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User Guide 3.0

Hello Strata Power

LV DC-DC Ecosystem

Strata Developer Studio

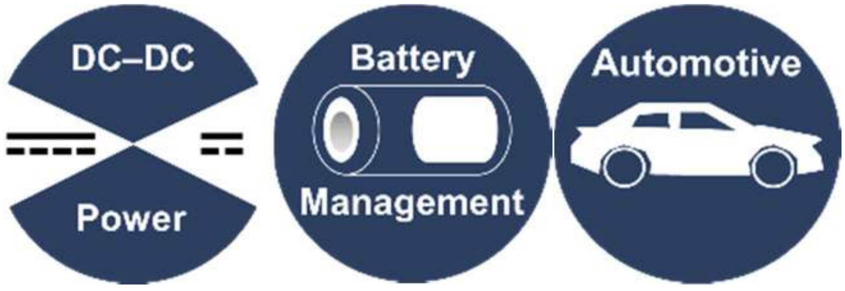


Table of Contents

1. Introduction

The Strata low voltage DC-DC evaluation boards series is an evaluation environment for low voltage DC-DC conversion controllers, converters and regulators. The platforms are compatible with the Strata Developer Studio™, providing a Graphical User Interface for a hassle-free and fast device evaluation out of the box. Essential system variables values, such as input and output voltages, currents, power dissipation, temperatures and efficiencies are displayed and plotted on dynamic charts in real time, and can be exported as well. Load transients can be simulated with a signal generator. These Strata platforms can be used for Automotive and Industrial developments.

Features

- **Monitoring and setting of system variables via Strata GUI:**
    - Input and output voltages
    - Input and output currents
    - Power dissipation
    - Switching frequency
    - PWM adjustment
- **Load transient** generation from GUI
- **Fast evaluation with Strata Developer Studio**
- **Hardware**
    - Spacious layout with multiple test points for measurement
    - Operating temperature -40°C or +125°C

Applications

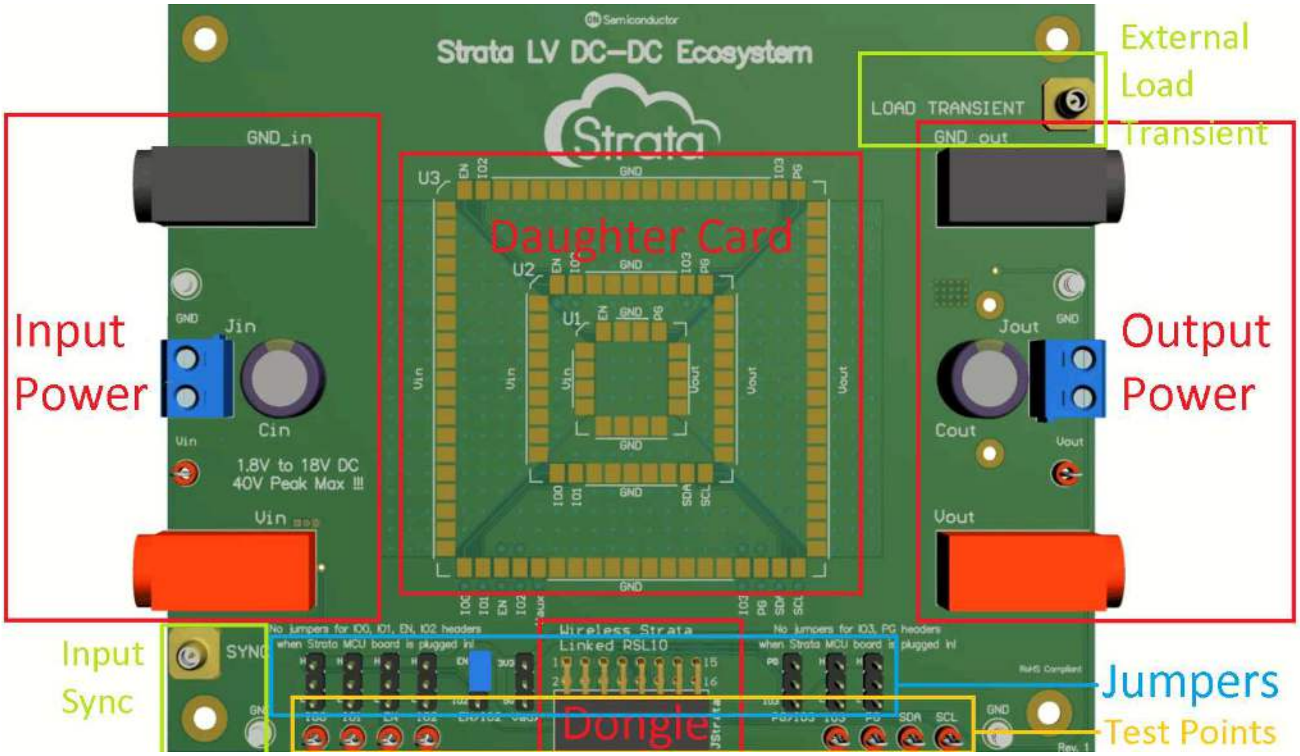
- Audio
- Infotainment
- Vision System
- Instrumentation
- Automotive low voltage DC-DC converters
- ADAS, Infotainment power management.
- Industrial imaging power management
- Industrial low voltage DC-DC conversion

Benefits

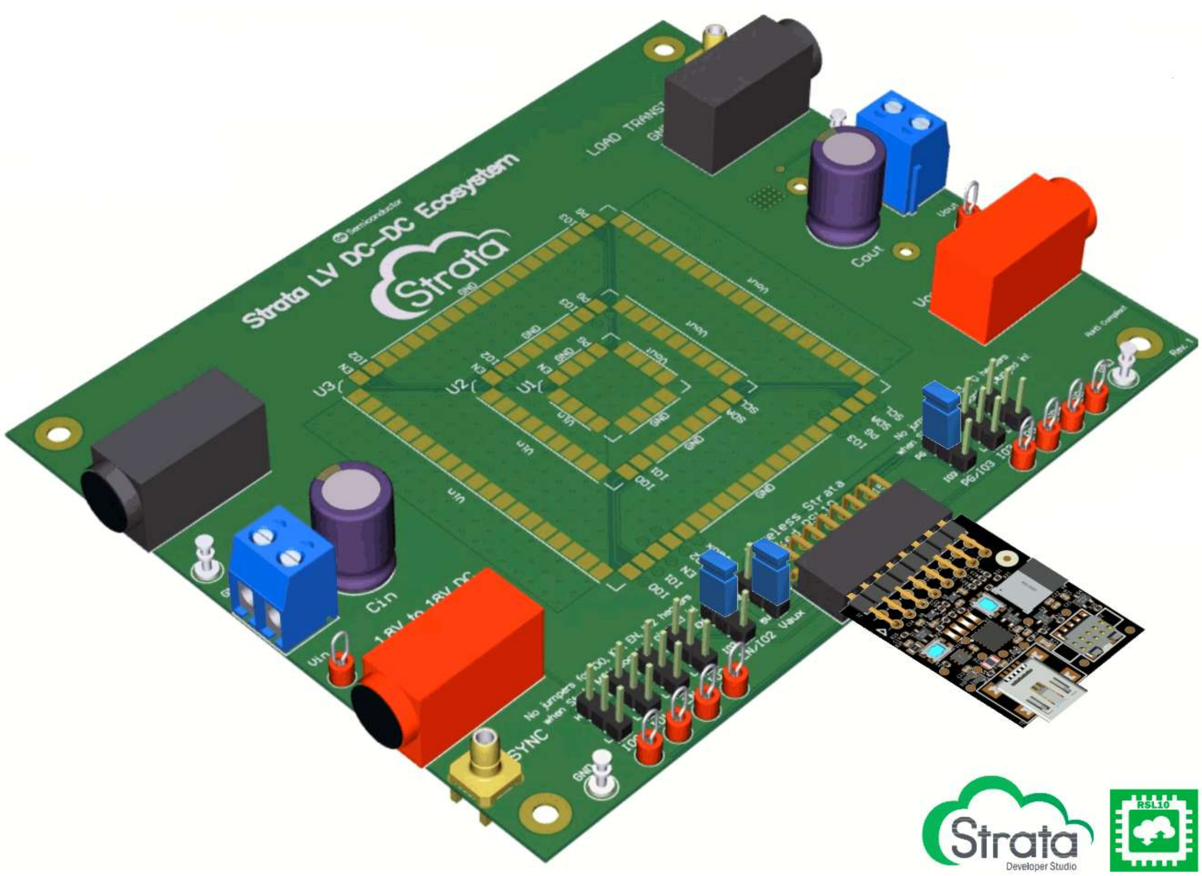
- Out of the box and fast evaluation and characterization of DC-DC ICs
- Speeds up development cycles and reduces time-to-market.
- All related collateral available at Strata Developer StudioTM
- AEC-Q qualified parts

