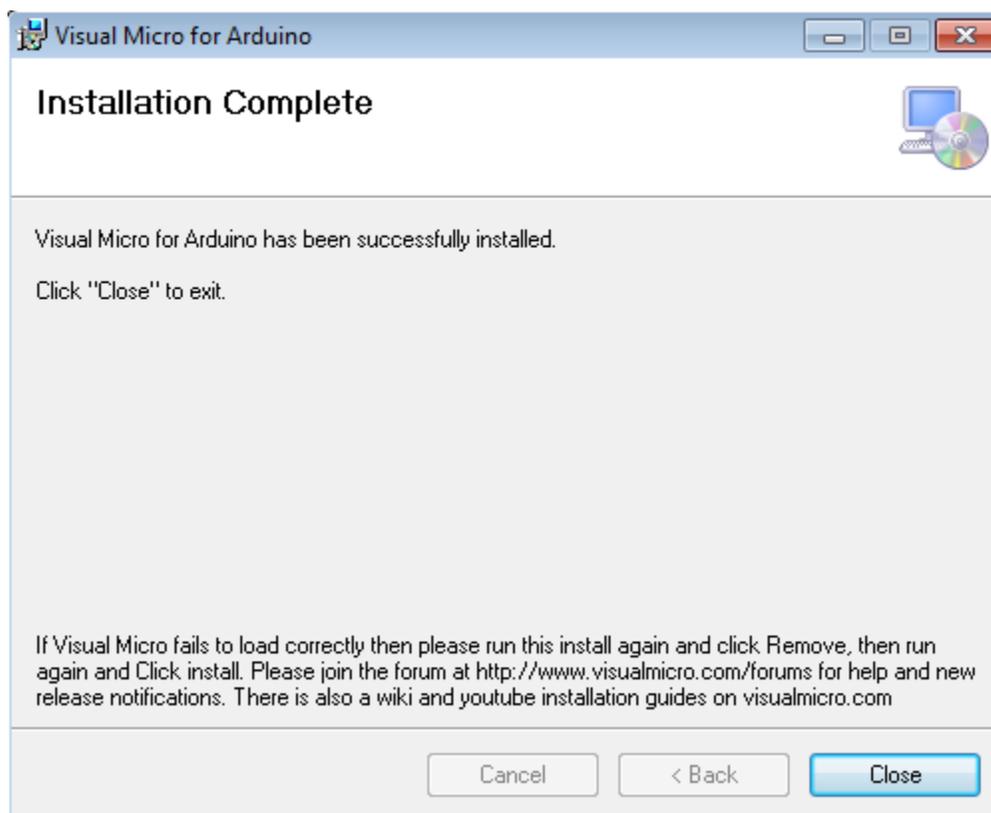


Arduino IDE for Atmel Studio Folder Selection

2. Click Next.
3. Review the license agreement that follows, and check "I Agree" if you agree to the terms of the license.
4. Click Next and wait for the installation program to install the necessary files.

Software Installation

5. When the installation is complete, close the window and you are ready to use Arduino Sketch applications in Atmel Studio.



Arduino IDE for Atmel Studio Installation Complete

4 Configuring Arduino IDE for Atmel Studio

Once Arduino IDE for Atmel Studio is installed, some new menu options and a new toolbar are available which provide functions specifically for Arduino projects. These allow configuration of Arduino IDE for Atmel Studio and access to the Visual Micro explorer.

