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Strata NCP1034 100V Buck Converter EVB User Guide

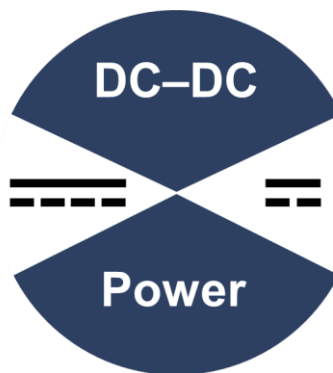


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Introduction

The Strata NCP1034 100V Buck Converter EVB provides an easy to use evaluation kit within the Strata Development Environment for the NCP1034 synchronous buck controller from ON Semiconductor. Through Strata, the developer can access datasheets, BOMs, schematics, and other collateral they may need.

Features

- VIN Range up to 100V
- Programmable Switching Frequency up to 500kHz
- 2A Output Drive Capability
- Programmable Soft Start
- Adjustable Output Voltage
- External Frequency Synchronization

Applications

- Embedded Telecom Systems
- Networking and Computing
- Distributed Point of Load Power Architectures
- General High Voltage DC-DC Converters

User Guide

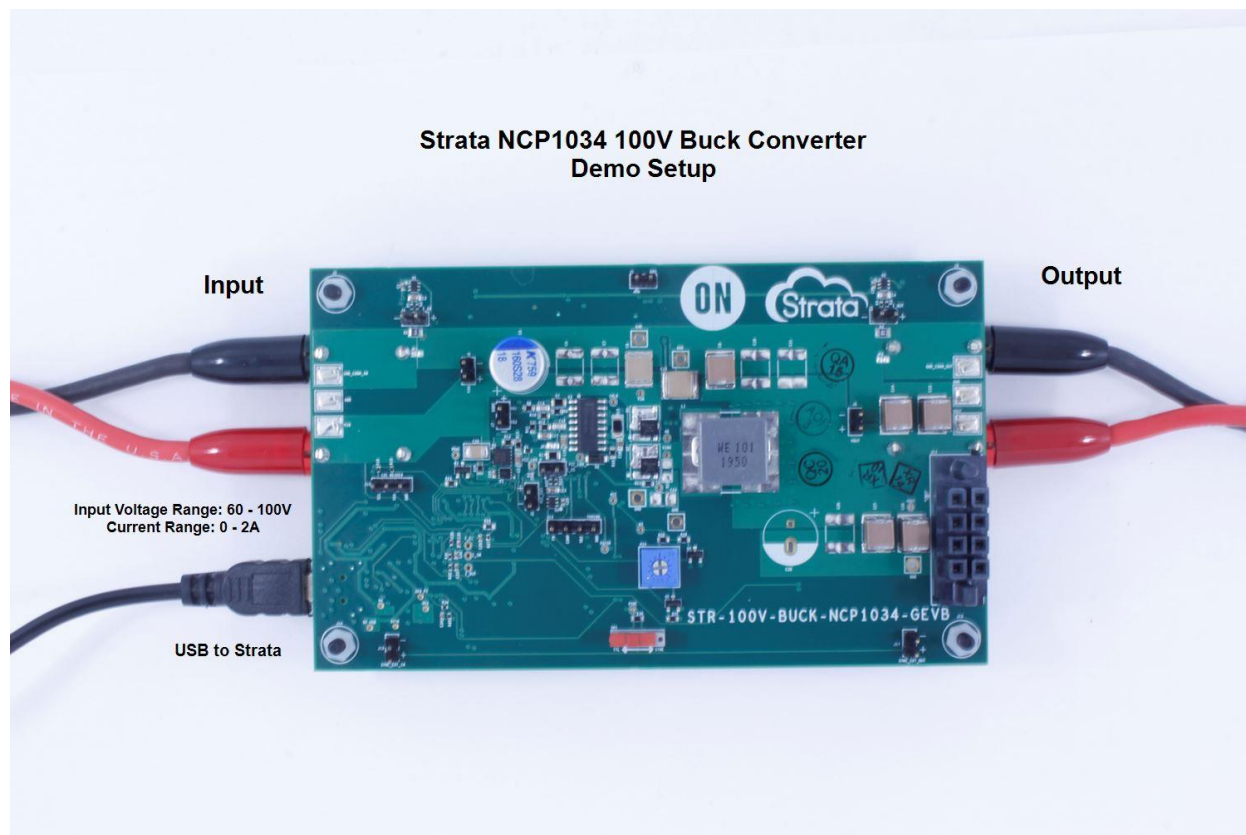
This section will explain how to use the Strata NCP1034 100V Buck Converter EVB in a step by step manner. It will cover the hardware required, how to use the User Interface in Strata, and the controls specific to this EVB.