2. Design Overview

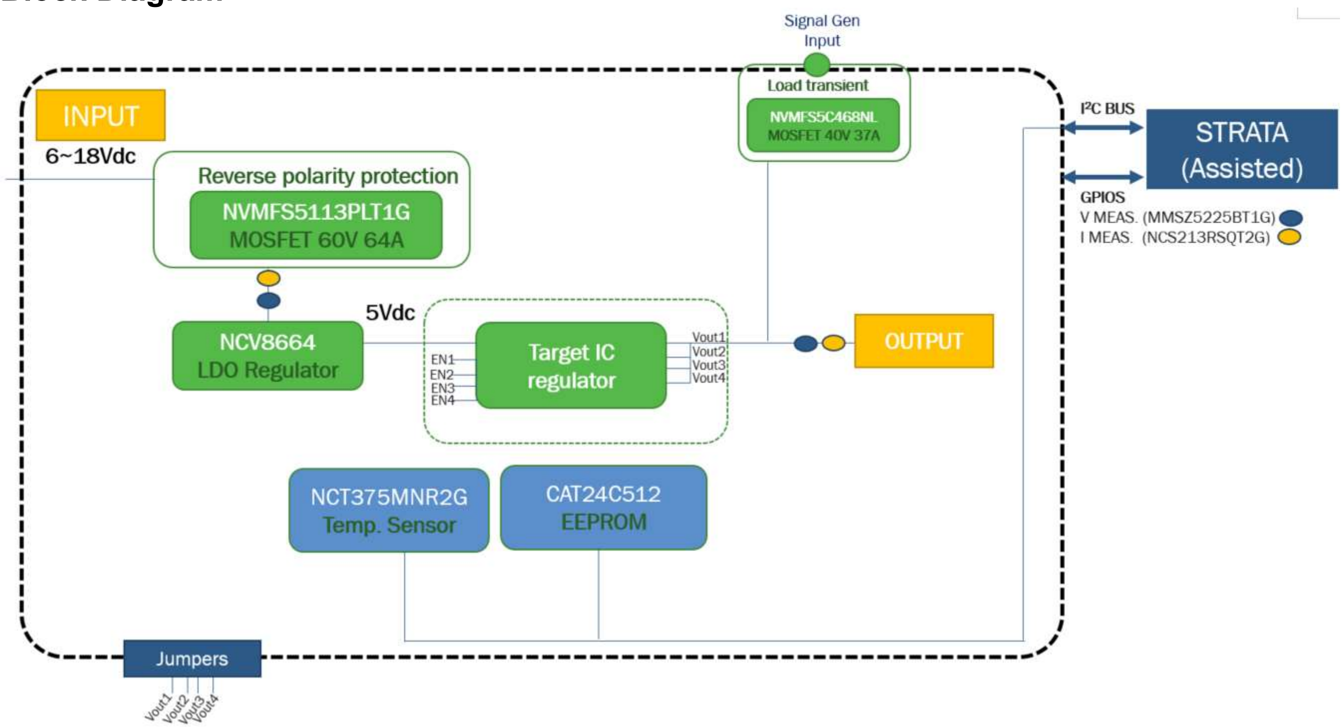
2D View



3D View



3. Block Diagram



4. Scope and Purpose

This user guide provides practical guidelines for using the Strata Low Voltage Ecosystem evaluation boards series. The design was tested as described in this document but not qualified regarding safety requirements or manufacturing and operation over the whole operating temperature range or lifetime. The development board has been layout in a spacious manner so that it facilitates measurements and probing for the evaluation of the system and its components. The hardware is intended for functional testing under laboratory conditions and by trained specialists only.

5. Prerequisites

Hardware

- Strata Low Voltage Ecosystem evaluation boards series – (Strata Low Voltage Ecosystem evaluation kit consists of mother board + daughter card)
- Strata RSL10 Assisted Dongle
- External DC power supply

Software

Strara Developer Studio™

6. User Guide

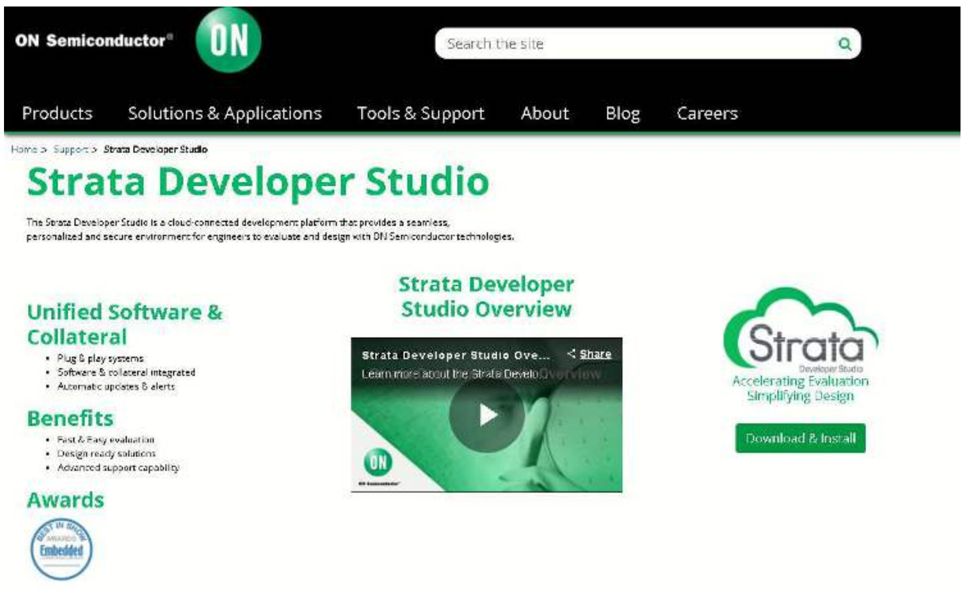
This section will explain how to use in a step by step manner the platform, and will cover both the hardware required as well as how to use the User Interface in Strata.

