

ON Semiconductor

Is Now

onsemi™

To learn more about onsemi™, please visit our website at
www.onsemi.com

onsemi and **onsemi** and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi** product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner. Other names and brands may be claimed as the property of others.



ON Semiconductor®

Strata Enabled NCL30160 1A LED Driver EVB User Guide

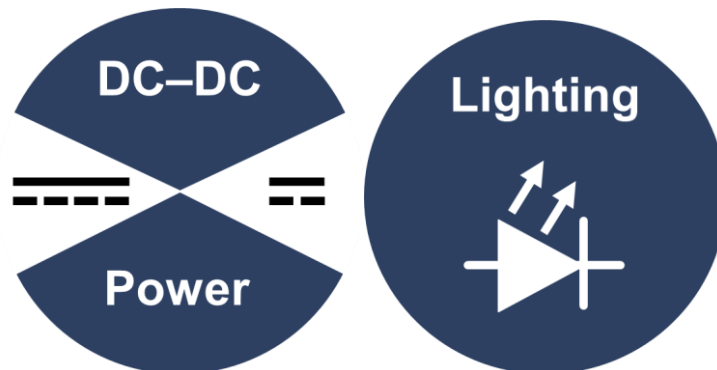


Table of Contents

INTRODUCTION..... 3
 Device Features 3
 Applications..... 3
USER GUIDE 4
 Hardware Setup 4
 User Interface 5

