
AT6491: Getting Started with SAM C21

SMART ARM Based Microcontroller

Description

This application note aims at getting started with the Atmel® SAM C21 ARM® Cortex®-M0+ based microcontroller.

Features

- Getting started with Atmel® SAM C21 microcontrollers and tools
- Atmel SAM C21 Xplained Pro and Atmel 6.2 getting started

This application note contains a list of all necessary components and tools required to start the work and point where to look for additional information.

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1 Device Datasheet

Web page: [SAM C series](#)

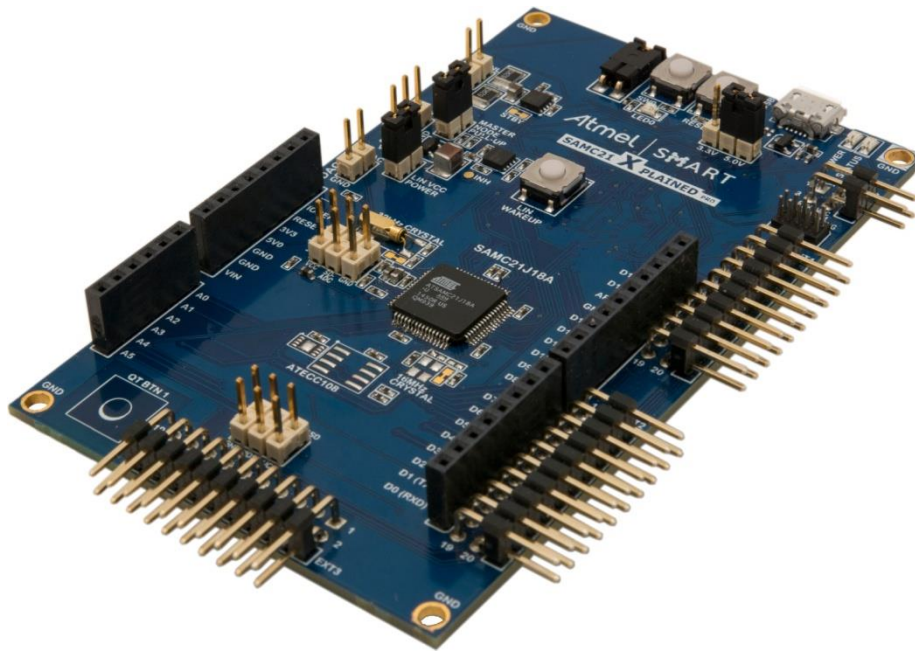
Document/file: Atmel SAM C21 Datasheet ([summary](#), [complete](#)) (.pdf)

Select the required device (e.g. ATSAMC21J18A) and get the latest datasheet (.pdf file).

- Complete version (includes extensive description for all peripherals and electrical characteristics)
- Summary version

2 SAM C21 Xplained Pro Kit

Figure 2-1. SAM D21 Xplained Pro Kit



Web page: [SAM C21 Xplained Pro](#)

Get kit: Atmel Store

Document/file:

- SAM C21 Xplained Pro User Guide application note (.pdf)

Key features:

- SAMC21J18A microcontroller
- One mechanical reset button
- One mechanical programmable button
- One QTouch® button
- One yellow user LED

- Two selectable target voltages
 - 3.3V
 - 5V
- 32.768kHz crystal oscillator
- 16MHz crystal footprint (not mounted)
- Three Xplained Pro extension headers
- CAN transceiver
- LIN transceiver
 - Wake-up button
 - Master node pull-up enable
 - Alternate LIN power jumper
- DAC output connector
- Analog voltage reference connector with filtered power supply
 - SDADC VREF
 - ADC/DAC VREF
- Powered by USB or an external power supply
- Supported with application examples in Atmel Software Framework (ASF)
- Embedded Debugger (EDBG)
- Auto ID for board identification in Atmel Studio 6.2
- One yellow status LED
- One green board power LED
- Symbolic debug for complex data types including scope information
- Programming
- Data Gateway Interface. USART, I2C, four GPIOs
- Virtual COM port (CDC)
- The SAM C21 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 Tools

Atmel Studio 6.2, which uses GCC compiler, is the preferred IDE to get started with SAM C21. Atmel Software Framework supports the IAR™ compiler and the ASF standalone package can be used to get example projects for SAM C21 in the IAR IDE.

3.1 Atmel Studio

Web page: [Atmel Studio](#)

Document:

- Atmel Studio 6-2 sp2 Installer - Full (.exe)

Atmel Studio 6.2 SP2 is the preferred IDE for developing and debugging firmware for the SAM C21 microcontroller.

3.2 IAR Embedded Workbench for ARM

Web page: [IAR Embedded Workbench® for ARM®](#)

Document: IAR installer for ARM

3.2.1 SAM C21 Xplained Pro Embedded Debugger Software (Segger J-Link)

Web page: [Segger J-Link](#)

Document/file: J-Link software

This software is required to program or debug the SAM C21 Xplained Pro if using Segger J-Link.

3.3 Atmel Software Framework (ASF)

Web page: <http://asf.atmel.com>

Document:

- 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 [Atmel Software Framework Documentation](#).

4 Atmel Studio Users Getting Started

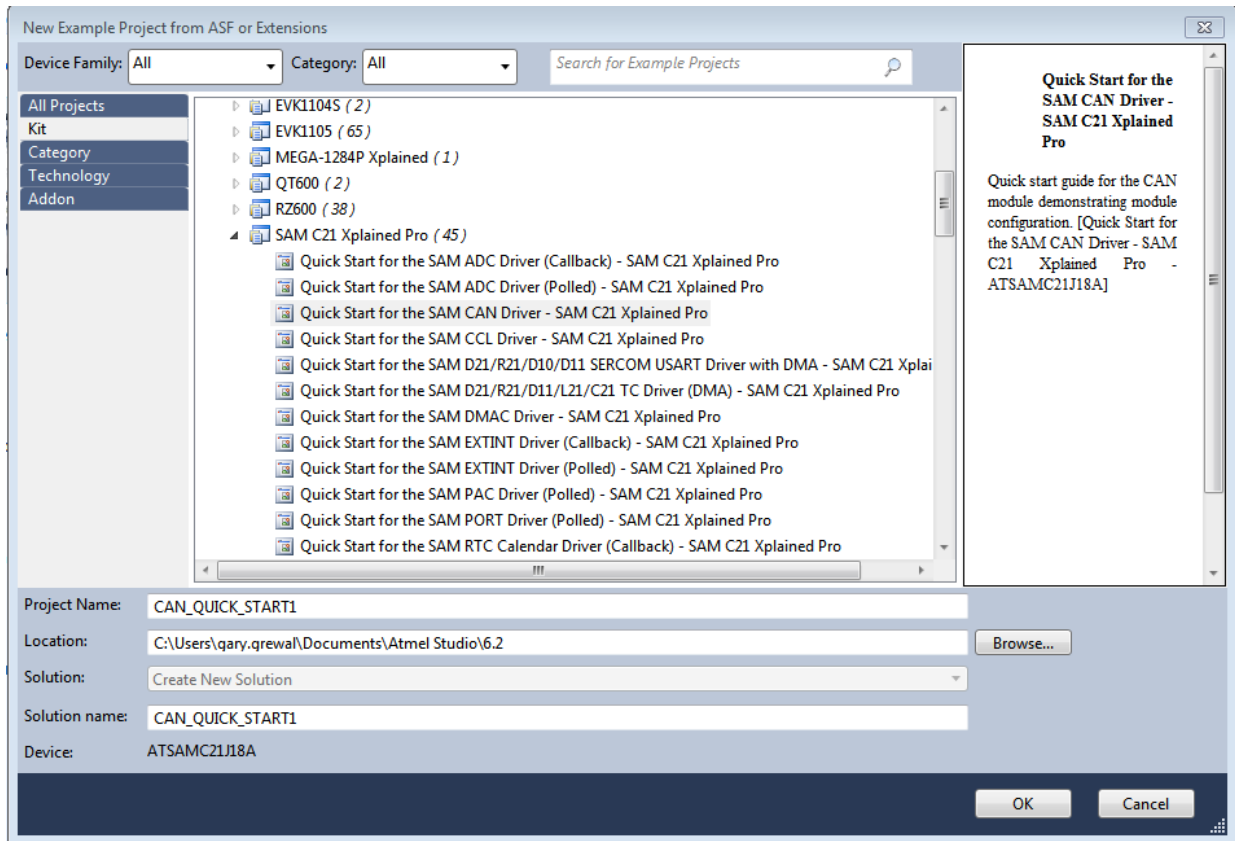
Prerequisites:

- Atmel Studio 6.2 SP2 or above installed.
- Latest ASF version (with SAM C21 support) or above installed.
- SAM C21 Xplained Pro board connected to Atmel Studio 6.2 through the embedded debugger USB connector. The kit will be powered by the USB port.