Note:

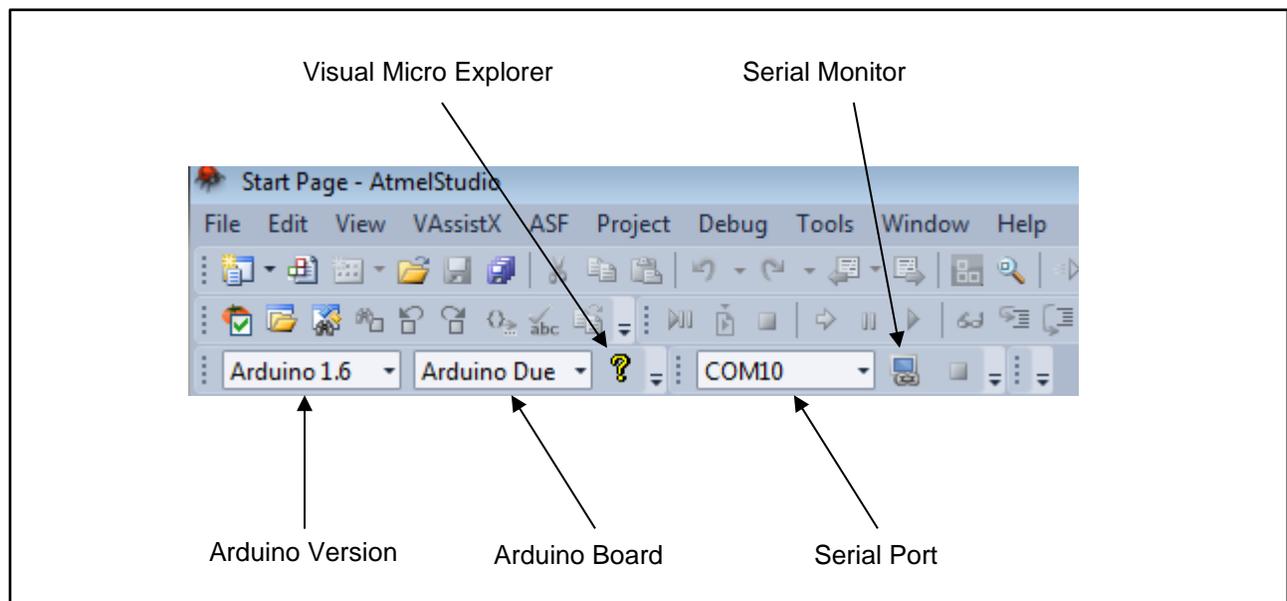
These instructions assume that the hardware and software requirements discussed in Section 2 are already setup, and that the Arduino Due is connected to the development PC using the USB Programming Port. . For more information on the installation and configuration of these components, refer to the *S5U13781R01C100 Shield Graphics Library Users Guide*, document number X94A-B-001-xx, available at vdc.epson.com.

4.1 Configuring for the Arduino Due Board

To use Arduino IDE for Atmel Studio with the S5U13781R01C100 Shield Graphics Library, there are few settings that must be set to select the target Arduino Due board. These can be set on the toolbar as follows:

- Arduino Version: Arduino 1.6
- Arduino Board: Arduino Due Programming Port
- Serial Port: COMxx Arduino Programming Port (where COMxx is the serial port used to access the Arduino Due board)

The following image shows where these settings are configured.