Hardware Setup

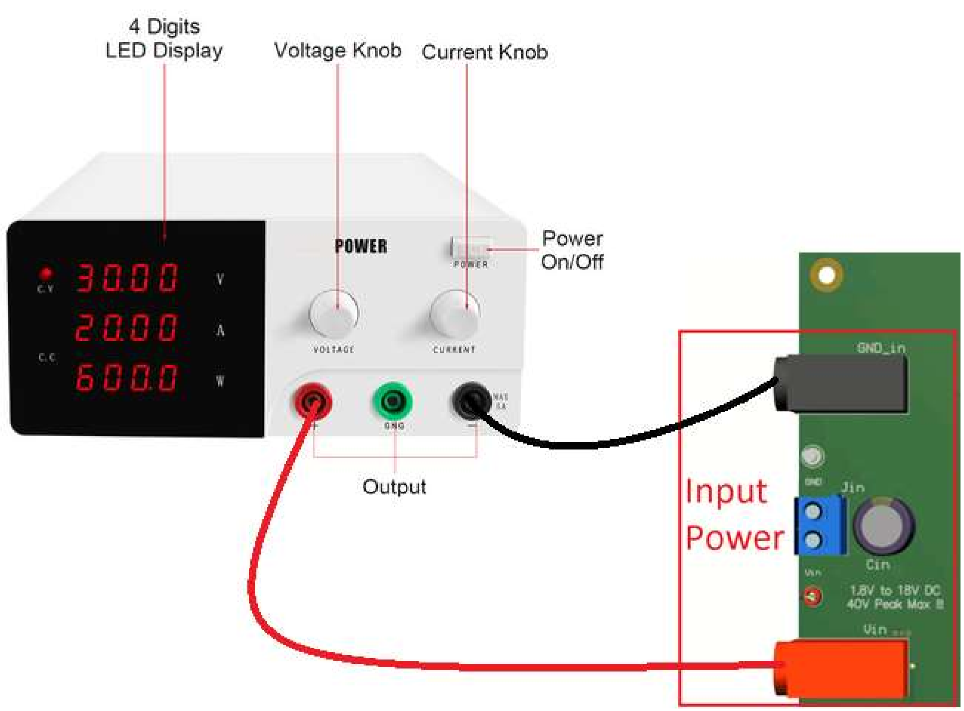
The hardware required for using the platform are a computer (with Windows) and a power supply. Follow the steps below.

1. Download and install the newest Strata Developer Studio:

Strara Developer Studio™

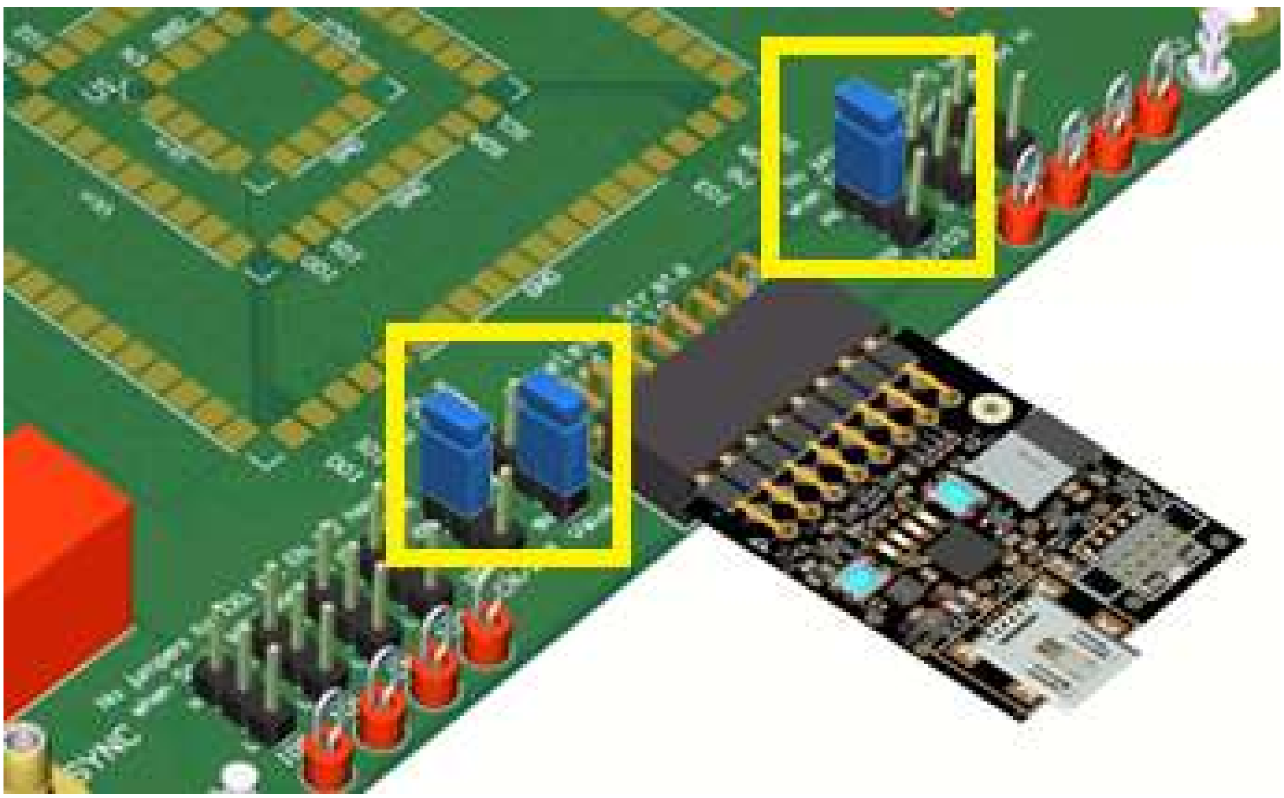


2. Plug the power supply into the input of the board using the banana plugs **Vin** and **GND_in**. Do not apply over 5V to the input and limit the output current to 1 Amps.



3. Connect the computer to the **RSL10 Assisted Dongle** using the **mini USB** connector and the **RSL10 Assisted Dongle** to the **Hello Strata LV DC-DC Ecosystem**.

4. Make sure that ALL jumpers are present.



7. User Interface

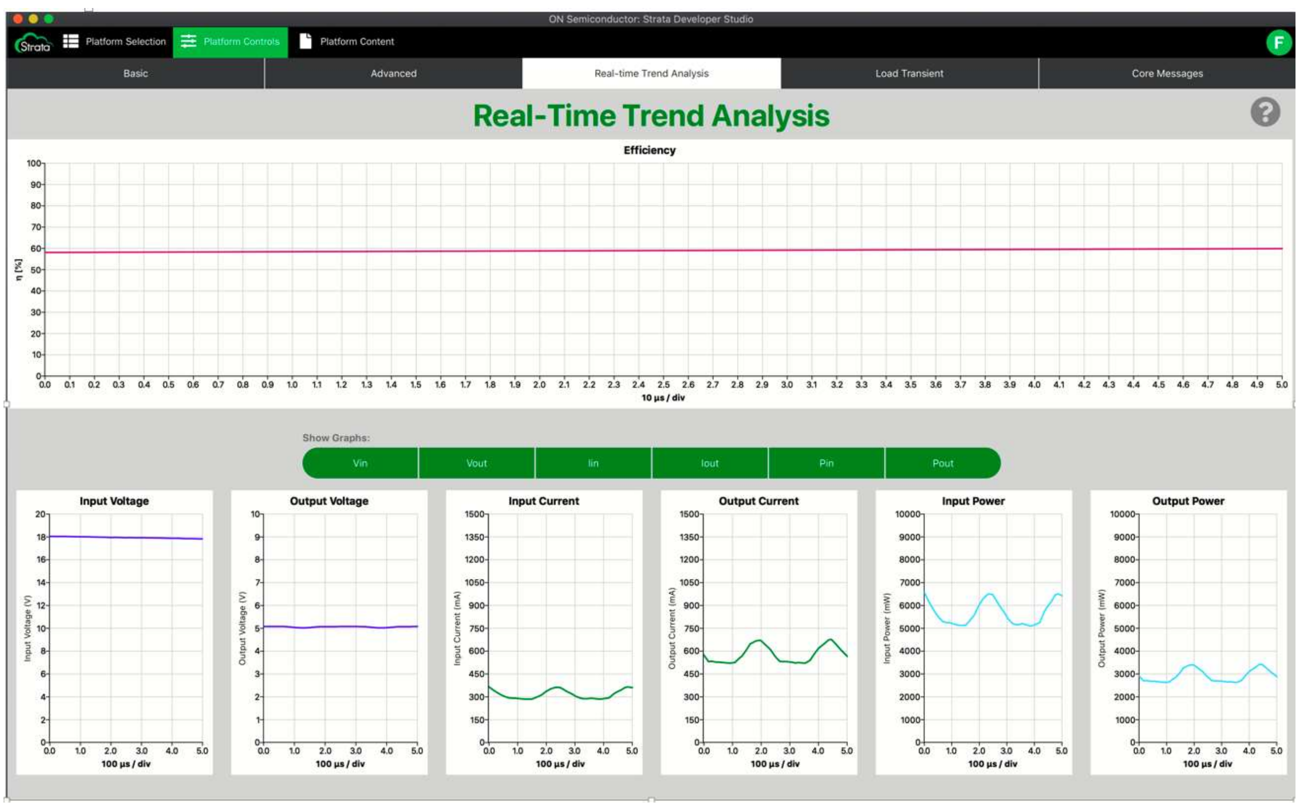
The UI within the Strata app will allow the user to control the Hello Strata LV DC-DC Ecosystem platform and monitor its telemetry without needing other lab equipment or training to do so. The steps below cover what is in the UI.

1. Open Strata and Login, if necessary Register with your email and Password and Login

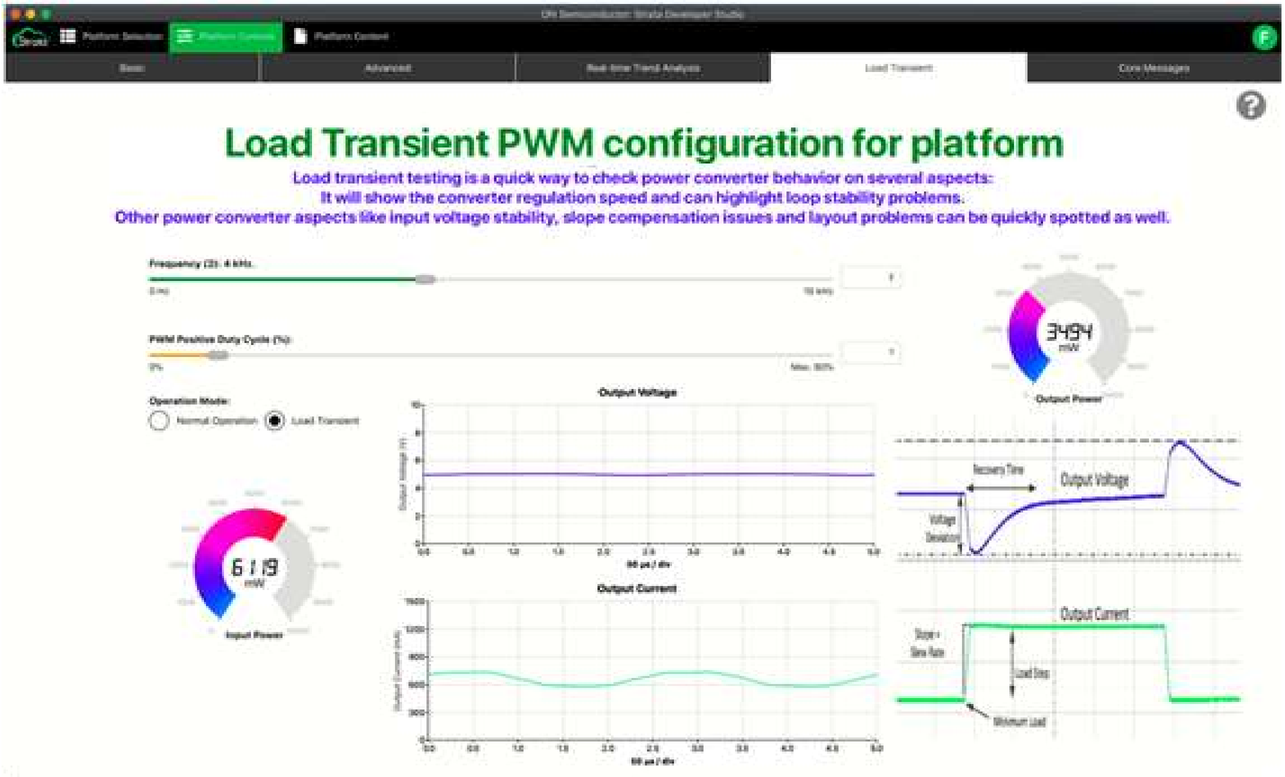
2. The view that comes up automatically when you plug in the mini USB is the basic view, which offers basic telemetry, an enable switch for enabling /disabling the switcher.

3. In the top right hand corner the user can switch to the Advanced view. The Advanced view offers more telemetry for the user to monitor, along with many more controls.

4. Real-Time Trend Analysis: The graph is displayed in below when tab menu is selected. The graph is hidden when tab menu is deselected.



5. The load is controlled from the GUI: We don't need an external electronic load. Please note, only power supply is required.



6. Core Control Interface provides the ability to capture notification serial data easily for subsequent analysis and debugging. Every action is logged with all relevant data, which allows users to bring data directly into the cells of an Excel spread-sheet.

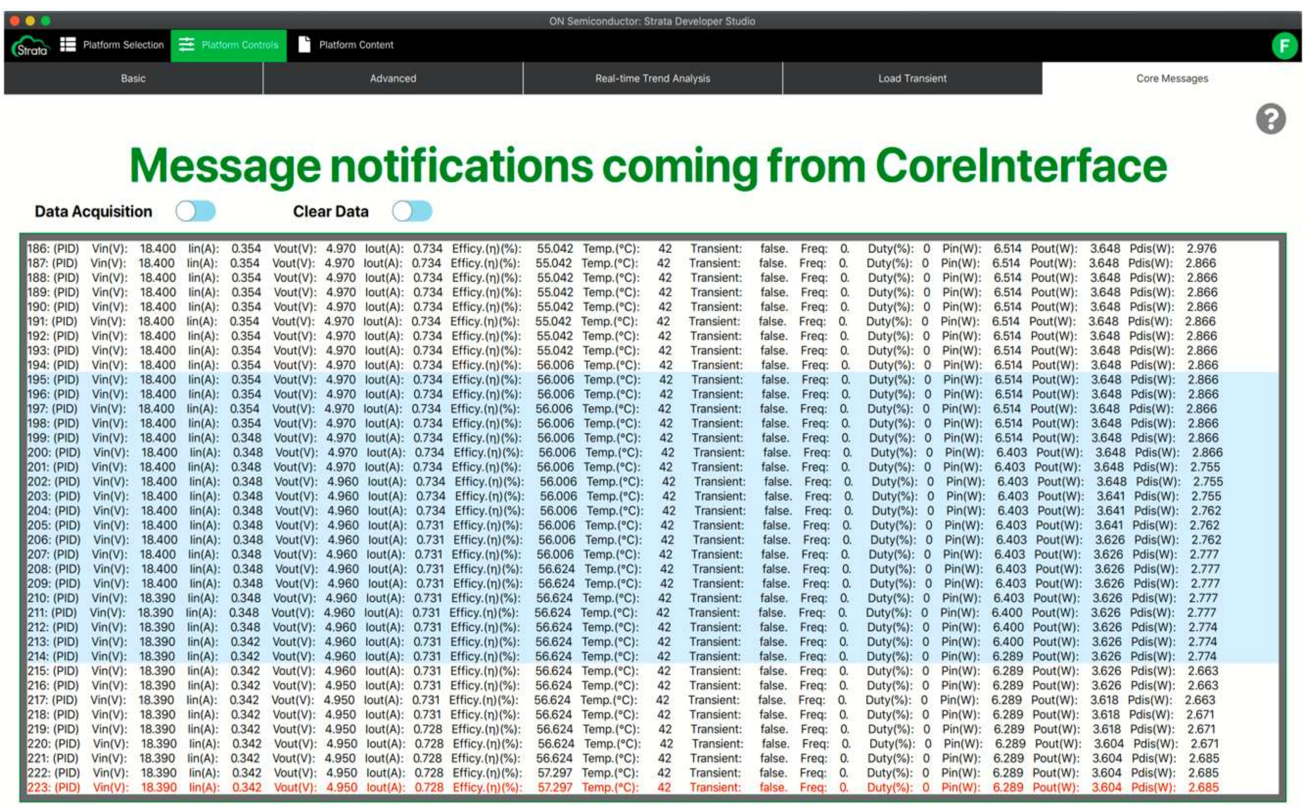


Table 1

Vin(V):	Iin(A):	Vout(V):	Iout(A):	Efficy.(η)(%):	Pin(W):	Pout(W):	Pdis(W):
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.480	291	5.040	525	49.203	5.378	2.646	2.732
18.490	291	5.040	525	49.203	5.378	2.646	2.732
18.490	291	5.040	525	49.203	5.381	2.646	2.732
18.490	291	5.040	525	49.203	5.381	2.646	2.735
18.490	294	5.040	525	49.203	5.381	2.646	2.735
18.490	294	5.040	525	49.203	5.436	2.646	2.735
18.490	294	5.040	525	49.203	5.436	2.646	2.790
18.490	294	5.050	525	49.203	5.436	2.646	2.790
18.490	294	5.050	525	49.203	5.436	2.651	2.790
18.490	294	5.050	525	49.203	5.436	2.651	2.785
18.490	294	5.050	525	49.203	5.436	2.651	2.785
18.490	294	5.050	525	49.203	5.436	2.651	2.785
18.490	294	5.050	525	49.203	5.436	2.651	2.785
18.490	294	5.050	525	48.772	5.436	2.651	2.785
18.490	294	5.050	525	48.772	5.436	2.651	2.785
18.480	294	5.050	525	48.772	5.436	2.651	2.785
18.480	294	5.050	525	48.772	5.433	2.651	2.785
18.480	294	5.050	525	48.772	5.433	2.651	2.782
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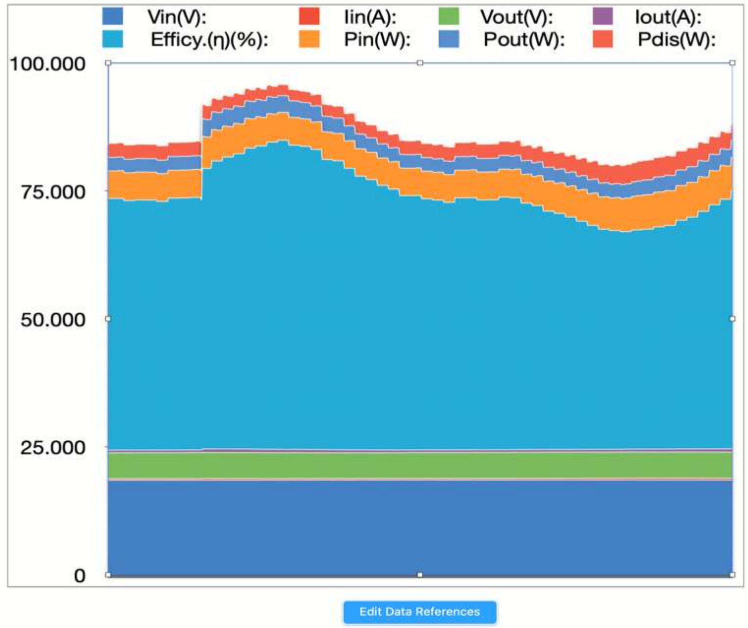
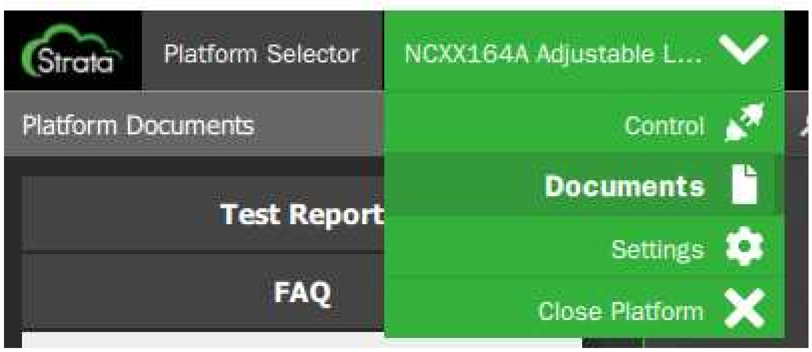
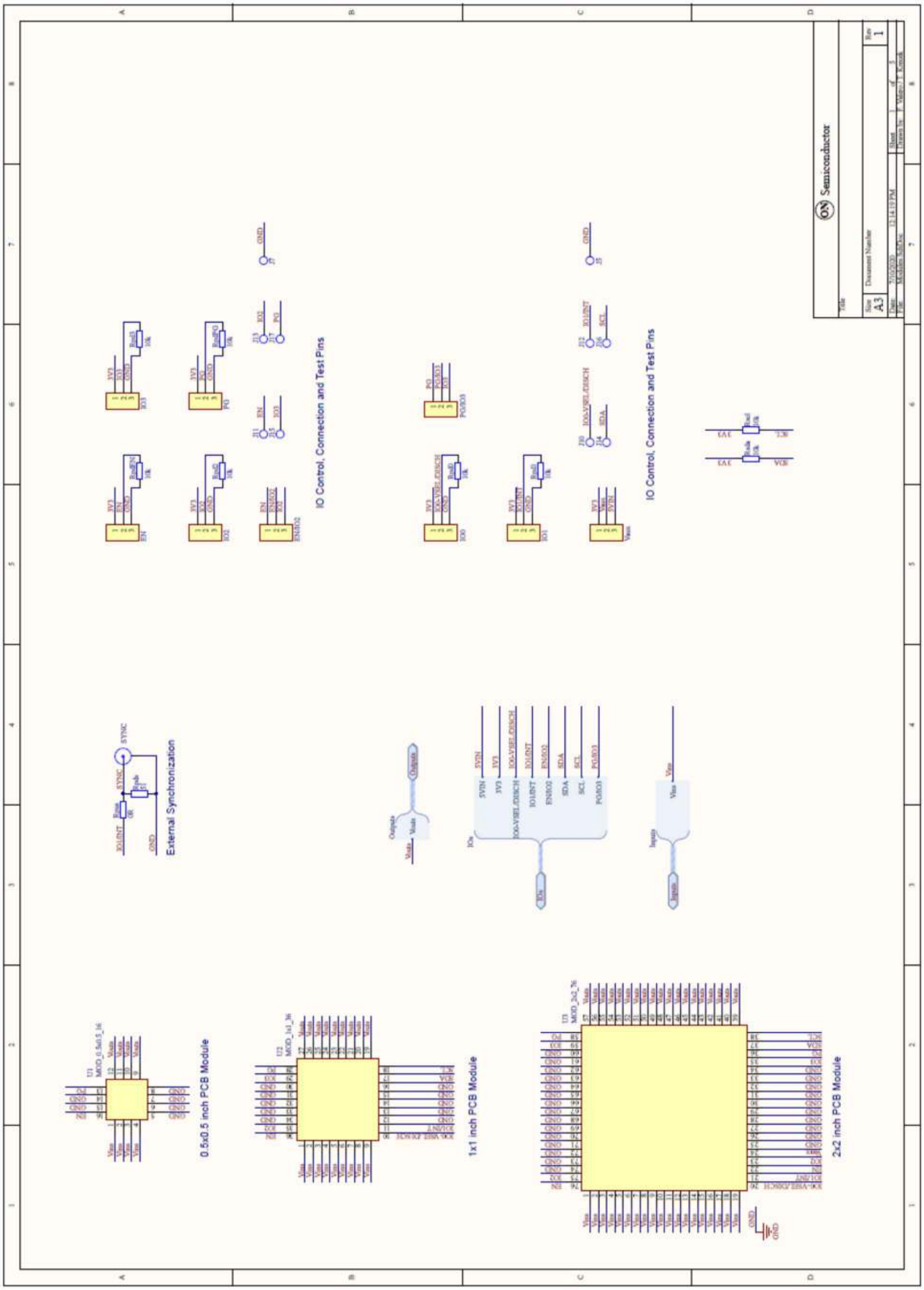
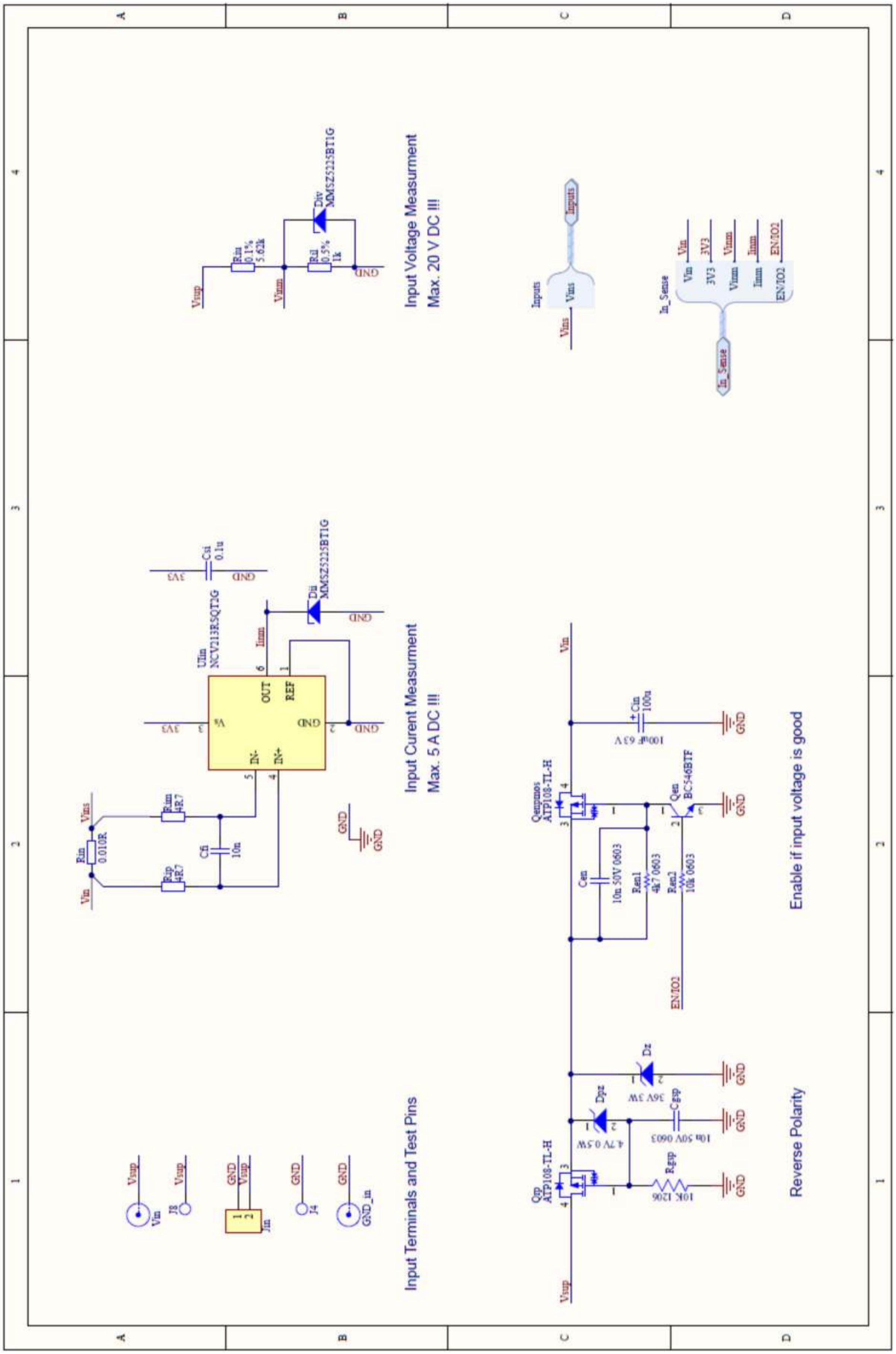


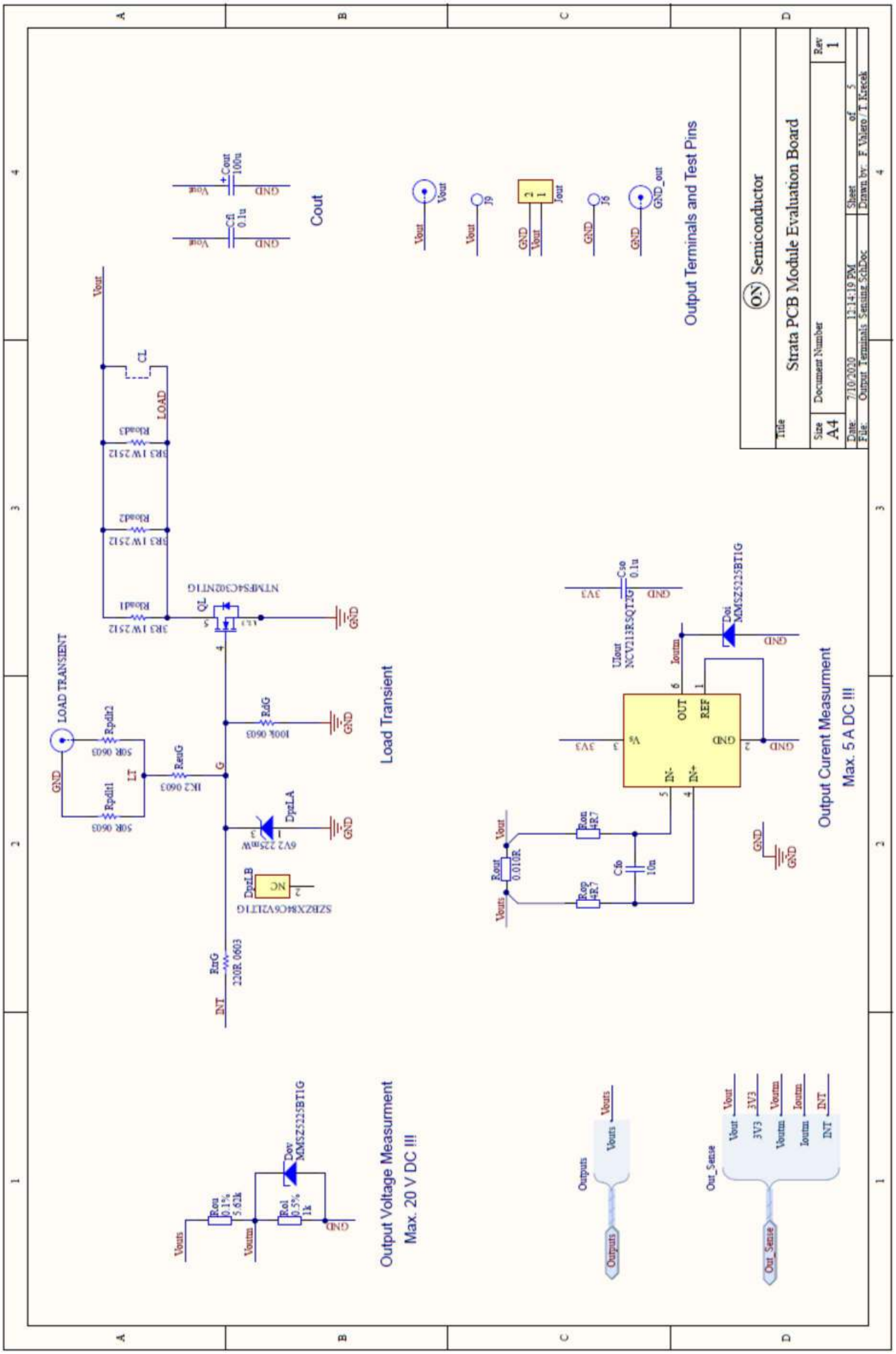
7. To look at the collateral provided with the EVB, click on the “Platform Content” tab at the top of the screen.

