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Strata Enabled NCL30160 1A LED Driver EVB User Guide

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Introduction

The Strata Enabled NCL30160 1A LED Driver EVB provides an easy to use evaluation board within the Strata Developer Studio for the NCL30160 1A LED Driver from ON Semiconductor. Through the Strata User Interface, the developer can access datasheets, BOMs, schematics, and other collateral they may need. This document will explain how to get the EVB up and running with Strata.

Device Features

- Integrated 1A/50mΩ MOSFET
- VIN Range 6.3V to 40 V
- Shorted LED Shutdown Protection
- Up to 1.4 MHz Switching Frequency
- No Control Loop Compensation Required
- Adjustable LED Current
- Single Pin Brightness and Enable/Disable Control Using PWM
- Supports All−Ceramic Output Capacitors and Capacitor−less Output
- Thermal Shutdown Protection
- Capable of 100% Duty Cycle Operation
- Pb−Free Device

Applications

- LED Driver
- Constant Current Source
- General Illumination
- Industrial Lighting

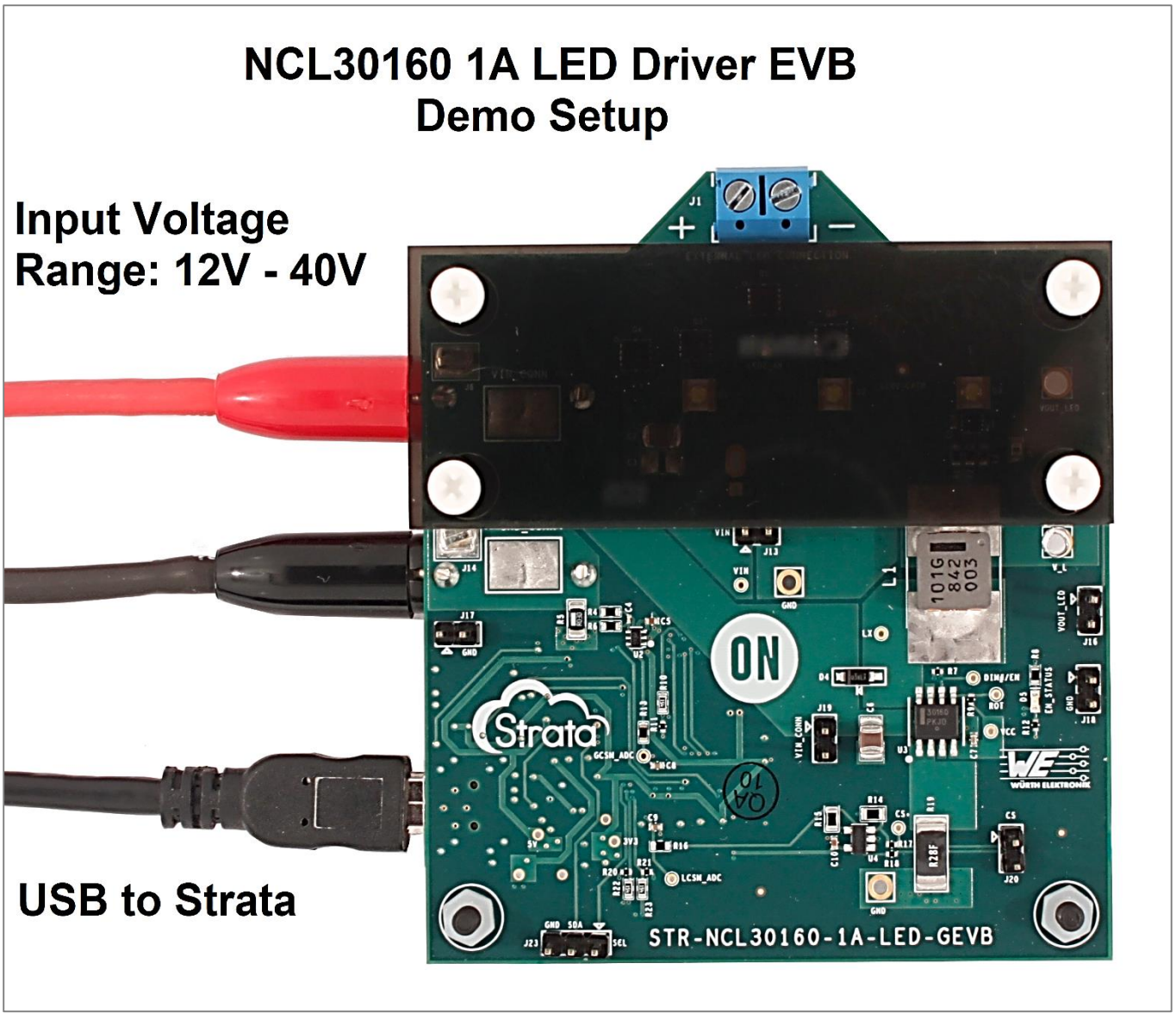
User Guide

This section will explain how to use the Strata Enabled NCL30160 1A LED Driver EVB in a step by step manner and will cover both the hardware required as well as how to use the User Interface (UI) in Strata.