Arduino IDE for Atmel Studio Toolbar

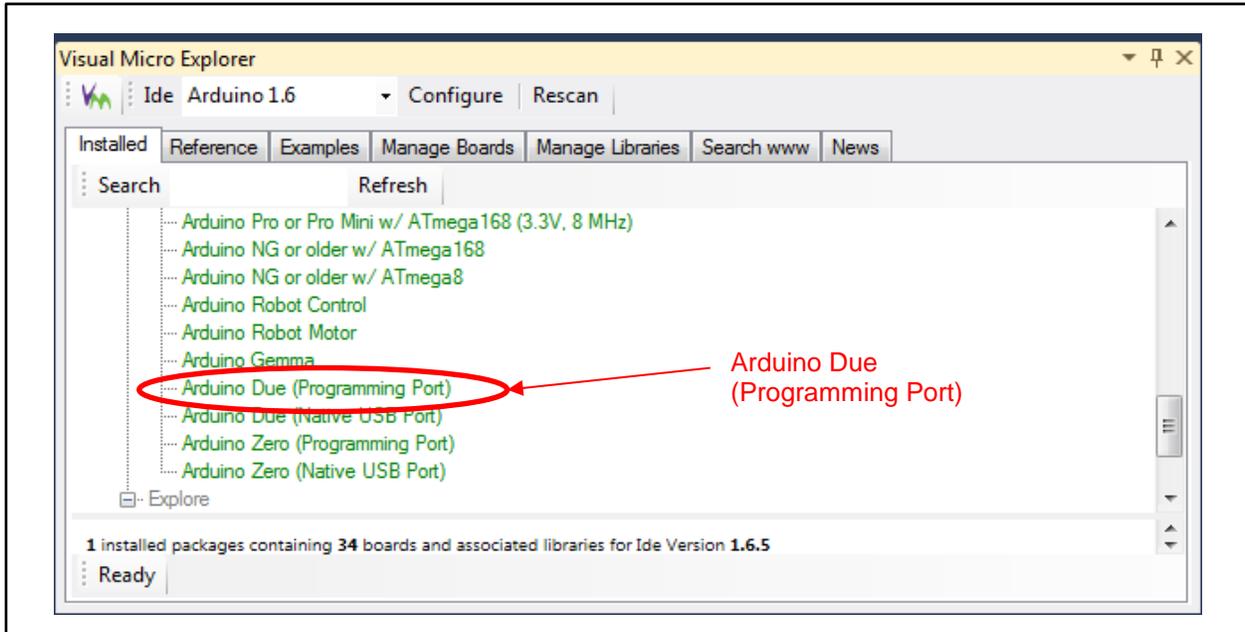
Note:

The Arduino Sketch IDE must be already installed and configured for the Arduino Due board as Arduino IDE for Atmel Studio relies on the Arduino environment.

4.2 Confirming the Board and Libraries

Arduino IDE for Atmel Studio uses board information and libraries that are installed in the Arduino Sketch IDE. By opening the Visual Micro Explorer (clicking on the “?” icon in the toolbar), the Visual Micro Explorer window is displayed.

First, confirm that the Arduino Due board package is installed. It should be listed in the Installed Tab as shown below.