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

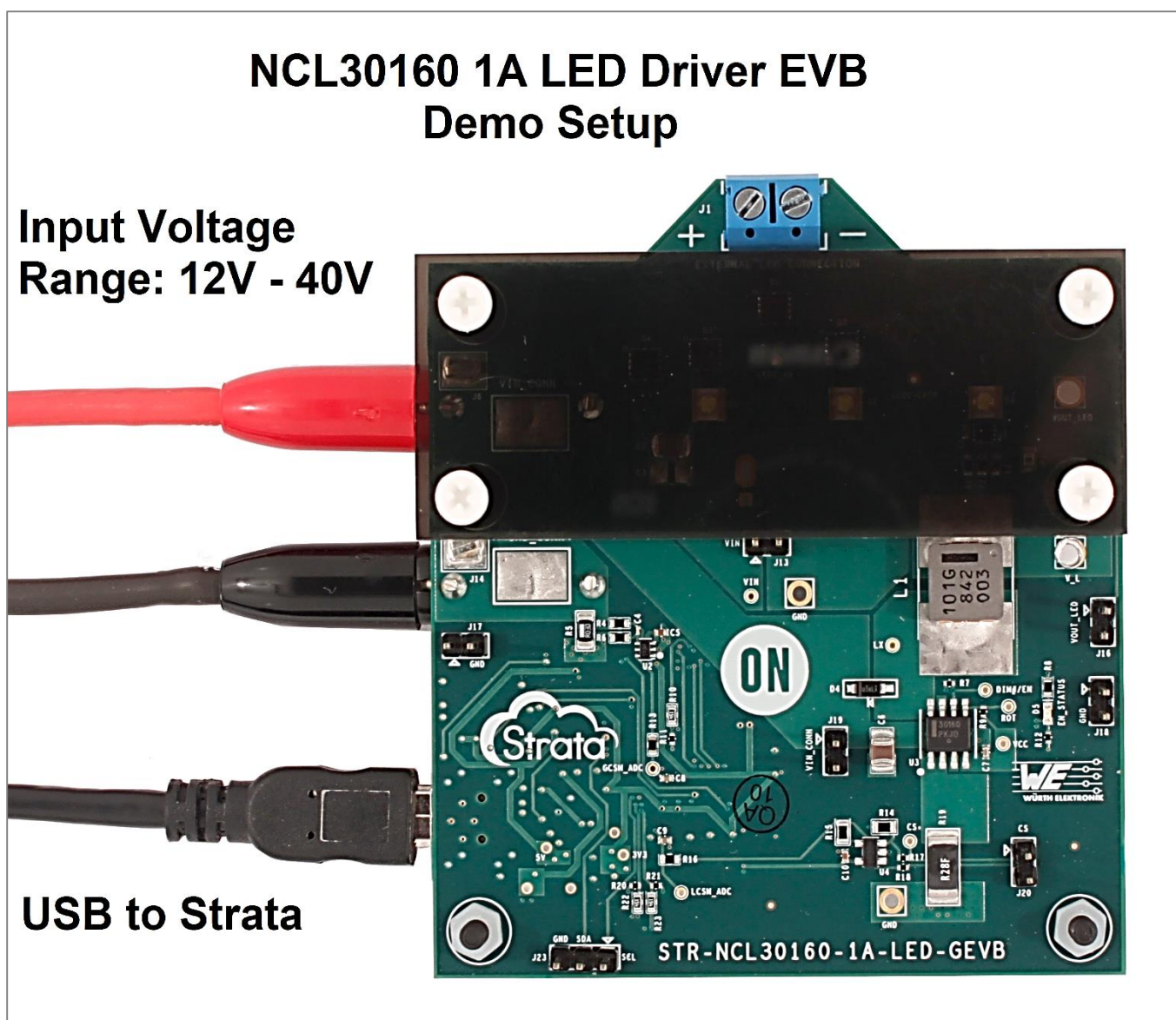
User Guide

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.