Hardware Setup

The hardware required to use the Strata NCP1034 100V Buck Converter EVB are a computer (with Windows), a power supply, and a load. Sense lines are recommended if available with equipment being used. Follow the steps below.

1. Plug the power supply into the input of the EVB using the banana plugs J24 and J22. Do not apply over 100V to the input. The minimum voltage needed for the EVB to turn on is 60V.
2. Connect the computer to the EVB using the USB connector J26 on the bottom of the board.
3. Plug the load into the output using the banana plugs J23 and J21.
4. If available, connect sense lines to input using TP7 and TP12, and connect sense lines to the output using TP13 and TP6.

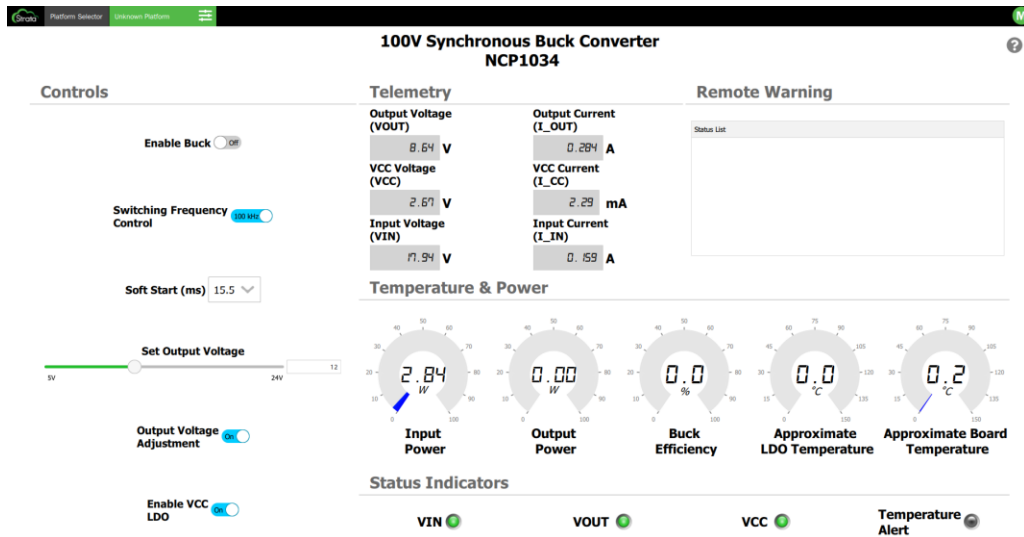
An example picture of the setup can be found below.



User Interface

The UI within the Strata app will allow the user to control the EVB and monitor its telemetry without needing other lab equipment or training to do so. The steps below cover what is in the UI.

1. First, download and install the most recent version of Strata. It can be found here: <https://www.onsemi.com/support/strata-developer-studio>
2. Open the Strata app. Login and the home screen will appear.
3. The app will automatically detect the device and will bring up the UI for the board that is plugged in.



- The view that comes up is UI for the 100V buck converter board. It offers telemetry such as: voltage/current for all major power rails, interrupt statuses for each power rail, and a status list for error and warning messages. It also offers controls for soft start, and output voltage adjustment.
- The round button with a question mark in the top right corner of the screen is the help button, which will give the user a description of what everything on the UI is doing.
- To view the collateral provided with the EVB, click on the “Platform Selector” tab at the top of the screen. Once back in the Platform Selector, click on “Browse Documents” next to the platform that is plugged in.

Controls and Functionality

This section will go over controls and functionality specific to this EVB.

- Switching Frequency Control – This switches between a preprogrammed switching frequency of 100kHz and a user programmed switching frequency with a range up to 500kHz. When in user programmed mode, the switching frequency is programmed using the potentiometer R36 on the board that can be adjusted with a small screw driver. The switching frequency can be adjusted while the buck converter is enabled.
- Soft Start – Gives the user 4 different soft start settings. The start timing the user selects is an estimation and not exact. The exact timing is dependent on both input and output voltage.
- Set Output Voltage – Gives the user the ability to set the output voltage between 5V and 24V. This can be adjusted while the buck converter is enabled.
- Output Voltage Adjustment Switch – This enables/disables the ability for the hardware to set the output voltage. When disabled, the output voltage would be set by the resistor divider R10 and R11 in the feedback loop for the buck converter.
- Enable VCC LDO – This enables the included on-board LDO that provides VCC to the part by stepping down the input voltage. When disabled the user will need to apply 10-18V externally using J12.
- Programmable UVLO – This can be set by adding a resistor to R51.
- External Synchronization – This feature can be used by applying an external CLK to J17 and having the switch SW1 set to SYNC_EXT_IN. Use the datasheet and adjust R36 potentiometer to determine appropriate CLK frequencies. To supply a CLK signal externally, set SW1 to SYNC_EXT_OUT and using J18.

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