

## Universal door lock demonstration board based on L99UDL01



EVAL-L99UDL01 motherboard



EVAL-L99UDL01 daughterboard

### Features

- Board functionality based on L99UDL01, universal door lock for automotive applications:
  - 6 integrated fully protected 0.09 Ω half bridges
  - PWM current regulation up to 25 kHz
  - integrated half bridges can be fully independent or paralleled up to three in parallel
  - 2 stage charge pump for low-voltage operation
  - 2 external half-bridge drivers
  - 10-bit digital current feedback (via SPI) for load integrity check
  - TQFP64L exposed pad package
- Board reverse battery protection with STD95N4F3 Power MOSFET
- Input operating voltage range through mother board connector: from 6 V to 26 V for microcontroller powered by 5V LDO motherboard; from 6 V to 18 V for microcontroller powered by 3.3V LDO motherboard
- Output current up to 24 A DC
- Motherboard size: 144 mm length x 81 mm width
- Daughterboard size: 113.4 mm length x 69.7 mm
- All ST components are automotive-grade qualified
- The referenced device L99UDL01 can be adapted to most central door lock configurations.

#### Product status link

[EVAL-L99UDL01](#)

#### Product summary

Order code      EVAL-L99UDL01

Related devices      L99UDL01  
motherboard and  
daughterboard

### Applications

- Central door lock systems from body control modules driving all door lock actuators

### Description

The [EVAL-L99UDL01](#) evaluation board is designed to demonstrate the centralized control of all the locks available in a car by means of the L99UDL01 device.

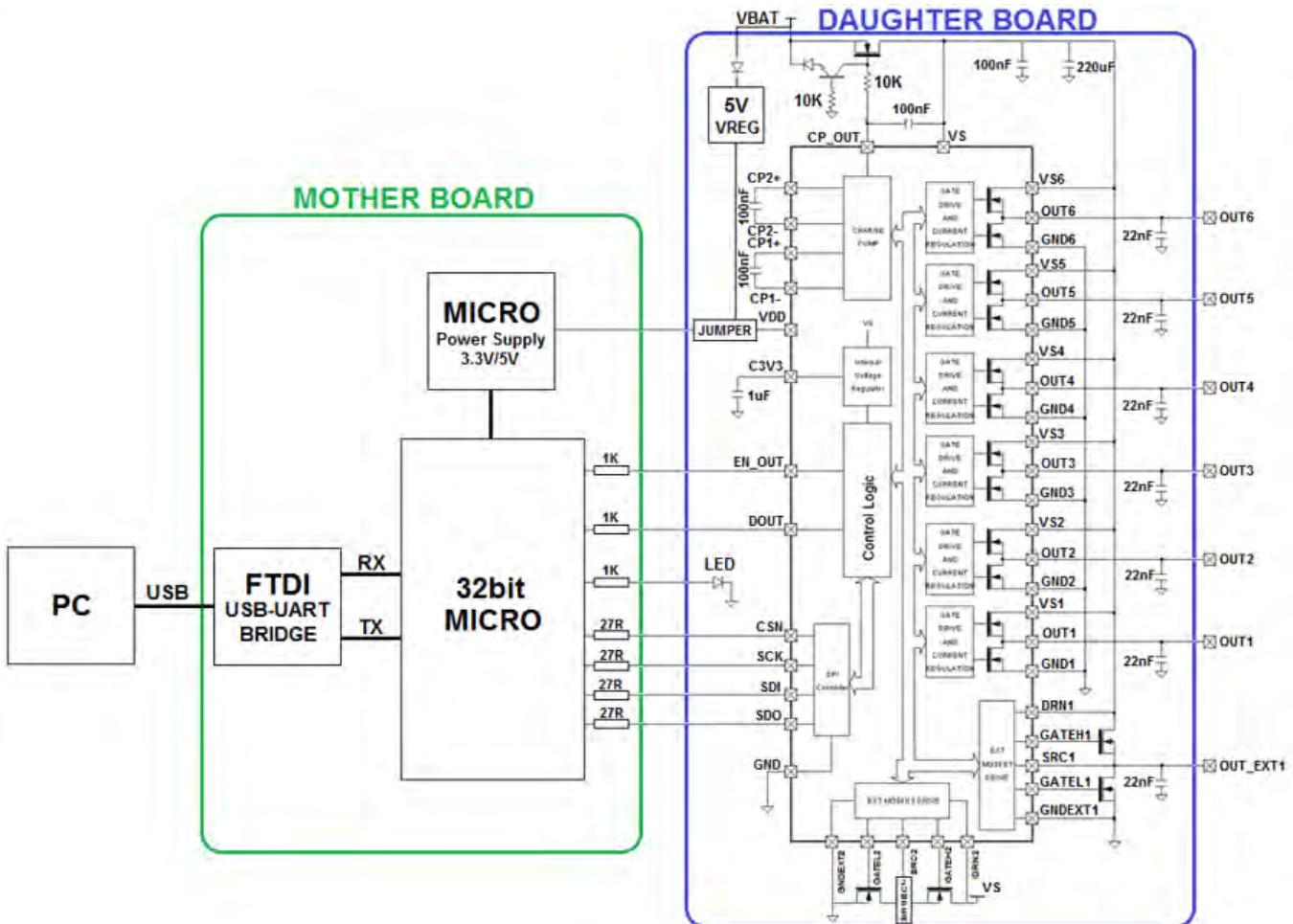
The board is composed by a motherboard and a daughterboard. The motherboard, which is based on the SPC560B54 microcontroller, provides the logic section for monitoring and driving the L99UDL01 device assembled on the daughterboard.