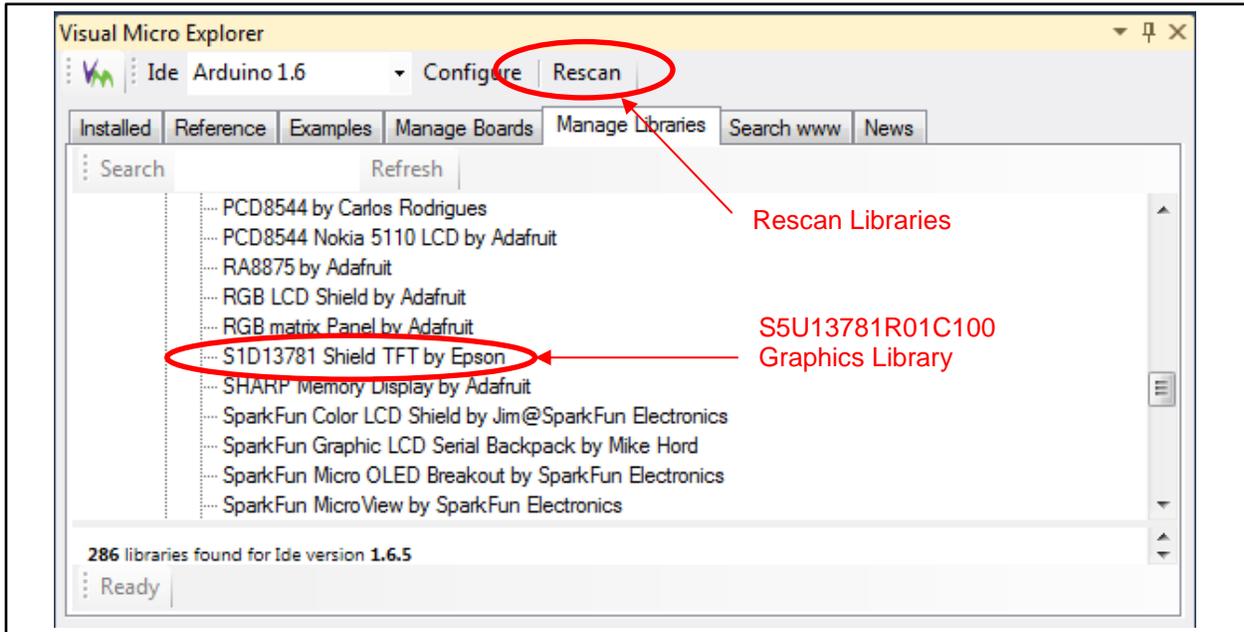
Visual Micro Explorer: Installed Tab

Configuring Arduino IDE for Atmel Studio

Next, in the Manage Libraries Tab, confirm that the “S1D13781 Shield TFT” is installed. It should be under Library Installer -> Categories -> Display -> S1D13781 Shield TFT by Epson. If the S1D13781 library is not listed, it can be installed using the Arduino Shield IDE and found using the Rescan function.

Note:

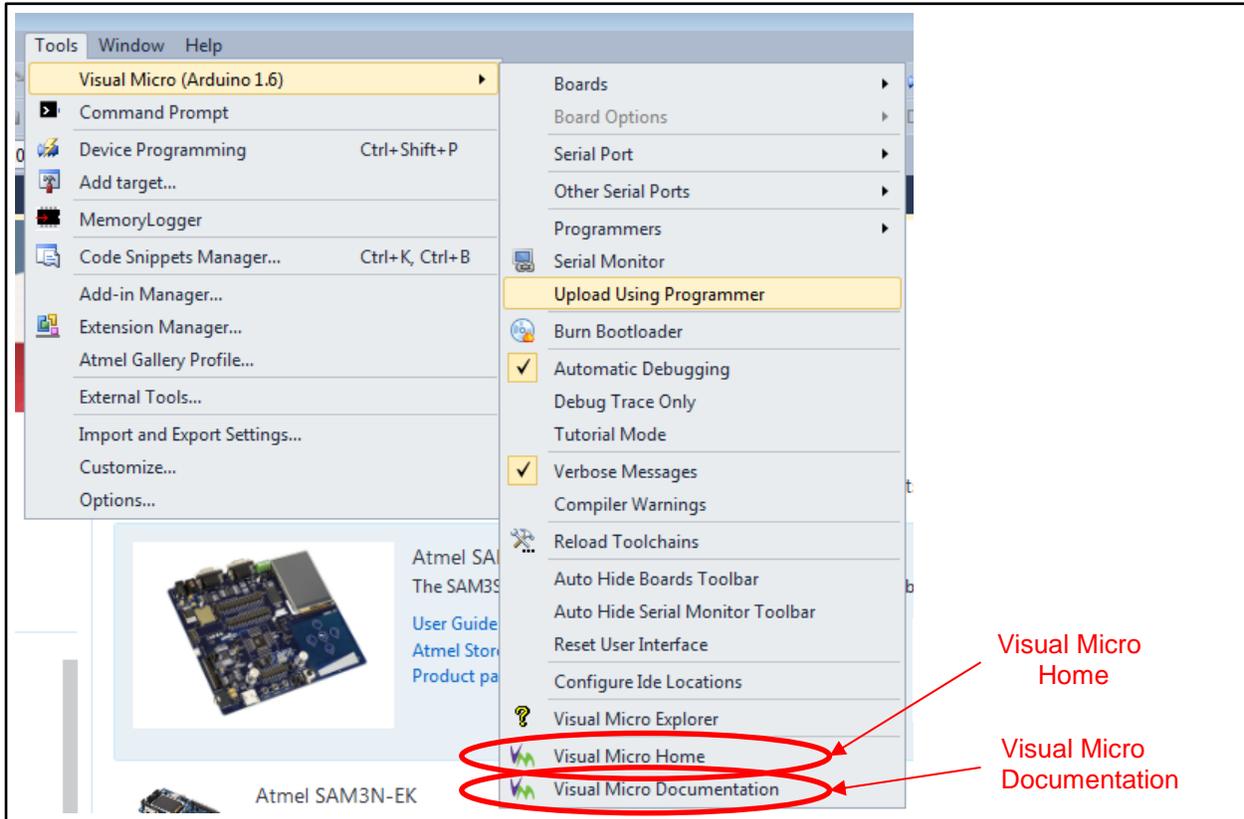
For some versions of Arduino IDE for Atmel Studio, it may be possible to install Arduino libraries from .zip files directly from the Visual Micro Explorer. Please confirm whether this function is available in your version at www.visualmicro.com.