Work flow:

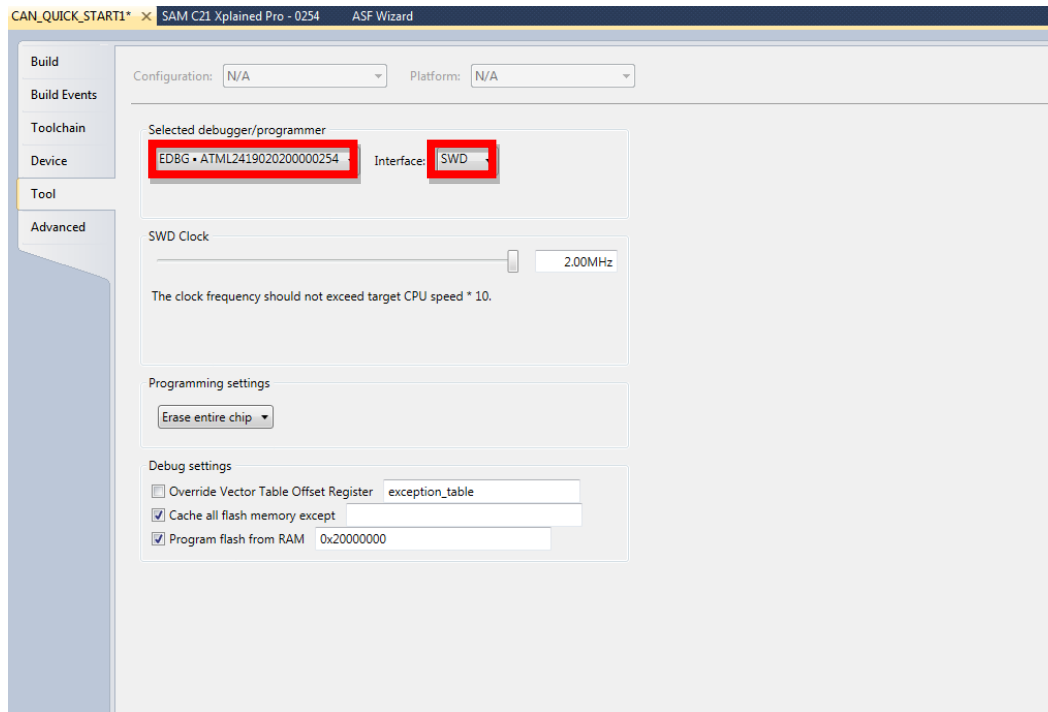
- Launch Atmel Studio 6.2.
- Connect the SAM C21 Xplained Pro to the PC using a USB cable.
- To open the ASF examples, click "New Example Project...".
- Select one of the examples (e.g. "Quick start for SAM CAN driver – SAMC21 Xplained Pro", see [Figure 4-1 New Example Project for SAM C21](#)), press OK and accept the license agreement. The project will be created and opened.

Figure 4-1. New Example Project for SAM C21



- Open project properties (Project → Properties or shortcut Alt+F7)
- In the Tool view, see [Figure 4-2 Debugger and Interface for SAM C21](#), set "Selected debugger/programmer" to XPRO-EDBG and "Interface" to SWD

Figure 4-2. Debugger and Interface for SAM C21



- Build the project: Build → Build solution or shortcut F7
- To load the code in the SAM C21 Xplained Pro and start debugging ("Debug → Start debugging and break" or shortcut "Alt + F5")
- The application is programmed and the debugger breaks in main
- Run the code ("Debug → Continue" or shortcut "F5")

5 What's Next

If you are interested in finding more documentation related to Atmel products and IDE, check the links below:

- Atmel Studio videos: http://www.atmel.com/microsite/atmel_studio6/default.aspx
- Atmel Studio help: Help → View Help (Ctrl+F1)
- ASF Getting Started: <http://www.atmel.com/tools/AVRSOFTWAREFRAMEWORK.aspx>
- ASF Reference Manual: <http://www.atmel.com/tools/AVRSOFTWAREFRAMEWORK.aspx>
- ASF Reference Manual: <http://asf.atmel.com>
- More technical documentation concerning various products: www.atmel.no/webdoc/

6 Revision History

Doc Rev.	Date	Comments
42466A	06/2015	Initial document release.



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