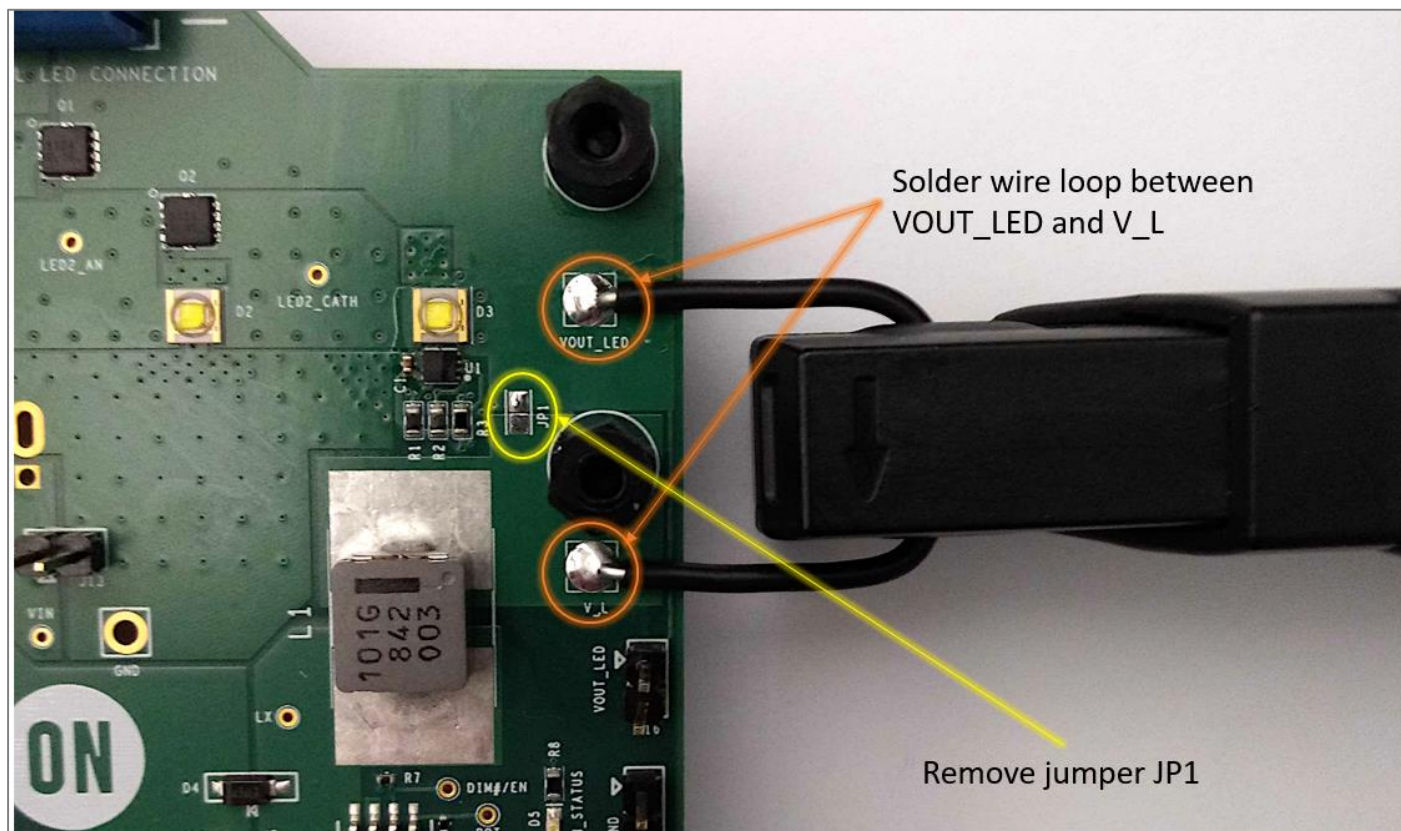


Using External LEDs

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

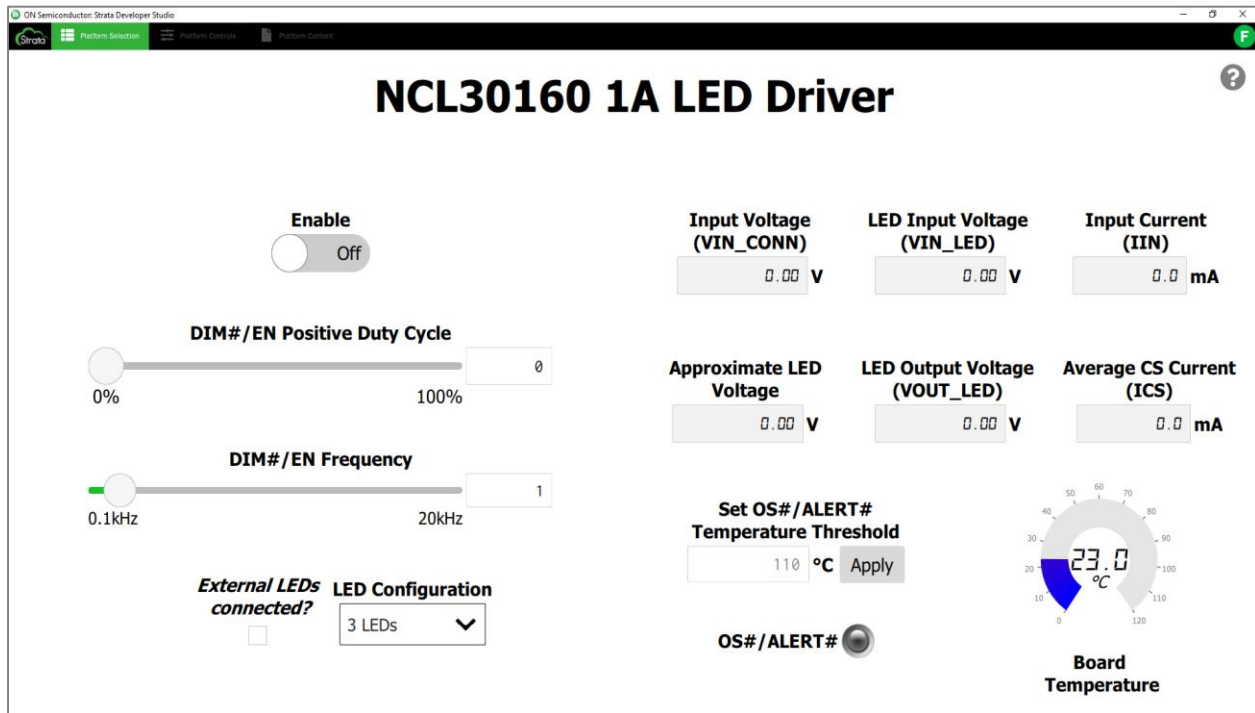
A wire can be manually soldered between the large VOUT_LED and V_L plated through holes on the EVB in order to directly measure LED current with a current probe. Remove the LED cover and remove jumper JP1 if making this modification to the board. See the picture below for a demonstration.