Visual Micro Explorer: Manage Libraries Tab

4.3 Visual Micro Menu Options

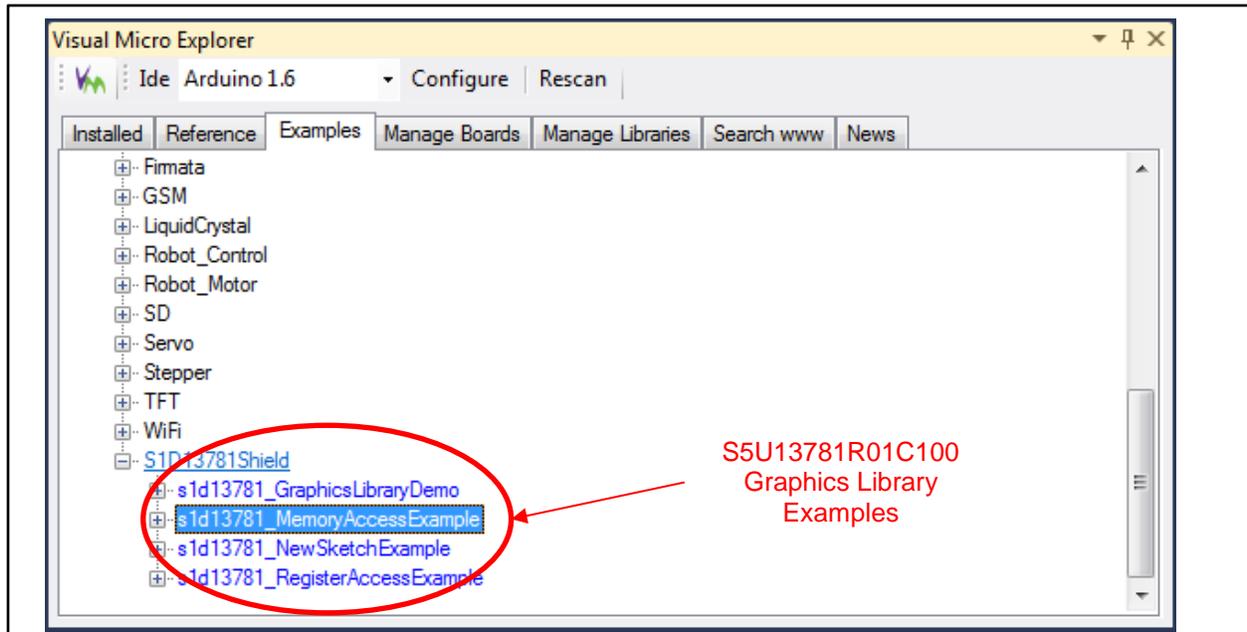
There are further configuration options and functions available on the Tools->Visual Micro->... menu. For detailed information on these functions, click on the Visual Micro Documentation or Visual Micro Home options.



Visual Micro Menu Options: Documentation

5 Running the Graphics Library Examples

Now that Arduino IDE for Atmel Studio is configured, the S5U13781R01C100 Shield Graphics Libraries can be used. There are some example sketches available in the Examples Tab of the Visual Micro Explorer. They are found under Library Examples -> S1D13781Shield -> ... as shown in the following image.



Visual Micro Explorer: Examples Tab

There are 4 example sketches:

- s1d13781_GraphicsLibraryDemo – demonstrates some of the graphics functions available in the Graphics Library
- s1d13781_MemoryAccessExample – demonstrates how to read/write S1D13781 memory directly
- s1d13781_NewSketchExample – provides a template for new sketches using the Graphics Library
- s1d13781_RegisterAccessExample – demonstrates how to read/write S1D13781 registers directly

Note:

For more information on understanding and using the Graphics Library and example sketches, refer to the *S5U13781R01C100 Shield Graphics Library Users Guide*, document number X94A-B-001-xx, available at vdc.epson.com.

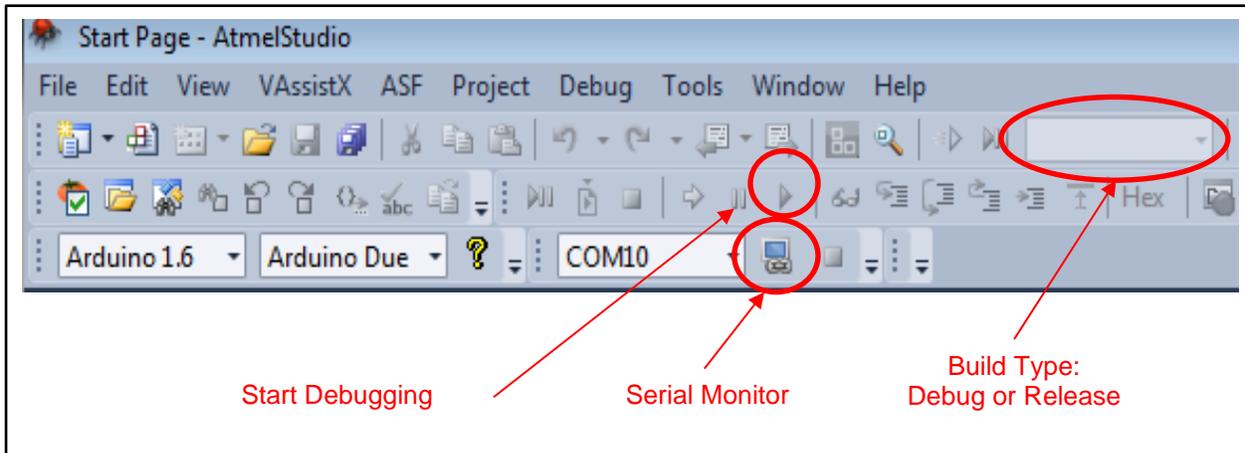
Running the Graphics Library Examples

5.1 Building and Running an Example Sketch

To build and run an example sketch perform the following steps.

1. Open an example sketch, click on the desired sketch name in the Examples Tab and open a copy of the sketch (unless you want to directly modify the example sketch).
2. Select whether you want to do a Debug or Release build.
3. Click the Start Debugging button to build the Arduino Sketch project and start debugging.

The following image shows the Toolbar buttons used to select the build type and start debugging.



Arduino IDE for Atmel Studio Toolbar: Build/Debug

The example sketch should build and be uploaded to the Arduino Due. It may be helpful to enable the Serial Monitor at this time to view IO from the Arduino Due. The example sketches output helpful debug messages.

For further information on using Arduino IDE for Atmel Studio, refer to the documentation as mentioned in Section 4.3, or visit their website at www.visualmicro.com.

6 Change Record

X94A-B-002-01 Revision 1.0 - Issued: March 29, 2016

- Updated address/contact page
- Updated Epson web page and email address
- Minor formatting changes

X94A-B-002-01 Revision 1.0 - Issued: July 30, 2015

- Revision 1.0
-

7 Sales and Technical Support

For more information on Epson Display Controllers, visit the Epson Global website.

https://global.epson.com/products_and_drivers/semicon/products/display_controllers/



For Sales and Technical Support, contact the Epson representative for your region.

https://global.epson.com/products_and_drivers/semicon/information/support.html

