QSG157: USB High Power Type-C 60W Charger Reference Design (SLRDK1001A)

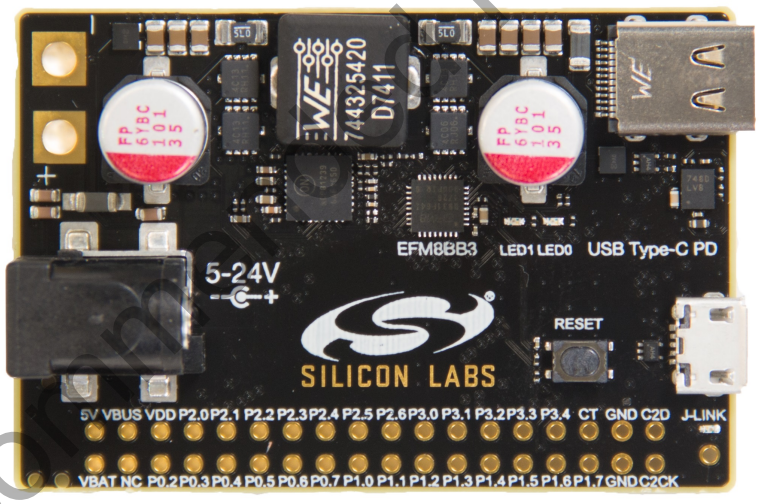
SLRDK1001A is a reference design for a small and cost effective USB Type-C 60W charger. A Silicon Labs EFM8BB3 Busy Bee microcontroller is used for USB Type-C Power Delivery (PD) negotiation.

The USB Type-C 60W Charger Reference Design ships with ready-to-use demo firmware that is capable of operating in source mode, delivering up to 60 W (3.0 A at 20 V) of output power.

An on-board SEGGER J-Link debugger enables easy customization and development.

KIT CONTENTS

- EFM8BB3 USB Type-C 60W Charger Reference Design Board
- USB Type-C cable
- USB micro cable
- Getting Started card



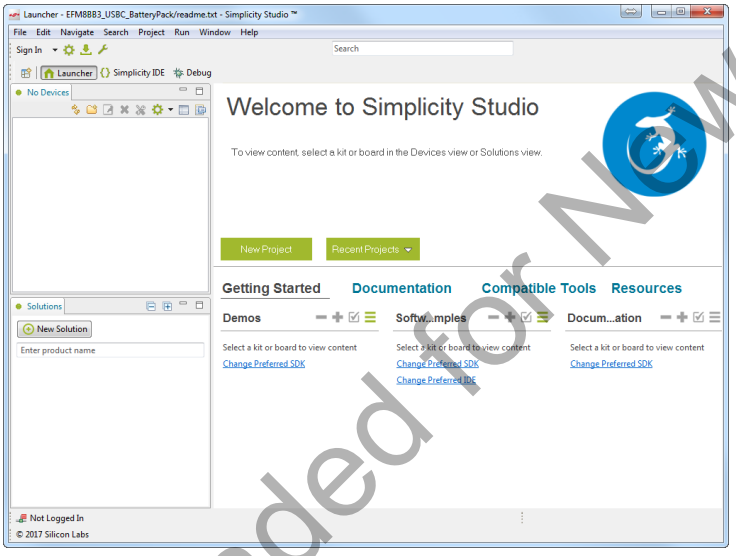
1. Getting Started

Set Up the Hardware

1. Supply 5-24V to the board using either:
   - A bench power supply (not provided) connected to the two test points on the left side of the board.
   - An AC-to-DC adapter, such as Toshiba PA3396U-1ACA or PA3467U-1ACA (not provided) connected to the 2.5mm barrel connector.
2. Connect a USB Type-C device (phone, tablet, laptop, etc.) to the board.
3. Observe the USB Type-C device is being powered by the board.

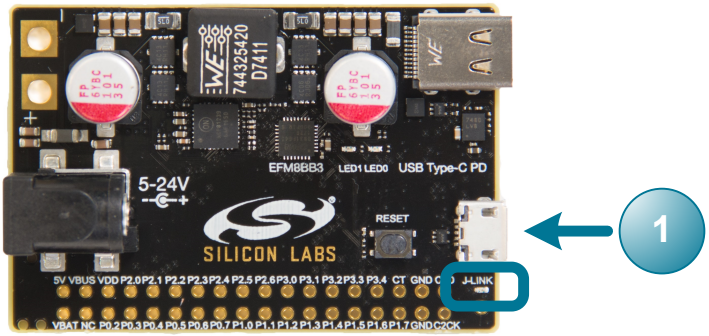
Access the Reference Design Firmware

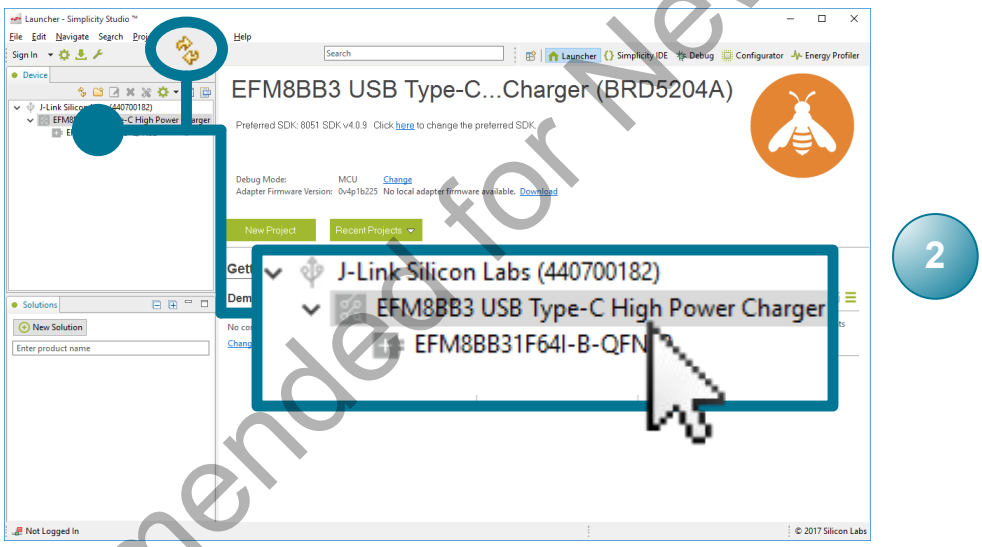
To view, edit, or build the reference design firmware, download Simplicity Studio from the Silicon Labs website and install or update to the [**8051 SDK v4.0.10**] package or later.



Detect Your Device in Simplicity Studio

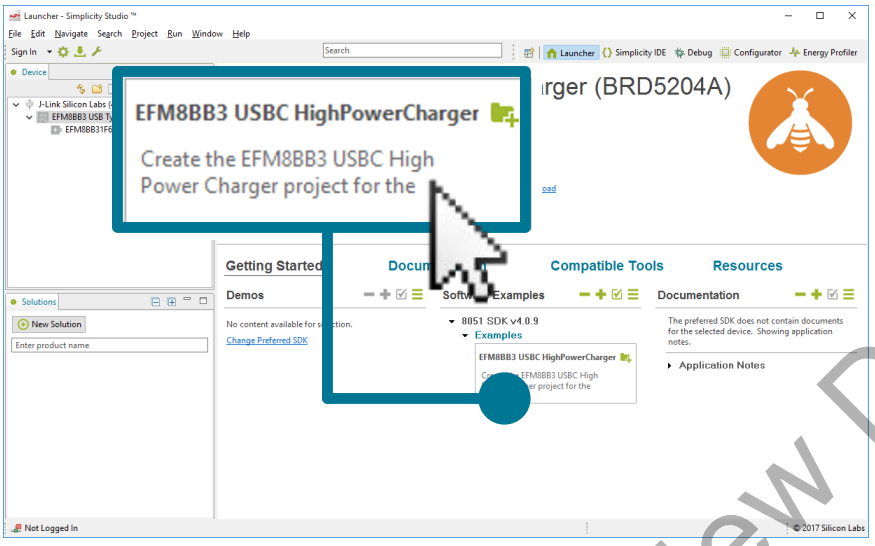
1. Connect the board to the PC running Simplicity Studio using the J-LINK micro USB connector and the provided cable. The blue LED near the connector should turn on.
2. Click the [**Refresh**] button in the [**Device**] area. The board may take some time to appear due to driver installations for the debug adapter.





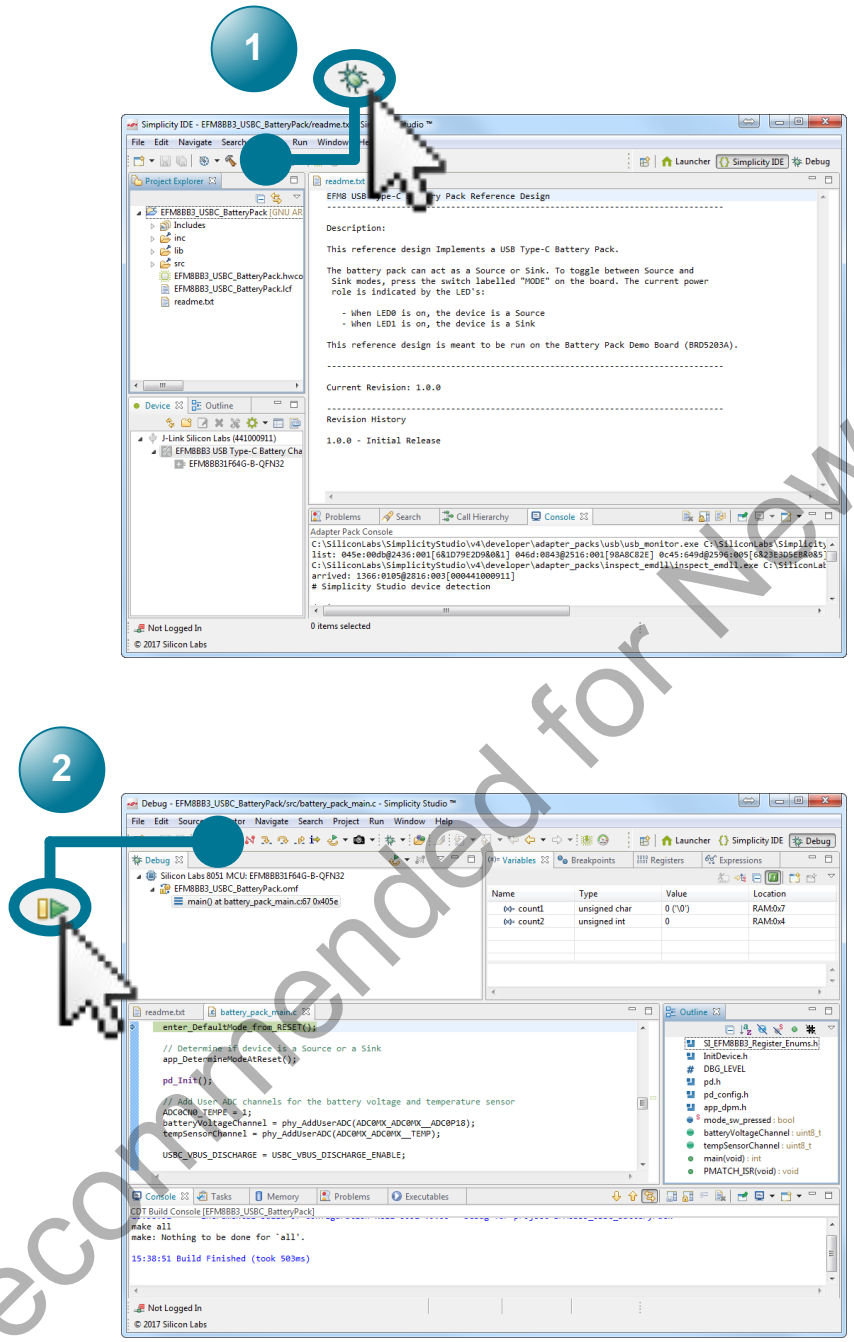
Open the Reference Design Project

In the [**Getting Started**] area, click on the [**EFM8BB3 USBC High Power Charger**] example in the [**Software Examples**] column to open the example in the Simplicity IDE.



Download the Code

1. Build and download to the device using the [**Debug**] button.
2. Press the [**Resume**] button to start running the firmware.

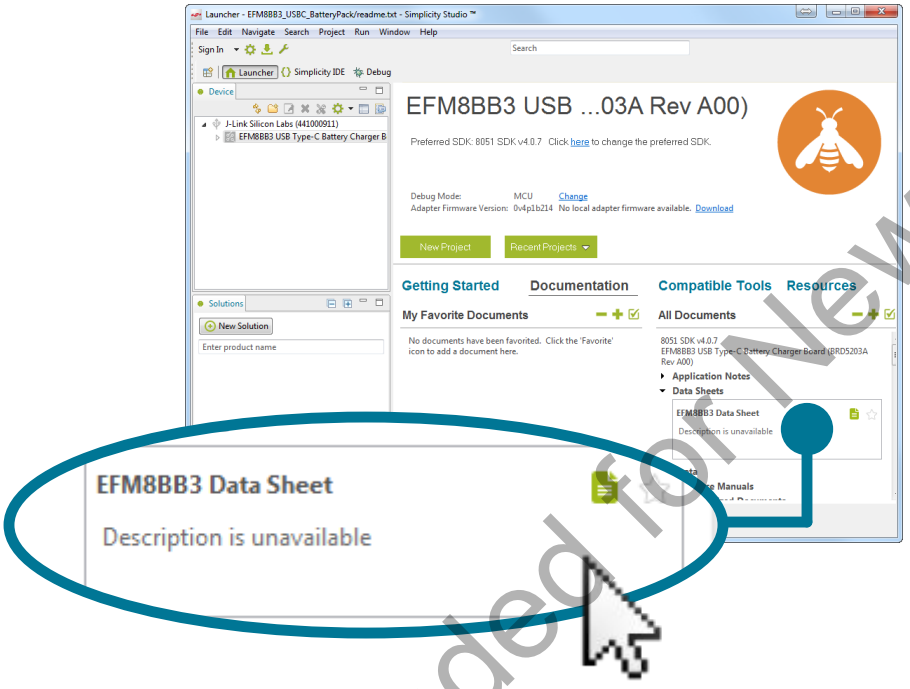


2. Resources

Hardware, Software, and Device Overviews

The user guide, *UG297: USB High Power Type-C 60W Charger Reference Design*, contains detailed information on the board and status information presented by the LEDs. This user guide is available on the Silicon Labs website (www.silabs.com/support/resources.ct-manuals_user-guides.p-microcontrollers_8-bit-mcus_efm8-busy-bee) or in Simplicity Studio in the [**Documentation**] area.

The EFM8BB3 device data sheet and reference manual contain detailed information on the operation of the device. Device documentation can be found on the Silicon Labs website (www.silabs.com/support/resources.ct-data-sheets.ct-manuals_reference-manuals.p-microcontrollers_8-bit-mcus_efm8-busy-bee) or in Simplicity Studio in the [**Documentation**] area.

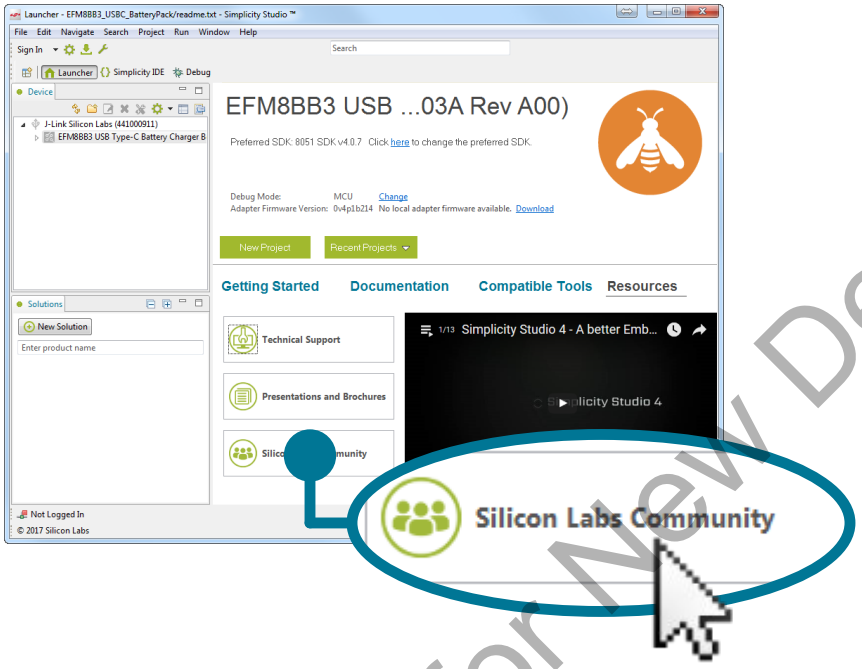


Learn More About USB Type-C

Additional resources and information on USB Type-C can be found on the Silicon Labs website (www.silabs.com/usb-type-c).

Community and Support

Have a question? Visit the community by visiting the Silicon Labs Community website or by clicking the [**Community**] link in the [**Resources**] area in Simplicity Studio.



Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!

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