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.

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

The evaluation board/kit (research and development board/kit) (hereinafter the "board") is not a finished product and is as such not available for sale to consumers. The board is only intended for research, development, demonstration and evaluation purposes and should as such only be used in laboratory/development areas by persons with an engineering/technical training and familiar with the risks associated with handling electrical/mechanical components, systems and subsystems. This person assumes full responsibility/liability for proper and safe handling. Any other use, resale or redistribution for any other purpose is strictly prohibited.

The board is delivered "AS IS" and without warranty of any kind including, but not limited to, that the board is production-worthy, that the functions contained in the board will meet your requirements, or that the operation of the board will be uninterrupted or error free. ON Semiconductor expressly disclaims all warranties, express, implied or otherwise, including without limitation, warranties of fitness for a particular purpose and non-infringement of intellectual property rights.

ON Semiconductor reserves the right to make changes without further notice to any board.

You are responsible for determining whether the board will be suitable for your intended use or application or will achieve your intended results. Prior to using or distributing any systems that have been evaluated, designed or tested using the board, you agree to test and validate your design to confirm the functionality for your application. Any technical, applications or design information or advice, quality characterization, reliability data or other services provided by ON Semiconductor shall not constitute any representation or warranty by ON Semiconductor, and no additional obligations or liabilities shall arise from ON Semiconductor having provided such information or services.

The boards are not designed, intended, or authorized for use in life support systems, or any FDA Class 3 medical devices or medical devices with a similar or equivalent classification in a foreign jurisdiction, or any devices intended for implantation in the human body. Should you purchase or use the board for any such unintended or unauthorized application, you shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the board.

This evaluation board/kit does not fall within the scope of the European Union directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and may not meet the technical requirements of these or other related directives.

FCC WARNING – This evaluation board/kit is intended for use for engineering development, demonstration, or evaluation purposes only and is not considered by ON Semiconductor to be a finished end product fit for general consumer use. It may generate, use, or radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment may cause interference with radio communications, in which case the user shall be responsible, at its expense, to take whatever measures may be required to correct this interference.

ON Semiconductor does not convey any license under its patent rights nor the rights of others.

LIMITATIONS OF LIABILITY: ON Semiconductor shall not be liable for any special, consequential, incidental, indirect or punitive damages, including, but not limited to the costs of requalification, delay, loss of profits or goodwill, arising out of or in connection with the board, even if ON Semiconductor is advised of the possibility of such damages. In no event shall ON Semiconductor's aggregate liability from any obligation arising out of or in connection with the board, under any theory of liability, exceed the purchase price paid for the board, if any.

PUBLICATION ORDERING INFORMATION

LITERATURE FULLFILLMENT:

Literature Distribution Center for ON Semiconductor 19521 E.
32nd Pkwy, Aurora, Colorado 80011 USA

Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada

Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada

Email: orderlit@onsemi.com

N. American Technical Support:

800-282-9855 Toll Free USA/Canada

Europe, Middle East and Africa Technical Support:

Phone: 421 33 790 2910

ON Semiconductor Website:

<https://www.onsemi.com/>

Order Literature:

<https://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative