APPLICATION NOTE

Atmel AT03293: Getting started with SAM D20

Atmel 32-bit Microcontrollers

Features

- Getting started with Atmel® SAM D20 microcontrollers and tools
- Atmel SAM D20 Xplained PRO and Atmel Studio 6.1 getting started

Description

This application note aims at helping the reader to get started with the Atmel SAM D20 ARM® Cortex®-M0+ based microcontroller.

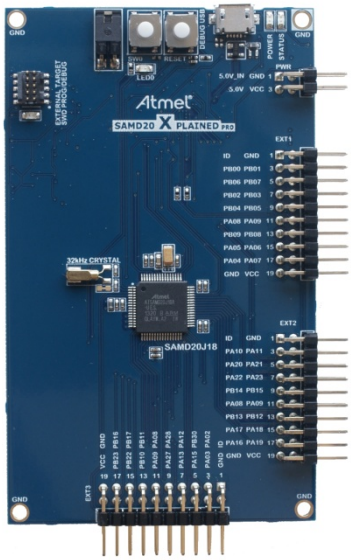
1. Getting the Device Datasheet

Web page: http://www.atmel.com/products/microcontrollers/arm/sam_d20.aspx?tab=documents

Document: Atmel SAM D20 Datasheet (summary, complete) (.pdf)

- Select the required device (ie. ATSAMD20J18) and get the latest datasheet (.pdf file). There are two versions:
  - Complete version (includes all peripheral descriptions and electrical charachteristics)
  - Summary version

2. Get the SAM D20 Xplained Pro Evaluation Kit



Web page: http://www.atmel.com/tools/ATSAMD20-XPRO.aspx

Get the kit: http://store.atmel.com

Document/file:

- SAM D20 Xplained Pro User Guide application note (.pdf)

Key features:

- SAMD20J18 microcontroller
- One mechanical reset button
- One mechanical programmable button
- One yellow user LED
- USB interface, host and device function (shared physical interface)
- 32.768kHz crystal
- 12MHz crystal
- 3 Xplained Pro extension headers
- USB powered

- Supported with application examples in Atmel Software Framework
- Embedded Debugger
  - Auto ID for board identification in Atmel Studio 6.1
  - One yellow status LED
  - One green board power LED
  - Symbolic debug of complex data types including scope information
  - Programming
  - Data Gateway Interface: USART, TWI, 4 GPIOs
  - Virtual COM port (CDC)

The SAM D20 Xplained Pro User Guide application note covers how to power the kit, the detailed information of the on board components, extension interface and the hardware guide.

3. Get the Tools

Atmel Studio 6.1 is the preferred IDE to get started with the SAM D20 device and GCC compiler. IAR™ compiler is supported as well.

3.1 Get Atmel Studio 6

Web page: www.atmel.com/atmelstudio

Document/file:

- Atmel Studio 6-1 installer (.exe)

Atmel Studio 6.1 is the IDE for developing and debugging firmware for the SAM D20 microcontroller.

3.2 Get IAR Embedded Workbench for ARM

Web page: http://www.iar.com/en/Products/IAR-Embedded-Workbench/ARM/

Document/file: IAR installer for ARM

3.2.1 Get SAM D20 Xplained Pro Embedded Debugger Software (Segger J-Link)

Web page: http://www.segger.com/jlink-software.html

Document/file: J-Link software

This software is required to use the SAM D20 Xplained Pro embedded debugger with IAR IDE.

3.3 Get Atmel Software Framework (ASF)

Web page: www.atmel.com/asf

Document/file:

- ASF update for Atmel Studio (.vsix)
- ASF standalone package for GCC makefile and IAR users
- ASF: Getting started (.pdf)
- ASF: Reference Manual (.pdf)

ASF online documentation for available API and examples can be found at http://asf.atmel.com.

4. Atmel Studio 6.1 Users Getting Started

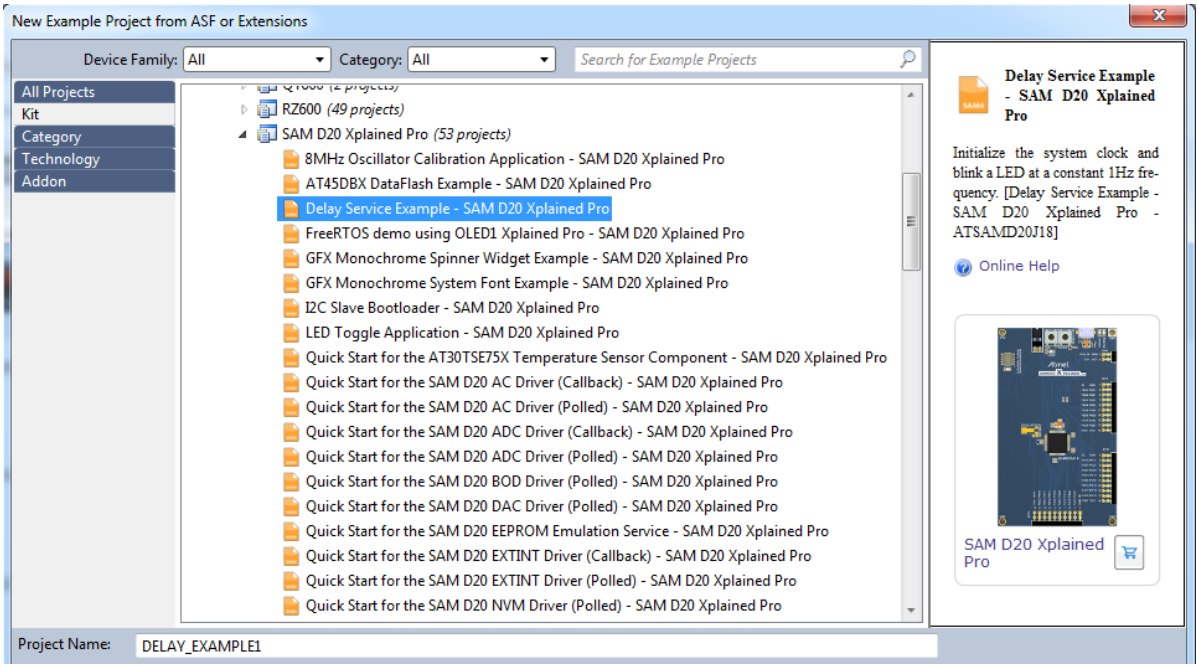
Requirements:

- Atmel Studio 6.1 SP1 or above installed
- ASF version 3.9.1 or above installed (comes with Atmel Studio 6.1 SP1)
- SAM D20 Xplained Pro board connected to Atmel Studio 6.1 through the embedded debugger USB connector. The kit will be powered by the USB.

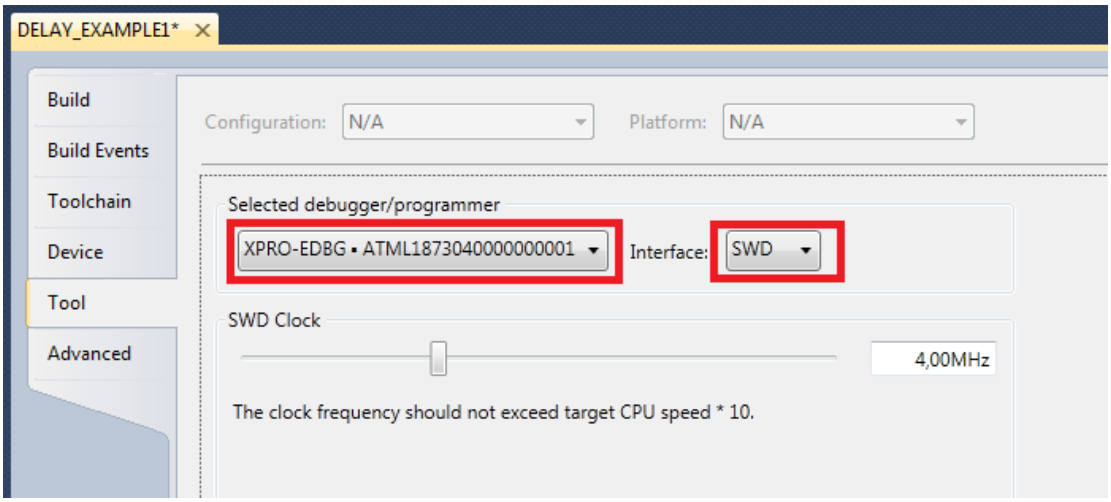
Getting started with Atmel Studio 6.1, ASF and SAM D20 Xplained Pro:

- Launch Atmel Studio 6.1
- Connect the SAM D20 Xplained Pro board to the PC using a USB cable. The following page will appear:

- To open ASF examples, click “New Example Project…”
- Select one of the examples (e.g. “Delay Service Example”), press OK and accept the license agreement. Then the project will be created and opened.



- Open project properties (Project -> Properties or shortcut Alt+f7)
- In Tool view, set selected debugger/programmer to XPRO-EDBG and interface to SWD



- Build the project: Build -> Build solution or shortcut F7
- To load the code in the SAM D20 Xplained Pro and debug, select Debug -> Start debugging and break (shortcut Alt + F5)
- The application is programmed and the debugger breaks in main
- To run the code, select Debug -> Continue (shortcut F5)

5. What's Next

- Atmel Studio videos: www.atmel.com/atmelstudio
- Atmel Studio help: Help -> View Help (Ctrl+F1)

- ASF Getting Started: www.atmel.com/asf
- ASF online documentation: asf.atmel.com
- ASF Reference manual: asf.atmel.com

6. Revision History

Doc. Rev.	Date	Comments
42147A	06/2013	Initial revision

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