With the aim of facilitating the use and configuration of the board, STMicroelectronics provides a dedicated user-friendly software with a graphic user interface (GUI). This GUI enables the user to set the L99UDL01 control parameters and at the same time shows real time diagnostics information as current output and battery voltage monitoring.

## 1 Application schematics and layout

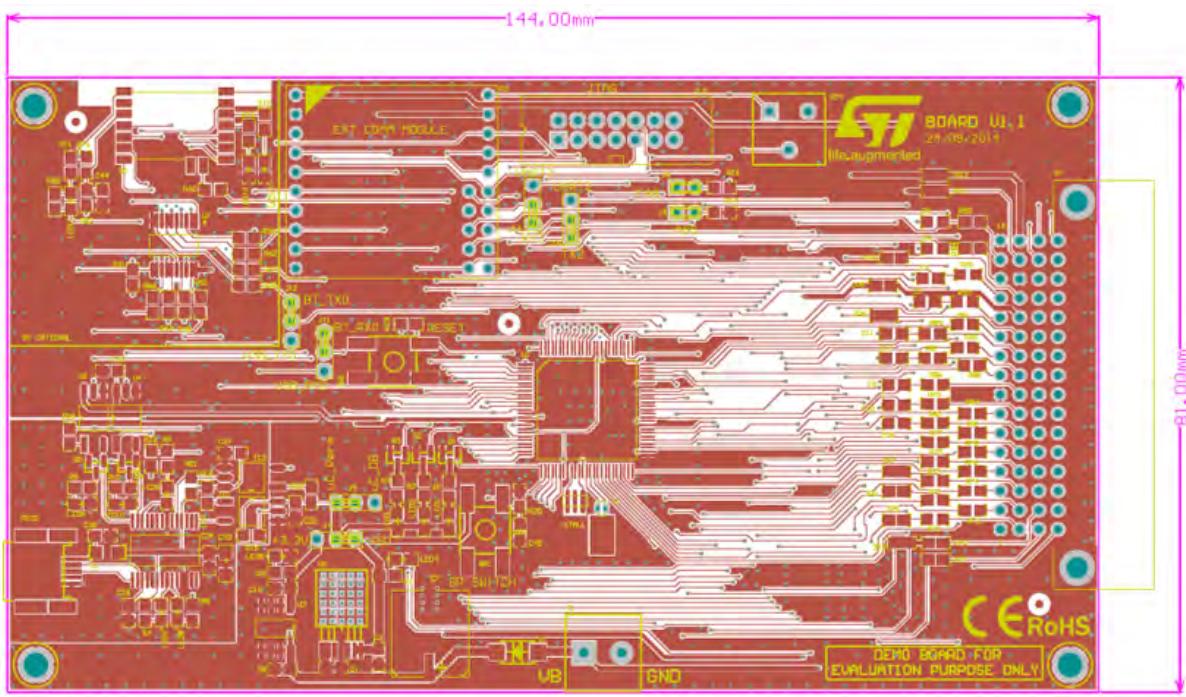
## 1.1 Overall application diagram

**Figure 1. L99UDL01 evaluation board overall application diagram**

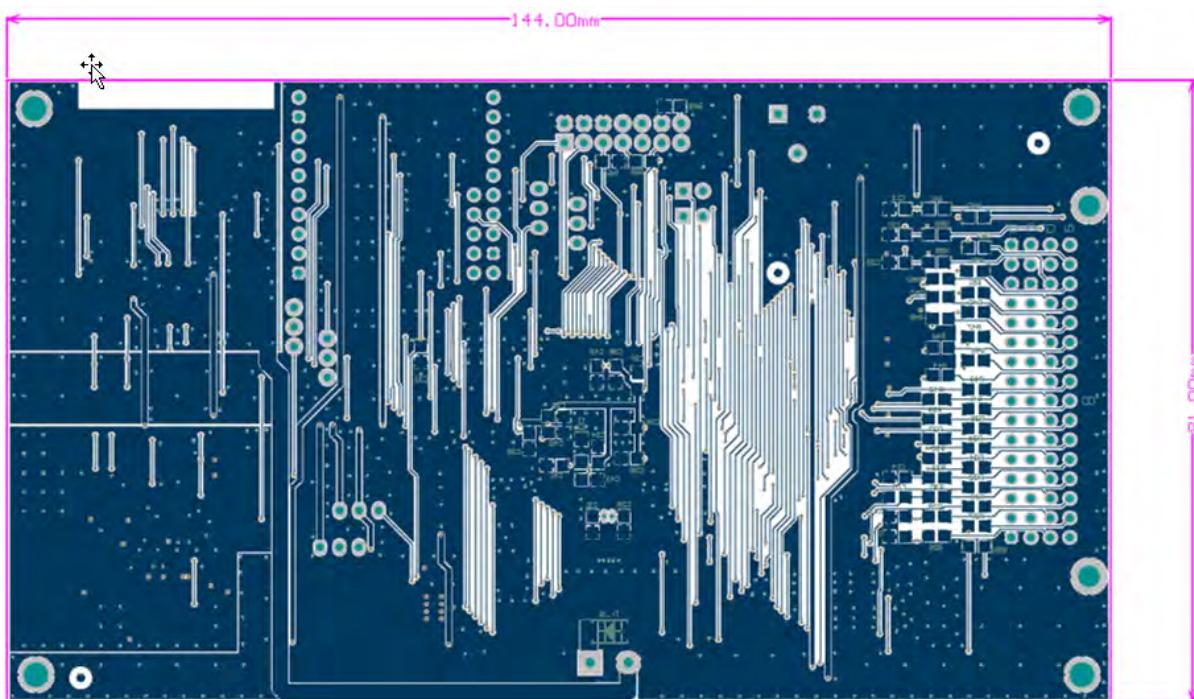


## 1.2 EVAL-L99UDL01 motherboard

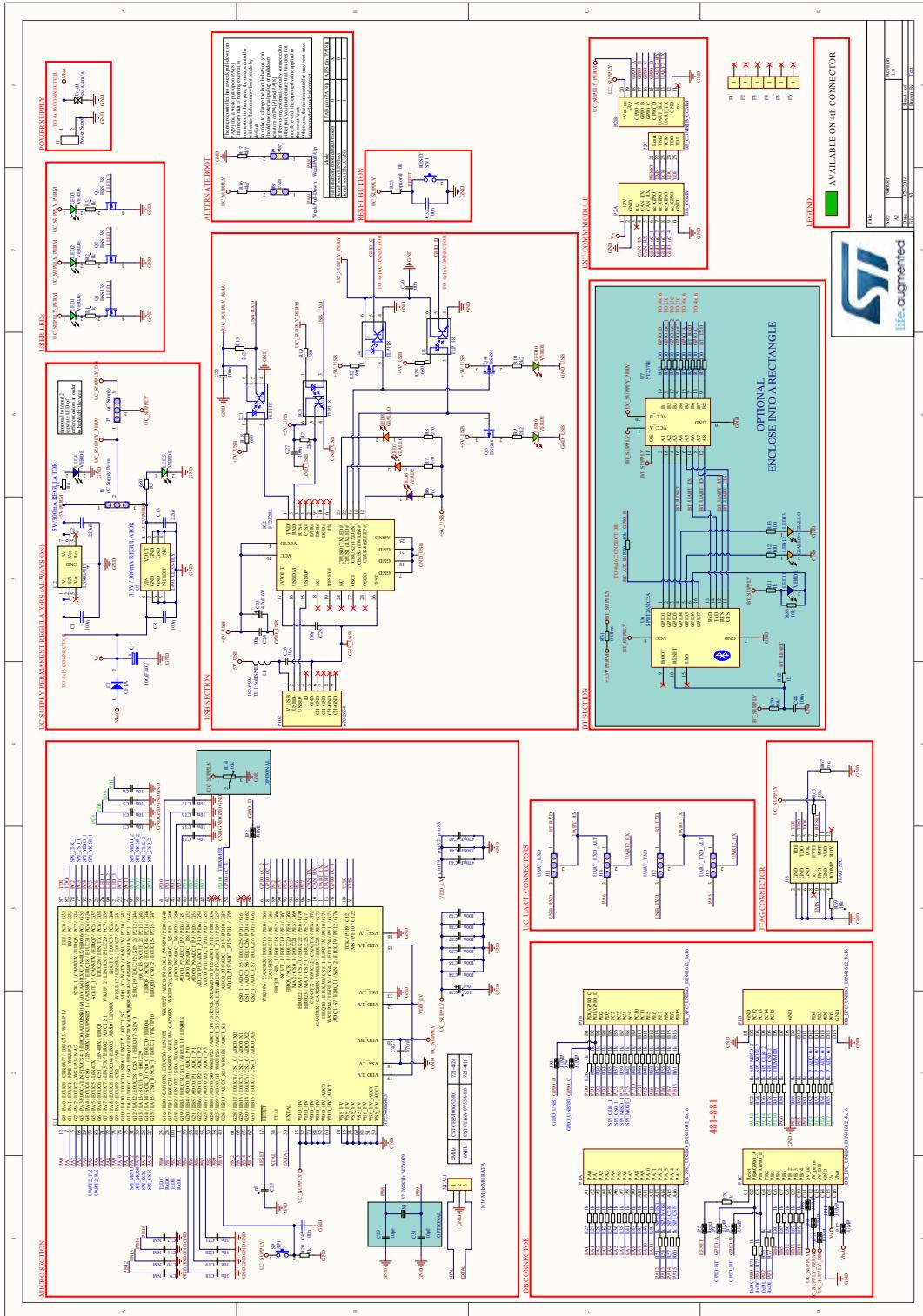
**Figure 2. EVAL-L99UDL01 motherboard top layer**



**Figure 3. EVAL-L99UDL01 motherboard bottom layer**

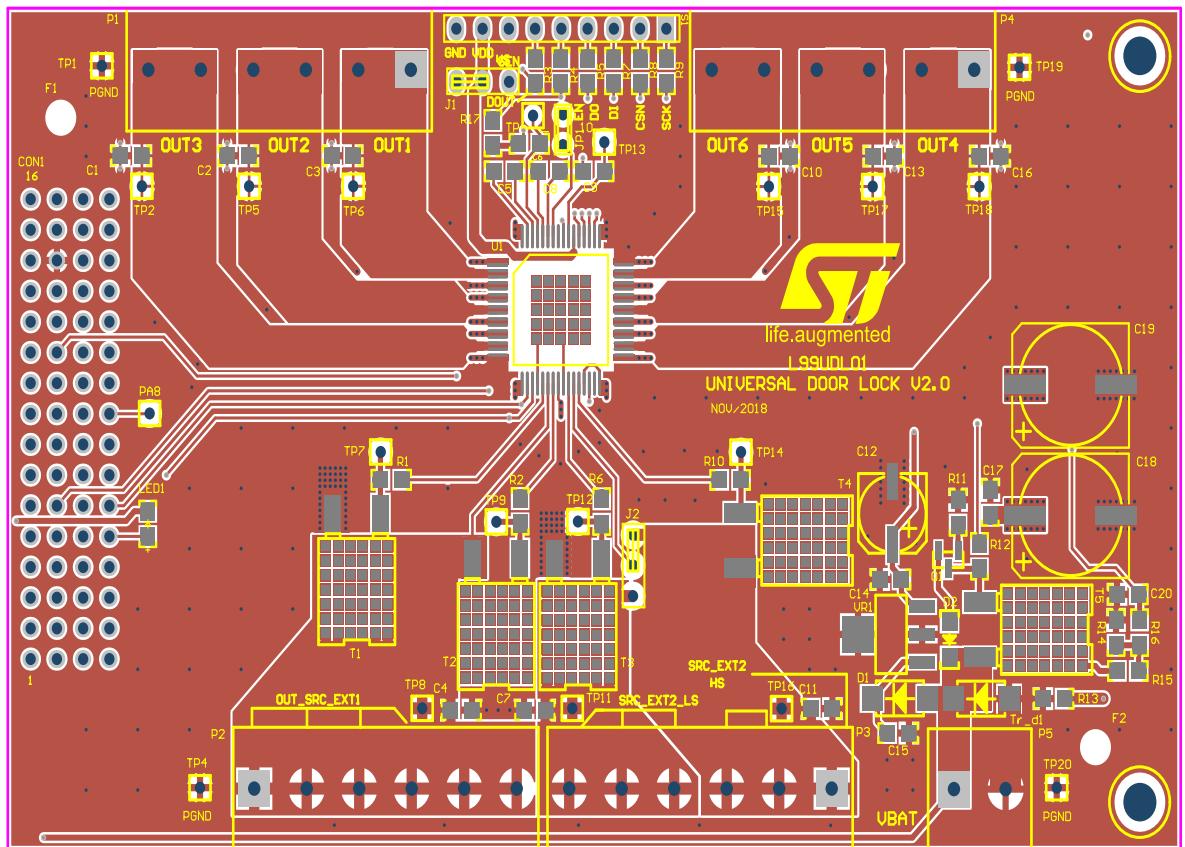


**Figure 4. Motherboard schematic**



## 1.3 EVAL-L99UDL01 daughterboard

**Figure 5. EVAL-L99UDL01 daughterboard top layer**



**Figure 6. EVAL-L99UDL01 daughterboard bottom layer**

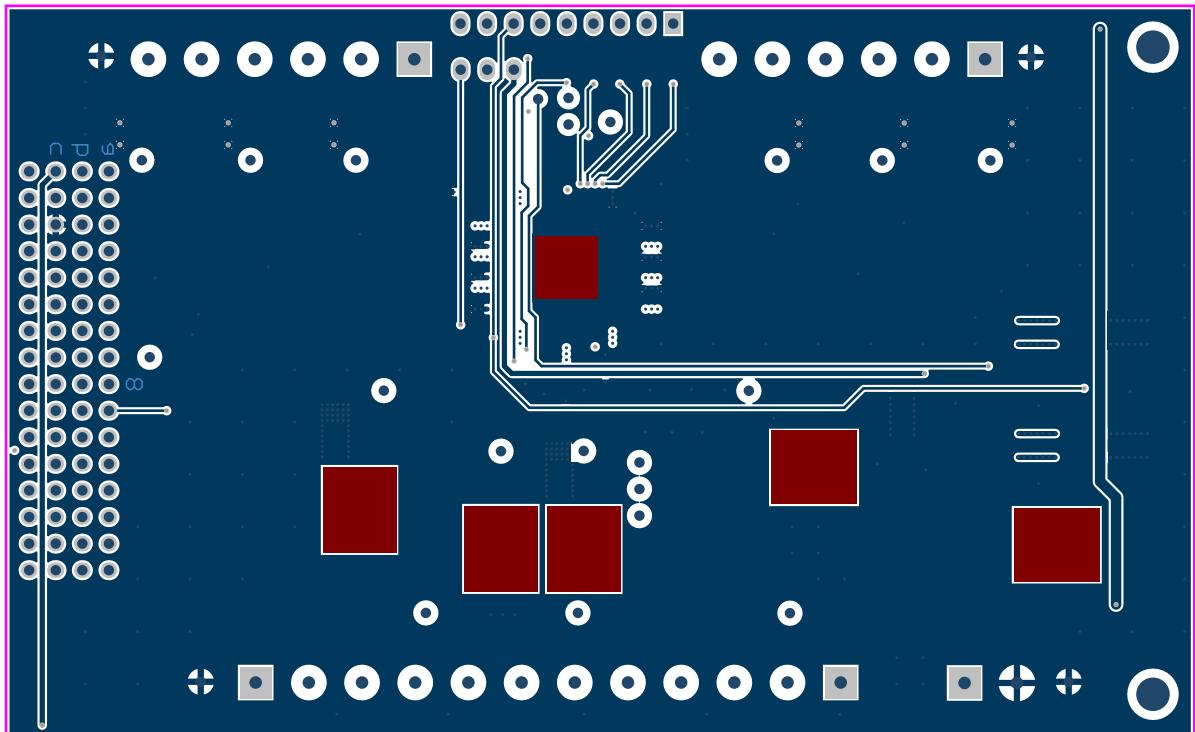
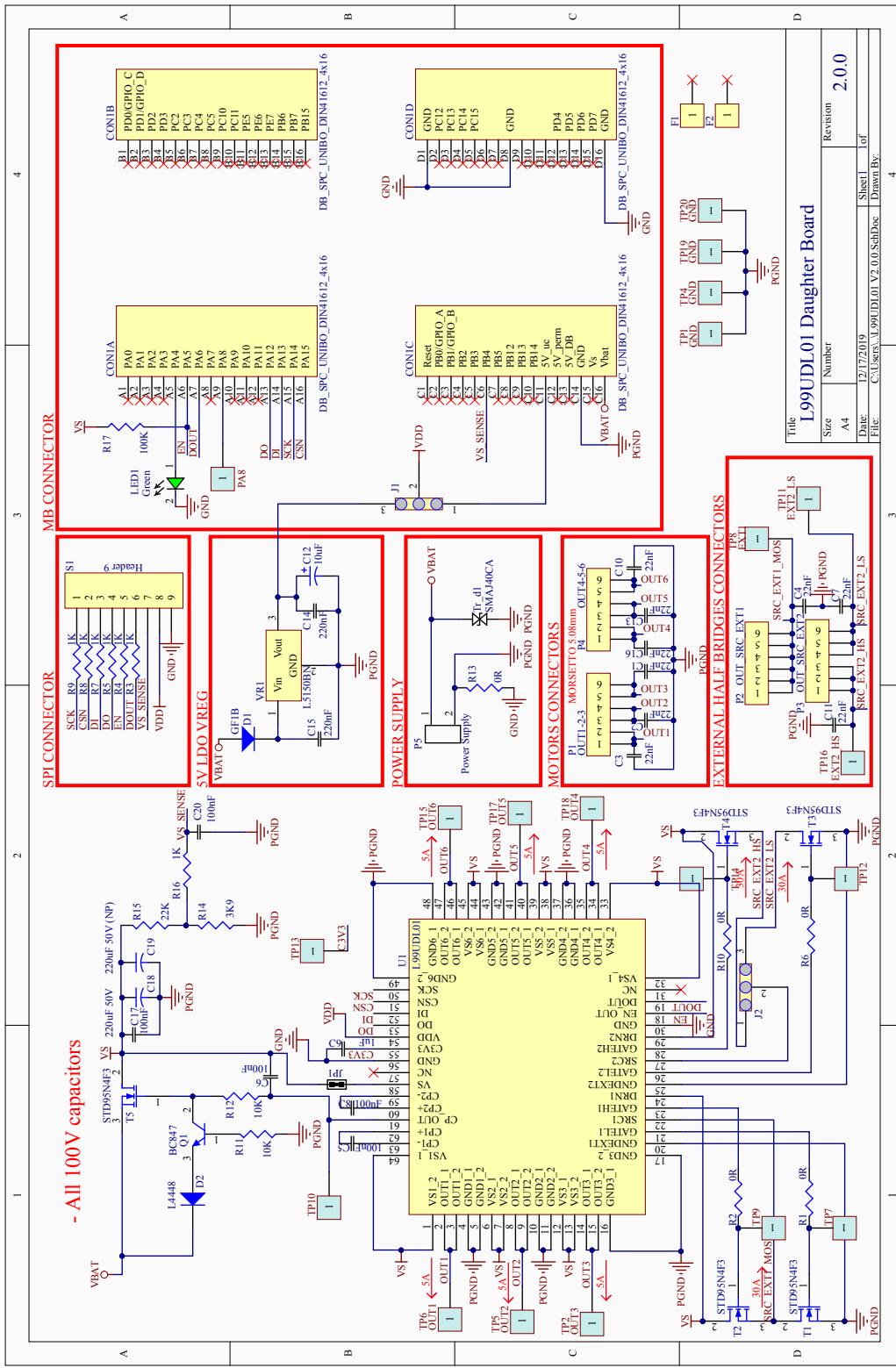


Figure 7. Daughterboard schematic



## 2 Demonstration software

A software graphical user interface (GUI) used for an easy demonstration of the L99UDL01 features is delivered upon customer request.

Figure 8. Main window of EVAL-L99UDL01 graphical user interface



## 3 System requirements

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- Windows OS (XP, 7, 8, 10)
- USB type B

## Revision history

**Table 1. Document revision history**

| Date        | Version | Changes        |
|-------------|---------|----------------|
| 11-Dec-2019 | 1       | First release. |

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