Hardware Setup

The hardware required for using the Strata Enabled NCL30160 1A LED Driver EVB are a computer (with Windows), and power supply (12V-40V voltage range, recommended 2A current limit). Follow the steps below.

1. Connect the computer to the EVB using the mini USB connector J31 on the bottom of the board.
2. Plug the power supply into the input of the board using the banana plugs J26 (positive terminal) and J29 (negative terminal). Do not hot plug the power cables or apply over 40V (the LED driver's absolute maximum voltage on its VIN pin) to the input because this may damage circuitry on the board. The recommended input voltage range is 12V to 40V for normal operation.
3. A picture of the setup can be found below. The red power cable denotes positive polarity with respect to the black power cable.

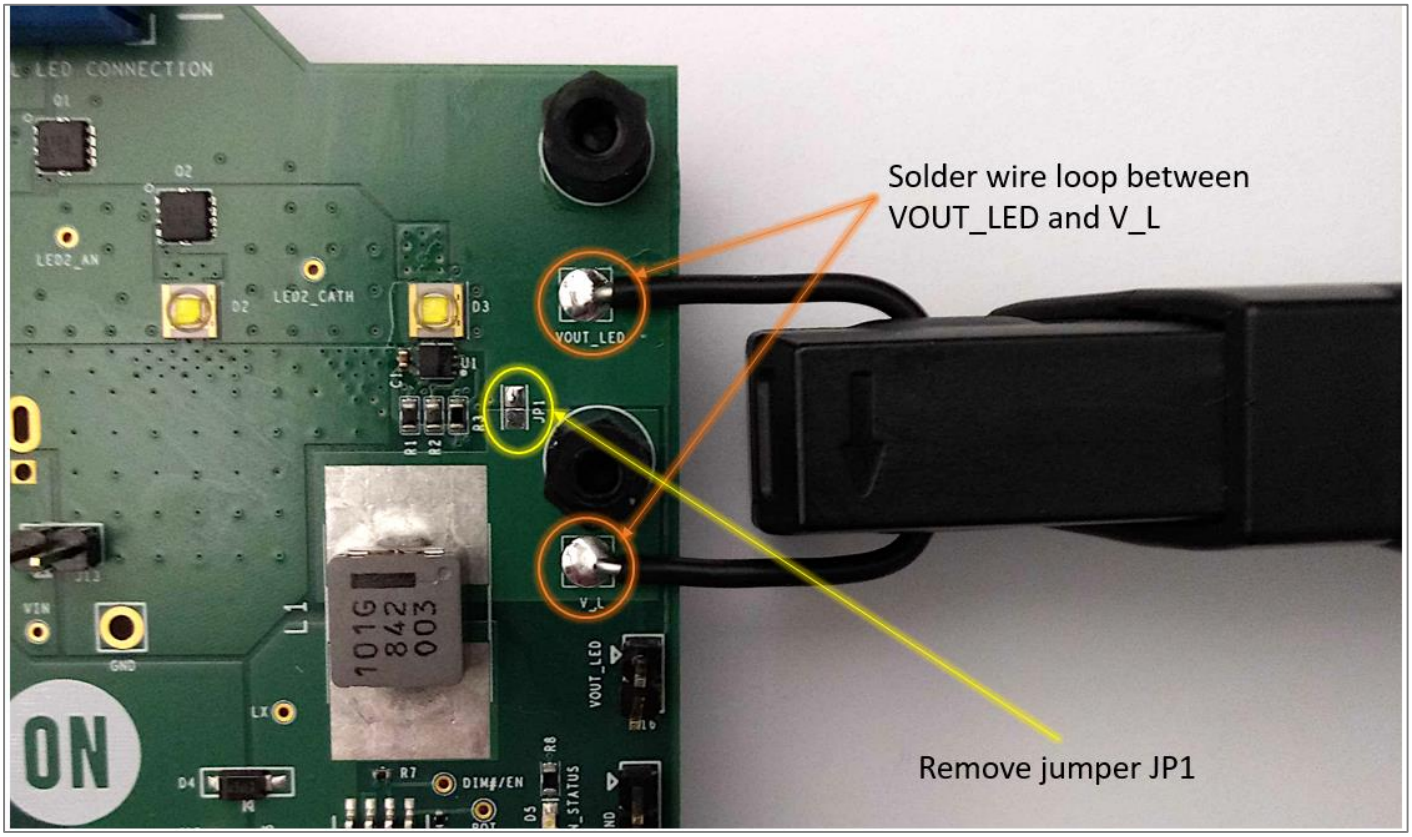


Using External LEDs

This EVB can accommodate external LEDs via the screw terminal, J1, near the top of the board. When connecting external LEDs, turn off the input power to the board first. It is also recommended to disconnect external LEDs if planning on using the onboard LEDs. See the “User Interface” section below for instructions on using external LEDs with the Strata UI.

Measuring LED Current

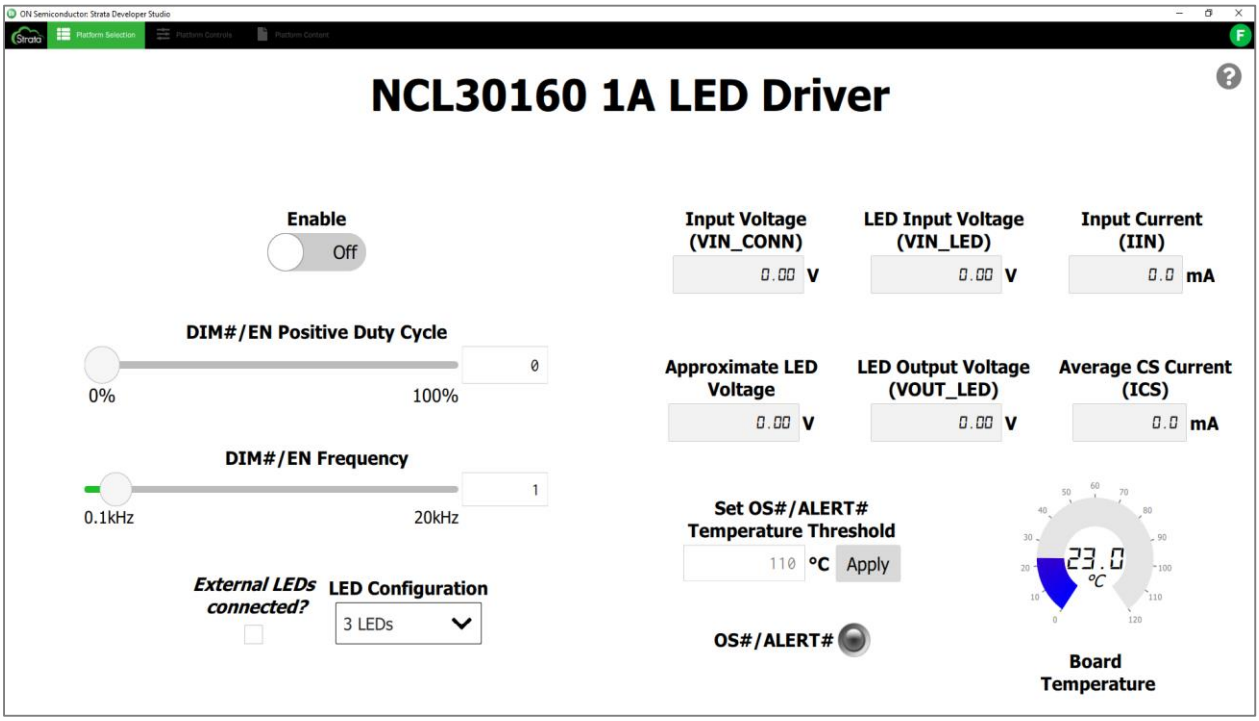
A wire can be manually soldered between the large VOUT_LED and V_L plated through holes on the EVB in order to directly measure LED current with a current probe. Remove the LED cover and remove jumper JP1 if making this modification to the board. See the picture below for a demonstration.



User Interface

The UI within the Strata app will allow the user to control the LED driver 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, open the Strata app. The login page and home screen will appear.
2. Once logged in, the app will automatically detect the device that is plugged in and will bring up the UI for the EVB.
3. The main view that comes up (shown below) offers basic telemetry, an enable switch for enabling/disabling the LED driver, sliders for adjusting the duty cycle and frequency of the DIM#/EN signal, a drop-down box for selecting the LED configuration, a checkbox to indicate that external LEDs are being used, and an input box for setting the over-temperature threshold for the onboard temperature sensor.



4. If external LEDs are connected, make sure to check the “External LEDs Connected” checkbox in the UI before enabling the device. Access to the onboard LEDs is restricted when this box is checked. To switch to using onboard LEDs, disable the device using the “Enable” switch, turn off the input power to the board, disconnect the external LEDs, reapply input power, uncheck the “External LEDs Connected” checkbox, select your desired onboard LED configuration, and re-enable the device. Access to the external LED option is restricted when the onboard LEDs are being used unless the “External LEDs Connected” checkbox is checked again.
5. The round button with a question mark in the top right corner is the Help button, and it will show the user what everything on the UI is doing.
6. To look at the collateral provided with the EVB, click on the “Platform Content” tab at the top of the screen.

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