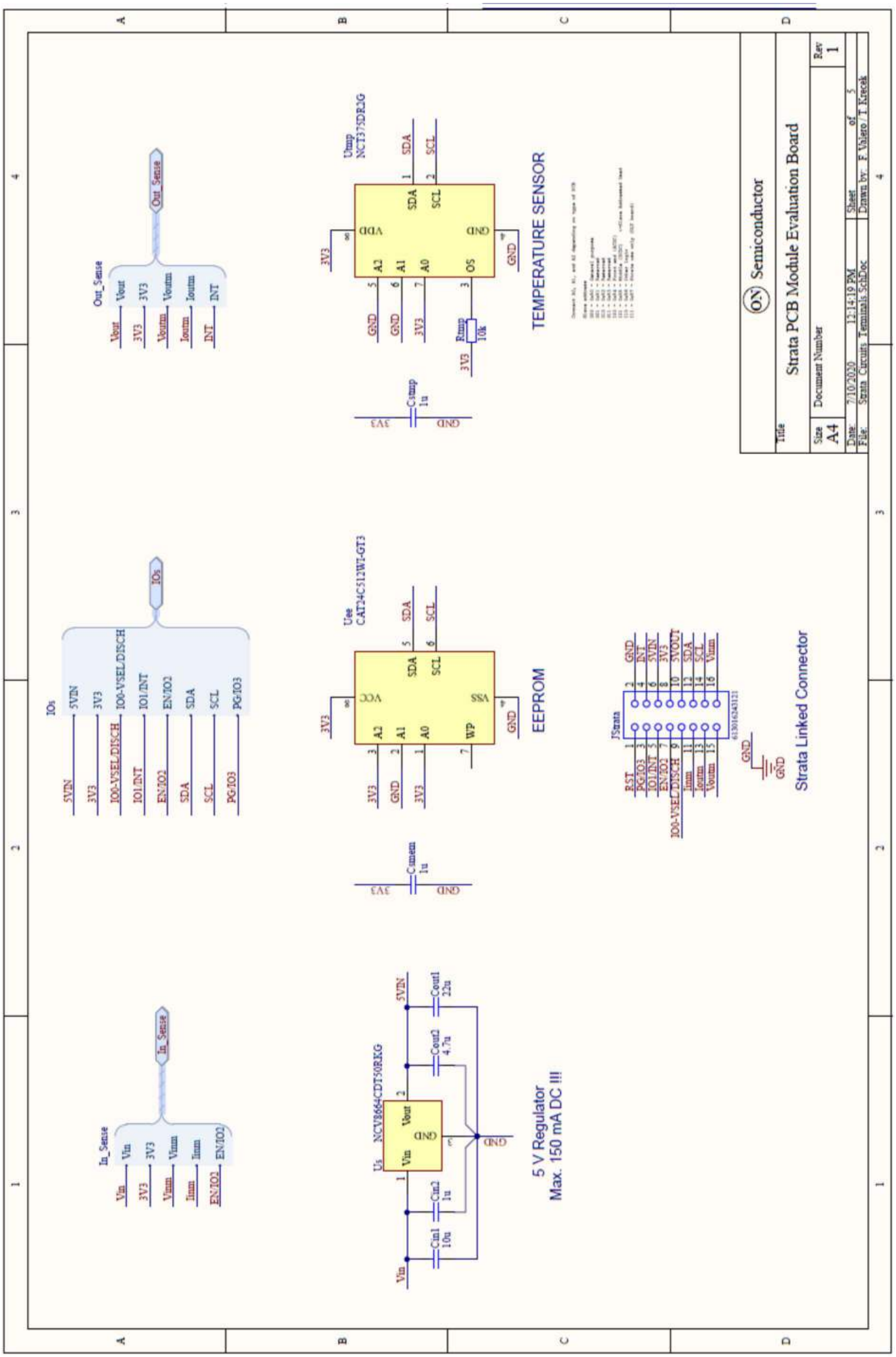


8. Schematic Module Evaluation Board




Input Voltage Measurment
Max. 20 V DC !!!
Riu
0.1%
5.62k
Ril
0.5%
1k
Div
MMSZ5225BT1G
Vsup
Vinm
GND
Inputs
Vins
In_Sense
Vin
3V3
Vinm
Iinm
EN/IO2
Input Curent Measurment
Max. 5 A DC !!!
UIin
NCV213RSQT2G
OUT
REF
IN-
IN+
GND
Iinm
Dii
MMSZ5225BT1G
Csi
0.1u
Rim
4R7
Rip
4R7
Rin
0.010R
Cfi
10n
Input Terminals and Test Pins
J8
J4
Jin
GND_in
Qenpmos
ATP108-TL-H
Qen
BC546BTF
Cin
100u
100uF 63 V
Cen
10n 50V 0603
Ren1
4k7 0603
Ren2
10k 0603
Enable if input voltage is good
Qrp
ATP108-TL-H
Dpz
4.7V 0.5W
Dz
36V 3W
Cgsp
10n 50V 0603
Rgsp
10K 1206
Reverse Polarity


Load Transient
Output Voltage Measurment
Max. 20 V DC !!!
Output Curent Measurment
Max. 5 A DC !!!
Output Terminals and Test Pins
Cout
LOAD TRANSIENT
Semiconductor
Strata PCB Module Evaluation Board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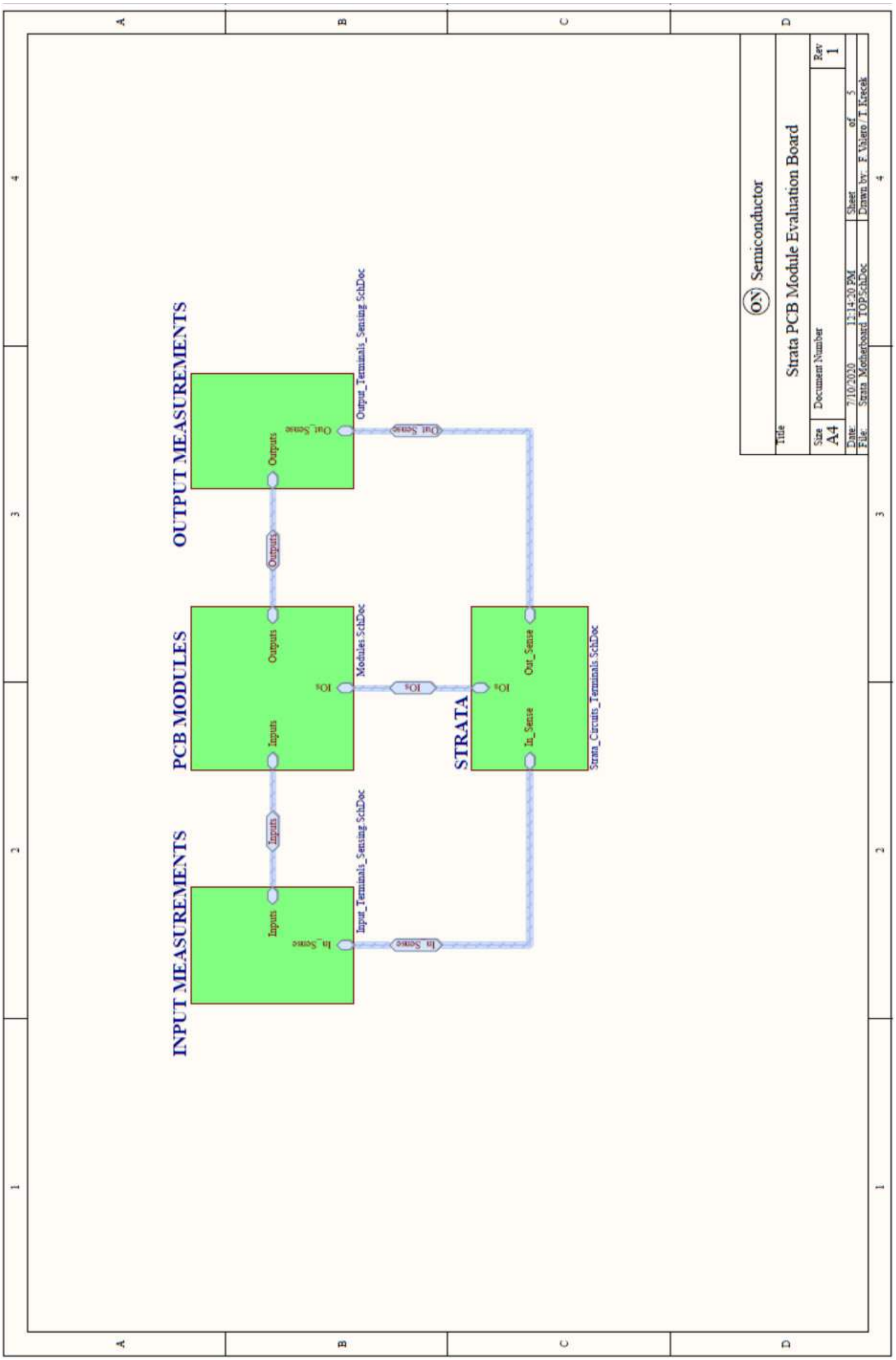
IOs
In_Sense
Utmp
NCT375DR2G
TEMPERATURE SENSOR
Uee
CAT24C512WI-GT3
EEPROM
Us
NCV8664CDT50RKG
5 V Regulator
Max. 150 mA DC !!!
Jstrata
Strata Linked Connector
ON Semiconductor
Strata PCB Module Evaluation Board
Size A4
Rev 1
Date: 7/10/2020 12:14:19 PM
File: Strata Circuits Terminals.SchDoc
Drawn by: F. Valero / T. Krecek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Input_Terminals_Sensing.SchDoc
PCB MODULES
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Outputs
IOs
Modules.SchDoc
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Outputs
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Output_Terminals_Sensing.SchDoc
STRATA
In_Sense
Out_Sense
IOs
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ON Semiconductor
Title
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Size
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Document Number
Rev
1
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Drawn by: F. Valero / T. Krecek

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