onsemi UM70096-D FUSB15201P Dual Port USB Type-C-PD Controller One-Tim User Manual

USER MANUAL
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FUSB15201P Dual Port
USB Type-C/PD Controller
One-Time Programming Guide
UM70096/D

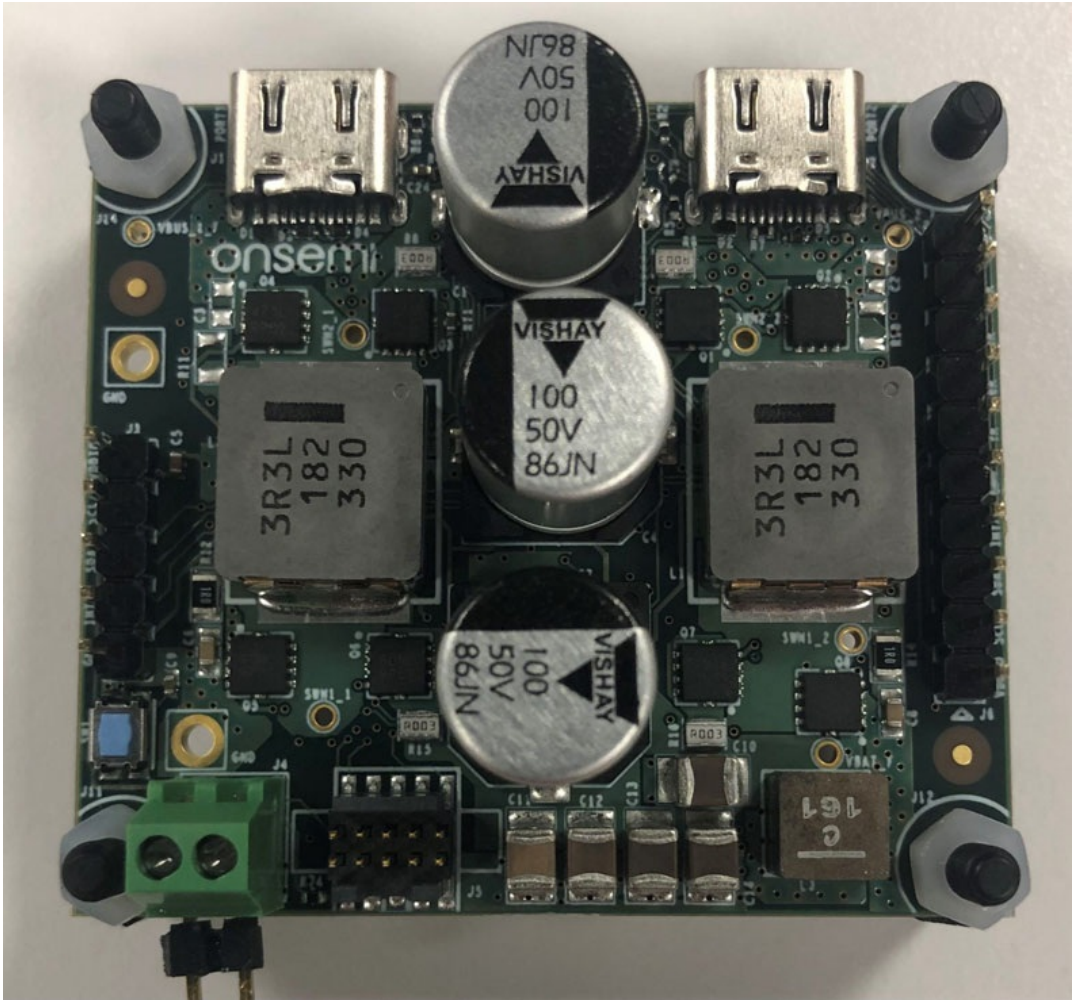


Figure 1. FUSB15201P24LGEVB, FUSB15201P32LGEVB

Contents

Introduction

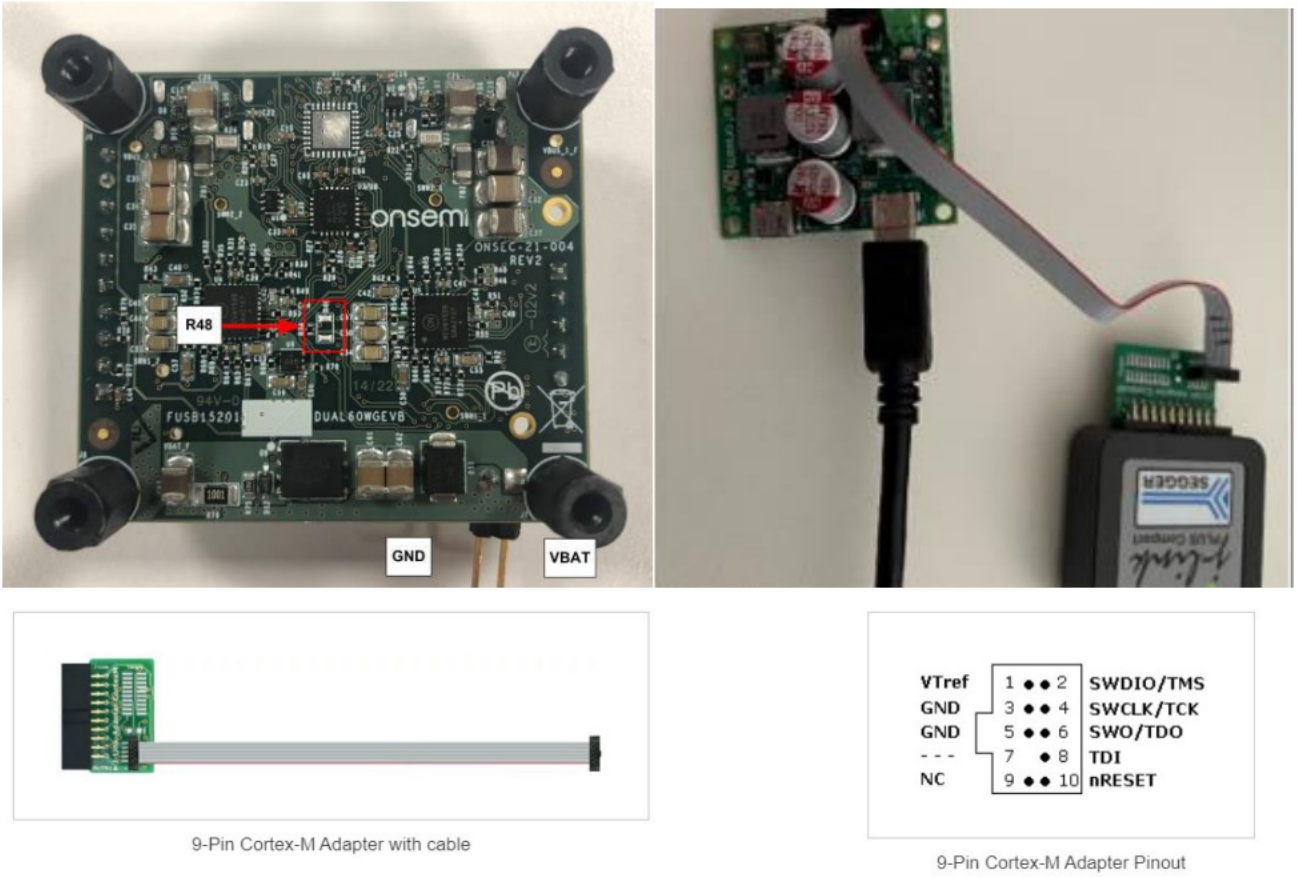
The FUSB15201P Evaluation Board (EVB), together with the firmware binary provided in the release package, permits a customer to program the one−time programmable (OTP) non−volatile memory (NVM) of the FUSB15201P.

Required Hardware and Setup Instructions

The following hardware is required:
(A) FUSB15201P Evaluation Board (EVB)
(B) 64KB OTP Chip labeled FUSB15201P24L or FUSB15201P32L
(C) SEGGER J−Link Pro JTAG/SWD Programming and Debug Probe
(D) 9−Pin Cortex−M Adapter to connect (A) the EVB to (C) J−Link Pro
(E) External Power Supply capable of providing 60 W

To set up the hardware, refer to the itemized hardware list above and perform these steps:

1. Make sure the EVB is configured for SWD. Install R48 (0 Ω) resistor on the board.
2. Use (D) the 9−pin adapter to connect (C) the J−Link Pro to the SWD connector (J5) on the socket EVB as shown in Figure 2.



9-Pin Cortex-M Adapter with cable

9-Pin Cortex-M Adapter Pinout

Figure 2.

3. Setup the power supply to 12 V (~200 mA) and connect the positive and negative jumpers on the board.

Required Software

a. SEGGER J−Link Tools
Download and install the J−Link Software and Documentation Pack Note: Please make sure SEGGER J−Flash is installed.
b. FUSB15201P SWD Converter Tool Please download and install the FUSB15201P SWD Converter tool Note: Search for keyword FUSB15201P SWD Converter Tool.
c. FUSB15201P Flash Loader Download the FUSB15201P Flash Loader used by J−Link to flash the EVB. Search for file FUSB15201P_FLASH_LOADER.ELF. Further instructions on where to place this file are indicated in the subsequent paragraph.
d. FUSB15201P NVR Loader Download the FUSB15201P NVR Loader used by J−Link to load data onto the EVB. Search for file FUSB15201P_NVR_LOADER.ELF. Further instructions on where to place this file are indicated in the subsequent paragraph.
e. FUSB15201P Device List AddOn Download the FUSB15201P Device AddOn to add the FUSB15201 to the J−Link device list. Search for file FUSB15201P_XML_ADDON.TXT.

Adding FUSB15201P Support to J−Link

To allow FUSB15201P to support J−Link, add the FUSB15201P to the list of J−Link supported devices. J−Link provides a device list in xml format. Add the FUSB15201P to this list, as follows:

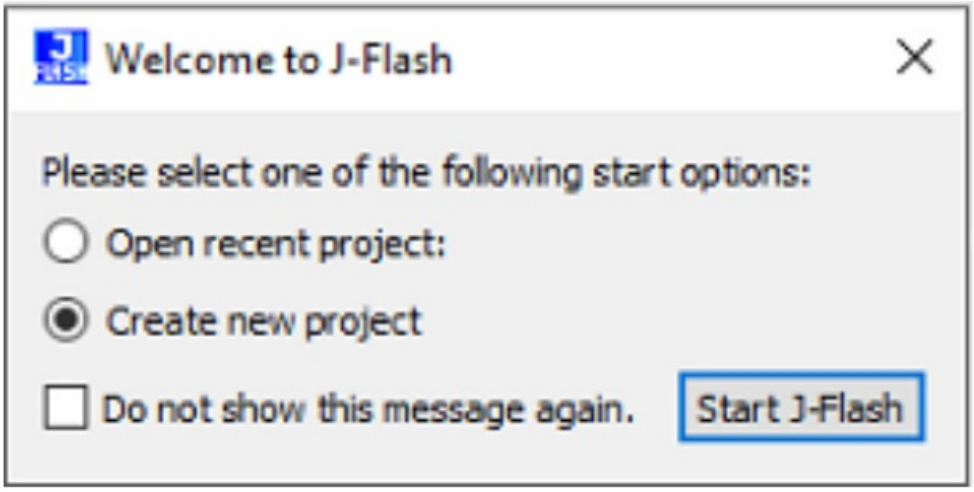
1. Create a directory named onsemi\FUSB15201P here:C:\Users\<USER_NAME>\AppData\Roaming\SEGGER\JLinkDevices\onsemi\FUSB15201P.

2. Copy the two files (c.) and (d.) shown in section Required Software, above, into C:\Users\<USER_NAME>\AppData\Roaming\SE GGER\JLinkDevices\onsemi\FUSB15201P.
3. Rename file (e.) to Devices.xml and copy into C:\Users\<USER_NAME>\AppData\Roaming\SE GGER\JLinkDevices\onsemi\FUSB15201P.

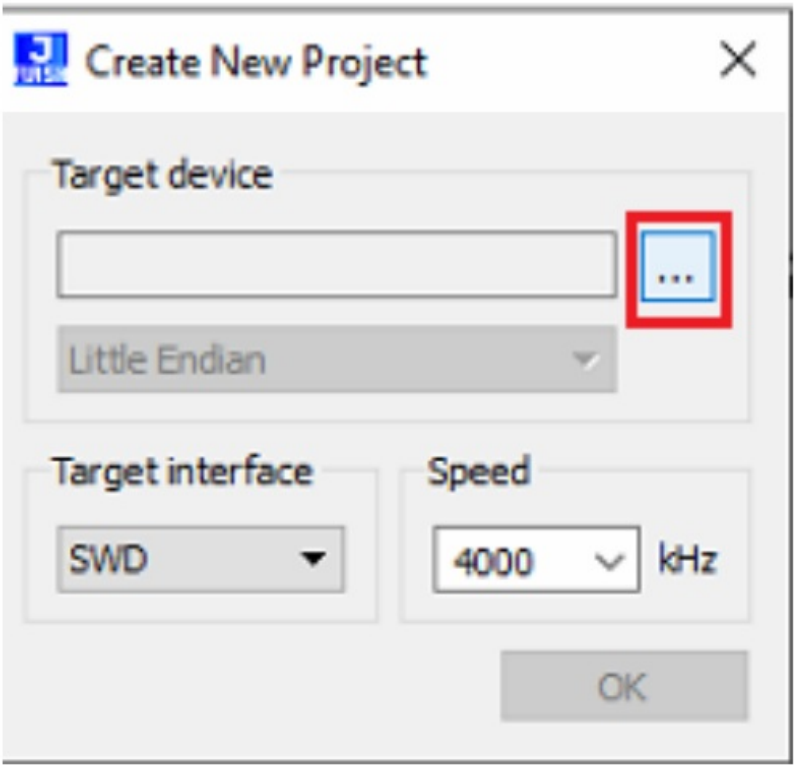
Programming the OTP

Complete the following steps to program the EVB:

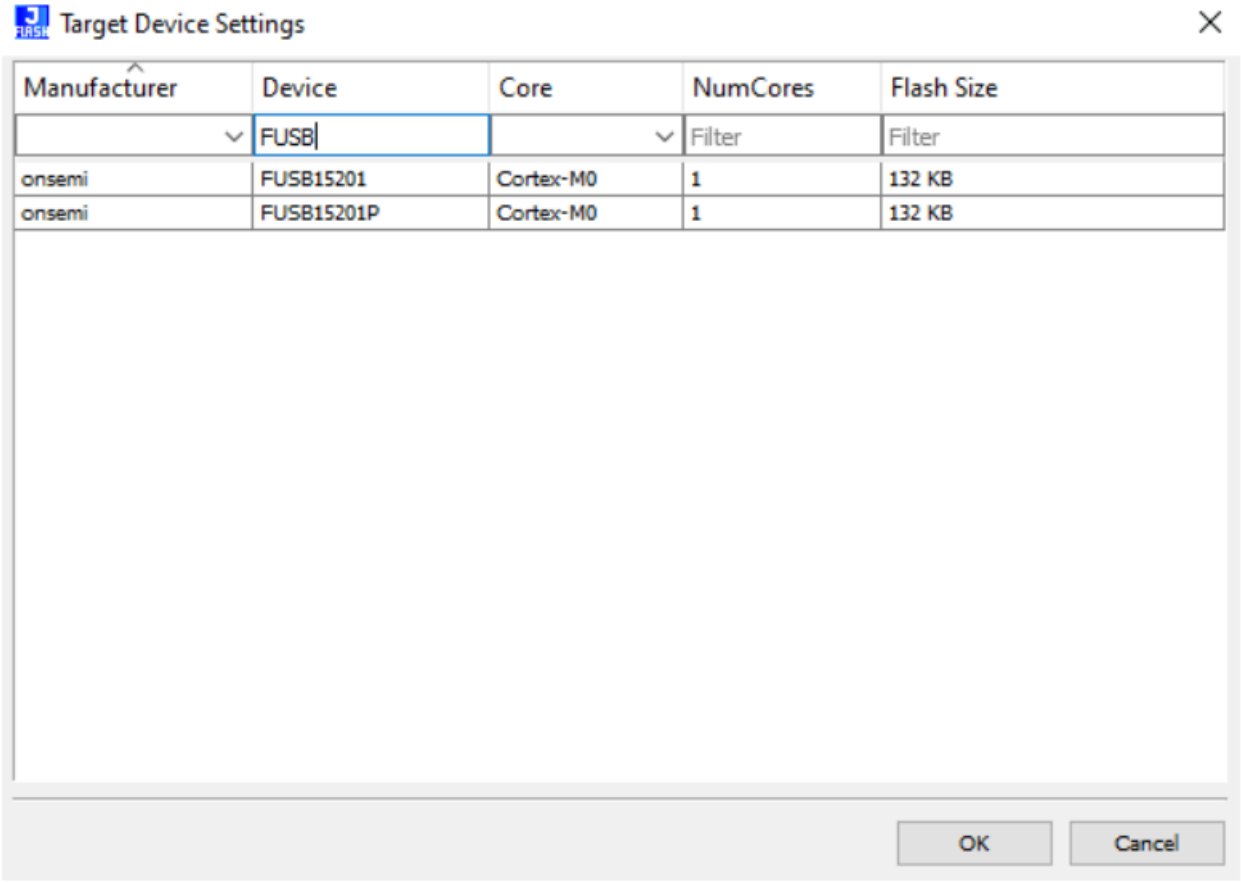
1. Connect J−Link to the EVB:
   • Open the SEGGER J−Flash and select Create new project, then select Start J−Flash.



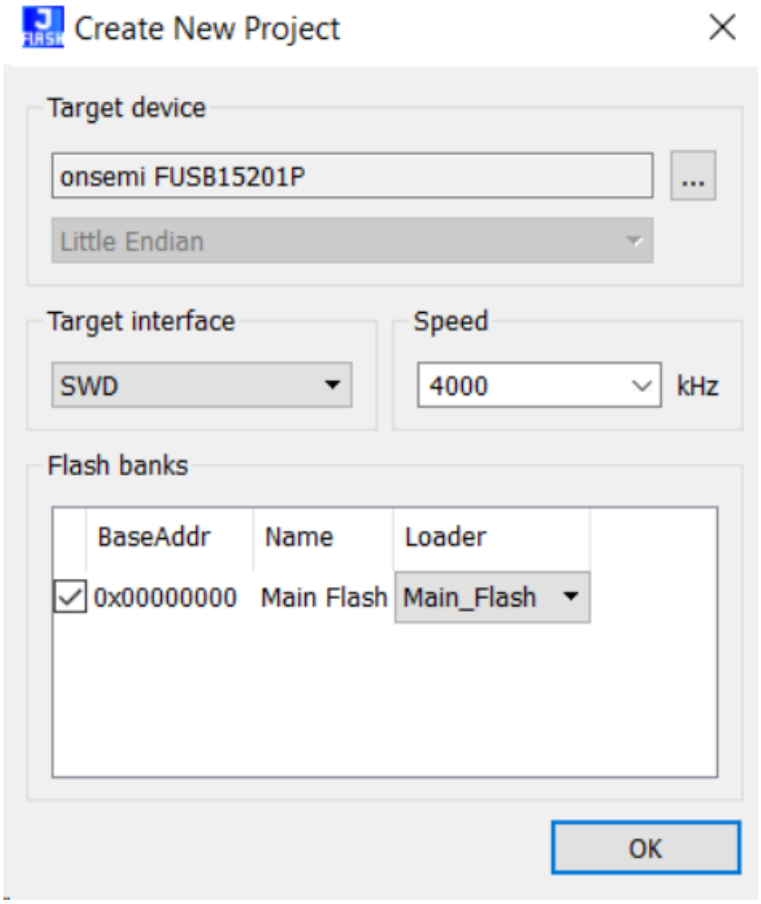
   • Click on the selection box (shown with a red outline below).



   • Select FUSB15201P.



- Select Target interface: SWD.
- Select Speed: 4000 kHz.
- Click OK for the new project to be created.



• From the menu, choose Target.

• From the resulting window, choose Connect.

If the connection is established, the log shows a message indicating a successful connection.

```
Log
  - CoreSight SoC-400 or earlier
  - Scanning AP map to find all available APs
  - AP[1]: Stopped AP scan as end of AP map has been reached
  - AP[0]: AHB-AP (IDR: 0x04770031)
  - Iterating through AP map to find AHB-AP to use
  - AP[0]: Core found
  - AP[0]: AHB-AP ROM base: 0xE00FF000
  - CPUID register: 0x410CC601. Implementer code: 0x41 (ARM)
  - Found Cortex-M0 r0p1, Little endian.
  - FPUnit: 4 code (BP) slots and 0 literal slots
  - CoreSight components:
  - ROMTbl[0] @ E00FF000
  - [0][0]: E000E000 CID B105E00D PID 000BB008 SCS
  - [0][1]: E0001000 CID B105E00D PID 000BB00A DWT
  - [0][2]: E0002000 CID B105E00D PID 000BB00B FPB
  - Executing init sequence ...
   - Initialized successfully
  - Target interface speed: 4000 kHz (Fixed)
  - Found 1 JTAG device. Core ID: 0x0BC11477 (None)
  - Connected successfully
Ready
```

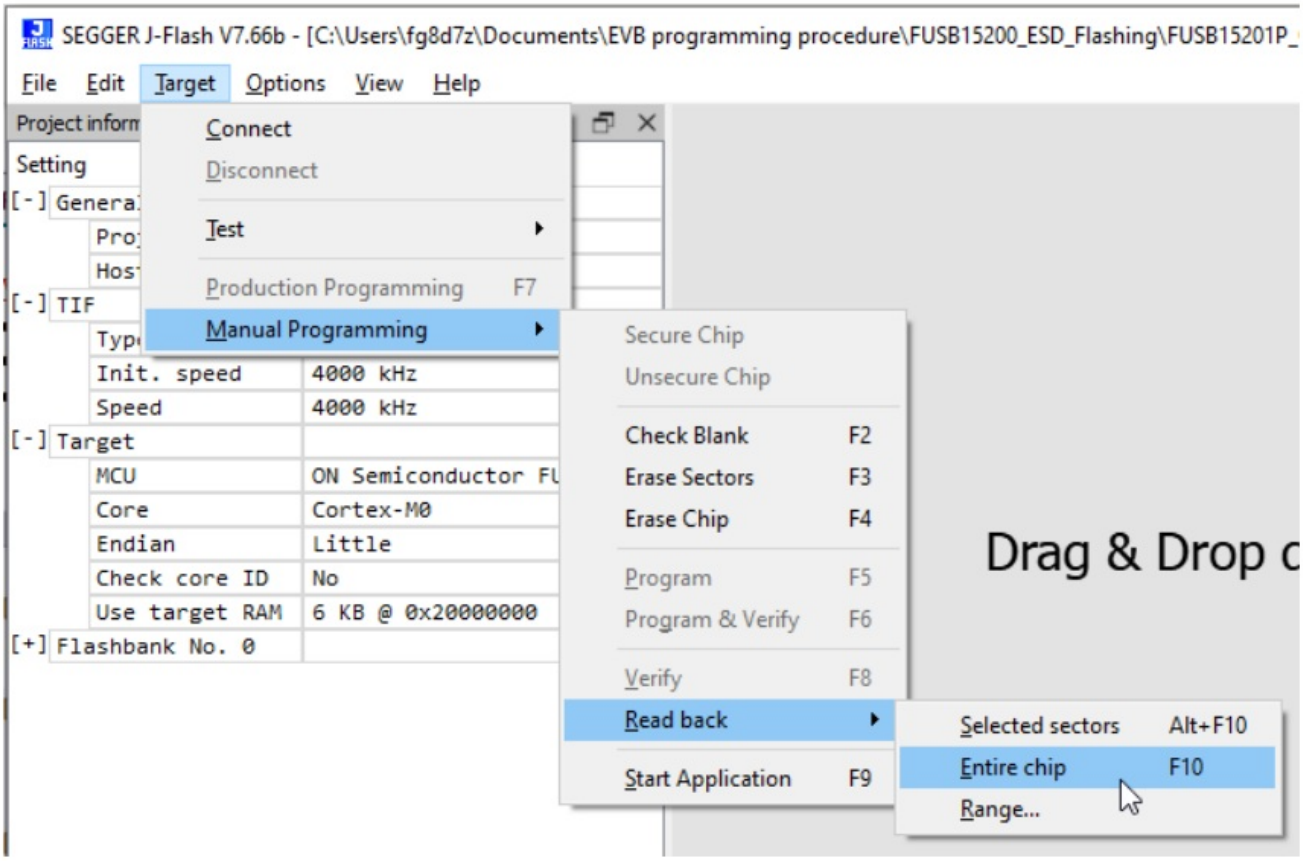
2. Verify that the chip is blank:

• From the menu, choose Target.

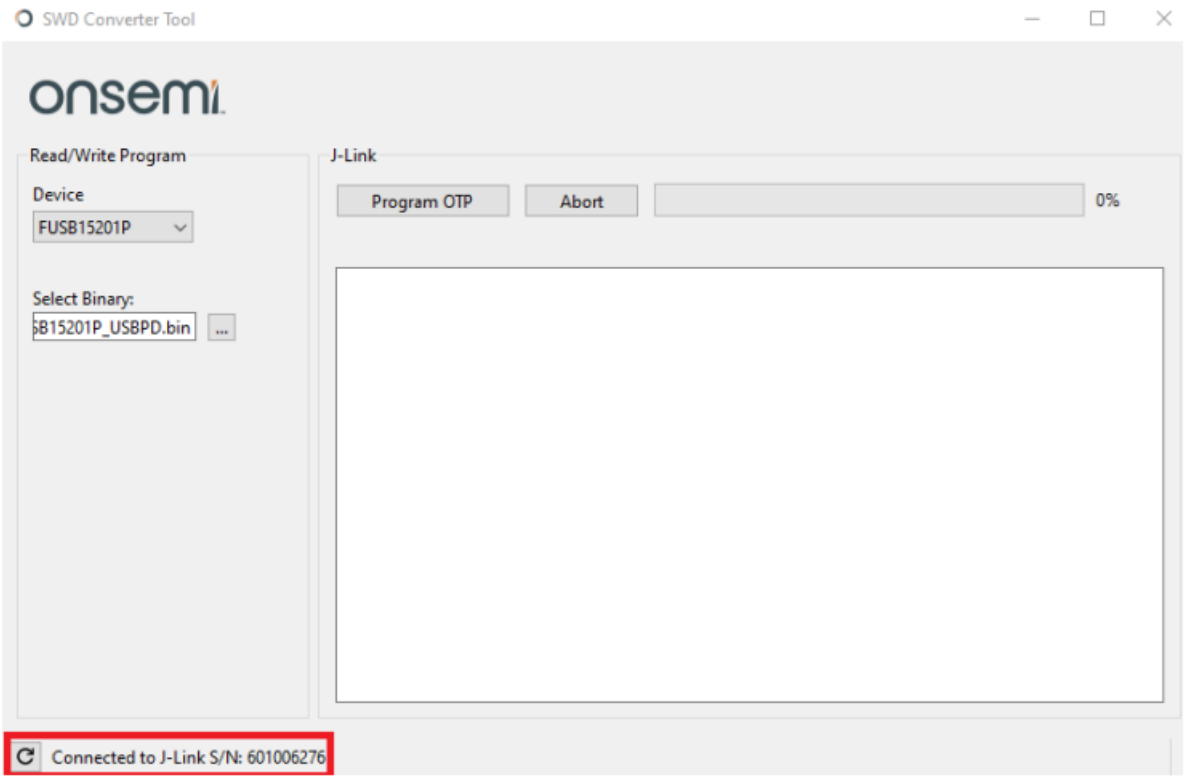
• From the resulting window, choose Manual Programming.

• Select Check Read back →Entire chip.

J–Flash will report the the Target memory is all 0x00’s.



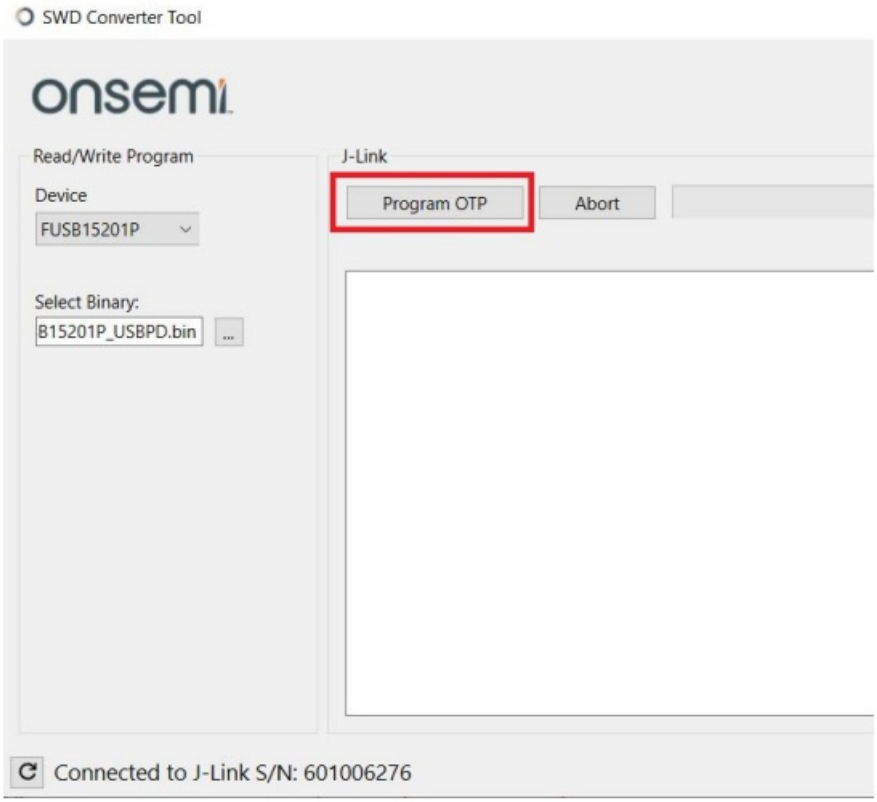
3. Prepare SWD Converter to program OTP:
   • Open the SWD Converter Tool.
   • Select FUSB15201P from the Device drop down menu.
   • Select the FW .bin file to convert in the Select Binary field.
   • Click on the Refresh Connection Icon in the bottom left corner.



4. Program OTP:
   • You can program the OTP by clicking the Program OTP button.

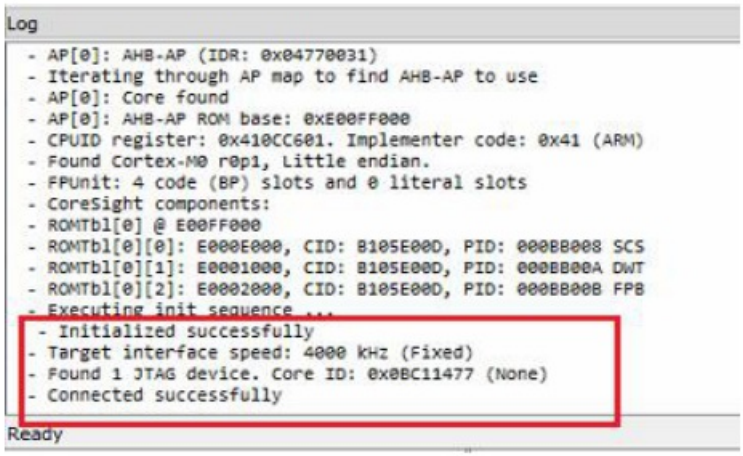
   A Message on the Log section shall confirm that the script processing is completed and the OTP programmed

successfully.



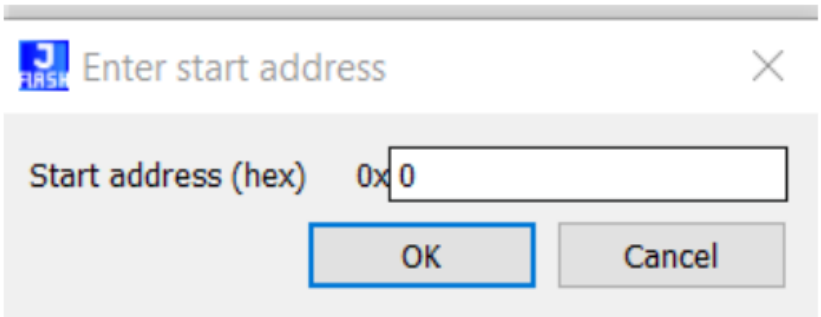
5. Validate OTP programmed successfully on the chip:
   • From the menu, choose Target.
   • From the resulting menu, click Connect.

   If the connection is established, you should see a message on the Log indicating a successful connection.

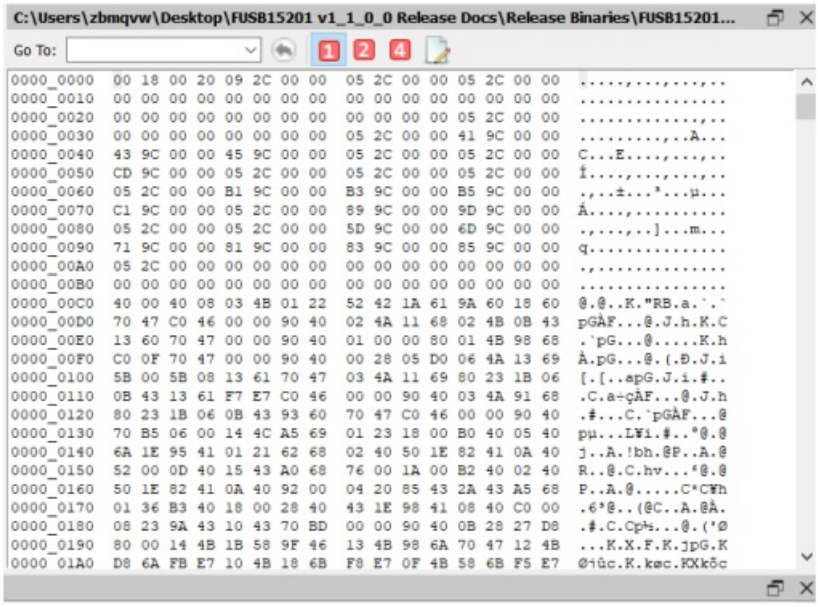


   • Drag the .bin file into the J–Flash Window.

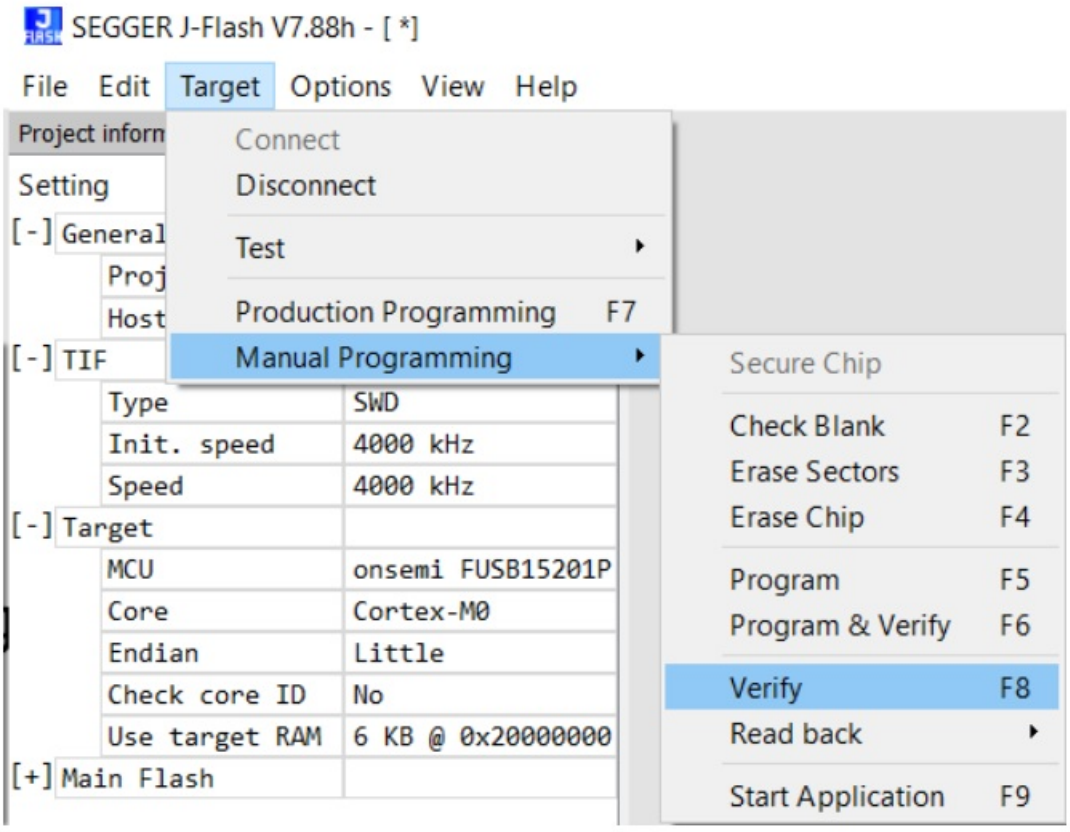
   J–Flash will ask for a start address. Enter 0 and click OK.

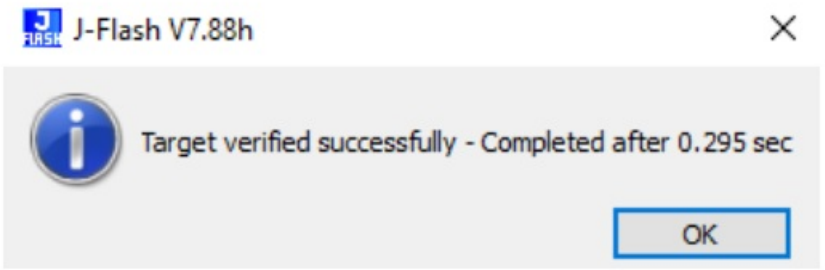


   • J–Flash will show the file in Hexadecimal format.



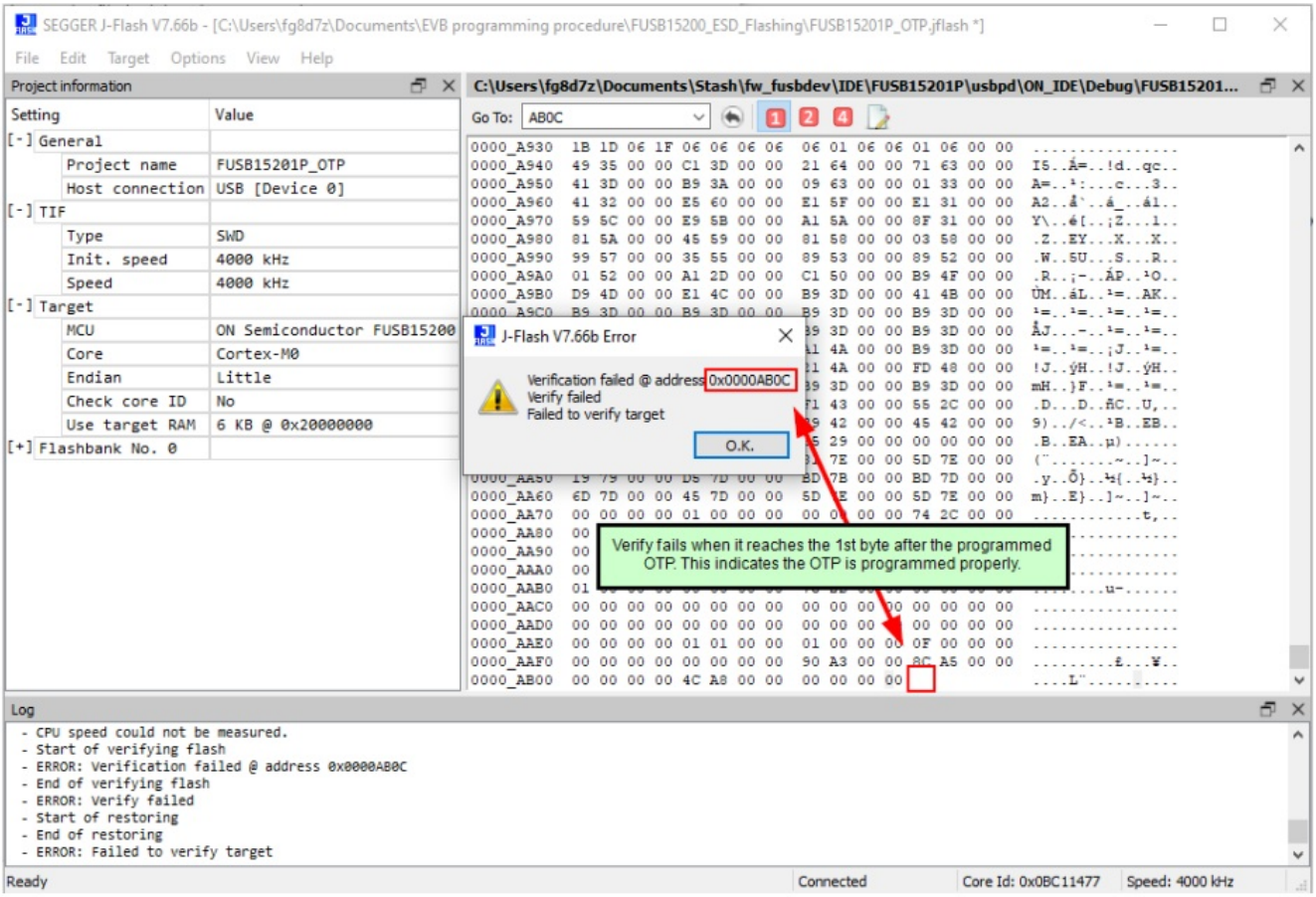
- From the J–Flash Menu, go to Target.
- From the resulting menu, go to Manual Programming.
- From the resulting Menu, select Verify.





The verification will report not successful, something similar to the following message should show, indicating how

the OTP has actually been successfully programmed up to the end of the .bin:



ADDITIONAL INFORMATION
TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical–documentation
onsemi Website: www.onsemi.com
ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

Documents / Resources

	onsemi UM70096-D FUSB15201P Dual Port USB Type-C-PD Controller One-Tim [pdf] User Manual UM70096-D FUSB15201P Dual Port USB Type-C-PD Controller One-Tim, UM70096-D, FUSB15201P Dual Port USB Type-C-PD Controller One-Tim

References

- Intelligent Power and Sensing Technologies | onsemi
- Intelligent Power and Sensing Technologies | onsemi
- Support
- Sales Offices & Distributor Network
- 9-Pin Cortex-M Adapter (8.06.02) - SEGGER U.S. Web Shop
- Intelligent Power and Sensing Technologies | onsemi
- Technical Documentation
- Support
- Sales Offices & Distributor Network
- SEGGER - The Embedded Experts - Downloads - J-Link / J-Trace